EFFECT OF GROSS DOMESTIC INVESTMENT ON ECONOMIC GROWTH IN KENYA

BY

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DECLARATION

I declare that this research project is my original work and has not been presented for a degree award in any university.

Signed…...  ……. Date: …. 26/11/2023……..

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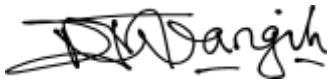
This research project has been submitted for examination with my approval as the University Supervisor.

Signed……  Date: ……...……..

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DEDICATION

I dedicate this research project to my husband Job, my sons Juan and Jerrell, and my daughter Janelle. Your unwavering support was the driving force behind this endeavor. Your belief in my abilities and your constant motivation were a guiding light throughout this journey. Your sacrifices did not go unnoticed, and this work stands as a tribute to the strength of our bond.

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ABBREVIATIONS

BLUE: Best Linear Unbiased Estimators

FAO: Food and Agriculture Organization

FDI: Foreign Direct Investment

GCF: Gross Capital Formation

GDP: Gross Domestic Product

IMF: International Monetary Fund

KNBS: Kenya National Bureau of Statistics

MPC: Marginal Propensity to Consume

MPS: Marginal Propensity to Save

MTP: Medium Term Plan

OLS: Ordinary Least Squares

PFM: Public Finance Management

R&D: Research and Development

VAR: Vector Autoregressive

VECM: Vector Error Correction Model

VIF: Variance Inflation Factors

ABSTRACT

Since independence, achieving and maintaining rapid economic growth has been the top priority for policymakers as seen in a number of government development programs and sessional papers. Attaining high levels of investment at 30 per cent of GDP is a key driver to achievement of the growth target of Kenya Vision 2030. While a total investment target of 25 per cent of GDP should have been invested in MTP I, only 20.4 per cent of it was actually invested. The investment-to-GDP ratio for MTP II was 20.1 per cent, below the target of 28.0 per cent for the session. Although the economy remained resilient within a stable macroeconomic environment, a growth rate of 4.8 per cent was achieved in 2022 down from 7.6 per cent in 2021 which was lower than the MTP III target of 10 per cent. Continuous efforts to improving the growth rate are therefore important because it is the means through which the quality of living standards can be enhanced. The objective of this study was to examine the effect of gross domestic investment on economic growth in Kenya. The study sought to further establish short and long run as well as causal relationships between the variables. It examined three theoretical models, including the Investment multiplier model by Keynes (1936), the Harrod-Domar model of the 1940s and the Solow economic growth model of 1956. The study employed a descriptive research design and used STATA 15.0 software to analyze secondary time series data for the years 1983-2022. The study also incorporated other variables like exports, imports and inflation. The findings of the study revealed that gross domestic investment, as measured by gross capital formation significantly affect economic growth in Kenya. Other variables like inflation and exports were also found to significantly influence economic growth in Kenya. However, imports was found not to influence growth. The Granger-causality test revealed that gross domestic investment causes economic growth and not vice versa. Stationarity tests established that both gross domestic investment and economic growth are stationary at levels implying that there exist short and long run relationship between the two variables. This study is crucial for policymakers, investors, and researchers seeking to understand and enhance the country's economic prospects. It will inform targeted policies and strategies to foster sustainable economic growth, job creation and improved living standards for the populace.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

This paper examines the Effect of Gross Domestic Investment on Economic Growth in Kenya, with Gross Domestic Investment as the explanatory variable while Economic Growth as the response variable. Gross domestic investment and economic growth are closely related and interconnected. The relationship is multifaceted and influenced by various factors like government policies, overall business environment and macroeconomic stability. Theoretically, domestic investment is crucial for promoting employment and economic growth (Overseas Development Institute, 2016). Higher levels of gross domestic investment are generally associated with increased economic activities, technological advancements and employment creation while lower levels can limit growth prospective. Based on Keynes perspective, new and increased investment raises economy's aggregate demand (Tobin, 1965). When existing companies diversify and boost their investments or new domestic investors get into the market, domestic investment rises (Faulkner, Loewald & Makrelov, 2013). Therefore, a rise in investment should result to a higher level of employment which would lead to higher incomes, and in turn stimulate consumer spending and contribute to economic growth. Meanwhile, a greater economic growth rate has also been linked to a boost in domestic investment. As a result, from a theoretical perspective, there is a two-way causal relationship between these two variables. Conversely, advancements in innovation, science and technology that have led to a scenario characterized as "jobless growth" and the displacement of labor by machines may undercut the contribution of investment to faster economic growth (Coombs & Green, 1981; Hodge, 2009). This could cause job losses in the economy, which would afterwards result in jobless growth (Frey & Osborne, 2015).

The study examines three theoretical models, including the Investment multiplier model by Keynes (1936) who demonstrated that the annual net investment and a multiplier factor determines the annual rise in national output. The Harrod-Domar model in the 1940s, demonstrated that changes in aggregate investment cause changes in output through the multiplier, and that investments increase the capital stock, which in turn dictates changes in the economy's potential output. The Solow economic growth model of 1956 which sought to improve on the former, had technology and labor added to the growth process besides capital. In this model, the greater the investment rate, the greater the level of output although investment implies no lasting growth effect because of decreasing returns.

The empirical research on the linkage between gross domestic investment and economic growth does provide a consensus with the theory behind it, as many authors find a positive association between the two although others do not find any, or at best, claim a very weak relationship. Hadjimichael & Ghura (1995), Aschauer authors (1989a, 1989b), and Tiwari and Mutascu (2011), in their studies reveal that public investment and private investment favorably affect economic growth. Carkovic & Levine (2002), Devarajan et al (1996) and Karikari (1992) on the other hand, found an inverse relationship between the variables or found no relationship at all. These discrepancies fundamentally arise from sample selection, perspectives of the authors, methodologies and tools of analysis applied in their study (Chakrabarti, 2001) as referenced by (Adhikary, 2011). Important to note is that, country specific characteristics as regards to economical, technological, infrastructural and institutional developments do matter in the analysis of the empirical relationship. The findings of

this study will inform scholarly discussions regarding how gross domestic investment influences economic growth.

1.1.1 Gross Domestic Investment

Domestic investment is the primary driver of an economic cycle and is one of the most significant economic processes that nations attach a great importance to (Bakari, 2017). The Bureau of Economic Analysis defines gross domestic investment as summation of gross government investment, gross private domestic fixed investment and change in private inventories. The World Bank Group defines gross domestic investment as the net changes in the level of inventories plus expenditures on additions to the economy's fixed assets. In this context, gross domestic investment can be defined as the total value of investments made within a country, including gross fixed capital formation and change in inventory levels, during a specific year. It represents the expenditure on acquiring or producing physical capital assets such as machinery, equipment, buildings, and infrastructure, as well as expenditures on research and development. Gross domestic investment is attributed to both private and public investment. Private investment refers to investments made by companies, corporations, and people in their ability to produce goods and services, for instance buying machinery, building factories, or expanding their businesses. Public investment, on the other hand, refers to government spending on infrastructure projects like roads, bridges, schools and hospitals.

Most existing literature on the relationship between gross domestic investment and economic growth provide a consensus with the theory behind it. Some studies however, have found no relationship between these two variables or at best claim a very weak relationship. A greater economic growth rate has also been linked to a boost in domestic

investment, there is therefore need to establish causality relationship between these two variables. Further, most studies on the relationship between investment and economic growth have focused on foreign direct investment, this topic therefore, is inadequately explored and its study can provide useful insights to scholars, policy makers and investors. The variable has been measured in various ways by researchers. Ocaya et al., (2012) measured the correlation between GDP and domestic investment in Rwanda. GDP and gross fixed capital formation were analyzed as proxies of economic growth and domestic investment respectively using the general form of bivariate VAR model. Yusoff (2016), measured time series data on private and public investment as proxy for domestic investment in his study on exchange rates, imports, exports, gross domestic investment and growth in Cameroon. Bouchoucha (2021), on studying the influence of domestic investment and FDI on economic growth in Tunisia, employed ARDL technique and measured gross fixed capital formation as the proxy measure for domestic investment.

1.1.2 Economic Growth

Dornbusch (1994), defines economic growth as the expansion in economy's capacity and capability to produce goods and services throughout the economic cycle. Kuznets (1934), defines a country's economic growth as its ability to continuously produce a wider range of commodities for its populace; this ability is based on technological advancements and the ideological and institutional adjustments it demands. Economic growth can further be defined as a rise in the size of a country's economy over an economic cycle. GDP is commonly used to gauge the size of the economy. To address the disadvantage of nominal GDP which measures national income at the current prices in the market without taking into account inflation, real GDP is used which reflects well

the output of a country at different time intervals. Most researchers have used GDP as a proxy measure of economic growth. They used various analytical models including linear regression analysis, co-integration analysis and pool mean group regression, just to mention a few.

Data from the Economic Survey Reports by the KNBS indicates that economic growth rate in Kenya has been fluctuating so often to warrant attention of why the instability. Through imports, exports, investments and other trade activities, Kenya's economic growth has benefited its citizens, neighbors as well as the global market. Kenya's economic development, however, has not been without obstacles. Kenya relies on agriculture for both exports and domestic consumption. Over 80 per cent of Kenyans depend on agriculture for their living, and the sector generates 65 per cent of the country's export revenue (FAO, 2021). Kenya's food shortages are the result of decreased agricultural production, which has also affected exports. Foreign exchange restrictions, government interference in the private sector and lack of export incentives have all contributed to the country's domestic investment climate becoming less appealing. The economy is and has always been reliant on rain-fed agriculture and tourism, both of which are heavily influenced by cycle booms. Few agricultural products are produced in the country, making them highly vulnerable to global price fluctuations. Investment continues to be the engine of growth in any economy. It is a significant source of employment while also positively contributing to national output.

1.1.3 Gross Domestic Investment and Economic Growth

In general, higher levels of gross domestic investment tend to favorably affect economic growth; largely due to technological advancements, the creation of jobs, and capital accumulation which allows for higher productive capacity. Low levels of investment,

however, can limit growth potential. Many studies have found an existing strong correlation between these two variables, though the relationship is imperfect. Yusoff (2016), Pegkas et al., (2016) and Nguyen (2021) established a long run positive relationship between gross domestic investment and economic growth. On the contrary, some studies have discovered a weak positive, negative, or even no relationship between the variables. Bakari (2017), established that although domestic investment is a source of economic growth in Egypt, domestic investment does not affect Egypt's economic growth. Barro (1991), didn't find any evidence to ascertain whether economic growth in 98 countries was influenced by public investment.

1.1.4 Gross Domestic Investment and Economic Growth in Kenya

The Kenyan economy is the largest in East Africa (National Treasury of Kenya). Over the past few years, the nation has seen steady economic growth, which is indicative of the diverse and broad-based Kenyan economy. The growth is supported by factors like robust investment from the public and private sectors, ongoing infrastructure projects, and proper fiscal and economic policies. The country's development is anchored on long-term plan, the Vision 2030 whose aim is to transform the nation into a newly industrializing middle income country by the year 2030, offering high quality life to its people. The economic pillar of this plan in particular aims to realize an average growth rate of 10 per cent per annum with investment rate at 30 per cent of GDP until the year 2030.

According to the Kenya Investment Authority, the country operates a liberal economy which promotes trade and investment. Due to its favorable investment environment, Kenya has drawn the attention of foreign firms seeking to establish regional or pan-African operations (US Department of State, 2022). In 2020, the World Bank Group

ranked Kenya as 56th economy on ease of doing business rating, up from 136 in 2014. In addition to removing exchange and price controls, the nation implemented prudent fiscal and monetary policies, enhanced economic governance, and the privatization of certain state enterprises as ways to sustain macroeconomic stability. These measures continue to support growth by giving the private sector a more secure environment in which to make investment decisions. Foreign investors are allowed to convert and repatriate profits, and the nation permits capital repatriation as well as the remittance of dividends and interest. The Companies Act permits private companies, both local and foreign to freely start, acquire and dispose of business enterprises. Kenya's 2010 Constitution offers protection against the expropriation of private property, which is only allowed with prompt and just compensation.

1.2 Research Problem

Since independence, achieving and maintaining rapid economic growth has been the top priority for policymakers. A number of government development programs and sessional papers have emphasized on how important economic growth is to reaching development objectives (Wanjala et al., 2007). In the late 1980s, academic interest in the role of public investment and economic growth was revived. This was mostly brought about by drops in economic productivity growth as well as reductions in governmental investment in the early 1970s (Mburu, 2012). Attaining high levels of investment at 30 per cent of GDP is a key driver to achievement of the growth target of Kenya Vision 2030. While a total investment target of 25 percent of GDP should have been invested in MTP I, only 20.4 per cent of it was actually invested. The investment-to-GDP ratio for MTP II was 20.1 per cent, below the target of 28.0 percent for the session (Kenya Economic Survey Report, 2018). Although the economy remained resilient within a stable macroeconomic environment, a growth rate of 4.8 per cent was

achieved in 2022 down from 7.6 percent in 2021 which was lower than the MTP III target of 10 per cent. Continuous efforts to improving the growth rate are important because it is the means through which the quality of living standards can be enhanced. It also enables catering for any population increases without having to lower the living standards (Palmer, 2012). An increase in average incomes will enable the consumer to afford more goods and services and enjoy better standards of living. Further, an increase in aggregate demand will cause companies to increase their output and this is done by investing more and hiring of more workers; this will ultimately reduce unemployment levels and issues of crime. Higher real incomes will also enable the government to channel more resources to critical areas like education, health care, water and sanitation hence higher literacy levels, better health and higher life expectancy.

Empirical findings on the relationship between gross domestic investment and economic growth are conflicting as most studies have found that there exists a strong though not perfect relationship between the variables. Other studies have however found no relationship at all, weak positive relationship or negative relationship between the two variables. Yusoff (2016), Pegkas et al., (2016) and Nguyen (2021) established that in the long run, there is a positive relationship between gross domestic investment and economic growth. Bakari (2017) found that although domestic investment is a source of economic growth in Egypt, it does not affect it. Barro (1991), didn't find any evidence to ascertain whether economic growth in 98 countries was influenced by public investment.

From the empirical studies analyzed in chapter two, it is clear that there is a substantial body of knowledge on the relationship between various forms of investment (foreign,

domestic, public, private, and infrastructure) and economic growth in different countries, including Greece, Cameroon, Malaysia, Egypt, Nigeria, Vietnam, and Kenya. While these studies have contributed significantly to our understanding of the subject, several research gaps and contradictions can be identified. For instance, time periods covered in these studies vary widely, from as early as 1960 to as recent as 2020. Economic conditions, policies, and global dynamics change over time, and this variation in time periods can impact the validity and applicability of the findings. A research gap therefore exists in analyzing how the relationship between domestic investment and economic growth has evolved over time. Further, some studies report correlations between investment and economic growth, but the issue of causality remains less explored. Understanding the causal relationships between different forms of investment and economic growth is essential for policymakers. The studies have also examined different forms of investment such as FDI, domestic private investment, infrastructure investment and public investment. However, there is a gap in research that comprehensively compares the effects of combined domestic investment on economic growth. Last but not least, some studies focus on either long-term or short-term effects, but understanding the dynamic interaction between investment and economic growth over different time horizons is essential. Addressing these research gaps could lead to a more comprehensive understanding of the link between investment and economic growth and provide valuable insights for policymakers, economists and researchers. This paper seeks to enrich the existing literature as well as bridge the research gaps identified above. The study seeks to establish the effect of gross domestic investment on economic growth in Kenya both in the short and long run as well as the causal relationship between the two variables. The implications for policy decisions and recommendations are also part of this study but most importantly, the study seeks

to answer the question ‘What is the effect of Gross Domestic Investment on Economic Growth in Kenya?’

1.3 Research Objective

To examine the Effect of Gross Domestic Investment on Economic Growth in Kenya.

1.4 Value of the Study

Based on previous studies, there has been lack of consensus regarding the effect of gross domestic investment on economic growth. Further, most of the existing empirical studies have mainly focused on the nexus between FDI and economic growth. This research has a wide range of applications, offering insightful analysis and important takeaways for different stakeholders. Firstly, the study adds to the body of knowledge by offering empirical data and insights regarding the linkage between gross domestic investment and economic growth in the Kenyan context. It advances our understanding in the fields of development studies and economics. The study further offers evidence-based insights to policymakers about how gross domestic investment contributes to economic growth. Targeted policies intended to support sustainable economic development, job creation, and improved living standards for the population can be designed and implemented with this knowledge in mind. Drawing from its findings, the study also provides specific policy recommendations that aim to guide policymakers on possible initiatives to optimize the positive impact of domestic investment.

Investors and businesses on the other hand can make more strategic and well-informed investment decisions. Businesses can better align their strategy with larger economic trends by having an understanding of how gross domestic investment affects economic

growth. The study draws attention to the significance of gross domestic investment as an engine of economic expansion and aids in determining resource allocation priorities; by this, it can help in formulation of development plans. By raising public knowledge of the significance of domestic investment in economic growth, the study can foster discussions on economic policies and development strategies among the general public. The study also point out particular gaps in the literature and pose suggestions for future studies. In a nut shell, the study has an impact on public understanding, corporate strategies, policy choices and Kenya's economic development trajectory in addition to academic circles.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter involves critically evaluating and summarizing existing scholarly works that are relevant to the research topic. It examines three models, as well as the determinants of economic growth. The chapter also contains empirical studies done on establishing relationship between gross domestic investment and economic growth both locally and globally. Last but not least, it captures the conceptual framework which outlines the variables that would be measured in this study.

2.2 Theoretical Review

This section involves examining the various theoretical perspectives, models, and concepts that help explain the relationship between gross domestic investment and economic growth in the Kenyan context. It examines three models, including the Investment multiplier model by Keynes (1936), the Harrod-Domar model and the Solow economic growth model of 1956 which sought to improve on the former.

2.2.1 Theory of the Investment Multiplier Model

Keynes (1936) brought this up from the General Theory of Employment, Interest, and Monetary. According to Keynes, investments must be increased in order to boost national income. Keynes demonstrated that the annual rise in national output is determined by the annual net investment and a multiplier factor. The multiplier signifies a link between the initial rise in investment and the subsequent rise in national output.

Keynes focuses primarily on aggregate demand, which determines the amount of aggregate consumption and investment, thus, deducing the indicators of marginal propensity to consumption (MPC) and savings (MPS), which can be associated with

the multiplier. Since the speed of economic growth at the macro level is determined by the multiplier, it is necessary to raise consumption (aggregate demand) and reduce the total savings in order to increase the growth rate. To borrow from this theory therefore, an increase in gross domestic investment by a factor derived from consumption would cause a rise in income i.e. economic growth.

Keynes' investment multiplier principle drew a lot of criticism since it was considered a static phenomenon, which is unsuitable to the ever changing world. The theory assumes a rapid relationship between income, investment and consumption which is not practical. The theory is also unproven hypothesis because it lacks empirical support, particularly for the notion that there is a connection between the multiplier and the MPC. The multiplier ignores the repercussions of induced consumption on induced investment and only considers how induced consumption affects income. The constraint imposed by the full employment ceiling also limits the value of the multiplier. The multiplier causes the output, income and employment to increase, as long as the full employment level has not been reached and stop increasing once full employment level is attained regardless of how high the MPC may be. Multiplier is concerned with the effects of original investment on consumption and hence on income. It does not deal with the effects of increased or induced consumption on investment. The model ignores other factors of production in whose absence the value of the multiplier is bound to be low and its working impaired. The model also assumes that the prices of commodities and raw materials etc. remain constant rendering the multiplier constant yet in reality if the prices go up, consumption will go down thus affecting the value of multiplier.

2.2.2 Harrod-Domar Growth Model

Harrod and Domar came up with this model based on Keynes' thought, to explain the connection between unemployment and economic growth in developed countries in 1939 and 1946 respectively. According to Girardi (2019), the model is based on two fundamental premises. Changes in total investment have two effects: one on the supply side, where investments raise the capital stock and hence impact changes in the economy's potential output; and on the demand side, where changes in investment determine changes in production through the multiplier. The second premise focuses on the factors that affect aggregate investment. According to the accelerator effect, the aggregate demand dynamic drives investment, and the higher the growth rate of demand and output, the higher the investment rate. According to the model, capital-output ratio and the level of savings influence economic growth rate. A higher savings rate enables greater investment, and a lower capital-output ratio suggests that investment is more efficient and will result in a higher growth rate.

The model assumes a one-good economy which can either be consumed or used as fixed capital for subsequent production. The economy is closed and there is no public sector. It also presupposes no advancement in technology and no depreciation (Girardi, 2019). The model has since been criticized since is it ignores factors like technological innovation and productivity of labour. Additionally, the model does not take into account the possibility of diminishing returns as capital stock increases. Harold eventually believed that his model did not offer a model for long-term growth rates, thus he decided to retract it.

2.2.3 Solow Economic Growth Model

Solow (1956) sought to improve on the Harrod-Domar model. Alongside capital, he added labor and technological components to the growth process. He further reiterated that in the short and long terms, technical advancement is a key driver of growth. Investment plays a vital role in increasing the capital stock, which, along with technological advancements, contributes to economic growth. In this model, the higher the rate of investment, the higher the level of output although investment implies no lasting growth effect because of decreasing returns.

The economy is closed with no external trade influence or government interference. The model assumes that savings and investment decisions and technological growth are exogenous together with factor accumulation. Time affects output only through physical capital, labour and technology. This model further assumes that labor and capital are utilized at a scale of constant returns, i.e. the output produced is either stored or completely used up. Total accumulated savings less depreciation equals capital stock accumulated during production. Producers consider savings to be a fixed output ratio and a fixed labor supply. The economy is first assumed to be in a minimal capital stock situation. Due to this, the capital stock will rise with the aid of savings during each designated period until it reaches a steady state where the savings and depreciation are equal. The economy will grow as a result of rising per capita consumption during the path to a steady state of capital stock. Additionally, the consumption per capita reaches saturation as soon as it reaches the steady-state consequently halting economic growth. Therefore, if the economy has to experience any further expansion, then the exogenous factors like the improvement in the technology have to change, to enhance the quantity of output versus the inputs for production. Linking this model to this study, an increase in capital stock in Kenya will lead to higher growth in output. However, any long-term

rise in the capital stock cannot be sustained due to diminishing returns to capital, suggesting that investment has a short-term impact on growth under this model.

The Post-Keynesian approach, which built on publications by (Robinson, 1956) and (Kaldor, 1956) on capital accumulation and income distribution, sharply criticized this theory. They contend that there is no physical measure of aggregate capital that is independent of price and income distribution since capital products are heterogeneous. Furthermore, Solow made the assumption that marginal productivity conditions will be met even in the absence of pricing flexibility and decreasing returns.

Since the real wage is a scarcity price according to theory of marginal productivity, more labor will result in a reduction in marginal output and an increase in marginal cost. However, marginal costs are usually either constant or decreasing rather than increasing. The issue at hand pertains to involuntary unemployment. The scarcity approach holds that there cannot be involuntary unemployment if labor is getting paid. If labor is unemployed, it is not scarce. Last but not least, the Solow model lacks a pricing mechanism as savings are supposed to fuel investment and the equilibrium is established by variations in the capital/labor ratio that comes up as result of saving.

2.3 Determinants of Economic Growth

According to Boldeanu (2015), the determinants of economic growth are interrelated variables that affect an economy's growth rate. A wide range of factors, including sociocultural, political, and economic influences the process of economic growth. These factors often reinforce or counteract each other. Understanding the complex interplay of these factors is therefore essential for policymakers and economists seeking to foster sustainable economic growth in a given country or region.

2.3.1 Capital Formation

The rate of foreign capital inflow as well as domestic saving and investment determine capital formation. Capital accumulation encourages investment, investment boosts employment through the expansion of production facilities, increased employment results in higher savings, which boosts confidence in making larger investments, and this chain reaction eventually has a favorable impact on economic returns. Kendrick (1993), pointed out that economic growth is not solely dependent on capital formation, but rather on how well capital is allocated from less productive to more productive sectors.

2.3.2 Macroeconomic Stability

A macroeconomic environment that is stable generally promotes economic growth through lowering the level of volatility and uncertainty. Macroeconomic volatility characterized by high inflation, can be detrimental to investment and productivity. When key economic relationships are in balance, macroeconomic stability is achieved (IMF, 2001). Macroeconomic stability is prerequisite to boosting economic growth and private sector development. Growth, productivity and investment appear to be positively associated with macroeconomic stability, according to cross-country analyses performed on a number of nations (Easterly & Kraay, 1999). While it is challenging to establish a direct causal relationship, these findings validate the general correlation between macroeconomic instability and subpar development outcomes. Resources will be redirected and both domestic and foreign investors will flee in the absence of macroeconomic stability.

2.3.3 Human Capital

Human capital is increasingly becoming more and more important in today's world for the growth of any enterprise and society at large. Rather than inventory and equipment, human capital plays a determining role in boosting the competitiveness of businesses, economic growth, and overall efficiency of the economy (Hobdari, Sun & Goodstein, 2016; Gennaioli et al., 2013; Seitova, 2016). Human capital plays a crucial role in driving economic growth and securing a competitive position in the global economy in the context of an innovative economy that is continuously modernizing, renovating, and moving (Yegorov, 2004; Machlup, 2014; Hanushek, 2013).

The people who comprise the nation's working population and possess a particular level of human capital are its human resources and are one of the economy’s most crucial components (Romer, 2014; Han & Brass, 2014; Machlup, 2013). The prospects for superior economic growth increase with the quality of human resources. Increased labor diversity and productivity boost economic growth (Ricardo, 1999). Numerous studies have discovered evidence that suggests that the level of education in a population is a significant factor in economic growth (Barro, 1991; Mankiw, Romer & Weil, 1992; Brunetti, et al., 1998; Hanushek & Kimko, 2000; Barro & Sala-i-Martin, 2004).

2.3.4 Technological Progress

Technological change has long been established as a key determinant of economic growth in growth theory (Guloglu et al., 2012). Smith (2004), defines technology as a set of skills, techniques, procedures, and methods employed in the creation of commodities and services. Technological advancement is the improvement of existing ways of doing things or the discovery of new and more effective methods. In general,

technological advancement leads to an increase in the productivity or efficiency with which labor, capital and natural resources are employed to generate goods; thus making it possible to create the same quantity of products with less input or more output with the same input. The increase in national income is a result of the improvement in productivity.

2.3.5 Political Factors

Political stability or instability, corruption, trade laws and policy management are the political factors that tend to have a significant influence on economic growth. Political instability is the propensity for a government to fall either as a result of fierce competition or conflicts between competing political parties (Hussain, 2014). Uncertainty brought on by unstable political environments may discourage investment, which would slow down economic growth (Alesina et al., 1996). Poor economic performance on the other hand may lead to political unrest and government collapse. Good economic policies are essential for a country to develop, but long-term increases in income are impossible without strong political and economic institutions. Regional conflict zones, intergroup inequality, and ethnic supremacy are among other factors that tend to increase the likelihood of violent conflicts. Economic stagnation and political instability are closely intertwined, and because of this, economists believe that unstable political environments are detrimental to economic performance. Political instability makes it possible for nations to often change their economic policies, which has a detrimental impact on economic performance (Aisen et al., 2011).

2.3.6 Cultural Factors

Societies have specific sets of values, beliefs, customs, and behaviors. These influence how they approach risk, view careers, perceptions and ideas of ideal lifestyle. An intricate relationship exists between the economic system and the cultural background and values that make up a society. According to Petrakis et al., (2015), culture can be viewed as a strategic tool that either directly or indirectly influences economic outcomes. For a society to be more effective, it ought to first adopt an economic policy, hence, the cultural makeup of the societies influences how effective economic policy is (Kafka et al., 2020). Data indicate that cultures with a stronger concentration of values characterized as accomplishment orientation, as opposed to a convergence of values supported by a just limited good belief system, experience faster financial progress. From influencing a nation's mentality to having an impact on the effectiveness of formal institutions, culture has a huge impact on the economy. Culture is a basic prerequisite for successful institutional implementation. A healthy culture and economy encourage innovation and technology, better health care, higher levels of satisfaction, and an improvement in general quality of life.

2.4 Empirical Studies

Numerous scholars have conducted studies to investigate the effects of investment on economic growth. These studies used various methodologies, data sources, and time frames to analyze the relationship and have provided a range of insights into the relationship between investment and economic growth, with findings mostly supporting the idea that higher levels of investment contribute positively to economic growth. It's important to note though, that the specific results may vary depending on the country, time period and data sources used in each study.

The study of Pegkas et al., (2016) examined the importance of domestic and foreign investments, human capital and exports for economic growth of Greece for the period 1970-2012. The study applied a modification of (Mankiw, Romer & Weil; 1992) model and used time series analysis to estimate the effect of these determinants on economic growth. The findings reveal that in the long run, there is a positive effect of all determinants on economic growth and there was evidence of unidirectional short-run and long-run Granger causality. This agrees with this study's expectation that domestic investment would influence the economic growth positively.

Yusoff (2016), while determining the relationship between imports, exports, gross domestic investment, exchange rates and growth in Cameroon, concluded that both private and public investment significantly influence economic growth having analyzed time series data between the period 1963-1996. This conclusion agrees with this study's expectation that gross domestic investment positively influences economic growth.

Bakari (2017), in his study on the impact of domestic investment on economic growth in Malaysia, used Correlation analysis to cover annual time series of 1960-2015, Johansen co-integration analysis of VECM and the Granger-causality tests. The results established that while labor, exports, and domestic investment all have a positive long-term impact on economic growth, there is no short-term association between domestic investment and growth. He further investigated the relationship between imports, exports, domestic investment and economic growth in Egypt. He employed similar analysis techniques using annual data for the years 1965-2015. While the co-integration analysis test found that exports, imports, and domestic investment had no effect on

economic growth, the causality test result showed that imports and domestic investment are the main drivers of economic growth in Egypt.

Gungor & Ringim (2017), in their study examined the effects of both domestic and foreign investment on Nigeria's economic growth from 1980-2015. They employed the Granger-causality Tests, the VECM and the Johansen multivariate co-integration test as estimation techniques. According to VECM analysis, the long-term impact of FDI and domestic investment on economic growth is negative. Granger-causality test results on the other hand established that only FDI contributes to economic growth.

Nguyen (2021), examined how investment affected Vietnam's economic growth. This study set out to evaluate the short and long-term effects of various investment sources, including FDI, public and private investment on Vietnam's economic growth. Using panel data collected from 63 Vietnamese provinces from 2000-2020, he conducted the research using an analytical framework based on Cobb-Douglas' production function and applied the Pool Mean Group regression for economic growth. The results show that public investment negatively affect economic growth while labor, trade openness, FDI, and local private investment all contribute to economic growth in the long run.

Onsare (2013), sought to establish the relationship between investment rate and economic growth rate in Kenya. She analyzed GDP values and investment values for the period 1993-2012 using regression. The regression model was found to be statistically insignificant and the variation in GDP rate was poorly explained by the variation in investment rate. The study, therefore concluded a weak positive

relationship between the variables indicating that the then structure of investment did not strongly drive economic growth.

King'angi (2003), in examining the connection between private investment and GDP growth in Kenya in the period 1980-2002, employed time series data to assess the degree to which private investment fueled growth. The results demonstrate that there was no causal relationship between changes in the GDP and the amount of private investment, even though they appeared to move in the same direction. Majority of the other variables considered in the study conformed to economic theory on the relationship between them and private investment.

Kimitei (2012), did a study with an objective of examining the impact of public and private investment on economic growth in Kenya, with the period under study being 1970-2011. Having tested the data for time series properties, OLS regression analysis was carried out. The results showed all the variables in the study and most importantly public and private investment positively contribute to economic growth.

Mburu (2013), used a descriptive research approach and analyzed data from 2005-2012 in order to examine the connection between government investment on infrastructure and economic growth in Kenya. According to the study, government investment on infrastructure development significantly and favorably impacted Kenya's economic growth for the period under consideration.

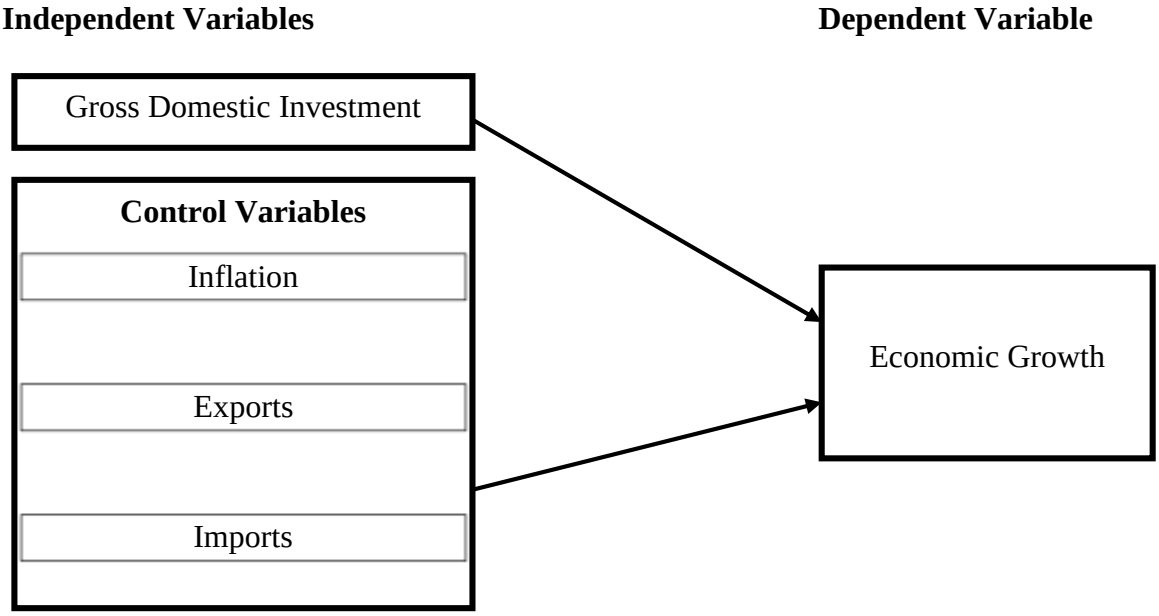
Soi et al., (2013), in their paper on impact of openness, gross capital formation and FDI on economic growth in Kenya with the years under consideration being 1960-2010, borrowed the model developed by (Barro, 1990, 1995) to meet their objective. The

study employed multiple linear regression to establish the relationship between variables. The findings revealed that gross capital formation and FDI had no impact on growth rate of GDP.

2.5 Conceptual Framework

Mugenda (2008), defines a conceptual framework as a brief graphical representation of main variables of the study.

Figure 2.1: Conceptual Framework



2.6 Summary of Literature Review

Although a large number of studies appear to favour the conventional assumption that gross domestic investment influences economic growth positively, from the empirical findings above, the results differ to a large extent; some studies find evidence of positive effect in the long run and negative effect in the short run. Others find no evidence of any relationship. This study seeks to make a contribution to the scholarly by seeking to prove or disapprove the existing hypotheses.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter outlines the methodology and procedure which the researcher used to realize the study objectives. They include the research design, data collection method and analysis. The chapter also outlines the diagnostic tests and significance tests that were used to prove viability of the data and the model respectively.

3.2 Research Design

Kothari (2014), defines research design as the organization of procedures for data collection and analysis with the aim of combining relevance to study purpose. According to Njoroge et al., (2015), descriptive research design can determine the cause-and-effect association between the endogenous and exogenous variables under investigation. A framework for collecting and analyzing data is provided by a research design. The selection of a research design is a reflection of decisions made regarding the weight assigned to different aspects of the research process. These include the significance of articulating causal relationships between variables; generalizations to bigger groups of individuals than those studied; understanding behavior and what it means in its specific social context; and having a chronological appreciation of social occurrences and their interconnections. This paper employed a descriptive research design in order to quantify data trends related to the topic of study. Observing individuals or events over time provides some control over the variables under study, ensuring that they are not influenced by the research process (Saunders et al., 2009).

3.3 Data Collection

Secondary data was used as the primary resource in conducting the entire research. The data was obtained from the KNBS and World Bank Group databases. The convenience sampling method was employed whereby each consecutive eligible observation was considered for selection from the year 1983-2022. Consecutive sampling adds structure and thus rigor to the study because it includes all observations available during the study period. The resulting sample is more likely to represent the target population. The variables included annual growth for the response variable i.e. economic growth as measured by GDP; and annual growth data for explanatory variables that is, gross domestic investment as measured by gross capital formation, inflation, exports and imports.

The use of secondary data was preferred because it is easier to use and saves time and money on research and it is credible because it is founded on previous research or primary data.

3.4 Data Analysis

Data analysis is the process of transforming and modeling data in order to communicate simple and effective results which can help make conclusive judgment and decisions and expand knowledge on a subject. Data analysis was conducted using STATA 15.0 statistical software.

3.4.1 Diagnostic Tests

The linear regression model is normally based on a number of assumptions. The multi collinearity, autocorrelation, stationarity and heteroscedasticity tests were performed on the data to determine its functionality and suitability.

3.4.1.1 Multicollinearity

Multicollinearity is a condition where two or more variables are highly correlated with one another. When all of the variables are exactly the same, there is perfect multicollinearity, and as a result, the coefficients cannot be estimated. Imperfect multicollinearity on the other hand happens when the variables are related, which can be very or less severe. In a regression context, multicollinearity can make variances and standard errors of the estimates to increase hence making it difficult to distinguish the effect of one variable on the response variable from the effect of another. This implies high probability of errors in the coefficients. Additionally, multicollinearity may result in exaggerated or poorly estimated coefficients, as well as make coefficients to have signs that don't make sense. Multicollinearity has the effect of making the results unreliable because, despite the results being BLUE, the Ordinary Least Squares (OLS) estimators have a high variance that makes precise estimation difficult. Further, estimates become very sensitive to changes in specification.

In this study, the variance inflation factors for independent variables (VIF) test was used to check for multicollinearity among the explanatory variables in the model.

3.4.1.2 Heteroskedasticity

This happens when the variance of the errors are fluctuating over time, otherwise, the data set is homoskedastic. Heteroskedasticity can occur when some variables are omitted, when there are outliers in the data or when there is incorrect variable transformations. The inconsistency of variance caused by heteroskedasticity can cause the linear regression model to be under fitting and have poor robustness performance. As a result, removing heteroskedasticity is critical to ensuring that the model produces

unbiased and robust estimates. Checking whether the time series is heteroskedastic was done using statistical tests i.e. Breusch-Pagan/Cook-Weisberg test.

3.4.1.3 Autocorrelation

Autocorrelation is a systematic pattern in the errors which can either be negative or positive autocorrelation. The regression model must include all systematic data in order to provide reliable estimation and prediction. When there is no autocorrelation, the covariance between the error terms is equal to zero and vice versa. Autocorrelation happens when some variables are omitted, the model is misspecified or there are systematic errors in measurement. The Breusch-Godfrey LM test for autocorrelation was used to investigate this condition.

3.4.1.4 Stationarity

If the probability distributions of a time series process remain stable over time, it is deemed to be stationary. A stationarity check is needed to ensure the mean and variance of the dataset are constant, otherwise, it would lead to spurious results. The enhanced Dickey-Fuller unit-root test was used to determine stationarity.

3.4.2 Analytical Model

A multiple linear regression model was used to establish the association between economic growth and gross domestic investment. The model was as follows:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

Where:

Y = Gross Domestic Product (GDP) (annual growth rate)

β_0 = Constant

X_1 = Gross Capital Formation (GCF) (annual growth rate)

X_2 = Inflation (annual growth rate)

X_3 = Exports (E) (annual growth rate)

X_4 = Imports (I) (annual growth rate)

ε = Error term

β_1, β_2, β_3 and β_4 = Coefficients i.e. sensitivity of economic growth to each of the independent variables

Annual GDP growth rate is a proxy measure for annual Economic Growth rate

Annual Gross Capital Formation (GCF) growth rate is a proxy measure for annual Gross Domestic Investment growth rate

3.4.3 Significance Tests

This study employed STATA 15.0 software to analyze the data. The null hypothesis was that gross domestic investment does not significantly affect economic growth in Kenya whereas the alternative hypothesis was that gross domestic investment significantly affect economic growth in Kenya. The study used the tests below to determine the statistical significance of the results.

3.4.3.1 P-value

The study assumed 5% level of significance, and made conclusions that the results are significant whenever p-value was less than p-critical of 0.05 and vice versa.

3.4.3.2 F-test

F-test was used to assess the overall significance of the model by determining whether the model, with all the independent variables included, was able to explain the variations in the response variable.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter typically focuses on the analysis of the data collected during the research, its presentation and interpretation. The study analyzed annual growth data of the variables from the year 1983 to 2022 equating to forty observations.

4.2 Descriptive Statistics

These are employed to enumerate primary characteristics of the data set. These statistics gives the researcher a clear summary of the most important aspects of the data, making it easier for the researcher to comprehend the distribution, variability and central tendencies of the data.

Table 4.1: Summary of Descriptive Statistics

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Y = GDP annual growth rate	40	3.801442	2.293652	-0.799494	8.058474
X_1 = GCF annual growth rate	40	5.958763	11.81082	-20.37422	31.47395
X_2 = Inflation annual growth rate	40	-0.325246	8.310692	-27.26006	18.64652
X_3 = Exports annual growth rate	40	3.749685	8.633288	-14.9121	31.52059
X_4 = Imports annual growth rate	40	6.70953	10.73611	-18.39626	33.81488

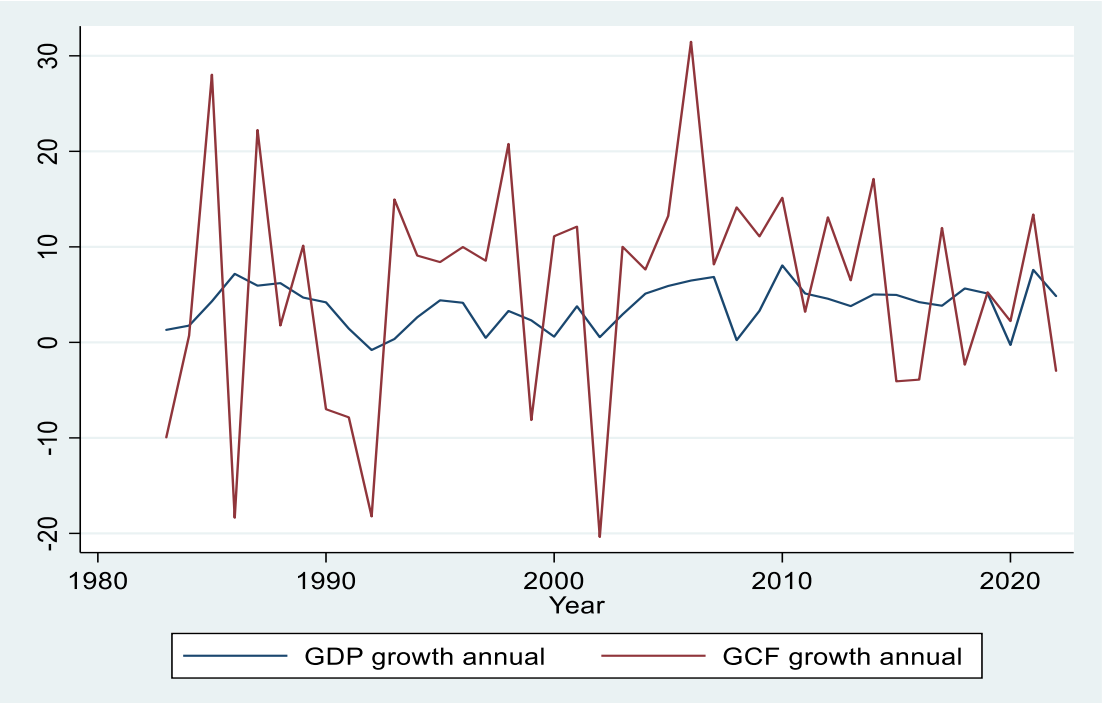
Source: STATA computation

Kenya's economic growth was on average 3.801442 per cent and had a standard deviation of 2.293652 per cent. The mean of annual growth rate of gross domestic investment was at 5.958763 and had the largest standard deviation of 11.81082. The annual growth rate mean for inflation was -0.325246 with a standard deviation of 8.310692. The Exports' annual growth rate mean stood at 3.749685 with a standard deviation of 8.633288 while the mean for annual growth rate of imports was at 6.70953 with a standard deviation of 10.73611.

4.3 Trend Analysis

The researcher undertook trend analysis to examine the movement of economic growth and gross domestic investment over the study period. The graphical representation is as follows:

Figure 4.1: GDP and GCF Annual growth rates from 1983-2022



Source: STATA Graphics

The GDP growth rate has been largely positive but fluctuating over the years. In the year 1992 it fell lowest at (-0.8 per cent) probably due to political transitions and uncertainties that were brought about by multi-party politics thus affecting investor confidence and economic activities. In the year 2008, the GDP growth was at 0.23 per cent which can be attributed to the post-election violence in that period. In 2020, it fell negative and was lowest in the recent past (-0.27 per cent) probably due to the global covid-19 pandemic which sent many economies into recession. It is clearly visible that global economic conditions and political factors greatly determine economic growth rate in Kenya. The gross capital formation, just like GDP has been fluctuating over the years both positively and negatively. The GDP and GCF annual growth rates are largely positively correlated although trend in their interactions is quite unpredictable.

4.4 Diagnostic Tests

The linear regression model is normally based on a number of assumptions. The multi collinearity, autocorrelation, stationarity and heteroscedasticity tests were performed.

4.4.1 Multicollinearity

Variance inflation factor test was used to check whether multicollinearity was a major concern. If each independent variable's VIF value is more than 10, multicollinearity is considered to exist (Kennedy, 1992).

Table 4.2: Variance Inflation Factor Test for Multicollinearity

Variable	VIF	1/VIF
X_1 = GCF annual growth rate	1.41	0.708875
X_2 = Inflation annual growth rate	1.24	0.806955
X_3 = Exports annual growth rate	1.50	0.667245
X_4 = Imports annual growth	1.64	0.609814
Mean VIF	1.45	

Source: STATA computation

The mean VIF value and the VIF values for the different independent variables were lower than the threshold value of 10. The findings suggested that there was little relationship between the independent factors otherwise known as less severe multicollinearity.

4.4.2 Heteroskedasticity

In order to validate the regression results, the study checked for heteroskedascity, a phenomenon in which the residual variances vary between observations. It is difficult to draw meaningful conclusions when the estimated coefficients are greatly inflated due to heteroskedasticity in the error term variances, as stated by Gujarati (2004). The Breusch-Pagan (1979) test was used to determine whether heteroskedasticity was present.

Table 4.3: Breusch-Pagan/Cook-Weisberg test for Heteroskedasticity

chi2(1)	0.32
Prob > chi2	0.5709

Source: STATA computation

The null hypothesis was that the residuals are distributed with equal variance. The probability of chi2 is greater than the conventional 5% level of significance as shown in table 4.3. Therefore, the researcher failed to reject the null hypothesis of constant variance. The conclusion was that there was no issue of heteroskedasticity in the data.

4.4.3 Autocorrelation

Autocorrelation is a systematic pattern in the errors which can either be negative or positive autocorrelation. Breusch-Godfrey LM test for autocorrelation was used to test for this condition. The null hypothesis which stated that there was no autocorrelation was rejected because the p-value for chi2 was 0.0004 which was lower than the 0.05 level of significance as shown below.

Table 4.4: Breusch-Godfrey LM test for Autocorrelation

Lags(p)	chi2	Df	Prob > chi2
1	12.714	1	0.0004

Source: STATA computation

This condition was however handled by employing Cochrane-Orcutt which is an iterative process that uses Prais-Winsten method before regression.

4.4.4 Stationarity

If the probability distributions of a time series process remain stable over time, it is deemed to be stationary. A stationarity check is needed to ensure the mean and variance of the dataset are constant. The enhanced Dickey-Fuller unit root test was used to determine stationarity. The stationarity tests presented below disclose that all variables are stationary in levels.

Table 4.5: Augmented Dickey-Fuller unit-root test

Variable	Without	With Trend
Y = GDP annual growth rate	-4.620*	-4.682*
X_1 = GCF annual growth rate	-7.644*	-7.563*
X_2 = Inflation annual growth rate	-7.019*	-6.921*
X_3 = Exports annual growth rate	-6.029*	-6.115*
X_4 = Imports annual growth	-7.334*	-7.378*

*Note: * denote stationarity at 1%*

Source: STATA computation

4.5 Regression Analysis

Multiple linear regression analysis was undertaken to help draw conclusions about the population based on a sample of data taken.

Table 4.6a: Regression Findings (a)

GDP annual growth rate	Coefficient	Standard Error	t	P>t	[95% Conf.	Interval]
GCF annual growth rate	0.0466502	0.0212233	2.20	0.035	0.0035645	0.0897359
Inflation annual growth rate	-0.1412294	0.0311997	4.53	0.000	-0.2045682	-0.0778906
Exports annual growth rate	0.1423726	0.0327156	4.35	0.000	0.0759563	0.2087888
Imports annual growth rate	0.0131983	0.0250842	0.53	0.602	-0.0377252	0.0641218
Constant	2.825816	0.5942549	4.76	0.000	1.619414	4.032217

Source: STATA computation

From the findings above, the model becomes:

GDP annual growth rate = 2.825816 + 0.0466502 GCF annual growth rate - 0.1412294 Inflation annual growth rate + 0.1423726 Exports annual growth rate + 0.0131983 Imports annual growth rate + ε

In the absence of the explanatory variables, the economic growth as measured by GDP would grow at 2.825816 %. In the presence of the explanatory variables, a 1% increase in gross domestic investment increases economic growth by 0.0466502%, holding other factors constant. The economic growth would decline at 0.1412294 % should inflation grow at 1%, ceteris paribus. A 1% increase in exports and 1% increase imports would cause the economic growth to increase by 0.1423726 % and 0.0131983 % respectively, holding all factors constant.

P-value for gross capital formation is 0.035, while for inflation and exports is 0.000 which are below the significance level of 0.05 implying that they significantly influence economic growth in Kenya. Whereas gross capital formation and exports influence economic growth favorably, inflation influences it unfavorably. On the contrary, p-value for imports is 0.602 which is greater than the p critical of 0.05, this leads to a conclusion that imports does not significantly influence economic growth in Kenya.

Gross domestic investment was statistically significant at 5% level of significance and had a positive relationship with economic growth in Kenya. This in line with Levine and Renalt (1992) who revealed that capital formation influences the rate of economic growth in country.

Table 4.6b: Regression Findings (b)

Source	Sum of Squares	Degrees of Freedom	Mean Sum of Squares
Model	96.8247568	4	24.2061892
Residual	100.15082	35	2.861452
Total	196.975577	39	5.05065581

Source: STATA computation

96.8247568 is the Explained Sum of Squares (ESS) and it shows us how much variation in the dependent variable (GDP annual growth rate) has been explained by the model. From this, we can say that the model is a fair fit as the ESS is almost equal to the Residual Sum of Squares (RSS) which shows the variations in the dependent variable that the model did not explain. The Total Sum of Squares denotes how much variation there is in the dependent variable.

Table 4.6c: Regression Findings (c)

Number of Observations	=	40
F(4, 35)	=	8.46
Prob > F	=	0.0001
R-squared	=	0.4916
Adjusted R-squared	=	0.4334
Root MSE	=	1.6916

Source: STATA computation

R-squared value was 0.4916 which implies that the explanatory variables in the model explained 49.16% of the variations in the dependent variable (Economic growth). The remaining 50.84% represents variations brought about by factors that were not measured in this study. This shows that the model is a fair fit.

On checking the overall significance of the model, the p-value for the F-test from table 4.6c (Prob > F=0.0001) is less than the 0.05. This leads to a conclusion that the model is significant.

4.6 Granger Causality

This test was used to help assess the causal relationship between economic growth and gross domestic investment. The test assumes that the time series data is stationary and that the observations are time-ordered.

Table 4.7: Granger Causality Wild Tests

Equation	Excluded	chi2	df	Prob > chi2
GDP annual growth rate	GCF annual growth rate	6.3858	2	0.041
GDP annual growth rate	Inflation annual growth rate	3.5104	2	0.173
GDP annual growth rate	Imports annual growth rate	2.0028	2	0.367
GDP annual growth rate	Exports annual growth rate	0.20466	2	0.903
GDP annual growth rate	ALL	11.066	8	0.198
GCF annual growth rate	GDP annual growth rate	2.1702	2	0.338
GCF annual growth rate	Inflation annual growth rate	1.0201	2	0.600
GCF annual growth rate	Imports annual growth rate	7.9208	2	0.019
GCF annual growth rate	Exports annual growth rate	0.04531	2	0.978
GCF annual growth rate	ALL	9.9371	8	0.269

Source: STATA computation

The findings show that lagged values of GCF growth cause GDP growth as the p-value is 0.041 which is less than 0.05. However, the null hypothesis that lagged values of GDP growth do not cause GCF growth cannot be rejected as the corresponding p-value

(0.338) is greater than 0.05. This implies that GDP growth does not Granger-cause GCF growth and the direction of causality is from GCF growth to GDP growth.

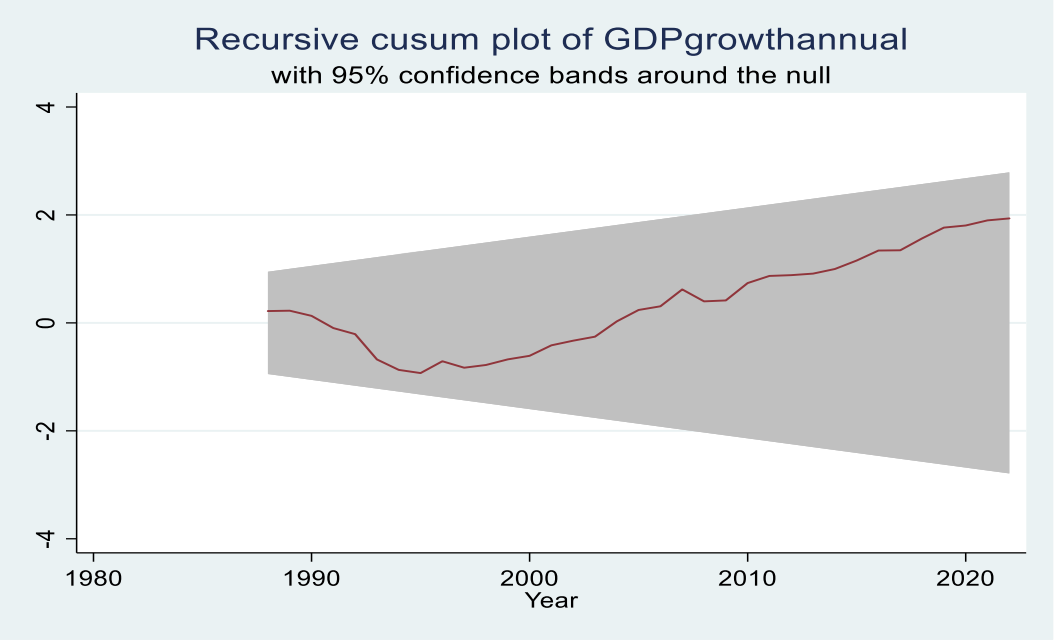
4.7 Establishing the Short run and Long run Phenomena

One of the objectives of the study was to examine whether the relationship between gross domestic investment and economic growth was a short run or a long run phenomenon. The stationarity tests revealed that both gross domestic investment and economic growth are stationary at levels implying that there exists short and long run relationship between the two variables. Therefore, the coefficients of the regression model in table 4.2 represent the short and long effects of the model since the regression was done at levels. This concurs with the study by Thuku et al., 2013, on effect of population growth on economic growth in Kenya.

4.8.1 Stability Test (CUSUM Residual Test)

The CUSUM test for stability is used to determine the model's suitability and stability. To put it another way, the CUSUM test is used to determine whether the model is stable and adequate for making long-term decisions.

Figure 4.2: Recursive CUSUM plot of Annual GDP growth



Source: STATA graphics

The plot of CUSUM for the model under examination is within the 5% critical bound, as seen in the figure above. This implies that the model's parameters are not subject to structural instability over the study period. That is, all of the regression model's coefficients are stable and can be used to make long term decisions.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter typically outlines the summary of findings, policy implications and recommendations, suggestions for further studies and limitations of the study.

5.2 Summary of Findings

The study was majorly about examining the effect of gross domestic investment on economic growth in Kenya; both in short run and long run, with the former being the explanatory variable and the later the response variable. The study also sought to establish the causal link between the two variables. The findings revealed gross domestic investment was statistically significant at 5% level of significance and had a positive relationship with economic growth in Kenya. This in line with Levine and Renalt (1992) who revealed that capital formation influences the rate of economic growth in country. Further, ceteris paribus, a 1% rise in gross domestic investment rises economic growth by 0.0466502%. R-squared value was 0.4916 which implies that the independent variables in the model explained 49.16% of the variations in the dependent variable (Economic growth). The remaining 50.84% represents variations brought about by factors that were not measured in this study. This shows that the model is a fair fit as the model was also found to be significant overall.

The findings also show that GDP growth does not Granger-cause GCF growth instead the direction of causality is from GCF growth to GDP growth. The stationarity tests revealed that both gross domestic investment and economic growth are stationary at levels implying that there exists a short and long run relationship between the two variables.

5.3 Conclusion

The objectives of this study were realized and the research questions answered. This study agrees with the anchoring theories identified herein which provides that an increase in investment causes an increase in output. The study also agrees with some of the empirical literatures that found a positive association between domestic investment and economic growth, notably Pegkas et al., (2016), Yusoff (2016) and Kimitei (2012). The study however disagrees with other existing empirical findings like those of Gungor & Ringim (2017) and Soi et al., (2013). The discrepancies may fundamentally arise from sample selection, perspectives of the authors, methodologies and tools of analysis applied in the studies. This study is crucial for policymakers, investors, and researchers seeking to understand and enhance the country's economic prospects. It will inform targeted policies and strategies to foster sustainable economic growth, job creation, and improved living standards for the population.

5.4 Policy Recommendations

The findings of this study revealed that gross domestic investment significantly influence economic growth in Kenya. It was also established that gross domestic investment causes economic growth. Based on this, a number of policy recommendations could be considered. These include coming up with and implementing policies that improve the overall investment climate in Kenya. This may involve doing away with bureaucratic hurdles and ensuring a transparent and certain business environment. The government should also consider incentivizing domestic investment by designing and implementing policies that provide incentives for domestic investment, such as tax breaks, tax credits for capital investments, investment grants, and streamlined regulatory procedures. Secondly, implementing strategies that

promote exports and reduce trade barriers can open up new markets for local businesses and industries hence stimulating economic growth through increased revenue from international trade. Further, prioritizing and investing in critical infrastructure projects can attract more domestic investment and facilitate economic activities thus contributing to overall economic growth. This can be done by allocating resources to strategic infrastructure projects and implementing policies that attract private sector participation in infrastructure development, for instance, public-private partnerships and targeted investments in critical infrastructure. Promoting policies that encourage technological adoption and innovation; by investing in research and development, supporting technology hubs, and fostering a culture of innovation which can drive productivity gains and economic growth. Similarly, developing policies that encourage investment in various regions or counties, taking into account the unique strengths and opportunities of each region can contribute to more inclusive economic growth. These coupled with good governance can help achieve the desirable goals of vision 2030.

5.5 Limitations of the Study

This study's reliability is contingent on the quality of the secondary data used. The researcher did not participate in the planning of the primary data collection processes hence if there are gaps, inaccuracies, or limitations in the data, it can affect the robustness of these findings. The findings of this study may not be directly applicable to other countries or regions due to unique economic, social and political contexts.

5.6 Suggestions for Further Research

Building on this study on the effect of gross domestic investment on economic growth in Kenya, there are several avenues for further research that could deepen our

understanding of this relationship and its implications. First, there is need to explore the interaction between gross domestic and foreign direct investments; examining how they complement or compete with each other and their combined impact on economic growth. Secondly, it is necessary to assess the quality of domestic investment by examining factors such as technology adoption, innovation, and productivity; and going further to investigate how high-quality investments contribute differently to economic growth compared to low-quality or speculative investments. Further, analyzing how inclusive investment strategies can contribute to broader societal well-being is important. This can be done by exploring the social dimensions of domestic investment, including its impact on employment, income distribution, and poverty reduction. Another possible area is assessing the effectiveness of existing policies aimed at promoting domestic investment; by evaluating the impact of government incentives, regulatory reforms, and other policy measures on investment decisions and economic growth outcomes. Last but not least, further studies can be done on analyzing how political stability, governance structures, and institutional quality influence domestic investment patterns and economic growth. By exploring these avenues, researchers can contribute to a more comprehensive understanding of the dynamics between domestic investment and economic growth in Kenya and provide valuable insights for policymakers, businesses, and academics.

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APPENDICES

Year	Y = Annual GDP growth rate	X_1=Annual GCF growth rate	X_2=Annual Inflation growth rate	X_3=Annual Exports growth rate	X_4=Annual Imports growth rate
1983	1.30905	-9.94744	-9.26893	-2.28464	-18.39625911
1984	1.755217	0.71702	-1.113684524	0.874585	17.86694179
1985	4.300562	28.02779	2.722468209	6.717531	-7.121447666
1986	7.177555	-18.3595	-10.47229043	9.771871	16.84428821
1987	5.937107	22.24142	6.103397201	0.25953	13.28657391
1988	6.203184	1.764421	3.627289858	4.607283	9.027236692
1989	4.690349	10.13318	1.524354228	9.408079	9.767473996
1990	4.192051	-6.9949	3.992497154	22.54042	3.37843989
1991	1.438347	-7.84506	2.302681146	-1.24219	-4.482877752
1992	-0.79949	-18.2237	7.247868872	-0.77956	-2.341673
1993	0.353197	14.96908	18.64651686	31.52059	33.81488206
1994	2.632785	9.087387	-17.16449187	-1.15557	16.82200405
1995	4.406217	8.404142	-27.26006127	-7.66124	17.49157135
1996	4.146839	9.983114	7.309759255	4.558933	1.820524591
1997	0.474902	8.547343	2.497757635	-10.6456	10.55318533
1998	3.290214	20.78325	-4.639408543	-4.88435	4.680687326
1999	2.305389	-8.13428	-0.980435412	9.280222	-1.479136045
2000	0.599695	11.11414	4.238024058	1.134983	1.918480411
2001	3.779906	12.12144	-4.24142701	3.607384	19.46955229
2002	0.54686	-20.3742	-3.777289926	7.115005	-11.28595341
2003	2.932476	10.00557	7.854382412	7.212067	-0.061591414
2004	5.1043	7.627532	1.808344914	12.59494	12.29587314
2005	5.906666	13.24049	-1.311257187	9.379819	14.9433765
2006	6.472494	31.47395	4.140955851	3.540408	25.31704594
2007	6.85073	8.158528	-4.694853978	6.157531	4.405638246
2008	0.232283	14.13622	16.48093641	2.371803	12.74387046
2009	3.30694	11.09292	-17.00569072	-5.21907	8.347732178
2010	8.058474	15.14196	-5.272737033	14.35239	10.32357473
2011	5.121106	3.196347	10.06110507	8.367347	13.75698324
2012	4.56868	13.09735	-4.644726482	2.259887	0.429711479
2013	3.797848	6.494523	-3.660273911	-0.46041	2.017114914
2014	5.020111	17.11976	1.160661422	1.850139	11.38406231
2015	4.967721	-4.08011	-0.29598059	-2.18529	-4.634642281
2016	4.213517	-3.90006	-0.285016878	-6.56919	-7.409808658
2017	3.837958	11.98726	1.708565267	-1.0177	12.4215326
2018	5.647946	-2.33956	-3.31590303	6.772101	1.43388781
2019	5.114159	5.251278	0.546040233	-3.15769	1.84446803
2020	-0.27277	2.225435	0.168954678	-14.9121	-9.422011209
2021	7.590489	13.39217	0.706094492	15.25058	22.15444337
2022	4.846635	-2.98563	1.545965397	10.65653	4.455449605