tt THE IMPACT OF FOREIGN DIRECT INVESTMENT ON DOMESTIC CAPITAL FORMATION: AN EMPIRICAL INVESTIGATION FOR KENYA: 1970-2009*

By

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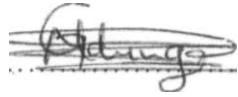
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Research Paper submitted to the School of Economics, in partial fulfilment of the requirements for the Degree of Masters of Arts in Economics at the University of Nairobi.

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Declaration

This paper is my original work and has not been presented for a degree in any other University.

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Dedication

This work is dedicated to my husband Shadrack for his encouragement and my son Lewyn for his cooperation and understanding during my absence.

Acknowledgement

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Abstract

This study looks at the relationship between Foreign Direct Investment (FD1) and Gross Fixed Capital Formation (GFCF) which is a measure of a country's level of investment. The study uses time series data for Kenya for the period of 1970 to 2009. Investment in an economy can originate from domestic savings or from capital flows. FDI which is a major component of capital flows is an important source of capital for African economies where massive capital amounts are needed to finance development. Kenya has in the last decade lost as a destination for FDI flows to its neighbouring countries. Following the country's poor performance in attracting FDI, there have been a lot of initiatives by the Government towards making Kenya an investment destination. The question is, what is the significance of FDI to Kenya?

Results from this study show that Kenya needs to increase her domestic savings and to open and encourage international trade through removal of tariff and non tariff barriers. Growth of the economy is a crucial factor to promoting investment since investors need to be sure that they will get the proceeds from their foreign ventures. The Government should put a lot of measures in place to moderate the exchange rate in order to gain substantially in growth of domestic investment. Rather than having crowding out effects to domestic investment, FDI and domestic investment are complements. Therefore, FDI acts as a stimulant of economic growth through complementing domestic investment in Kenya.

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List of Abbreviations

CBK	Central Bank of Kenya
ECM	Error Correction Model
EPZs	Export Processing Zones
ERS	Economic Recovery Strategy
FDI	Foreign Direct Investment
FIPA	Foreign Investment Protection Act
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GoK	Government of Kenya
IPC	Investment Promotion Council
IV	Instrumental Variable
M&As	Mergers & Acquisitions
MNCs	Multinational Corporations
NARC	National Rainbow Coalition
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Lea^t Squares
SNA	System of National Accounts
TNCs	Transnational Corporations
UNCTAD	United Nations Conference on Trade and Development
US	United States
WIR	World Investment Report

CHAPTER 5

INTRODUCTION

Economic development is a dream that only became a reality in some western countries (Western Europe and North America) and in some selected countries and regions elsewhere. However, large parts of the world especially parts of Africa, Asia and Latin America, have not succeeded in realizing the dream of economic development. Indeed, according to prominent international organizations and also well known economists like Stiglitz, two thirds of humanity live in misery with less than two dollars per day. However, the mankind has all the time attempted to improve its well being through effective use of available resources such as fertile lands and physical capital which include tools, machinery and equipment (Bortis, 2003)

Nurkse (1955) described developing countries as being underequipped with capital relative to their population and natural resources compared with the developed countries. This could have been a contributing factor as to why these countries have lagged behind in attaining economic development. Although economic development has much to do with human endowments, social attitudes, political conditions and historical accidents, the level of capital formation plays a major role. Capital formation means that the society does not direct all that it has produced to consumption but directs a part of it to making capital goods. Capital goods include tools and instruments, machines and transport facilities, plant and equipment (Nurkse, 1955). Capital formation or accumulation rfas much to do with the society's diversion of part of currently available resources to increasing the stock of capital goods. The increase in capital stock makes it possible for the expansion of consumable output in future leading to economic growth. Capital accumulation comprises of Gross Fixed Capital Formation (GFCF) which includes land improvements for example fences, ditches, drains; machinery and equipment purchases; construction of roads and railways including schools, hospitals, private residential and commercial buildings and net acquisitions of valuables (System of National Accounts (SNA), 1993).

GFCF is a measure of a country's level of investment. Investment in an economy can originate from domestic savings or from capital flows. Capital flows can be in the form of foreign loans, portfolio flows or Foreign Direct Investment (FDI). Capital flows affect domestic investment in several ways. FDI, which is a major component of these type of flows contributes directly to new plant and equipment in the so called 'greenfield' FDI. On the other hand, FDI for Mergers and Acquisitions (M&As) does not contribute directly to capital formation unless the new foreign ownership includes modernization or expansion of their acquisitions through investment in new technology. Generally, FDI is required to compensate the low level of domestic savings in developing economies which may have been brought by a "vicious circle of poverty". The cycle emerges from low levels of real income reflecting low productivity, which in turn is due to a lack of capital. This way, FDI is able to provide additional resources and to complete domestic capital deficits.

FDI in basic terms refers to long term investment inflows reflecting a lasting relationship between the investor and the host economy. An example would include a company from one country (investor) making a physical investment in another country (host country). Fernandez-Arias and Hausmann (2000) argued that countries that have weak institutions, underdeveloped Financial markets and are more risky tend to attract less capital but a lot in the form of FDI. This is explained by the fact that FDI is cheaper when compared to foreign debt financing considering the credit risk premiums required by majority of these countries.

There exist theories based on the motivation of foreign investors to invest abroad. Ngugi (2005) summarized these motivations as; reduction in production costs, expansion of market scope, bringing goods closer to consumers and the search for and extraction of raw materials. These motivations group FDI into three types namely; market securing type, natural resource securing type and cost saving type as highlighted by Urata (1997). The market securing type is synonymous to horizontal FDI since it involves foreign construction of duplicate plants to supply the market. Vertical FDI is synonymous to the cost saving type and involves slicing the vertical production chain and relocating it in a low cost location.

FDI inflows have several spillover effects. They are a source of technology transfer in both transition economies and developing countries. A spillover can occur when either domestic firms copy some technologies used by a Multinational Corporation (MNC) or when they are forced to use existing technology more efficiently to cope with competition pressures in the market from MNCs. Local firms can be forced to invest in both human and physical capital to measure up to the standards of foreign firms. In addition, the presence of foreign firms can increase demand for domestic firms' products and the supply of inputs. There is a great difference to a developing country as to whether FDI takes place through MNCs or Transnational Corporations (TNCs). MNCs are associated with international trade and international specialization therefore if FDI is through MNC, a subsidiary is normally built up in the recipient country. The subsidiary enterprise produces one or several goods or services in its entirety thus contributing to building up real capital and also improving the human capital of the recipient country. On the other hand, TNCs are based upon international and even worldwide division of labour and specialisation on the level of the process of production. This implies that only some parts of a good may be produced in one country. Mostly, this would be a country which has low wages to cut on costs in which case it would be a developing country.

Inflows of FDI are an important source of capital formation as highlighted in empirical literature. Bosworth and Collins (1999) argued that foreign capital in developing economies can be used to supplement domestic savings thereby raising the rate of capital accumulation. FDI inflows according to Krkoska (2001) a*fTe* an important source of financing in transition economies since it helps in covering both fiscal and current account deficits. Krkoska also noted that FDI supplements domestic resources in financing capital formation and ownership change. Also, recent theoretical and empirical work has identified FDI as a key variable in determining economic growth (Meier, 1995). This has an indirect positive impact on capital formation since a country's capital formation is important in promoting economic growth. Significant changes in FDI patterns have been witnessed all over the world in the past 20 years. These changes have raised questions concerning their impact on several aspects of the host economies. These aspects include employment, productivity, international trade, GFCF and the overall welfare.

Many developing economies rely on foreign capital to overcome domestic issues especially those of unskilled workforce thereby limiting their ability to master their economic problems. The worldwide economic structure and international organizations using free market economic principles and theories have encouraged these countries to borrow from abroad and use FDI to meet their domestic needs. Kenya is in this category of countries and one of the economic leaders in Sub-Saharan Africa. Region wise, Kenya is the most industrially developed in the East African region (United Nations Conference on Trade and Development (UNCTAD), 2005). Convinced that FDI can solve its entire economic problems like many other African countries, it is dependent on FDI for capital and employment.

United Nations (2005) highlighted Kenya as being an underperformer in attracting FDI. When FDI flows to developing countries surged in the mid 1980s to the end of the millennium, flows to Kenya averaged about $30 million yearly. Flows to Kenya in 1996-2003 averaged $38 million against annual flows of over $200 million to each of its neighbours, Tanzania and Uganda. This was a shocking performance considering that Kenya is an economy which is much stronger and more diversified than many in Africa (United Nations, 2005). However, this was in line with the backdrop of bad governance and neglect of basic assets such as the transport infrastructure for over two decades. Various initiatives have been put in place as a way of ensuring good governance and good infrastructure. In 2002, there was a dawn of new regime (National Rainbow Coalition (NARC)) which tried to put in place reforms towards achieving good governance. Efforts have beenjn place since then, with the promulgation of new constitution in 2010, the Government has also' been very proactive regarding transport infrastructure. To mention a few, there has been expansion of Mombasa highway and Thika highway which is almost complete. The Government's efforts to spur rapid and sustainable growth and development have been seen through the development of Vision 2030.

As a way of enhancing Kenya's competitiveness in attracting investments and ease the investment process, the Investment Promotion Act 2004, Cap 485 of 1986 was passed and became operational in 2005. This led to the transformation of the Investment Promotion Centre (IPC) to Kenya Investment Authority. Coupled with the transformation was an expanded mandate in executing its role of investment promotion, facilitation and policy advocacy. This

was also a priority in the Economic Recovery Strategy for Wealth and Employment Creation (ERS) (2003-2007). In addition to enactment of the Act, the Investment Policy Review was prepared and published in 2007 with joint efforts from UNCTAD. All these initiatives have been made by the Government in its efforts towards making Kenya an investment destination. It is on the basis of these many initiatives by the Government that this paper wishes to investigate whether FDI plays any role in capital formation.

1.1 Global FDI Trends

World FDI flows have grown rapidly since the early 1980s. Between the late 1980s and 1990s, two thirds of the increase in world wide FDI went to developing countries. The surge in FDI was a reflection of improvements in investment climate in these countries. This was a contrast from the previous decade when flows to industrialized economies dominated (World Bank, 2001). Generally, composition of capital inflows to developing countries has shifted towards FDI and portfolio investment.

The World Investment Report 2010 (WIR, 2010) continued to reveal the shift in foreign investment inflows to developing and transition economies. Globally, FDI inflows declined in 2009 which is a reflection of a declined economic performance in the world and reduced financial capabilities of TNCs. The report indicated that, in 2009 FDI flows to developed economies declined further ty 44 per cent. At the same time, FDI flows to developing and transition economies contracted by 24 per cent after six consecutive years of improved growth. From the figures, it is clear that these countries performed better than the developed ones although they both reported declines. The underlying reason for their improved performance is increased economic activities and increased openness to FDI and international production. This modest performance spurred developing and transition economies to account for nearly half of global FDI inflows.

Although United States maintained its position as the world's largest host country in 2009, China emerged as the second most popular destination. Most of the FDI flows were for greenfleld

investments since there was a slump in cross border M&As. The drop was due to their sensitivity **to** financial conditions.

The report showed a similar pattern for FDI outflows which declined globally by 43 per cent to $1 101 billion in 2009. This resulted from the global economic and financial crisis which **continued to** pull down FDI outflows from developed countries and, developing and transition **economies.** However, developed economies continued to be the largest source of FDI outflows **whereby** outflows surpassed inflows.

A similar trend was observed from developing countries whose outflows declined by 23 per cent witnessing an end of five-year upward trend. Consequently, developing and transition economies strengthened their global position further as emerging sources of FDI increasing their share to 25 per cent in 2009 compared to 19 per cent in 2008. China recorded an impressive performance in FDI outflows as well whereby the country was ranked among 20 investors in the world. However, outflows in this country grouping remained low compared to inflows.

1.2 Africa FDI Trends

The WIR (2010) indicated that FDI flows to Africa declined to $59 billion in 2009 from a peak of $72 billion in 2008 mainly occasioned by contraction in global demand and fall in commodity prices. This was an alarming record especially when FDI accounts for almost a fifth of GFCF making it a vital source of Employment. However, there was a mixed performance in FDI inflows in the region. West and East Africa whose investments are commodity-related registered a decline in flows in 2009. Enormous investments in Equatorial Guinea caused Central Africa to record a rise in FDI inflows. As usual, Southern Africa remained the largest recipient of inflows due to large investment deals especially telecommunications in South Africa.

All subregions in Africa except Southern Africa recorded decline in FDI outflows. This was as a result of African TNCs' investments in natural resources and service sector in countries within the region. TNCs from developed countries continued to account for the bigger share of inward FDI flows and stock to many African countries. This pattern though may change due to increased

presence of firms from developing countries especially Asia. China for example, has become a key investor in Sub- Saharan African countries. The country has a lot of presence in Kenya especially in infrastructure development.

1.3 Trends in FDI flows to Kenya

Although Kenya remains the second largest economy in East Africa after Sudan, she has experienced stagnation over the past two decades. In the 1960s and 1970s, Kenya was a prime choice for foreign investors seeking to establish a presence in Eastern and Southern Africa. This was a period when the political environment was conducive for investment due to euphoria of independence. The country's poor economic policies and inconsistent efforts at structural reforms, corruption and poor governance, and poor service delivery at the public sector have been an hindrance to FDI since the 1980s. This economic backdrop caused Kenya to be left out of the global surge in FDI flows that started in the mid 1990s and benefited the developing world as well as Africa including its neighbours in the East African Community (UNCTAD, 2005).

In the early 1970s, annual net FDI inflows to Kenya started at low levels of around $10 million before increasing to around $80 million in the period 1979 to 1980 as depicted in the figure 1.1.

Figurel. 1 FDI Inflows to Kenya, 1970-2009

(Million US dollars)
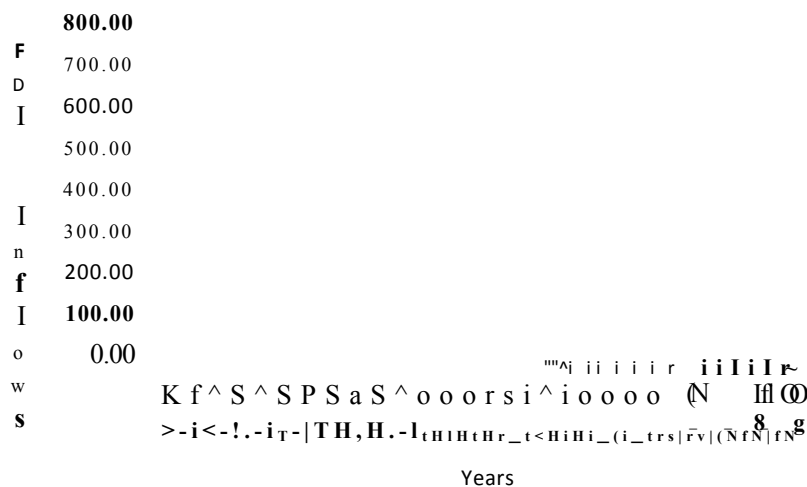
Source: UNCTAD FDI database

FDI inflows increased to over $100 million in 2000 owing to new investments by mobile phone companies. The enactment of the Export Processing Zones (EPZs) Act, led to a rise in inflows in ^003 riding on the back of textile investments in EPZs though that was unsustainable. Inflows in ->007 reached a record high of $729 million mainly occasioned by capital injection by foreign strategic partnerships and privatization (Republic of Kenya, 2008). This was a confirmation to the fact that privatization is an important source of FDI flows.

1.4 Trends of GFCF in Kenya

Kenya's levels of GFCF appear to move in tandem with FDI inflows as shown in figure 1.2.

Figure **1**.2 Levels of GFCF in Kenya, 1970-2009
(Millions US dollars)

^   ^ q?³ ^   (>   ^   c^
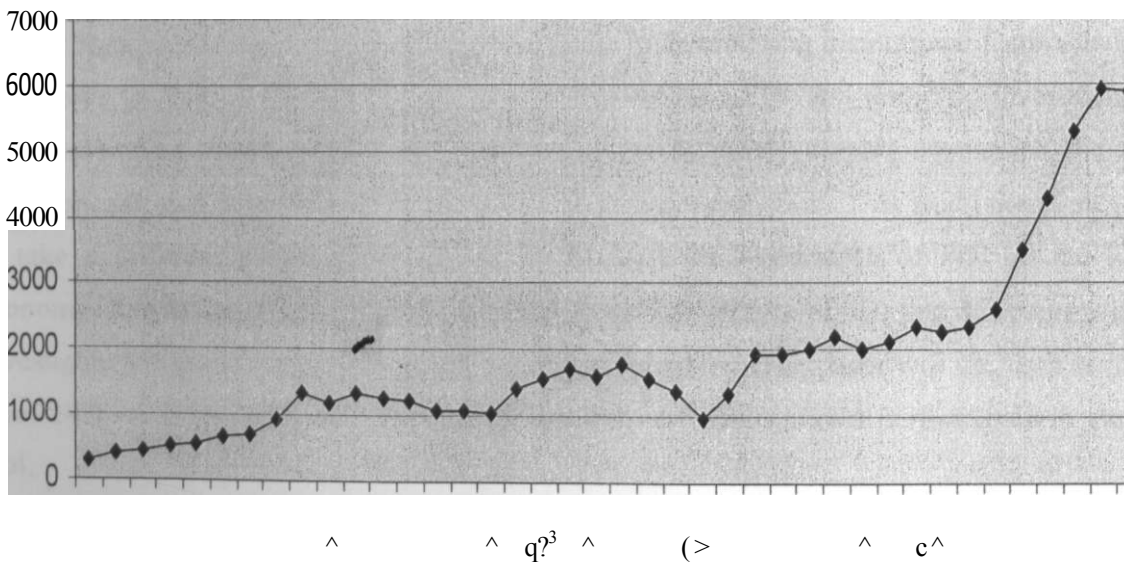
Source: World Development Indicators

The figure provides evidence of existence of an underlying relationship between FDI and GFCF. What the figure may not describe is the direction of the relationship between these two macroeconomic variables which this study seeks to establish.

1.5 Problem Statement

A country's size of total **investment** plays a vital role in economic performance. Borensztein et al (1998) found a positive impact of FDI on growth. Markusen (1998) established a strong relationship between trade and FDI. Investment can be from the host country's domestic savings or FDI which is a source of foreign capital. There are different ways of investing one among them being investment in capital goods. There exists a wide range of literature from continent specific region specific, cross country specific to country specific studies on FDI. Much of the literature focuses on determinants of FDI since countries are ambitious towards attracting FDI. These include; Bende-Nabende (2002) who examined determinants of FDI in Sub-Saharan Africa through cointegration analysis, Wang and Swain (1995) who investigated FDI determinants in China and Hungary and Nunnenkamp (2002) who used a sample of 28 developing countries in evaluating FDI determinants. There is voluminous academic research on determinants of FDI in Kenya which exists. Some of these include Kinaro (2006) who used Johansen cointegration technique and the Hendry log type model in examining FDI inflows to Kenya. Ngugi (2005) who used panel data analysis in determining institutional factors that affect FDI flows to Kenya. Studies on the relationship between FDI and domestic investment have been undertaken mostly in the developed economies. In the developing economies, the studies have concentrated in explaining the relationship at aggregate level. This study therefore intends to take a different perspective in trying to evaluate the importance of FDI on the Kenyan economy. It is in the efforts of trying to establish the significance of FDI that this paper wishes to investigate the impact of FDI^n domestic capital formation. The paper will use time series data Irom 1970 to 2009, a period in which Kenya has recorded a mixed performance in attracting FDI.

1.6 Objectives of the Study

1 he main objective of this study is to investigate the impact of FDI on domestic capital formation in Kenya. Specifically, the study seeks to;

[1] • Determine and establish the direction of causality between FDI and GFCF;

[2]- Determine the short-run and long-run relationship between FDI and GFCF; and

3   Draw policy recommendations in light of the empirical findings in (1) and (2).

1. 7 Justification of the study

This paper evaluates evidence of the relationship between FDI and GFCF. The study comes at a time when there has been several initiatives by the Government geared towards increasing Kenya's competitiveness in attracting foreign investment. Key among the initiatives being the enactment of the Investment Promotion Act 2004, the publication of Investment Policy Review and the enactment of Foreign Investment Protection Act (FIPA). In addition, the Kenya Vision 2030 which is the country's long term development blue print has underscored the importance of FDI in financing some of the scheduled mega projects. Therefore, the paper will be significant since its findings may be suggestive to the Government in adopting policies towards making Kenya an investment destination

1.8 Limitations of the study

The major limitation of this study concerns data on the Kenyan economy because it lacks consistency. Different data sources give different data for the same variable. To maintain accuracy and consistency, the study used data from international sources which are more harmonized.

CHAPTER 5

LITERATURE REVIEW

2.1 Theoretical Literature

The scarcity of capital in underdeveloped economies coupled with low saving rates leads to low levels of domestic investment and economic growth. This makes foreign investment a requirement in these countries in order to complement domestic investment and to raise the rate of economic growth and thus speed up the economic development process. There exist no theories which deal with the effects of foreign investment tailored to the specific situation of developing countries. Almost all the theories take the view of developed and even highly industrialized economies.

FDI connected to capital accumulation goes back to pre- classical views. The mercantilists were the first to reflect on attracting foreign capital and to set up investment plans. In their analysis, they tried to clarify the role of capital in an economy. Their basic idea was to attain a trade surplus through encouraging exports and discouraging imports. The mercantilist's attraction of financial capital resulted from government policy geared towards promotion of the accumulation of capital and a protectionist policy represented by taxes on import and subsidies on export. The inflow of precious metals resulting from an export surplus was largely equivalent to financial capital inflows. Financial capi^l stock build up was conducive for capital accumulation.

I he mercantilist model implies a unilateral and asymmetric relationship whereby the successful country realizes an export surplus creating a cumulative process of demand opening up new investment possibilities. The export surplus included real foreign investment abroad to sustain trading activities. This system led to direct investment abroad to build up trade bases. Subsequently, the huge profits from the investment were returned to the local economy in the form of financial capital. Classical economic theories both of economics and political economy were supply oriented. According to the theories, Says law always holds implying that savings are •nvested all the time. This is an important implication for FDI. FDI adds to domestic savings and theiefore domestic investment bringing about a higher rate of economic growth.

FD1 is an import surplus *(M -X y 0)* which adds to domestic savings to make up the volume of **investment.** That is;

S+M-X'[1]

Where;

S **is domestic** savings, **M** is Imports, **X** is exports and I is investment.

This supply-oriented approach has been taken up by neoclassical economics and still represents **the current** attitude towards FDI held by economic policy makers worldwide. In the neoclassical **view, economic** growth depends on supply factors such as growth of the labour force, capital **accumulation** and technical progress which are considered endogenous. Therefore, foreign **resources** complement domestic resources in enhancing economic growth.

Recent theories of economic growth place capital and technology at the center of analysis. **Capital** accumulation has been established as an important source of growth and development **from many** studies using Harrod- Domar and Solow growth models. From the Solow model, the **capital** formation component is a reflection of the additional productivity which would result **fiom** additional investment in capital of the variety already existing. Studies on factors **determining** capital formation are important in economic literature especially in developing **economies** that are faced with low levels of capital formation. Capital formation is known to **facilitate** infrastructure development which is key to encouraging economic growth.

2. 2 Empirical Literature

The seminal paper by Feldstein and Horioka (1980) which was a study on Organisation for Economic Co-operation and Development (OECD) countries for the period 1960 to 1974 indicated a close correlation between national savings and national investment. Their study which used two stage least squares on cross sectional data argued that differences in investment 'ᵉvels among countries could be explained by differences in saving levels.

F Idstein (1995) carried out a study on the relationship between domestic investment and tward FDI on OECD countries. The study used data from the 1989 benchmark survey of US nvestment abroad. Potential endogeneity due to omitted variable bias was minimized by including variables which are determinants of investment (inflation rate, average population and average growth rate of GDP). The study found that domestic investment in a country declines with increment in outbound FDI whereas inward FDI increases it.

L ipsey (2000) in a study on developed countries' FDI for the period 1970 to 1995 found very little evidence of FDI having an effect on capital formation. The study argued that FDI does not change a country's capital position but basically involves a shift in ownership.

Krkoska (2001) utilized a systems approach in establishing the importance of FDI in Financing capital formation in transition economies. Estimation results using Zellner's Seemingly Unrelated Regression (SUR) established that GFCF is positively related to FDI.

Hejazi and Pauly (2003) carried out a study to find out the impact of multinationals on domestic investment using Canadian industry level data from 1984 to 1995. Their estimation results after regressing GFCF on its determinants established a positive relationship between inward FDI and GFCF. However, heterogeneity was established in the relationship between outward FDI and GFCF. In their heterogeneous results, they found that outward FDI to US increased Canadian GFCF but outward FDI to the Rest of the World (ROW) reduced Canadian GFCF. Most startling was that outward FDI to the United Kingdom (UK) had no impact on GFCF. Although the results were rather ambiguous<they explained the heterogeneity across countries as being caused by the underlying motivation for investment.

Desai et al. (2005) followed a similar approach to Feldstein (1995) but used a broader sample of countries in the 1980s and 1990s with observations representing decade long average values for each of the OECD countries. Their study found a negative relationship between outward FDI and domestic investment and a positive relationship for inward FDI and domestic investment. Their extension to analysis of American multinationals found a positive relationship between outward I DI and domestic investment.

A anel data **study** by Choy et al. (2009) on FDI and Domestic Capital Stock of Chinese regions **b t** veen **2004 and** 2007 found that gross capital formation in China had been driven by inbound FDI.

A US **manufacturing** industries study, using pooled cross sectional data from 1997 to 2007 by **Mullen (2010) to** establish crowding out and displacement effects of bi directional FDI while **employing Ordinary** Least Squares (OLS) established that inward FDI stimulates domestic **capital formation** whereas outward FDI has a displacement effect.

I ang et al. **(2008)** employed a multivariate Vector Autoregression (VAR) system with error correction model (ECM) to find out the causal link between FDI, domestic investment and economic growth in China for the period 1988 to 2003. From their findings, they noted that FDI complements domestic investment in China, rather than crowding out domestic investment. The study also revealed that domestic investment in China does not have much impact on FDI inflows in the long run.

Herzer and Schrooten (2007) analysed the impact of outward FDI on domestic investment using time series for a sample period of 1970 to 2003 for US and 1971 to 2004 for Germany. From their analysis using cointegration, they found that outward FDI promoted domestic investment in the US while in Germany, outward FDI had a negative effect. This suggests that country differences matter in this analysis. Differences in the legal framework could be a contributing factor since it affects the investment climate.

Mi leva **(2008)** used both stati^and dynamic panel data analysis in assessing the effect of capital Hows on domestic investment. The study covered 22 transition economies for the period 1995 to **2005.** Results from the study showed that FDI constituted the largest share of capital inflows to the transition economies just like in most developing countries. Findings from the study also indicated that in countries with weak institutions and underdeveloped financial systems, FDI stimulates investment by local firms. This was because each dollar of FDI created 84 cents of additional domestic capital formation by local firms in the short run and a dollar in the long run.

In th   * *

eir ern pirical investigations on the impact of domestic factor markets on FDI and the effects of FDI On domestic factor markets, Ndikumana and Verick (2008) used a sample of 38 Sub Saharan African countries for the period 1970 to 2005. Their study employed both the robust

OLS estimator and the fixed effects specification as estimation methodologies. They further **classified the** countries by resource intensity following the Collier and O' Connell (2006) classification. The findings from their study revealed that **FDI** crowds in private investment in **both resource rich** and resource poor countries. This is supportive evidence to the fact that one way in **which FDI** have a positive impact on growth is by enhancing domestic capital formation.

2.3 Overview of Literature Review

Much of the literature on the relationship between **FDI** and domestic investment has focused on the **developed** world. Even in the developed economies, the studies have focused on the highly **industrialized** economies. Majority of the studies have used cross country data in their analysis **on the** assumption that **FDI** flows across countries and overtime are similar. Since **FDI** can be broken down into two variables (outbound and inbound **FDI)** and both have different effects on domestic capital formation, most studies have followed that route. The consensus from the literature has indicated a positive and causal link between inbound **FDI** and domestic investment. FDI inflows have been found to supplement domestic savings thereby stimulating domestic investment. In this way therefore, **FDI** can be an essential but not the only determinant of economic growth.

On the other hand, the effect of outbound FDI on domestic capital formation indicated mixed results. In some studies, it wasjioted that outward FDI had a negative relationship with domestic investment, whereas in others, if was found to have a positive relationship. In addition, some studies found outward FDI as having no effect at all on domestic investment. The later result was mostly attributed to the underlying motivation for investment which could be market access, access to natural resources, differences in factor endowments etc.

In Kenya, there exists very little literature on relationship between FDI and GFCF. The main reason may be because the levels of both inward and outward FDI are still very low thus the major focus on attracting FDI. This study therefore will be important since it will inform the 8°vernment in its efforts of making Kenya an investment destination. The study will focus on the Kenyan economy while using time series analysis and OLS method of estimation.

CHAPTER 3

METHODOLOGY

3.1 Conceptual Framework

\ **study by** Feldstein and Horioka (1980) on major industrial countries for the period 1960 to **1974 was the first** in this area of research. The intention of their study was to measure whether a **higher rate** of domestic saving is associated with a higher domestic investment rate. However, **with perfect** capital mobility there exists no relationship between domestic saving and domestic **investment** since savings in a country responds to worldwide investment opportunities whereas **investment in** a country is as a result of a pool of worldwide capital. To assess the relationship **between saving** rates and rates of investment, the following equation was estimated;

$$(y W + f l f x$$

Where

I   **is the** gross domestic investment

Y   **is the** gross domestic product

S   **is the** gross domestic savings

(y), **is** the ratio of gross domestic investment to gross domestic product in country i

And

  S   .

 (j,), **is the** ratio of gross domestic savings to gross domestic product in country i

 a and /? are the constant and slope coefficient, respectively.

 However, from the analysis the concept of foreign investment flows can be introduced since the excess of **gross** domestic investment over gross domestic saving can be equated to net inflows of foreign investment. This study was a strong platform for continued research in this area since a '°**ng literature** followed thereafter. Many of the studies have continued to use a similar approach ﬆut **with** additional variables to reduce omitted variable bias.

3.2 Analytical Framework

The objective of this study is to analyse the relationship between FDI and GFCF in Kenya. Since majority of the studies have utilized the empirical approach by Feldstein and Horioka (1980), our study used a similar approach. Many studies have used industry level data in specific countries or cross country data and used panel data analysis to control for omitted variable bias. Our model specification in this paper is an extension of Feldstein and Horioka (1980). Our study used GFCF which is a measure of a country's level of investment and incorporates both outbound and inbound FDI variables. In our study, we used country specific data and OLS method for estimation.

In an economic system though, savings and FDI are endogenous variables. This simply means that they are likely to be correlated with the error term due to omitted variables in the estimating equation. The consequence is that the OLS estimator will be biased and inconsistent. A country with good investment climate will definitely attract more inbound FDI and most likely experience less outbound FDI. Therefore the levels of both inbound and outbound FDI are likely to be correlated with variables that favor higher domestic rates of investment.

There are ways which have been developed to solve for inconsistent OLS estimator. These include the Instrumental Variable (IV) approach and the Systems approach. The IV approach has limitations since sometimes it may be impossible to find variables that can be the satisfactory instruments.

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The degree of biasness in the estimator can also be reduced by expanding the model specification to include additional investment determinants that could be correlated with either or both of the FDI variables. This is the method we adopted in our study.

The following estimating equation was used;

$$^{GFCF}/GDP^{ifdi}/GDP^{+}A \qquad ^{ofdi}/gdp^{+}A \qquad ^{GNS}/GDP^{+}\&°P^{en+}\&^{REER+}Po^{INF+}fi\text{-}fiDPG+\wedge$$

(1)

Where;

GFCF is the Gross Fixed Capital Formation and is the dependent variable which is a measure of a country's level of domestic investment. It includes buildings and structures, transport equipment, other machinery and equipment, cultivated assets and intangible assets. Country factors that have been found from other studies to be important determinants of domestic investment were included in this study as the explanatory variables. They include both inward and outward FDI inflows which give net FDI inflows, gross national savings, openness of the economy, real effective exchange rate and inflation.

Inward FDI flows: This is the acquisition of real assets in the host country by non-residents. It is the sum of equity capital, reinvestment of earnings, other long-term capital and short-term capital. Inward foreign direct investment is expected to have a positive effect on domestic investment suggesting crowding in of domestic investment.

Outward FDI flows: This is the acquisition of real assets in other countries abroad by residents of the host country. Like the inward flows, it is the sum of equity capital, reinvestment of earnings, other long-term capital and short-term capital. Outward foreign direct investment is expected to have a negative effect on domestic investment suggesting crowding out of domestic investment.

Degree of openness of the economy: This determines the ease of transfers across borders as affected by exchange controls. There exists a widespread perception that open economies encourage more direct investment as it encourages confidence among investors. Openness of the economy is calculated as the fZtio of the sum of exports and imports to real GDP. The higher the ratio, the higher the rate of domestic investment meaning investment is primarily driven by trade.

Gross national savings: This is Gross Disposable National Income (GNDI) less final consumption expenditure. National savings and domestic investment are expected to have a positive relationship.

Real effective exchange rate: Devaluation changes in the exchange rate capture the effect of the host country's currency relative to that of the sourcing country. Currency devaluation leads to cheap exports and expensive imports making a country's exports more competitive in the world market, leading to increased export volumes. A strong and volatile exchange rate **reduces** domestic investment rate.

Inflation: The rate of inflation acts as **a** proxy for the level of economic stability considering that one of the classic symptoms of loss of fiscal or monetary control is unbridled inflation. High and unpredictable inflation cripples business planning and acts as a check for financial intermediation development within the private sector. Considering that investors prefer to invest in more stable economies that reflect a lesser degree of uncertainty, it is reasonable to expect that inflation would have a negative effect on investment.

Growth rate of GDP: This is the annual percentage growth of real GDP. This variable determines the long term behavior of a country's saving rate since it gives a future view of the economic performance of the economy. It is expected that growth of GDP will have a positive impact on investment.

v is the stochastic error term.

3.3   Diagnostic Tests

This study employs time series data and economic literature suggests that casual inspection of most time series data reveal that these series are non stationary. If a series is non stationary meaning it exhibits a random walk, regression of two such time series variables would lead to a "spurious" result. In a spurious regression the fitted coefficients are statistically significant even when there is no true relationship between the dependent variable and the regressors. The main reason for the spurious result is because the Gauss-Markov Theorem would not hold since a random walk does not have a finite variance. This translates into inconsistent estimators from the OLS regression since this method of estimation is only applied where observations are independent. In a time series variable following a random walk, the effect of a temporary shock will not dissipate after several time periods but instead will be permanent. This would definitely lead to serious implications in trying to study the economy for certain duration of time.

Quite often, economic theory suggests that certain pairs or groups of macroeconomic variables are linked by a long run equilibrium relationship. If economic series are non stationary but their linear combination is stationary, then such series are said to be cointegrated. Cointegration implies that the variables may drift from each other in the short run but should not diverge from each other in the long run.

Cointegration does not require the long run equilibrium relationship to be generated by market forces but may be causal, belj^vioural or a reduced form relationship among similarly trending variables (Engle and Granger, 1987). Before testing for causal relationship between time series, it is important to ensure that the variables used are either stationary individually or non stationary individually. Detection of cointegration is very important prior to estimation since fundamentally different conclusions are made between spurious regression and cointegration. In order to overcome problems associated with non stationarity, causality and relational dynamics, conducting the following tests on the variables is necessary.

3.3.1 Unit Root Test

The early and pioneering work on testing for a unit root in time series was done by Dickey and Fuller (Dickey and Fuller, 1979). The basic objective of the test is to test the null hypothesis that *6=0* in:

$$AGFCF = 6GFCF,\_, + //, \dotfill (2)$$

Where

0 = 77-**1**

6 is the estimating coefficient.

If *6=0,* then *r\ = 1* and therefore the series has a unit root hence non stationary.

Our study used the Augmented Dickey Fuller (ADF) test, since the above test assumes that   is a white noise.

The ADF test consists of estimating the following regression;

$$\mathbf{A}\,GFCF = 6GFCF,\_, + {}^{\wedge}a_l AGFCF,\_, + n, \dotfill \mathbf{(3)}$$

$$=1$$

where GFCF indicates any variable used in estimation.

The lagged term is used to make the error term have a white noise. The null hypothesis remains the same as expressed above. The maximum number of lags of the dependent variable is determined using information criteria.

In each case, the tests are based on the *t* - ratio on the $GFCF_{t\_x}$ term in the estimated regression of $\mathrm{A}\,GFCF,$ on $GFCF_{t\_x}$

The test statistic is defined as

$$t\text{ - }statistic = \frac{\overline{e}}{SE(9)}$$, 6 is the estimated *0* and *SE(d)* is the standard error of the estimated *0.*

The test statistic does not follow the usual ^-distribution under the null, since the null is one of non-stationarity, but rather follows a non-standard distribution. Critical tau values (t) are obtained from the tabulations of DF (1979). In practice, we run the regressions and obtain t-statistics of the estimated 6, then compare the t-statistics to the critical value "tau" statistics.

If   **t < "tau", H$_0$** is rejected, meaning   *GFCF,* is stationary.

If   **t > "tau", H$_0$** is not rejected, meaning *GFCF,* is non-stationary.

In the process of testing for unit roots, **non**-stationary series are usually transformed into stationary series by differencing.

3.3.2 Testing for Cointegration

The concept of non-stationarity in time series data incorporates the concept of cointegration introduced by Granger (1981) and extended by Engle and Granger (1987). This means that some series share co-movements with other series maybe due to underlying common economic forces. Two series are said to be cointegrated if there exists a stationary linear combination of the two but each individual series is non-stationary. This phenomena means that these series are linked by a long-run equilibrium relationship.

Quite often, cointegration is viewed as a statistical expression of the nature of the long-run equilibrium relationships. For example, if y and x are two series linked by some long-run relationship from which they can deviate in the short run but must return to in the long run, then the residuals are stationary. Otherwise, if they diverge without bound, no long-run equilibrium relationship exists. In empirical work, there are two common approaches used in testing for cointegration namely; Engle Granger Approach and Johansen Approach. In our study, we used the Engle and Granger (1987) approach.

3.3.3 Granger Causality Test

Whether GFCF is granger caused by FDI remains an open question for discussion. The concept of granger causality relates to whether one variable can help improve the forecast of another. Testing for granger causality between FDI and GFCF helps to establish whether there is a feedback mechanism between the two variables. The test is based on these two equations.

$GFCF^{\wedge}ftGFCF^{\wedge}+frFDI^{\wedge}+e,$ (4)

$FDI_t \quad = \quad a\backslash GFCF_{t\_x} \quad + \quad a_2FDI+ \quad v,$ (5)

FDI, granger causes *GFCF,* if it helps to forecast $GFCF_t$ given past *GFCF,*. However, *FDI,* does not granger cause *GFCF,* if *GFCF,* is a function of its own shocks and does not respond to *FDI,* shocks meaning that/$?_2 = 0$. Thus, *FDI,* does not improve the forecasting performance of *GFCF,*. If *FDI,* granger causes *GFCF,* and *GFCF,* granger causes *FDI,,* there is a feedback mechanism in the system (Granger, 1988).

3. 3.4 Data Sources

This study utilized time series data for analysis. Published data from local and international sources were used in the study while trying to maintain accuracy and consistency of the data. Since majority of the data was on macroeconomic variables, they were obtained from the World Development Indicators. These included data on GFCF, gross national savings, inflation, GDP growth rate and openness. Real effective exchange rate data was obtained from the Central Bank of Kenya (CBK) whereas data on both FDI variables was extracted from the UNCTAD FDI data base.

RESEARCH ANALYSIS AND FINDINGS

We discuss our research findings and analysis in this section. Time series data estimation techniques were used to carry out the analysis on the impact of FDI on domestic capital formation in Kenya.

4.1   Estimation Procedures

We start by discussing the tests performed on the data to ascertain whether it could be used in its raw form for regression or it should be transformed. The study used the OLS method in the regression of data. Normality and stationarity tests were carried out to ensure accuracy of the data before analysis.

A descriptive analysis of the data was conducted to determine whether the data exhibited normality (Table 4.1).

Table 4.1: Summary Statistics

	GFCFR	GDSR	IFDIR	OFDIR	INF	OPEN	REER	GGDP
Mean	0.1885	0.1545	0.0051	0.0006	12.7638	0.5955	106.7500	4.3151
Median	0.1906	0.1716	0.0040	0.0003	11.3800	0.5750	110.9300	3.9250
Maximum	0.2508	0.2702	0.0268	0.0039	45.9800	0.7500	147.4100	22.1700
Minimum	0.1539	0.0612	0.0001	-0.0002	1.5500	0.4800	82.0400	-4.6554
Std. Deviation	0.0208	**0.8681**	0.0051	0.0008	8.5293	0.0702	14.3932	4.5102
Skewness	0.4379	-0.1193	2.2544	2.0014	1.6935	0.3900	-0.0333	1.9164
Kurtosis	3.5331	1.8166	9.7382	8.0463	7.1614	2.3582	3.2205	8.7543
Obs.	40	40	40	40	40	40	40	40

As indicated in the table, the mean ratio of GFCF to GDP is 0.19 and a minimum of 0.15. The average ratios for both inward FDI and outward FDI are 0.005 and 0.0006, respectively. Outward FDI recorded a ratio of -0.0002 as the minimum and a ratio of 0.004 as the maximum which is a reflection of low levels of outward FDI in Kenya. Kenya has experienced high levels of inflation in the study period as indicated by a maximum overall annual inflation rate of 46.0 percent with an average of 13.0 percent. Like many developing countries, Kenya's levels of gross domestic savings is still very low with a record minimum and maximum ratios of 0.06 and 0.27 to the

GDP, respectively. The country recorded mixed economic performance during the study period with a peak GDP growth rate of 22.17 percent and -4.66 percent as the bottom. On average, real effective exchange rate was 106.75 with a maximum of 147.41 in the study period.

To establish whether there exists multicollinearity among the variables used in the regression, a correlation matrix is obtained (Table 4.2). Most of the variables do not depict significant relationships. The second column shows the relationship between dependent variable and the explanatory variables. GFCF is positively related to domestic savings (0.476(0.002)) and growth rate of GDP (0.519(0.001)). This means that increased domestic savings leads to increase in domestic investment.

Table 4.2: Correlation Matrix of the Variables

	GFCFR	GDSR	GGDP	IFDIR	INF	OFDIR	OPEN	REER
GFCFR	1.0000							
GDSR	0.476	1.000						
	(0.002)							
GGDP	0.519	0.166	1.000					
	(0.001)	(0.306)						
IFDIR	0.258	0.103	0.136	1.000				
	(0.109)	(0.526)	(0.401)					
INF	-0.068	0.233	-0.288	-0.163	1.000			
	(0.676)	(0.148)	(0.072)	(0.315)				
OFDIR	0.154	0.019	-0.053	0.143	-0.045	1.000		
	(0.344)	(0.909)	(0.743)	(0.380)	(0.783)			
OPEN	0.403	O.190»	0.065	0.173	0.414	0.002	1.000	
	(0.010)	(0.219)	(0.688)	(0.286)	(0.008)	(0.989)		
REER	-0.254	0.194	-0.050	-0.347	0.073	-0.239	-0.237	1.000
	(0.113)	(0.231)	(0.758)	(0.028)	(0.653)	(0.137)	(0.142)	

Notes: Probabilities in parentheses

In order to confirm whether there was indeed multicollinearity in the variables, we used another rule of thumb as illustrated in paragraph 4.2. This is because there is no one unique method of detecting relationship among variables. The **Klien**'s **rule** of **thumb** (Gujarati, 1995 pp. 337) which involves comparison between the R^2 of all the auxiliary regressions and the R^2 of the overall regression was used. The results as shown in Table 4.3, suggested that the degree of multicollinearity was not a problem since none of the R^2 of the auxiliary regressions was greater

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than the R^2 of the overall regression. Given that the degree of multicollinearity was not a problem, none of the variables was dropped in the estimation.

Table 4.3: Detecting Multicollinearity

Dependent variable	R^J	Decision
Growth rate of GDP	0.179	Not a problem
Gross National Savings ratio	0.200	Not a problem
Inward FDI ratio	0.204	Not a problem
Outward FDI ratio	0.078	Not a problem
Inflation	0.389	Not a problem
Open	0.307	Not a problem
Real effective exchange rate	0.268	Not a problem
Overall R^	0.606	

4.2   Detecting Multicollinearity

Detecting multicollinearity or measuring its strength has no one unique way but what we have are rules of thumb which are all the same. We used the following rule of thumb as illustrated by Gujarati (1995) to confirm wliether some variables which had shown significant relationship in Table 4.2 were actually correlated.

Auxiliary regressions

Since multicollinearity arises because one or more of the repressors' are exact or approximately linear combinations of the other regressors, one way to find out which X variable is related to other X variables is to regress each X_f on the remaining X variables and compute the corresponding R^2, which we designate $R_,^2$.

Each one of these regressions is called an auxiliary regression which is auxiliary to the main regression of Y on the X's. Following the relationship between F and R^2, the variable

$$R \qquad *_{>}^{/(K\_2)} \qquad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (6)$$
$$_{Xt})'(n\text{-}k \quad + \quad |)$$

follows the F distribution with $K-2$ and $n\text{-}k+1$ degrees of freedom. In equation (6), n is the sample size, K is the number of explanatory variables including the intercept term, R^2_{XX} $\qquad$ $_{Xj}$ is the coefficient of determination in the regression of variable X, on the remaining$^{\wedge}$ variables. If the computed F exceeds the critical F_t at the chosen level of significance, then X_l is collinear with other X's, if not, we say that it is not collinear with other X's. In this case we may retain that variable in the model.

Instead of formally testing all auxiliary R^2 values, one may adopt **Klien's rule of thumb,** which suggests that multicollinearity may be a troublesome problem only if the R^2 obtained from an auxiliary regression is greater than the overall R^2 obtained from the regression of Y on all the regressors. We used this rule of thumb where we regressed each X_f on the remaining X variables. The results as shown in Table 4.3 were obtained.

r

4.3   Unit Root Test Results

Before performing the unit root test, we graph the variables to compare their long run behaviour as indicated in Figure 4.1.

Figure 4.1: Graphs Showing the Movements of Variables at Levels
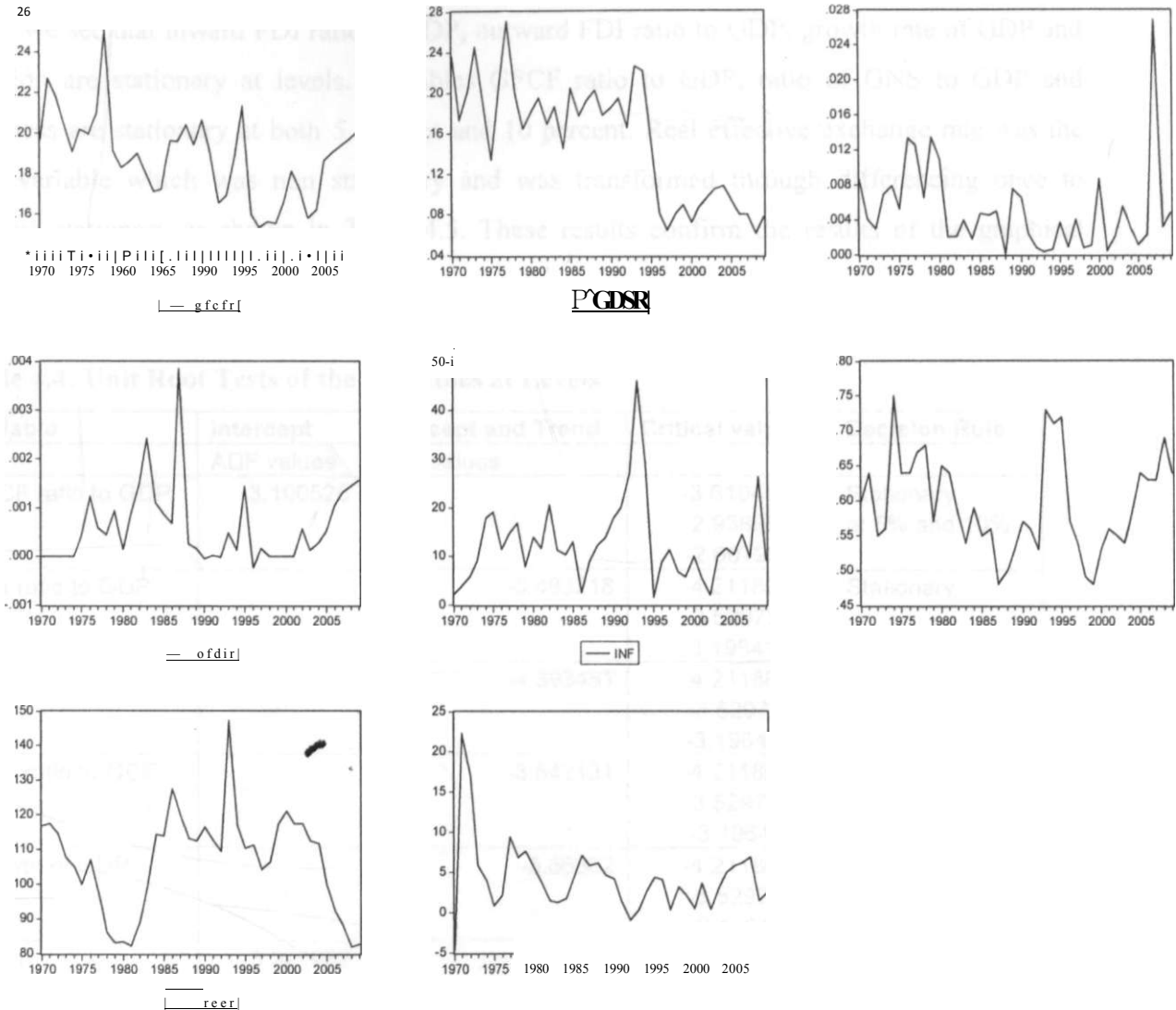
From the graphs, it is explicit that most of the variables are stationary whereas a few are non stationary at levels. The variables GFCF ratio to GDP, inward FDI ratio to GDP, outward FDI ratio to GDP, GDP growth rate, Openness, inflation and ratio of gross domestic savings to GDP

are all stationary since neither linear nor stochastic trends are indicated in the graphs. This means that the behavior of these time series can be studied over time. Only real effective exchange rate is non stationary at levels and therefore needs transformation through differencing to attain stationarity.

Unit root test results for the variables are presented in Table 4.4. From the test results using ADF, we see that inward FDI ratio to GDP, outward FDI ratio to GDP, growth rate of GDP and inflation are stationary at levels. Variables GFCF ratio to GDP, ratio of GNS to GDP and openness are stationary at both 5 percent and 10 percent. Real effective exchange rate was the only variable which was non stationary and was transformed through differencing once to become stationary as shown in Table 4.5. These results confirm the results of the graphical representation of the variables.

Table 4.4: Unit Root Tests of the Variables at Levels

Variable	Intercept	Intercept and Trend	Critical values	Decision Rule
	ADF values	ADF values		
GFCF ratio to GDP	-3.100526		-3.610453*** -2.938987** -2.607932*	Stationary at 5% and 10%
IFDI ratio to GDP		-5.483218	-4.211868*** -3.529758** -3.196411*	Stationary
OFDI ratio to GDP		-4.393481	-4.211868*** -3.529758** -3.196411*	Stationary
GNS ratio to GDP		-3.542131	-4.211868*** -3.529758** -3.196411*	Stationary at 5% and 10 %
Growth of GDP		-5.66662	-4.211868*** -3.529758** -3.196411*	Stationary
Open	-3.321962		-3.610453*** -2.938987** -2.607932*	Stationary at 5% and 10%
Inflation	-3.733763		-3.610453*** -2.938987** -2.607932*	Stationary
REER	-2.03482		-3.610453*** -2.938987** -2.607932*	Non Stationary

*Notes: *** - critical values at 1 %,   ** - critical values at 5 %,   * - critical values at 10%*

Table 4.5: Unit Root Test for the Differenced Variable

Variable	Intercept	Intercept and Trend	Critical values	Decision Rule
	ADF values	ADF values		
DREER	-8.679134		3.626784*"	Stationary
			-2.945842"	
			-2.611531*	

*Notes: *** - critical values at 1 %,   ** - critical values at 5 %,   * - critical values at 10%*

Figure 4.2 shows the behaviour of real effective exchange rate after differencing once. Since no stochastic trend is shown in the graph, the variable is stationary at first difference.

Figure 4.2: Graphical Representation of the Transformed REER

> DREER
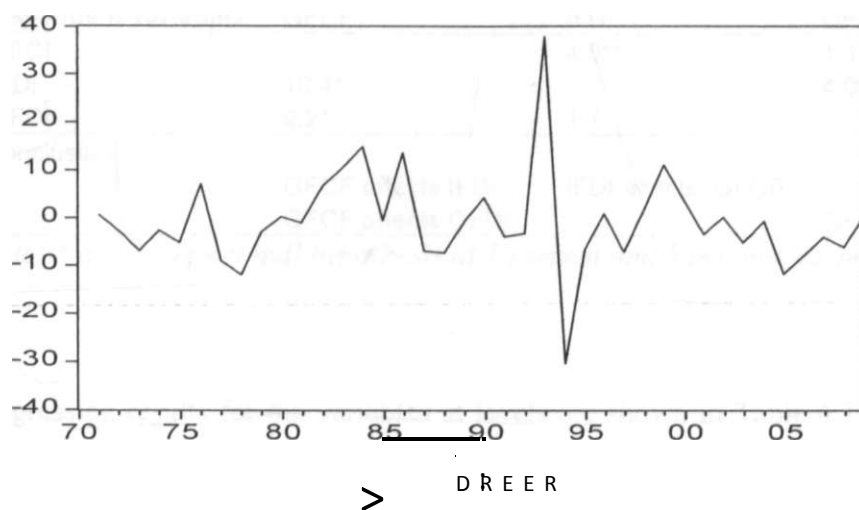
4.4   Cointegration Test Results

The unit root tests confirm that all the variables are stationary at levels except real effective exchange rate. Since testing for cointegration applies to individual series which on their own are non-stationary but linear combination of two of such series is stationary, this test was not necessary in this study. This was because most of variables were stationary at levels.

4.5 Granger Causality Test Results

Table 4.6 presents the granger causality test results for GFCF and both inward and outward FDI variables. The results show that the effect of outward FDI on GFCF is statistically insignificant. Also from the table, the effect of inward FDI on GFCF and the effect of GFCF on outward FDI are statistically significant. The effect of GFCF on inward FDI is significant whereas the effect of inward FDI on outward FDI is insignificant. This is a reflection that outward FDI affects GFCF but not the reverse. However, the causal links between inward FDI and GFCF are bi-directional.

Table 4.6: Results of Granger causality test among GFCF, Outward FDI and Inward FDI

Dependent variables	GFCF	IFDI	OFDI
GFCF		4.0**	1.1
IFDI	10.4*		4.0**
OFD!	9.2*	1.7	
conclusion			
	GFCF affects IFDI	IFDI affects GFCF	
	GFCF affects OFDI		OFDI affects IFDI

*Note: * and * * reject null hypothesis at 1 percent and 5 percent, respectively.*

Regression results for the variables at levels are shown in Table 4.7. From the results it can be seen that the variables GNS ratio to GDP and growth rate of GDP are significant in explaining the model. Openness is significant at 5 percent. Variables inward FDI ratio to GDP, outward FDI ratio to GDP, inflation and real effective exchange rate are insignificant in explaining the model.

Table 4.7: Regression Results for the Variables at Levels.

Dependent variable: GFCF/GDP	Coefficient	t- statistic	prob.
Explanatory variables			
Inward FDI ratio to GDP	-0.03513 (0.511511)	-0.06868	0.9457
Outward FDI ratio to GDP	2.804717 (2.992973)	0.93710	0.3557
Openness	0.093806 (0.039541)	2.37237	0.0239
Inflation	-0.000422 (0.000338)	-1.2468	0.2215
GNS ratio to GDP	0.154446 (0.044449)	3.47465	0.0015
Growth rate of GDP	0.001725 (0.000565)	3.05304	0.0045
Real effective exchange rate	-0.000302 (0.000187)	-1.60937	0.1174
C	0.137429 (0.032684)	4.204832	0.0002
R- Squared	0.61		
No. of Observations	40		

Notes: standard errors in parentheses.

The results of the effects of FDI on domestic capital accumulation of most of the variables at levels confirm our expected signs of the coefficients of the regression. Only inward FDI ratio to GDP gave a negative coefficient which is different from the consensus in literature of positive coefficient. This means that inward FDI in Kenya crowds out domestic investment. The rest of the variables though some were insignificant, the sign of their coefficients conform to the results from empirical studies such as^hose by Ndikumana and Verick (2008), and Mileva (2008).

The fact that some variables thought to be significant in explaining domestic capital formation were insignificant prompted us to do some transformations on the data. In addition, the unexpected sign on inward FDI ratio to GDP led us into thinking about transforming the data used in the analysis. We used the inverse of inward FDI ratio to GDP. Since real effective exchange rate was non stationary, it was important to make it stationary through differencing. These transformations gave us different results as shown in Table 4.8.

Table 4.8: Regression Results for Variables Used in the Study

Dependent variable: GFCF/GDP	Coefficient	t- statistic	prob.
Explanatory variables			
Inverse inward FDI ratio to GDP	6.41 E-07 (7.20E-07)	0.890008	0.038
Outward FDI ratio to GDP	5.337484 (2.954345)	1.806656	0.081
GNS ratio to GDP	0.112961 (0.047207)	2.392872	0.023
Openness	0.105826 (0.03963)	2.670336	0.012
Inflation	-0.000258 (0.000385)	-0.671182	0.507
Growth rate of GDP	0.002007 (0.000675)	2.972025	0.006
Differenced real effective exchange rate	-0.00039 (0.000236)	-1.650081	0.109
C	0.097975 (0.021689)	4.517277	0.000
R- Squared	0.63		
No. of Observations	39		

Notes: Standard errors in parentheses.

After transformations, all the variables gave us the expected sign of the coefficients. The results of inward FDI ratio to GDP are significant at 5 percent and the coefficient has the expected positive sign. This means that inward FDI in Kenya promotes domestic investment rather than having crowding out effects. Growth rate of GDP has a positive relationship with domestic capital accumulation. This implies that Kenya needs to increase her efforts in attaining high and sustainable GDP growth rates. Openness is significant at both 5 percent and 10 percent conventional levels of significance with a positive coefficient. This shows that domestic investment in Kenya is very much driven by trade. Rather than having displacement effects, outward FDI had a positive impact on capital accumulation in Kenya. This result was in agreement to the results of Herzer and Schrooten (2007).

As a consequence therefore, Kenya needs to improve her investment climate as well as expanding her market base with the rest of the world. Domestic savings are also key to promoting domestic investment which poses a challenge for Kenya whose marginal propensity to save is still very low due to high unemployment levels.

The results of inflation and real effective exchange rate agreed to our earlier prediction of negative coefficient. With an historical mark of the Kenyan exchange rate at Ksh. 92 for a dollar in the month of August 2011, this means that Kenya needs to intensify her efforts in cushioning her currency against international pressures. Kenya's rate of inflation has been increasing at a high rate from an overall inflation rate of 5.42 percent in January 2011 to 15.53 percent in July 2011 (Republic of Kenya, July 2011). This result means that in order to increase her levels of GFCF, Kenya needs to reduce her high levels of inflation so as to attract both local and foreign investors.

CHAPTER 5

CONCLUSION AND POLICY RECOMMENDATIONS

5.1   Conclusion

The development economy that the Kenyan government inherited at independence gradually gave way to negative growth rates and high inflationary rates reaching its peak of 46.0 percent in 1993. The growth problem became a big issue that the country had to rethink about her economic performance which led to economic recovery strategies and structural programmes. The question which would worry policy makers would be the factors which could have caused the decline.

Since a country's capital formation is important in promoting economic growth an attempt has been made in this study to investigate some of the key factors which explain GFCF in Kenya.

The linear regression results have shown that growth rate of GDP, gross national savings, openness of the economy and inward FDI are significant factors in explaining domestic investment. Outward FDI is also significant at 5 percent whereas real effective exchange rate is significant at 10 percent. Inflation rate was the only variable which was insignificant at any of the conventional levels of significance. The estimated parameters conformed to the expected signs from the literature.

The results in this study also have shown that the relationship between inward FDI and domestic investment runs both ways. However, the results clearly indicate that the impact of domestic investment on inward FDI is stronger than the reverse relation.

5.2   Policy Recommendations

From the study findings, we make the following key recommendations;

There is need for the government to embark on measures aimed at promoting domestic investment since an impressive investment performance serves as a sign of high returns to capital. This will in turn attract more foreign capital.

Since FDI and domestic investment are complements, Kenya being a developing country should encourage and promote FDI inflows which mean that appropriate FDI policies and regulations are required. An example would be to urge MNCs to undertake export obligations or encourage direct investors to invest in risky areas where domestic investment is limited. A case in point would be for the government to encourage foreign investment in agriculture in the north eastern region where Kenyans are dying of starvation. This would mandate the government to enhance security and to provide the appropriate infrastructure such as the improvement of roads, construction of Airstrips and provision of water through sinking boreholes in this region.

Growth rate of GDP is key to promoting domestic capital formation. Therefore the government should increase her efforts aimed at boosting economic growth. Although initiatives for boosting economic growth are in place like the economic stimulus programme, sound macroeconomic policies needs to be instituted to revamp the economy.

There is need for accelerated marketing for Kenya in all over the world to make it an investment destination. Major emphasis would be to improve investment climate through improved infrastructure which greatly reduces the cost of doing business.

Openness is very significant in the model which calls for the government to open and carefully encourage international trade with more emphasis on export promotion. There is need to liberalize the economy further by removing tariff and non tariff barriers that may discourage favourable terms of trade.

5.3   Areas for further research

The study uses time series analysis and OLS method of estimation. A similar study could be done using panel data analysis since most studies from the literature have used panel data instead of time series data.

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Appendix III

Table 1.1   FDI inflows to Kenya, 1970-2009

Year	Inflows (US $ Million)
1970	13.80
1971	7.40
1972	6.30
1973	17.26
1974	23.42
1975	17.16
1976	46.37
1977	56.55
1978	34.41
1979	84.01
1980	78.97
1981	14.15
1982	13.00
1983	23.74
1984	10.75
1985	28.85
1986	32.73
1987	39.38
1988	0.39
1989	62.19
1990	57.10
1991	18.80
1992	6.00
1993	2.00
1994	4.30
1995	33.00
1996	10.55
1997	53.00
1998	11.00
1999	13.82
2000	110.90
2001	5.30
2002	^ . 27.62
2003	81.74
2004	46.06
2005	21.21
2006	50.67
2007	729.05
2008	95.58
2009	140.52

Source: UNCTAD   FDI   database

Appendix III

Table 1.2 GFCF levels in Kenya, 1970-2009

year	Million US Dollars
1970	315.59
1971	403.76
1972	458.53
1973	511.68
1974	567.84
1975	658.81
1976	694.22
1977	942.44
1978	1329.99
1979	1195.21
1980	1331.21
1981	1275.71
1982	1223.79
1983	1083.11
1984	1062.03
1985	1059.61
1986	1421.47
1987	1564.36
1988	1708.41
1989	1609.52
1990	1773.80
1991	1551.35
1992	1363.11
1993	974.22
1994	1349.07
1995	1934.61
1996	1928.43
1997	2018.24
1998	2209.14
1999	/» 2010.68
2000	" 2120.56
2001	2357.26
2002	2266.52
2003	2360.47
2004	2617.10
2005	3503.83
2006	4293.87
2007	5274.82
2008	5921.15
2009	5901.43

Source: World Development Indicators

Appendix III

Table 1.3 Data used in the analysis

Year	GFCFR	IFDRIN	OFDIR	GDSR	Inf	Open	GGDP	REER
1970	0.196818	116.19	0.00000	0.235585	2.19	0.60	-4.6554	116.92
1971	0.227037	240.32	0.00000	0.173662	3.78	0.64	22.17	117.45
1972	0.217592	334.49	0.00000	0.201834	5.83	0.55	17.08	114.65
1973	0.204497	144.97	0.00000	0.24536	9.28	0.56	5.90	107.65
1974	0.191194	126.81	0.00000	0.185349	17.81	0.75	4.07	105.03
1975	0.202131	189.94	0.000417	0.134537	19.12	0.64	0.88	99.84
1976	0.199800	74.93	0.001238	0.209342	11.45	0.64	2.15	106.95
1977	0.209694	79.48	0.000592	0.27023	14.82	0.67	9.45	97.92
1978	0.250765	154.13	0.000439	0.200075	16.93	0.68	6.91	85.97
1979	0.191713	74.21	0.000945	0.164321	7.98	0.57	7.62	83.03
1980	0.183228	92.00	0.000149	0.181154	13.86	0.65	5.59	83.22
1981	0.186113	484.42	0.000855	0.19553	11.60	0.64	3.77	82.26
1982	0.190278	494.74	0.001494	0.169594	20.67	0.58	1.51	89.00
1983	0.181146	251.86	0.002425	0.186622	11.40	0.54	1.31	99.46
1984	0.171532	575.95	0.001110	0.145069	10.28	0.59	1.76	114.37
1985	0.172714	212.65	0.000883	0.204773	13.01	0.55	4.30	113.86
1986	0.196359	221.18	0.000681	0.177234	2.53	0.56	7.18	127.48
1987	0.196261	202.41	0.003858	0.191971	8.64	0.48	5.94	120.51
1988	0.204469	21,424.05	0.000263	0.202165	12.26	0.50	6.20	113.22
1989	0.194581	133.01	0.000164	0.177718	13.79	0.53	4.69	112.49
1990	0.206482	150.45	-5.153E-05	0.185284	17.78	0.57	4.19	116.69
1991	0.190301	433.62	0.000025	0.194561	20.08	0.56	1.44	112.82
1992	0.165814	1,370.12	-1.155E-05	0.165107	27.33	0.53	-0.7995	109.59
1993	0.169376	2,875.89	0.000485	0.225592	45.98	0.73	0.35	147.41
1994	0.188731	1,662.36	0.000135	0.221077	28.81	0.71	2.63	117.05
1995	0.213856	274.13	0.001459	0.152574	1.55	0.72	4.41	110.48
1996	0.160091	1,142.09	-0.0002235	0.080929	8.86	0.57	4.15	111.38
1997	0.153879	247.47/	0.000164	0.064566	11.36	0.54	0.47	104.28
1998	0.156752	1,281.20	0.000001	0.08134	6.72	0.49	3.29	106.25
1999	0.155914	933.02	0.000001	0.089946	5.74	0.48	2.31	117.29
2000	0.167088	114.43	0.000001	0.072802	9.98	0.53	0.60	121.05
2001	0.181516	2,449.07	0.000001	0.087067	5.74	0.56	3.78	117.60
2002	0.172369	476.09	0.000564	0.097615	1.96	0.55	0.55	117.62
2003	0.158382	182.33	0.000140	0.105235	9.82	0.54	2.93	112.44
2004	0.162592	349.43	0.000275	0.108303	11.62	0.59	5.10	111.79
2005	0.186991	883.38	0.000517	0.094525	10.31	0.64	5.91	100.00
2006	0.190819	444.05	0.001064	0.080565	14.45	0.63	6.32	92.18
2007	0.194167	37.26	0.001327	0.080435	9.76	0.63	7.01	88.14
2008	0.197165	314.19	0.001458	0.061183	26.24	0.69	1.55	82.04
2009	0.200895	209.05	0.001566	0.078137	9.23	0.64	2.59	82.62

Source: World Development Indicators,   UNCTAD FDI database, Author's computation.