MACROECONOMIC EFFECTS OF FINANCIAL DEEPENING BETWEEN 1990 TO 2023 ON ECONOMIC GROWTH IN KENYA

MARTHA KERUBO MOREKA

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DECLARATION

Declaration by the Candidate

This thesis is my original work and has never been presented for the award of an academic degree in any other university and should not be copied, or reproduced in any format without written authority from the author and/or University of Eldoret.

Moreka Kerubo Martha

……. **Date**…….....……

SECO/AEC/M/002/21

Approval by the Supervisors:

This thesis has been submitted with our approval as university supervisors.

……. **Date**…….....……

Dr. Winrose Chepng'eno

School of Business, Economics and Management Sciences

University of Eldoret, Kenya

…….. **Date**…….....……

Dr. Naftaly Mose

School of Business, Economics and Management Sciences

University of Eldoret, Kenya

DEDICATION

I dedicate this thesis to my parents and siblings, who have stood by me throughout my entire academic life. With their guidance, I have reached this far and will continue to achieve more in the future with them by my side.

ABSTRACT

Financial deepening has been found to stimulate economic growth by its capability to mobilize investments, thereby making financial resources readily available and, hence, raising efficiency. However, the reviewed empirical literature on the relationship between financial deepening and economic growth is not very clear in Kenya. The primary objective of the study is to examine the macroeconomic effect of financial deepening on economic growth in Kenya. The specific objectives are to determine the effect of credit to the private sector, stock market capitalization, commercial bank liquidity liabilities, broad money supply, and commercial bank deposits on the growth of the economy in Kenya. The study employed the following theories: the Endogenous Growth theory, the Neoclassical theory, Financial Liberalization Theory, Supply Leading theory. The study employed an explanatory research design and used secondary data from the World Bank and KNBS, with data spanning from 1990 to 2023. The data was subjected to stationarity and cointegration tests to test if the time series has stationary and long-run properties. Autoregressive Distributed Lag (ARDL) model estimation technique was used to achieve the research objectives. The ARDL regression results show that in the long run credit to the private sector 0.41(p-value 0.00<0.05), stock market capitalization 0.04(p-value 0.00<0.05), bank deposit 1.419(p-value 0.00<0.05), liquidity liabilities 0.004(p-value 0.00<0.05), broad money 1.55(p-value 0.00<0.05) and deposit interest rate 0.08(p-value 0.00<0.05) have significant positive effect on economic growth. In contrast, inflation rate -0.08(p-value 0.00<0.05) has a negative impact. In the short run, credit to private sector 0.15(p-value 0.01<0.05), stock market capitalization 0.02(p-value 0.03<0.05), bank deposit 0.84(p-value 0.00<0.05), broad money 0.30(p-value 0.02<0.05) and interest rate 0.03(p-value 0.00<0.05) are positively related to economic growth while inflation rate -0.03(p-value 0.00<0.05) has a negative impact. Liquidity liabilities -0.0004(p-value 0.15>0.05) is negatively related to economic growth but statistically insignificant in the short run. Further, the results show a relationship between financial deepening and GDP growth in Kenya. Thus, the policymakers should improve the money supply in the economy to stimulate economic growth. This could be achieved through policies encouraging savings and investment and broadening the financial instruments available to the public. Financial institutions should be incentivized to innovate and offer various attractive savings and investment products to different population segments. By doing so, they can mobilize more funds from the public, which can then be channeled into productive investments that drive economic growth.

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OPERATIONAL DEFINITION OF TERMS

Bank Liquid Liabilities: Denotes the total broad money supply (M3), including currency held by the public, demand deposits, and other interest-bearing liabilities of financial institutions relative to GDP. It measures the size and liquidity of the financial system (King & Levine, 1993; Guzel, 2021).

Broad Money Supply: Refers to the total amount of money circulating within economy, including currency in circulation, demand deposits, and quasi-money, as a proportion of GDP. It indicates the degree monetization and financial depth (Mockel, 2024; World Bank, 2023).

Commercial Bank Deposits: Refers to the total value of money held by individuals, firms, and institutions in commercial banks, expressed as a percentage of GDP. It reflects the capacity of the banking sector to mobilize savings and facilitate investment (Sadilloyevna, 2004; Odhiambo, 2009).

Credit to Private Sector: Refers to the total domestic credit issued by financial institutions to the private sector, expressed as a percentage of GDP. It measures the extent to which the banking sector supports private investment and business development (Beck & & Levine, 2004; Asratie, 2021).

Economic Growth: Is the sustained increase in the production of goods and services within an economy over time, measured by the annual growth rate of Gross Domestic Product (GDP) per capita. It reflects improvements in the overall economic performance and living standards of a country (Fatmawati, 2022; Adebisi, 2023).

Deposit Interest Rate: Represents the rate of return paid by financial institutions on customer deposits. It influences savings behaviour and determines the willingness of individuals to hold financial assets in banks (Odhiambo, 2009; Macharia, 2021).

Inflation Rate: Measured by the annual percentage change in the consumer price index (CPI), it indicates the general increase in prices of goods and services in the economy. High inflation tends to erode real returns and distort financial intermediation (World Bank, 2023; Omete, 2023)

Stock Market Capitalization: Represents the total market value of all listed shares on the Nairobi Securities Exchange (NSE) as a percentage of GDP. It captures the size, depth, and performance of the stock market as an indicator of financial deepening (Dorko, 2012; Naik & Padhi, 2015).

LIST OF ABBREVIATIONS AND ACRONYMS

ADF	Augmented Dickey-Fuller Test
AIC	Akaike Information Criterion
ANOVA	Analysis of Variance
ARDL	Autoregressive Distributed Lag
ATM	Automated Teller Machine
BD	Bank Deposits
BM	Broad Money Supply
CBK	Central Bank of Kenya
CMA	Capital Markets Authority
CPS	Credit to Private Sector
DFI	Development Finance Institution
ECM	Error Correction Model
FD	Financial Deepening
FDI	Foreign Direct Investments
FSDI	Financial Sector Development Index
GDP	Gross Domestic Product
GEMS	Global Emerging Markets
GNI	Gross National Income
GNP	Gross National Product
HQIC	Hannan Quinn Information Criterion
INF	Inflation Rate
INR	Interest Rate
IMF	International Monetary Fund
KNBS	Kenya National Bureau of Statistics

KPSS	Kwiatkowski-Philips-Schmidt-Shin
LL	Liquid liabilities
MC	Market Capitalization
MFI	Microfinance Institution
NACOSTI	National Commission for Science, Technology and Innovation
NBFI	Non-Bank Financial Institution
NICs	Newly Industrialized Countries
NSE	Nairobi Securities Exchange
PP	Philips-Perron Test
SACU	Southern African Customs Union
SAPs	Structural Adjustment Programs
SIC	Schwarz Information Criterion
TSLS	Two- Stage Least Squares
VAR	Vector Autoregression
VECM	Vector Error Correction Model

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter provides an overview of the background information, statement of the problem, objectives, research hypotheses, scope, significance, and limitations of the study.

1.2 Background Information of the Study

In recent times, there has been significant research focused on the role of financial deepening in the growth process. Gaining a clearer understanding of how financial deepening, particularly in capital markets, impacts economic growth is crucial from a regulatory perspective. Capital markets are essential for fostering economic growth by mobilizing liquidity, directing intermediate and long-term capital towards industrious investments, aiding in price discovery, reducing transaction costs, and facilitating menace transfers (Gurley & Shaw, 1955; Goldsmith, 1969; Hicks, 1969; Rahman & Mustafa, 2015).

Over the past few decades, particularly since the 1990s, the financial system in Kenya has experienced significant variations following the initiation of various reforms. During the 1990s, the economy was marked by heavy regulation, controlled interest rates, direct credit line-ups, a fragile banking structure, inadequate risk management systems, and a lack of operational transparency, among other challenges (Otieno, 2013). These reforms aimed to liberalize the financial system, with the expectation that this would lead to increased savings and investments, ultimately driving the country's growth rate.

Otieno (2013) suggests that a well-developed financial system expands access to funding. In contrast, in an underdeveloped financial system, access to funds is restricted, forcing people to rely on their own limited resources or expensive informal sources like money lenders. This limitation hinders economic activities that could drive growth. In other words, an underdeveloped financial infrastructure constrains economic growth. It is therefore crucial to focus on developing financial institutions to support the real economy.

1.2.1 Economic Growth

Economic growth is the increase in of overall output recorded in an economy within a particular period, which is normally one year (Adebisi, 2023). It represents total value of goods and services produced and sold as a result of the economic activities carried out by citizens of a country. It summarizes the activities of the country in the creation of value over the period under review. Economic growth is typically gauged by the yearly percentage increase in a nation's gross domestic product (GDP) or through similar metrics like gross national product (GNP) or gross national income (GNI), both of which are based on GDP figures. According to Lawrence (2023), economic growth serves as an indicator of an economy’s overall health, emphasizing that capital is a crucial requirement for sustaining and accelerating growth momentum. A nation's economic well-being can be assessed by examining its economic growth and development.

Iram and Nishat (2009) suggest that economic growth is a primary measure of the general well-being of an economy, with capital being essential to sustain and accelerate

this growth. In essence, a nation's economic well-being can be gauged by examining its growth and development, as economic growth largely defines a country's material prosperity of a country (Diener, 2004).

1.2.2 Overview of Economic Growth in Kenya

The economy of Kenya has experienced fluctuating economic growth, with the first decade after independence (1964 –1973) marking strong and impressive performance (Andele, 2013). During the period of independence, prices of commodities were relatively high (Austin, 2010). After independence, the country benefited from significant foreign exchange reserves that were left by the colonialists, which helped to stabilize the economy. The gross domestic product (GDP) rose at an annual rate of 6.6 per cent over the period, a performance which compared favourably with some of the newly industrialized countries (NICs) in East Asia. Savings and investment were relatively high in relation to the country's per capita income. This impressive performance was credited to consistent economic policy, a strong focus on smallholder agricultural farming, robust domestic demand and enlargement of the market for local output within the East African region (Magahema, 2015).

Whereas the first decade of independence (1970-1980) in Kenya is occasionally referred to as the "Golden Years" due to its impressive record of economic growth, the subsequent period (1980- 1990) is commonly known as the "lost decade" marked by significant external and internal difficulties and challenges that began in 1973 (Rono, 2002). The poor fiscal and monetary management resulted in a gradual and sustained economic downturn. Since the surge in oil prices in 1973, the Kenyan population's living standards, like those of most African countries, have significantly deteriorated.

In addition to the increase in oil prices, Kenya's economy in the 1970s faced numerous challenges and hardships due to the global recession, which triggered the economic crisis of the 1970s (Rono, 2002). These challenges included the unstable prices of the country's foremost exports, drought and famine, rapid population growth, the collapse of the East African Community, rising urbanization, mounting debt, widespread poverty, disease and illiteracy (Magahema, 2015). These factors had a detrimental influence on economy of the country. During this period, gross domestic product per capita dropped to 5.2 per cent, accompanied by food shortages and a decline in standards of living (Njoka et al., 2016).

In the third decade (1990-2000), the influence of the expansionary fiscal policy of the previous decade became evident. A significant shift in Kenya's economic management was the implementation of structural adjustment programs (SAPs), which started in the 1980 fiscal year. However, SAPs only became a crucial element of economic management after the release of Sessional Paper No. 1 of 1986 (Rono, 2002). Despite the adjustments in the monetary policies, the economy's poor performance sustained. The budget deficits kept increasing, exports and imports declined, and the average real GDP dropped below 4.2% over the period (Magehema, 2015). This declining trend persisted until the early 2000s. Weak fiscal and monetary policy regimes, together with both external and internal shocks, led to the worst economic performance in Kenya's short history as an independent nation. The average real GDP declined to 2.2 per cent in 1990 and 1.4 per cent in 2002 (Odero, 2015).

In the fourth decade (2000-2010), the Kenyan government sustained its fiscal policy reforms designed to strengthen the performance of the financial sector in the country.

Recently, the CBK implemented a financial segment reform premeditated to raise the capital base of financial institutions to enhance effective intermediation and to protect customer savings from loss (M'Amanja & Morrissey, 2005). As a result of the ongoing reforms, the economy experienced significant growth in the last decade, rising to nearly 7.0 per cent in 2007 but declining due to the post-election violence of 2007/2008 (Siyaye, 2013). Based on rebased statistics, GDP growth remained robust in 2013 at 5.7 per cent and stood at 4.4 per cent, 5.8 per cent and 5.5 per cent in the first three quarters of 2014 compared with 6.4 per cent, 7.2 per cent and 6.2 per cent in corresponding quarters of 2013 (Odero, 2015). According to CBK (2014), economic growth was primarily reinforced by expansion in construction, finance and insurance, manufacturing, communications and technology, information, as well as wholesale and retail trade.

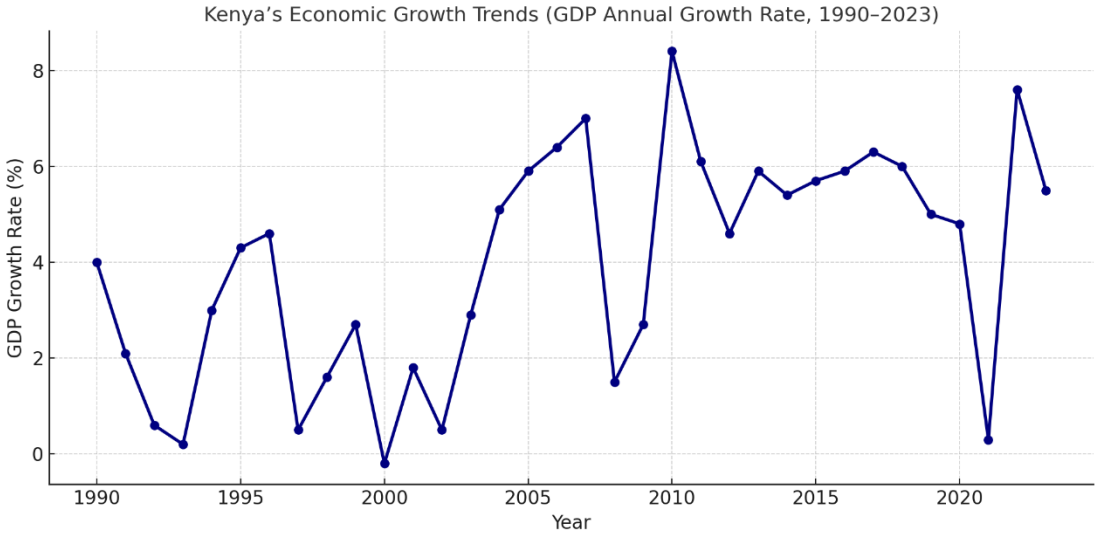

Figure 1.1: Trends in Economic Growth in Kenya 1990-2023

Kenya's economic growth has exhibited significant fluctuations over the past three decades, reflecting the influence of both domestic and external shocks. The early 1990s were characterized by sluggish growth due to structural adjustment programs and macroeconomic instability, while the mid-2000s experienced robust expansion driven

by financial reforms, infrastructural development, and improved governance. The 2007/2008 post-election violence led to a sharp contraction, but the economy recovered steadily in the 2010s following diversification in services, technology, and finance. More recently, growth slowed again in the early 2020s due to the COVID-19 pandemic and global inflationary pressures, underscoring the need for a resilient and inclusive financial system to sustain long-term economic growth.

1.2.3 Financial Deepening

Financial deepening refers to the capacity of financial institutions to efficiently mobilize savings and channel them into investment purposes (Obenge, 2018). This is because the expansion of domestic savings is essential for diversifying financial assets. Consequently, it is represented by an increasing ratio of the money supply to the Gross Domestic Product (Razia *et al*., 2022). Shaw (1973) adds that financial deepening entails a specialization in financial functions, with domestic financial institutions and markets becoming more aligned with foreign markets. Additionally, an expansion in the monetary system will boost the profitability of various financial institutions (Yuan, 2023).

Financial deepening has the potential to promote economic growth by mobilizing more investments, thereby increasing returns on financial resources and enhancing productivity. Financial markets play a crucial role in this process by acting as intermediaries, channelling funds from savers to investors (Ogoe, 2022). When financial deepening occurs efficiently and without repression, it typically results in a well-developed financial sector that supports sustainable economic growth (Ukamaka, 2021). Conversely, in the absence of financial deepening, known as "financial

shallowness," economic growth is not assured (Cline, 2015). Therefore, a competitive and well-developed financial sector is essential for driving economic growth.

Efficient financial institutions contribute to economic efficiency, increased liquidity, mobilization of savings, capital accumulation, and the reallocation of resources from non-growth sectors to those that drive economic growth (Eshun, 2024). Furthermore, financial deepening fosters a robust entrepreneurial response in these growth-oriented economies. Financial deepening has been shown to allow financial intermediaries to efficiently transform resources into profitable capital (Nyamweya, 2021).

Financial deepening is assessed using various metrics such as liabilities of non-bank financial intermediaries, broad money, treasury bills, money market funds and stock market share values. The indicators of financial deepening can vary between countries. In Kenya, for instance, (Muriuki, 2019) identifies indicators including liquid liabilities, private sector credit, market capitalization, the value of shares traded, and GDP. Financial markets exhibit varying degrees of financial deepening, with some showing lower ratios and others demonstrating higher ratios (Raddant, 2021).

Challoumis (2024) notes that financial systems play a crucial role in global economic development by mobilizing and allocating savings for productive purposes. It also provides frameworks for monetary management and is essential for managing liquidity within the system. Additionally, financial systems help reduce risks for firms in their production processes, enhance portfolio diversification, and shield the economy from global and international economic fluctuations (Vorontsova et al., 2019). Economists

such as Robinson (1952) argue that financial expansion progresses in tandem with economic growth.

Economic development has been found to create demand for unique types of financial arrangements where the financial system will respond automatically to demand. It is basically a byproduct of the growing economy. As put by Robinson, "Enterprise first, then finance (Robinson, 2019). The other schools of thought believe that financial deepening is a result of economic growth, rather than its cause. According to this school of thought, economic growth increases the demand for complex financial instruments, which will, in turn, lead to growth in the financial sector. This is what Patrick (1966) referred to as the demand-following hypothesis as a possible causality between financial deepening and economic development.

The increasing deepening of the financial system is expected to expand the financial instruments in both the banking subsector and the capital market (Mohieldin *et al.,* 2019). The availability of a variety of financial organizations is expected to deepen the financial system. Financial deepening is measured using ratios of the growth rate of broad money to that of the gross domestic product, Total banking assets to GDP, and Gross Savings to GDP. The deeper the financial system, the more expanded the level of output and the proportion of production growth are supposed to be (Paun *et al.,* 2019).

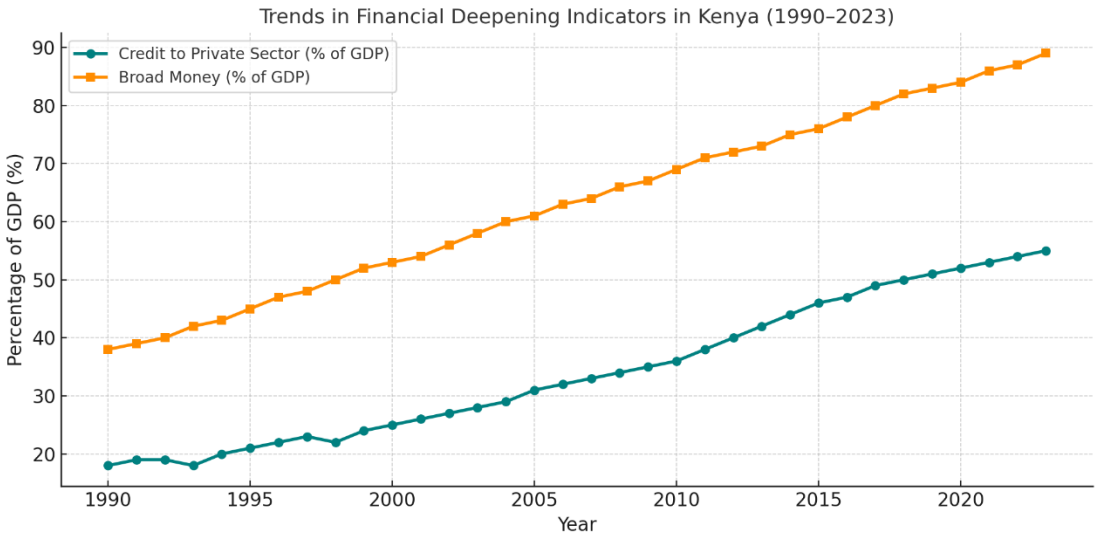

Figure 1.2 1: Trends in Financial Deepening Indicators in Kenya (1990–2023)

Kenya's financial sector has deepened progressively over the past three decades, as shown in Figure 1.2. Both credit to the private sector and broad money supply have increased steadily as a percentage of GDP, reflecting growing financial intermediation and monetary expansion. The rise in credit to the private sector suggests improved access to finance and greater confidence in the banking system, while the steady growth of broad money indicates increased monetization and liquidity within the economy. These trends coincide with key financial reforms, technological innovations such as mobile banking, and initiatives under Kenya's Vision 2030 aimed at enhancing financial inclusion and economic transformation.

1.2.4 Financial Deepening and Economic Growth

There has been a theoretical connection between financial deepening and economic growth. Financial sector deepening can alleviate poverty through two main channels. Firstly, financial development can indirectly benefit the poor by fostering economic growth, which improves conditions in the regions and sectors where they reside. This concept is often referred to as the trickle-down theory, where economic growth is

believed to benefit the poor by creating jobs and other economic opportunities. This theory is supported by several studies, including those by Stiglitz (2016) and Skare and Druzeta (2016). Secondly, financial deepening can directly impact poverty by facilitating transactions and expanding access to financial services such as credit, savings, and insurance for the poor. This helps to reinforce their productive assets, increasing their productivity and economic potential (Kheir, 2018; Eton, 2019). Wu (2023) note that while the liberalization of bank interest rates and the entry of foreign banks have positively influenced technological progress and cost efficiency, prudential regulation may negatively impact bank cost performance.

This suggests that the relationship between financial deepening and economic growth remains an empirical question. In particular, as government intervention in the allocation of financial resources decreases, market competition conditions improve, leading to more efficient banking activities. Evidence from Zaman and Bhandari (2020) indicates that financial deregulation has positively impacted bank efficiency in India and Pakistan, while Martin, (2018) found that increased competition improved the cost efficiency of Spanish banks.

1.2.5 Financial Deepening and Economic Growth in Kenya

The Kenyan government envisions transforming the country into a middle-income, industrialized economy by 2030 and has identified the financial sector as a key driver in achieving this goal. The Capital Markets Authority (CMA) of Kenya recognises that the country's financial markets are at varying stages of development. While Kenya boasts a well-developed and liquid government bond market, its equities market is characterized by relatively few listings, a concentration in financial companies, and low liquidity (Capital Markets Master Plan, 2015).

To enhance the development of Kenyan financial markets, several ambitious targets have been set. The first is to increase the equity market capitalization to GDP ratio from its current level of 50 per cent to 70 per cent by the end of 2023. The second target is to increase the number of GEMS listings, which indicates the future supply of main board-listed companies, by three to four annually. The third goal is to advance the ratio of outstanding corporate bonds to GDP to 40 per cent by the end of 2023. Lastly, the value of exceptional exchange-traded derivative contracts is targeted to reach USD 200 billion by the end of 2023. While this is a go-getting goal, especially given that the market has not yet been launched, it is considered doable based on comparisons with other markets (Capital Markets Master Plan, 2015).

Kenya is among African countries with a well-established financial system on the ground. Over the past two decades, various transformations, advances, and inventions have significantly impacted the banking sector of Kenya, resulting in increased sector assets. Financial innovations within the industry have largely driven these advancements. Notable changes include the Central Bank of Kenya's (CBK) reduction of the retention ratio from 6 per cent to 5.25 per cent, making loans more accessible to the public; the conversion of Non-Bank Financial Institutions (NBFIs) like Equity and Family banks into commercial banks; and the introduction of new financial products and service delivery channels. These innovations include M-Pesa, Islamic banking, mobile banking, agency banking, and the integration of Automated Teller Machines (ATMs) by microfinance institutions, among others (Bakang, 2015).

1.3 Problem Statement

Financial deepening—the process of increasing the quantity, quality, and efficiency of financial intermediary services—has long been recognized as a catalyst for economic growth. Theoretically, well-developed financial systems are expected to promote savings, facilitate investment, and enhance the efficient allocation of resources, thereby stimulating growth (Shaw, 1973; McKinnon, 1973; Gurley & Shaw, 1955). In Kenya, financial reforms initiated in the late 1980s and early 1990s aimed to liberalize the financial sector, increase access to credit, and strengthen the link between finance and economic performance (Otieno, 2013). Furthermore, Kenya's *Vision 2030* identified financial deepening as a critical pillar for transforming the nation into a middle-income, industrialized economy (Government of Kenya, 2007).

Despite these efforts, the relationship between financial deepening and economic growth in Kenya remains inconclusive. While indicators such as increased mobile banking, capital market expansion, and credit access suggest financial advancement, economic outcomes have not consistently mirrored these developments (Muriuki, 2019; Bakang, 2015). Empirical evidence has revealed mixed findings—some studies indicate that financial deepening fosters economic growth (Odhiambo, 2009; Ouma, 2014; Wanjala, 2020), while others argue that excessive financial expansion may impede development (Andele, 2013; Arcand, Berkes, & Panizza, 2015). Moreover, the persistently high cost of credit, limited financial inclusion, and banks' preference for lending to the government instead of the private sector continue to constrain investment and entrepreneurship (Mukundi, 2013; Aduda & Kalunda, 2012).

Additionally, previous studies in Kenya have primarily focused on isolated aspects of financial deepening—such as interest rate reforms, credit to the private sector, or bank profitability—without comprehensively examining the combined macroeconomic impact of key indicators like stock market capitalization, liquidity liabilities, broad money supply, and commercial bank deposits (Musau, 2022; Ndonye, 2023). Moreover, emerging dynamics such as mobile banking, financial technology innovations, and regulatory interventions like interest rate capping have significantly altered the structure and behavior of the financial sector, yet their implications for economic growth remain underexplored (CBK, 2016; Gogo, 2020).

Given these gaps, it is unclear to what extent financial deepening contributes to Kenya's economic growth or whether the benefits are offset by inefficiencies and inequalities in credit access. This study, therefore, seeks to empirically examine the macroeconomic effect of financial deepening on economic growth in Kenya, focusing on the period 1990–2023. It aims to provide evidence-based insights that can guide policymakers in designing strategies to foster a more inclusive and growth-oriented financial system.

1.4 Research Objectives

1.4.1 General Objective

The general objective of the study was to establish the macroeconomic effect of financial deepening on economic growth in Kenya.

1.4.2 Specific Objectives

The study was guided by the following objectives:

(i) To determine the effect of credit to the private sector on economic growth in Kenya.

(ii) To establish the effect of stock market capitalization on the economic growth in Kenya.

(iii) To determine the effect of bank liquidity liabilities on economic growth in Kenya.

(iv) To examine the effect of a broad money supply on economic growth in Kenya.

(v) To establish the effect of commercial bank deposits on economic growth in Kenya.

(vi) To determine the effect of deposit interest rate on economic growth in Kenya.

(vii) To examine the effect of the inflation rate on economic growth in Kenya.

1.5 Research Hypotheses

The study tested the following null hypothesis:

H_{01} Credit to the private sector has no significant effect on economic growth in Kenya.

H_{02} Stock market capitalization has no significant effect on economic growth in Kenya.

H_{03} Bank liquidity liabilities have no significant effect on economic growth in Kenya.

H_{04} Broad money supply has no significant effect on economic growth in Kenya.

H_{05} Commercial bank deposits have no significant effect on economic growth in Kenya.

H_{06} Deposit interest rate has no significant effect on economic growth in Kenya.

H_{07} Inflation rate has no significant effect on economic growth in Kenya.

1.6 Significance of the Study

This study significantly contributes to the general theory of finance, particularly enhancing the understanding of the correlation between financial deepening and economic growth. By critically analyzing both theoretical and empirical characteristics of this nexus, the study offers valuable insights that extend the existing literature on the

long-debated link between finance and growth. Researchers and academicians interested in further exploring this area may find this study a useful resource.

Moreover, the study holds considerable importance for policymakers at both nationwide and worldwide levels. Government officials and financial regulators will find the review informative in shaping financial strategies that boost financial sector deepening and improve efficiency, which are crucial for sustained economic growth. Insights gained from this may guide capital and money market regulators worldwide in formulating financial regulations that reflect the relationship between financial deepening and economic growth.

Additionally, this research is valuable for finance practitioners and those involved in economic development. Investment firms and individual investors can utilize these findings to make more informed investment decisions and construct robust portfolios in the capital markets. The study is especially relevant to governments in developing countries, like Kenya, that aim to transform their economies into middle-income and industrialized states, with the financial sector playing a crucial role in achieving these goals. This aligns with the development plans of many nations, which serve as blueprints for economic transformation. The study adds to the prevailing literature on the subject of financial deepening, financial inclusion and economic growth. It will assist researchers who want to carry out further studies within the scope of financial deepening and economic growth.

1.7 Scope of the Study

The study utilizes annual time series data from the Kenyan economy, focusing on financial deepening and economic growth in Kenya from 1990 to 2023.

1.8 Limitations of the Study

The scope of this study was limited to the secondary data from the World Bank and the Kenya Bureau of Statistics. The GDP, which was the measure of economic growth, was measured annually for the period between 1990 and 2023. The policy recommendations derived from this study are specifically customized for Kenya and may not be directly applicable to other nations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the existing literature from other scholars and researchers. It focuses on the theories underpinning the study, empirical research, the conceptual framework, and a summary of the reviewed literature.

2.2 Theoretical Literature

Several theories in financial literature have been proposed to enlighten the relationship between financial deepening efficiency and economic growth. This study will specifically draw on the Financial Liberalization Hypothesis, the Supply-Led Hypothesis, the Endogenous Growth Model and the Neoclassical Theory. The chapter will discuss these theories and their relevance to the study.

2.2.1 Financial Liberalization Hypothesis

Shaw (1973) advanced financial liberalization theory, which explicates the connection between the deregulation of the financial sector and financial deepening. According to Shaw's (1973), financial deepening hypothesis, financial liberalization increases the proportion of private domestic savings to income. With the actual growth of financial institutions, more investors are gaining access to borrowing. The presence of many players creates incentives to save and borrowing becomes more affordable. Savings generally show an upward trend within the government sector. With financial deepening, foreign sector savings respond to financial liberalization. There is an inflow of capital and readily available foreign capital markets, which removes distortions in

comparative prices. Liberalization permits the financial process to mobilize and allocate savings to override foreign aid and inflation.

Liberalization facilitates more efficient allocation of savings by widening and diversifying financial markets, where various investment opportunities compete for flow of savings. The savers are presented with a widespread range of portfolio choices. The market is widened in relations to scale, maturity, and risk (Shaw, 1973). Information is readily and affordably available. Local capital markets are merged and new opportunities for pooling savings and specializing in investments are possible. Prices serve as a tool to differentiate investment and opportunities. According to Shaw (1973), financial depth appears to be a crucial foundation for competitive and innovative allocation of savings flows. As a result, financial liberalization and its associated guidelines promote fairer income distribution It lessens monopoly profits that result from granting import and other licenses to a limited number of importers and bank borrowers. Additionally, it fosters sustained growth in productivity and employment (Shaw, 1973).

Opponents of financial liberalization policies argue that applying the efficient markets theory to capital flows can be misleading. According to the theory of the second best, eliminating a single alteration may not improve overall well-being if other alterations still exist. (Markovits, 2020. If the capital account is opened up while industries that compete with imports continue to be protected, for instance, or if real wages are rigid downward, capital may be directed toward sectors where the country lacks a comparative advantage, leading to a decline in overall welfare (Lechthaler & Mileva, 2024). If financial markets and transactions are marked by significant information

asymmetries—particularly in countries with weak corporate governance and inadequate legal protections—there is little reason to expect that financial liberalization, whether at the domestic or international level, would enhance overall welfare (Arestis, 2016). In nations where contract enforcement and access to financial information are underdeveloped, it cannot be assumed that capital will flow to its most productive and efficient uses.

In relation to this study, the theory links directly to variables such as deposit interest rate, commercial bank deposits, and credit to the private sector, which reflect the extent of financial liberalization and intermediation. A liberalized financial system enhances the flow of funds from savers to investors, leading to higher private investment and improved productivity, which contribute to economic growth. Hence, the Shaw theory underpins the positive relationship between financial deepening indicators and economic growth in Kenya.

In this framework, interest rate liberalization encourages savings (S), which increases credit availability to the private sector (CPS), and consequently stimulates investment (I) and economic growth (Y). The model can be expressed as:

$I = f(r), Y = f(I)$ …….(2.1)

where $r$denotes the real interest rate.

In the context of this study, deposit interest rate (INR) influences commercial bank deposits (BD), which expand credit to the private sector (CPS), leading to higher economic growth (GDP). The theoretical linkage can thus be summarized as:

$GDP = f(INR, BD, CPS)$ …….(2.2)

2.2.2 Supply –Leading Hypothesis

This theory was proposed by Schumpeter (1911) and subsequently embraced by various scholars such as McKinnon (1973); Shaw (1973); Gupta (1984); Fry (1988); Greenwood and Jovanovich (1990) and Bencivenga and Smith (1991). The supply-leading hypothesis posits that adequate financial markets stimulate a rise in financial assets that in turn enhance production within an economy. The hypothesis contends that well established financial markets enhance economic efficiency, generate and increase liquidity, improve mobilisation of savings and capital accumulation, and transfer of productive resources from rural to modern sectors, where contributions to manufacturing and industries are boosted (Kapaya, 2010).

This theory proposes that financial development is a key driver of economic growth in any country. In an economy without transaction, information, or monitoring frictions, financial intermediaries are rendered unnecessaryThe theory argues that when transaction, information, and monitoring costs are sufficiently high, they hinder exchanges among economic agents. These challenges led to the emergence of financial institutions and markets that form the foundation of the financial sector.

This theory asserts that a well-developed financial sector reduces transaction, information, and monitoring costs, thereby enhancing the efficiency of financial intermediation. It further suggests that effective financial intermediaries contribute to economic development by mobilizing savings, facilitating trade, and diversifying risks, among other functions. These vital services support the efficient allocation of resources, promote the rapid accumulation of physical and human capital, and stimulate technological innovation—all of which drive sustained and long-term economic growth (Omete, 2023). This theory aligns with the study as it provides a framework for

understanding how the development of the financial sector influences economic growth.

This theory directly relates to study variables such as credit to the private sector and stock market capitalization, which measure the ability of financial institutions and capital markets to provide financing to productive sectors. Efficient intermediation enhances entrepreneurs' access to investment funds, fostering innovation and industrial growth, which in turn promote economic growth. Schumpeter's theory therefore establishes the conceptual foundation linking financial intermediation and capital market development to real sector performance in Kenya. The model can be represented as:

$Y = f(CPS, MC)$ …….(2.3)

where $Y$is economic growth, $CPS$is credit to the private sector, and MCrepresents stock market capitalization.

2.2.3 Endogenous Growth Theory

The Endogenous growth theory was formulated by Lucas in the 1880s. Endogenous growth model emphasize the importance of investments in human capital, innovation, and knowledge as key drivers of economic growth, asserting that these factors can be influenced by policy decisions, market incentives, and institutional factors. The model assumes that human capital, which entails of education, training, experience, innovation, and knowledge, produces investment, which enables tenacious growth.

This theory is particularly relevant to variables like broad money supply, bank liquid liabilities, and commercial bank deposits, which reflect the size, liquidity, and

efficiency of the financial system. The expansion of these financial aggregates facilitates capital accumulation and productive investment, which stimulate economic growth. Thus, the endogenous growth theory provides a long-term analytical framework for understanding how financial deepening contributes to sustained economic performance in Kenya.

The Endogenous Growth Theory formalizes the idea that financial development and innovation are internal drivers of growth. The model suggests that capital accumulation and productivity improvements depend on financial system efficiency. The general representation is:

$Y = AK^{\alpha}L^{1-\alpha}$ ……(2.4)

where A(total factor productivity) is influenced by financial deepening indicators such as broad money supply (BM), bank liquid liabilities (LL), and commercial bank deposit (BD).

By enhancing financial depth and liquidity, these variables raise total factor productivity and long-term economic growth (GDP). Therefore, the endogenous model can be expressed as:

$GDP = f(BM, LL, BD)$ ……..(2.5)

indicating that a deep and efficient financial sector fosters sustainable economic growth.

2.2.4 Neo-Classical Growth Theory

Other factors held constant, countries with higher saving rates tend to have higher levels of per capita income and vice versa. Recently, the Solow-Swan theory has been

substituted with endogenous growth theory, which assumes constant or increasing returns to capital. This is due to criticisms that the standard neoclassical theory does not adequately account for the observed disparities in per capita income among different countries.

The distinction between the two growth theories has, in recent years, glimmered empirical review. A key concern of this study has been to determine whether one should see a long-run trend toward convergence of per capita income levels across countries. The empirical evidence challenging unconditional convergence aligns with the predictions of the neoclassical growth theory. Mankiw, Romer, and Weil (1992) contend that applying a cross-sectional approach, the Solow-Swan theory's predictions are reliable with the empirical evidence.

In relation to this study, the Neoclassical Growth Theory provides the foundation for linking financial deepening indicators to economic performance. Variables such as credit to the private sector, commercial bank deposits, and stock market capitalization represent mechanisms through which savings are transformed into investment capital. Similarly, broad money supply and bank liquid liabilities indicate the extent of financial sector depth that facilitates capital mobilization. Through these linkages, financial deepening promotes investment efficiency, capital formation, and productivity improvements, which contribute to higher economic growth. However, consistent with the theory's assumptions, this relationship may be subject to diminishing returns unless accompanied by technological progress and institutional development.

The Neoclassical Growth Model links financial deepening to capital accumulation and long-run equilibrium output. The Solow–Swan model can be expressed as:

$Y = AK^{\alpha}L^{1-\alpha}$ …….(2.6)

where $K$is the capital stock financed through financial intermediaries. Financial deepening enhances capital formation by increasing credit to the private sector (CPS), commercial bank deposits (BD), and stock market capitalization (MC). These variables expand investment and accelerate economic growth (GDP) until the economy reaches its steady state. Hence, the model applicable to this study can be written as:

$GDP = f(CPS, BD, MC, LL, BM)$ …….(2.7)

2.3 Empirical Literature Review

Numerous studies have explored the factors driving economic growth, focusing on different explanatory parameters and providing various insights into its sources. These factors include credit extended to the private sector by commercial banks, market capitalization relative to GDP, liquid liabilities of commercial banks, the ratio of broad money supply to GDP, and commercial bank deposits.

2.3.1 Credit to Private Sector and Economic Growth

According to the World Bank (2009), private sector credit serves as the most comprehensive indicator of the activities of commercial banks, and it is calculated as the amount of domestic credit assigned to the private sector by the banking sector divided by GDP. It is the degree of extent to which the banking sector finances the economy and private investments, and private sector development. This ratio reflects the banking system's size and its significance to the private sector of the economy. Domestic credit comprises financial resources, purchases of non-equity securities, trade

credits and other accounts receivable. The domestic credits also eliminate credit extended to the government and public enterprises (Beck & Levine, 2004). This measure of the banking sector is important to economic growth through poverty reduction, financing production, consumption, and capital formation (World Bank, 2008). According to Becks (2010), this proxy is of more significance than other measures of financial intermediaries' development since the credit to the public sector is excluded and thus a better image of the degree of efficient resource allocation.

One issue with data on credit to the private sector is that high levels of credit may suggest excessive borrowing and inefficient credit distribution. Particularly since 2008, it is clear that a rapid increase in private credit, driven by financial deregulation and privatization, can negatively affect economic growth (Bezemer *et.al*, 2023). Moreover, Arcand (2013) demonstrates that bailouts can push the financial sector beyond a socially optimal level. Therefore, the benefits of financial deepening for growth have limits. This has also been acknowledged by earlier research, including Reinhart and Rogoff (2009), Kindleberger and Aliber (2005), and Minsky (1986). Arcand (2015) also finds that financial deepening tends to hinder economic growth when the credit-to-GDP ratio approaches 100%.

Akpansung and Babalola (2011) investigated connection between the banking sector credit and economic growth in Nigeria between the period 1970-2008 to establish the underlying links between banking sector credit and economic growth applying the Granger causality test. The study used a Two-Stage Least Squares (2SLS) in the examination in which the Granger causality test exhibited a unidirectional causal

connection from GDP to private sector credit. The outcomes showed that private-sector credit positively influences on economic growth.

In another study, Adamopoulos (2010) examined the link between credit market development and economic growth in Spain over the period 1976-2007. The study intended to explore the short-run and long-run relationship among bank lending, gross domestic product and inflation rate, applying the Johansen cointegration analysis. Employing the Vector Error Correction Model (VECM) to analyze the data, the study revealed that in the short run, a one per cent rise in economic growth will result in a 0.08% rise in bank lending. From the findings, economic growth had a positive effect on credit market development. Ayadi *et.al*, (2015) conducted a study to investigate the connection between financial sector development and economic growth in northern and southern Mediterranean countries from 1985 to 2009. The results showed that credit to the private sector and bank deposits were negatively correlated with growth.

These studies designate that the link between credit market development and economic growth is exceedingly contextual. While the study by Akpansung and Babalola (2010) and by Ayadi (2015) display a negative relationship the study by Adamopoulos (2010) illustrates a positive relationship. The results, therefore, make it grim to determine the kind of relationship that exists between credit market development and economic growth in Kenya.

2.3.2 Stock Market Capitalization and Economic Growth

The stock market is a public platform where the issuance and trading of equities, bonds, and other types of securities occur, either through organized exchanges or over-the-

counter markets. Stock trading facilitates the exchange of company stocks and other securities among dealers. Participants in stock markets include governments, corporate entities, individuals, mortgage companies, and more. Households are generally net investors in stock markets, while firms and governments are typically net users (Mishkin & Eakins, 2012).

Naik and Padhi (2015) conducted a study to explore the effect of stock market development on economic growth through a descriptive research approach.

Dorko (2012) conducted a study aimed at determining how economic growth is influenced by developments in market capitalization at the Nairobi Securities Exchange. This study utilized a descriptive research design, focusing on all listed firms and sampling only those consistently listed. The research relied secondary data from the NSE and United Nations covering the years 2000 to 2011. Regression analysis showed a weak positive relationship between stock market capitalization and the degree of economic growth.

2.3.3 Commercial Bank Deposits and Economic Growth

The connection between commercial bank deposits and economic growth has been explored in the literature (Alguacil, 2004). Solow's growth model (1956) illustrates the connection between commercial bank deposits through savings and economic growth, positing that higher savings contribute to economic expansion. According to Alguacil (2004), the model recommends that countries should implement policies that encourage savings to boost income.

Additionally, the study notes that higher savings lead to capital accumulation, which in turn increases GDP. Using annual data for Mexico from 1970 to 2000, the researchers conducted Granger causality tests to examine the association between savings and growth. The empirical results support Solow's growth model, indicating that higher savings rates positively impact economic growth, establishing a causal link between savings and growth in Mexico's economy.

Similarly, Katırcıoğlu and Naraliyeva (2006) found a positive correlation between savings and growth, with unidirectional causation from savings to growth in Kazakhstan. Odhiambo (2009) emphasized the significance of savings for economic growth, stating that a rise in savings results to growth in domestic investment, which in turn boosts real income, particularly in developing countries. Savings play a vital role in these nations where the supply of loanable funds falls short of demand. In this context, a higher demand for loanable funds implies higher savings, increased domestic investment, and a rise in real income (Hubbard, 2008). Odhiambo (2009) discovered a bidirectional causality between domestic savings and real income growth in South Africa. Bairamli and Kostoglou (2010) highlighted that domestic savings contribute to increased production through domestic sources. Bacha (1990) established a macroeconomic model, and DeGregorio (1992) inspected a panel of 12 Latin American countries during the period 1950-1985, both utilizing OLS methodology.

2.3.4 Bank Liquid Liabilities and Economic Growth

This is an indicator of the scale of the banking system, assessed in terms of the size of the financial intermediaries relative to the overall size of the economy. This ratio serves to measure the level of monetization within the economy and the depth of the banking

sector. It also indicates an expansion of payment and savings functions. This ratio helps to determine the capacity of the banking system to expand lending. The liquid liabilities ratio is represented as M2, refers to broad money supplied (currency plus demand and interest-bearing liabilities of banks and non-bank financial intermediaries) divided by GDP.

The higher the liquid liabilities ratio, the larger the banking sector, which is the size of the banking system, is positively related to the provision of financial services, which leads to growth (World Bank, 2004). Therefore, a positive relationship is expected between the liquid liabilities and growth in the economy. Studies by Agu and Chukwu (2008), Aslam (2008), and Aziakpono (2008) have confirmed that there exists a positive relationship between the liquid liabilities and economic growth.

In a study carried out by Caporale (2009), the connection between financial development and economic growth in ten new European Union countries was analysed using panel data from 1994 to 2007. The study discovered that the stock and credit markets in these nations were still underdeveloped. As a result, the contribution to economic growth was restricted due to a deficiency of financial depth. The Granger causality test confirmed that financial development influenced economic growth, with causality running from financial development to economic growth, indicating a positive association between financial depth and economic growth.

Similarly, Manwa (2015) steered a study to explore the connection between financial deepening and economic growth in the Southern African Customs Union (SACU) countries, including Botswana, Lesotho, South Africa, and Swaziland, from 1976 to

2008. The study used the ratio of credit to the private sector provided by commercial banks and the ratio of liquid liabilities of commercial banks to GDP as independent variables. Economic growth, the dependent variable, was measured by the growth in manufacturing. The findings revealed a very weak and insignificant relationship between manufacturing growth and financial deepening across the four countries.

In a study by Kargbo and Adamu (2010), the relationship between financial development and economic growth in Sierra Leone from 1970 to 2008 was examined. The researchers used the Financial Sector Development Index (FSDI) as a proxy for financial sector development and discovered a unique cointegrating relationship between real GDP and financial development. Their findings indicated that financial development had a positive and statistically significant impact on economic growth, highlighting a positive and significant relationship between financial deepening and economic growth.

King and Levine (1993) used various ratios to measure aspects of financial development, including the ratio of liquid liabilities of the financial system to GDP, which they termed "liquid liability." The study considered the ratio of deposit money bank domestic assets to deposit money bank domestic assets plus central bank domestic assets, referred to as "bank," and the ratio of claims on the non-financial private sector to total domestic credit, termed "private," as well as the ratio of claims on the non-financial private sector to GDP, termed "privy." According to their study, liquid liability reflects the depth or size of financial intermediaries and their capacity to provide financial services. However, the "bank" measure was considered controversial because banks are not the only institutions offering risk management and related services,

making the distinction between deposit money banks and central banks somewhat unclear. Additionally, this measure does not account for how the funds lent by banks are used by their customers. Despite these limitations, King and Levine (1993) suggested that "bank" could complement liquid liability.

These studies indicate that the relationship between liquid liabilities and economic growth is not universally guaranteed but depends on the specific context. The connection between liquid liabilities and economic growth in Kenya is not well established, and this study aims to address that gap.

2.3.5 Broad Money Supply and Economic Growth

Money supply refers to the total amount of money circulating within an economy, which includes currency, printed notes, money held in deposit accounts, and other liquid assets. Assessing the money supply is crucial for analysts and policymakers as it guides the formulation or adjustment of policies aimed at increasing or decreasing the money supply.

2.4 Research Gaps in Literature Review

The study did not account for inflation, exchange rates, GDP growth, and financial literacy, which could also play a role. Wanjala (2020) examined the impact of financial deepening on economic growth in the EAC. The study relied on descriptive research design and found that all three pointers of financial deepening, namely, broad money, credit to the private sector, and volume of traded stock, had a positive and significant effect on economic growth in the East African Community. Wanjala's (2020) study establishes a positive and significant relationship between financial deepening and

economic growth in the EAC, but does not confirm whether this relationship is causal or merely correlational. It remains unclear whether financial deepening drives economic growth (supply-leading hypothesis), whether economic growth leads to financial deepening (demand-following hypothesis), or if both influence each other.

Musau (2022) conducted a study on the financial deepening and the profitability of commercial banks in Kenya using explanatory research to target commercial banks. The study revealed that financial deepening affects bank profitability positively. However, the studies were carried out on the profitability of banks only and not the entire economy. In another study, Ndonye (2023) looked at the association between financial deepening and growth in GDP of listed firms at the Nairobi Securities Exchange (NSE) relying on time series regression analysis between 1993 and 2012. The study found out that the economy would still grow at 6.18% irrespective of market capitalization, liquid liabilities private credit from banks and stock turnover. However, they were limited to banks listed at the NSE and not the entire banking sector. Gogo (2020) examined the impact of financial deepening on economic growth within the East African Community (EAC) bloc. Utilizing a descriptive research design and applying a fixed effects regression model, the study found that all three indicators of financial deepening—broad money, private sector credit, and stock market trading volume—had a positive and significant influence on economic growth in the EAC region. The study fell short on causal inference by using descriptive research design.

Moreover, the period under study by Pinshi(2020) is a long time and many developments have taken place which call for a more current study, hence research gaps. Table 2.1 presents the summary of the empirical literature review.

Table 2.1: Summary of Empirical Literature Review

Author	The focus of the Study	Methodology	Findings	Research Gap
Musau (2022)	Assessed the effect of financial deepening and the profitability of commercial banks in Kenya.	The study employed an explanatory research design.	Found that financial deepening affects bank profitability positively.	The study was done on the profitability of banks only and not the entire economy.
Ndonye (2023)	Assessed the relationship between financial deepening and growth in GDP of listed firms at the Nairobi Securities Exchange (NSE).	The study used time series regression analysis.	Found that the economy would still grow at 6.18% regardless of market capitalization, liquid liabilities private credit from banks and stock turnover.	The study was limited to banks listed at the NSE and not the entire banking sector.
Wanjala (2020)	Examined effect of financial deepening on economic growth in the EAC.	The study used descriptive research design.	The study found out that all the three indicators of financial deepening namely, broad money, credit to the private sector, and volume of traded stock had a positive and significant effect on economic growth in East Africa Community.	Descriptive research does not establish cause-and-effect relationships.
Macharia (2021)	Examined the effects of real Interest Rates on the Financial Deepening in Kenya.	The study adopted descriptive and analytical research design.	Determined that the real interest rate had a significant impact on financial deepening.	Real interest rates is just one factor influencing financial deepening. The study did not account for

				inflation, exchange rates, GDP growth, and financial literacy, which could play a role.
Gogo, (2020)	The study's objective was to determine the effect of financial deepening on the economic growth of the East Africa Community bloc.	The study used descriptive research design and employed the fixed effect model in regression analysis.	The findings revealed that all three indicators of financial deepening namely, broad money, credit to the private sector, and volume of traded stock had a positive and significant effect on economic growth in East Africa Community	The study fell short on causal inference by using descriptive research design.

2.5 Conceptual Framework

Mbulwa and Kinyua (2020) defined conceptual framework as a structure of concepts that the researcher applies to fulfil the defined objectives. Figure 2.1 illustrates the theoretical framework of the study, highlighting the interaction between the key variables, specifically the dependent and independent variables. The dependent variable is the economic growth of Kenya. The explanatory variables are credit to the private sector, stock market capitalization, commercial bank liquidity liabilities, broad money supply, commercial bank deposits, deposit interest rate and inflation rate.

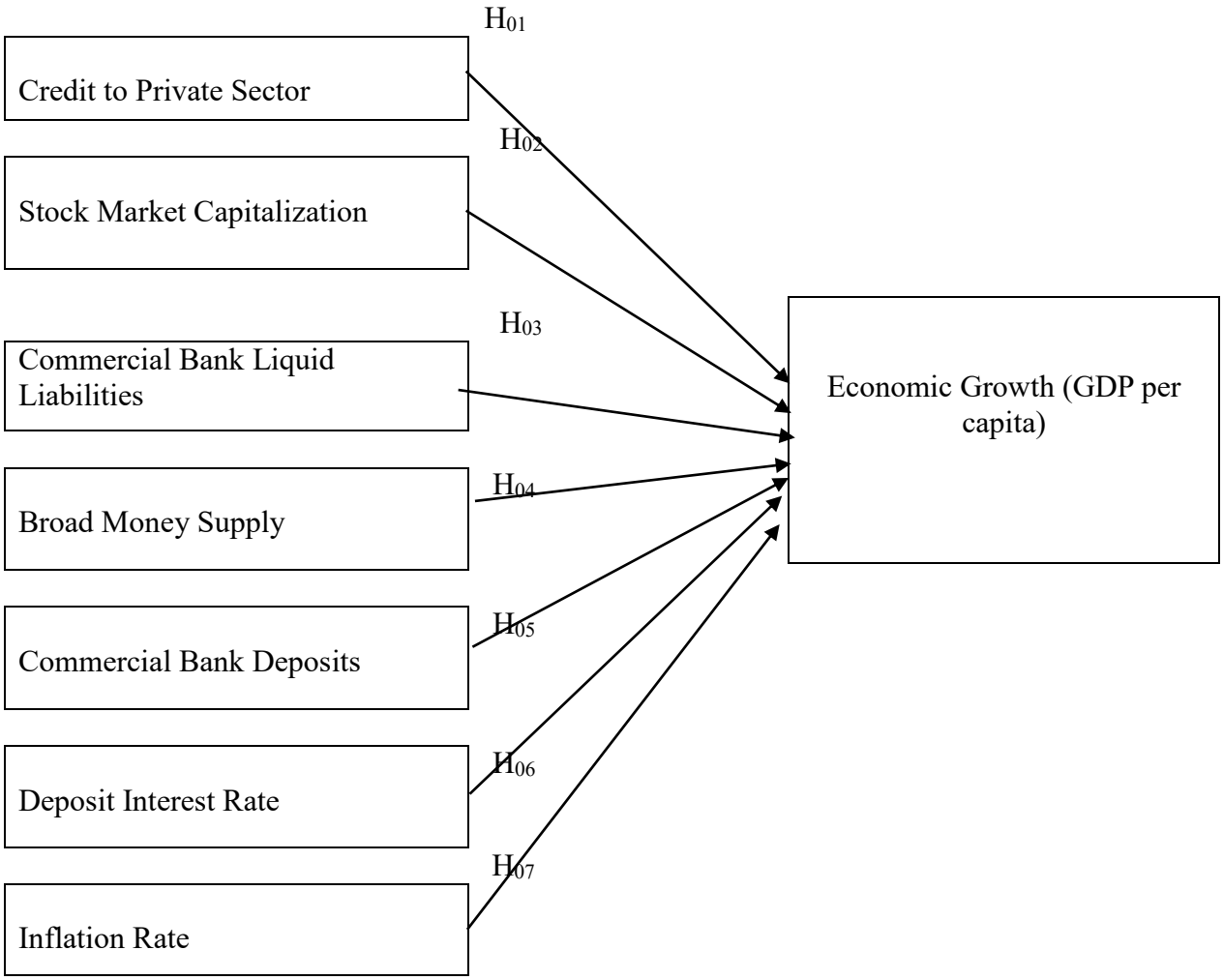

Figure 1.1: Conceptual Framework

The financial deepening is typically evaluated by examining levels of credit to the private sector, stock market capitalization, commercial bank liquid liabilities, broad money supply, commercial bank deposits, deposit interest rates and inflation rate. On the other hand, economic growth is measured by GDP.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter outlines study area, research design, data types and sources, data collection instrument, theoretical model, model specification, model diagnostic tests and ethical consideration.

3.2 Study Area

This study investigates the effect of financial deepening on economic growth in Kenya from 1990 to 2023, focusing on the economy of Kenya as the case study. According to World Bank (2021), Kenya, among African countries, has a robust financial system and is among the fastest-growing economies. Over the last two decades, the banking sector of Kenya has undergone several reforms and innovations, leading to significant financial asset growth. These advancements have been primarily spurred by financial innovations, including the Central Bank of Kenya (CBK) reducing the retention rate from 6% to 5.25%, making credits more affordable although the lending rates have again slightly increased due to the abolishment of capping interest rate law that was repealed by the government. Other significant changes include the conversion of Non-Bank Financial Institutions (NBFIs) into commercial banks (exempli gratia, Equity and Family banks) and the emergence of new financial products and service delivery methods such as M-Pesa, Islamic banking, mobile banking, agency banking, and the incorporation of Automated Teller Machines (ATMs) by microfinance institutions (Bakang, 2015).

3.3 Research Design

According to Schoonenboom and Johnson (2017), a research design entails the arrangement of methods established to gather and analyse data in a way that is relevant to the research question. This study employed an explanatory design to examine the effect of financial deepening on economic growth in Kenya. Explanatory research design offers a functional explanation as to why a solution includes specific components, based on the requirements stated in the design as it finds the degree and extent of causal relationships between two or more variables (Baskerville & Pries-Heje, 2010).

3.4 Data Types and Sources

Secondary data was used for the study. The data regarding economic growth which was measured in terms of GDP per capita was collected from the Kenya National Bureau of Statistics (KNBS). The data regarding the annual values of liquid liabilities, national annual private credit and commercial bank deposits was obtained from the Central Bank of Kenya (CBK) and World Bank (World Development Indicators).

3.5 Data Collection Instrument

The study relied on a secondary source of data therefore; content analysis was used. Secondary data from published and internet sources was collected using data collection schedule plan.

3.6 Description and Measurement of Study Variables

Table 3.1 below presents a description and measurement of the variables and their

relationships with the dependent variable.

Table 3.1: Measurements and Expected Signs of the Variables

Variable	Measurement of the Variable	Data source	Expected sign
Economic growth (GDP)	GDP per capita growth (%)	KNBS	Dependent variable
Domestic credit to private sector (CPS)	Domestic credit to private sector as a share of GDP (%)	World Bank	Positive
Stock market capitalization (MC)	Stock market capitalization as a share GDP (%)	World Bank	Positive
Bank Liquid liabilities (LL)	Total liquid liabilities as a share of GDP (%)	Federal Reserve Bank of St. Louis	Positive
Broad money supply (BM)	Broad money as a share GDP (%)	World Bank	Positive
Commercial bank deposits (BD)	Bank deposits as a share of GDP (%)	Federal Reserve Bank of St. Louis	Positive
Deposit interest rate (INR)	Deposit interest rate (%)	World Bank	Positive
Inflation rate (INF)	Consumer prices index (%)	World Bank	Negative

3.7 Theoretical Model

The study employed the endogenous model to examine the effect of financial deepening on economic growth. The endogenous growth model was formulated by Lucas in the 1880s. The model assumes that human capital consists of education, training, and experience, as well as innovation, and knowledge to produce investment, which enables persistent growth. Moreover, the model is attributed to the assumptions of non-decreasing returns to the set of reproducible factors of production (Mankiw *et.al.*, 1992). It paints endogenous factors as key inputs that determine economic growth by triggering production output, and not exogenous factors.

The advantage of using an endogenous growth model is that the model is open and flexible (Odhiambo, 2009; Momanyi, 2013). It accommodates any macroeconomic variable that influences per capita GDP growth. These macroeconomic variables include commercial bank deposits, domestic credit to the private sector, stock market capitalization, broad money, liquid liabilities, deposit interest rate and inflation rate (Odhiambo, 2009).

3.8 Model Specification

The modified model takes the following form, as shown in Equation 3.1

$GDP = f\ (CPS, LL, MC, BM, BD, INF, INR)$…… (3.1)

Where;

GDP– Gross Domestic Product

CPS – Credit to Private Sector

LL – Bank Liquid Liabilities

MC – Stock Market Capitalization

BM – Broad Money Supply

BD – Commercial Bank Deposits

INR-Deposit interest rate

INF-Inflation rate.

Following Mukundi (2013), the econometric model was specified as shown in Equation 3.2:

$$\mathrm{GDP_t} = \beta_0 + \beta_1 \mathrm{CPS_t} + \beta_2 \mathrm{LL_t} + \beta_3 \mathrm{MC_t} + \beta_4 \mathrm{BM_t} + \beta_5 \mathrm{BD_t} + \beta_6 \mathrm{INR_t} + \beta_7 \mathrm{INF_t} + \varepsilon_t$$

…….(3.2)

Where;

ε_t– represents the error term

β_0 show the constant term

β_1 to β_7– are the coefficients of each independent variable on GDP.

3.9 Data Analysis

The study employed both descriptive and inferential statistical methods for data analysis. Initially, the collected data was sorted, categorized, and organized. Descriptive statistics, including the mean, median, and standard deviation for each variable, were computed and presented in tables. Inferential statistical techniques were then applied, with data analysis conducted using E-Views software.

3.9.1 ARDL Estimation Approach

The study utilized the Autoregressive Distributed Lag (ARDL) model. It is an econometric model used in analysing long and short-run relationship between different time series variables. The ARDL process begins by testing all variables for stationarity using unit root tests like ADF and PP to ensure none is integrated of order 2. Once confirmed, optimal lag lengths for each variable are selected using criteria like AIC and BIC. A bounds test is then conducted to check for a long-run relationship among variables. If cointegration is found, the long-run ARDL model is estimated, followed by the Error Correction Model (ECM) to capture short-run dynamics and the speediness of adjustment. Finally, diagnostic tests are performed to check for issues like serial correlation, heteroskedasticity, and model stability before the model can be applied for forecasting or policy analysis.

The study adopted this model because the ARDL model utilizes the principle of a singly reduced equation and a more detailed and comprehensive outcome than any other traditional integration method. Moreso, it accommodates different orders of co-integration hence it is consistent and efficient.

The relationship among variables can be put in the ARDL function by introducing lags as shown in the Equation 3.3:

$$GDP_{t-1} = \beta_0 + \beta_1 CPS_{t-1} + \beta_2 LL_{t-1} + \beta_3 MC_{t-1} + \beta_4 BM_{t-1} + \beta_5 BD_{t-1} + \beta_6 INR_{t-1} + \beta_7 INF_{t-1} + \varepsilon_t \quad (3.3)$$

Where;

GDP_{t-1}- Gross Domestic Product in the previous period, representing economic growth.

CPS_{t-1}– Credit to the Private Sector in the previous period.

LL_{t-1}– Liquid Liabilities in the previous period.

MC_{t-1} – Market Capitalization in the previous period.

BM_{t-1} – Broad Money in the previous period.

BD_{t-1} – Bank Deposits in the previous period.

INR_{t-1} – Interest Rate in the previous period.

INF_{t-1} – Inflation Rate in the previous period.

ε_t – Error term, capturing unobserved factors affecting GDP.

Introducing lags in the function helps capture the dynamic relationship between the dependent variable and the independent variables over time.

The ARDL model has a general form where y, modelled in levels or differences, is a function of itself (in lagged levels or differences), up to k variables x, either in

contemporaneous levels, lagged levels, contemporaneous differences, or lagged differences. Lags are often used in econometric regressions to capture the effects of past events on current outcomes or behaviours.

The ARDL model is an extension of the VAR, which represents a multivariate version of the former. The VAR model with P lags and K number of endogenous variables is such that (3.3) above can be illustrated as;

$y_t=v+\beta_1 y_{t-1}+\beta_2 y_{t-2}$ +.....+ $\beta_p y_{t-p}$ + ε_t.....(3.4)

Where;

y_t = K×1 vector of variables

v = K×1 vector of parameters representing constants.

$\beta_i$are K×K matrices of parameters representing coefficients.

ε_t = is a K×1 vector of disturbances white noise with mean zero and non-singular covariance matrix. This suggests that all variables in a VAR model are endogenous and result in a system that is identical to simultaneous equations. As previously mentioned, to prevent misleading regression, a VAR model needs stable variables such that the differences between them are employed for non-stationary variables. Non-stationary time series methods of analysis have emerged due to the unit-roots seen in the most of macroeconomic time series. The long-term link between the variables is represented by the co-integrating equation when these time series are co-integrated. If co-integration is present, the ARDL includes the long- and short-term relationships between the variables in the vector y_t. As a result, a VAR in (3.5) above can become an ARDL as shown;

$\Delta y_t=v+\alpha\beta' y_{t-1}+\sum_{i=1}^{p-1} \Gamma_i \Delta x_{t-i} + \varepsilon_t$.....(3.5)

Where:

v = becomes K×1 vector of parameters representing constants in the short run.

α = K×r matrix of adjustment parameters in the co-integrating equations, the error correction term, and speed of adjustment to the long run.

β = K×r matrix of coefficient parameters of the long-run relationship in the r co-integrating equations

Γ_i = Showing short-run coefficients of lagged variables.

Δ = First difference operator.

r = The co-integrating rank which is $1 \leq r \leq K-1$

p =The number of lags

ε_t= Is the error term at time t

t = time

3.9.2 Unit Root Test

Unit root tests are critical in time series analysis as they determine whether a series is stationary or non-stationary. Stationarity implies that the statistical properties of the series, such as mean, variance, and autocorrelation, are constant over time. In contrast, non-stationary series exhibit time-dependent structures, which can lead to misleading statistical inferences if not adequately addressed. Understanding the stationarity of the variables in this study is vital for selecting appropriate econometric models and ensuring the results' validity. The study performed Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root analysis to test whether a time series variable is non-stationary and possesses a unit root.

The Augmented Dickey-Fuller (ADF) test is a statistical test used to determine whether a time series is stationary or has a unit root, which indicates that the series is non-

stationary. We fit the following augmented Dickey-Fuller regression model to calculate the test statistic.

$\Delta y = \alpha + \gamma y_{t-1} + \delta t +$

$\sum_{j=1}^{k} \alpha_j \, \Delta y_{t-j} \, e_t$……………………………….…………………………...(3.6)

Where; α is the constant term, δt is the trend term and k is the number of lags specified, α_j is the coefficient of the parameter in question and e_t is the white nose error term. A significant postulation of the Dicker-Fuller test is that the terms e_t for error are distributed independently and identically. The ADF test improves the DF test by adding the regressand's lagged difference terms to take care of potential serial association in terms of error (Damodar 2004).

The Phillips-Perron (PP) unit root test is a statistical test used to determine whether a time series is stationary or contains a unit root, indicating that the series is non-stationary. Non-stationary time series data may result in unreliable statistical inferences, so testing for stationarity is an essential step in time series analysis.

The test involves fitting the regression model;

$\Delta Y_t = \varphi Y_{t-1} + \sum_{j=1}^{p-1} \alpha_j^* \Delta Y_{t-j} + \upsilon_t$……………………………………………….(3.7)

Phillips and Perron (1988) proposed two alternative statistics, Phillips and Perron’s test statistics can be viewed as Dickey–Fuller statistics that have been made robust to serial correlation by using the Newey and West (1987), heteroskedasticity- and autocorrelation-consistent covariance matrix estimator. The greatest advantage of the Philips- test is that it is non-parametric, that is it does not require selecting the degree of serial correlation observed in ADF.

3.9.3 Lag Length Selection

It is essential to weigh the marginal advantages of adding more lags when deciding how many lags to include in the study. If the order of estimation is too low, the research faces a risk of omitting important information contained in the omitted lag periods and if it is set too high then many unnecessary coefficients are evaluated. The analysis used the Akaike Information Criterion, Hannan-Quinn information criterion, Sequential modified LR test statistic, Final prediction error, and Schwarz information criterion. The Schwarz Information Criterion selects the most frugal models with the fewest coefficients, whereas AIC selects the most sumptuous models (Luetkepohl, 2009). The decision rule involves selecting the model with the lowest value of the information criterion to ensure that the error term is specified.

3.9.4. ARDL F-Bound Cointegration Test

Cointegration analysis determines whether a long-term equilibrium relationship exists between the variables despite any short-term deviations. To assess the presence of cointegration among these variables, the study utilizes the F-bound test as part of the autoregressive distributed lag (ARDL) modelling approach, following the methodology of Narayan (2004) and Pesaran *et.al.* (2001). The F-bound test is instrumental in small sample sizes and does not require the variables to be of the same order of integration. It tests the null hypothesis that no cointegration exists among the variables against the alternative hypothesis that a long-term relationship exists.

3.10 Model Diagnostic Tests

The data underwent a series of diagnostic tests to assess its compliance with the assumptions of the multiple regression model, thereby ensuring the validity of the

results. The study conducted tests for stability, normality, autocorrelation, multicollinearity, heteroscedasticity, and unit root presence.

3.10.1 Stability Tests

When estimating a model, it is assumed that the model parameters will be maintained constant for the entire period of study. This is the assumption of constancy or stability of the parameters. Changes in structure could make a model unstable. To check for the structural stability the CUSUM test by Durbin (1975) on stability based on recursive residuals was used. This preference plots the cumulative sum with the 5% significant critical lines. The test indicates parameter instability when the cumulative sum crosses beyond the boundaries defined by the two critical lines.

3.10.2 Normality Test

The purpose of the test is to determine whether the data follows a normal distribution. A lack of normality may result in an inaccurate representation of the relationship between variables (Garson, 2012). Lomnicki (1961), Thadewald and Büning (2007) suggested a test for non-normality based on the skewness and kurtosis of a distribution. The null hypothesis of normality is tested against the alternative hypothesis of non-normal distribution. For a normal distribution, the Jarque Berra statistic is expected to be statistically indifferent from zero. If;

H_0: JB = 0 (normally distributed) ……. (3.8)

H_1: JB ≠ 0 (not normally distributed) ……..…….…… (3.9)

Rejection of the null hypothesis for any of the variables would suggest that the variables are not normally distributed; hence a Logarithmic transformation is necessary.

3.10.3 Autocorrelation Test

Portmanteau tests were obtained to check for autocorrelation in the residuals of a model. This test is the Ljung–Box test, which is a revised version of the Box–Pierce test. It determines whether any of the group of autocorrelations of the residual time series are dissimilar from zero. The test is convenient in working with ARIMA, like the VECM models (Safi, 2014). Other commons serial correlation test includes Breusch-Godfrey LM.

3.10.4 Multicollinearity Test

Multicollinearity refers to a condition in which two or more variables in a regression model are highly interdependent, allowing one to be linearly predicted from the others with a high level of accuracy. If the association between two independent variables is equal to 1 or −1, then there is perfect multicollinearity. Usually, the problem of multicollinearity occurs when there is a distinct linear relationship between two or more independent variables. Multicollinearity exists if a single independent variable highly correlates with a set of other independent variables. Variance Inflation Factor is used to measure the amount of multicollinearity in a multiple regression variable (Kim, 2019).

3.10.5 Heteroscedasticity Test

The study used Breusch-Pagan-Godfrey test to test for heteroscedasticity. If the variance of the random disturbance is unequal across a range of measured values of elements of the vector, then heteroscedasticity exists. The state of systematic variations in the residuals' distribution or the model's error term is known as heteroskedasticity. When residual variance is present in a model, it indicates that at least one independent variable affects how the model scatters (Jain, 2020).

3.10.6 Correlation Analysis

Gujarati (2003) states that correlation is present when the error term from one period is related to the error terms of subsequent periods. The study used pairwise correlation analysis to uncover potential relations of interest between the dependent and independent variables. According to Smith (2022), pairwise correlation analysis is a statistical technique used to measure the strength and direction of the linear relationship between pairs of variables in a dataset. It is commonly used in exploratory data analysis to understand relationships among multiple variables, detect patterns, or identify possible predictors Data is considered uncorrelated if the p-value exceeds the 5% significance level.

3.11 Ethical Considerations

The researcher considered the following ethical considerations to be implemented for the research period. The researcher obtained an introductory letter as part of the requirements of the University of Eldoret and assurance that the thesis was written only for academic purposes. The researcher also acquired a letter of authorization and a work permit from the National Commission for Science, Technology, and Innovation (NACOSTI). Additionally, the researcher complied with intellectual property standards by accurately acknowledging all information sources. All references are entered into Endnote for accurate citation and in the APA series.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter reports the analysis results of the relationship between financial deepening and economic growth.

4.2 Descriptive Statistics Results

The descriptive statistics in this study provide a comprehensive summary of data, capturing essential aspects such as the central tendency, dispersion and the distribution of shape for each variable. The mean values offer an initial understanding of each variable's magnitude and typical values, helping contextualize the economy's characteristics. The standard deviation offers insight into the variability or dispersion of each variable from its mean.

Kurtosis describes the peaking and flattening of the distribution tail, whereas skewness reflects the direction and degree of asymmetry of a given distribution around its mean (Cisar and Cisar, 2010). For a normal distribution, skewness is 0 with a kurtosis of 3 and the JB of 0. A positive kurtosis indicates a relatively peaked distribution while if the kurtosis is negative kurtosis the distribution will be relatively flat (Cisar & Cisar, 2010).

Table 4.1 : Summary of Descriptive Statistics Results

	GDP	BD	BM	MC	CPS	LL	INR	INF
Mean	1.0016	32.9471	37.3946	23.6278	26.6152	38.6980	9.2031	11.2050
Median	1.4399	32.9491	37.7562	22.4035	25.834 3	37.8985	8.1967	8.4348
Maximum	5.5204	39.2200	42.8193	44.0573	36.699 3	61.5480	18.400 8	45.9788
Minimum	-3.7667	24.1015	29.5770	8.0494	18.496 2	29.5770	2.4333	1.5543
Std. Dev.	2.4004	3.6334	2.9992	9.7768	4.8362	6.4637	4.3207	9.1176
Skewness	-0.2661	-0.3093	-0.5103	0.4671	0.2988	2.4625	0.6732	2.1192
Kurtosis	2.1795	2.7243	3.4373	2.3321	2.3037	9.7108	2.2956	7.7429
Jarque-Bera	1.3549	0.6500	1.7471	1.8686	1.1928	98.1648	3.2714	57.3181
Probability	0.5079	0.7225	0.4174	0.3928	0.5507	0.0000	0.1948	0.0000
Sum	34.054 9	1120.20 20	1271.41 90	803.345 5	904.917 3	1315.73 40	312.90 65	380.971 8
Sum Sq. dev.	190.14 65	435.663 7	296.851 2	3154.37 20	771.83 68	1378.73 90	616.07 13	2743.36 80
Observations	34	34	34	34	34	34	34	34

Looking at the mean values from Table 4.1, GDP per capita has a relatively low average of 1.0016. The BD and BM variables, which represent banking deposits and money supply as a percentage of GDP, have mean values of 32.9471 and 37.3946, respectively. Focusing at the standard deviation, GDP per capita has the lowest value of standard deviation of 2.4004 and MC has the highest value of standard deviation of 9.7768. A skewness value of -0.2661 for GDP suggests a slight leftward skew. In contrast, the higher positive skewness for LL (2.4625) indicates a more pronounced rightward skew.

High kurtosis values, such as those observed for LL (9.7108) and INF (7.7429), suggest that these distributions have fat tails and sharp peaks, indicating that extreme values (outliers) occur more frequently than in a normal distribution. Finally, the Jarque-Bera test, which tests the null hypothesis that the data follow a normal distribution, indicates that for most variables, such as BD and MC, the distribution is approximately normal (with p-values greater than 0.05). However, for variables like LL and INF, the significant Jarque-Bera statistics suggest that these distributions are not typical, which might influence the choice of econometric techniques or require data transformation to meet the assumptions of specific statistical tests.

4.3 Correlation Analysis Results

The research performed pairwise correlation analysis to uncover potential relations of interest between dependent and explanatory variables. Table 4.2 shows the correlation relationship between financial deepening variables and economic growth using a pairwise correlation approach.

Table 4.2: Correlation Matrix Results

	GDP	BD	BM	MC	CPS	LL	INR	INF
GDP	1	0.4363***	0.2243	0.4129**	0.4173**	0.2863	-0.3718**	-0.4936***
BD		1	0.9096***	0.2467	0.8937***	0.6873***	-0.3676**	-0.4772***
BM			1	0.2296	0.7377***	0.5674***	-0.1618	-0.3050
MC				1	0.1060	-0.0812	-0.3247*	0.0580
CPS						0.5598***	-0.3924**	-0.5714***
LL						1	-0.1278	-0.2218
INR							1	0.3544**
INF								1

Note: ** p < 0.05, *** p < 0.01 are significance level

Note: GDP- GDP per Capita; BD- Bank Deposits (% of GDP); CPS-Domestic credit to private sector (% of GDP); MC-Stock market capitalization (% of GDP); BM-Broad money (% of GDP); Liquidity Liabilities (% of GDP); INR-Deposit interest rate (%); INF-Inflation, consumer prices (%)

The correlation matrix reveals the strength and direction of linear relationships between the variables in the study. A notable observation is the moderate positive correlation between GDP and BD (0.4363), suggesting that higher bank deposits are moderately associated with higher GDP per capita. The relationship between BD and BM is even more robust, with a correlation of 0.9096, indicating that bank deposits also rise as the supply of broad money increases, which is expected given the interconnectedness of these financial variables. Interestingly, MC and CPS have a weaker positive correlation of 0.1060, suggesting that the connection between stock market activities and domestic

credit to the private sector is less direct. Negative correlations are also noteworthy, particularly between INR and GDP (-0.3718) and INF and GDP (-0.4936).

4.4 Unit Root Test Results

Unit root tests are critical in time series analysis as they determine whether a series is stationary or non-stationary. The study performed Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root analysis to test whether a time series variable is non-stationary and possesses a unit root.

4.4.1 Augmented Dickey-Fuller Test Results

The Augmented Dickey-Fuller (ADF) test is among the most commonly used methods to test for unit roots and determine stationarity. The null hypothesis of the ADF test posits that the series contains a unit root, meaning it is non-stationary. If the null hypothesis is rejected, it suggests that the series is stationary. Table 4.3 presents Augmented Dickey-Fuller unit root test results.

Table 4.3: ADF Unit Root Test

Variable	Level t-Statistics	P-Value	Conclusion	Variable	First difference t-Statistics	P-Value	Conclusion
GDP	-2.1971	0.2112	I(1)	ΔGDP	-5.0497	0.0003	I(1)
CPS	-1.5445	0.4986	I(1)	ΔCPS	-5.1968	0.0002	I(1)
MC	-2.5316	0.1177	I(1)	ΔMC	-4.7673	0.0006	I(1)
BM	-3.4665	0.0157	I(0)	ΔBM	-	-	I(0)
BD	-2.3745	0.1566	I(1)	ΔBD	-4.6584	0.0008	I(1)
LL	-0.1219	0.9386	I(1)	ΔLL	-6.0136	0.0000	I(1)
INF	-3.0295	0.0428	I(0)	ΔINF	-	-	I(0)
INR	-1.6504	0.4460	I(1)	ΔINR	-3.7628	0.0078	I(1)

Null Hypothesis: has a unit root
Augmented Dickey-Fuller Test Equation

These variables are, therefore, integrated of order zero, I(0), meaning they do not exhibit a unit root, and their statistical properties do not change over time. For BM, this implies that the money supply in the economy has been relatively stable when considered in proportion to GDP, with fluctuations around a constant mean. Similarly, the stationarity of the inflation rate suggests that inflationary shocks do not permanently affect the price level, allowing it to revert to a long-term average over time. This characteristic of inflation is often desirable in an economy, as it indicates that inflation is under control and subject to mean reversion. The unit root test shows that all variables

except BM and INF are non-stationary, integrated of order one I(1). A unit root test was conducted using the Phillips-Perron (PP) test for robust results. Table 4.4 shows the Phillips-Perron unit root outcome.

4.4.2 Philips-Perron Unit Root Test Results

To ensure robustness and account for potential issues like serial correlation and heteroskedasticity, the study also applies the Phillips-Perron (PP) test. The PP test is an alternative to the ADF test but uses a non-parametric approach to address serial correlation and heteroskedasticity issues in the error terms.

Table 4.4 Philips-Perron Unit Root Test Results

Variable	Level		Conclusion	First difference	Order		
	t-Statistics	P-Value			t-Statistics	P-Value	Conclusion
GDP	2.6608	1.0000	I(1)	ΔGDP	-3.8742	0.0058	I(1)
CPS	-1.6848	0.4294	I(1)	ΔCPS	-6.4891	0.0000	I(1)
MC	-2.6430	0.0948	I(1)	ΔMC	-6.5327	0.0000	I(1)
BM	-3.6182	0.0107	I(0)	ΔBM	-	-	I(0)
BD	-2.5674	0.1098	I(1)	ΔBD	-7.0938	0.0000	I(1)
LL	-0.8492	0.7915	I(1)	ΔLL	-6.7025	0.0000	I(1)
INF	-2.9377	0.0518	I(1)	ΔINF	-11.5940	0.0000	I(1)
INR	-1.7402	0.4024	I(1)	ΔINR	-6.3308	0.0000	I(1)

Null Hypothesis: has a unit root

The identification of the integration order of the variables has significant implications for the subsequent econometric analysis. Knowing that variables like GDP, BD, and MC are I(1) justifies using cointegration techniques to explore long-term equilibrium relationships among these variables.

Conversely, the stationarity of variables like BM and INF at their levels allows them to be directly incorporated into models without the need for differencing. In summary, the unit root tests provide a foundational understanding of the data's properties, ensuring

that the following analysis, whether VAR modelling, cointegration testing, or error correction modelling, relies on a well-specified models that account for the stationarity of the variables.

This careful approach to testing and transforming the data is essential for deriving valid and reliable conclusions about the correlation between financial deepening and economic growth in Kenya. The unit root test illustrates that all variables except BM are non-stationary, integrated of order one I(1). From the findings, the study concludes that data is integrated in mixed order and no factor is integrated into order two, which satisfies the series to apply the ARDL technique for further analysis. Both ADF and PP unit root tests have supported the application of the ARDL ECM approach in further model estimation. However, vector autoregression (VAR) was first performed to establish the autoregressive lag length.

4.4 Lag Length Selection Criteria Results

Table 4.5: Lag Order Selection Criteria Results

Lag	LogL	LR	FPE	AIC	SIC	HQIC
0	-655.9159	NA	1.45e+08	41.4947	41.8611	41.6162
1	-543.1222	162.1410	7777468.	38.4451	41.7430	39.5383
2	-397.2292	136.7747*	108441.8*	33.3268*	39.5562*	35.3916*

Note *Indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

HQIC: Hannan-Quinn information criterion

FPE: Final Predictor Error

AIC: Akaike Information Criterion

SIC: Schwarz Information Criterion

In this study, several information criteria, including the Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), and Hannan-Quinn Information Criterion (HQIC), were used to determine the optimal lag length. The study identified a lag length of two as optimal, with the AIC providing the minimum value at lag two (33.3268). The choice of two lags is significant as it allows the VAR model to effectively capture the temporal dynamics without overfitting the data. The VAR model results reveal critical interdependencies among the variables. A positive shock to BD (Bank Deposits) might increase GDP, reflecting the role of banking deposits in supporting investment and consumption. However, the model also shows that the full impact of such changes may take one or two periods to materialize, indicating that the effects of financial deepening on economic growth are not immediate but accumulate over time. Moreover, the VAR model enables the analysis of impulse response functions (IRFs), which trace the impact

of a one-unit shock to one of the variables on the current and future values of all the variables in the system. These responses provide a visual and quantitative understanding of how economic shocks propagate through the system, offering valuable insights for policy decisions. For instance, an IRF could illustrate how a sudden increase in inflation might impact GDP and other financial variables over time, guiding policymakers on the likely outcomes of inflationary pressures. Akaike Information Criterion (AIC) estimation model and lag length of two is the most preferred because of the minimum value (33.3268).

4.5 Cointegration Analysis Results

Cointegration analysis determines whether a long-term equilibrium relationship exists between the variables despite any short-term deviations. In this study, the F-bound test, based on the methodology of Narayan (2004), was used to assess the presence of cointegration among the variables. Table 4.6 displays the F-bound cointegration test results from Pesaran (2001).

Table 4.6: F-Bounds Cointegration Test

Narayan	**Value**	**Significance Level**	**Bounds Critical values**	
F-Statistics	5.3317		I(0)	I(1)
		1%	3.31	4.63
K	7	5%	2.69	3.83

Note: Null hypothesis: No level relationship.

Since the F-statistic (5.3317) is greater than the upper bound critical value (3.83), cointegration or long-run relationships are present. In this study, the primary focus of the cointegration analysis is to determine whether there exists a long-term equilibrium relationship between economic growth (measured by GDP per capita) and various indicators of financial deepening, including Bank Deposits as a percentage of GDP (BD), Broad Money as a percentage of GDP (BM), Stock Market Capitalization to GDP (MC), Domestic Credit to Private Sector as a percentage of GDP (CPS), Liquid Liabilities as a percentage of GDP (LL), Deposit Interest Rate (INR), and Inflation (INF).

To assess the presence of cointegration among these variables, the study utilizes the F-bound test as part of the autoregressive distributed lag (ARDL) modelling approach, following the methodology of Narayan (2004) and Pesaran *et.al* (2001). The F-bound test is instrumental in small sample sizes and does not require the variables to be of the same order of integration. It tests the null hypothesis that no cointegration exists among the variables against the alternative hypothesis that a long-term relationship exists. The outcomes of the F-bound test indicate that the computed F-statistic of 5.3317 exceeds the upper bound critical value of 3.83 at the 5% significance level.

4.6 ARDL Estimation Results

The Autoregressive Distributed Model (ARDL) long-run form results provide crucial insights into the sustained relationships between financial deepening variables and economic growth in Kenya. The analysis reveals several significant predictors that shed light on the long-term economic trajectory and offer valuable guidance for policy-making. ARDL technique was used to analyse the study model based on AIC criterion.

4.6.1 ARDL Long Run Results

The study performed an ARDL long-run analysis to determine the long-run relationship between dependent and explanatory variables. Table 4.7 shows the long-run result of financial deepening and economic growth model analysis.

Table 4.7: Long Run Results

Variable	Coefficient	Standard Error	t-Statistics	P-Value
BD	1.419508	0.364828	3.890901***	0.0037
CPS	0.414860	0.028532	14.54028***	0.0000
BM	1.554581	0.345403	4.500772***	0.0015
MC	0.048685	0.018530	2.627334**	0.0275
LL	0.004648	0.000498	9.335885***	0.0000
INR	0.086546	0.005787	14.95532***	0.0000
INF	-0.083989	0.016876	-4.97678***	0.0008
Cons	2.220083	0.322179	6.890830***	0.0001
Diagnostic Test		Test	F-statistics	Probability
Serial Correlation		Breusch-Godfrey LM	2.7410	0.1046
Model Misspecification		Ramsey RESET	1.6708	0.2186
Heteroscedasticity		Breusch-Pagan-Godfrey	1.3197	0.3046
Normality test		Jarque-Bera	1.1691	0.5573
Goodness of fit measure		R-Squared	0.8776	DW=2.05

*Note: indicates ** $p < 0.05$, *** $p < 0.01$ are significance levels in which the null hypothesis is rejected.*

GDP- GDP per Capita; BD- Bank Deposits (% of GDP); CPS-Domestic credit to private sector (% of GDP); MC-Stock market capitalization (% of GDP); BM-Broad money (% of GDP); Liquidity Liabilities (% of GDP); INR-Deposit interest rate (%); INF-Inflation, consumer prices (%); DW-Durbin Watson

Firstly, Commercial Bank Deposits (BD) emerge as a significant driver of economic growth, with a coefficient of 1.419508 and a p-value of 0.0037, indicating a strong and

positive relationship. From the results, the research rejected the null hypothesis since $p<0.05$ and concluded that the residual is significant at a 5 per cent level of significance. An increase in commercial bank deposits will translate to an increase in financial deepening and an increase in economic growth in Kenya. Explicitly, a one per cent increase in bank deposits increases economic growth by 1.42 per cent, other things being unchanged.

Broad Money (BM) shows a positive and highly significant relationship with economic growth, with a coefficient of 1.554581 and a p-value of 0.0010. Based on t-statistics, the null hypothesis is rejected at 5 per cent, meaning broad money significantly explains economic growth. Specifically, a one per cent increase in broad money increases economic growth by 1.55 per cent, other things being unchanged.

Stock Market Capitalization (MC) also plays a significant role in long-term economic growth, as indicated by a positive coefficient of 0.048685 and a p-value of 0.0275. Based on the p-value the study rejects the null hypothesis at 5 per cent, indicating that market capitalization has a substantial effect on economic growth. Particularly, a one per cent increase in stock market capitalization deposit increases GDP by 0.05 per cent, other things being constant.

Domestic Credit to the Private Sector (CPS), with a coefficient of 0.414860 and a p-value of 0.0000, is another significant determinant of long-term economic growth. This variable measures the amount of credit financial institutions extend to the private sector. Based on t-statistics, the null hypothesis is rejected at 5 per cent, implying that credit to the private sector increases financial deepening and thus grows investment and the

economy (World Bank, 2021). Particularly, a one per cent increase in credit to the private sector increases GDP growth by 0.41 per cent, *ceteris paribus*.

Interestingly, Bank Liquid Liabilities (LL), while showing a minimal positive coefficient (0.004648), are statistically significant (p-value = 0.0000). According to t-statistics, reject the null hypothesis at a 5 per cent level of significance, implying that liquidity liabilities significantly explain GDP growth. Precisely, a one per cent increase in liquidity liabilities increases economic growth by 0.004 per cent, other things being unchanged in Kenya, *ceteris paribus*.

The relationship between the Deposit Interest Rate (INR) and economic growth is also noteworthy. The positive and highly significant coefficient (0.086546, p-value = 0.0000). Based on the p-value, the study rejects the null hypothesis at 5 per cent. Particularly, an increase in deposit interest rate by one per cent will cause GDP to grow by 0.09 per cent, *ceteris paribus*.

On the other hand, Inflation (INF) has a negative and significant impact on economic growth, as indicated by the coefficient of -0.083989 and a p-value of 0.0008. The study rejects the null hypothesis at 5 per cent based on the t-statistic value. Specifically, a one per cent increase in the inflation rate will translate to an 0.08 per cent decline in economic growth, *ceteris paribus*.

4.6.2 ARDL Short Run Results

The ARDL short-run form results offer a detailed perspective on the immediate impacts of changes in financial deepening variables on economic growth, capturing the short-term dynamics that may differ from the long-run relationships.

Table 4.8: Short Run Results

Variable	Coefficient	Standard Error	t-Statistics	P-Value
ΔBD	0.848059	0.138222	6.135470***	0.0002
ΔCPS	0.150382	0.044216	3.401100**	0.0192
ΔBM	0.309042	0.110118	2.806454**	0.0205
ΔMC	0.022627	0.008873	2.550035**	0.0312
ΔLL	-0.000402	0.000257	-1.561659	0.1528
ΔINR	0.038981	0.008317	4.686924***	0.0011
ΔINF	-0.034822	0.004632	-7.51745***	0.0000
ΔGDP	0.345379	0.134001	2.577431**	0.0298
ECT	-0.739620	0.084935	-8.70803***	0.0000
Cons	2.220083	0.256173	8.666348***	0.0000
Diagnostic Test		Test	F-statistics	Probability
Serial Correlation		Breusch-Godfrey LM	2.7410	0.1046
Model misspecification		Ramsey RESET	1.6708	0.2186
Heteroscedasticity		Breusch-Pagan-Godfrey	1.3197	0.3046
Normality test		Jarque-Bera	1.1691	0.5573
Goodness of fit measure		R-Squared	0.8776	DW=2.05
Note: indicates ** $p < 0.05$, *** $p < 0.01$ level of significance				

Stock Market Capitalization (ΔMC) also has a significant and positive effect on economic growth in the short run, as indicated by a coefficient of 0.022627 and a p-value of 0.0312. The results imply that a unit increase in market capitalization will result in a 0.02 change in economic growth, *ceteris paribus*.

Domestic Credit to the Private Sector (ΔCPS) is another significant determinant of short-term economic growth, with a coefficient of 0.150382 and a p-value of 0.0192.

The findings imply that a unit increase in domestic credit will result in a 0.15 change in the GDP, *ceteris paribus*.

Interestingly, Liquid Liabilities (ΔLL) do not significantly impact economic growth in the short run, as the coefficient is -0.000402 with a p-value of 0.1528, *ceteris paribus*.

The Deposit Interest Rate (ΔINR) positively and significantly impacts economic growth in the short run, with a coefficient of 0.038981 and a p-value of 0.0011. The estimates imply that a unit increase in interest rate will result in a 0.04 change in the GDP, other factors held constant.

Inflation (ΔINF), on the other hand, has a negative and significant impact on economic growth in the short run, with a coefficient of -0.034822 and a p-value of 0.0000. The results imply that a unit increase in the inflation rate will result in a 0.03 change in the GDP, ceteris paribus, at a 5 per cent level of significance.

4.7 Granger Causality Analysis Results

Granger causality analysis is a statistical method to determine whether one time series can predict another. In this study, Granger causality tests help understand the directional relationships between financial deepening variables and economic growth in Kenya. These results are essential for policymakers, as they can provide insights for decisions concerning how financial variables should be targeted to stimulate economic growth or vice versa. Table 4.9 shows the pairwise Granger causality result.

Table 4.9: Pairwise Causality Test

Null Hypothesis:	Obs	F-Statistic	P-Value	Decision
BM does not Granger-Cause GDP	33	5.7248	0.0232	Unidirectional causality
GDP does not Granger Cause BM	33	0.3845	0.5398	
BD does not Granger Cause GDP	33	10.8017	0.0026	Unidirectional causality
GDP does not Granger Cause BD	33	1.8100	0.1886	
MC does not Granger Cause GDP	33	3.5591	0.0689	Unidirectional causality
GDP does not Granger Cause MC	33	0.6470	0.4275	
CPS does not Granger Cause GDP	33	5.1378	0.0308	Bidirectional causality
GDP does not Granger Cause CPS	33	4.0825	0.0523	
LL does not Granger Cause GDP	33	4.0184	0.0541	Bidirectional causality
GDP does not Granger Cause LL	33	3.7967	0.0608	
INR does not Granger Cause GDP	33	5.1626	0.0304	Unidirectional causality
GDP does not Granger Cause INR	33	0.0377	0.8473	
INF does not Granger Cause GDP	33	0.4136	0.5250	No causality
GDP does not Granger Cause INF	33	0.0895	0.7668	

In general, the results show that the level of causal relationship is different depending on the level of financial deepening in Kenya. If a p-value> 0.05, the study fails to reject the null hypothesis. The examination begins with Bank Deposits (BD) and economic growth (GDP), where a unidirectional Granger causality is identified, running from bank deposits to economic growthThis indicates that increased credit availability stimulates economic growth, and as the economy expands, the demand for credit naturally rises. Interestingly, the analysis finds no significant Granger causality between Liquid Liabilities (LL) and economic growth, indicating that changes in liquid liabilities do not predict economic performance, nor does economic growth influence liquid liabilities The relationship between the Deposit Interest Rate (INR) and economic growth is unidirectional, with causality from the deposit interest rate to GDP. This implies that higher deposit rates may encourage savings, thereby increasing the funds available for investment and driving economic growth. Lastly, the results illustrate a unidirectional causality from Inflation (INF) to economic growth. This designates that inflation rates can predict future changes in GDP.

4.8 Diagnostic and Model Stability Test Results

The study performed several diagnostic tests to support the findings. To meet econometric conditions, the following diagnostic tests were conducted: autocorrelation, heteroskedasticity, model misspecification and normality test. Table 4.10 shows the post-diagnostic results from regression residuals.

Table 4.10: Summary of Diagnostic Tests

Residual test	Type of test	Null hypothesis	F-statistics	P-value	Decision
Serial correlation test	Breusch-Godfrey LM	No serial correlation	2.7410	0.1046	Fail to reject
Heteroscedasticity test	Breusch-Pagan-Godfrey	Homoskedasticity	1.3197	0.3046	Fail to reject
Multicollinearity test	Variance Inflation Factor (VIF)	No multicollinearity	Mean VIF (1.38)	Not applicable	Fail to reject
Normality test	Jarque-Bera	Normally distributed	1.1691	0.5573	Fail to reject
Functional misspecification test	Ramsey RESET	No misspecification	1.6708	0.2186	Fail to reject

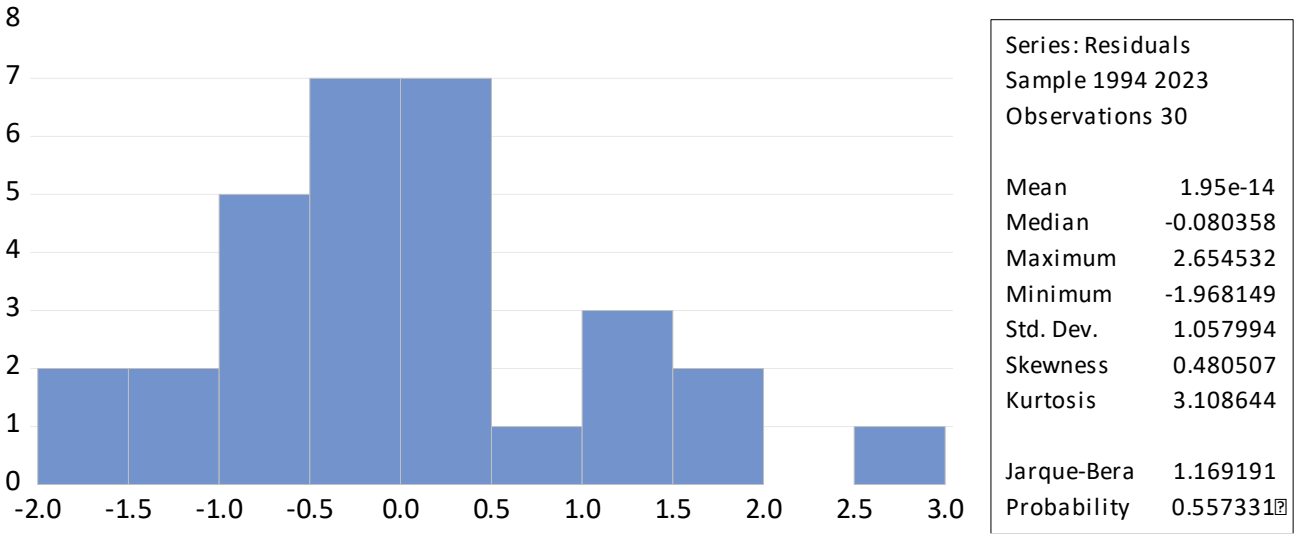

Figure 4.1: Normality Test of Jarque-Berra

The study investigated data for residual variance stability using CUSUM and CUSUMSQ tests as shown below. The cumulative sum (CUSUM) and cumulative sum

of square (CUSUSMQ) tests were propagated by Awan (2015). CUSUM tests systematic change in the parameters while CUSUMSQ captures sudden change in the regression coefficients. Figures 4.2 and 4.3 show the CUSUM and CUSUMSQ stability test results.

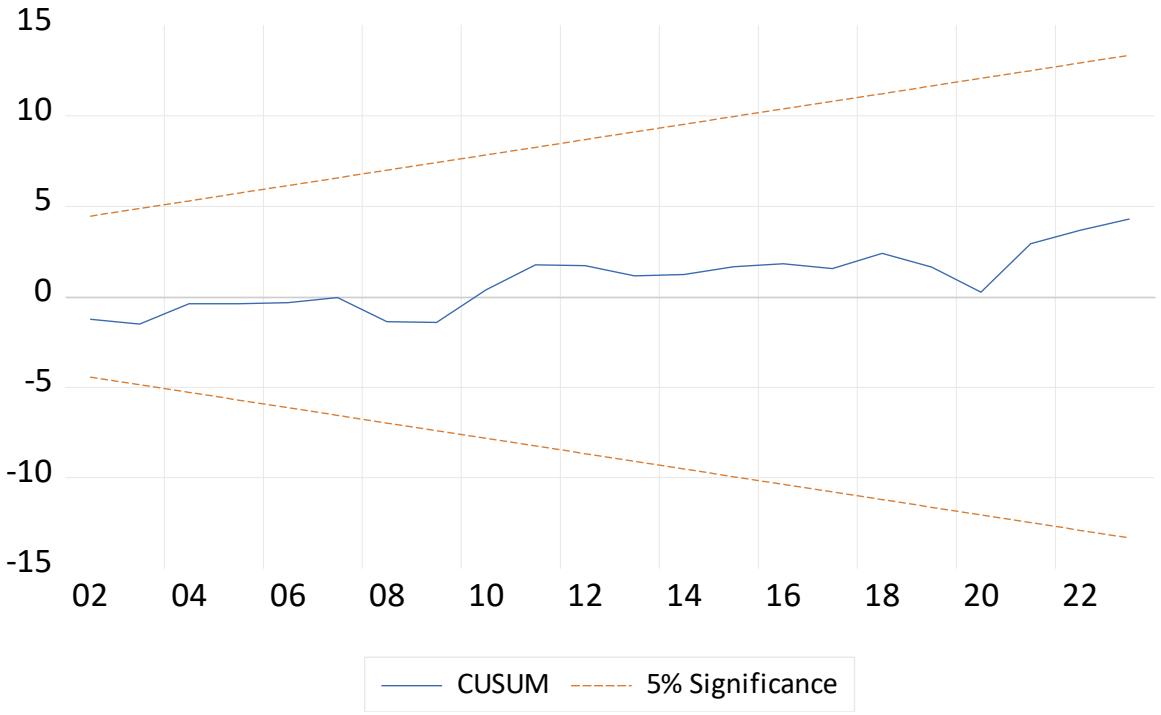

Figure 4.2: Plot of Parameter Stability (CUSUM)

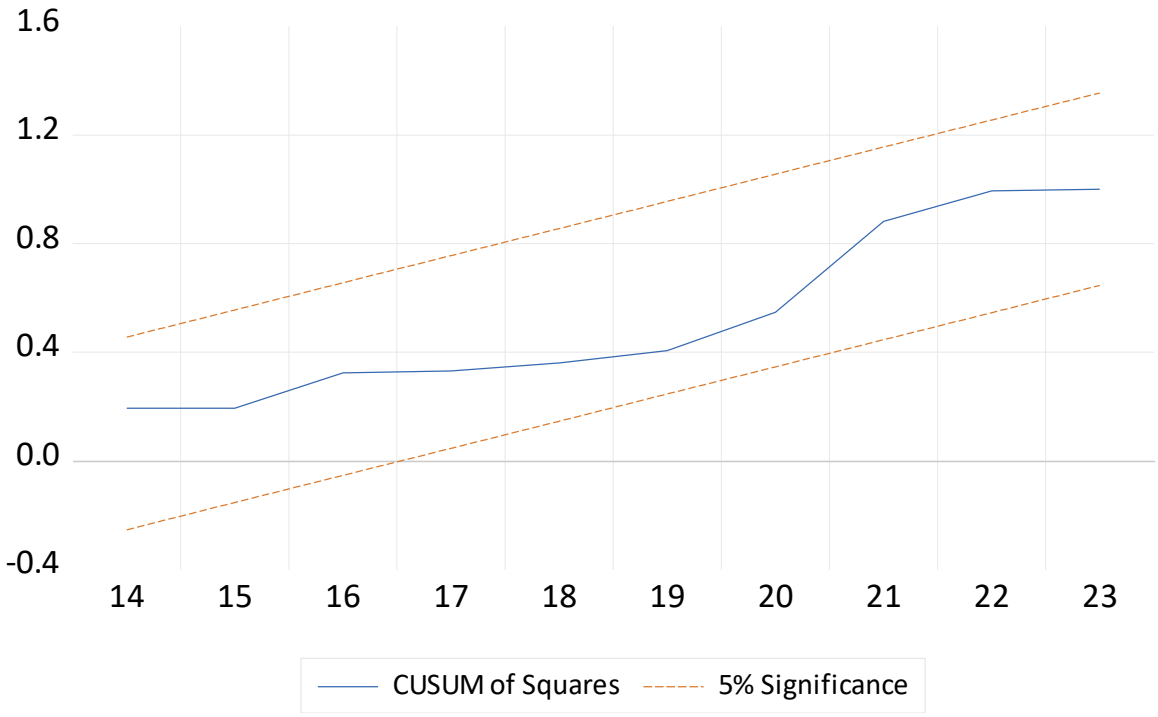

Figure 4.3: Plot of Parameter Stability (CUSUMSQ)

Based on Figures 4.2 and 4.3, the model is stable at a 5% critical bound. This indicates the residual is between the two straight lines, in which any other series included in the residual does not affect the series included in the model. When variances of residuals are not constant, there is a problem of heteroscedasticity. The regression model passed all post-diagnostic and stability tests conducted, and consequently, the research proceeded to provide recommendations based on research findings.

CHAPTER FIVE

DISCUSSIONS

5.1 Introduction

This chapter explains the synthesis and logical interpretation of the results and findings of the study.

5.2 Descriptive Statistics Test Findings

Results in Table 4.1 disclose that GDP per capita has a relatively low average of 1.0016, suggesting modest economic growth in per capita terms over the study period. The BD and BM variables, which represent banking deposits and money supply as a percentage of GDP, have mean values of 32.9471 and 37.3946, respectively, indicating a significant proportion of the economy is tied to financial deepening measures. The mean values offer an initial understanding of each variable's magnitude and typical values, helping contextualize the economy's characteristics. The standard deviation provides insight into the variability or dispersion of each variable from its mean. GDP per capita has a standard deviation of 2.4004, reflecting substantial fluctuations in economic performance over time. MC, with a standard deviation of 9.7768, shows high variability, indicating that the stock market capitalization to GDP ratio experiences considerable shifts, possibly due to market volatility or economic cycles. This variability is crucial for understanding the stability of economic indicators and financial markets over time.

Skewness and kurtosis are statistical measures that describe the shape of the data distribution. A skewness value of -0.2661 for GDP suggests a slight leftward skew. In

contrast, the higher positive skewness for LL (2.4625) indicates a more pronounced rightward skew, meaning there are relatively few very high values for liquid liabilities as a percentage of GDP. High kurtosis values, such as those observed for LL (9.7108) and INF (7.7429), suggest that these distributions have fat tails and sharp peaks, indicating that extreme values (outliers) occur more frequently than in a normal distribution. Finally, the Jarque-Bera test, which tests the null hypothesis that the data follow a normal distribution, indicates that for most variables, such as BD and MC, the distribution is approximately normal (with p-values greater than 0.05). However, for variables like LL and INF, the significant Jarque-Bera statistics suggest that these distributions are not typical, which might influence the choice of econometric techniques or require data transformation to meet the assumptions of specific statistical tests.

5.3 Correlation Analysis Findings

From Table 4.2, a notable observation is the moderate positive correlation between GDP and BD (0.4363), suggesting that higher bank deposits are moderately associated with higher GDP per capita. This could imply that as financial institutions accumulate more deposits, these funds are potentially channelled into productive investments, spurring economic growth. The relationship between BD and BM is even more robust, with a correlation of 0.9096, indicating that bank deposits also rise as the supply of broad money increases, which is expected given the interconnectedness of these financial variables. The close relationship between these variables underscores the importance of a well-developed banking system in maintaining a stable money supply and supporting economic activities. Interestingly, MC and CPS have a weaker positive correlation of 0.1060, suggesting that the connection between stock market activities

and domestic credit to the private sector is less direct. This could be as a result of the different roles of these variables in the financial system.

Stock market capitalization reflects equity market activities. At the same time, CPS captures the extent of credit available to businesses and households. The weak correlation may imply that stock market performance does not significantly drive credit availability in Kenya, or vice versa, during the study period. Negative correlations are also noteworthy, particularly between INR and GDP (-0.3718) and INF and GDP (-0.4936). These negative correlations suggest that higher deposit interest rates and inflation are associated with lower economic growth. The relationship with interest rates could reflect the cost of borrowing higher rates, which might deter investment and consumption, leading to slower economic growth. Similarly, higher inflation could erode purchasing power and savings, negatively impacting financial deepening and performance. These findings underscore potential aspects of concern for policymakers, especially in managing interest rates and inflation to support sustainable growth.

5.4 ARDL Long Run Results Discussion

From the results in Table 4.7, Commercial Bank Deposits (BD) emerge as a significant driver of economic growth, with a coefficient of 1.419508 and a p-value of 0.0037, indicating a strong and positive relationship. This signifies that a rise in commercial bank deposits will translate to a rise in financial deepening and an increase in economic growth in Kenya. Specifically, a one per cent increase in bank deposits increases economic growth by 1.42 per cent, other things being unchanged. This implies that an increase in bank deposits, as a percentage of GDP, contributes substantially to the country's economic growth. The logic behind this is that when individuals and businesses deposit more money in banks, it increases the available pool of funds that

banks can lend to various sectors of the economy (Bairamli & Kostoglou, 2010). These funds can be utilized for investments in infrastructure, business expansion, and other productive activities that drive growth (Odhiambo, 2009).

This means that a one per cent rise in broad money rises economic growth by 1.55 per cent, other things being unchanged. Broad money encompasses the total money supply within an economy, including cash, demand deposits, and other liquid assets. A higher level of broad money indicates greater liquidity, crucial for facilitating economic transactions and investment. The high money supply is important as it ultimately affects the business cycles and thereby affects the economy (OECD, 2014). The positive impact of broad money on GDP suggests that an adequately liquid economy supports business activities and investments, leading to sustained economic growth. This underscores the importance of monetary policies that ensure sufficient liquidity in the financial system to support ongoing economic activities.

Stock Market Capitalization (MC) had a positive coefficient of 0.048685 and a p-value of 0.0275. This implies that a one per cent increase in stock market capitalization deposit increases GDP by 0.05 per cent, other things being constant. As captured by the endogenous growth model, stock market capitalization causes higher economic growth through influence on the level of investment and productivity (Omoke, 2010). Stock market capitalization represents the total value of all listed companies on the stock market. A higher market capitalization reflects a robust and well-developed stock market, essential for providing firms with access to capital (Mishkin, 2004). When companies can raise funds through equity markets, they can invest in new projects, innovate, and expand their operations, contributing to economic growth. The

significance of this variable highlights the necessity for strategies that promote the development of the stock market, such as ensuring transparency, protecting investor rights, and encouraging more firms to list their shares. Findings agree with Mukundi (2013) and Levine and Zervos's (1998) empirical studies that established how stock markets and banks promote long-run economic growth.

Domestic Credit to Private Sector (CPS) had a coefficient of 0.414860 and a p-value of 0.0000, implying that a one per cent increase in credit to the private sector increases GDP growth by 0.41 per cent, ceteris paribus. Access to credit is vital for businesses, as it allows them to finance operations, invest in new technologies, and expand their activities. Therefore, policies that enhance credit accessibility, such as reducing lending rates, improving credit information systems, and promoting financial inclusion, can significantly boost economic growth in the long run. The findings agree with Akpansung and Babalola (2010) in Nigeria, Adamopoulos (2010) in Spain and Mukundi (2013) in Kenya's empirical results that an increase in domestic credit to the private sector will cause economic growth in the sample country. In contrast, Yadi (2013) show a negative relationship between private sector credit growth and GDP, attributed to high interest rates and inflation rates in sample countries.

Bank Liquid Liabilities (LL), showing a minimal positive coefficient (0.004648) and statistically significant at a p-value of 0.0000. This means that a one per cent increase in liquidity liabilities increases economic growth by 0.004 per cent, other things being unchanged, in Kenya. Empirical studies illustrates that liquidity creation helps economies grow faster by fostering tangible investment (Beck *et al*, 2023). Liquid liabilities represent the liabilities of the financial sector that are easily convertible into

cash. Although the positive sign aligns with theoretical expectations, the minimal coefficient value suggests that liquid liabilities may not fully drive long-term economic growth in Kenya. The higher the liquidity liabilities ratio, the larger the banking sector, which is positively related to the provision of financial services, leading to growth in financial deepening and growth (World Bank, 2004). Studies by Agu and Chukwu (2008), Aslam (2008), Aziakpono (2008) and Mukundi (2013) have confirmed that there exists a positive relationship between the liquidity liabilities ratio and economic growth, while Ng'ang'a (2016) reported a negative relationship.

On the other hand, Deposit Interest Rate (INR) had a positive and highly significant coefficient of 0.086546 and a p-value of 0.0000, indicating that an increase in deposit interest rate by one per cent will cause GDP to grow by 0.09 per cent. This suggests that higher deposit interest rates encourage savings, which leads to increased funds available for investment, ultimately driving economic growth (Thomi, 2022). An increase in deposit interest rate will cause the economy to grow in the long run, ceteris paribus. This finding highlights the importance of maintaining an interest rate environment that balances the need to encourage savings with borrowing costs.

Controlling inflation through appropriate monetary and fiscal policies can create a favourable condition for sustained economic growth. A study by Odhiambo (2009) on the impact of interest rates on economic growth in Kenya established that interest rates negatively affect economic growth by lowering the purchasing power of consumers.

5.5 ARDL Short Run Form Results Discussion

From Table 4.8, the results show that Bank Deposits (ΔBD) had a significant and positive impact on economic growth in the short run, as indicated by a coefficient of

0.848059 and a p-value of 0.0002. This finding suggests that an increase in bank deposits quickly translates into economic growth in the short term. The mechanism behind this relationship is that increased deposits enhance banks' liquidity, enabling them to extend more credit to businesses and consumers. This direct availability of credit can stimulate economic activities, leading to short-term growth (Abdullah, 2022). This result highlights the significance of ensuring that the banking system remains robust and capable of mobilizing savings effectively, particularly in times of economic uncertainty. The findings agree with empirical studies of Abdullah (2022), Ribaj and Mexhuani (2021), Bairamli and Kostoglou (2010) and Odhiambo (2009) that highlight how commercial bank deposits help to increase production in the country through domestic sources. The short-run result is identical to the long-run findings.

Broad Money (ΔBM) with a coefficient of 0.309042 and a p-value of 0.0205 implies that a unit increase in broad money will lead to a 0.31change in the GDP, other things unchanged, at a 5 per cent level of significance. This strong and positive relationship underscores the critical role of liquidity in the economy. An increase in broad money supply enhances the accessibility of funds for transactions, investments, and other economic activities, thereby driving short-term growth (OECD, 2014). The significance of this variable suggests that monetary authorities should monitor and manage the money supply carefully to ensure that it supports economic stability and growth, particularly in periods of economic volatility. The short-run result is identical to the long-run estimates.

Stock Market Capitalization (ΔMC) had a significant and positive effect on economic growth in the short run, indicated by a coefficient of 0.022627 and a p-value of 0.0312. This implies that a unit increase in market capitalization will lead to a 0.02 change in economic growth, ceteris paribus. A growing stock market can quickly channel capital into productive investments, positively affecting economic output. This result highlights the importance of a well-functioning stock market for short-term economic performance. Policymakers should consider measures to enhance market confidence, such as improving transparency, protecting investor rights, and fostering an environment conducive to investment, to ensure that the stock market contributes positively to the economy. Findings agree with Omoke's (2010) and Mukundi's (2013) studies on the key role of stock market development in developing economies. The short-run finding is similar to the long-run result.

Domestic Credit to the Private Sector (ΔCPS) had a coefficient of 0.150382 and a p-value of 0.0192, indicating that a unit increase in domestic credit will result in a 0.15 change in the GDP, ceteris paribus. This positive relationship suggests that increased credit availability to the private sector stimulates economic activities in the short run. Credit is vital for businesses to finance operations, invest in new technologies, and expand their production capacities. The finding supports similar findings by Akpansung and Babalola (2010), Adamopoulos (2010) and Mukundi (2013) while contrasting with Yadi *et al.* (2013) negative result attributed to high interest rate. The long-run and short-run results are similar. In the short term, policies that improve access to credit, such as reducing borrowing costs, enhancing financial inclusion, and supporting small and

medium-sized enterprises (SMEs), can lead to immediate gains in economic performance.

Liquid Liabilities (ΔLL) with a coefficient of -0.000402 and a p-value of 0.1528 do not significantly impact economic growth in the short run. This finding suggests that liquid liabilities are essential for maintaining overall financial stability, but their changes do not significantly affect economic growth. This result might indicate that other factors, such as the efficiency of financial intermediation or the financial system's stability, play a more crucial role in the short-term dynamics of economic growth. The result contradicts the long-run results that reported a positive and significant relationship.

On the other hand, Deposit Interest Rate (ΔINR) with a coefficient of 0.038981 and a p-value of 0.0011 implies that a unit increase in interest rate will result in a 0.04 change in the GDP, other things unchanged. This result suggests that higher interest rates can encourage savings in the short term, increasing the funds available for investment. However, this effect must be carefully balanced, as excessively high interest rates could discourage borrowing and investment. Policymakers should strive to maintain an interest rate environment that supports savings and investment, ensuring that the economy benefits from increased liquidity and productive investments. The study result is similar to long-run estimates.

Lastly, Inflation (ΔINF) had a coefficient of -0.034822 and a p-value of 0.0000, indicating that a unit increase in the inflation rate will result in a 0.03 change in the GDP, ceteris paribus, at a 5 per cent level of significance. This result reinforces the idea

that inflation erodes economic growth via reduced consumer demand. Rising inflation can depress GDP via an increase in banking losses. During inflationary periods, prices are higher, and it is more expensive to incur debt. For these two reasons, companies often sell fewer products, and the economy slows. The study agrees with a past study by Odhiambo (2009) in Kenya. The study result is similar to long-run findings.

The previous year's GDP leads to economic growth in Kenya. Previous GDP is positive and significant at 5 per cent of the current GDP growth. According to the literature, GDP growth for a given year is determined by both growth dynamics in that particular year and the previous year (carry-over effect). High GDP means human capital stock and infrastructure have been created and thus can sustain more future growth. The constant was positively significant at 5 per cent significance. This indicates that some variables not captured in the model may influence economic growth in Kenya.

The coefficient value of the error correction term (ECT) is -0.73 and statistically significant at a one per cent level of significance, implying a stable long-run relationship. The negative sign indicates that the model is convergent towards equilibrium, whereas the value shows that the adjustment towards equilibrium is about 73% in the current year. The error correction model indicates how quickly variables converge to equilibrium in Kenya.

5.6 Granger Causality Analysis Results

From Table 4.9, a unidirectional Granger causality is identified between Bank Deposits (BD) and economic growth (GDP). This suggests that variations in bank deposits have predictive power over future GDP changes but not vice versa. The implication here is clear: policies that promote increased savings and deposits, such as higher deposit

interest rates or improved banking services, could directly stimulate economic growth. This unidirectional relationship underscores the importance of a stable and growing banking sector in driving Kenya's economic growth.

Overall, the results show causation between economic growth and financial deepening in Kenya. The findings contrasted with Ng'ang'a's (2016) result, which indicated no causality in Kenya. Furthermore, Akpansung and Babalola (2010) revealed that private sector credit has a unidirectional relationship running from GDP to the private sector in Nigeria. Odhiambo (2009) finds bidirectional causality between domestic deposits and income growth in the case of South Africa, while inflation has no association with economic growth.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter presents a summary of the findings based on the variables used. Key findings are used to conclude, along with recommendations for policymakers. The chapter also discusses the limitations faced by the researcher during the study. Additionally, suggestions for further studies are provided for future scholars and academicians.

6.2 Summary of the Findings

This chapter presents a summary of the major findings of the study based on the analysis of data covering the period 1990–2023. The study examined the macroeconomic effects of financial deepening on economic growth in Kenya using indicators such as credit to the private sector, stock market capitalization, commercial bank deposits, bank liquid liabilities, broad money supply, deposit interest rate, and inflation rate. The results are summarized variable by variable as follows:

The findings revealed that credit to the private sector had a positive and statistically significant effect on economic growth in Kenya. This implies that an increase in lending to the private sector stimulates investment in productive activities, leading to higher output and income levels. The result aligns with the Schumpeterian Theory of Economic Development and the McKinnon–Shaw Financial Liberalization Theory, both of which emphasize the role of credit allocation in promoting innovation and capital accumulation. However, the magnitude of this effect suggests that while access

to credit has improved, inefficiencies in credit allocation and high lending rates still limit its full potential impact on growth.

Stock market capitalization was found to have a positive but relatively weak influence on economic growth. The Nairobi Securities Exchange (NSE) has expanded over the years, but its contribution to the overall economy remains modest due to limited participation and low market liquidity. The result is consistent with the Schumpeterian perspective, which highlights the capital market's potential to mobilize long-term funds for investment. Nevertheless, the weak elasticity indicates that Kenya's stock market remains underdeveloped and that its linkages to the real economy are still evolving.

The analysis indicated that commercial bank deposits significantly and positively affected economic growth. Higher deposit mobilization enhances banks' capacity to extend credit to productive sectors, stimulating private investment and aggregate demand. This outcome supports the McKinnon–Shaw and Endogenous Growth Theories, which assert that financial savings are key drivers of economic expansion. The result also suggests improved public confidence in the banking sector, partly due to regulatory reforms and the adoption of digital banking services in Kenya.

Bank liquid liabilities, representing the size and liquidity of the financial system, exhibited a positive and statistically significant relationship with economic growth. This suggests that a deeper and more liquid financial system supports efficient financial intermediation and enhances investment. The finding validates the Endogenous Growth Theory, which posits that financial depth and liquidity play a critical role in sustaining long-term growth by increasing the availability of investible funds in the economy.

Broad money supply showed a positive and significant influence on economic growth. This finding implies that expansion in monetary aggregates enhances economic activity by increasing liquidity and stimulating investment and consumption. The result is consistent with the Monetarist and Neoclassical Growth Theories, which emphasize that adequate money supply supports economic expansion when managed prudently. However, excessive money growth could pose inflationary risks, requiring effective monetary policy coordination by the Central Bank of Kenya.

Inflation was found to have a negative and statistically significant effect on economic growth. This indicates that rising price levels erode purchasing power, discourage long-term investment, and create uncertainty in financial markets. The result supports the Monetarist Theory, which cautions that excessive money growth leads to inflationary pressures that hinder economic performance. Maintaining price stability therefore remains a key macroeconomic policy objective for fostering sustainable growth in Kenya.

The overall results confirmed that financial deepening significantly contributes to economic growth in Kenya in both the short and long run. The combined effect of financial indicators such as credit to the private sector, bank deposits, broad money, and liquidity suggests that a deeper and more inclusive financial system enhances productive investment and economic performance. However, the study also found that macroeconomic instability and structural constraints—such as high interest spreads and low capital market participation—limit the full transmission of financial deepening benefits to the real economy.

6.3 Conclusion

Financial deepening is a vital catalyst for economic growth in Kenya. The study's findings indicate a strong and enduring relationship between financial deepening and economic growth, as evidenced by the long-term equilibrium relationship between the critical financial deepening indicators and the economy's performance. This relationship suggests that deliberate and sustained efforts to foster the development of the financial sector can yield substantial benefits, not just in the short term but over an extended period. The evidence presented by the VAR and ARDL models illustrates the intricate interdependencies between the financial sector and economic growth.

The analysis reveals that the improvements in financial deepening indicators, such as increased bank deposits, a broader money supply, and greater stock market capitalization, lead to positive economic outcomes. However, these conclusions are not always immediate; there is often a lag between changes in financial deepening and the resultant economic growth. This delayed impact emphasizes the importance of patience and consistency in policy implementation, as the benefits of financial sector development may take time to materialize fully but are likely to be substantial and lasting. For policymakers in Kenya, these findings carry significant implications. The study suggests that strategic investments in the financial sector aimed at improving access to financial services, enhancing the stability and efficiency of financial institutions, and fostering a vibrant capital market can promote sustained economic growth. The conclusion is that a deep, well-developed financial sector is not merely an adjunct to economic activity but a fundamental pillar that supports and drives economic growth, providing a solid foundation for the nation's long-term economic success.

6.4 Recommendations of the Study

Building on the findings of this study, several key recommendations are proposed to enhance further the role of financial deepening in promoting economic growth in Kenya. Firstly, it is recommended that policymakers prioritize strategies that deepen the financial sector by improving the accessibility, inclusiveness, and reach of financial services across the country. This could involve a concerted effort to expand banking infrastructure, particularly in underserved and rural areas, where access to financial services remains limited. By increasing the physical presence of financial institutions and promoting the use of mobile banking platforms, more Kenyans can be brought into the formal financial system, thereby increasing the overall depth of the financial sector.

Secondly, the study recommends that efforts be made to improve the money supply in the economy to stimulate economic growth. This could be achieved through policies encouraging savings and investment and broadening the financial instruments available to the public. Financial institutions should be incentivized to innovate and offer various attractive savings and investment products to different population segments. By doing so, they can mobilize more funds from the public, which can then be channeled into productive investments that drive economic growth.

Furthermore, the financial sector's stability is paramount, and this study recommends that policymakers prioritize implementing robust regulatory frameworks to ensure the soundness and resilience of financial institutions. This is particularly important in the face of external shocks, such as global economic downturns or domestic financial crises, which can severely disrupt the financial sector and, by extension, the broader economy. A stable and resilient financial sector is crucial for maintaining investor

confidence and ensuring the financial system continues functioning effectively, even in challenging economic environments.

Additionally, the study highlights the importance of enhancing financial literacy among the population. Financial literacy programs should be developed and promoted to improve the public's understanding of financial products and services. A financially literate population is more likely to participate in the financial system, make informed financial decisions, and engage in behaviors that contribute to economic growth, such as saving, investing, and borrowing responsibly.

Lastly, the study recommends further efforts to develop Kenya's capital markets. A more vibrant and active stock market can serve as an additional channel for financial deepening, attracting domestic and foreign investment. This, in turn, can lead to more significant economic growth as capital markets provide the necessary resources for businesses to expand and innovate. Policymakers should focus on creating a conducive environment for the growth of capital markets, including strengthening investor protections, improving market transparency, and encouraging the listing of more companies on the stock exchange.

6.5 Areas for Further Research

While the results of this study are both insightful and significant, it is significant to acknowledge several limitations that may influence the generalizability and robustness of the results. One major limitation is the potential inaccuracies or incompleteness of the data used in the analysis. Financial and economic data, particularly in developing

countries like Kenya, are subject to various limitations, such as outdated information, reporting errors, or a lack of comprehensive coverage. These data issues might affect the precision of the estimates and the reliability of the conclusions drawn from the analysis.

Moreover, while providing valuable insights into the relationship between financial deepening and economic growth in this context, the study's focus on Kenya limits the generalizability of the findings. The economic structures, financial systems, and regulatory environments differ widely across countries, and the relationships observed in Kenya may not necessarily apply to other contexts with different economic dynamics and levels of financial development. Therefore, caution should be exercised when generalizing the study's findings to other countries or regions.

Another limitation pertains to the methodological approach employed in the study. While the VAR and ARDL models are well-suited for analyzing the dynamic relationships between financial deepening and economic growth, they are not without their shortcomings. These models are based on certain assumptions, such as linearity, stationarity, and the absence of omitted variables, which may not fully capture the complexities of the economic phenomena under investigation. For instance, the models may not account for nonlinear relationships, structural breaks, or interactions with external factors, such as political stability, global economic conditions, or technological advancements, which can influence the relationship between financial deepening and economic growth.

Additionally, the study's reliance on historical data may not fully account for recent developments in the financial sector, particularly the rapid growth of digital financial services. The advent of mobile banking, digital payments, and other fintech innovations

has transformed the financial landscape in many developing countries, including Kenya. These developments could significantly affect the relationship between financial deepening and economic growth. However, they are not fully captured in this study due to the period of the data analyzed.

Given the limitations and findings of this study, several promising avenues for future research could deepen our understanding of the relationship between financial deepening and economic growth. One potential direction is to extend the analysis to other countries, particularly those with different economic development and financial sector maturity levels. Comparative studies across various regions, income groups, or economic systems could provide valuable insights into how financial deepening impacts economic growth under varying conditions and in other contexts.

Another critical area for future research is the role of digital financial services in financial deepening and economic growth. As digital finance continues to gain prominence, particularly in developing countries, it is crucial to understand how innovations such as mobile banking, digital payments, and online lending platforms contribute to financial deepening and their impact on economic growth. Future studies could investigate how digital financial services enhance financial inclusion, reduce transaction costs, and facilitate access to credit and how these factors contribute to overall economic development.

Furthermore, future research could benefit from using alternative methodologies or more advanced econometric techniques to capture the complexities of the relationship between financial deepening and economic growth. For instance, nonlinear models, panel data analysis, or models that account for structural breaks and regime changes

could provide more nuanced insights into the dynamics of this relationship. Additionally, incorporating more recent data, particularly data that captures the impact of the COVID-19 pandemic on financial systems and economic growth, could provide a more contemporary perspective.

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APPENDICES

Appendix I: Authorization Letter

University of Eldoret
flame of knowledge and innovation

P. O. Box 1125 - 30100, Eldoret, Kenya
Tel: +254 53 2063257 /2033712/13 Ext. 2358
Mob: 0774249552;; Fax: +254 53 206 3257
E-mail: bpgs@uoeld.ac.ke
Website: www.uoeld.ac.ke

OFFICE OF THE DEPUTY VICE-CHANCELLOR (ASA)
(Directorate of Board of Postgraduate Studies)

Our Ref: UoE/B/BPGS/NACO/060 **Date:** 19th August, 2024

The Chief Executive Officer
National Commission for Science, Technology & Innovations
(NACOST)
P.O. Box 30623 - 00100
NAIROBI.

Dear Sir/Madam

SUBJECT: REQUEST FOR RESEARCH PERMIT - MARTHA MOREKA (REG.NO.SECO/AEC/M/002/21)

The above subject matter refers.

The above named is a bonafide Masters student in the Department of Applied Economics, School of Business, Economics and Management Sciences. The applicant has completed her coursework and successfully defended her proposal in readiness for commencement of research. Her research is entitled "*Effect of Financial Deepening on Economic Growth* in Kenya."

By this letter, I request you to issue Ms. Moreka with a research permit to enable her proceed with her survey for her to write thesis.

Your support will be highly appreciated.

Yours faithfully

DIRECTOR
Board of Postgraduate Studies
University of Eldoret.

PROF. SAMUEL LUTTA
DIRECTOR, BOARD OF POSTGRADUATE STUDIES.

Appendix II: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **257752**

Date of Issue: **02/September/2024**

RESEARCH LICENSE

This is to Certify that Ms.. Martha KERUBO Moreka of University of Eldoret, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Uasin-Gishu on the topic: MACROECONOMIC EFFECT OF FINANCIAL DEEPENING ON ECONOMIC GROWTH IN KENYA for the period ending : 02/September/2025.

License No: **NACOSTI/P/24/39681**

257752

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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See overleaf for conditions

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. The license any rights thereunder are non-transferable
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6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
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10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and
Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix III: Raw Data Used in this Study

Table A1: Data Collection Schedule

General Information about the Institution

1. Institution ……...……...……..
2. Name of officer in charge……
3. Location (sq. kms) …….....
4. Economic function of the Institution…….....

Please provide the following information.

VARIABLE	SPECIFICS	1990-2000	2001-2011	2012-2022	2023
Economic Growth Measures	GPD per capita growth (annual %)				
Credit to Private Sector (CPS)	Domestic credit to private sector as a share of GDP (%)				

Stock Market Capitalization (MC)	Stock Market Capitalization as a share of GDP (%)				
Bank Liquid Liabilities (LL)	Total liquid liabilities as a share of GDP (%)				
Broad Money Supply (BM)	Broad money as a share of GDP (%)				
Commercial Bank Deposits (BD)	Bank deposits as a share of GDP (%)				
Deposit Interest Rate (INR)	Deposit interest rate (%)				
Inflation Rate (INF)	Consumer price index (%)				

Where absolute values are not available, indicate the estimated per cent increase or decrease.

Appendix IV: Similarity Report

University of Eldoret

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Certificate of Plagiarism Check for Thesis

Author Name	Moreka Kerubo Martha SECO/AEC/M/002/21
Course of Study	Type here...
Name of Guide	Type here...
Department	Type here...
Acceptable Maximum Limit	Type here...
Submitted By	titustoo@uoeld.ac.ke
Paper Title	MACROECONOMIC EFFECTS OF FINANCIAL DEEPENING BETWEEN 1990 TO 2023 ON ECONOMIC GROWTH IN KENYA
Similarity	11%
Paper ID	4595944
Total Pages	123
Submission Date	2025-10-30 11:53:27

Signature of Student

Signature of Guide

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