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**ADDIS ABABA UNIVERSITY  
SCHOOL OF GRADUATE STUDIES**

**THE MICRO AND MACROECONOMIC DETERMINANTS OF  
PRIVATE INVESTMENT IN THE MANUFACTURING SECTOR IN  
KENYA**

*A thesis submitted to the School of Graduate Studies, Addis Ababa University,  
in partial fulfillment of the requirement for the degree of Master of Science in  
Economic Policy Analysis*

By

**TIMOTHY KAMAU MBUGUA**

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BY  
TIMOTHY KAMAU MBUGUA

FACULTY OF BUSINESS AND ECONOMICS  
APPROVAL BY BOARD OF EXAMINERS

Dr. Mulat Demeke  
Advisor

Mulat D  
Signature

Geoffrey Mwan  
Examiner

Geoffrey Mwan  
Signature

Dr. Aber Guina  
Examiner

Aber Guina  
Signature

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## DEDICATION

*To my wife, Wambui and our children Wairimu-Wahito and Mbugua-Kabogo who had to endure my long absence from home.*

*"Hitherto has the Lord helped us"  
1Sam7:12*

*Ni Ngai!*

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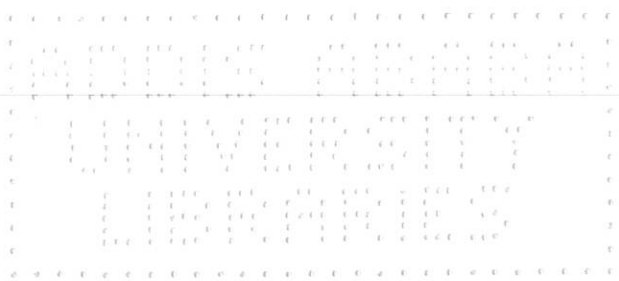
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**ABSTRACT**

*Kenya continues to record low levels of growth in private investment. This is despite the new paradigm that recognizes market mechanism and private enterprise as more efficient in generating the economic dynamism that leads to growth. This study set out to find the macro and micro economic factors that affect investment particularly in the manufacturing sector in Kenya. Econometric techniques of time series and also a survey were employed to analyze this phenomenon. High on the list of the macroeconomic factors negatively determining private investment is the high and unstable interest rates, increasing public debt, dilapidated infrastructure, insufficient expenditure on education development, low levels of credit to the private sector, the low level of GDP and generally, a harsh macroeconomic environment. These factors not only affect the manufacturers but also the Agriculture and the Service sectors. On the micro level, the macro factors also play a role coupled with other numerous socio-political and economic factors e.g. insecurity, corruption and contraband trade. If Kenya is to rid herself from the current economic quagmire and achieve her stated goal of becoming a Newly Industrialized Country (NIC) by the year 2020, then it needs to borrow a leaf from the "Asian Tigers" and tackle these issues urgently.*

**CHAPTER ONE**  
**INTRODUCTION**

**1.1 BACKGROUND**

During the first decade of independence, Kenya achieved commendable economic growth compared to other developing countries. Between 1964 and 1973, the real GDP grew on an average of 6.6% per year, the agricultural sector grew by 4.2% and the manufacturing sector by 8.2%. This rapid growth resulted mainly from successful rural development policies where land was redistributed to the small holders who utilized it more intensely, and the extension of cultivated land for high value cash crops, coupled with the use of modern farming methods. The East African Community (EAC) markets and good macroeconomic management supported import substitution, the then industrial strategy. Another source of growth was the ability of the economy to generate high levels of savings and investments, boosted by the liberal attitude towards foreign investment and an active government role in industrial and investment promotion fueled by the expansion of manufacturing growth. Since the mid-1960s, gross investment was larger than 19% of GNP, with much of this financed from domestic savings.

Also the macroeconomic indicators over this period indicate a healthy economy, e.g., the average rate of inflation was low at 3.4%. The external reserves exceeded the legally stipulated four months of imports, and the modest current account was more than compensated by net long term capital inflows, resulting in a positive balance of payments as shown in Table 1.1.

TABLE 1.1- MACROECONOMIC PERFORMANCE INDICATORS IN KENYA, 1964-98

	1964	1969	1974	1979	1984	1989	1994
	1968	1973	1978	1983	1988	1993	1998
<b>ECONOMIC GROWTH &amp; INFLATION</b>							
-Growth of real GDP	8.5	8.3	4.5	4.5	4.2	2.4	3.3
-Change in real per capital consumption <sup>2</sup>	-	4.4	2.0	-2.6	0.8	-3.0	-2.0
-Rise in consumer prices <sup>2</sup>	3.3	5.1	12.4	11.8	8.9	27.2	11.4
<b>BALANCE OF PAYMENT</b>							
-Change in import volumes <sup>2</sup>	-	0.6	4.0	-9.8	6.9	-1.8	9.2
-Current account as % GDP	-	-4.2	-6.8	-7.8	-3.4	-5.0	-3.8
-Basic balance as % GDP	-	0.2	-0.5	-2.1	0.1	-0.7	0.9
-External reserves as months of import	-	4.3	4.0	2.8	2.7	1.8	3.0
<b>INVESTMENTS AND SAVINGS</b>							
-GD fixed cap. formation as %GNP	-	21.8	22.4	22.2	19.8	19.9	19.2
-GN saving as % GNP	-	17.9	17.5	18.3	18.4	16.8	13.9
<b>FINANCIAL INDICATORS</b>							
-Govt borrowing from banks as %GDP	-	0.7	1.6	1.5	1.7	5.5	8.3
-Growth in domestic credit <sup>2</sup>	-	21.0	22.0	11.5	13.7	14.6	28.4
-Growth in credit to public sector <sup>2</sup>	-	83.0	32.0	23.5	16.8	29.4	14.4
-Share of private sector in ttl domestic credit	-	82	71	65	58	66	70

Note: 2 - % per annum

Source: Economic Survey, various issues.

This "good" performance of the economy was however not sustained. Since the mid 70's oil shocks and the collapse of the EAC the performance of the economy has indeed been very poor. Agricultural growth slowed down as the forces that boosted its production during the 1960's weakened. Industrial growth also declined due to a weak incentive system that favoured production for the domestic market over production for export, and also due to the diminishing opportunities for efficient import substitution (National Development Plan (1997-2001)).

The economy performed poorly as indicated by the lower average growth rate of only 4%, a high average inflation of 11% and a less impressive external account. Foreign exchange reserves have been smaller than the stipulated four months worth of imports, while the current account deficit could not be compensated for by long term net capital inflows.

This in effect led to the increase in unemployment and poverty. The introduction of structural adjustment Programmes (SAPs) also exacerbated the situation because retrenchment took place in both the private and the public sector. Besides, the austerity measures introduced under SAPs reduced the availability and affordability of social services including health and education, which eroded real wages particularly among the vulnerable groups.

The number of people unemployed in Kenya is currently estimated at 2.7 million and the labour force is increasing by nearly half a million people per year. The decline in average size of land holding in small-holder agriculture and

the increase in the population has increased the incidence of underemployment in the rural areas. This has in turn led to increased incidences of poverty that calls for concerted efforts in increasing job opportunities for the many people joining the labour market annually. It is estimated that the prevalence of absolute poverty in the country has been rising. In the rural areas the number of people living below the absolute poverty line was estimated to have increased from 40.2% in 1982 to 46.4% in 1992. Within the urban areas, the incidence of absolute poverty was estimated to have stood at around 29.3% in 1992. Overall, by 1992, an estimated 11 million Kenyans or about 43% of the entire population were living below the absolute poverty line.

Private investment is expected to play a leading role in job creation, increasing the growth rate and alleviating poverty. This is more so because the Government is diversifying away from business that can be best done by the private sector. The government on its part should strive to create an enabling environment for the sector.

## **1.2 TREND IN KENYA'S MANUFACTURING SECTOR.**

Kenya's industrial sector is among the largest in sub-saharan Africa and has been the fastest growing sector of the economy since independence growing more rapidly than the GDP in almost every year since independence.

This was boosted by industrial development protected by tariffs and import quotas enforced through foreign exchange allocations. The objectives were rapid growth of industry, easing balance of payment pressure, indigenous

participation in the sector and high productivity and high-income employment. This strategy was supported by an overvalued exchange rate that kept imported capital goods and intermediate inputs relatively cheap, subsidized interest rates that made investments attractive and direct Government participation in industry.

But this kind of industrial strategy is no longer tenable since Kenya has now embraced the open market industrial policy devoid of tariffs and protection.

Sessional paper No.1 of 1986 on economic management for renewed growth presented a major watershed in Kenya's macroeconomic policy orientation. It introduced an economic adjustment programme designed to: establish a market based incentive system; reform of the role of the government and the public sector; and put in place policies that would lead to rapid development with equitable wealth distribution. It also made it clear that industrialization was a key objective. It emphasized that strategy for industrialization must concentrate on expansion of domestic market for manufactured goods and the industry must be restructured to become much more efficient and capable of exporting goods profitably and competing against imported goods with moderate protection.

Though Kenya has a relatively large manufacturing and industrial service sector in this region, the share of contribution of this sector to GDP has increased very little over the past two decades. The sector has not been dynamic enough to function as an engine of growth for the whole economy and

has not contributed significantly to foreign exchange earnings. The sector has been inward looking with limited technological progress and reflects past import-substitution policy orientation.

As Table 1.2 shows, the manufacturing sector share in the real GDP has only achieved a minimal growth since 1964. Between then and 1998 the sector share in the real GDP has grown by only 3.5%. This is a minor growth for a country that is gearing up towards achieving the status of industrialized country by the year 2020. The agricultural sector's share in the same period also shows a decline of about 11%. It is only the service sector that has done well over the years occupying a share of about 61% of the GDP over that period.

**TABLE 1.2-SECTORAL SHARES IN THE REAL GDP 1964-1998 (PERCENTAGE)**

	1964-1973	1974-1979	1980-1989	1990-1998
<b>Agriculture</b>	36.6	33.2	29.8	25.7
<b>Manufacturing</b>	10.0	11.8	12.8	13.5
<b>Services</b>	53.4	55.0	57.4	60.8
<b>Total</b>	100.0	100.0	100.0	100.0

Source: Economic Survey, various issues

On the other hand, it can be seen from Table 1.3 that during the period 1964-1973, manufacturing sector registered an average growth rate of 9.1% and agriculture 4.6% per year, whereas during the periods 1980 to 1989 and 1990 to 1998, the annual average growth rate for manufacturing were 4.8% and 2.5% respectively. The two major sectors have recorded declining performance over the last three decades even though manufacturing appears to have been more resilient.

TABLE 1.3- AVERAGE ANNUAL GROWTH RATES OF REAL GDP 1964-1998 (PERCENTAGE)

	1964-1973	1974-1979	1980-1989	1990-1998
Agriculture	4.6	3.9	3.3	0.7
Manufacturing	9.1	10.0	4.8	2.5
Private household	3.5	14.5	10.0	9.8
Government services	16.9	6.5	4.9	2.6
Finance, real estate etc	9.8	12.4	6.7	6.1
Other services		3.3	4.2	1.9
GDP	6.6	5.2	4.1	2.5

Source: Economic Survey, various issues

Despite the government's efforts in the area of employment creation, the country has been unable to generate adequate employment opportunities as evidenced by the low growth of wage employment. Between 1964 and 1973, wage employment grew by an average of only 3.6% per year.

There was a slight improvement for the period 1974-1979 when the growth rate of 4.2% per year was achieved. Thereafter, however, the average annual growth rate declined to 3.5% in the 80's and to 1.9% per year in the early 90's. Recent rates have been far below the population growth rate and they have led to accumulation of large numbers of openly unemployed people. Moreover many of those who have found jobs in the small-scale agriculture and informal sectors have been underemployed. The 7<sup>th</sup> national development plan projected modern sector wage employment to increase from 1,490,000 in 1994 to 1,540,000 in 1995. This represents an annual growth rate of 3.4% over this

period. The increase was mainly expected in the private sector (National Development plan (1997-2001)).

For near full employment to be achieved during the current period 1997-2020, employment growth must average 4.3% annually. This is in sharp contrast to historical annual employment growth rates of 3% in 1963-1986 and just over 2% in the last decade. The government recognizes that jobs can only be created and sustained through encouragement of efficient industries, which are internationally competitive through utilization of the latest technology.

In order to cope with these challenges, the industry is projected to increase its growth rate from the current 5% to 15% by the year 2020. This definitely calls for enhanced industrialization, which is achievable through the adoption of new, integrated strategy in which market driven development is combined with careful capacity building and strengthening of the institutional framework.

### ***1.2.1 Investment and Savings***

In tandem with the general decline in economic performance since the 70's, the growth of the nation's capital stock fell to 2.7% per annum in the 1980's compared to an annual average of 7.1% in the 70's. By the 90's, the growth of gross investment was just sufficient to maintain the capital stock at a constant level. Despite recent improvements, gross fixed capital formation (GFCF) still remains low at an annual average of 17% of the GDP in the 90's compared to 31% and 21% in the 70's and 80's respectively. One notable feature about GFCF is that it is increasingly being financed through domestic savings,

perhaps evidence of reduced capital inflow from major donors and the Bretton Woods institutions (IMF and the World Bank).

If the country is to achieve sustainable rate of growth, an increase in both investment and savings will be crucial. The level of investment should be increased substantially both in the public and private sector. Tapping of foreign savings, through the promotion of direct foreign investment, should also be promoted if the country is to achieve its desired level of investment.

### **1.3 STATEMENT OF THE PROBLEM**

Expansion of private investment is considered to be the main source of economic growth. This view stems from the many years of dismal performance by the public sector investment programs. The adjustment to the changing global environment of the 90's requires the recovery of the private investment that leads to higher efficiency of resource use and serves as a positive signal to local and foreign investors. The performance of the private investors is therefore central to the success or failure of the adjustment and growth strategies undertaken by many developing countries (Chhibber, Mansoor and Shafik (1992)).

It is for this reason that many African countries, Kenya included, now focus on improving their growth performance through encouraging private investment after undertaking major reforms in the 80's to shift the orientation of their economies. Private investment remains the cornerstone of renewed growth in less developed countries that have successfully reoriented their economies to

make them more efficient. Failure to create an environment that will guarantee the continued growth of the private sector, will lead to slow economic growth which will not only exacerbate the unemployment problems, but also result in increased incidences of poverty. The recent trend of the economic growth in Kenya bears this assertion out as shown by Table 1.4. As earlier mentioned, since the 60's the economic growth has been on the decline and in 1999 it went to an all time low level of 1.4% in real terms. The number of people living below the poverty line has accordingly risen to more than 50% of the total population by the same year.<sup>1</sup>

**TABLE 1.4- DECLINING ECONOMIC GROWTH (PERCENTAGE)**

Year	1960- 1970	1970- 1979	1980- 1989	1990- 1997	1998- 1999
Average Annual GDP growth	6.0	6.6	4.2	2.1	1.4

Source: Daily Nation, March 16, 2000

In spite of structural adjustment programs being implemented in agriculture, industry, trade and the financial sector, the levels of private investment in Kenya have continued on their downward trend (Ronge and Kimuyu (1997)). This study therefore will endeavour to find the cause of this downward trend even after the government efforts to revamp the private sector. The study will try to seek other gaps and policy issues that could be contributing to this state of affairs.

<sup>1</sup> The Daily Nation, March 10, 2000

#### **1.4 OBJECTIVES OF THE STUDY**

The economic downturn foretold and the accompanying fall of investment rates have sparked renewed interest in the determinants and effectiveness of investment in Kenya. The causes and strategies for revamping economic growth and development are therefore of utmost importance to analysts and policy makers alike. A consensus is emerging on the importance of increasing the total investment, promoting the private sector development and increasing its share of total investment for long-term growth.

The objectives of this paper therefore are:

- (i) To understand, analyze and evaluate the macroeconomic variables that explain the low and fluctuating private investment growth, particularly in the manufacturing sector, and how macroeconomic policies and institutions affect private investment.
- (ii) To examine microeconomic, socio-political and cultural factors that may uniquely be affecting individual investment decisions in Kenya,
- (iii) To draw policy implications and conclusions that may be useful to the policy makers and investors in their endeavour to make Kenya a newly industrialized country by the year 2020. (Sessional Paper No. 2 of 1996)

## **1.5 SIGNIFICANCE OF THE STUDY**

As stated by Ronge and Kimuyu (1997), studies on investment behaviour in Kenya are few, although Kenya has been analyzed in cross-country studies by Blejer and Khan (1984), Greene and Villanueva (1991) and Oshikoya (1994). In these studies Kenya is just one of the countries pooled from the group of developing or African countries as the case may be. It is therefore impossible to isolate the Kenya-specific determinants of investment behaviour from these studies.

On the other hand, the few studies on the macroeconomic determinants of private investment in Kenya that have been carried out, fail to recognize the importance of some important determinants like the public debt.

This study has gone a step further by incorporating other factors that influence individual investor's investment decisions. By carrying out a survey, we will be able to get first hand information from the investors on the problems hampering their investment efforts in Kenya. The fact that private investment has been on the decline even after liberalization, shows that there are other formidable factors at play which could weigh even more than the traditional macroeconomic factors on investment decisions in Kenya.

Likewise, and to my knowledge, no study has stretched the entire period from independence to the late 90's when fundamental economic and political changes took place. This study also dwells on the manufacturing as one of the

crucial sectors that needs to be promoted if the country is to achieve its stated objective of being a Newly Industrialized Country (NIC) by the year 2020.

The study is also an important addition to the existing literature on the determinants of private investment, which is widely recognized as the engine of growth in developing countries including Kenya.

## **1.6 ORGANIZATION OF THE STUDY**

This study is organized into five chapters. The first chapter has covered the introduction, which contains sub-heading on the background, trend in the manufacturing sector, statement of the problem, objective and the significance of the study.

Chapter two covers the literature review, which is divided into three parts. The first part is on theoretical literature while the second one is on empirical review. The last part reviews studies done on Kenya.

Chapter three is broadly on the methodology. Under this, the model is specified, the various variables to be estimated and the procedure to be used are described, and the chapter ends with a short brief on the data sources and type.

The fourth chapter gives the regression results and interpretations. The stationarity and cointegration tests are also done. This chapter also describes

the short-run and long run models and gives a short description of the effects of the variables we have used on the Agriculture and Service sector. The chapter analyses the results of the survey conducted and culminate with a comparison of the Kenyan situation with that of the "Asian Tigers".

Chapter five draws the conclusion and gives broad policy recommendations that we think can help reverse the current downward trend in private investment in Kenya.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 THEORETICAL LITERATURE

Investment in this study is mostly used to refer to the flow of spending that adds to the physical stock of capital.

According to Dornbusch and Fischer (1994), investment spending is important for it accounts for much of the movement in the business cycle. When expenditure on goods and services falls during recession, much is due to a drop in the investment spending. Besides, investment spending determines the rate at which the economy adds to its stock of physical capital, and therefore helps determine the economy's long-run growth and productivity performance. It is important to study investment behaviour to better understand fluctuations in the economy's output of goods and services.

Keynes in his "General Theory" introduced the idea of an independent investment function in the economy. He argued that investment depends on the prospective marginal efficiency of capital relative to some interest rates, reflecting the opportunity cost of investment. Keynes also pointed out that investment decisions are made on uncertain basis. Thus, he argued private investment is intrinsically volatile since any rational assessment of the return on investment was bound to be highly uncertain. Hence, he said investment decisions are very much affected by how optimistic or pessimistic the investors feel. This he described as the "animal spirit" which implies there may be no

good basis for the expectations on which investors' base their decisions, without which they could change easily- and the volume of investment, could well change along with the expectations.

Various models have been used to explain the investment behaviour, mostly based on the experience of the developed countries. Following Keynes, investment theory developed around growth models, giving rise to the now popular accelerator theory according to which investment is a linear proportion of output changes. This classical investment theory is however limited in appeal because it does not have a role for profitability, expectations, and the cost of capital. This shortcoming gave rise to the neo-classical and Tobin's-Q theories.

Jorgensen (1967) popularized the neo-classical theory. It postulates that the level of investment depends on the volume of output and the user cost of capital. The user cost in turn depends on the real interest rate, the price of capital goods and the rate of physical depreciation. An investment equation results from the time gap between desired capital and the actual capital stock. This gap is caused by the time lag between the decision to acquire assets and the actual delivery. There is therefore a close relationship between desired capital stock and firms level of output

$$\dot{K}^* = hy \text{-----}(1)$$

Where,

h=constant

y=output

If firms invest without delay to keep actual level of capital stock =desired level of capital stock, then net investment:

$$Inv=K^*_{+1}-K^*-----(2)$$

$$Inv=hy_{+1}-hy-----(3)$$

$$Inv=h(y_{+1}-y)-----(4)$$

$$\text{Gross investment} =h (y_{+1}-1) +\delta k-----(5)$$

Net investment increases as output “accelerates”. This model has been heavily criticized due to its restrictive assumptions e.g. assuming that capital stock equal the desired capital stock. It has also been criticized on account of inconsistency between its assumptions of perfect competition and exogeneity of output. The assumption of static expectations about the future prices, output and interest rates also overlooks the fact that investment is a forward-looking process.

Tobin's-Q theory (1969), postulates that the main force driving investment is the Q-ratio or the ratio of the market value of the existing capital stock to its replacement value. That is to say that entrepreneurs will want to invest (divest) if the increase in the market value of an additional unit exceeds (fall short of) the replacement cost. However the marginal Q is not easily measured and thus

what is used instead is the ratio of the market value of the entire existing capital stock to its replacement cost, i.e. the average Q ratio. There are problems associated with the use of average Q. According to Abel (1980) and Hayash (1982), if firms enjoy economies of scale or market power or if they cannot sell all they want, marginal Q will certainly differ. Besides, the assumption of increasing installation cost is dubious.

Because of the problems inherent in applying the standard neoclassical model to developing countries, one line of research, pursued notably by Mckinnon and Shaw (1973), has abandoned this model advancing instead the hypothesis that private investment in developing countries is positively related to the accumulation of domestic real money balances. Underlying this hypothesis is the assumption that private investors in these countries must accumulate money balances before undertaking investment projects because of their limited access to credit and equity markets. Because real money balances are directly influenced by real deposit interest rates, there should be a positive relationship between private investment and real interest rates in these countries. But this approach accordingly disregards the negative effect of higher real rates on investment via increases in the user cost of capital that normally follows from the neoclassical investment model. It is important to note that Mckinnon (1991) admits lack of strong relation, at least from the macro perspective, between real interest rate and saving (Abu (2000) Pers. Comm.).

Neither the neoclassical nor the Tobin's-Q theories of investment are applicable in the less developed countries because of the restrictive assumptions on

which they are based e.g. perfect capital markets, perfect flow of information and little or no government investment. Typically, these countries do not have equity markets and have for a long time suffered financial repression, debt overhang, and a dominant role of imported capital goods and macroeconomic instability (Agenor and Montiel (1996)). Though these factors act as a barrier to private investment, they are often not incorporated in traditional models of private investment e.g. private investors in less developed countries face enormous financial and physical resource constraints e.g. credit and infrastructure which are normally not considered in the traditional models.

Another line of research has attempted to retain the neoclassical model, but to address the analytical and data problems involved in its application to developing countries, in particular the lack of data and the resource constraints facing private investors in the developing countries (Sundararajan and Thakur (1980)), (Tun Wai and Wong (1982)) and (Blejer and Khan (1984)). Applying the neoclassical model leads to the conclusion that the private investment rate should be negatively related to the real interest rate as a measure of the user cost of capital.

Recent research has made a departure from the traditional net present value (NPV) rule, which says that one should invest when the purchase and installation cost equals the expected return. This is because it ignores the irreversibility and the option of delaying an investment. The neoclassical theory has also been put to question because of this anomaly. The new theory emphasizes that the anticipated return on the new investment project, must

exceed the purchase and installation cost by an amount equal to the value of keeping the investment option alive (Schmidt-Hebbel *et al* (1996)).

According to Dixit and Pindyck (1994), most investment decision has three important characteristics: They are irreversible in that the initial cost of investment is at least partially a sunk cost and cannot be retrieved. Secondly, there is uncertainty over the future rewards from the investment hence the best an investor can do is to assess the probabilities of the alternative outcomes that can mean greater or smaller profit (or loss) for his venture. Thirdly the investor have some leeway about the timing of the investment, hence she can postpone the investment to get more information (though never complete) about the future. These three characteristics interact to determine the optimal decisions of investors. The argument then is that, compared to the predictions of earlier models, real world investment seems much less sensitive to factors such as interest rates changes and tax policy changes, but more sensitive to the volatility and uncertainty of the economic environment. The uncertainty may be on future profits- fluctuation in product prices, input cost, exchange rates, tax and regulatory policies (Dixit and Pindyck (1994)).

Schmidt-Hebbel *et al* (1996) says that recent strands of investment literature have begun to consider nonconventional determinants that are thought to be of particular relevance to the developing and transitional economies. Among these are the enforcement of the property rights, the elimination of unnecessary regulation, and the implication of income distribution for a stable investment climate. The formal definition of property rights therefore, must be

complimented by a judicial system that guarantees their effective enforcement. This is because lack of impartial mechanisms to resolve contractual disputes increases the cost of doing business by increasing the probability that the contracts will not be respected and that expenses such as bribes will become necessary to enforce them. The issue of corruption is a critical matter for investment projects because implementing the project may involve many administrative steps. The cost of doing business may rise substantially if the investor is forced to pay bribe to expedite passage through the system. Corruption thus effectively amounts to a tax on investment. Recent country work by Knack and Keefer (1994) and Mauro (1995) shows that high levels of corruption and poor contract enforcement are associated with a significantly worse-than-average investment performance.

This study will attempt to pursue this line by conducting a small survey of about 30 firms to get first hand information on the effects of corruption, inefficient judiciary etc on investment.

## 2.2 EMPIRICAL LITERATURE

A number of empirical studies on private investment in developing countries have been done and this can help us to identify factors that influence private investors in their investment decisions.

Most of these studies have combined the features of flexible accelerator, neo-classical and structural models in an effort to emphasize the resource constraint faced by the private investors in the developing countries. They have used a much more eclectic model of private investment designed to capture the distinctive features of these economies.

The results of these studies suggest that expected aggregate demand proxied typically by credit availability to private sector and physical infrastructure proxied by public investment expenditure are important determinants of private investment in developing countries.

In testing the impact of real deposit rate and public investment on private investment, Galbis (1979), cited in Mwangi (1997), used the equation:

$$IR_p = b_0 + b_1d + b_2p^e + b_3r + b_4IR_g \text{ -----(6)}$$

(+ ) (- ) (+-) (+-)

Where,

IR= Private investment-income ratio

d = Expected real interest rate

$p^e$  = Expected inflation rate

$r$  = Profit rate

$IR_g$  = Public investment-income ratio

By using the OLS method to estimate the equation based on the annual data for the period 1961-1973 for 19 Latin American countries, he found that the real deposit rate has a negative effect on private investment.

Sundararajan and Thakur (1980) examined critically the relationship between public and private investment in developing countries by postulating a dynamic model of savings, investment and growth and by testing and stimulating it for India and Korea. They found out that an initial increase in fixed investment by public sector raises public sector output, the private sector actual and expected output and aggregate domestic savings. If there are a negative effect owing to a net reduction in the availability of savings to the private sector (crowding out) that more than offset the positive effects of increase in private sector output and expectations, private fixed investment falls otherwise private investment rises. Therefore investment by the government stimulates and complements private investment. The empirical result also indicates that the direct effect of interest rate in India had a significant and positive effect on savings where these direct effects were relatively weak in Korea.

The study by Wai and Wong (1982) on the determinants of private investment in the developing countries used a modified version of the flexible accelerator model of investment for Malaysia, Greece, Thailand, Mexico and South Korea.

It isolated the determinants of private investment, government investment, and the change in bank credit to the private sector and capital inflows. The role played by the reinvested earnings was found to be minimal within the framework of recursive model. They found that the effect of reduction of domestic and foreign credit to the private sector reduced the growth of the private investment. They therefore asserted that a projected expansion of domestic credit might be thwarted by the desire of the government to allocate itself a larger quantum of financial resources than allocated by the monetary authorities. This squeezes the private sector thus reducing the private investment.

Using adapted accelerator model, including variables designed to capture constraints and structural characteristics typical for developing countries Chhibber and Wijnbergen (1988) in a study on public policy and private investment in Turkey, showed that the government policies have a marked impact on private investors behaviour through a variety of channels. The government can crowd out the private sector if large budget deficits cannot be financed from abroad. The study also showed that exchange rate policies and other export promotion policies have a major impact on private investment. In addition, the composition of government investment and its credit policies will also influence private investment decisions.

In a cross-country study comparing 24 developing countries in the period 1971-1979, Blejer and Khan (1984) established that public investment had an overwhelming impact on private investment. The results, which were similar to

those, obtained by Chhibber and Wijnbergen (1988) concluded that government budget financing can crowd out the private sector and so government should use foreign borrowing to finance the budget deficit more than using the domestically borrowed resources. They also found exchange rate and high interest rates to adversely affect investment.

Khan and Reinhart (1990) in their paper on private investment and economic growth in developing countries, concluded that private investment and public investment have different effects on the long-run rate of economic growth. Private investment, they found, plays a much larger, and thus more important role in the growth process than does public investment. But they failed to look at the complementary effects of the public investment on the private investment. Expenditure on roads, electricity, telecommunication and schools can have a strong influence on the rate and productivity of private capital formation.

Serven and Solimano (1991), estimating a simple investment equation and using pooled cross-sectional time series data for a group of developing countries found out that real output growth have a strong positive impact on private investment. In contrast, the effect of real exchange rate was very small and insignificant, even after allowing for a one-year lag. Public investment was found to have a positive effect on private investment after a one-year lag but was moderately significant (at 25% level). As the study expected, the foreign debt burden had a strong negative effect on private investment.

Greene and Villanueva (1991) analyzed the effects of several policies and other macroeconomic variables on the ratio of private investment to gross domestic product in developing countries during the 1975-1987 period. Their econometric evidence indicated that the rate of private investment is positively related to real GDP growth, level of per capita GDP, and the rate of public sector investment, and negatively related to real interest rates, domestic inflation, the debt-service ratio, and the ratio of debt to GDP. They noted that the impact of most variables was greatest before the 1982 debt crisis, but the ratio of debt to GDP has since become more important.

Schmidt-Hebbel and Muller (1991) in their paper entitled "Private Investment under Macroeconomic Adjustment in Morocco", concluded that growing uncertainty on future economic policy, as proxied by the debt/output ratio explains over 70% of the drop in the private investment rate. The rapid rise of the user cost of capital also seemed to have driven down private investment. A more stringent credit policy and, to a lesser degree, the deterioration of the public capital stock (relative to GDP) also contributed to lower private capital formation. The influence of the terms of trade was negligible over the period. The only variable that they found to have increased private investment in Morocco was the availability of credit to private sector firms.

Morisset (1991) has looked at the effects of liberalization on private investment in a paper entitled "Does Financial Liberalization Really Improve Private Investment in Developing Countries?" He came to the conclusion that an increase in the real interest rates, which is a typical element of financial

reforms, does not necessarily involve a positive effect on private investment unless the authorities take certain measures. First, they must ensure that bank deposits are closer substitutes to unproductive assets (cash, gold) and foreign assets than to capital goods. Secondly, the financial sector must ensure an efficient allocation of domestic credit. Thirdly, the flow of domestic credit to the private sector is not absorbed by the needs of the public sector.

Oshikoya (1994) investigated the determinants of Private Investment activity in the empirical content of selected African countries. He regressed Private Investment on real GDP, Public sector investment, change in credit to the private sector, ratio of external debt service payment, change in terms of trade and real exchange rate. He found that increase in RGDP have positive impact on Private Investment. Public Investment also positively affected Private Investment. He found Real Exchange Rate to have a positive and significant impact in the middle income countries like Mauritius, Morocco, and Tunisia while having negative, small and insignificant impact in low income countries like Kenya, Malawi and Tanzania. Inflation rates were found to have a strong and unambiguous negative impact particularly in the low-income countries. Credit availability, had strong positive effects whereas debts service ratio had strong negative effects on the Private Investment.

Clement and Levy (1994) analyzed the determinants of Private Investment in the Caribbean region. The paper tested the effects of Government expenditure on education, changes in RGDP, ratio of external debt, and changes in real domestic interest rates on private investment. The results showed a positive

and significant relationship between both public education spending and growth of RGDP on private investment. Real interest rates and the amount of external debt were not significant determinant of private investment.

Workie Mitiku (1997), in his thesis on determinants and constraints of private investment in Ethiopia, concluded that private investment is determined by the availability of finance, the real exchange rate, investment policy, debt service payments and the debt overhang. His data between 1975-1994 showed that real interest rate, growth of per capita GDP, public investment and changes in terms of trade did not affect private investment. He further carried out a survey on a number of firms in region 14 and Tigray, and the data collected showed that bureaucratic procedures, lack of infrastructure (particularly power) and access to finance, are the leading constraints to entry, operation and expansion of private investment in Ethiopia. Political or policy uncertainty and labour regulations were not cited as important investment constraints in Ethiopia.

Akpalu (1997) researched on determinants of private investment in Ghana. He came to the conclusion that in the long run, private investment in Ghana depends on the real GDP, real lending rate, public investment and the availability of credit. Increase in real GDP and availability of credit, positively affect private investment while increase in public investment has a negative impact suggesting that it "crowds out" private investment in Ghana.

Harupara (1998), in analyzing the determinants of private investment in Namibia between 1970 and 1996, found out that public investment, credit to the

private sector, real GDP growth, real interest rate, inflation and real exchange rate are the long run multipliers of private investment in Namibia. The implication being that an increase in the growth rate of all the other variables except inflation and real interest rate have a positive impact on private investment. Inflation and real interest rate may deter private capital accumulation in Namibia in the long run with the former exerting the largest negative impact.

### **2.3 STUDIES ON KENYA**

First, a study of aggregate investment behaviour in Kenya by Matin and Wasow (1992) sought to explain the behaviour of aggregate private investment over the adjustment period through policy stimulation. A private investment function for Kenya was estimated in which domestic credit, foreign exchange reserves, the stock of infrastructure and real exchange rates were determinants. All these variables had a significant positive impact on private investment, with the stock of public infrastructure having the greatest impact. The study also found that the real interest rate had a significant, negative impact on private investment. But the model did not examine the effects of public debt and terms of trade on the behaviour of private investment. While trying to include these variables, this study will also disaggregate private investment and concentrate on the manufacturing sector, which have of late experienced a downward trend.

Ronge and Kimuyu (1997) while analyzing the trends, composition and determinants of private investment in Kenya found that availability of credit, ratio of lagged public investment to the GDP and foreign exchange reserves

exerts significantly positive effects on private investment. On the other hand, they found that investment is adversely affected by the public stock of debt and exchange rate. The interest rates were found not to have significantly influenced private investment in Kenya. Though this study can be said to be among those that have covered the longest period in Kenya, but it fails to incorporate other important determinants e.g. the size of the domestic market, terms of trade and other macroeconomic stability measures e.g. inflation. Ronge and Kimuyu failed to use the various econometric techniques e.g. stationarity and cointegration analysis to guard against spurious regression results. This puts into question their findings. The current study will incorporate these factors and expand the database to cover the latest period possible.

Mwangi (1997) in his research on the determinants of private investment in Kenya's manufacturing sector came to the conclusion that real GDP lagged once, proxy for exchange and trade controls (openness) and public investment in infrastructure, positively affect private investment, while interest rate, level of capital stock and foreign debt burden were not important determinants of private investment. The proxy for human capital formation and the dummy corresponding to the policy shift were insignificant determinants. However his relatively small sample size of 23 years puts into question his findings. The present study strives to add value to this work by incorporating other important variables e.g. terms of trade, and expanding the database to span from the period immediately after independence (1964) to (1998). Our study will also use the public debt instead of the debt service ratio used by Mwangi. Use of external debt ratio rather than the stock may have tilted towards the short-term

fluctuations of the debt service ratio to which investors may not respond given their long term focus (Ronge and Kimuyu (1997)).

## CHAPTER THREE

### METHODOLOGY

#### 3.1 MODEL SPECIFICATION

This study hypothesizes that the response of private investors to the gap between actual and desired stock of capital depends on the availability of credit, rate of growth of real GDP, the level of public investment in infrastructure, level of public investment in education, real interest rates, real exchange rates. These variables were chosen after a research on literature that revealed that they are among the most important factors determining private investment.

The study will initially start with a large set of explanatory variables, and then the preferred equations will be derived from a specification search selecting a parsimonious model from this large set. This general-to-specific modeling strategy potentially minimizes omitted variable bias, although highly collinear regressors may affect accuracy. This approach will also reduce the degrees of freedom constraints given the size of the data (Goldsbrough. (1996)). The insignificant variables (those outside the core model) will be deleted. We will also favour variables that do not disturb the "maintained" hypothesis (the core model). This means, if a variable is significant but makes one or more of the variables in the core model insignificant, we'll place less emphasis on such a variable.

The investment equation will be estimated by the ordinary least squares (OLS). This technique was chosen for its robustness to misspecification errors in small samples. Available small sample studies show that when an estimated equation incorrectly omits relevant explanatory variables, OLS are less sensitive to misspecification than simultaneous estimation methods and therefore maybe a preferable estimation technique (Goldsbrough (1996)).

Matin and Wasow (1992) used an eclectic version of the flexible accelerator model designed to capture some of the key determinants of private investment in Kenya. They found that Kenya's failure to implement appropriate adjustment policies after the coffee boom and the break up of the East African Common Market reduced private investment sharply in the 80's. Declining real credit to private sector, falling stocks of public infrastructure capital and lower availability of imports were found to be the main cause of reduced private investment. They showed that though real depreciation is found to have a direct effect on investment, it has a positive indirect effect on private investment in the medium term as such depreciation relaxes foreign constraint on imports.

Though various models, e.g. the accelerator model, have widely been used in the developed countries, there has not been a successful establishment of an empirical investment function in developing countries perhaps because of lack of sufficient and reliable data. This is more so because assumptions like perfect capital markets and little or no public investment are hard to satisfy in such countries. The focus in these countries usually shifts to the test of various

hypotheses advanced to explain variations in private investment in these countries.

This study therefore intends to use the eclectic version of the flexible accelerator model, in the tradition of Martin and Wasow (1992), but will be modified to accommodate a greater emphasis on the effects of the resource constraints faced by private investors in the developing countries. These include constraints on credit, and foreign exchange, which are expected to affect the direction and speed of adjustment of actual to desired capital stock. This study shall also emphasis on the uncertainty created by the macroeconomic instability. We shall therefore use various macroeconomic indicators like inflation, the public debt and the terms of trade to signify the importance of uncertainty in private investment behaviour.

Also error correction mechanism will be employed to allow the use of new techniques that have recently emerged in the recent literature on stationarity testing and cointegration.

This estimation technique assumes that in the long- run steady state, private sector desired capital stock ( $K_t^*$ ) is proportional to expected output ( $Y_t^e$ ):

Thus,

$$K_t^* = a (Y_t^e) \text{-----}(7)$$

In deriving an investment function from the above equation, "a" is kept constant but the parameters of the quadratic adjustment cost function are assumed to be

a function of different variables. Their formulation starts with a partial adjustment function derived from a quadratic adjustment cost model as follows:

$$(I_t - I_{t-1}) = \beta (I_t^* - I_{t-1}) \text{-----} (8)$$

Where  $I_t^*$  is the desired level of investment in the steady state, which is given by:

$$I_t^* = [1 - (1 - \delta)L]K_t^* \text{-----} (9)$$

Where  $L$  is the lag operator and  $\delta$  is the proportional rate of depreciation

The response of private investment to the gap between desired and actual investment, as measured by the coefficient  $\beta$ , is assumed to vary systematically with economic factors that influence the ability of private investors to achieve the desired level of investment. The response of private investors to that gap is assumed to depend on: the availability of credit, availability of foreign exchange, the level of the real exchange rate, the stock of public infrastructure capital and macroeconomic instability.

On the basis of the above arguments, we can express the coefficient of adjustment in equation (8) as a function of the implied valuables. A linear representative for this relationship would be:

$$\beta_t = b_1 + 1/I_t^* - I_{t-1} \{ b_2 \text{RGDP}_t + b_3 \text{DCP}_t + b_4 \text{RER}_t + b_5 \text{PUINFR}_t + b_6 \text{PUEDU}_t + b_7 \text{RIR}_t + b_8 \text{PUDEB}_t + b_9 \text{INFL}_t + b_{10} \text{TOT}_t \text{-----} (10)$$

Where:

RGDP - Real Gross Domestic Product

DCp- Domestic Credit to the private sector

RER- Real Exchange Rate

PUINFR- Public Investment on Infrastructure

PUEDU- Public Investment on Education

RIR- Real Interest Rate

PUDEB- Public Debt

INFL- Inflation

TOT- Terms of Trade

Adapting the formulation by Matin and Wasow (1992), the general equation on the basis of which policy discussions will be made can be presented as:

$$PI_{mant} = f (RGDP_{t-1}, DCp_t, RER_t, PUINFR_t, PUEDU_t, RIR_t, PUDEB_t, INFL_t, TOT_t) \text{-----}(11)$$

Where:

$PI_{mant}$  = Private Investment in manufacturing at time t,

The specific equation to be estimated can then be expressed as:

$$PI_{mant} = b_0 + b_1 RGDP_t + b_2 DCp_t + b_3 RER_t + b_4 PUINFR_t + b_5 PUEDU_t + b_6 RIR_t + b_7 PUDEB_t + b_8 INFL_t + b_9 TOT_t + e_t \text{-----}(12)$$

### **3.2 VARIABLE DEFINITIONS, TRENDS AND EXPECTED OUTCOME**

Private Investment (PIman) in this study is used to refer to the flow of spending that adds to outlays, buildings and construction by private investors in the manufacturing sector. Over the research period, private investment in the manufacturing sector has grown at a relatively sluggish pace. It grew from 10% of the GDP 1964, to 11.8% in 1973. By the end of 1998, it had only grown to 13.5% of the GDP.

Public expenditure on infrastructure (PUINFRA) is expected to show the amount of spending on roads, communication, water, electricity, gas and steam. Graph 3.2 shows that there has been a general increase in the expenditure on infrastructure as a percentage of GDP. But it must be noted that increase in expenditure on infrastructure do not necessary imply improved communication network. Efficient utilization of the resources is equally important.

The effect of public expenditure on investment in theory or empirical literature is often ambiguous. This is because public expenditure can "crowd out" the public sector. This would occur in cases where the government is running a budget deficit and borrowing from the domestic market to fill up this gap. This would effectively diminish the available credit to the private sector and may also lead to high interest rates hence exacerbating the "crowding out" effect. On the other hand, public expenditure can be a boon to private investment. Expenditure on roads, railways, electricity, water etc would have a

complementary effect on private investment. The sign of this variable is indeterminate given that there may be huge budget allocation to infrastructure, but inefficiency and misappropriation of the funds may lead to negative effect on the private investment.

Public expenditure in education (PUEDU) is expected to show the amount spent on education as a proxy for human capital formation. The expenditure on education is expected to increase the human capital stock at the disposal of the private investors. Over the years public expenditure in education has been increasing with the government subsidizing most educational activities. Nearly one third of the total government budget goes to the Education Ministry showing the importance the government attaches to this sector. This could positively affect private investment. This variable is therefore expected to show a positive sign.

Public debt (PUDEB) is used as a proxy for macroeconomic instability. Many developing countries are now ridden by the debt crisis. Some have even lost their credit worthiness for failure to service their debt obligation when due. The trend on public debt shows that, over the years the stock of public debt has been rising at a fast rate and as Graph 3.2 shows by the 90's it had reached an astronomical level. Indeed, by February 2000 the public debt was 70.7% of the GDP<sup>2</sup>. It has been argued that the large amount of resources that developing countries are using to service their debt is leading to the "crowding out" of the public investment hence diminishing the complementary effect of public

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<sup>2</sup> Kenya Monthly Economic Review, April 2000

investment in infrastructure. Secondly, an external debt ratio could be an indication of “debt overhang”. This can reduce the incentives for investment, because much of the forthcoming returns from investment must be used to repay existing debt, therefore acting as a tax on domestic investment (Borensztein (1989)) and (Froot and Krugman (1990)).

Thirdly, if substantial external debt leads to difficulties in meeting debt-service obligations, relations with external creditors may deteriorate thus, reducing the amount of trade financing a country can obtain. This, in turn, may make it harder or more costly to finance private investment, because imports play a major role in most investment projects in developing countries, and most developing countries imports are investment related (Mirakhor and Montiel (1987)). A number of studies on private investment e.g Greene and Villanueva (1991), Oshikoya (1994), Agenor and Montiel (1996), Ronge and Kimuyu (1997) found strong support for the debt overhang argument.

Real Gross Domestic Product (RGDP<sub>-1</sub>) was used as a proxy to show the demand for the manufactured products. Increase in real GDP would imply an increase in income hence an increase in demand for the produced goods. Over the study period there has been a continuous increase in the level of real GDP, but this do not necessarily lead to an increased demand in the manufactured goods. There are bound to be other competing needs for the increasing income. This variable was therefore expected to positively affect the private investment.

Domestic Credit to the private sector (DCp) was used to show the amount of commercial bank loans, treasury bills and advances that go to the private sector. Graph 3.2 shows that there has been a huge increase in credit to the private sector since the early 90's in absolute terms. This could be attributed to the liberalization of the financial market, which made it easier to access credit. An increase in financial resources to the private sector would positively affect the private investment. The variable is therefore expected to have a positive coefficient.

Real Interest Rate (RiR) was taken as the nominal interest rate less inflation rate. It is expected to show the cost of capital to investors. Graph 3.2 shows that before the financial markets were freed, the interest rates were relatively stable. But from the early 90's they rose sharply and reached an all time high of over 30% in 1993. There was excess liquidity associated with the financing of the general election in 1992, which led to the government using the Open Market Operation (OMO) to mop up the liquidity-saturated economy. This could therefore explain the high interest rates over that period. The higher the rate of interest, the more costly it is to invest. Higher interest rates are therefore expected to negatively affect private investment.

Real Exchange rate (RER) was calculated as a weighted average of Kenya's nominal exchange rate against its major trading partners. Since being decontrolled, the exchange rate movements have been cyclic causing a lot of anxiety to investors. Speculators have also contributed to this instability of the Kenya shilling. The effect of this valuable may have either positive or negative

effect on private investment. Real devaluation aims at expenditure-switching to complement the expenditure-reducing measures.

An objective of real depreciation is to correct an overvaluation, thereby improving external competitiveness by inducing a real depreciation. Real depreciation affects private investment through several channels, not all of which work in the same direction. First, depreciation may impact on private investment negatively when it raises the cost of imported capital goods and intermediate goods. This lowers the profitability of the non-tradable sector and subsequently slows down the response of the private investment to the adjustment process. Second, because depreciation reduces the real product wage of traded goods, it is likely to raise the profitability of the tradable goods sector, while it will depress investment in the non-traded goods sector.

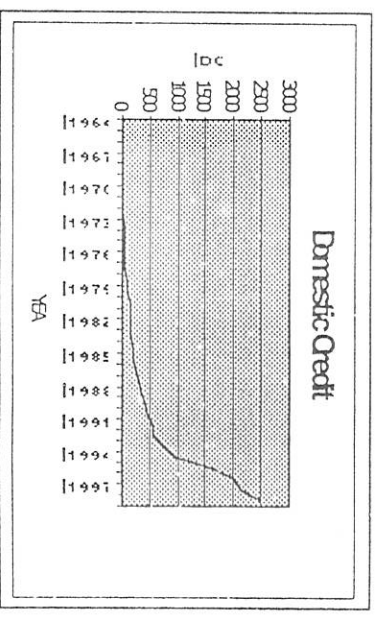
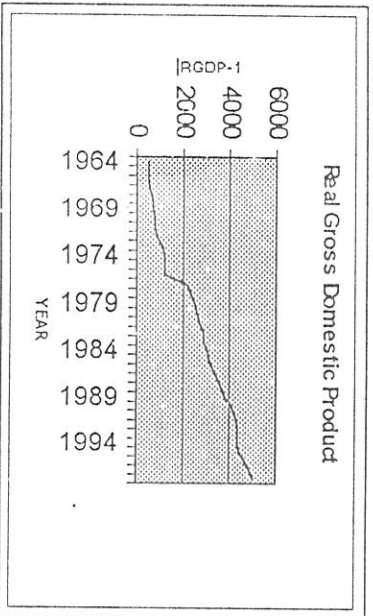
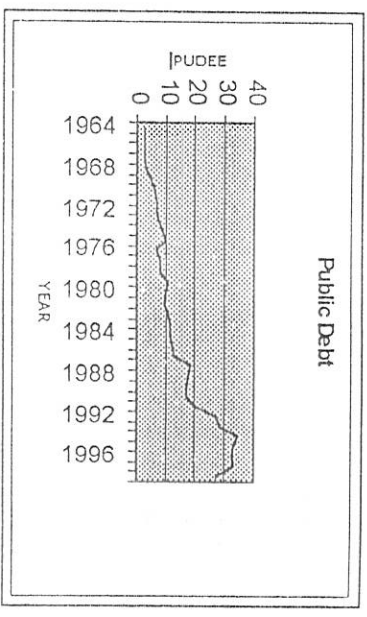
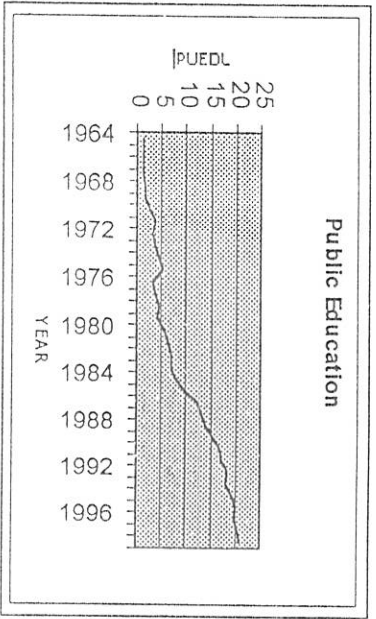
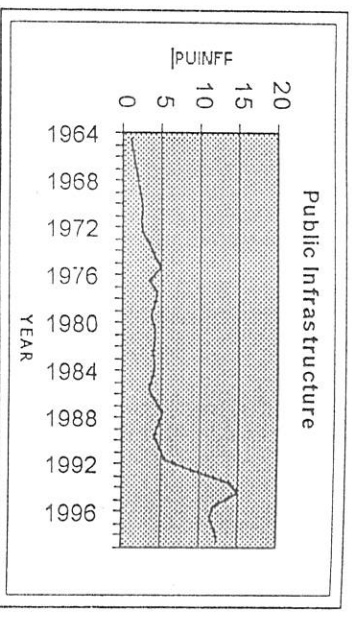
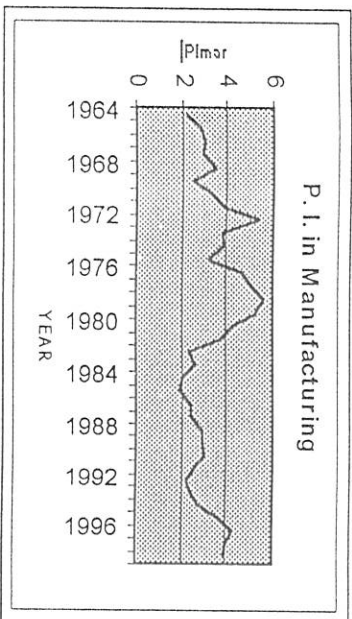
Third, depreciation raises the demand for domestic output. Fourth anticipated depreciation is likely to result in an investment boom if the import content of capital goods is high relative to the degree of capital mobility as the anticipated depreciation induces a switch towards foreign goods. After depreciation, the boom is followed by a slump because the change in the exchange rate is equivalent to the removal of a subsidy on investment. With high capital mobility the expected depreciation promotes flight into foreign assets and the opposite pattern occurs. As a result the impact of real depreciation on investment could go either way.

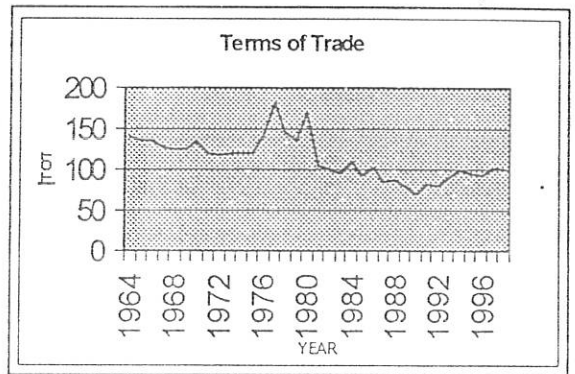
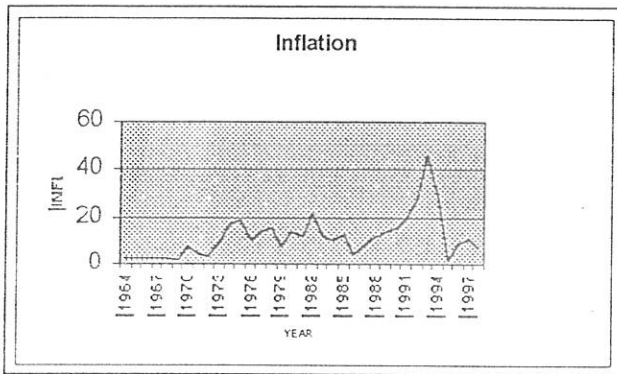
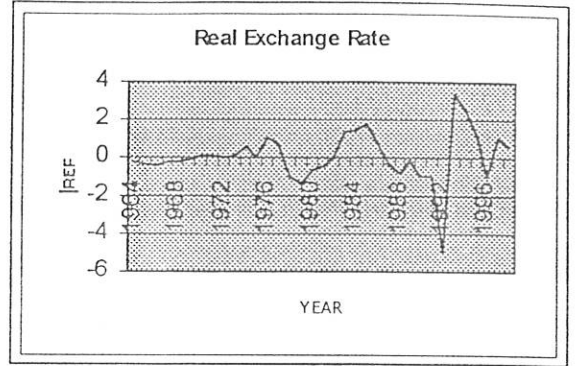
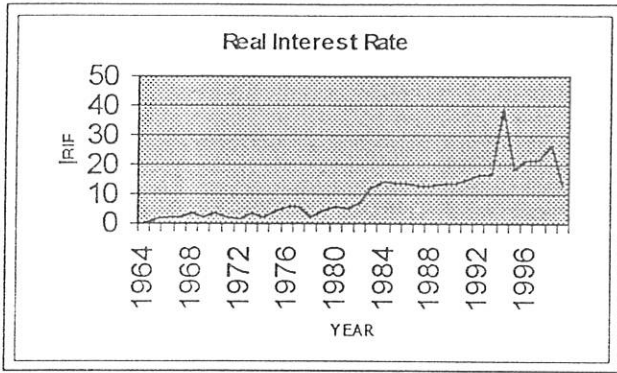
The inflation rate (INFL) was calculated as the annual increase in the Consumer Price Index (CPI). The movements of the inflation rate can be

similarly traced to that of the real interest rate because we derive the latter after eliminating the effects of the former. The direction of the effects of inflation on investment is also ambiguous. In developing countries, high inflation rates are often considered an indicator of macroeconomic instability and a country's inability to control macroeconomic policy, both of which contribute to an adverse investment climate. High rate of inflation increases the riskiness of long-term investment by reducing the average maturity of commercial lending. Also when the rate of inflation is highly variable, it becomes difficult to extract the correct signals (i.e. distorts the information content) from relative price movements and this can lead to an inefficient allocation of economic resources like capital. This variable is therefore expected to have a negative coefficient. A study by Oshikoya (1994) found a weak negative effect of inflation in Kenya among other African countries.

Terms of Trade (TOT) is one of the most important indicators of external shocks to the economy. Adverse movement in the terms of trade will increase the cost of imports relative to income and also reduce the purchasing power of exports. Graph 3.2 shows that over the years our terms of trade has been on a downward spiral and has never regained the high levels of the mid 70's. Severe terms of trade, therefore, may worsen the ratio of current account deficit to GDP-an indicator of external balance and macroeconomic stability, with consequences on private investment. On the other hand, increase in the price of exports relative to that of imports increases real income without affecting output. Therefore improved terms of trade are expected to have a positive effect on private investment.

Graph3.2-Trend of the variables (1964-1998)





### 3.3 ESTIMATION PROCEDURE

Given the recent development in time series econometrics, this study will employ estimation process that test the time series properties of the data using the unit root test of Dickey Fuller (DF) and the Augmented Dickey Fuller test (ADF). This will help to test for stationarity and cointegration to avoid the spurious correlations associated with trended time series and also to allow for analysis of long run equilibrium relationship between private investment and its determinants. Stationarity in this context is used to mean that the mean, variance and autocovariance are independent of the time. In practice, macroeconomic variables are almost always nonstationary and working with such variables will give a high likelihood for spurious regression results. In such a situation any inference made will be meaningless. If the variables are not stationary,  $I(0)$  we may need to difference them several times  $I(d)$  to achieve stationarity.

Test for cointegration will also be carried out. Two time series  $X_t$  and  $Y_t$  are said to be cointegrated of order  $d, b$  where  $d \geq b \geq 0$ , written as:

$$X_t, Y_t \sim I(d, b)$$

If both  $X_t$  and  $Y_t$  are integrated of order  $d$ ; and there exist a linear combination of  $X_t$  and  $Y_t$  which is integrated of order  $d-b$ . Cointegration facilitates analysis of long- run economic relationship associated with time series data. Data observed over a considerable period of time tend to trend up or down in a

nonstationary manner but when analyzed as a group, it may tend to drift together. The test for cointegration is similar to the unit root tests of Dickey Fuller (DK) and Augmented Dickey Fuller (ADK) except that in this case, tests are performed on the regression model residuals obtained from regressing the static model at levels. In order to have meaningful long-run relationships, it is necessary for the error term of the long-run model to be stationary. The Engle and Granger two-step procedure will be used to address this problem of nonstationarity. This is the most appropriate cointegration test in cases where there are data limitations. The only problem with this method is that step 1 is carried out without having established that the relationship is a long-run one.

The Johansen test for cointegration will also be carried out. This is necessary because assuming there is only one cointegrating vector, when in fact there are more, leads to inefficiency in the sense that we can only obtain a linear combination of these vectors when estimating a single equation model. If there are  $n > 2$  variables in the model, there can be more than one cointegration vector, i.e. the variables in the model may feature as part of several equilibrium relationships governing the joint evolution of the variables. It is possible for up to  $n-1$  linearly independent cointegrating vectors to exist and only when  $n=2$  is it possible to show that the cointegration vector is unique (Harris (1995)).

To test for structural break the Cumulative Sum of Recursive Residual (CUSUM) and the Cumulative Sum of Residual Square (CUSUMQ) will be used to detect structural breaks if the regression does not contain lagged dependent variables. Structural breaks in the model would be evidence that the

parameter estimates are non-constant. Sequential one-step chow tests and one-step residuals will be obtained from applying recursive least squares to the model over successive time periods by increasing the sample size period by one additional observation for each estimation. Graph of 1-step ahead residuals are shown bordered by 2 standard deviations from the mean of 0, and points outside this region are either outliers or are associated with coefficient changes.

The timing of private investment decisions may also be affected by irreversibility, uncertainty, flexibility and other socio-political and economic factors in investment. An increase in uncertainty causes risk-averse firms to reallocate resources away from risky activities/places, thereby lowering the desired stock of capital. Also, if the outcome of irreversible investment turns out to be worse than expected, risk-neutral investors may get stuck with low returns, whereas if prospects improve new entrants may compete away part of the gains. Consequently, downside risk may increase without corresponding upside gain, so that waiting may have value as it gives firms the opportunity to process new information before committing resources.

If Cost related to the purchase, delivery and installation of capital increase with the investment rate, they create incentive for gradual transition from actual to desired levels of capital. However, the costs can be influenced by policies. In particular the transition period can be unduly protracted by credit-rationing constraints and structural problems of financial intermediaries; by the large weight of the public sector, often hampering private initiative with distortions

and regulations. The role of all these factors, however, is hard to test empirically because there are conceptual and measurement problems. For instance, the difference between uncertainty, instability or volatility is normally not very clear. Even more important, there is complication on the sort of proxy to use. For instance, inflation which normally proxies for volatility and uncertainty may only partially capture the impact. In light of this, a survey will be conducted and we'll use simple statistical analysis and descriptive approach on the data collected, to determine how these factors affect private investment in the manufacturing sector in Kenya.

#### **3.4 DATA SOURCES AND TYPE**

Secondary data in most developing countries, Kenya included, have problems, of which there is little the researcher can do. In some cases the same data series may have different figures. In other cases there is inconsistency in some of the data set. Still there are cases where aggregate data do not reflect the actual figures for some periods. An even more intriguing problem is when there are divergence of values of variables from different sources. It is in trying to minimize these problems that we tried as much as possible to utilize data from the Government, mainly the Ministry of Finance and Planning's Central Bureau of Statistics (CBS).

This study therefore, utilizes time series data spanning from 1964-1998. Data was obtained mostly from the Ministry of Planning's Statistical Abstract, Economic Surveys, Development Plans and the Central Bank of Kenya's

Economic Review. To supplement this, the IMF's International Financial Statistics (IFS) yearbook and the World Bank's World Tables data was also utilized. The figures are in Kenya million pounds, but all the appropriate level variables are divided by the real GDP partly to reduce the nonstationarity problem common in the time series data.

Due to the recent importance placed on the immense effects of uncertainty, lack of confidence, riskiness and irreversibility on investment, and other socio-economic factors, the study intends to carry out a survey of 30 manufacturing firms. This will be in the capital city of Nairobi, the industrial town of Thika and in the fourth largest town of Nakuru, to establish the extent to which these issues affect the investment behaviour at the microeconomic level.

Nairobi being the capital city has all kinds of manufacturing outfits be they small, medium or large scale. Thika was chosen as it is regarded to have grown largely as an industrial town. It has a comparatively good infrastructural network and is only about 38 Km from Nairobi. Manufacturing sector in Kenya is highly dependent on the performance of the agricultural sector. This is because of the backward and forward linkages that exist between the two sectors. It is for this reason that Nakuru, being the agricultural capital of Kenya was chosen since it has a number of agro-based manufacturing firms e.g. food manufacturing. Given the size of the sample, the firms were not classified between the large and small firms. Besides, these problems mostly cut across all types of firms.

## **CHAPTER FOUR**

### **EMPIRICAL RESULTS AND INTERPRETATIONS**

This chapter outlines the main empirical findings of the study. First, we discuss their unit root tests performed on the variables at the level and difference stage. We also carry out various tests necessary to authenticate our findings. We will incorporate other sectors of the economy in a bid to gauge the effects of our variable on other sectors. Thereafter we analyze the results from the short run dynamic model, which will dwell on the role of the Error Correction Model (ECM).

#### **4.1 STATIONARITY TESTS**

Before the regression of the private investment in the manufacturing was done, we tested the time series characteristics of the data. This was done to avoid the spurious correlations associated with trended time series. These means that results obtained in such series suggest that there are significant long-run relationship between the variables in the regression model, while in fact all that is being obtained is evidence of contemporaneous correlations rather than meaningful causal relationship. We therefore employed the Augmented Dickey Fuller (ADF) test to establish the order of integration.

As shown in Table 4.1, apart from the RER all the other variables have non-stationary series at their levels. This is because the critical t-ADF values are less than the calculated t-ADF values (in absolute terms) for all the variables (except RER) at both levels of significance.

TABLE 4.1-UNIT ROOT TESTS

Variable	With constant only		With constant and trend	
	Critical values		Critical values	
	5%=-2.956, 1%=-3.65		5%=-3.556, 1%=-4.271	
	Null of I(0)	Null of I(1)	Null of I(0)	Null of I(1)
LRIR	-1.14	-5.19**	-2.83	-5.07**
LRER	-4.17**	-6.38**	-4.20*	-6.27**
LPIman	-1.52	-3.26**	-2.07	-3.25
LPUINFR	-1.10	-4.67**	-2.75	-4.73**
LINFL	-2.72	-6.21**	-2.73	-6.33**
LTOT	-1.52	-4.69**	-1.85	-4.63**
LRGDP-1	-1.97	-3.97**	-0.97	-4.43**
LDCp	-0.74	-6.21**	-3.31	-6.12**
LPUEDU	-1.99	-4.71**	-2.53	-5.13**
LPUEB	-1.81	-4.06**	-2.87	-4.28*

## Acronyms for Variables:

LRGDP-1 - Log of Real Gross Domestic Product

LRIR - Log of Real Interest Rate

LDCp - Log of Domestic Credit to  
the private sector

LRER - Log of Real Exchange Rate

LPUEDU - Log Public Investment on Education

LPUEB Log of Public Debt

LPUINFR - Log of Public Investment on  
Infrastructure

LINFL -Log of Inflation

LTOT - Log of Terms of Trade

The first difference on LPIman, LRIR, LINFL, LPUINFRL, LPUEDU, LPUEB, LTOT, LRGDP-1, and LDCp produced a stationary series, resulting in a I (1) series. This therefore means that these variables are integrated of order 1. But LRER was stationary at levels and is therefore a I (0) series.

As the above results show most of the variables are non-stationary in levels and this facilitates cointegration analysis. This is because stationarity can be induced after the first difference of the series. The unit root tests are therefore crucial as they allow regressions with stationary series, which can produce reliable estimates.

Having established the order of integration of the variables, we embark on the long-run regression, which will employ the Engle and Granger two step procedure to establish whether the variables are cointegrating or not.

#### **4.2 COINTEGRATION TESTS**

To avoid the problem of spurious regression results earlier mentioned, cointegration analysis is of utmost importance. Therefore conducting cointegration analysis between apparently correlated I (1) series and establishing cointegration validates the regression. On the other hand, failure to find cointegration is indicative of spurious correlation between the series, which ultimately invalidates inferences drawn from such correlation.

The presence of cointegration implies that even if the dependent and the independent variables are non-stationary, the residual from the estimation of the equation are stationary (Engle and Granger (1987). They argue that, if there is cointegration, the equation with non-stationary variables is best estimated by the error-correction model (ECM) for long and short-run dynamics. The error-correction model serves as a feedback mechanism as it allows the exploitation of the information on the long-run relationship between non-stationary series within a stationary and therefore statistically consistent model (Adam, (1992).

The Engle and Granger two-step procedure we are using is to enable us determine the short-run and the long-run multipliers of the private investment

behaviour. Given our relatively small sample size, this procedure is the most appropriate.

The first step of this procedure involves the inclusion of all the variables that are having unit roots at the level stage. Due to the properties of super converge (merging) the estimated parameters can be viewed as an estimate of the long run and the residuals (lagged once) can be used as an error term. The null hypothesis for the test is that the estimated error term has a unit root and the alternative is that the variables are cointegrated.

The second step, in the two- step procedure is to test for a unit root in the residual of the cointegrating regression obtained in the first step. Here, the lagged residual from the long run regression has to be included in the equation with differenced variables to form the short run dynamic model or the error-correction model which validates the long run estimates in the event of the rejection of the null hypothesis that the residual has a unit root.

The level stage regression gave us the following long-run equation on the  $PI_{man}$  which is our main concern:

$$LPI_{man} = \beta_0 + \beta_1 LPUINFR + \beta_2 LTOT - \beta_3 LRER + \beta_4 LINFL + \beta_5 LRGDP_{-1} + \beta_6 PUEdu - \beta_7 LDC_P - \beta_8 LPUDEB + \beta_9 RIR$$

$$R^2 = 0.92475 \quad F(9, 25) = 34.136 [0.0000] \quad \hat{\alpha} = 0.251679 \quad DW = 1.97$$

RSS = 1.583552695 for 10 variables and 35 observations

TABLE 4.2-ECM TESTS

Variable	With Constant only	With constant and trend
	Critical values	Critical values
	5%=-2.956, 1%=-3.65	5%=-3.556, 1%=-4.271
ECM	-3.89**	-3.82*

Note: The single and double asterisk shows stationarity at the 5% and 1% significance level respectively.

The ECM in Table 4.2 shows the residual from the long-run equation. The ADF test, with and without the trend, was carried out and the results reveal that there is stationarity at the 1% and or 5% significance level.

The ADF test included one lag term enough to produce a white noise process in the test.

Due to the shortcomings of the EG process mentioned in chapter three, we supplemented it with the Johansen multivariate test. This was expected to further reduce the problem of spurious regression results. By setting the lag length to one, the test ensured that there is one cointegrating vector. Therefore, as Table i in Appendix 1 show, the hypothesis of the presence of no cointegration vector is rejected in favour of one cointegration vector.

#### 4.3 THE SHORT RUN DYNAMIC MODEL OF PRIVATE INVESTMENT

The Kenyan annual data spanning from 1964-1998 was applied on the private investment equation (12). It is from this long-run equation that the residual for the error correction model (ECM) for the short-run model were generated. Equation (6) was then estimated using the stationary variables with the ECM lagged once ( $ECM_{-1}$ ) added to the model as an explanatory variable.

The lagged residual, ( $ECM_{-1}$ ) representing the error correction model is expected to have a negative sign as it captures the process by which agents adjust to the long-run equilibrium.

The results in Table 4.3 show that the overall explanatory power of the model is 0.68546. This implies that various factors identified in the determination of private investment in the manufacturing sector in Kenya jointly account for nearly 69%.

The variables are jointly significant at the 1% level of significance as indicated by the F-statistics of 6.2653.

Overall, the diagnostic tests of the model are good as the AR do not show any problem of serial or residual correlation. The ARCH test rejects the presence of heteroscedasticity. This could be because by introducing logs to the variables we reduce the scale of measurement and therefore track down the incidence of heteroscedasticity. The test of normality indicates that there are no outliers in

the data. Finally, the RESET test shows that we don't have a problem of functional misspecification.

A plot of the CUSUM for system changes and CUSUMSQ for recursive residual showed no structural breaks, which confirms the stability of parameters as indicated by the diagnostic tests of the model. Graph iia and b in the appendix 2 provides evidence that there is no structural breaks in the model. It can be observed from the graphs that the parameters are constant as there are no outliers crossing the critical bounds at the 5% significance level.

TABLE 4.3-MODELLING DLPIMAN BY OLS

Variable	Coefficient	Std Error	t-Value	t-probability	Partial R <sup>2</sup>
Constant	-0.191	0.079	-2.114	0.025	0.176
DLRIR	-0.518	0.229	-2.265	0.032	0.182
DLPUIFR	0.614	0.218	2.824	0.009	0.257
DLPUIFR <sub>-2</sub>	0.537	0.220	2.438	0.229	0.205
DLGDP <sub>-1</sub>	0.997	0.464	2.148	0.043	0.180
DLDCp <sub>-1</sub>	0.213	0.252	0.844	0.407	0.030
DLPUEDU <sub>-2</sub>	0.864	0.322	2.808	0.010	0.255
DLPUEDEB	-0.770	0.214	-3.601	0.002	0.360
ECM <sub>-1</sub>	-0.674	0.158	-4.241	0.001	0.438

R<sup>2</sup> = 0.68546 F(8, 23) = 6.2653 [0.0002]  $\hat{\alpha}$  = 0.174624 DW = 2.07  
 RSS = 0.7013487502 for 9 variables and 32 observations

AR 1- 2F( 2, 21) = 0.3463 [0.7113]  
 ARCH 1 F( 1, 21) = 1.4056 [0.2490]  
 Normality Chi<sup>2</sup>(2) = 3.2977 [0.1923]  
 Xi<sup>2</sup> F(16, 6) = 0.28345 [0.9797]  
 RESET F( 1, 22) = 3.1473 [0.0899]

The DW-statistics is 2.07, which indicates that there is no serious correlation problem and also that there are no significant outliers in the model.

The result shows that real interest rates (DLRIR) affect private investment in the manufacturing sector in Kenya negatively. This variable is significant at the 5% level, the implication of this is that high interest rates increases the opportunity cost of retained earnings thus raising the user of capital thus leading to reduced investment. Greene and Villanueva (1991) and Serven and Solimano (1991) Mwangi (1997) all obtained similar results on Kenya. These findings are more consistent with the neoclassical investment model than with the Mckinnon-Shaw hypothesis, as it would suggest that high real interest rates serve more to deter investment than to promote it by increasing the volume of financial savings.

Credit to the private sector lagged once (DLDCp<sub>1</sub>), had a positive but insignificant effect on the private investment in the manufacturing sector in the country. Schmidt-Hebbel and Muller (1991) even though they found bank credit to be a positive and significant determinant of private investment in Morocco, but they argued that due to the relatively declining role of credit constraint vis-à-vis the cost of capital, this relation is probably smaller in the present. Similarly, the Kenyan financial market has since early 90's been liberalized, and the major concern now is the cost of capital rather than constraint. This result also mimics those obtained by Goldsbrough (1996) in his model of private investment in Ghana.

Public expenditure on infrastructure (DLPUINFR) also had a positive and significant coefficient. The variable was also an important and significant determinant when lagged twice (DLPUINFR<sub>2</sub>). Public investment as noted

earlier in this paper can be an advantage or disadvantage to the private sector. In this case public expenditure on infrastructure complements the private sector particularly the manufacturers who need efficient communication system for their operations. This means that the government needs to continue investing in infrastructure especially roads and the telecommunication, which are in dire, need of improvement. Mwangi (1997), Ronge and Kimuyu (1997) all came up with similar results. Similarly, Amin (1998), while analyzing the fiscal policy and economic growth in Cameroon came to the same conclusion.

Not only present public expenditure but also the past period expenditure in infrastructure affects investment. This means that investors will respond positively in the future if the government is presently spending on road, electricity, telecommunication etc. The implication of these findings is very real in Kenya. Since 1997, when infrastructure in Kenya was destroyed by the *el nino* rains, investors have bitterly complained of lost business particularly when transporting goods to and from the port city of Mombasa. The Nairobi-Mombasa road and the general telecommunication system are said to be a great disincentive to investment. Therefore, improvement on this infrastructure will result in improved investment now and in the future.

The real gross domestic product (RGDP<sub>-1,1</sub>) lagged once has a positive coefficient. This is significant at the 5% level, which shows that it is an important proxy for the size of the domestic market for the produced goods. Mwangi (1997) obtained similar results although the variable was insignificant in his analysis.

Public expenditure on education lagged (PUEDU<sub>2</sub>) twice showed a significant and, as expected positive sign. Clement and Levy (1994) while analyzing the determinants of Private Investment in the Caribbean region obtained similar results even though the variable was not lagged. The implication is that as more human capital is made available through promotion of education opportunities, it will lead to a reduction in the cost of production thereby encouraging private investment in manufacturing sector. Human capital is a core ingredient in any industrial venture. Investors are therefore enticed by countries with cheap, well-trained and readily available human capital.

The Public Debt (DLPUDEB) variable had a negative and significant coefficient. Public debt is used as a proxy for macroeconomic instability. Secondly, an external debt ratio could be an indication of “debt overhang”. This can reduce the incentives for investment, because much of the forthcoming returns from investment must be used to repay existing debt, therefore acting as a tax on domestic investment (Borensztein (1989)) and (Froot and Krugman (1990)). Thirdly, if substantial external debt leads to difficulties in meeting debt-service obligations, relations with external creditors may deteriorate; thus reducing the amount of trade financing a country can obtain. This, in turn, may make it harder or more costly to finance private investment, because imports play a major role in most investment projects in developing countries, and most developing countries imports are investment related (Mirakhor and Montiel (1987)).

Many developing, countries Kenya included, are now ridden by the debt crisis. Some have even lost their credit worthiness for failure to service their debt obligation when due. It has been argued that the large amount of resources that these countries are using to service their debt is leading to the crowding out of the public investment hence diminishing the complementary effect of public investment in infrastructure. This is could be very true for Kenya.

According to the Central Bank's Monthly Economic Review, the country's external debt was estimated to be over US\$ 5.5 billion accounting for about 72% of the total debt, while the domestic debt was about US\$ 2.2 or nearly 23% of the total public debt. The total public debt was therefore about US\$ 7.7 billion representing 70.7% of the GDP as of February 2000. Since 1991 relationship between the country and the IMF and the World Bank went sour and the two institutions stopped their financial assistance to the country. The government turned to the local financial market for financing her operations. For instance between June 1999 and February 200 the external debt decreased by US\$132 Million while the domestic debt increased by US\$ 93 Million. Therefore, as the budget deficit grew, so did the domestic public debt.

The net result of this was that by competing with the investors for the scarce finance locally, the government crowded out the later. Besides, the government action led to the sky rocketing of the interest rates because it borrowed from the local market at very high interest rates of her treasury bills. The local banks had also to raise their interest to compete with the treasury bills rates besides most banks preferring to lend to the risk free government. Last year, there was

a delay in payment of the debt service dues, which nearly deteriorated the country's relationship with external creditors. A number of studies on private investment e.g. Greene and Villanueva (1991), Oshikoya (1994), Agenor and Montiel (1996), Ronge and Kimuyu (1997) found strong support for the debt overhang argument.

The coefficient of the error correction term (ECM) is negative and significant as expected. This implies that at each period, there is an adjustment of the gap between current level and that which private investment in the manufacturing sector attains in the long-run equilibrium.

#### ***4.3.1 Effect of the variables on Agriculture and Service sectors***

We also tried to capture the effect of these variables on other economic sectors, notably the agricultural and service sectors. This would offer important comparison between the various sectors and hence guide in policy recommendations.

As shown by Table iiiia and b in Appendix 3, these variables are also important determinants of investment in the various sectors.

In the agricultural sector for instance, public expenditure on infrastructure is highly significant and positive at the 1% level. This is not surprising given the fact that these activities are mostly in the rural areas and therefore a reliable communication system like roads is of utmost importance. Most of the other

valuables are also significant and possess the expected sign. The only exception is the inflation, which shows a positive and significant sign. This could be attributed to the positive aspect of increased agricultural prices, which encourages investment in the sector. Given the fact that the economy is liberalized, poor agricultural prices may send negative signals for investors and hence reduce investment in the sector. Increasing prices of the commodity may have the opposite effect.

Terms of trade is another important variable in this sector given that most of the produce are destined for the external market. It depicts a positive and significant sign implying that improved terms of trade will encourage investment in the sector. Credit to the sector is also positive and significant. Unlike the manufacturing sector where the role of the indigenous manufacturers is insignificant, the agricultural sector is dominated by indigenous small-scale farmers in both the cash and food crop production. The need for credit may therefore be real given that most financial institutions are wary of financing a sector that is susceptible to the vagaries of weather. This sector is also affected by the real exchange rates negatively. This could be because most of the inputs used need to be imported, hence a depreciating currency increases the cost of these inputs.

The service sector also showed positive and significant results for most of the valuables. Apparently, the sector is significantly affected by the access to credit, which is significant even when lagged. This is also acceptable given the fact that majority of the operators are small scale to medium entrepreneurs who

depend on loans for their operations, unlike the manufacturer who mostly use the retained profits. Like in the other sectors, it is also positively affected by increased expenditure on infrastructure even when considering the previous period. This may be explained by the tourism sub sector, which has become a major sector, which can only thrive where there is efficient communication system. Other factors affect the sector in the same proportion as the manufacturing sector.

#### **4.4 THE SURVEY RESULTS AND INTERPRETATIONS**

Although every effort was made to capture the most important macroeconomic determinants of private investment in Kenya, we believe that there are other resilient factors that affect investment decisions in Kenya. The study therefore went a step further and tried to capture these other factors through a survey conducted in three major manufacturing towns in Kenya. Issues such as those touching on corruption, security, bureaucracy, institutional framework and other socio-political and economic issues could only be captured through a survey. These factors could well explain why even after the introduction of Structural Adjustment Programmes (SAP's), liberalization of the economy and the government efforts to divest from public enterprises, no tangible improvement in investment is being realized.

#### ***4.4.1 Public institutions, policy uncertainties and the general socio-political and economic environment.***

Over 73% of the respondents argued that the existing public sector capacity for micro and macroeconomic policy formulation is not conducive to private investment. To most, the major problem is political patronage, overstaffing and poor pay, and absence of merit-based recruitment and promotion respectively. Indeed, according to Collier and Gunning (1998), in many African countries, “The public sector has been used to create employment rather than to deliver services and this reduces productivity”.

More than 76% of the respondents answered that the government do not give them a chance to participate in its decision making process. Consequently, many said that this leads to a constant fear of policy surprises from the government, hence a lot of uncertainty. Nearly 87% of the manufacturers felt that there is a need for a mechanism to debate policies between the government and the private sector before implementation. This kind of debate many said, would result in better policies and planning, increase investment, create security and stability and more confidence and acceptability of those policies.

Nearly 77% of the respondents felt that the institutional framework in the country cannot withstand a change of government without serious disruption. Almost 61% said that this would very negatively affect their investment decision while the rest said their investment decision would only negatively be affected. An example they often mentioned is the forth-coming general election in the

year 2002 when the current president is expected to vacate office. Many said this is reason enough for them to adopt a wait-and-see attitude before investing. Indeed a leading Economist, Dr David Ndi commented in one of the dailies saying, "because individuals and enterprises expect things to get worse before they get better, each adopts a wait-and-see strategy-postponing investment and other expenditure decisions- which contribute to overall level of economic activity<sup>3</sup>".

One's own security and that of her property was said to be a major threat to the manufacturers. Almost 90% of those who responded said there is inadequate security in the country.

Most said that the biggest threat to their business is theft, followed by contraband trade, other forms of insecurity, then smuggling and murder respectively. Again this problem seems to be appreciated in various quarters. Mr Kamau Kahiu, chairman of the Kenya Association of Building and Civil Engineering told a press conference in Mombasa that the wave of crime in the country was the single largest threat to business as its members and establishments were the main targets<sup>4</sup>.

The judiciary was also said to be inefficient. Nearly 87% of the respondent gave this answer. The main cause of these state of affairs is lack of independence in the judiciary, corruption, delayed court rulings, inability to enforce rulings and lack of motivation in that order. As if to support these assertions, Collier and

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<sup>3</sup>The Daily Nation, September 27,1998

<sup>4</sup> The Daily Nation, March 8, 2000

Gunning (1998), says that one reason for a high rate of opportunism in Africa is that the African courts generally work less reliably than those elsewhere, and they also add that only a quarter of African lawyers consider the judiciary fully independent. They say that the legal process often involves long delays and most judicial officers appear to be only moderately knowledgeable about the law. African courts therefore often fail as an instrument of reliable contract enforcement. As a result, they say, in most African countries the courts are little used for conflict resolution.

Over 53% of those who were interviewed said that they had been subjected to delayed services due the bureaucratic redtape. They answered that it took them about 6 months to be served. But nearly 28 % answered that it took them less than 3 months to be served.

Sixty-nine percent of the respondent answered that they have been asked to give bribe before they can be served. The police department was named to be the most notorious in this regard, followed by the licensing departments, then most of the other government offices.

Almost 62% of the manufacturers see corruption as a major problem in the country. About half of them argue that it has a very negative effect on investment while the rest think that the effect is not very negative. A leading Kenyan industrialist Mr Manu Chandaria has in one of his many contributions in manufacturers fora, argued that what is killing the Kenyan industries is a combination of liberalisation and corruption, excessive taxes, inefficiency of

public utilities and poor infrastructure, which he said diverts trade to the neighbouring countries. This corruption he says, comes in the form of imports that are not taxed hence creating unfair competition<sup>5</sup>.

The issue of corruption in Kenya has raised a lot of concern. In a recent forum to discuss measures to alleviate poverty, massive institutional theft was said to be contributing to the blocking of efficient resources allocation. In this seminar that brought together top government official led by the President, Cabinet Ministers, the donor community and top policy makers, the government made a damning admission: "Corruption in the corridors of power is among the most important causes of poverty in Kenya. This has undermined investor confidence and increased the cost of doing business in Kenya<sup>6</sup>".

Nearly 52% of the respondents think the prospects of investment in Kenya are low, 17% think they are average and only about 7% think there are high investment prospects.

When comparing the investment climate in Kenya with other countries in the region, nearly 74% of the investors think it is worse, while 11% think it is the same and a similar percentage think it is better than the other regional countries. Again other commentators on the Kenyan economy seem to vindicate this answer. Paul Redfern in a report titled "Kenya faces bleak prospects" says that Kenya is in danger of becoming one of the poorer economic performers of Africa with growth rates stuck at levels below the rise

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<sup>5</sup> The Daily Nation, January 15, 2000

<sup>6</sup> The Daily Nation, March 10, 2000

in population. Yet, her two East African neighbours-Tanzania and Uganda- are set to see their GDPs grow by between 5% and 6% this year while Kenya's will be only 2.5% and that is only providing a new IMF agreement is in place, facilitating an improved investor climate. Quoting the *Economist Intelligence unit* in its world outlook for 2000, he says that Uganda will be among the fastest growing economies in the world in 2000, while Kenya will just be outside the bottom 20 slowest growing economies. The report adds that the problems posed for the Kenyan economy emanates from her poor record in implementing economic reform which leads to a failure to create the conditions for sustained export growth, unlike her neighbours who have been pervasive and successful on this count<sup>7</sup>.

Seventy percent of the investors answered that to their knowledge there are investors who have moved to other countries due to the unattractive policies in Kenya.

The final comment from this group of manufacturers was that serious commitment was urgently required with some arguing that it is lack of commitment to sound macroeconomic policies that has brought investment to an all time low level in Kenya. Others suggested a complete overhaul of the public sector to improve efficiency and reduce wastage.

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<sup>7</sup> The Daily Nation, January 14, 2000.

#### ***4.4.2 Investment in people and infrastructure.***

Many manufacturers did not have a problem of shortage of manpower that can cope with the fast changing technology. Paradoxically, it has been argued that education is the one public service in which, African performance has not been markedly worse than other regions (Collier and Gunning (1998)). This could explain why shortage of manpower is not a major problem for the Kenyan manufacturers. Only 31% said that they faced this problem as Table iv on appendix 4 shows. The major problem quoted by this group was the inadequate technical training, where over 77% said that this is a major problem and the rest saw the low level of education as the major constraint.

Over 93% of the respondents complained that the physical infrastructure in the country is unable to efficiently serve them. Over 96% picked inefficient roads and railway system as the most acute problem. This was followed by the inadequate power and telecommunication services as the most severe problem, then inadequate water supply and the least severe was said to be shortage of land. Again the September 1998 issue of the Central Bank's Monthly Economic Review quotes "dilapidated infrastructure, particularly roads" as among the six factors contributing to low levels of growth. Not only is the infrastructure poor, but also the prices of their use are high.

#### **4.4.3 Access to Finance**

Ninety-three percent of the firms interviewed answered that they finance their operations through the financial institutions. Since over 76% of the sample consisted of companies, this could explain why financial institutions are popular. Sixty percent also argued that they didn't have a problem in acquiring bank loan. For this group, the major complaint was the high interest rates, as table 4a in the Appendix 4 shows. In this regard, it must be noted that, the Asian community and the multinational corporations dominate most of the manufacturing activities in Kenya. In the survey the former owned most of the firms visited. Because of the weak contract enforcement (caused by inadequate state-provided enforcement mechanism), in most African countries, Kenya included, Financial Institutions are forced into the expensive process of gathering for themselves the information needed to distinguish between avoidable and opportunistic defaults.

Manufacturing firms have adopted the kin group as the basis for their social networks. In Kenya, Asian-owned firms are at advantage over African-owned firms because to screen new applicants for credit the later relies on direct observation of the candidate's premises whereas the former rely on "asking around", suggesting strong information networks (Collier, and Gunning (1998)). This may help to explain why these firms do not face the problems of accessing credit like their African-owned counterparts.

Over 96% of the respondents thought that the interest rates are very high while the rest said it is high. Though the interest rates have considerably gone down

from a high of between 23-26% per annum most of last year, the current rate of between 15-18% is still consider high by the investors. Besides, the instability of the interest rates is a source of concern to the investors. The rates have been continuously moving up and down creating a situation of great uncertainty, which is not conducive to investment. This complaint has been echoed in many other forums and is said to be a major deterrent to investment. In the September 1998 issue of the Central Bank's Monthly Economic Review, among the six factors cited as responsible for the ongoing recession was lack of working capital and reduced local investments due to the high cost of domestic funds. Fifty-five percent of the respondents didn't have to wait for a long time to acquire the loan for they said it took them less than 3 months. Thirty percent took 6 months while less than 10 % of the respondents had to wait for a longer time than this.

Those who do not use financial institutions for their operations but use other sources of finance e.g. family finances or partnership contributions, found it difficult to get the loan from the bank. For this group, the biggest problem that led to difficulties in acquiring the loan is lack of collateral with 75% giving this answer. Nine respondents representing 31% of the sample also said that they use family finances in their operations. Another source quoted was partnership contribution where 17.2 respondent got their finances through this source. Only about 10% of the respondents use their own savings to finance their operations.

#### 4.5 KENYA VERSUS SOUTH EAST-ASIA: A COMPARATIVE ANALYSIS.

It is useful to compare the past and current position of Kenya with that of notable recent successful examples of South East Asia. Considering the three countries Thailand, Indonesia and Malaysia, which can be said to be more pertinent to Kenya's aspiration, comparative indicators are presented in Table 4.4 below at two time periods, 1970-1980 and 1981-1993.

In the 1970-80 period the growth rate in GDP were about the same for all the countries. But during the 1980s Kenya' growth declined sharply while the Newly Industrializing Countries (NICs) were able to maintain high growth rates over a fairly long period. Although the growth rate in the agriculture sector in all the countries declined, in the NICs this was well compensated for by in the expansion of the manufacturing sector.

TABLE 4.4- GROWTH OF PRODUCTION (AVERAGE ANNUAL GROWTH %)

Country	Total GDP		Agriculture		Manufacturing		Services	
	1970- 1980	1980- 1993	1970- 1980	1980- 1993	1970- 1980	1980- 1993	1970- 1980	1980- 1993
Kenya	6.4	3.8	4.8	2.6	9.9	4.7	6.8	4.7
Indonesia	7.2	5.8	4.1	3.2	14.0	11.8	7.7	6.9
Malaysia	7.9	6.2	5.0	3.5	11.7	10.3	9.1	5.5
Thailand	7.1	8.2	4.4	3.8	10.5	10.8	7.0	7.7

Source: Sessional Paper No. 2 of 1996.

It would therefore appear that a high growth rate in the industrial sector is a necessary if not sufficient condition for sustainable growth in GDP. The cumulative average annual growth in the manufacturing sector for the two periods together amounted to more than 10% for Thailand, 11% for Malaysia,

and 12.4% for Indonesia. It would therefore appear that to become an NIC, a country must attain and maintain an average growth rate of 10% or more in the manufacturing sector over a period of 15-20 years. Also all the NICs adopted an export orientation in their trade policies and actively encouraged the export of manufactured goods. Over the period the structure of the NICs exports changed from primary to manufactured goods.

**TABLE 4.5-GROSS DOMESTIC SAVINGS AND INVESTMENT (%GDP)**

Country	Domestic Savings		Domestic Investment	
	1970	1992	1970	1992
Kenya	24	15	24	17
Indonesia	14	37	16	35
Malaysia	27	35	22	34
Thailand	21	35	26	40

Source: Sessional Paper No. 2 of 1996.

Another essential feature that distinguishes these countries from Kenya is that they were able to attain high levels of savings and investment, while Kenya registered a decline over this period, as shown in Table 4.5. This then points to the challenge facing and task ahead for Kenya if it is to join the league of NICs. A high level of investment channeled to the manufacturing sector is a basic requirement. The level of investment should be in the region of 25-30% of GDP. This in turn means a high level of domestic savings in both the public and the private sectors (Sessional Paper No.2 of 1996).

The experience of the high-growth economies of South-East Asia therefore, suggest that getting certain fundamental policies right build the foundation for sustained growth.

However, the problems of transition to such a growth-friendly policy environment are often not clear-cut and sometimes require difficult trade-off between intermediate objectives. These choices can be especially complex when, as is the case for most countries undertaking IMF-supported adjustment programs, the initial position is one of severe external financing constraints, large macroeconomic imbalances and deeply entrenched structural weaknesses. But the World Bank's comprehensive study of the factors underlying the success of the eight high-performing Asian economies concluded that there was no single "model" of success. However, some common threads do emerge, suggesting that Kenya should also strive to fulfil them if she is to attain the status of a newly industrialized country by the year 2020. These include:

- Prudent fiscal and monetary management,
- Heavy investment in human capital, especially in basic education,
- Creation of effective and secure financial systems,
- Limiting price distortions, especially to ensure that domestic prices of traded goods are never too far from international prices, and promoting flexible labour markets to help supply respond quickly to those prices,
- Ensuring easy access to foreign technology rather than attempting a path of self-reliance,
- Limiting the bias of price incentives against agriculture and,
- A commitment to a relatively equal dispersion of the benefits of growth, and a reliance on the private sector.

On the microeconomic and socio-political front, the NIC's have build strong institution capable of withstanding any changes e.g. Government change. This helps to reduce uncertainties. Dissatisfaction with state either through social protests and capital fights hurts investment. According to the World Development Report 1997, other areas in which these countries have done well include:

- A reduced level of corruption in these countries compared to a country like Kenya.
- An efficient judiciary able to enforce rulings without delay
- Predictability of rule making thus reducing the fear of policy surprises that hurt the business
- An effective and competent public service devoid of bureaucratic red tape and hence is able to dispense its duties efficiently and promptly
- Effective protection of person and properties from crime
- Unflinching government support of investors through provision of credit, training, markets and extension services.

While there are mechanisms in place geared toward achieving similar objectives in Kenya, but a lot still needs to be done for the country to get out of the current economic quagmire. The Central bank needs to come up with strict rules and regulations that will ensure the intermittent banking crisis are done away with. The liquidity problem that keeps on resurfacing in the banking sector can only be solved if the Central bank streamlined its surveillance of the banking sector. Concerted efforts between the banks and the security arms

should be enhanced to eliminate the problem of ever increasing bank robberies.

## **CHAPTER FIVE**

### **CONCLUSION AND POLICY RECOMMENDATIONS**

#### **5.1 CONCLUSION**

The study has identified the main determinants of private investment in the manufacturing sector in Kenya as, current and past public expenditure on infrastructure, public expenditure on education, public debt, real interest rates and real GDP lagged once. A brief comparison with the other sectors has shown that these factors have significant effect on the whole economy in general.

On the other hand, the survey carried out showed that high interest rate, dilapidated and inefficient infrastructure, corruption, insecurity, weak institutional framework and inefficient and bureaucratic public service as the greatest hindrance to investment

If Kenya is to achieve its stated objective of becoming a newly industrialized country by the year 2020, then it has to expand both its manufacturing and agricultural sector. As stated elsewhere in this paper both sectors have been performing poorly with the agricultural sector being the hardest hit. Also, as we mentioned earlier there are forward and backward linkages between the two sectors and therefore improving one without the other will not help. This is because developing agro-based industries is the most plausible way forward for Kenya.

But as the comprehensive report of the World Bank notes, countries need to establish a track record of sound macroeconomic and structural policies before a significant strengthening of private investment can be expected.

The clear message that has emerged from this paper is that a stable macroeconomic environment is not enough to lure investors to our economy. A host of macro and micro economic factors coupled with a conducive socio-political environment are also essential ingredients that investors look for.

## **5.2 POLICY RECOMMENDATIONS**

As the study has shown, increases in the interest rate adversely affect the private sector. This is more so after liberalizing the financial sector where the problem still bedeviling the investors is the increased cost of capital. The government has been using the treasury bills to borrow from the local market. In 1993, this instrument was used to mop up excess liquidity that was associated with financing of the general election in 1992. The treasury bill rate went to an all time high of about 73%. Banks and other financial institutions were falling over themselves rushing to buy the bill, which ensured a risk-free investment.

Although the rates have considerably gone down, but the treasury bills are still widely used to raise funds for the public sector. Given this scenario, the banks find it more profitable to invest in the bills rather than lending to investors. Also, to attract savings from the public that can equally buy the bills and earn higher income, the banks have to raise their interest rates. The end result has been

the government crowding out the private sector, hence leading to scarcity of loanable funds, and an increase in the interest rates, sometimes to as high as 30%. If the economy is to pull out of the current recession, then the government will have to drastically cut its expenditure (particularly the recurrent expenditure) to release more funds to the investors.

Government expenditure on infrastructure has been seen to positively affect the private investment in the manufacturing sector. Even the agricultural sector has shown that an efficient infrastructure is vital for its growth. An inefficient road network, railway system, and telecommunication system has been cited as a major disincentive to investment in Kenya. The current twelve-hour power rationing measures will certainly affect the investors negatively. Even the survey carried out identified this as a major impediment.

The top priority should go to repairing the vital Nairobi-Mombasa road, which connects the port city with the upcountry and also other East African countries. There has been a hue and cry over the state of this road whose condition was made worse by the *el nino* rains. The privatisation of the Kenya Railways Corporation and all other parastatals earmarked for privatization should be hastened to make them more efficient. The government should also consider better means of coping with insufficient electric power. Measures such as importation from the neighbouring countries and exploitation of other sources of power can be explored. As mentioned elsewhere in this paper, reducing government recurrent expenditure will release funds for development purposes. Since a huge chunk of recurrent expenditure goes to remuneration,

retrenchment in the public sector may be the most viable option. Fight against corruption should also be extended to this area as corrupt tender system has often led to shoddy roads being constructed, which become dilapidated within a short time.

Government expenditure on education is also an important ingredient in private investment not only in the manufacturing but also in the service sector. The two sectors need highly educated and trained personnel to man them. Though the Ministry of education is among those that receive the highest budget from the Government, most of it goes to recurrent expenditure with little left for development purposes. Even where funds are used for training, most of this goes to higher education particularly universities. While spending in higher education is important, the primary level education should not be neglected particularly in less endowed areas where parents cannot afford school fees. We should not forget that the "Asian Tigers" growth success came about partly because those countries went on a massive spending in mass education and today the literacy rate in those countries are among the highest in the world.

Public debt is also seen as one of the major determinants of private investment in the manufacturing sector in country. Kenya, like many developing countries, is ridden with internal and external debt. Developing countries need to put their houses in order and rid themselves the aid dependence syndrome, which has exacerbated the debt problem. While it may be inappropriate to entirely do away with external and internal borrowing, but measures should be put in place to ensure efficient and prudent use of the borrowed funds. This is because

even where a lot of funds has been borrowed, in most cases, they end up being misappropriated.

Corruption was sighted as a major problem in the survey carried out. Even the government admits that corruption is not only undermining investor confidence and increasing the cost of doing business in Kenya, but also leading to an increase in the incidence of poverty<sup>8</sup>. In the wake of an outcry against corruption, the government established the Kenya Anti-Corruption Authority (KACA) to deal with the menace. But many critics argue that the authority is ineffective as it is only prosecuting junior civil servants while leaving the big shots who have stolen millions from the public coffers to go scot-free. KACA therefore needs to be truly independent and apprehend all those who have misappropriated public funds irrespective of their station in life.

Insecurity has also raised a lot of concern in the country. Sophisticated gun-trotting thugs have been terrorising businessmen at will. Marauding gangs of hymns singing thugs have been robbing the banks at almost daily basis. No investor would want to put her resources in such an environment. Maintenance of security in the country should be of utmost importance. The security officers' remuneration should be improved to reduce cases of corruption in the police force. Likewise, they should be better armed to be able to perform their duties effectively. The thugs have been known to carry more sophisticated weapon than the police in which case it is hard for the police to overcome the thugs. But while all is said and done, the only sustainable solution to this problem is

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<sup>8</sup> The Daily Nation, March 20, 2000

putting the economy back on the growth path. For as long as there are thousands of people who are unemployed, it will be very hard to eradicate insecurity.

As in many other developing countries, Kenya has an unnecessarily large and bloated public service workforce characterized by inefficiency, corruption, political patronage, overstaffing and poor pay, and absence of merit-based recruitment and promotion. As mentioned earlier, the cost of doing business may rise substantially if the investor is forced to pay bribes to expedite passage through the system. The government should therefore act first to eliminate unnecessary regulations and reform the civil service to a lean and efficient workforce, which is well paid and motivated. This could also reduce the incidence of corruption.

The establishment of the National Industrial Development Council (NIDC) as a forum for discussions between the private and the public sector, was a step in the right direction. But while it is too early to tell the effect of the organisation to the investors, but what was gathered in the field shows that the organisation is little known leave alone being appreciated. The organisation needs to go out of its way to create awareness among the investors of its existence and its mission. It should be a forum that holds frequent round-table meetings between the investors and the government. It should also strive to ensure that there is political good will so that whatever is agreed upon is implemented. This is the only way to ensure that the forum is not a mere talking shop, but a serious

forum where both parties can exchange ideas and hence ensure that government policies do not take the investors by surprise.

Nearly 67% of the investors interviewed claimed that investment climate in Kenya is worse than that in other countries in the region. An equally big percentage also thought prospects of investment in the country are low while an even bigger percentage claimed that there are investors who have moved to other countries in the region. While these results must be taken cautiously, but other sources have made equally worrying claims. The government must seriously address these problems. One reason given by the donor as to why the country is losing out to Uganda is that the government is not consistent or at times dilly-dallies in policy implementation when they think that the policies are too painful and may have serious social and political repercussion.

The government has to accept the fact that the country is in serious recession and to get out of it decisions have to be taken which may be painful in the short run but may bear fruits in the long run. Many have for instance recommended that the only way to jump-start the economy is, by the government balancing her books and avoiding local borrowing. But while the government agrees to this, it only implements it half-heartedly, leading to more confusion in the financial sector and sending the wrong signals to the investors. The *Economist* magazine once described the complex dance of adjustment in Kenya thus:

*The steps are: one, Kenya wins its yearly pledges of foreign aid. Two, the government begins to misbehave, backtracking on economic reform...Three, a new meeting of*

*donor countries looms with exasperated foreign governments preparing their sharp rebukes. Four, Kenya pulls a placatory rabbit out of the hat. Five, they are mollified and aid is pledged. The whole dance then starts again*<sup>9</sup>.

In a very recent case, the government, through the Central Bank reduced her treasury bills rate in an effort to encourage the commercial banks to reduce their rates. But none of the banks were willing to do so since a few months earlier, the government had done the same and within weeks the bills rate were on the rise again. This kind of inconsistency only ends up hurting the economy even more instead of revitalizing it.

Kenya products have often faced problems because of being uncompetitive in the international markets. Likewise, there has been a hue and cry from the local manufacturers particularly after the liberalization when the local market was flooded with imported goods that were cheaper. This issue was often raised during the survey. While it is true that some of the goods are heavily subsidized in their home countries, but it is also true that locally produced goods are highly priced, hence uncompetitive. This is a major problem where the government and the manufacturer need to work together to solve it. Some of the problems mentioned earlier in the paper like high taxes and dilapidated infrastructure are said to contribute to the cost of production in the country. Perhaps the government should think of reducing tax on some core industrial inputs like oil, which can help in reducing the cost of domestic local production.

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<sup>9</sup> The Economist, August 19, 1995.

On the other hand goods that are escaping taxation and hence selling cheaply, are finding their way into the country. Therefore, even with the advantages of liberalization care needs to be taken not to make the country a dumping ground for cheap imported goods. Already the textile and motor assembly firms have virtually collapsed in the hands of massive imports of second hand clothes (*mitumba*) and motor vehicles. This is one area where the NIDC, mentioned elsewhere in the paper, should come up with an answer on whether we should continue importing goods we are capable of producing, or we should apply heavy anti-dumping tax to discourage these kind of imports.

Ways should also be found of addressing the ethnic-driven impediments to the manufacturing performance and prospects. Either non-African Kenyans or multinational corporations own a big majority of the manufacturing concerns in the country. As pointed out by Kimuyu (1999), there is a need to promote an inclusive society more likely to generate greater prosperity than one in which important segments remain in the periphery. A thriving indigenous business community is also likely to obviate racial tensions and improve the socio-political climate to encourage local and foreign investors (Kimuyu (1999)).

Since most indigenous Kenyans are to be found in the small and micro enterprises, Constraints that bedevil this sector should be thrashed out for it to prosper. Credit as one of the major impediments should be accessed to the sector through the establishment of more collateral free credit schemes. There is also need to constantly sensitize the African entrepreneurs on the importance of business relative to other forms of livelihood and to remind them

of its importance for the economy. This is because many African investors seem to go into business due to lack of other alternatives and hence there is lack of entrepreneurial culture and commitment. Improving the rights of women over property, creating incentive for pooling business resources and generally exploring and reducing risks peculiar to the African investors will help their investment to graduate from micro to medium investments.

But when all is said and done, African countries, Kenya included, needs to create a wider democratic space. It is through enhanced democracy that respect individuals' freedom that we shall be able to create strong institutions, which are able to withstand any storm e.g. that caused by elections. It is also through the respect of democratic ideals that our various public institutions e.g. the judiciary, parliament and the public sector will be able to work independently without fear or favour. Such an environment will allow a well-defined (and effectively enforced) code of property rights, which will create an environment conducive to a low cost of doing business.

Democratic institutions provide a check on governmental power and thereby limit the potential of public officials to amass personal wealth and carry out unpopular policies. If we can achieve this fit, then we can boast of strong institutions comparable to those in the west or South-East Asian countries, and this will enhance investor confidence. This can also lead to creation of adequate political institutions able to foster social consensus and political stability. Indeed it is often argued that economic freedoms in the form of free markets and small governments that focus on the maintenance of property

rights, encourage economic growth through increased investment, hence the two freedoms (economic and political) are mutually reinforcing. In this view, an expansion of political rights-more "democracy"- fosters economic rights and tends thereby to stimulate growth.

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## APPENDICES

### APPENDIX 1-JOHANSEN PROCEDURE

Test on Piman

Maximum lag in VAR = 1

List of variables included in the cointegrating vector:

LPIman LRIR LDCp LPUINFR LR GDP-1 LPUEDU LPUDEB

List of the eigenvalues in descending order:

	0.867	0.637	0.435	0.299	0.221	0.137	0.029			
Ho:rank=p	-Tlog(1- $\alpha$ )		using T-nm		95% -T $\lambda$ g(1- $\alpha$ )		using T-nm		95%	
P = 0			68.59**		54.47**	45.3		149.1**	118.4	124.2
P <= 1			34.5		27.4	39.4		80.54	63.96	94.2
P <= 2			19.43		15.43	33.5		46.04	36.56	68.5
P <= 3			12.13		9.629	27.1		26.61	21.13	47.2
P <= 4			8.47		6.726	21.0		14.49	11.5	29.7
P <= 5			5.022		3.988	14.1		6.017	4.778	15.4
P <= 6			0.9947		0.7899	3.8		0.9947	0.7899	3.8

Test on Piagri

Maximum lag in VAR = 1

List of variables included in the cointegrating vector:

LPIagri LRIR LDCp LRER LTOT LPUINFR LINFL LPUEDU LPUDEB

List of the eigenvalues in descending order:

	0.870	0.739	0.673	0.653	0.451	0.247	0.213	0.090	0.064	
Ho:rank=p	-Tlog(1- $\alpha$ )		using T-nm		95% -T $\lambda$ g(1- $\alpha$ )		using T-nm		95%	
P = 0			69.38**		51.02	57.1		249.1**	183.1	192.9
P <= 1			42.03		45.61	51.4		119.7	102.1	126.0
P <= 2			38.03		27.97	45.3		117.7	86.51	124.2
P <= 3			35.94		26.43	39.4		79.62	58.55	94.2
P <= 4			20.38		14.98	33.5		43.68	32.12	68.5
P <= 5			9.663		7.105	27.1		23.3	17.13	47.2
P <= 6			8.145		5.989	21.0		13.64	10.03	29.7
P <= 7			3.224		2.371	14.1		5.494	4.04	15.4
P <= 8			2.269		1.669	3.8		2.269	1.669	3.8

Test on Piserv

Maximum lag in VAR = 1

List of variables included in the cointegrating vector:

LPIserv LRIR LDCp LPUINFR LINFL LR GDP-1 LPUEDU LPUDEB

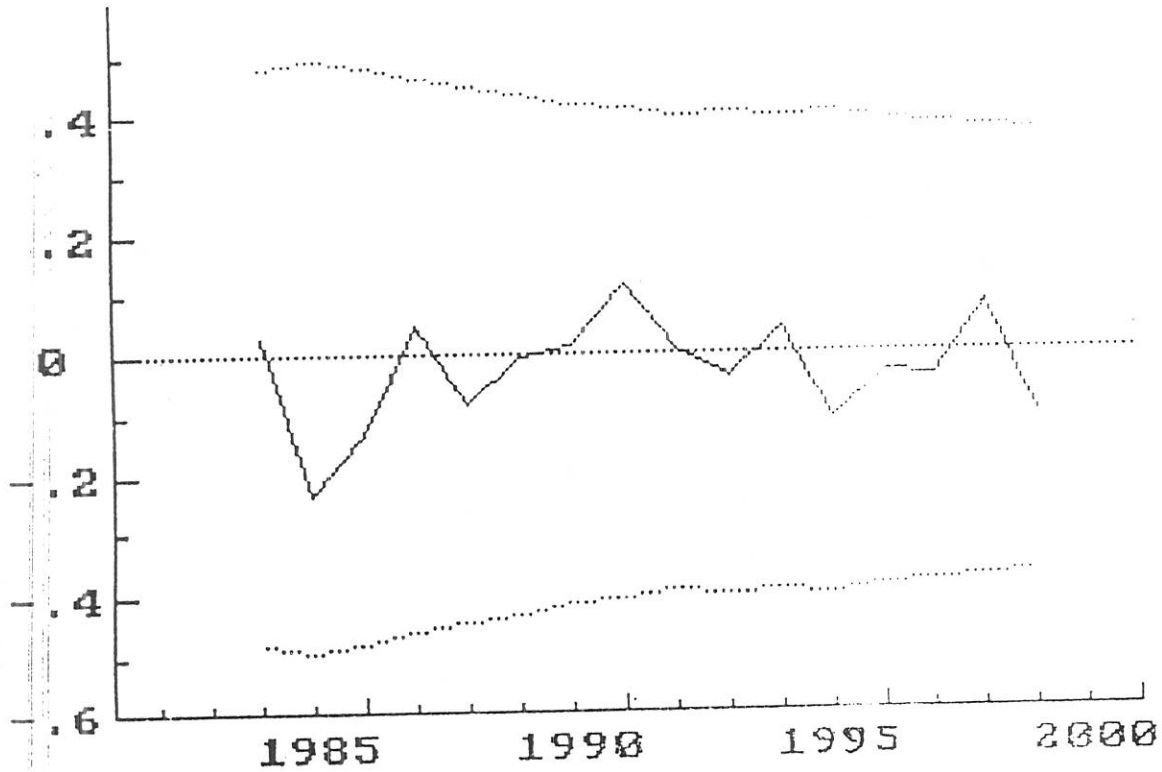
List of the eigenvalues in descending order:

	0.789	0.676	0.618	0.490	0.269	0.166	0.128	0.019		
Ho:rank=p	-Tlog(1- $\alpha$ )		using T-nm		95% -T $\lambda$ g(1- $\alpha$ )		using T-nm		95%	
P = 0			51.49*		39.01	51.4		164.3*	124.5	156.0
P <= 1			37.29		28.25	45.3		112.9	85.49	124.2
P <= 2			31.84		24.12	39.4		75.57	57.25	94.2
P <= 3			22.24		16.85	33.5		43.73	33.13	68.5
P <= 4			10.35		7.844	27.1		21.49	16.28	47.2
P <= 5			6.007		4.551	21.0		11.14	8.439	29.7
P <= 6			4.511		3.417	14.1		5.132	3.888	15.4
P <= 7			0.6213		0.4707	3.8		0.6213	0.4707	3.8

Appendix 2

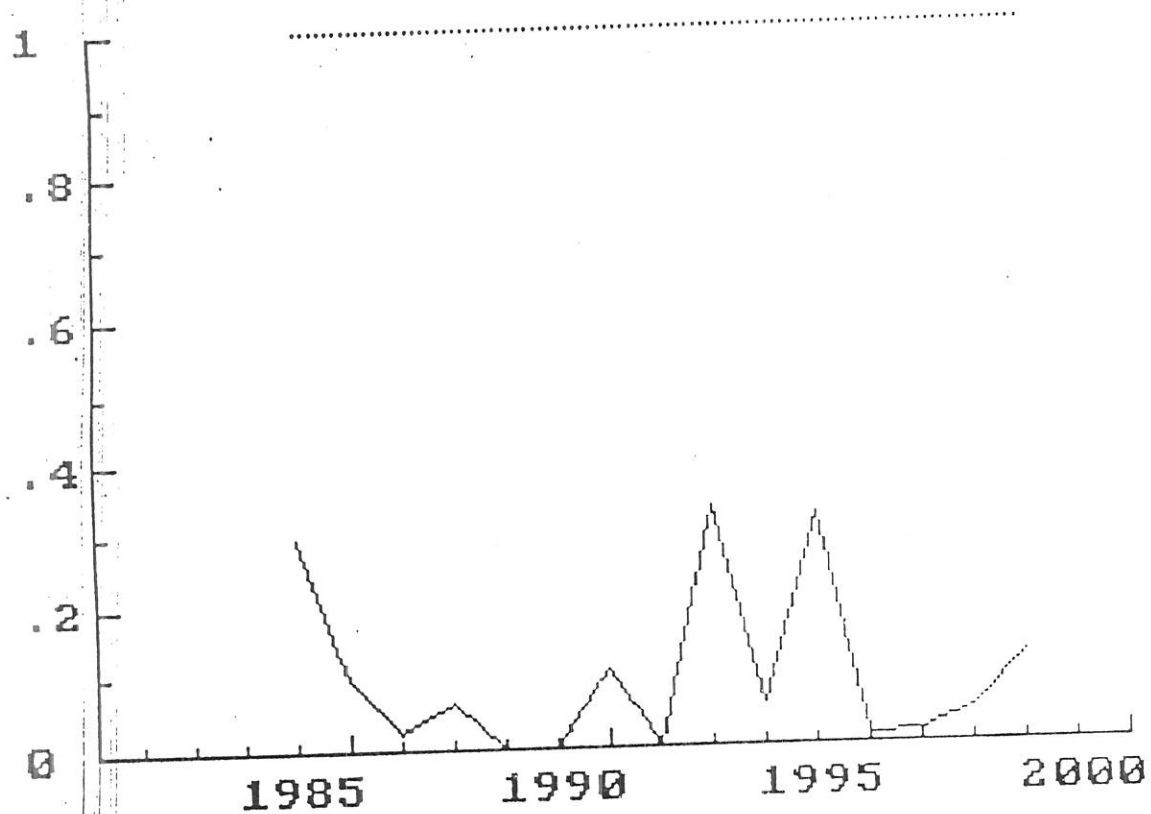
Graph iia - One-step ahead residual test

Res1Step = \_\_\_\_\_  
 $\pm 2 \times S.E.$  = .....



Graph iib - Chow test

1† CHOWs=\_\_\_ 5% crit=



APPENDIX 3-MODELLING DLPIagri AND DLPLserv BY OLS.

Variable	Coefficient	Std. Error	t-value	t-probability	Partial R <sup>2</sup>
Constant	-0.124	0.027	-4.618	0.001	0.492
DLRIR	-0.305	0.157	-1.941	0.065	0.146
DLRER-1	-0.062	0.022	-2.771	0.011	0.259
DLPUIFR	0.565	0.081	6.966	0.000	0.688
DLTOT	0.180	0.089	2.035	0.054	0.159
DLDCp-1	0.211	0.109	1.935	0.066	0.145
DLINFL	0.043	0.019	2.219	0.037	0.183
DLPUEDU	0.196	0.098	1.998	0.058	0.154
DLPUEB-1	-0.159	0.094	-1.704	0.102	0.117
Resi-1	-0.836	0.151	-5.545	0.000	0.583

R<sup>2</sup> = 0.84012 F(9, 22) = 12.845 [0.0000]  $\hat{\alpha}$  = 0.0667118 DW = 2.09

RSS = 0.09791020218 for 10 variables and 32 observations

AR 1- 2F( 2, 20) = 0.51434 [0.6056]  
 ARCH 1 F( 1, 20) = 1.4427 [0.2437]  
 Normality Chi<sup>2</sup>(2)= 0.57408 [0.7505]  
 Xi<sup>2</sup> F(18, 3) = 0.21432 [0.9860]  
 RESET F( 1, 21) = 1.3835 [0.2527]

ECM test

Variable	With only	Constant	With constant and trend
	Critical values	Critical values	Critical values
	5%=-2.956, 1%=-3.65	1%=-	5%=-3.556, 1%=-4.271
Resi	-5.21**		-5.05**

MODELLING DLPIserv BY OLS

Variable	Coefficient	Std. Error	t-value	t-probability	Partial R <sup>2</sup>
Constant	-0.114	0.040	-2.848	0.009	0.269
DLRIR-2	-0.180	0.176	-1.024	0.316	0.045
DLPUINFR	0.276	0.099	2.782	0.010	0.260
DLPUINFR-1	0.200	0.099	2.016	0.056	0.156
DLDCp-1	0.198	0.123	1.607	0.122	0.105
DLDC-2	0.215	0.102	2.104	0.047	0.168
DLINFL	-0.035	0.026	-1.353	0.189	0.076
DLPUEDU	0.200	0.098	2.043	0.053	0.159
DLPUEB-1	-0.129	0.847	-1.533	0.139	0.097
Resid-1	-0.680	0.142	-4.213	0.001	0.507

R<sup>2</sup> = 0.671269 F(9, 22) = 4.9916 [0.0010]  $\hat{\alpha}$  = 0.0669049

DW = 1.98

RSS = 0.09847795278 for 10 variables and 32 observations

AR 1- 2F( 2, 21) = 0.3987 [0.6762]  
 ARCH 1 F( 1, 21) = 0.25639 [0.6179]  
 Normality Chi<sup>2</sup>(2) = 3.7551 [0.1530]  
 Xi<sup>2</sup> F(16, 6) = 0.15324 [0.9988]  
 RESET F( 1, 22) = 1.1542 [0.2943]

ECM test

Variable	With Constant only Critical values 5%=-2.956, 1%=-3.65	With constant and trend Critical values 5%=-3.556, 1%=-4.271
Resid	-5.01**	-4.89**

The author verbally administered a printed questionnaire highlighting obstacles in the area of business environment to the owner of the firm or a senior officer. This questionnaire is in annex 1. About 30 firms were interviewed. The survey focused on a broad group in the manufacturing subsector. Although this generalisation may fail to highlight specific subsector constraints, suffice to say that most of the firms face similar constraints irrespective of their activities or location. A stratified sampling method was used to identify the sample from the population. It was stratified into 7 subsectors namely; those involved in food processing, (Human /Animal Textile/fiber, Wood products (furniture/carvings), Metals/plastics, Footwear/tanning, Insecticides/pesticide and Printing. A simple random sampling was used to identify the samples from the respective subsector. The author then visited these firms in person. This proved to be a very taxing exercise since it was very difficult to interview the owner of the firm or a responsible officer.

The questions dwelt on the manufacturers' background, access to finance, investment in people and infrastructure, public institutions, policy uncertainty and the general socio-economic and political environment.

**Questionnaire**

*NB please tick or circle the correct answer where appropriate*

**Background**

1) Investors name-----

Address-----

-----

-----

2) Is the enterprise

1 = sole proprietorship

2 = partnership

3 = limited / unlimited company?

ii) If sole proprietorship,

Age-----

Educational level,

- 1 = No schooling
- 2 = Primary level
- 3 = Secondary level
- 4 = Tertiary level
- 5 = University level

**Access to Finance**

3) How do you finance your investment?

- 1 = Own savings
- 2 = Family finances
- 3 = Partnership contributions
- 4 = Informal financial institutions
- 5 = Financial institutions.

4) Have you experienced any difficult in acquiring bank loan?

- 1 = Yes
- 2 = No

ii) If yes, what was the problem?

- 1 = Lack of collateral
- 2 = Lack of proper bookkeeping
- 3 = Corruption

5) Do you find the prevailing interest rates on borrowed funds,

- 1 = Very high
- 2 = High
- 3 = Medium
- 4 = Low
- 5 = Very low

6) How long did it take to acquire the loan?

- 1 = Less than 3 months
- 2 = 6 months
- 3 = 1 year
- 4 = More than 1 year

**Investment in People and Infrastructure**

7) Have you faced the problem of lack of skilled manpower able to cope with the changing technology?

- 1 = Yes

2 = No

(ii) If yes, in which area is the problem more pronounced?

1 = Low level of education

2 = Inadequate technical training

3 = Unsustainable demand for high wages

4 = Others (specify)

8) Do you think the physical infrastructure in this country is able to efficiently serve the investors?

1 = Yes

2 = No

ii) If not, which is/are the most acute problem/problems? For more than one problem, arrange them starting with the most severe and ending with the least severe.

1 = Inefficient roads and railway transport

2 = Inadequate power and telecommunication services

3 = Shortage of land

4 = Inadequate water supply

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**Public Institutions and Policy Uncertainties**

9) Do you think the existing public sector capacity for micro and macroeconomic policy formulation is conducive to private investment?

1 = Yes

2 = No

ii) If not, what is the major problem?

1 = Overstaffing

2 = Political patronage

3 = Absence of merit-based recruitment and promotion

4 = Poor pay

5 = Others (specify)

10) Does the Government give you a chance as an investor to participate in its decision making process?

1 = Yes

2 = No

ii) If not, does this lead to a constant fear of policy surprises from the Government?

1 = Yes

2 = No

11) Do you think there is a need for a mechanism to debate policies between the government and the private sector before implementation?

1 = Yes

2 = No

ii) If yes, What benefits would accrue from such a mechanism?

-----  
-----  
-----

12) Do you think the institutional framework in this country is able to withstand a change of government without serious disruptions?

1 = Yes

2 = No

ii) If not, how do you expect this to affect your investment decisions?

1 = Very negatively

2 = Negatively

3 = Positively

4 = Very positively

13) Do you think there is adequate protection of you and your property from criminal actions like robberies, destruction smuggling?

1 = Yes

2 = No

ii) If not which is the biggest threat to your business?

1 = Theft

2 = Smuggling

3 = Murder

4 = Contraband trade

5 = Others (specify)

14) In your opinion, is the judicial system in this country efficient?

1 = Yes

2 = No

ii) If not, what is/are the most acute shortcoming/shortcomings? For more than one shortcoming, arrange them starting with the most severe and ending with the least severe.

- 1 = Lack of independence
- 2 = Inability to enforce rulings
- 3 = Delayed court rulings
- 4 = Lack of motivation
- 5 = Corruption

15) Have you been subjected to delays in getting services due to the bureaucratic redtape?

- 1 = Yes
- 2 = No

ii) If yes, how long did it take to be served?

- 1 = Less than 3 months
- 2 = 6 months
- 3 = 1 year
- 4 = More than 1 year

16) Have been asked to give bribe before you can be served in government offices?

- 1 = Yes
- 2 = No

ii) If yes, for what services?

- 1 = Police services
- 2 = Motor vehicle registration
- 3 = Licensing
- 4 = others (specify)

17) What is your perception of corruption in this country?

- 1 = Very high
- 2 = High
- 3 = Average
- 4 = Low
- 5 = Very low

18) What effect do you think it has on investment?

- 1 = Very negative
- 2 = Negative
- 3 = No effect
- 4 = Positive

19)How do you see the prospects of investments in this country?

1 = Very high

2 = High

3 = Average

4 = Low

5 = Very low

20)How do you compare investment climate in Kenya with other East African countries?

1 = Better

2 = Same

3 = Worse

21)To your knowledge, are there investors who have moved to invest in other countries in the region due to unattractive policies locally?

1 = Yes

2 = No

22)Do you have any other comment?

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Selected Result Tables

Table i-Type of Enterprise

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Sole Proprietor	1.0	2	6.7	6.9	6.9
Partnership Limited Company	2.0	4	13.32	13.8	20.7
	3.0	23	76.7	79.3	100.0
Not Applicable	99.0	1	3.3	Missing	
	Total	30	100		

Table ii- Do you use Financial Institutions?

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	1.0	27	90.0	93.1	93.1
No	2.0	2	6.7	6.9	100.0
Not Applicable	99.0	1	3.3	Missing	
	Total	30	100.0	100.0	

Table iii-Status of the interest rates

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Very High	1.0	29	96.7	96.7	96.7
High	2.0	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

Table iv-The problem that led to difficulties in acquiring loan.

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Lack of Collateral	1.0	9	30.0	75.0	75.0
Any Other	4.0	3	10.0	25.0	100.0
Not Applicable	99.00	18	60.0	Missing	
	Total	30	100.0	100.0	

Table v-Scarcity of skilled manpower able to cope with the changing technology?

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	1.0	9	30.0	31.0	31.0
No	2.0	20	66.7	69.0	100.0
Not Applicable	99.0	1	3.3	Missing	
	Total	30	100.0	100.0	

Table vi - Is the physical infrastructure able to adequately serve the investors?

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	1.00	2	6.7	6.9	6.9
No	2.00	2	90.0	93.1	100.0
Not Applicable	99.00	1	3.3	Missing	
	Total	30	100.0	100.0	

Table vii- Is the existing public sector capacity for micro and macroeconomic policy formulation conducive to private investment?

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	1.00	8	26.7	26.7	26.7
No	2.00	22	73.3	73.3	100.0
	Total	30	100.0	100.0	

Table viii-Own and property security

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	1.00	3	10.0	10.3	10.3
No	2.00	26	86.7	89.7	100.0
Not Applicable	98.00	1	3.3	Missing	
	Total	30	100.0	100.0	

Table ix- The biggest threat to once business.

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Theft	1.0	18	60.0	64.3	64.3
Smuggling	2.0	1	3.3	3.6	67.9
Contraband	4.0	4	13.3	14.3	82.1
Trade Others	5.0	5	16.7	17.9	100.0
(Specify)					
No response	98.0	1	3.3	Missing	
Not Applicable	99.00	1	3.3	Missing	
	Total	30	100.0	100.0	

Table x-Efficiency in the judiciary.

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	1.0	3	10.0	10.3	10.3
No	2.0	26	86.7	89.7	100.0
Not Applicable	99.00	1	3.3	Missing	
	Total	30	100.0	100.0	

Table ix- Services where one needed to bribe to be served.

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Police Services	1.0	7	23.3	36.8	36.8
Motor Vehicle registration	2.0	2	6.7	10.5	47.4
Licensing	3.0	6	20.0	31.6	78.9
All Government Offices	4.0	3	10.0	15.8	94.7
Any other	5.0	1	3.3	5.3	100.0
No response	98.0	1	3.3	Missing	
Not Applicable	99.00	10	33.3	Missing	
Total		30	100.0	100.0	

Table xii-Investment prospects in Kenya. 1

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
High	2.0	2	6.7	6.9	6.9
Average	3.0	5	16.7	17.2	24.1
Low	4.0	15	50.0	51.7	75.9
Very low	5.0	7	23.3	24.1	100.0
No response	98.00	1	3.3	Missing	
Total		30	100.0	100.0	

Table xiii-Comparison of investment climate in Kenya with other East African countries.

Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Better	1.0	3	10.0	11.1	11.1
Same	2.0	3	10.0	11.1	22.2
Worse	3.0	20	66.7	74.1	96.3
Others (specify)	4.0	1	3.3	3.7	100.0
Not Applicable	98.0	3	10.0	Missing	
Total		30	100.0	100.0	

## DECLARATION

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any other university. All references used for the thesis have been duly acknowledged.

Name: T. K. Mbugua

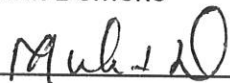
Signature: 

Date: 19 JUNE 2000

Place: ADDIS ABABA.

Confirmed by the Advisor:

Name: Dr. Mulat Demeke

Signature: 

Date: 19, JUNE 2000