DETERMINANTS OF DOMESTIC PRIVATE INVESTMENT
IN KENYA, (1970 – 2001)

BY

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF
ECONOMICS, KENYATTA UNIVERSITY IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE MASTERS OF ARTS DEGREE IN
ECONOMICS.

AUGUST 2004
DECLARATION

This research paper is my original. Except where acknowledgement is given, the paper is not substantially similar to work that has previously been or is being submitted to any university for fulfilment of an academic requirement.

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DEDICATION

This project is dedicated to my parents Mr John Njuru and Mrs Julia Wanjeri Njuru for their unfailing support in the whole of formal education. This project would not have been success without their encouragement, moral and economic support. It is also dedicated to all my brothers and my sisters – Wangari, Gikuma, Muchori, Maina, Nyaga, Kiiru and Wambui. They have been a role model and also supported me in different ways in order to make my life successful.
ACKNOWLEDGEMENT

I feel highly indebted to various persons who have been instrumental in different ways in the process of writing my research paper. Many have contributed positively, but I will acknowledge only a few of them. My greatest appreciation goes to Almighty God for giving me an opportunity to succeed in my Masters degree amidst many challenges and weaknesses. I also want to acknowledge my two supervisors Mr Obere Almadi and Mr Nelson Wawire for their guidance, positive criticism and also accepting to commit their time to supervise me notwithstanding that they had busy programmes. I cannot forget all academic staff of Economics department Kenyatta University who participated actively towards making this research paper be of high quality. Their comments and criticism added a lot of value to my paper.

I also owe a lot appreciation to Kenyatta university administration for the financial assistance given to me in my master’s programme and also for their patience in the time of financial hardship. I can’t forget to thank all staff of the Bureau of Training and Consultancy, a department of Kenyatta University, for the support they gave me in many dimensions in whole of my postgraduate degree programme. My classmate, Rono, has also been very useful towards making my project writing successful. His encouragement, academic support and being there for me, has enabled me to go through my programme with a lot of confidence.

I can’t forget to acknowledge my family members who have actively assisted me in diverse ways. Their encouragement, financial help and prayers have contributed a lot towards making me complete my studies. Lastly I can’t forget my friends for advises, role modelling and assisting me in different ways such as academic, social and economic, among others.
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ABSTRACT

This study analyse the determinants of domestic private investments in Kenya using a time series data in the period between 1970 and 2001. DPI needs to remain the cornerstone of renewed growth in Kenya if the economy is to be successful and efficient. Kenyan government has tried to put its economy on a faster and stable growth by use of private investments through some economic reforms. Despite these measures, domestic private investment has continued being characterized by decline, volatility and unpredictable trends.

The objective of this investigation was to identify the factors that determine cyclic and declining trend of DPI in Kenya. The study also analyzed relative effects of each variable and gives policy recommendations based on the research findings. Flexible accelerator model which put investments as a function of economic growth was used in modelling determinants of domestic private investments. Data used in the study was obtained from secondary source and refined to make them reliable in estimating the econometric model. Some variable were not stationary at levels. Non stationary variables in the series were differenced to make them stationary in order to avoid spurious regression results. Linear model was estimated by use of ordinary least squares and this gave the most reliable results.

Lagged domestic private investment was found to be the most statistically significant and positively related with DPI. The question of investment climate in the country should therefore be addressed in order to ensure continuing participation of the private sector in the investment. Exchange rates, fiscal deficit, inflation rates and real interest rates were found be statistically significant and negatively correlated with DPI. Economic liberalization and return on investment were statistically significant and positively correlated with DPI. Policies that address each of these variables should be put in place. All other variables were found to have negligible effects on DPI.
<table>
<thead>
<tr>
<th>Acronym</th>
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<tr>
<td>CBK</td>
<td>Central Bank of Kenya.</td>
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<tr>
<td>CPI</td>
<td>Consumer price index.</td>
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<td>DPI</td>
<td>Domestic private investments.</td>
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<td>EPC</td>
<td>Export Promotion Council.</td>
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<td>GDP</td>
<td>Gross Domestic Product.</td>
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<td>HPAEs</td>
<td>High performing Asian economies.</td>
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<td>IPC</td>
<td>Investment Promotion Council.</td>
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<td>OLS</td>
<td>Ordinary least squares.</td>
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<td>PI</td>
<td>Private investment.</td>
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<td>ROK</td>
<td>Republic of Kenya.</td>
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<td>SSA</td>
<td>Sub – Saharan Africa.</td>
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<td>UN</td>
<td>United Nations.</td>
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DEFINITIONS OF TERMS

*Domestic Private Investment:* It is the accumulation of physical and liquid stock for productive purpose. This is done by private persons who are nationals in the country.

*Depreciation of currency:* Decrease in the value of one currency relative to another under flexible exchange rate regime.

*Crawling Peg Exchange Rate Regime:* It is the exchange rate regime where exchange rate is pegged at desired levels according to economic and trade situations prevailing in a particular country and its trading partners.

*Fixed Exchange Rate:* An exchange rate system where the central banks fix or peg the exchange rate according to the policy goals.

*Flexible Exchange Rate:* An exchange rate regime where foreign exchange rates are determined by the forces of supply and demand of foreign exchange.

*Balance of Payment:* A set of accounts that summarises economic transaction between residents, firms and government of one country with their counterparts in the rest of the world.

*Consumer Price Index:* A measure of the cost of a fixed market basket of goods and services over time.

*Fiscal Policy:* Government measures aimed at raising revenue and incurring expenditure in order to achieve particular macroeconomic goals, such as low unemployment, stable prices, and economic growth.

*Monetary Policy:* The exercise of the central bank’s control over the quantity of money and the level of interest rates in order to achieve economic stability.
CHAPTER ONE

INTRODUCTION

1.1 Background

1.1.1 The Importance of Domestic Private Investment

Domestic Private Investment usually impacts positively to economic, social and political development of a country. This type of investment is a good source of employment creation in the country through capital accumulation for productive endeavours. It may lead to equity in income distribution and improved standard of living. Moreover, the government is able to collect taxes from the private sector out of the incomes earned by the factors of production. These incomes include profit to entrepreneurs, wages to labourers, interest to the capital owners and rent to the owners of the land. In addition, the social problems arising from unemployment, for instance, crime, immorality, drugs abuses among others are reduced and thus may lead to improved social welfare. Furthermore, the domestic private investments may have direct impact on foreign direct investors who prefer committing their funds in countries where domestic investors are thriving. Consequently, this may lead to technological transfer into the country, which contributes to increased productivity of factors of production (United Nations, 1993).

Another importance of private investment in a country is that it may lead to public sector involvement in the investment activities, especially in the establishment of the infrastructure to complement private sector’s effort. This further results in the growth of aggregate investment that is instrumental in economic development. In addition, public investment is vital in reducing cost of production for the private investors especially if it is directed towards physical infrastructure development. Low production cost has impact on prices of the goods consumed locally and
for exportation. In the long run, exports may become competitive in the world market, and consequently impacts positively on the balance of payment and the terms of the trade. This has further effect on the future investment since the country’s ability to import especially capital goods may be highly enhanced and as a result there may be robustness in the economic growth (Kahuthu, 1999).

In summary, private investment remains the corner stone of renewed growth in the less developed countries, since it has successfully re-oriented these economies to make them more efficient. Countries wishing to put the economy on a faster and stable growth path will therefore have to promote the level of private investment as a matter of sound economic policy, in order to make the private sector become the engine for renewed growth. The experience in many developing countries has shown a close correlation between the private investment growth and economic growth (Seruvatu et al, 2001). This is because domestic private investment not only adds to the productive capacity, but also creates new opportunities for the acquisition of new and often more efficient technology. It does not only determine the rate of gross capital accumulation, but also the growth of production sector of the economy. Therefore, policies that encourage increased domestic private investment in the country are desirable.

1.1.2 Private Investment in Africa.

Most of African countries have recorded declining private investment rates since 1970’s to the end of 1990’s (Mlambo et al, 1999). Cross sectional and time series data from a number of African countries has given interesting facts about evolution of private investment in the continent of Africa.
First, the empirical evidence shows that in the post debt crisis, private investment has generally tended to decline in Africa especially in SSA. Severe decline in private investment occurred in the 1980s. In the second half of the 1990s, private investment began to show signs of improvement, though the levels were still below the peaks reached in the 1970s (Mlambo et al., 1999). Secondly, North African countries have recorded comparatively higher private investment rates with little decline in early 1990s where it declined from 12.82 percent in 1980s to 11.57 percent (Table 1). However, there was sharp increase to 14.85 percent towards the end of 1990s (African Development Bank, 1999). Generally, private investment in Africa has not shown a sign of robustness in growth. The worst affected region is SSA that has had less than 10 percent average rates for the whole period (Table 1).

Table 1.0 Average private Investment as Percentage of GDP (1970-1999)

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<tr>
<td>Countries</td>
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<tr>
<td>Sub-Saharan countries</td>
<td>9.06</td>
<td>6.8</td>
<td>7.9</td>
<td>8.6</td>
</tr>
<tr>
<td>North Africans countries</td>
<td>9.9</td>
<td>12.82</td>
<td>11.57</td>
<td>14.85</td>
</tr>
<tr>
<td>South Africa</td>
<td>13.9</td>
<td>13.5</td>
<td>12.6</td>
<td>11.06</td>
</tr>
<tr>
<td>All African countries</td>
<td>10.8</td>
<td>10.55</td>
<td>10.48</td>
<td>11.22</td>
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The episodes of decline in DPI seem to occur in times when Kenya’s economy experienced political and macroeconomic instability. For instance, the coup attempt in 1982, electioneering
periods, oil price shocks, economic liberalisation, among others. As shown in Figure 1, DPI declined sharply in the period between 1971 and 1975. This could be attributed to deterioration in economic performance, first oil crisis of 1973 and severe drought of 1974.

The DPI increased sharply in 1977. This could have been caused by the coffee boom of 1976/77, which increased average household’s income and savings, and hence increased investable funds. However, the decline in coffee prices towards the end 1977 and second oil crisis of 1979 may be the possible explanation of decline in investments towards the end of the 1970s. Moreover, increase in DPI in 1981 may be attributed to improvement in macroeconomic environment over the same period. However, the 1982 coup attempt may have increased uncertainties among investors, and therefore decreased their capital accumulation.

Over the period 1982 to 1987, the domestic private investment generally increased. This could have been facilitated by fiscal and monetary disciplinary measures adopted by government at that time. However, the implementation of structural adjustments programmes in mid 1980s may have impacted negatively on investment behaviour, and therefore the domestic private investment declined. In addition, the relatively stable political climate after the multi party election in 1992 may have led to general increase in DPI over period 1993 to 1995. Prior to and after 1997 elections, the country was surrounded by political instability, which could have made people reduce their investments. Consequently, the growth in DPI declined to 9.09 percent in year 2001.
In an effort to influence investment growth in the country, the government has adopted several strategies. These include the use of macroeconomics tools and other promotional strategies. The different policies that have been adopted over the sample period of study are as explained below.

1.1.3.1 Monetary Policy

The restrictive monetary and credit policies included in the stabilisation packages affect investment in two ways. First, the real cost of bank credit rises through increase interest rates. Secondly, they increase the opportunity cost of retained earnings. Both mechanisms raise the user cost of capital and lead to a reduction in investments (Serven et al, 1992). Liberalization of interest rate in Kenya was adopted in 1991. This aimed at harmonizing competitiveness among the commercial banks and non-banking financial institutions. The arguments behind liberalization was that, the needs of both borrowers and lenders would be better met through the
operations of market forces, which would in turn maintain the general positive levels of real interest rate. In addition, this was expected to encourage the mobilization of savings, and contribute to the maintenance of financial stability. Nevertheless, this policy was adopted in the midst of increasing inflationary pressure and deteriorating economic conditions. This indicates a failure to meet the prerequisites for successful financial reform that is, fiscal discipline, macroeconomic and financial stability (Ngugi, 2001).

The trend in the domestic private investment can be linked to the trends of interest rates. The former portrayed erratic and declining trend, while the latter is showing increasing trend over time. Moreover, it is during interest rates liberalization period that domestic private investment experienced the highest decline ever, with the lowest value of 8.1 percent in the year 2000. With the liberalization, the situation became very volatile even for the borrowers since the interest rates more than doubled within a period of less than five years. This impacted negatively on investors’ especially small scale investors who had limited source of capital to finance investment. This indicates that interest rates decontrol policy was retrogressive, since it led to increase in cost of borrowing for investors and hence bank loans became unaffordable especially to domestic investors.
1.1.3.2 Exchange Rate Policy

Since independence in 1963, Kenya has had three phases of exchange rate regime. The first one was fixed exchange rate regime from 1966 to 1982, where the exchange rate was fixed at a given level by the monetary authority. During this period, the shilling exchange rate was adjusted only three times, in 1967, 1975, and 1981, in order to maintain competitiveness of exports. This regime was replaced in 1983 by a crawling peg exchange rate regime up to 1993. In the crawling peg regime, the exchange rate was pegged at desired levels according to economic and trading situations prevailing in the major trading partners. A floating exchange rate regime was adopted in October 1993 up to date, where the foreign exchange market forces are left to determine the foreign exchange rates. Since then the shilling has remained largely market driven with Central...
bank only intervening to correct erratic movements in the rates (Central Bank of Kenya, 2000).

The different exchange rate regimes have affected domestic private investment to a greater extent. In the fixed exchange rate regime, DPI was associated with little fluctuations that were just transitory in nature. In the whole period of this regime, the lowest value of DPI experienced was 10 percent, which was above the comparative rates in the other regimes. The highest value of DPI experienced, which was 14.96 percent, for the whole period under study falls within this regime. In the crawling peg regime, there was regular depreciation of exchange rates that depressed private investment continuously, which could be due to imported capital goods becoming more expensive. The highest and lowest value of DPI witnessed over this regime was 11.68 percent and 9.43 percent respectively. The floating exchange rate regime is associated with great depreciation of local currency. This regime had the most adverse effect on the investments. The lowest value of DPI was found in this regime. Moreover, this regime was associated with very sharp decline in DPI. In particular, private investment dropped from 13.14 percent in 1995 to 9.09 percent in year 2001 (World Bank, 2002). The floating exchange rate favours foreign investors who enjoy high rates of interest rates on their investment.

1.1.3.3 Fiscal Policy

High fiscal deficits push up the interest rates or reduce the availability of the credit to the private sector, or both, thus crowding out private investment. Hence, the reduction of the public deficit during macroeconomic adjustment should allow private investment to expand. However, the way a fiscal deficit is corrected also matters. The mix of tax increases and spending reductions will affect aggregate private investment. Government expenditure especially on components of
infrastructure such as roads, ports, and communication networks may be complementary with private investment, and will cause private investment to increase. This underscores the need to protect public expenditure on infrastructure during the adjustment process to encourage the recovery of investment and growth (Serven et al, 1992).

However, poorly planned fiscal measures leading to budgetary deficit and heavy debt burden has had retrogressive effects on DPI. Allocation of large amount of public funds to recurrent expenditure and less to capital accumulation especially in infrastructures have had crowding out effect on the DPI (Mariara et al, 2002). In addition, large debt overhang is a sign of increased future taxation, and therefore leads to decline in investment rates. In the 1970s, when fiscal deficit was less than 5 percent, the DPI rates were little bit high than those of 1980s when fiscal deficit was higher than 5 percent. In the 1990s, the situation was even worse due to large fiscal deficit, which was above 10 percent and also large debt overhang (World Bank, 2000). Increase in domestic public borrowing led to reduction in credit availability to private investors and also increased bank loan interest rates. The general trend of increased fiscal deficit, public debt and taxation in the whole period between 1970 and 2001 could have led to erratic and declining trends of DPI.

1.1.3.4 Investments Promotional Policies in Kenya.

The Government of Kenya has adopted number of promotional policies meant to provide conducive environment for investment for both locals and foreigners. These policies have been reviewed regularly to enhance their effectiveness. These promotional policies can be analyzed
under two periods in order to evaluate their effectiveness, this are, pre and post – liberalization periods.

The pre – Liberalization period was the one in which the Kenyan economy was government based, and it started soon after independence in 1963 to mid 1980s. Government intervention in many economic aspects was evident. This was meant to streamline domestic market to avoid unfair competition to the local entrepreneurs from already established foreign producers. In this period government took an active role as an investor in the economy. This led to the establishment of many parastatals, which was a desirable involvement in order to provide essential services such as post and telecommunication. Additionally, to cater for the interest of potential investors who encountered capital and skills problems, Kenya Industrial Estate which is a state corporation was established in 1967. This was meant to support small enterprises by providing them with industrial sheds, technical management, organisational advice and cheap credit. Also, soon after independent in 1963, import substitution industrialization strategy was adopted as the main industrialization strategy. To achieve the desirable results in the industrial protection, the government used mainly three mechanisms. First, licensing that limited and prohibited the importation of goods competing with domestically manufactured goods. Second, imposing high duty on competing imports and finally, relatively lower duty was placed on industrial inputs than other imports. Other incentives to both local and foreign investors in this period were investment and depreciation allowances for the capital goods acquired for manufacturing purposes, remission from custom duties, business loss offset among many others (Republic of Kenya, 1986).
The post – Liberalization period is the one in which government controls on the economy declined. The market was set free leading to foreign producers accessing Kenyan market, and consequently local producers encountered stiff competition. It is in this period that government changed its tactics from import substitution to export promotion strategies. Export processing zones programme started in 1990 was another ambitious strategy of government meant to promote production for exportation purposes. Any investor who takes advantage of this programme and produce goods for export only, is entitled to ten years tax holiday, capital allowances, exemption from import duties on machinery, raw materials and intermediate industrial inputs among other incentive (Investment Promotion centre, 2000). In addition, government established EPC in 1992 with following objectives; first, to remove bottlenecks facing exporters and producers of export goods and services. Secondly, to formulate marketing strategies, identifying export opportunities, and to promote an export culture. Lastly, to work closely with relevant public and private sector bodies in order to co-ordinate and harmonise export development and promotion activities among all stakeholders (Mireri, 2000).

The trend of DPI in the pre- liberalization period was more stable despite the occurrences of transitional fluctuations. It was in this period that the highest level of DPI was attained of 14.96 percent in 1977. Nevertheless, this period of protected paradigm is often blamed for inefficiency in production, resulting to production of low quality and very expensive goods. Capability of locally produced goods to compete internationally was also highly dispensed with, because of this heavy protection. This could be the possible explanation of the sharp fluctuation in DPI especially when there was internal or external shock which affected Kenyan economy, for example oil crisis of 1973 and 1979 or drought of 1979 and 1984 (Mireri, 2000).
The post-liberalization period could be associated with declining trend of DPI to the lowest level ever, of 8.1 percent in year 2000. This indicates that domestic producers were unable to compete with foreign producers having enterprises locally or abroad.

1.2 Statement of Research Problem

Domestic private investments have attracted considerable attention due to their potential to contribute to the development of the economy. Generally, investment growth is a major precondition for growth in output. Harrod–Domar growth theory has linked generation of total output to the stock of capital via capital-output ratio (Shapiro, 1992).

There is a positive relationship between growth of domestic private investment and supportive measures that are adopted by a country as asserted by the World Bank (1995). Given the important role investments play in economic growth, several policies have been adopted by the government in encouraging capital accumulation in the country. These include trade liberalisation, interest rates and price decontrol, privatization of state owned enterprises, import substitution and export promotion strategies. Others are establishment of supportive government institutions to encourage and promote investment, soft loans to small-scale investors, streamlining government expenditure to avoid crowding out effects in private investment among other policy measures (Mireri, 2000). However, in Kenya the facts on the ground show that DPI has been erratic and demonstrates a declining trend since 1970s. This is despite efforts made by the government to increase DPI.
Little has been done in Kenya to give the explanation behind this trend. Okello (1997) did a study on private investment in Kenya putting more emphasis on macroeconomics factors affecting private investment, while Mwabu (1989) researched on determinants of foreign direct investment in Kenya. Both of them never addressed factors that affect domestic investments by the private sector. This shortcoming is witnessed in other studies on investment done on Kenya such as Koori (1984) and Kazi et al (1992). Therefore, this study addresses the following research questions:

(i) What are the determinants of domestic private investment in Kenya?
(ii) What is the relative effect of each of the determinants to the domestic private investment?
(iii) What policy measures ought to be taken in order to encourage domestic private investments and consequently facilitate output growth so as to achieve robustness in economic growth?

1.3 Objectives of the Study

The general objective of the study is to analyze the factors affecting domestic private investment in Kenya.

The specific objectives are:

i. To identify the factors that affect domestic private investment.

ii. To determine the relative effects of each of these factors on domestic private investment.

iii. To draw policy recommendation in the light of (ii) above.
1.4 Significance of the Study

The study on domestic private investment is useful in number of ways. First, this research is important in bridging the knowledge gap that exists on factors affecting private sector investment behaviour in Kenya. The study will suggest more factors determining DPI in Kenya and do critical analysis on the factors that has already been documented. Secondly, it will be useful to policy makers when designing different programmes to encourage investments. It will enlighten on some of the measures, which ought to be taken, that were previously ignored and others that ought to be dropped which previously were emphasised. Thirdly, it will help private investors to know how important some factors are in their investment decisions and therefore facilitate in project appraisal.

1.5 Scope and Justification of the Study

The study will focus on the determinants of domestic private investment in Kenya for period extending from 1970 to 2001. The rationale of limiting the study to this period is due to the fact that many of Africans run government policies were implemented in this period. Most of these policies aimed at promoting endogenous economic growth through domestic capital accumulation after independence in 1964.
CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Literature

Literature on investment in general, explaining amount, effects and causes, suggests that theories that can be applied in analyzing investment behavior can be categorized into three. These are Keynesian theories, neoclassical theories and uncertainty into investment theories. Each of these helps to explain some variables that are instrumental in determining investments behaviors.

2.1.1 Keynesian Theories

Keynes (1936), called in to attention the existence of an independent investment function in the economy. The heart of the Keynes analysis was the observations that although savings and investment must be equal at equilibrium, savings and investment decisions are made by different people. The implication of this argument is that there is no reason why ex-ante savings should equal ex-ante investments.

The next phase in the evolution of investment theory gave rise to the accelerator theory, which makes investment a linear proportion of changes in output. In the accelerator model, expectations, profitability and capital costs play no role. Keynesians have traditionally favoured the accelerator theory of investment while disregarding the role of factor costs. A more general form of the accelerator model is the flexible accelerator model. The basic notion behind this model is that, the larger the gap between the existing capital stock and the desired capital, the greater a firm’s rate of investment.
The hypothesis is that firms plan to close a fraction of the gap between the desired capital stock and the actual capital stock in each period. Within the framework of the flexible accelerator model, output, internal funds, cost of external financing and other variables may be the determinants of desired capital stock. Accelerator theory was very popular in 1950s and 1960s. Its extreme simplicity explains its popularity: given an incremental capital-output ratio, it is easy to compute the investment requirement associated with a given target for output growth.

2.1.2 Neo-Classical Theories

Tobin (1969) developed a neo-classical model in an attempt to explain investment behaviour. According to Tobin what matters is the relation between the increase in the value of the firm due to the installation of an additional unit of capital and its replacement cost. When the increase in the market value of the additional unit exceeds or is less than the replacement cost, the firm will want to increase or decrease their existing capital stock. This ratio commonly referred to as marginal “Q”, may differ from unity because of delivery lags and adjustment or installation costs. However, marginal “Q” is not easily measured, so what is used instead is the ratio of the entire capital stock to its replacement cost (the average “Q” ratio). Tobin argues that delivery lags and increasing marginal costs of investment are the reasons why “Q” would differ from unity.

Jorgenson et al (1971) formulated the neo-classical approach, which is a version of the flexible accelerator model. In this approach, the desired or optimal capital stock is proportional to output and the user cost of capital, which in turn depends on the price of capital goods, the real interest rate, depreciation rate and the tax structure. Lags in the decision-making and delivery, create a gap between the current and desired capital stocks, this give rise to an investment equation, which is an equation for the change in the capital stock. The foundation of this approach has been
criticised on the grounds that the assumptions of perfect competition and that, exogenously given output are inconsistent. The assumption of static expectations about future prices, output, and interest is inappropriate. This is because investment is essentially a forward-looking process and the lags in the delivery are introduced in an unjustified manner.

Mc Kinnon (1973) and Shaw (1973) came up with another approach dubbed “Neo Liberal”. It emphasises the importance of financial deepening and high interest rates in stimulating growth. The core of their arguments rests on the claim that developing countries suffer from financial repression which is generally equated with controls on interest rates in a downward direction and that if these countries were liberated from their repressive conditions, it would induce saving, investments and growth. Not only would liberalisation increase savings and loanable funds, it will result in a more efficient allocation of these funds, both contributing to a higher economic growth. In the neo liberal view, investment is positively related to the real interest. The reason for this is that a rise in interest rates increases the volume of financial savings through financial intermediaries and thereby raises investible funds. Thus, while it may be that sometimes demand for investment declines with the rise in the real interest rates, realized investments actually increases because of the greater availability of funds. This phenomenon is referred to as the conduit effect. However, this can only work when the capital market is in dis-equilibrium with the demands for funds exceeding supply.

2.1.3 Uncertainty into Investment Theories.

Recent literature has introduced an element of uncertainty in the investment theories due to irreversible investments. The argument is that, since capital goods are often firm specific and
have low-resale value, disinvestment is more costly than positive investment.

Pindyck (1991) argues that the net present value rule – invest when the value of a unit of capital is at least as large as its cost – must be modified when there is an irreversible investment. This is because when an investment is made, the firm cannot disinvest should market condition change adversely. The concept of the value lost in the foregone investment option is an opportunity cost that must be included as part of the cost. Accordingly, the value of the unit must exceed the purchase and installation cost, by an amount equal to the value of keeping the investment option active.

Rodrick (1991) introduces another element of uncertainty – policy uncertainty – as a determinant of private investment. When a policy reform is introduced, it is very unlikely that private sector will see it as one hundred percent sustainable. A number of reasons may be adduced, among them is the expectation that political and economic configuration that supported the earlier policies might resurface. There is also the fear that unexpected consequences may lead to a reversal. Investors must respond to the signals generated by the reform for it to be successful. However, rational behaviour calls for withholding investment until much of the uncertainty regarding the eventual success of the reform is eliminated.

In general, this approach argues that most investments are irreversible and therefore represents sunk costs. This is because capital once installed cannot be used in different activity without incurring a substantial additional cost in doing so. The decision to invest in uncertain environment involves exercising an option, which is the option to wait for the new information. The loss of this option, which must be considered as part of the opportunity cost of
investment, is overlooked in the conventional calculations of net present value. This opportunity cost according to this theory can be substantial and it is also sensitive to the prevailing degree of uncertainty about returns to investment. Thus, changes in uncertainty have a strong effect on the aggregate investment. It therefore implies that, a stable incentive structure and macroeconomic policy environment may be as important for investment as the level of the interest rate. In other words, if uncertainty is high, the return on investment has to be prohibitively large in order to have any significant effect on investment. Sources of uncertainties to investors could be fluctuations in output prices, depreciation in foreign exchange rates, large external debt overhangs, incomplete credibility of policy reforms among others.

2.2.1 Empirical Literature from other Developing countries.

Ghura et al (1993) carried their study on the macro economic performance of 35 Sub- Saharan countries for the period between 1972 and 1987. They found that real exchange rate volatility proxied by the coefficient of variation has a strong adverse impact on the investment measured as a proportion of GDP ratio. They also found that black market premium, which was taken in the study as a proxy of real exchange rate misalignment, has a negative and significant effect on investment.

In an effort to discover factors that contributed most to the HPAES’ extraordinary record of capital accumulation over the last thirty years, World Bank (1994) discovered the following: First, the eight high performing Asians countries encouraged stable and predictable macroeconomic environments. This was in term of low interest rates and inflation rates among other policy measures. Second, they all emphasized on universal primary and later secondary education. Lastly, public authorities were committed in enhancing sound and solvent financial
institution, securing property rights, complementary public investments in physical infrastructure and low relative prices of investment goods. More selective interventions that include forced savings, tax policies to promote investments, sharing risks and restricting capital outflow. Repressing interest rates appear to have succeeded in some of HPAES' that includes Japan, Korea, Singapore, Taiwan and China. The study noted that, the potential costs of these more selective interventions if misapplied could be very high in terms of consumer welfare. These countries would not have succeeded without the monitoring and disciplinary roles performed by the banks and the public institutions of these economies. Improper control and monitoring was found to be the main cause of unsuccessfulness of these interventions in the other HPAES' which consist of Indonesia, Malaysia and Thailand.

Hadjimichael et al (1995) analyses the private investment performance of 32 countries over the period between 1986 and 1992. They used a specification that included the variability of inflation and real exchange rate as a measure of macro economic uncertainty, and an index of political and civil liberties as a proxy for the definition of property rights. Their estimation results show that either measure of macro economic uncertainty has a strong adverse impact on investment while the political and civil liberties variable had a positive but insignificant effect.

Another study by Kumar et al (1995) provides a comprehensive empirical investigation on the determinants of private investment in 40 sub Saharan Africa countries between 1970 and 1993. The research encompassing framework includes variables measuring macro economic instability - proxied by the inflation rates, variables measuring the fiscal deficit and terms of trade as well as measure of restrictions on political and civil liberties which authors view as proxies for political instability. Their results indicate convincingly a strong and negative impact of inflation on private
investment. The other two proxies for macro economic instability carried the expected negative sign but only become statistically significant after 1980. In turn the two political indicators have also the expected signs although on the whole, the measure of civil liberties appear to exerts a strong impact on investment than the measure of political rights.

Serven (1996) carried analytical study on irreversibility, uncertainty and private investment for less developed countries with emphasis on Africa from 1970 to 1990, using cross country and time series data. The study reveals that sub-Saharan Africa stands out for the volatility of her terms of trade and real exchange rates and for her poor indicators in term of property rights and civil liberties. Based on a sample of developing country data, the study showed that these and other indicators of instability and institutional quality are negatively related to private investment. Serven noted that, to encourage investment and facilitates its response to incentives changes, government should attach top priority to correction of unsustainable macroeconomic imbalances such as inflation, large public deficit and exchange rate over-valuation which is primary causes of macro economic instability and uncertainty about future policies. It was also noted that institutional reform to remove social tensions and ensuring the enforcement of property rights could also go a long way to facilitate the response of investment to incentive changes.

In a study of Zimbabwe, Jenkins (1998) analysed determinants of private investment over the period 1969 to 1990. A two-step Engle-Granger (1987) approach was adopted to deal with non-stationary variables. The empirical model identified constitute of the following variables; private investment as dependent variable, foreign capital inflows, private gross profit, national income, and loans as independent variables. Other independent variables were foreign exchange rates, external debt, tax rates, relative price of capital and public sector investment.
The study found private capital formation to be positively related to gross profit not only as an indicator of profitability but also as source of finances and negatively related to the debt overhang which increases uncertainty. However, it was likely that this second effect was important only for the second half of the period for which the model was being estimated. Foreign capital inflows never appeared to have long run constraint to private investors. However in the short-run, variation in private capital expenditure are governed by the availability of exchange rate lagged one period, as well as by changes in the relative cost of capital and output. Accumulating large external debt within a very short period of time and then having to service it together with government ambivalence towards foreign investment have been most harmful to private capital formation. Changes in profit, tax, interest and exchange rate had no significant effect on private investment, although the relative effect of prices of capital inputs and other output may have reduced the explanatory power of the rate of profit.

Nakamba (1998) investigated the effects of macroeconomic adjustment and private investment behaviour in Zambia. The study attributed domestic investment rise in 1964 to 1975 to around 25 percent of GDP to sound economic reforms in public sector in 1968 especially in copper mining sector. The study also postulates that investment is not likely to grow in the environment of uncertainty. This was due to fact that investment decisions are irreversible since they are sunk costs that cannot be recovered costlessly and therefore investors will postpone investment and invest on information. Nakamba noted that economic liberalisation that led to floating exchange rate and price decontrol was a powerful engine towards growth of investment in Zambia.
Using Africa data, Mlambo et al (1999) examined macro-economic adjustments and private investment. The study found that the economic environment in which entrepreneur operates affects investment behaviour. This indicates the importance of providing an appropriate macro-economic environment, mainly by following sound fiscal, monetary and trades co-operation policy. Public sector reforms have an influence on private investment behaviour. An important component of public sector reform is the privatization process, which can help reduce public sector fiscal deficit, spur additional investment and improve efficiency. It was also noted that infrastructure utilities are particularly attractive candidates for diversities that can help to improve performance of firm, reduce capital flight, attract foreign direct investment and boost domestic capital market. They also noted that investment in modern capital and technology requires a financial system that can transfer resources from savers to investors. Monetary and financial sector policies were found to be vital in this regard to the extent that they contribute to the maintenance of a well functioning financial system. Lastly it was noted that macroeconomic and political stability matters in investment decisions. Investors were found to be strongly influenced by underlying economic and political framework to the extent that any action that distorts the investors’ view of the future will discourage investment.

Devarajan et al (1999) did a cross-country empirical research to investigate the productivity of investment in Africa. By citing both macro and micro evidence in support of the study, it was observed that low investments in Africa are mostly caused by low productivity of the investment. It was also noted that low investment is not caused by low savings rate, but rather low productivity of the already existing investment, which often leads to low savings. Also, relatively high level of capital flight from Africa may be a rational response to the lack of investment opportunities at home, due to lack of sustainable returns on investments.
Mugomba (1999) carried out research on the determinants of private investments in Zimbabwe. It was noted that three major factors affect private investments. These are monetary policy, fiscal policy and risk variables. Monetary policy was found to affect banking sector credit availability to private sector, user cost of capital, terms of trade among other variables. Fiscal policy has an effect on private investment through crowding in/out effects, amount of public debts, tax structure and other related variables. It was also noted that risk variables like ratio of public debt to GDP, variance of income, inflation, variance in the uses cost of capital and political uncertainty are very instrumental in determining level of private investment.

Asante (2000) carried out an investigation on determinants of private investment behaviour in Ghana. In the study a time series analysis was complemented with a cross-sectional survey. The study had nominal private investment as a percentage of nominal GDP as dependent variable in the econometric model. The independent variables were as follows; lagged value of nominal private investment which was a proxy for the investment climate, nominal public investment as percentage of nominal GDP, real exchange rate, growth of real credit to private sector, real interest rate (proxied by real lending rate), macroeconomic instability and growth rate of real GDP to capture profitability of investment venture. Others variables are investment deflator, a proxy for user cost of capital, corporate tax as a percentage of total tax Revenue, a measure for trade regimes and a dummy for political instability (one for successful coup years and zero otherwise). Cross-sectional analysis was based on primary data collected via a questionnaire survey of a sample of 116 manufacturing firms.

The study found that the growth of real credit to the private sector had a positive and a statistically significant effect on private investment. This was strongly supported by the
survey results, which suggested that credit had been a problem that still remains for private investors. Individual components of macroeconomic instability were found to be statistically insignificant determinants of private investment. However, the overall measures of macroeconomic instability were identified as a major hindrance to private investment. Results also suggest that the military take-overs may have created a climate hostile to private investment. In summary the results revealed that four most important variables in terms of magnitude of influence on private investment are the trade regime, growth of real credit to private sector, macroeconomic instability and political instability.

Elenva et al (2001) carried an investigation on determinants of private investment in Fiji. It was noted that public investment, ceteris peribus was supportive of private sector investment through creation and improvement of infrastructure that was necessary condition for economic development in Fiji. The study found that, throughout 1970s the government was committed in improving national infrastructure like transport and communications systems, water and sewerage services, electric supplies, postal services among others. The completion of most of these public sector projects led to increase in private investment. In addition, it was noted that different government incentives like tax holidays to investors from certain sector and establishment of export processing zones in 1980s led to growth in private investment.

2.2.2 Empirical literature specific to Kenya.

Mwau (1984) mainly focused on the impact of foreign capital inflows on the Kenyan economy. The study found that capital inflows have significant and positive effect on domestic investment, BOP and economic growth. In the same year (1984) study by Koori revealed that in the
competitive Market for financial resources, public sector investment crowds out private sector investment. However, for Kenya, the study found public sector investment not to crowd out private sector investment since it relied heavily on other sources of finance like NSSF, NHIF, Postal Bank, Bilateral and multilateral sources which private sector have no access to.

Mwabu (1989) considered the factors affecting FDI by applying a step-wise regression technique. It was found that public investment in infrastructure, lagged foreign direct investment and the deviation of GDP from the trend of potential GDP to be the factors affecting foreign direct investment. A study by Kazi et al (1992) was to assess the determinants of private investment and also to analyse how adjustment policies (or their absence) affect those determinants. They found insufficient and uncertain access to imports to be a major factor behind the decline in private investment. They also found real depreciation of foreign exchange to have a positive indirect effect on private investment in the medium term because such depreciation relaxes the foreign exchange constraints on imports. Okello (1997) did analysis of the impacts of macroeconomic policies on private investment in Kenya for the period between 1970 and 1995. The study identified the following factors to be statistically significant in influencing private sector investment in Kenya. Public investment, real interest rates, growth rate, lagged private investment and credit to private sector. Others include adverse terms of trade, financial liberalisation proxied by a dummy, uncertainty proxied by inflation rate and external debt.

2.4 Overview of Literature

To begin with, most of the studies undertaken in this area ignore the aspect of irreversible nature of most of the investment and the uncertain investment climate faced by many investors. Even where the aspects have been taken into consideration, the proxies taken to capture them are not
adequate. Secondly, the interdependence between different investments for coordination purposes has not been adequately dealt with. Poor coordination between public, foreign direct and domestic private investments could have been the main cause of low-investments in the economy. Thirdly, most of the studies have been carried out in developing countries whose investment conditions are very different from those found in Kenya. Therefore, there is likely to be differences in outcome if Kenya adopts the prescription followed by other countries. Fourthly, the concept of human capital development in terms of educational development and skills enhancement commonly known to affect investment behavior in the economy has been left out in almost all studies, except in World Bank (1994). Lastly the time frame in many of the studies is short and somehow portraying similar characteristics and therefore unable to give true nature of things as it pertain to general trends of investment.

Nevertheless, an empirical investigation by Asante (2000) included lagged value of nominal private investment to capture investment climate existing in the country. This was to capture the effect of previous levels of investment on its current levels. This variable was a very significant determinant of private investment behavior. This variable which was previously ignored by many past investigations was used in this study to capture similar effects.
CHAPTER THREE
THEORETICAL MODEL

3.1 Theoretical Formulation

Investment behavior of any economic unit can be explained by the use of accelerator model. According to the acceleration theory, a firm may be able to produce more output with the existing capital through more intensive use of that capital. However, there is a particular ratio of capital to output that a firm considers optimum (Shapiro, 1990). From this point of view, investment is explained largely on a physical or input – output basis; Increase in the desired capital stock occur because, a growing demand for output necessitates a growing supply of the capital stock services, provided such goods can be secured only through an expansion in the existing capital stock. Input – output ratio is assumed to be constant over a given period of time.

According to the accelerator theory, the incentive to acquire more capital goods arises, not because the current profit record is favorable as proposed by the profit theory, but because increases in output is putting pressure on firm’s existing productive capacity. This increase in productive capacity requires an expansion of the capital stock, which in turn calls for a higher rate of investment spending than would otherwise be, needed (Shapiro, 1990). Investment behavior by an economic unit can therefore be derived as follows:

Let \( \alpha = K/Y \) \hspace{1cm} (1)

Where K represent capital stock, Y the final output of goods and \( \alpha \) optimal capital-output ratio for an economy. If \( \alpha \), the average capital output ratio is equal to incremental capital output ratio with assumption of constant technology then;

\[ \alpha = \frac{\Delta K}{\Delta Y} \] \hspace{1cm} (2)
Where \( \Delta Y \) is change in output and \( \Delta K \) is change in capital stock.

Investment in any particular period can be expressed as follows;

\[
I_t = K_t - K_{t-1} = \Delta K
\]  

(3)

Where \( I_t \) is the net investment in any particular period.

\( K_t \) is the desired capital stock and \( K_{t-1} \) is the actual capital stock for the previous period. Thus equation (3) can be re-written as;

\[
I_t = K_t - K_{t-1} = \alpha Y_t - \alpha Y_{t-1} = \alpha (Y_t - Y_{t-1}) \quad \text{Since} \quad K_t = \alpha Y_t
\]

(4a)

Or

\[
I_t = \alpha \Delta Y_t
\]

(4b)

The proposition of the accelerator theory is that investment is related to the change in output. If the economy is growing rapidly, then investment grows rapidly and if the economy is not growing, then the investment is limited to the replacement investment. Nevertheless, growth in investment out of growth in output may not be realized in the same period. Lag in the adjustment from actual capital stock to desired capital stock due to growth in output could be due to number of reasons. First, most fixed capital investments are partly reversible or completely irreversible and the initial cost of investment cannot be recovered completely by selling the capital once it has been put in place. Therefore, if the investors feel that output growth is just transitional, there will be delay until stability is achieved. Second, investment decisions face uncertainty about their future reward and the best investor can do is to attach probabilities to the possible outcome. This can cause delay in the investment as the investors take time to gather information and appraise all options available to them in order to maximise their earnings. Third, resource utilisation level in the economy could lead to delay in the adjustment. If economy has excess capacity, growth in output may not lead to additional investment in that period, while if there is over...
employment of resources; adjustment in term of additional capital accumulation may be faster than usual. Lastly, adjustments require financial resources that may be deterrent to instant adjustment.

Flexible accelerator model that caters for partial adjustment into the desired level of investment will therefore be the appropriate tool in explaining investment behaviour. Let $\delta$ be the fraction of the gap between the desired and actual capital stock that an investor pursues to close in this period, given the bottlenecks of closing the whole gap in one period. The accelerator model will therefore be written as:

$$I_t = \delta (K_t - K_{t-1})$$  \hspace{1cm} (5a)

$$0 < \delta < 1$$

or equivalently,

$$I_t = \delta (\alpha Y_t - \alpha Y_{t-1})$$  \hspace{1cm} (5b)

Since $K_{t-1} - K_{t-1} = \alpha Y_t - \alpha Y_{t-1}$

Within the framework of flexible accelerator model other variables that determine the desired capital stock ($K_d$) will be included in the model.

### 3.2 Model Specification

The study postulates a relationship between domestic private investment and its determinants. From the equation 5, investment in a certain year is determined by changes in output and the capital stock partial adjustment coefficient. From the economic theory and the literature reviewed, changes in output and the size of partial adjustments coefficient are determined by saving rate, terms of trade, external debt, inflation rate, fiscal deficit, public investment and exchange rate. Others are foreign direct investment, real interest rate, Literacy level, credit
availability, return on investment, economic liberalization and lagged Domestic private investment. Therefore, general model of domestic private investment used in this study was modified in the version of equation 5. The modification was necessitated, first by taking net investment to represent domestic private investment. Second, by including the factors influencing growth in output and those that determines how fast the gap between desired and actual capital stock would be closed. The output growth was taken to be Gross domestic product growth. From above, the following functions were formed to explain changes in DPI.

\[ \Delta Y = f(SR, PI, FDI, CV, FD, L) \] ......................................................... (6)

\[ \delta = f(TOT, INF, RIR, EL, ED, ER, LDP, EI) \] ......................................................... (7)

Where \( \Delta Y \) is \( Y_t - Y_{t-1} \) and \( \delta \) is partial adjustment coefficient.

The modified form of the model is therefore given as:

\[ DPI = f(SR, FD, TOT, PI, ED, L, ROI, RIR, CV, INF, FDI, LDP, ER, EI) \] ... (8)

Where:

- \( DPI \) is Domestic private investment.
- \( SR \) is the Rate of saving.
- \( FD \) is the Fiscal deficit.
- \( TOT \) is the Terms of trade.
- \( PI \) is the Public investment.
- \( LDP \) denotes Lagged domestic private investment
- \( INF \) is the Inflation rates.
- \( ROI \) is the Rate of return on investment.
- \( FDI \) denotes foreign direct investment.
- \( RIR \) denotes Real interest rates

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CV is the Credit availability.

$ED$ denotes External debt

$ER$ is the Exchange rates.

$L$ represents literacy level

$EL$ denotes Economic liberalization.

3.3 Research Design.

Quantitative research method was utilised in this research. This is due to the fact that there is causal relationship between dependent and independent variables. The quantitative approach for data estimation was adopted. Time series data was used in this case since it is easily estimated, analyzed and manipulated.

3.4 Data Type and Source

To achieve the objectives of the study, annual time series data for the period between 1970 and 2001 was obtained (Appendix i). The model required data on domestic private investment, fiscal deficit, credit availability, savings rate, inflation rates, public investment, foreign direct investment, terms of trade, external debts, exchange rates, literacy level, real interest rates, rate of returns on investment, economic liberalization and lagged domestic private investment. The data was derived from the following sources; various issues of economic surveys, African development indicators, and World Bank publications. Refinement was done to data given for fiscal years by converting them to calendar years. This was accomplished by adding data for two consecutive fiscal years and dividing by two. Nominal values were also converted in to real values by the use of GDP deflator.
3.5 Data Refinement and Estimation Techniques

This section presents the different statistical tests undertaken before the model estimation was done. Time series data usually exhibit a non-stationary process (has both time and variable specific effects) and if ordinary least squares (OLS) method is applied directly, the results would be spurious. Because of this, a test for the order of stationarity had to be done. Unit root test on both dependent and explanatory variables in the model was conducted. Essentially, these tests were required to ascertain the number of times a variable was to be differenced to arrive at stationarity. For this purpose, the Dickey-Fuller and 'Augmented' Dickey-Fuller (ADF) tests were employed to identify the order of integration for economic variables of interest. Table 3.1.

Table 3.1

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>ADF: TREND &amp;INTERCEPT</th>
<th>LAGS</th>
<th>ORDER OF INTEGRATION</th>
<th>ADF: INTERCEPT ONLY</th>
<th>LAGS</th>
<th>ORDER OF INTEGRATION</th>
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</table>

The critical value for ADF: 5 percent levels of significance are $-2.97$ and $-3.58$ for trend &
intercept and intercept only respectively. Most of the variables were found to be non-stationary and had to be differentiated to make them stationary. The only variables that were stationary at levels included foreign direct investment, inflation rates, lagged domestic private investment, public investment, real interest rates, return on investment and saving rates. All others were differenced once except literacy level, which was differenced twice to attain stationarity. Both linear and non-linear specifications of the functional relationship in equation (8) were estimated using time series data for the period 1970 and 2001. The research adopted the best specification.

The linear model was specified as:

\[
DPI = a_0 + a_1SR + a_2FD + a_3PI + a_4INF + a_5RIR + a_6TOT + a_7FDI + a_8ROI + a_9CV + a_{10}LDP + a_{11}ER + a_{12}ED + a_{13}L + a_{14}EL + e_t
\]

Where \( a's = 0,1 \ldots 14 \) are the parameters to be estimated.

\( e_t \) - error term.

### 3.6 Definitions and Measurement of Variables

(i) **Domestic private investment (DPI).** It is the net investment by the domestic persons other than the government. It is captured by total domestic private investments expressed as a percentage of GDP.

(ii) **Saving rate (SR).** It is the proportion of GDP that is saved in a year. It is measured by the rate of gross domestic savings.

(iii) **Fiscal deficit (FD).** This is the difference between central Government’s expenditure and revenue. It is captured by the difference between the recurrent revenue plus capital revenue and recurrent expenditure plus capital expenditure plus net lending expressed in Million US dollars.
(iv) **Public investment (PI).** This is the investment undertaken by the government in a country. It indicates public sector participation in capital accumulation either to complement private sector role or as a competitor to private investors. It is captured by total public investment as a percentage of GDP.

(v) **External debt (ED).** This is the total amount of money borrowed by the government from abroad. It is measured by the value of long-term plus short-term borrowing expressed in millions Kenyan pounds.

(vi) **Exchange rate (ER).** It is price of one nation's currency in terms of a unit of foreign currency. It is measured by annual average of the official market exchange rate in the national currency per U.S. dollar.

(vii) **Lagged domestic private investment (LDP).** This is a proxy measure of the investment climate in the country. It is measured by total domestic private investment expressed as a percentage of GDP lagged by one period.

(viii) **Credit availability (CV).** This is a measure of the credit availability to private sector per annum. It is captured by the proportion of credit given to private sector out of the total domestic credit expressed in percentages.

(ix) **Inflation rate (INF).** This is the persistent increase in general prices of goods. It is captured by annual percentage changes in the consumer price index of some commodities in Kenya chosen by the government.

(x) **Terms of trade (TOT).** This is a measure of the ratio of index of export prices to an index of import prices. It is measured by the index of export volume over import volume with 1995 as the base year.
(xi) **Return on investment (ROI).** This is the measure of profitability on the investment in a certain year. It is captured by annual percentage changes in GDP.

(xii) **Foreign direct investment (FDI).** This is net inflow of investment to acquire lasting managing interest in an enterprise operating in an economy other than that of the investor. It is captured by total foreign direct investments as a percentage of GDP.

(xiii) **Real interest rates (RIR).** This is the actual annual percentage change in the purchasing power of interest income earned on the government treasury bills. It is captured by the average annual real interest rates of 91 days government treasury bills.

(xiv) **Literacy Level (L).** This is proportion of people in a country with reading and writing skills. It is captured by taking the percentage of people aged 15 years and above in the country’s population who can read and write.

(xv) **Economic liberalization (EL).** These are institutional changes in the economy in terms of government control. It is captured by a dummy: 1 = without economic liberalization and 0 = otherwise.
CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION OF RESULTS

4.1 Introduction.

This chapter presents model estimation based on the empirical model outlined in chapter three. Before estimation, the data series was tested for their time series properties using Augmented Dickey Fuller (ADF) tests. Non-stationary series in the data were made stationary by differencing. Generalized least squares model was constructed, various diagnostic tests conducted on the results of the estimated model. Lastly, analysis were done on the outcome of the estimation as regard to signs of the coefficients, statistical significance of each variable and their implications in influencing levels of domestic private investment given.

4.2 Model Estimation.

Ordinary least squares estimation was applied to show the relationship between domestic private investment and the independent variables that were identified in chapter three. The linear model was preferred since it gave the best outcome on the model estimation. Estimation was done by the aid of econometric package, specifically Eviews.
Table 4.1 Empirical Results

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<tr>
<th>Variable</th>
<th>Coefficient</th>
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<th>t-Statistic</th>
<th>Prob.</th>
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| R-squared | 0.863529    | Mean dependent var | -0.14066 |
| Adjusted R² | 0.654823    | S.D. dependent var | 1.57345 |
| S.E. of regression | 1.129358    | Akaike info criterion | 3.38802 |
| Sum squared resid | 19.13174    | Schwarz criterion | 4.08862 |
| Log likelihood | -35.82043   | F-statistic | 2.94938 |
| Durbin-Watson stat | 2.524450   | Prob(F-statistic) | 0.02301 |

4.3 Diagnostic tests

Various diagnostic econometric tests were done on the results of the estimation. The results indicate absence of serial correlation in the estimated model. This is demonstrated by Durbin Watson statistic value of (2.11). The white heteroskedasticity test gave the computed F-value as (2.14) while the critical F-value is (2.31). This shows that there was homoskedasticity in the residuals. Further, the linear regression model passed the normality test. This is according to Jarque Bera statistic that reported high probability of (0.537). This is further demonstrated by graphical representation in the appendix (v). The stability test was also carried out with the use of CUSUM Test which is based on the cumulative sum of the recursive residuals. The cumulative sum recursive residuals plotted are within the 5 percent critical lines. This is
consistent with the stability tests that, for a parameter to be stable, the plotted cumulative sum should be within 5 percent critical lines (appendix iv). The correlation matrix was also generated using Eviews econometric software (appendix iii). The aim was to tests for the existence of multicolinearity between the variables. Variables are said to be highly correlated if the correlation coefficients are approaching one and to be lowly correlated if these coefficients are approaching zero. The coefficients of correlation in most of the variables were less than 0.5 depicting that there was low degree of multicolinearity. The only variable found to be highly correlated with others, in general was literacy level ($L$).

4.4 Interpretation and Discussion of the Results

The adjusted R-squared ($R^2$) measures the success of the regression in predicting the values of the dependent variable within the sample. The adjusted $R^2$ is the fraction of the variance of the dependent variable explained by the independent variables. The statistic will equal one if the regression fits perfectly, and zero if it fits no better than the simple mean of the dependent variable. The adjusted $R^2$ of 65 percent given by the results is fairly impressive implying that most of the variation in the DPI is explained by the estimated model. The F-statistic in the estimation results tests the hypothesis that all of the slope coefficients (excluding the constant, or intercept) in a regression are zero. The computed F value (2.949) is greater than the critical value of (2.31) implying that the slope of the coefficients of independent variable has taken none zero values. This is an indication that there exists a meaningful relationship between dependent and independent variables and hence statistical reliability of the model estimated.

At 5 percent significance level, six variables were found to be significant. These includes fiscal deficit ($FD$), inflation rate ($INF$), lagged domestic private investment ($LDP$), Internal rate of
return ($RIR$), returns on investment ($ROI$), economic liberalization ($EL$) and exchange rate ($ER$).

All the signs of the coefficient of independent variables were found to be consistent with the economic theory except the variable for economic liberalization, which was captured by a dummy. The estimation results indicate that the constant term has a positive sign, indicating that the independent variables that were not included in the model have a positive net effect on domestic private investment. It also has the $t$-ratio of 3.19 which imply that the constant term is significant at 5 percent significance level.

The following is the interpretation and discussion of the results on the signs of the coefficients of the independent variables used in the model, level of significance and their implications on the domestic private investment.

**Lagged Domestic Private Investment**

This variable is found to be positively correlated with the dependent variable and highly significant at 5 percent significance level. Thus, past values of domestic private investment, which was used as a proxy for the investment climate in a country constitute a good indicator for current investments decisions. Mlambo et al (1999) and Asante (2000) had similar results and their study noted that economic environment in which entrepreneurs operates affect investment behavior to a greater extent. If the previous year's investment was small, it could be an indication of hostile investment climate in the country. This may leads to investors reacting by committing less of their financial resources to capital accumulation in the country. In addition, cases of increase in capital flight out of the country are likely to be experienced
Return on Investment

This variable is positively correlated with domestic private investment and also statistically significant at 5 percent significance level. The findings suggest that private investment tolerates a high degree of economic growth, which is a proxy for profitability. Devaranjan et al (1999) investigation supports this finding. In their study it was found that low investment is not caused by low savings rate, but rather by low productivity of the already existing investment. An economy which is very productive and fast growing will be a good environment for investors who desire to have high return on their investment.

Real interest Rate

The coefficient of real interest rates has a negative sign and is significant at 5 percent significance level. Jenkins (1998) also found that interest rates as a proxy for cost of capital had a negative and insignificant effect on private investment in Zimbabwe. It implies that increase in interest rates deterred many investment agents from committing their funds to accumulating capital goods in the country. This may be due to the fact that previously interest rates on loan were controlled by monetary authority, and therefore lending rates were kept low. With the emergency of liberalized system, interest rates are very high creating problems to potential investors. Most of the investors could have shifted some of their portfolio into short-term activities such as purchase of treasury bills which yields more. Thus, monetization of the fiscal deficit is crowding out private investment by attracting investible funds from business activities into treasury bills.

Exchange Rate

The estimation results indicate that depreciation of local currency depressed domestic private investment growth. The estimation results are as hypothesized in term of the sign of the
coefficient of the variable and also the variable is statistically significant at 5 percent significance level. This outcome is consistent with the findings of Ghura et al (1993) and Serven (1996) who found exchange rate variability to be the main causes of macroeconomic instability likely to cause uncertainties to the investors. Most of the investments goods are imported and the effect of local currency depreciation is to make imports expensive. Kenya has had three exchange rate regimes since independence in 1963. Changing from one regime to another has been retrogressive to the value of Kenyan shillings and the worst of all is the flexible exchange rate regime which came into effect as from 1993.

**Inflation rate**

As expected, high inflation rates discourages domestic private investment. The estimation results indicate that inflation rates are negatively correlated with the dependent variable and also statistically significant at 5 percent significance level. Kumar et al (1995) found that inflation as measure of macro economic instability had the expected negative sign and statistically significance as a determinant of private investment in 40 sub Saharan countries which correspond to findings of this study. This negative relationship can be explained by reaction from investors on changes in consumer price index. If there is persistent increase in price levels, it will send a signal to investors that economy is not stable and therefore they will be reluctant to invest in it.

**Fiscal Deficit**

This variable gave the expected negative coefficient and is statistically significant at 5 percent significance level. It implies that increase in fiscal deficit will crowd out domestic private investment. Mlambo et al (1999) had similar findings. In their study it was found that fiscal deficit was a significant setback in promoting private sector capital accumulation. This can be
explained by the fact that, when the fiscal deficit is high government may resort to domestic borrowing in financing this deficit. Consequently, very little credit will be available for private sector to borrow from the financial institutions. Large amount of fiscal deficit may be a sign of macroeconomic instability which may make potential investors to postpone their mission until stability is regained.

**Economic liberalization**

This is a dummy variable that is meant to capture pre and post liberalization periods in Kenya. Unexpectedly the variable's coefficient indicates that domestic private investment would increase with the economic liberalization. For a less developed country like Kenya, this scenario is not realistic. Economic liberalization poses challenges to domestic investors who are unable to cope with the competition in the short-run. Consequently, market driven economy will be hostile to developing domestic private sector. The outcome is supported by Nakamba (1998) study, which noted that economic liberalization that led to floating exchange rate and price decontrol was a powerful engine towards growth of investment in Zambia.

**Foreign Direct Investment**

Economic theory postulates positive relationship between foreign direct investment and domestic private investment. The result of the investigation has confirmed this hypothesis though statistically insignificant at 5 percent significant level. Inflows of foreign investors may have led to inflows of capital goods into the country and also technological transfer for the benefit of local investors. Jenkins (1998) study noted that foreign capital inflows never appeared to have been long run constraint to private investors contrary to the findings of this investigation.
Both local and foreign investors will supplement each other since the output from one of them may be used as input in the other one. Foreign investors have the financial ability of conducting research on the viability of certain project for investments purposes. Local investors are likely to depend on foreign investors’ research findings and invest in similar or related projects.

**Literacy level**

It has a positive sign as hypothesized and insignificant at 5 percent significance level. This result is similar to the findings of World Bank (1994) only that present study has literacy level as insignificant variable. Literate people are likely to save and invest more than illiterate people because literacy increases ability to conceptualize issues in a more concrete manner. Educated population is more enlightened on the benefits of investing from their present income in preparation of old age.

**Public Investment**

Public investment has a positive correlation with the domestic private investment as hypothesized but statistically insignificant at 5 percent significance level. Elenva *et al* (2001) findings on factors affecting capital accumulation in Fiji correspond to the present on Kenya. In their study, it was found that government participation in accumulating physical capital on the infrastructure positively and significantly affect private investment.

Government participation in capital accumulation in creating infrastructure complements private sector’s activities. There has been a tremendous turn around in the public sector’s participation on capital formation in Kenya.
Involvement in investment by government through state corporations is known to have resulted to inefficiency of such state enterprises leading to calls by local and international community for privatization of government controlled enterprises. Public investment has now been on areas which affect private sector positively such as creating physical infrastructures like roads.

**External Debts**

Empirical results indicate that it has the expected negative correlation with domestic private investment and it is statistically insignificant at 5 percent significance level. Growth in the external debt increases uncertainties over future policies reversal due to the credibility problem. In addition, this increase has implication of future tax imposition in an effort to service foreign debts payments. Debt overhang could have discouraged investment because it implies that eventually some combination of higher taxes, currency depreciation and lower domestic demand will be required to affect the required external transfer. Jenkins (1998) investigation found that accumulating large external debt significantly deterred private investors and consequently leading to capital flight. This is in line with the results of this finding only that present study has this variable being insignificant.

**Terms of Trade**

As expected, terms of trade is positively correlated with domestic private investment and statistically insignificant at 5 percent significant levels. Kazi *et al* (1992) and Okello (1997) study on factors influencing private investment in Kenya attributed low investment to deteriorating terms of trade. Terms of trade have a bearing on firms that depends on imported goods (raw materials and capital goods). In principle, worsening terms of trade discourages investment as it become relatively expensive to import the necessary goods. Deterioration of
terms of trade could have been caused by changes in exchange rates regime which has led to depreciation of local currency. However, the coefficient of the terms of trade is very small a phenomena that may be explained by ambiguous effect of depreciation on terms of trade. Depreciation of currency can encourage investment by improving profitability in the traded goods sector and sometimes by increasing the supply of foreign exchange, which can be used to pay for additional importation of capital goods.

Savings Rate
The coefficient of savings rate is positive and statistically insignificant at 5 percent significance levels. This implies that, the amount saved from the national income will be available for investment directly by those who saved or indirectly by those who borrows those savings from the banks. World Bank (1995) investigation found that increase in savings rate affected positively to greater extent levels of private investment in HPAES.

Credit Availability
The growth of real credit to the private sector was insignificant at 5 percent significance level and has a positive effect on the domestic private investment. The current trends of DPI suggest that credit has been a problem and remains a problem for private investment. According to Asante (2000) credit availability had a positive and significant effect on the private investment in Zimbabwe. Asante's finding is consistent to the one in this study except on the significance of this variable in influencing private investment. Even though real credit growth has positive coefficient in explaining investment, its effect is small in influencing investment behavior.
This could be explained by inflexibility on the domestic investors in their attitudes towards using borrowed capital implying that foreign private investors could be benefiting more than domestic investors in terms of borrowed capital from financial institutions. Dependence on personal savings to finance investments could also have led to reduction in borrowing by domestic private investors.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Summary and conclusion of the Findings

Empirical results revealed the lagged domestic private investment with t-ratio of 4.153, as the most significant determinant of domestic private investment. In order of statistical significance, other importance determinants of domestic private investment are; rate of return on investment, real interest rate, exchange rate, inflation rate, fiscal deficit, economic liberalisation, foreign direct investment, literacy level, public investment, external debts, terms of trade, savings rate and credit availability.

In addition, the empirical results indicate that credit availability, economic liberalization, foreign direct investment, literacy level, lagged domestic private investment, public investment, return on investment, saving rates and terms of trade had positive effect on DPI. All other explanatory variables were found to have negative effects on DPI. Moreover, exchange rate, fiscal deficit, inflation rate, lagged domestic private investment; real interest rate, economic liberalization and return on investment were the only variables that significantly determine DPI. Hence, lack of proper policy measures to address factors affecting each variable may have led to the cyclic and declining trend of domestic private investment in Kenya. Most of the variations in DPI are explained by the model estimated since the adjusted R-squared is substantially big implying that most of the variation in the domestic private investment is explained by the estimated model.
5.2 Policy Implications/Recommendation

The findings of this study have given the variables that are significantly affecting changes in DPI. Inadequate policy measures could have the main cause of declining trend of domestic private investment. In addition, improper prescription of the policy measures by the government could have led to lack of robustness in the growth of DPI. The following policy implications can be drawn from the empirical findings of this study.

First, to achieve sustainable DPI rate, investment climate in the country should be improved. Policy measures that encourage capital accumulation in the country should be put in place. These measures include ensuring political stability in the country, credible investment policies, upholding the rule of law and property rights. Also the government should ensure development of proper infrastructure, as this might lead to the reduction in cost of production and guarantee security to investors.

Second, the government should streamline its expenditure as a way of reducing the budget deficit as a proportion of GDP. This is necessary to mitigate the undesirable effects of high budget deficit on domestic prices, interest rate, balance of payment, and exchange rate. In addition, adequate funds should be allocated by the government to the operation and maintenance of existing public investment, to encourage and facilitate private sector participation towards economic growth through provisions of economic infrastructure.

Third, empirical findings indicate public investment to have high explanatory power on DPI. This calls for the adoption of policies that stimulate public investment in areas such as physical
infrastructure. In the past, the government channelled more resource to loss making and inefficient parastatals at the expense of infrastructural investment required to supplement domestic private investment which has been under funded. This includes among others; energy sector, water, transport and communication sectors, which are important for economic growth.

Forth, empirical evidence suggests that growth rate in GDP has positive and significant influence on domestic private investment. Therefore, the government should strengthen its commitments to improve and sustain high growth in real GDP. In addition, the government should put in place measures that encourage foreign direct investors in order to boost country’s economic growth. The measures required among others includes; removing bottlenecks to the requirements from foreign investors, favourable taxation policies and maintaining of real interest rate at level that encourage borrowing by investors.

Fifth, government should ensure positive real interest rates. This is to be done by developing and improving secondary markets for government securities; maintaining low inflation; promoting public and private domestic savings; encouraging external borrowing by the private sectors. Positive interest will increase economic growth through several ways. First, they affect spending and depending on their sensitivity to these rates. Second, they affect exchange rate when it is free to move, thereby influencing the competitiveness of the country’s products with respect to foreign goods and services. Through this channel, they can affect demand for county’s output at home and abroad. Third, change in interest rate affect the market rate for long-term assets such as stocks and bonds.
Sixth, government should also ensure a stable macro-economic environment within which the private sector can operate and flourish. The objective is to spur economic activity, maintain low inflation, create positive real interest rates and stabilize nominal exchange rate. Prudent management of major macro-economic variables is essential for sustainable DPI growth. This should entail among other things, consistency in maintaining price stability and ensuring an enabling environment for the accumulation and efficient private sector utilization of financial resources.

Lastly, even though exchange rate should be market determined, central bank should sometimes intervene in the foreign market to limit undesirable fluctuations caused by mismatch between the supply and demand of foreign currencies. This will help to increase the volume of exports. Flexible exchange rate policy will have an expansionary effect by switching demand away from imports and making export industry more competitive. It will also induce domestic industry to use more local instead of imported input.

5.3 Limitation of the Study

In the course of carrying out this study, some constraints were encountered. For instance, not all the potential determinants of DPI were included in the estimated model. Variables to capture property rights, policy credibility of the government and political instability were excluded because of lack of appropriate proxy to capture them. Moreover, some proxies used are not adequate, such as using GDP growth rate to capture profitability of investment in the country, and this was contradicted by situations when investment was declining despite growing GDP rate. Also, time series data was used in empirical analysis, and the period was not long enough as this
was dictated by the available consistent data most of which are compiled on annual basis. The study also relied on quantitative data only and qualitative data, which could have improved the results, was left out due to the nature of research.

5.4 Suggested Areas for Further Research

The role of taxation on capital accumulation deserves careful consideration. High level of taxation affects marginal propensity to save and consequently level of investment. The effects of individual taxes on domestic private investment ought to be investigated in order to suggest the way forward to the government. Also, Proper investigation should be done on the causality between economic growth and domestic private investment in the country, since it should be known whether it is high economic growth that causes growth in domestic private investment or it is the domestic private investment that cause increase in economic growth. Further, cross sectional data analysis on the same subject matter may be required to compliment the findings of this study.


## APPENDICES

### Appendix i: Basic Data

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56
# Appendix ii: Trends of Bank Loan Interest Rates From 1971-1999

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Appendix iii : Correlation Matrix

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Appendix iv: Cusum Test
Appendix v: Normality Test

Series: Residuals
Sample 1972.2001
Observations 30

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Median: 0.007891
Maximum: 1.777866
Minimum: -1.301980
Std. Dev.: 0.812229
Skewness: 0.456202
Kurtosis: 2.597365
Jarque-Bera: 1.243246
Probability: 0.537072