THE IMPACT OF TRADE INCENTIVES ON EXPORTS, BALANCE OF PAYMENTS AND ECONOMIC GROWTH IN KENYA: AN EMPIRICAL ANALYSIS

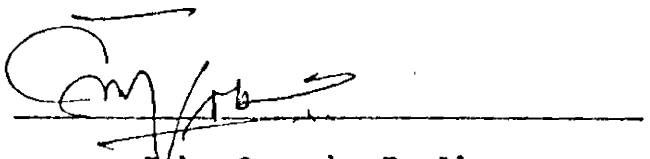
BY

JOHN ONYONKA BAKARA

Research Paper Submitted to the Department of Economics, University of Nairobi,in Partial fulfillment of Requirements for the Degree of Master of Arts in Economics.

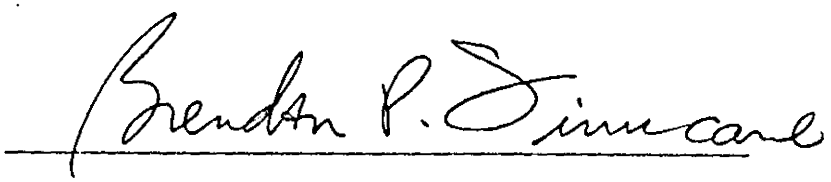
June, 1989

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

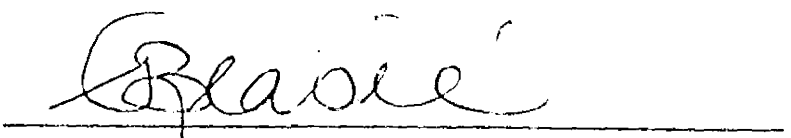


John Onyonka B. Akara.

This Research Paper has been submitted for examination with our Approval as University Supervisors.



Dr. Brendan P. Finucane



Dr. Aloys B. Ayako

TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

ACKNOWLEDGEMENTS

I'm deeply indebted to my supervisors Dr,Brendan Finucane and Dr.Aloys B. Ayako, whose open door policy encouraged me to seek help whenever it was required and who were willing to help me any time. To Dr. Finucane, my first supervisor, for his continuous support and careful nurturing of my topic. To Dr. Ayako, my second supervisor, who despite his busy schedule, provided perceptive comments and constructive criticisms and from whose work I benefited. I thank them for their help, guidance and co-operation, without which this paper will never have been written.

Special thanks go to other members of the Department of Economics whose comments during the initial stages of its preparation helped the paper take the present shape.
I would also like to express my gratitude to the chairman, Department of Economics Prof. M.S. Mukras and the University of Nairobi for offering me a full scholarship for the two years I spent doing the M.A. course.

While it is not possible to give acknowledgement to all who assisted me, like my parents Mr. B. Akara and Mrs. Catherine Kemunto Borura whose background assistance set me in motion for the work, I have to thank my brothers, sisters and friends whose encouragement from time to time gave me the determination to this end.

Finally I'm grateful to Miss. Grace Kinyua of the Ministry of Planning and National Development for sparing her valuable time to help in typing this work.
However, all errors and omissions, mistakes, views and interpretations are my responsibility and should not be attributed to any of the above named persons, Department of Economics or the University of Nairobi.

J.O.B. Akara

June,1989.

ABSTRACT

The object of this paper was to develop, estimate and simulate the effects of trade incentives on exports, balance of payments and economic growth in Kenya. The study was motivated by a lack of systematic analysis of the relationship between Kenya's trade policy incentives and its macroeconomic performance. The study is important both in terms of validation of theoretical models often used in such studies and for guiding the choice of a policy mix consistent with the structural and economic institutions in Kenya.

A five equation general growth model in which real exports enter as an input in the production process was developed. Real exports were introduced as a variable to be able to incorporate the possible advantages of policies designed to promote exports. The equations were estimated using both two stage least squares (TSLS) and ordinary least squares (OLS) techniques with time series data for the period, 1966-86, and validated by dynamic ex-post and policy simulations.

The signs and statistical significance of the estimated coefficients, as well as the dynamic validity of the simulations strongly supports the model empirically. The study clearly and strongly confirms the conclusion that trade is very important in Kenya's development process but is shown to be more in the nature of a "handmaiden" rather than an "engine" of growth.

More important than the statistical significance of individual parameters, was a rigorous test of the validity of the

model provided by the dynamic ex-post and policy simulations over the sample period. The policy simulation exercises performed showed that trade policies were sub-optimal and that they were consistent to Kenya's macroeconomic structure. If improved, they could raise export earnings, investment and economic growth.

CHAPTER ONE

INTRODUCTION

1.1 Kenya's External Trade and Balance of Payments

Kenya is an open economy exchanging between 25 and 35 percent of its gross domestic product (GDP) with the rest of the world. In 1986, the country's exports of goods and services constituted about 28.3 percent of GDP at factor cost while imports of goods and services were as high as 39.5 percent of it. Furthermore, the country's foreign dependence index expressed as a ratio of value of exports and imports to GDP, has remained high since independence (see table 1.1 below).

Table 1.1: Kenya's International Trade Indices 1964 - 86 (selected years)

		1964	1972	1977	1982	1986
Exports(x)	% GDP	24.2	19.5	30.6	18.7	28.3
Imports(m)	% GDP	26.8	29.0	32.4	30.8	39.5
x+m	% GDP	51.0	48.5	63.0	49.5	67.8

Source: Republic of Kenya, Statistical Abstracts, (Various).

Existing statistical data show high dependency on primary commodity exports, of which, two agricultural commodities, i.e. coffee and tea, contribute over 30 per cent of the country's total domestic export earnings. Manufactured products have not yet featured

significantly in Kenya's external trade except to the neighbouring states and recently to the Preferential Trade Area (PTA). Exports of oil products appreciated over time but show a declining trend in the 1980's (See Table 1.2 below).

Table 1.2: Structure of Kenya's Exports in Kf (As percentage of total)

	1966	1970	1976	1982	1986
Total Exports	58	103	319	546	958
	(100)	(100)	(100)	(100)	(100)
Primary Exports	51.6	77.5	269.6	478.3	844.0
	(88.9)	(75.2)	(84.5)	(87.0)	(88.1)
Manufactured	6.2	25.3	49.4	67.7	114
	(10.7)	(26.6)	(15.5)	(12.4)	(11.9)
Coffee	18.7	82.0	93.5	144.7	388.9
	(32.3)	(31.1)	(29.3)	(26.5)	(40.6)
Tea	8.6	18.2	31.9	17.5	175.3
	(14.9)	(17.7)	(10.0)	(14.2)	(18.3)
Oil Products	5.9	11.8	57.7	142	98.7
	(10.1)	(11.8)	(18.1)	(26.0)	(10.3)
Others	24.8	40.9	139.9	181.8	295.1
	(42.7)	(39.7)	(42.6)	(33.3)	(30.8)

Source: Republic of Kenya, Statistical Abstract, (Various).

This continual high dependence on primary exports indicates that the country has not succeeded in developing viable and efficient alternative export items.

The volume of merchandise exports has continuously fallen since independence. For example, the volume of exports fell by 12 per cent between 1976 and 1985 while the terms trade fell by 33 per cent. The volume of imports fell by 26 per cent during the same period.

Export prices rose by 173 per cent while those of imports rose by over 300 per cent. Consequently, the country's purchasing power fell by on average of 3.3 per cent a year over the same period (Table 1.3 below).

Table 1.3: Quantity and Price Indices for Merchandise Trade (1976=100)

	1977	1979	1981	1983	1985
Quantum Index					
Exports	104	94	92	85	88
Imports	122	116	104	69	74
Price Index					
Exports	142	128	170	223	273
Imports	108	132	220	356	430
Terms of Trade	131	97	77	68	67

Source: Republic of Kenya, Economic Surveys, (Various).

Since the value of export earnings depends not only on the volume of exports sold abroad but also on the prices paid for them, the stagnation of Kenya's export items indicate that the country was neither in a position to maintain or increase significantly its export quantities when price trends were leading upwards, nor was it able to expand the volume in order to offset the effects of deteriorating terms of trade. With deteriorating terms of trade, only substantial volume increases can compensate for the loss in foreign exchange earnings. Having failed to expand the volume to compensate for such losses, the country has financed a decreasing share of its commodity imports with exports,

the gap being filled by foreign capital inflows.

Kenya's external trade has been characterized by strong orientation towards Western Europe mainly due to the country's colonial history. However, there has been some substantial diversification of the country's trading partners since 1963. While 60 per cent of Kenya's exports went to Western Europe in 1963 (32 percent to U.K alone), and 53 percent of imports came from Western Europe (31 percent from U.K), corresponding figures in 1986 were 51 percent (14.5 percent to U.K) and 53 per cent (15.6 per cent from U.K).

Trade with the rest of Africa has remained low, especially as far as imports are concerned. In 1963, 4.9 percent of Kenya's imports came from African countries while in 1986, the figure had gone down to 2.8 percent. During the same period, exports rose from 11 percent to 20.7 percent (15.8 percent to P.T.A. region). Kenya's exports to PTA has increased tremendously from Kf53.3 million in 1978 to Kf151 million in 1986 with the country having a surplus trade balance throughout the period. The country's external trade has also been characterized by large balance of trade deficits. The trade deficit has steadily risen from Kf8.5 million in 1964 to Kf641 million in 1987. Consequently, the economy has run into foreign exchange constraints that limits its growth.

The economy's growth rate has persistently declined since the first oil shock of 1973. Prior to 1973, the country enjoyed high rate of growth of GDP (estimated at 6.5 percent per annum) combined with a healthy balance of payments position (except in 1971 when there was 'mini crisis'). After the 1973 oil shock, the economy plunged into serious balance of payments deficits, which together with high inflation (estimated at 14.9 percent), interrupted the high and stable growth of the previous period. Except for the short lived Coffee Boom of 1976-77, the economy has continued to experience serious macroeconomic crises. The balance of payments position has generally worsened since 1978 reaching crisis proportions in 1980 and 1982. The growth rate of GDP declined hitting a floor rate of 0.9 in 1984.

An analysis of the causes of balance of payments problems in Kenya may be broadly classified into three major categories. First are the external factors which include the oil shocks of 1973/74 and 1979/80, the deterioration in the international terms of trade of primary exports, the fluctuation of exchange rates of major trading partners, the increase in the general level of protectionism, the changes in the international aid flows, sharp increases in the real interest rates in the international markets, and the world recessions of 1974/1975, 1979/1980 and 1984.

Secondly, domestic factors which include expansionary fiscal and monetary policies, which creates excessive domestic demand and inflationary pressures[1]. Thirdly, there are structural factors of production which include industrial protection through tariffs, foreign exchange allocation, import duties, quantitative restrictions and outright bans[2], which we classify here as inadequate trade incentives to producers.

In response to the balance of payments disequilibria, the government adopted a number of interventionist policy measures including borrowing from private foreign banks and governments, running down foreign exchange reserves, severe reduction of imports, and obtaining structural adjustment funds from the international monetary fund (IMF) and the World Bank. Funding from these institutions was conditional upon the adoption of a reform macro-economic policy package intended to structure and internally adjust the economy to disequilbrating forces whose origin are predominantly external. These policies comprise devaluation of local currency and adoption of a flexible exchange rate system, increase incentives for exporters, liberalization of exchange and import controls,

---

[1]See Killick and Thorne (1981), Grubel and Ryan (1979) Kingundu (1984) and Vadermoortele (1985)

[2]See Maitha, Killick and Ikiara (1978)

rationalization of tariff structure, debt management and export promotion efforts. In particular, Kenya's export promotion drive has been undertaken largely to satisfy the urgent needs for foreign exchange earnings.

The following is an outline of Kenya's trade incentives in general and export promotion incentives in particular.

1.2 The Structure of Kenya's Trade Incentives[3]

In early post-independence years, the government emphasized import substitution industrialization by providing protection from competing imports via tariffs and quantitative restrictions. The use of quantitative restrictions increased rapidly after Kenya's first foreign exchange crisis of 1970/71. Before 1973, the tariff system had the effect of primarily controlling the composition of imports but when balance of payments and foreign exchange shortage became acute, the structure was designed to control both the composition and volume of imports.

From about 1973, there was a growing realization that the existing trade and industrial policies were overemphasizing import substitution and, subsequently, measures were taken to reduce the imbalance. Among

---

[3]This section is based on materials contained in Low (1982), Ayako and Manundu (1988) and Republic of Kenya (1986)

those remedial measures was the introduction of a sales tax in order to reduce reliance on import duties and tariffs for generating revenue. At the same time, tariff reforms were embarked upon, the aim of which was to narrow the rates and thereby reduce the levels of effective tariff protection. On the other hand, an export subsidy of 10 percent was introduced on manufactured exports in 1974. Most manufactured goods were eligible subject to the requirement that it contained 30 percent local content. Export subsidy was intended to compensate exporting firms for their high cost of production due to tariffs on their imported inputs or because their protected suppliers produced at a higher cost. In order to promote export trade, the government declared 1984 an "Export Year" and the rates of compensation were raised from 10 to 15 percent. The 1985 Finance Act established a 20 percent subsidy and the list of eligible exports expanded. Also to quicken the process of payments, the subsidy disbursing department was moved from the Customs and Excise Departments to the Central Bank.

Another element of the country's trade incentive structure is the exchange rate management. Prior to 1971, Kenya maintained a fixed exchange rate pegged at KShs.20 per sterling pound. After 1971, the peg was shifted to the U.S dollar. To avoid adverse effects of

a single currency peg, the peg was shifted to the Special Drawing Rights (SDR) in 1975. Between 1975 and 1981, there were minor devaluations and revaluations of the shilling. In February 1981, the shilling was devalued from KShs.7.66 to KShs.10.15 per SDR. Between 1981 and 1984, the shilling was devalued by 45 percent. From April, 1984, the government adopted a managed float exchange rate system to maintain profitable export margins and thus increase exports.

Other components of Kenya's incentive structure enumerated in the sessional paper No.1 of 1986 and the Sixth Development Plan include; manufacturing in bond which offers duty free imports under bond for production which is exclusively for export; "Green Channel" as a means of simplifying and speeding up the steps required for an exporter to receive the necessary administrative approvals; Government Financed Credit Schemes as a means of overcoming the risk in loans to individual exporters; the Preferential Trade Area incentives; and the establishment of an Export Processing Zone (EPZ), i.e. an area well served with basic infrastructure to attract investments in export producing industries.

1.3 Statement of Research Problem

The degree of openness of the Kenyan economy implies that its performance will be closely tied to that of its

external sector. Indeed one of the limiting factors in Kenya's economic development has been the shortage of foreign exchange to pay for increasing quantities of imported capital goods, intermediate inputs and raw materials, especially oil, necessary for economic growth. The shortage can be attributed to the inability of the country to expand the volume of its exports, and the reliance upon primary commodity exports whose terms of trade have persistently deteriorated since Independence. Consequently, the economy has been forced to finance an increasing proportion of its imports from foreign savings and borrowing. To reduce this dependence, foreign exchange management and trade incentive structure have assumed considerable importance in the country's macroeconomic policy reform efforts.

A good deal of argument against primary products export expansion and in favour for diversification into manufactured exports for developing countries is based on the secular deterioration of the non-oil commodity terms of trade. But since past commodity price trends are no indication of what future prices will be, and since the international economic vulnerability of developing nations is not confined to adverse movement in commodity terms of trade, it is important to understand the broader theoretical and practical issues of international economics, taking institutional

features of Kenya into consideration.

Most statistical studies of world demand patterns for different commodity groups reveal that in the case of primary products, the income elasticity of demand is low. On the other hand, for fuels, certain raw materials and manufactured goods, the income elasticity is high. For example, it has been estimated that a 1 percent increase in developed country income will normally raise their import of food stuffs by 0.6 percent, agricultural raw materials such as rubber and vegetable oil by 0.5 percent, petroleum products by 2.4 percent and manufactures by 1.9 percent".[4]

An analysis of Kenya's export performance show that the country has not been able to expand its export volume to compensate for losses due to deteriorating terms of trade or to achieve growth in real export earnings. Existing statistics indicate that on the basis of the 'Lome' Convention, almost all Kenyan exports have free access to European Community (EC) markets where Kenya disposes over 40 percent of her exports. Equally, preferential treatment is given to Kenyan exports to PTA, where the country disposes off most of her manufactured exports. Thus, Kenyan exports enjoy high access to inter- and intra- regional (external) markets; and yet the slow growth rate of

---

[4]See Todaro (1986) pp.370

export volume has persisted.

Although most discussions on Kenya's economic growth tend to ascribe an important causal role to trade, there has been little or no empirical investigations of the nature and strength of the relationship between the two variables. The channel through which trade exerts its influence on growth in the country has not been adequately specified, either. Furthermore, the impact of a variety of trade incentives adopted on export volume remain an unexplored empirical issue. The apparent ineffectiveness of trade incentives to increase both the quantity of exports and export earnings, and the economy's inability to achieve balance of payments equilibria imply that trade policies were either sub-optimal, (i.e, they were inconsistent with the country's socio-economic structure and nature of the problem), and/or were mildly applied. Furthermore, the observed performance of trade incentives may be attributed to either lack of commitment of implementing them, to budgetary constraints or that their impact was offset by other macro policies. In general, this study attempts to partially fill the existing information gap regarding the interactions among trade incentives and macroeconomic performance in Kenya. Such a gap constitutes an important handicap to rational trade policy. The study makes a modest attempt to fill the

existing information gap. In particular, an attempt is made to develop an empirical model framework for evaluating and simulating the impact of adopted or proposed trade incentives on exports, the balance of payments, and economic growth.

1.4 Objectives of the Study

As would already be clear, the main objective of this study is to provide an analytical and empirical framework for evaluating the impact of trade incentives on export performance, balance of payments and economic growth. The sub-objectives of this study are:

i) to develop an analytical - empirical model linking exports, balance of payments and economic growth;

ii) to use Kenyan data to estimate the model specified in (i) above;

iii) using the results in (i) and (ii), to perform a variety of policy simulations of changes in the incentive structure on the stated macroeconomic variables; and

iv) based on the findings in (ii) and (iii) draw policy implications.

1.5 Significance of the Study

The study hopes to generate knowledge about the significance and extent to which export incentives have influenced exports, the balance of payments, and economic growth. This information would be important for policy makers and planners in their attempts to evaluate and monitor the macroeconomic impacts of the present and future trade policy incentives. The information would also form a rational basis for the revision and adoption of policy measures intended to achieve some macroeconomic performance targets. Clearly, it is important for policy makers to understand why past policies were ineffective in order to improve the quality of their policy decisions. The results of the proposed policy simulations could form a rational basis for selecting optimal trade policies given the existing structural relations, government policy in force, and the constraints.

Finally, the findings of this study would provide reference material for future research in the area of trade and development, particularly in Kenya. This area has attracted limited attention in the past (see Finucane, Rupley and Killick, 1985: 109).

1.6 Organization of the Remainder of the Paper

The remainder of the paper has four chapters and an appendix. Chapter Two provides a survey of literature on the impact of trade policy on balance of payments and economic growth. Chapter Three discusses both the analytical and empirical model specification. Here also, the estimation methodology, data type and sources are discussed.

In Chapter Four, the empirical results are presented and interpreted. Some simulation exercises are performed both for model validation and for policy analysis. In Chapter Five some policy implications are made. The limitations of the study and areas of further research are also examined here.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section outlines the main theoretical and empirical frameworks for the analysis of the effectiveness of trade incentives on exports, the balance of payments, and economic growth. The strengths and weaknesses of past studies will be examined to consolidate the present study. The review of the literature was organized under three sub-headings.

2.2 The Impact of Exports on Economic Growth

Theoretically, there is a controversy on the impact of trade on economic growth of less developed countries (LDCs). On the basis of the standard 2x2x2 trade models, export biased growth worsens the terms of trade and it exposes less developed countries to the risk of protectionism (see Bhagwati, 1958 and Prebisch, 1959). On the other hand, some economists suggest that export performance and, in general, outward orientation make important contributions to economic growth by offering greater capacity utilization, economies of scale, and rapid technical change (see, for example, Krueger, 1980; Chenery and Eckstein, 1970).

In view of the importance of the subject and the wide divergence of theoretical positions, numerous studies have been conducted to assess the role of exports in economic growth. In most of these studies, there is abundant evidence of high correlation between the rate of growth of exports and the rate of growth of gross national product (GNP). A wide range of studies which utilize both cross-sectional and time-series data are virtually uniform in their conclusion that the relationship between export performance and growth performance is very significant (see Massel, Pearson, and Fitch, 1972; Voivodas, 1974; Michaely, 1977; Krueger, 1978; Balassa, 1978; Fajana, 1979; Ram, 1980; Salvatore, 1983; Kavoussi, 1984; Ram, 1987; and Chow, 1987). Krueger (1978), for example found that an increase in the rate of growth of export earnings of one percent annually was associated with an increase in the rate of growth of GNP of about 0.1 percent point.

Michaely (1977) and Balassa (1978) similarly found positive correlations between exports and economic growth. Michaely found a Spearman's rank correlation coefficient between the rate of growth of exports and the economy to be 0.38 and significant at 1 percent level. Balassa obtained weaker results when he used the concept of value added postulated by Halevi (1972) in a production type framework for a sample of semi-

industrialized countries over the period 1960-73.

Fajana (1979) utilized the two gap model developed by Chenery and Eckstein (1970). The model operates under two hypotheses. The first is that trade is an engine of economic growth since inadequate imports of capital goods constitute the constraint on capital formation and economic growth. The second hypothesis is that trade constitutes a drag on economic growth when capital formation is limited by insufficiency of domestic resources. Testing the models using Nigerian data 1954-74, Fajana found that foreign capital inflow played only a secondary role to exports in the stimulation of output.

Ram (1980) estimated a log-linear behavioral relationship between exports, foreign capital inflows and economic growth for 33 developing countries. The results showed that the ratio of exports to GDP was significant at one percent level and that a one percent rise in the export variable was a accompanied by 0.75 percent rise in GDP.

While the correlations that have been shown are statistically significant, it is important to note that correlation does not prove causality. The usual hypothesis is that export growth causes the output growth, but the causality could be the other way from GNP growth to exports. National product may be rising

because of human and physical capital accumulation, learning by doing, or new technology inflows to some industries which produce in excess of domestic consumption. Such industries would export, and here it would be growth in national product that caused growth of exports. Alternatively, causality may be bidirectional with exports causing growth in GNP and vice versa. Chow (1987), using statistical tests of causality in his study of the relationship between exports and industrial development for eight new industrializing countries (NICs) of South America, found six cases with bidirectional causality. In one country, causality ran from exports to industrial development. While for the other, no causal relationship was found.

In an attempt to capture the major interlinkages through which exports exerts their influence on economic growth, Salvatore (1983) developed a simultaneous equation model for trade and development and tested it by pooling data from 52 developing countries. The model was estimated by full information maximum likelihood (FIML) method and validated by policy simulations. The results of the policy simulations indicated that some of the policies most often advocated for developing countries, such as increasing the growth of exports and capital inflows and curbing domestic inflation, are not very effective in increasing their rates of growth

unless the magnitudes of the proposed policies are unrealistically high. The following economic model was developed:

$$DY_t = a_o + a_1 I_t + a_2 R_t + DX_t \quad \ldots\ldots (2.1)$$

$$I_t = b_o + b_1 Y_t + b_2 DY_t + b_3 X_t + b_4 F_t \quad \ldots\ldots (2.2)$$

$$R_t = c_o + c_1 DY_t + c_2 X_t + c_3 R_{t-1} \quad \ldots\ldots (2.2)$$

$$X_t = do + di P_t + d_2 W_t + d_3 R_t \quad \ldots\ldots (3,4)$$

Where DY_t is the growth rate in real per capita income in year t; I is gross fixed capital formation as a percentage of GDP; R is industrial output (manufacturing + construction) as a percentage of GDP; F is capital inflows (net of imports of goods and services) as a percentage of GDP; P is the ratio of consumer price index in the nation relative to consumer price index of all market economies; W is the index of real GDP of all market economies and X is the exports as a percentage of GDP.

A major weakness of the model is that the growth rate of exports is treated as a policy variable. While this may be true, developing countries may not succeed in manipulating their exports given the fact that most of them rely on primary commodity exports, predominated by agricultural products whose demand and supply is difficult to control. In this case export growth may be treated as a target variable. Furthermore the model

does not adequately specify the elements of trade policy or policy incentives applied to achieve growth in exports. The inflation parameter used in the simulation exercise is only implicit in the model and this assertion by itself, therefore, weakens Salvatore's findings.

The important conclusion from the studies reviewed here is that policies to increase exports do certainly appear to stimulate growth, whatever the immediate cause of the larger volume of exports, i.e. increased capacity output, effective export promotion policies, or other. On the contrary, however, Stein (1979), studying the growth of exports in East Africa observed no statistically significant relation between GDP and export growth in Kenya, 1964-71. Various regressions failed to reveal any direct link between exports and economic growth in Kenya, while such links were revealed in Tanzania and Uganda. However, indirectly, exports were shown to affect growth through their strong contribution to savings, particularly in Kenya and Uganda. The failure to establish any direct links in Kenya may have been due to inadequate data. During the study period, some data was aggregated for the whole region, hence, country level data was either not there at all or was distorted and thus difficult to collect.

While the studies reviewed have made useful

contributions towards the understanding of the role of exports in economic performance, most investigations were based on cross-country, cross-sectional data analysis and concentrated on the newly industrializing developing countries. Thus, country differences may be masked in cross-country results. Findings of such studies, therefore, cannot be applied to specific conditions of any developing country, particularly the less industrialized developing nations. Indeed, as reported in his analysis of the 1950-73 about relationships between export expansion and economic growth, Michaely(1977) noted:

> It is interesting to note that the positive association of the economy's growth with the growth of export share appears to be particularly strong among the more developed countries, and not to exist at all among the least developed.... This seems to indicate that growth is affected by export performance only once countries achieve some minimum level of development (p.52).

Similarly, Tyler (1981) rationalised his exclusion of low-income countries from his investigation of similar issues by arguing that some basic level of development was necessary for a country to significantly benefit from export oriented growth, particularly involving manufactured exports.

2.3 Trade Policy, Exports and Economic Growth

A number of studies have shown that countries which

adopted outward oriented development strategies faired better in terms of economic growth, employment, economic efficiency, and adjustment to external shocks than those engaged in inward-looking strategies (see Kessing, 1979; Balassa, 1983; Krueger, 1978; 1980; and Bhagwati, 1978).

Disappointments with past import substitution experiences was the initial force behind advocating export promotions. Empirical evidence of strong positive correlation between export performance and economic growth has added impetus to the adoption of such policies.

Outward-oriented strategies have been characterized by the provision of incentives for production, encouragement of import competition for most domestically produced goods, and the use of floating exchange rate (Khan and Zahler, 1983). Krueger (1980) and Bhagwati (1978) both argue that export-oriented policies are much closer to the point where international marginal rate of transformation (IMRT) equal the domestic marginal rate of transformation (DMRT). However, on the basis of a model of export promotion as a development strategy by Rotemberg (1987), it is argued that export promotion may only be of benefit for a limited group of nations. Some minimum production capacity is necessary before outward orientation is sought. Encouraging all economies to be

outward oriented, it is warned, may be detrimental to social and economic welfare. Offering export subsidies in such countries may make a country worse off by causing distortions in the domestic market. Hence, an export subsidy could be seen as a forced export promotion strategy because it is not warranted.

Export oriented development strategy imply a liberal trade efficient regime. A model of trade and financial liberalization developed by Khan and Zahler (1983; 1985) shows, within a framework of a dynamic general equilibrium model, that different policies yield different results from the point of view of the time path of macroeconomic variables. The model consists of three equations:

$$P_i = (1 + T)EP_f \quad \ldots\ldots\ldots (2.5)$$

$$DK = K + \beta[a(rd-rf - e-v)] \quad \ldots\ldots (2.6)$$

$$v_t = v_o + v_1 (Bf/Y)_t \quad \ldots\ldots (2.7)$$

Where P_i is the domestic price index of importable; T, the tariff rate; E, the exchange rate; P_f, the international price of tradable goods; DK, the flow of capital (with K representing an autonomous component); rd, domestic interest rate; rf, foreign interest rate; v, the risk premium; B_f, the stock of external debt; Y, the level of income; v_o, a constant; v_1, assumed positive; and e, the expected change in E.

In their simulations, trade liberalization corresponds to lowering of tariff rates to zero and opening up the capital account by increasing the value of the restriction coefficient., As the experiments show, the removal of barriers to trade and capital flows incur costs. The current account deteriorates in the short run. The negative effects are magnified with the possibility of domestic policy inconsistencies and adverse international climate during the liberalization. Compensating policies are needed to reduce the undesirable transitory effects from opening up the economy (Khan and Zahler 1983:264).

This model is limited; the analysis was conducted in a non-growth framework with potential output assumed exogenous. This means that the productive capacity of the economy is not affected since, in the short run, capital formation and technical progress are unaffected by the liberalization policy. Therefore, the model cannot handle the longer term aspects of the policy change.

Imbalances that give rise to stabilization may be a result of loss of international competitiveness. An exchange rate change, to the extent that it alters the real exchange rate, gives incentive to the production of tradeable goods. The role of exchange rate is viewed in this context as operating via its effect on relative

prices, that is, the nominal price in domestic currency deflated by consumer price index. However, if trade distortions such as tariffs and quota exist, the concept of effective exchange is the more relevant one. With the existence of such distortions, exporting firms suffer because they use expensive protected products as inputs.

To the extent that exporters are selling in competitive markets, they cannot pass over their high costs to foreign consumers. With exports penalized, there is likely to be shortages of foreign exchange to purchase imports. This will require exchange controls and rationing. Products which could have been exported under free market conditions are poor competitors because of the bias. The extensive controls mean that the economy is likely to respond less elastically; low reserves of foreign exchange mean that imports may have to be restricted. Import restrictions attracts resources to the protected industry, raises prices for buyers of the product, shifts welfare from consumers to producers, and involves a deadweight loss.

Empirical studies in developed countries show quite small deadweight losses from protection, usually 1 or less percentage of GNP. But studies in less developed countries suggest much greater damage to those countries, sometimes as much as 9 to 10 percent of GNP

(Hongeden, 1987). By dismantling of the whole matrix of protection coefficients, Harris (1984) argues that there are dynamic gains to be won from increased competition and economies of scale. He estimates that by doing so, developing countries may realize a rise in GNP in the range of 2.5 and 8.5 percent.

The use of devaluation as a trade policy or as a stabilization tool is a controversial issue in the literature. It is theoretically possible that it can have deflationary effects on real output and employment in the domestic economy (See, for example, Taylor, 1979: 50-55; Muller and Solimono,1987).

Muller and Solimono (1987) set up a Keynesian model which explicitly treats balance of payments as a binding constraint on demand management. It is shown that in the short run devaluation has deflationary effects through the existence of trade deficits, redistributive effects among groups with different propensities to consume, the decline in the real monetary balances and the increase in the domestic price of imports and its impact on aggregate supply. The model shows that devaluation should be accompanied by an expansionary fiscal policy as part of the package to relax the external constraints. This is contrasted with the IMF policies of devaluation along with contractionary fiscal policy. Testing the model on Chilean data, the

authors show that a ten percent devaluation should be accompanied by an 8.55 percent increase in government expenditure. This will further call for a 3.06 percent increase in the general taxes.

The IMF typically recommends devaluation as a remedy to overvalued exchange rates. But this tool of exchange rate management is intensely unpopular and will often be shunned on the belief that national pride and strength can be measured by the value of its currency (Hongedom, 1987). The Fund also requires lower trade barriers in a majority of its stabilization programs. Import quotas and licenses can be streamlined and relaxed, quantitative restrictions replaced by tariffs rationalized by reducing their dispersion and a reduction in the bias against agriculture and the lifting of many price controls. Export taxation, particularly on products whose demand elasticity is high should be eased to motivate exporters.

Export subsidy may be provided as long as they do not create distortions in the domestic economy making a country specialize in an 'inefficiently' produced commodity. Under the subsidy code of GATT rules, developed countries cannot legally subsidize exports of industrial products, minerals or agricultural products if this displaces exports from other countries. Less developed countries are, however, permitted to use

export subsidies for manufactured products as long as this does not cause serious prejudice to trade and production of another signatory. The main use of subsidies are to encourage infant industries and to offset past policies that have harmed exporting, such as import substitution and overvalued exchange rates. Bhagwati (1968) has pointed out that the entering of new foreign markets may require considerable market-cultivating expenditures on the part of the exporting firms. He argues that in particular, the externalities in cultivating new foreign markets may justify export subsidies as first - best policy measures.

In Kenya, there exists few studies in this area of trade policy. Low (1982) conducted a sample survey study to test the impact of export subsidy on the volume of exports. The results showed that only 37 percent of the exporting firms increased exports as a result of subsidy. A further 40 percent treated the subsidy as a windfall and did not change their decisions in any way. Finally, 16 percent of the firms did not even claim the subsidy. These firms' response was attributed to the delays and uncertainty about disbursements. No econometric study has been done in this area. Studying the determinants of Kenya's manufactured exports, Okore (1987) that concluded Kenya's manufactured exports performance is more sensitive to domestic factors than

to external factors affecting demand condition in the EEC market. Thus, policies should be designed to improve domestic supply conditions of manufactured products. On the other hand, Mwamadzingo (1988) studied the effects of exchange rates on various macroeconomic variables using a simultaneous equations model. In almost all the equations specified (including exports) the effect of exchange rate was not significant even at 10 percent level.

2.4 Trade Policy and Balance of Payments

In order to appreciate the role of government policy in the alleviation of balance of payments deficits, it is important to understand its causes. There are factors external to the economy which include terms of trade, growth rates in industrial countries and rising interest rates, and the internal factors such as increases in budget deficits and exchange rates (See Dell, 1980; Killick, 1981; and Khan and Knight, 1983). Apart from Khan and Knight (1983), the rest of the authors have drown conclusions relying on casual observations. For instance, Dell (1980) attributes deterioration in current account to external factors while Killick (1981), and Khan and Knight (1982) attributes it to domestic factors.

To solve this controversy, Khan and Knight (1983)

tested empirically the influence of external and domestic factors on current account. The model was estimated ror 32 non-oil developing countries (Kenya was in the sample) over the period 1973-80. Estimating by ordinary least square (OLS) method, their results showed that individual countries were not completely powerless to adjust to external shocks since authorities could have used a combination of inflationary demand management and exchange rate policies to counteract the effects of other variables. They indicated that in many countries, a combination of inflationary demand management policies, restrictions on trade and payments, and rigid exchange rate policies contributed to cumulative loss in international competitiveness and consequent balance of payments difficulties. T h e limitation to this study is that it is too aggregative limiting applicability of its results.

With balance of payments as a binding constraint, fiscal and monetary restraints, increases in domestic rates of interest to positive real levels, gradual tariff reductions, direct export promotion incentives in the form of export subsidy and an adoption of crawling peg exchange rate system with emphasis towards undervaluation of the real exchange rate have been recommended for developing countries (see Diaz Alejandro, 1984).

2.5 Overview of Literature Reviewed.

The literature reviewed show that most of the studies in the realm of trade policy are partial in the sense that they capture only an aspect of policy, for example, the impact of exchange rates on export performance, export subsidy and trade performance, and trade liberalization effects on some macroeconomic variables. While these studies have made significant contributions to knowledge in the subject area, the theoretical studies reviewed show that trade policies are interdependent in the sense that one policy change can be counteracted or reinforced by another policy change. For instance, Khan and Zahler (1985) show that in the context of trade liberalization alone, current account balance deteriorate in the short run. In such circumstances, it becomes important to introduce compensatory policies to reduce some of the undesirable transitory effects of the process of opening up. On the other hand, the possibility of contractionary devaluation (see Muller and Solimono, 1987) require compensatory expansionary fiscal policies. Thus, issues of policy mix are important and cannot be neglected in such analyses.

Most of theoretical literature reviewed tend to favour trade and financial liberalization and a liberal exchange rate system. However, there is no reliable

empirical studies that support the theory. Most studies that have attempted to investigate trade policy affects on growth, apart from being too aggregate and covering many countries, use simulation models with imputed parameters obtained from other studies (see, for example, Khan and Knight, 1985 and Khan and Zahler, 1985). Clearly, this fails to capture country specific economic circumstances and institutional structures. Thus, results from such studies must be interpreted cautiously.

In Kenya, very few studies have employed a systematic econometric technique. Mwamadzingo (1988) carried out a study to investigate the effectiveness of exchange rate policies on major macroeconomic variables in Kenya. Exchange rates were found not to be statistically significant from zero even at 10 percent level of significance. This may be attributed to the definition of the variables used. For instance, he defined the real effective exchange rate for exports and imports to be the same. Indeed, this definition falls short of capturing the country specific exchange rate regime. Due to the existence of tariff system, and given the fact that some export items are subject to export duty while others are subsidized, the real effective exchange rate for exports and imports can not be the same.

Okore (1987) concluded that the constraints to Kenya's manufactured exports to EEC were domestic. He considered relative prices and exchange rates as variables separately. However, it is known that exporters do not receive the true price of their exports. They get it in domestic money, after exchange rate has been multiplied and export netted. The effect of exchange rate is through its impact on the domestic currency rate 'perse' does not affect the incentive to export or not to export. On the other hand, Low's study in 1982 was exploratory.

The present study has been motivated by lack of systematic analysis of the relation and effects of trade policy incentives and Kenya's macroeconomic performance. Such analysis is important both in terms of validation of the theoretical models reviewed and the choice of policy mix consistent with the structural institutions in Kenya.

CHAPTER THREE

EMPIRICAL METHODOLOGY AND DATA

3.1 Introduction

In this section we attempt to develop an empirical model linking exports, balance of payments, and economic growth in Kenya on the basis of the literature reviewed. The chapter is divided into five parts. In part two, we develop an analytical model framework of the model showing major linkages between trade policy incentives, balance of payments and economic growth. Part three discusses the empirical model specification while in part four, we discuss the estimation methodology. Finally, in part five, we discuss the data type, sources and limitations of the data.

3.2 Analytical Model Framework

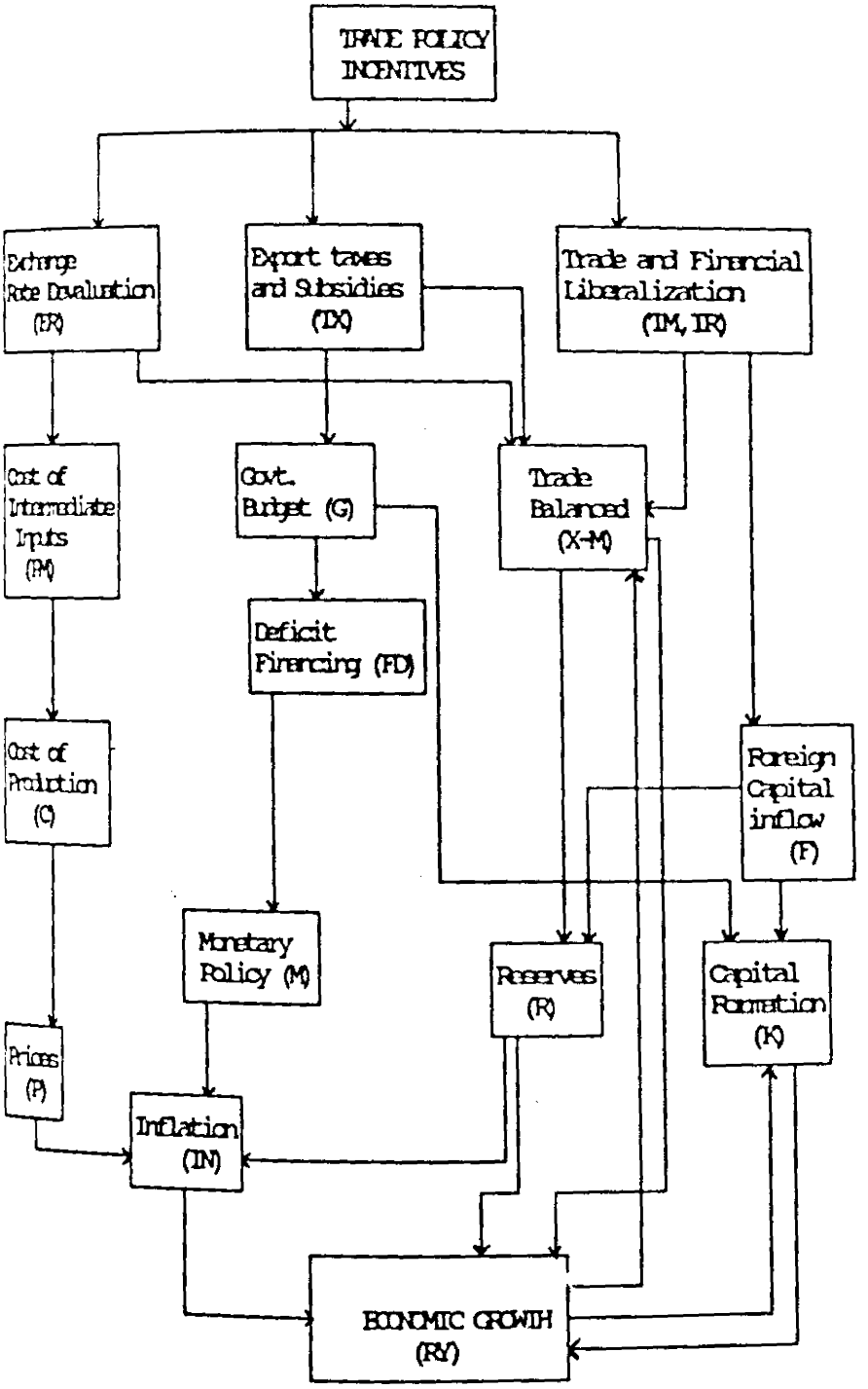
The relationship between trade policy and certain macroeconomic variables is quite complex and it is difficult to identify all of the existing linkages. The chart below is a simplified schematic diagram attempting to identify most of the existing linkages among trade policies, balance of payments and economic growth.

Trade policy is hypothesized to affect economic growth through three important channels. First, trade

policy affects balance of payments and economic growth through exchange rate devaluation. Theoretically devaluation is supposed to increase the price of imports measured in domestic currency. On the other hand, the prices of exports in domestic currency increases and thus making exporting more profitable. Demand for imports is expected to fall and trade balance is expected to improve by devaluing.

Whether more foreign exchange is earned depends on the elasticity of supply and demand for exports and the period under consideration. Only a zero supply elastically will prevent that from happening. Devaluation will also benefit a country if creating new capacity is easy, if there exists excess capacity in the exporting industry, if the country has significant unemployment problems (common in Kenya), if infrastructural support system is in place, and if resources are flexible and so can respond to market incentives.

Chart 1: Schematic overview of the principle relationships between trade policy and economic growth



Note The arrows show the direction of causality.

Analytically, any elasticity of demand for imports greater than zero will mean a reduction in foreign exchange spent as prices rise. The reduction in imports may be limited, however, if the country liberalizes its protection at the same time. The fall in barriers will work to some degree to offset the rise in prices. If, however, a large proportion of imports are inputs whose elasticity of demand is very low, spending on imports will not be reduced as much and may in fact increase. Hence, the cost of intermediate inputs will rise. Consequently, the domestic costs of production may rise, hence contributing to domestic inflation thus causing the country to lose competitiveness in the international markets. Thus, the initial real effects of devaluation may be offset by higher domestic inflation.

Inflation causes the domestic currency to be revalued. With domestic prices rising, at a fixed exchange rate, imports appear cheaper at home while domestic exports will appear more expensive and in this case, a further devaluation will be required.
Moreover, if entrepreneurs believe that, following a devaluation, exporting will not be profitable for long due to continuing inflation, then they are unlikely to raise the supply of exports. If devaluation is eroded by higher inflation then there will be no expenditure switching towards domestically produced goods and no

production switching towards export markets. For devaluation to be effective, inflation must be controlled. Inflation control policies can be viewed as an elements of trade incentives aimed at keeping domestic prices lower than international prices.

The second link of trade policy incentives and economic growth is through the direct incentives to exporters in the form of taxes and/or subsidies. An export subsidy makes exporting more profitable, hence inducing exporting firms to expand their scales of operation or for those firms producing for domestic consumption to produce also for export. Subsidization is expected to have a positive effect on trade balance. However, since a subsidy is an expenditure of government funds, depending on the extent to which government budget is financed by deficit financing, it will lead to increased domestic inflation. The on government budget constraint will limit expenditures in form of non-inflationary subsidies. On the other hand, the government may use export taxes on some commodities to finance expenditure on subsidy. However, the use of taxes depends on the elasticity of demand for such a commodity in the international markets, and also on the proportion of a country's exports to total world export supply. If the elasticity of demand is low, then the country will be able to pass over the export taxes to

foreign consumers.

The third major link is through trade and financial liberalization. As Khan and Zahler (1985) noted, total liberalization corresponds to lowering the tariff rates to zero and opening up the capital account. Import restrictions attracts resources to the protected industry, raises prices for buyers of the product, shifts welfare from consumers to producers and involves a deadweight loss (Hongedom, 1987). Liberalization affects economic growth from increased competition and from economies of scale. On the other hand, increased capital inflows will contribute to domestic capital formation. Apart from capital inflows that may be independent of interest rates, more capital inflows may be ensured by liberalizing domestic rates of interest.

Many developing countries impose ceilings and other restrictions on the nominal interest rates offered on the saving deposits by the banking system. Under inflationary conditions, these ceilings may imply low or negative real interest rates on savings. If domestic savings access to foreign capital inflows are interest sensitive, adjusting interest rates to more realistic levels would clearly be called for (Khan and Knight, 1985). The increase in savings would raise domestic investment and the country's capacity for growth. Hence, the current policies to raise capacity output levels

will depend on the degree of interest sensitivity of savings and the effect of increased investment on the growth rate of the economy.

3.3 Empirical Model Specification

The model specified here contains equations which incorporate the major definitional, theoretical and behavioral links connecting various macroeconomic variables in Kenya. The complete model contains five equations describing the growth rate of the economy, rate of fixed capital formation, exports and balance of payments. The model will be able to capture both direct and indirect effects of trade incentives on exports and on other macroeconomic variables.

The modelling approach is based on existing models of macroeconomics affects of trade policy, especially Salvatore's model of trade and development and Khan and Zahler (1985) model. Unlike the Salvatore model, our model includes more policy incentives, e.g. export promotion incentives such as real exchange rates government expenditures. Also, unlike Khan and Zahler's model, a growth equation in which exports enter as an input to production process is introduced. Real exports are introduced as a variable to be able to incorporate the possible advantages of policies designed to promote exports. This model, handles potential output

endogenously as apposed to their exogenous treatment given to it in Khan and Zahler's model. Presentation of the model is organized under four sub-headings.

3.3.1 Real Output Equation

The rate of growth of real output is specified to respond to the rate of growth of real exports, gross real investment, change in the level of reserves from the previous period, level of capital stock and capacity output in the previous period. Growth in real output is modelled in an aggregate production function framework with exports introduced as an additional explanatory variable in the growth function (as in Salvatore,1983). The hypothesized relationships are shown by the signs below the explanatory variable.

$$RY_t = h_1(RKF_t, RR_t, RX_t, Y_{t-1}, K_Ft_{-1}, U_{1t}) \quad \ldots.(3\text{-}1)$$

$$(+) \quad (+) \quad (+) \quad (+) \quad (+)$$

Where:

RY_t = rate of growth of real GDP in year t

RKF_t = the rate of gross fixed capital formation (Gross investment)

RR_t = The growth rate in level of foreign reserves (equal to change in Balance of Payments)

RX_t = Rate of change in net exports

Y_{t-1} = capacity output lagged one period

K_Ft_{-1} = level of capital stock lagged one period

U_{1t} = The random disturbance term

The growth function is modified to take into consideration the fact that labour (particularly unskilled labour) is abundant. The rate of investment is hypothesized to be positively related to real output growth. Rising exports are expected to be a vehicle for the introduction of new technology, for adoption of more economically efficient techniques and to lead to higher domestic savings and investment. Net exports are defined as gross exports less import components, or simply value added in foreign exchange. Since data for gross exports are usually available, whereas those of value added in foreign exchange are not, the gross figures serve as a proxy for net export figures. The rationale is that what is important to a country is not mere proceeds from its exports but the net purchasing power of exports. The rate of growth of reserves is introduced to capture the fact that capacity output constantly need to be fed with new supplies of intermediate inputs in the production process. Since a large percentage for Kenya are imports, the level of reserves in the previous period will affect the level of imported intermediate inputs.

3.3.2 Investment Equation

Since the rate of capital formation is crucial to development process, we consider an investment function in our model. The rate of capital formation is assumed to be determined by exports, foreign capital inflow, real output, interest rates, government expenditure, and the growth of real output. The major assumption here is that investment is limited by an inadequate domestic rate of savings and insufficient capital inflows. Domestic savings itself is a function of real output, the growth rate of real output, and export earnings. Thus, investment is a function of and positively related to Y_t,RY_t, X_t, IR_t, and F_t:

$$RKF_t = h_2(Y_t, RY_t, X_t, F_t, G_t, IR_t, U_{2t}) \quad .....(3.2)$$
$$(+) \quad (+) \quad (+) \quad (+) \quad (?) \quad (-)$$

Where:

RKF_t = the rate of gross fixed capital formation in year t

Y_t = real GDP in KShs.

RY_t = Growth of real GDP

X_t = net export i.e. Exports less import components

F_t = Net foreign capital inflows

G_t = Government Expenditure

IR_t = Interest rates

U_{2t} = The error disturbance term

The inclusion of Y_t and RY_t as explanatory variables is established both empirically and theoretically by Leff (1967). Higher export earnings is expected to lead to higher savings (through taxation) and higher imports of investment goods (Lee, 1971). The use of X_t in the equation, as opposed to RX_t is due to the assumption that $I = f_1(S,F)$; and $S = f_2(Y_t, RY_t, X_t, IR_t)$. Thus, equation (3.2) is an expanded form of a combined savings and investment function. If interest rates are liberalized, they expected to attract both domestic and foreign investments. Evidence on the relationship between government expenditure and investment is inconclusive (Khan and Knight, 1985:11).

3.3.3 Exports Earnings Equation

Export earnings are generally postulated to depend on the nation's international competitiveness as well as conditions on the world markets. The volume of exports will also be expected to increase with the productive capacity of the economy. Thus:

$$X_t = h_3(Px_t^*/pd_t, WY_t, Y^*_t, RKF_t, KF_t^{-1}, RYt, U_{3t}) \quad (3.3)$$

$$(+) \quad (+) \quad (+) \quad (+) \quad (+) \quad (+)$$

Where:

X_t = net export earnings in year t

P_{xt}^* = Price index of export

pd_t = the domestic price index

WY_t = an index of real GDP of all market economies.

Y^*_t = capacity output (proxied by real GDP).

RKF_t = The rate of gross fixed capital formation (Gross investment)

K_Ft_{-1} = the level of capital stock legged one period.

RY_t = Rate of growth of GDP.

U_{3t} = The error disturbance term

The profitability of producing and selling exports is captured by the ratio of export prices to domestic prices $(Px^*/Pd)_t$. The domestic price index, (pd_t), serves two purposes. First, given the price of exports (expressed in domestic currency), the profitability of producing exports falls when the factor costs in the export industries increase. As these factor costs are likely to move with the general price index, Pd_t may serve as a proxy for production cost levels. Secondly, the profitability of producing and selling exports falls with rise in domestic prices. In which case, it becomes more profitable to sell domestically than to export.

The domestic price level of traded goods, expressed in domestic currency, is determined by the official

exchange rate, the level of foreign prices, and market distortions in the form of import duties, export subsidies and surcharges on exports. Thus:

$$Px = Px(EXr, tx, Px^*) \quad \ldots\ldots \quad (3.3.1)$$

$$(+) \quad (-) \quad (+)$$

Where:

Px = domestic prices of exports

Px* = world prices of exports expressed in foreign money terms.

t_x = export duty rate (t_x<o for a subsidy)

Exr = official exchange rate.

Exporters receive the foreign currency price in domestic money - after it has been multiplied by the official exchange rate and export taxes (tx) have been netted. Similarly, importers pay an amount determined by the world price (Pm*), the exchange rate, and import tariff levels such that:

$$Px = EXr(1-tx)Px^* \quad \ldots\ldots \quad (3.3.2)$$

and

$$Pm = EXr(1+tm)Pm^* \quad \ldots\ldots \quad (3.3.3)$$

Where:

Pm = domestic price of imports

tm = import duty.

Pm* = Foreign price of imports.

To include the effect of domestic prices, the international competitiveness of exporting and producing imports (Px^*/Pd, Pm^*/Pd) can be proxied by real exchange rate (RER). The real exchange rate is the price of tradable goods in terms of non-tradable goods within the country. Thus, real exchange rate indicates the level of international competitiveness of domestic production. RER can be defined for imports and exports as :

$$RERx = EXr(1-tx)Px^*/Pd \quad \ldots\ldots\ldots (3.3.4)$$

for exports, and

$$RERm = EXr(1+tm)Pm^*/Pd \quad \ldots\ldots\ldots (3.3.5)$$

for imports.

In Kenya, while a majority of manufactured exports qualify for a subsidy, traditional exports (a majority of which are marketed by statutory boards) are surcharged. In particular, tea, and to a lesser extent coffee, are subject to export taxes.

It is assumed that when world income increases, demand for exports will increase. However, it is foreign income elasticity of demand that is the most important determinant. At least if income elasticity of foreign demand is not zero, export earnings will increase. We assume in this study income elasticity of exports is not zero. We assume further that domestic

price elasticity of export supply is also not zero.

3.3.4 Inflation Equation

The domestic rate of inflation, (IN_t), is assumed to be positively related to the excess supply of real money balances, the rate of foreign inflation, the rate of devaluation, and fiscal deficits.

$$IN_t = h_4(RMS_t, RFD_t, IN_t^*, Deval_t, IN_{t-1}, U_{4t}) \quad \cdots\cdot(3.4)$$
$$(+) \quad (+) \quad (+) \quad (+) \quad (+)$$

Where:

IN_t = domestic rate of inflation

RMS_t = rate of change in money supply

RFD_t = rate of change in government fiscal deficits

IN_t^* = foreign rate of inflation

$Deval_t$ = exchange rate devaluation

IN_{t-1} = domestic inflation lagged one period

U_{4t} = The random disturbance term

Since inflation can simply be represented as the rate of change in domestic prices, it then follows that it will affect the real exchange rate by reducing the effect of real devaluation. If the exchange rate is devalued, other things remaining constant, RER is expected to rise. However, if inflation or the domestic

away the incentives to export or the incentives to import substitute. On the other hand, if export taxes (tx) are reduced to zero, with an aim of making exporting more profitable, exports will be expected to be more profitable and more resources should be devoted to production for export markets. Hence, it is important to understand the determinants of inflation in Kenya because, keeping the inflation rate low would be an incentive to producers of exports to sell abroad as opposed to targeting their output for the domestic markets.

3.5 Balance of Payments Equation

Since the balance on current account represents a major threat to a country, we specify a balance of payments equation based upon the current account.

$$CAB_t = h_5(RERX_t, RERM_t, TOT_t, RW_t, FD_t, DB_t, R_t, U_{5t}) \quad \ldots (3.5)$$

$$(+) \quad (+) \quad (+) \quad (-) \quad (-) \quad (-) \quad (+)$$

Where:

CAB_t = Balance on current account in year t

$RERX_t$ = Real Exchange for exports

$RERM_t$ = Real Exchange rate for imports

TOT_t = Terms of trade

RW_t = Growth in World income

FD_t = Fiscal deficit

DB_t = Net outstanding foreign debt.

R_{t-1} = The level of reserves lagged one period

U_{5t} = The random disturbance term

To analyze the impact of trade incentives on exports, we adopt a partial equilibrium approach for the analysis of our export and balance of payments equations (3.3) and (3.5). The emphasis is on the effect of the real exchange rate upon the trade balance. Making a "small country assumption" implies that on the export side, the volume of exports will be equal to supply. As elements of trade policy incentives, we specifically consider the effects of: exchange rate devaluation; subsidy increase and/or reduction in export taxes; trade liberalization attempts and some supply-side policies that increase capacity output, e.g, policies that raise domestic investments such as government expenditure and interest rates changes.

Lags of the price incentives will be introduced in the net export equation to avoid the fact that the impact of any change in the explanatory variables occurs in the current period. For the supply of exports,

particularly from developing countries producing primary goods, this would be an unrealistic assumption given the structural and institutional rigidities in these countries. Balassa (1976:34) correctly argues that "omission of lagged price effects results in a downward bias in the estimation of price elasticity of export supply". Due to data limitations, and problems of having insufficient degrees of freedom, we may run into, we limit our lags to one period. Here, we are not claiming to have captured the whole effects of the price incentives. In a more practical and realistic analysis, two or three period lags should be introduced.

3.4 Estimation Methodology

While equation (3.1) through (3.3) form a system of simultaneous equations, (3.4) and (3.5) are not strictly simultaneous with respect to the rest of the equations. The simultaneity nature of the model arises from RY_t being determined by RKF_t and RX_t (equation 3.1). However, the effect of X_t on RY_t is indirectly depicted in this model. Of greater importance here is that the standard statistical assumption about uncorrelated error terms [i.e $E(U_{it},U_{jt}) = 0$], is violated since for any particular equation (3.1) to (3.3), the random variable is not independent of the explanatory variables [$E(U_{it},X)$ is not = 0], where X is any explanatory

variable. As a consequence, the estimates by OLS will be both biased and inconsistent. Given this argument, we cannot estimate (3.1),(3.2), and (3.3) by ordinary least square (OLS). For consistent estimates of the coefficients of the structural equations, either indirect least square (ILS), two - stage least square (TSLS) or maximum likelihood methods (MLM) can be used depending on the identifiability of the structural equations.

3.4.1 Establishing the Order Condition of Identification

The order condition states that if an equation is to be identified, the number of predetermined variables excluded from the equation must be greater than or equal to the number of included endogenous variables minus 1 (Pindyck and Rubinfeld, 1981: 326-7). Alternatively the order condition requires the number of all variables excluded from the equation be greater than or equal to the number of endogenous variables in the model minus 1.

If G = Number of endogenous variables

K = Number of variables in the model

M = Number of variables, endogenous and exogenous

include in a particular equation.

Then the order condition of identification can be expressed as:

$(K-M) \geq (G-1)$

If $(K-M)>(G-1)$, the equation is over identified and if $(K-M)=(G-1)$, the equation is exactly identified.

In our model,

$G = 3$, $K = 13$

Table 3.1: Order Condition of Identification

EQ.	M	K-M	G-1	Identification Status
3.6	6	7	2	Over-identified
3.7	8	5	2	Over-identified
3.8	7	6	2	Over-identified

3.4.2 Establishing the Rank Condition of Identification

The rank condition states that in a system of a G equations, any particular equation is identified if and only if it is possible to construct at least one none zero determinant of order (G-1) from the coefficients of the variables excluded from that particular equation but contained in other equations of the model (Koutsoyiannis, 1984:353). The rank condition is a sufficient condition for the test of identifiable status of an equation. We shall examine the rank condition by drawing a table of the structural equation's coefficients.

Table 3.2 The Rank Condition of Identification

Eq.	RY	RX	RKF	KF-1	RR	Y-1	X	F	G	RER	WY	Y	IN
1.	$-a^1$	$-a^2$	$-a^3$	$-a^4$	$-a^5$	0	0	0	0	0	0	0	
2.	$-b^1$	0	1	0	0	0	$-b^2$	$-b^3$	$-b^4$	0	0	$-b^5$	
3.	$-c^1$	0	$-c^2$	$-c^3$	0	0	1	0	0	$-c^4$	$-c^5$	$-c^6$	

Examples of determinants (D_i) of order (G-1)= 3-1 that can b formed from this table are:

$D^1 = b^4 * c^4$; $D^2 = -c^3 * a^4$; and $D^3 = a^5 * b^3$. And since we can form a at least one non-zero determinant for each equation, the three equations are over-identified.

Following the order and rank condition for the identification status of an equation, we conclude that all the three equations are over-identified. In estimating over-identified equations, consistent and efficient parameter estimates can be achieved by TSLS estimation technique. This technique has been generally accepted as the simplest in estimating over-identified simultaneous equation models (Koutsoyannis, 1984:384). Thus this study estimates the three structural equations by TSLS technique. Equations (3.4) and (3.5),on the other hand are estimated by ordinary least square method (OLS).

In order to capture the systematic relations between trade incentives and other explanatory variables upon the endogenous variables specified, time series data will be used. The sample period will be 1966-1986. We limit ourselves to this sample range merely because of data limitations on many variables for 1987. Data will be collected on an annual basis.

3.5 DATA: Type, Sources and Limitations

3.5.1 Type

The econometric estimation of the model specified above required data on the following variables.

1. Real GDP in millions of Kenya Shillings, Y.
2. Export earnings in millions of Kenya Shilling, X.
3. Gross fixed capital formation in M.KShs, K
4. Government expenditure in M.KSh, G.
5. The level of foreign reserves (equal balance of payments) in M.KShs., R.
6. Net foreign capital inflows in M.KShs., F.
7. Interest rates, IR.
8. International price of exports in US. dollars, P_X^*.
9. International price of exports in US. dollars, P_m^*.
10. Domestic price index, Pd.
11. The official exchange rate in KShs/US. dollar, Exr.
12. An index of real GDP of all market economies, wy.

13. The rate of export duty, t_x.
14. Nominal tariff rates on imports, tm.
15. Domestic inflation rate, IN
16. Government fiscal deficits, FD.
17. Foreign inflation, IN*
18. Money supply, MS.
19. Terms of trade, TOT.
20. Net outstanding foreign indebtness, DB.

3.5.2 Source and Nature of Data

The official publications used for some of the data include various issues of the following sources:

(i) Domestic sources.

These include the Kenya Economic Surveys, Kenya Statistical Abstracts, Central Bank of Kenya Annual reviews, Ministry of Finance, Kenya Annual Trade Reports.

(ii) International sources.

These include various issues from the IMF series on International Financial Statistics Yearbook, and Government Finance Statistics Yearbooks.

Most of the variables were derived directly from one or the other of the above sources. Other variables had to be derived directly from the variable specified above. For example, those variables involving first differences specified in growth form were calculated

from the real variables. For instance, RY was calculated as follows:

$$RY_t = [Y_t - Y_{t-1}]/Y_{t-1}$$

Other variables were either proxied or derived indirectly from the published data. The domestic price level was proxied by the consumer price index at 1980=100. Rate of change of price of imports was taken as a proxy for foreign inflation. It was assumed that a given change in import prices would be fully reflected in domestic prices.

The nominal tariff on imports (tm) was approximated by taking the ratio of nominal import duties paid commercial imports as follows:

$$tm = (M.Dty/com.M)_t$$

Where: M. Dty = Total import duty in year

Com.M = Commercial imports in year t.

The Central bank publishes imports in two categories, commercial imports and government imports. Government imports are not dutiable. Export duty was calculated in the same way by taking the ratio of nominal export duties on primary commodities. Export duties are reported as net of any compensations. Manufactured exports are not taxed but rather subsidized

The index of real GDP of market economies was calculated by taking weights representing the proportion of export to any particular trading partner in a given

year, multiplied by its GDP. That is:

$$WY_t = ER[\Sigma_{i=1}^{n} E_i \phi_i Y_i]$$

Where E_i = the exchange rate of country i in terms of SDR/country i's currency.

ϕ = Share of exports to country i

Y_i = Country i's real GDP or GNP

ER = Kenya's exchange rate in terms of KShs./SDR. ER changes WY from SDRs to Kenya shillings.

3.5.3 Limitations of the data used.

A major difficulty encountered was the non availability of data either in the required form or not at all. For instance, data on export duty was available for a few years. It was discovered that prior to 1977, that is before the break up of the East African Community, such data was not available at country level. It was not clear whether there were or there were no duties in Kenya during that time. Only Tanzania was reporting data on export duties. On the other hand, data that was not available in the required form forced us to compute indices, usually under very stringent assumptions and high level of aggregation. This undoubtedly reduces the reliability of such data.

CHAPTER FOUR

ANALYSIS OF EMPIRICAL RESULTS

4.1 Introduction

In this chapter, ordinary least square (OLS) and two stage least square (TSLS) regression estimates of equations specified in chapter three are presented and analyzed. Equations (3.1) to (3.3) were estimated by TSLS method, while equations (3.4) and (3.5) were estimated by OLS method using micro time series processor (TSP) econometric package.

Preliminary analysis showed that linear specification for the equations gave poor fit. Consequently, we specified our model in double logarithmic form. Logarithmic transformations are often used in time series analysis as a means of removing growth over time of the variance of the data (Pindyck and Rubinfeld, 1981: 590). This is probably why our log-linear specification gave us a better fit. The results presented in section (4.2) and (4.2) will be based in log-linear specification of equations (3.1) to (3.3) and linear specification of equation (3.4) while results presented in section (4.3) will be based on the linear specification of equation (3.5). The empirical results are presented and analyzed under the following three sub-headings.

4.2 The Impact of Exports on Economic Growth

4.2.1 The Direct Impact

The TSLS estimation results of the direct impact of exports on output are summarized in table 4.1 below.

Table 4.1: TSLS Estimation Results of the Real Output Equation. (Dependent variable RLNY)

Var.	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
CONST.	0.021	0.033	0.632	0.537
RLNKF	0.145	0.082	1.766	0.098
RLNR	0.019	0.012	1.614	0.127
RLNX	0.003	0.049	1.054	0.760
LNKFL	0.015	0.005	2.719	0.017
LNYLAG	-0.014	0.004	-3.024	0.006

R-squared	0.467
Adjusted R-squared	0.290
S.E. of regression	0.003
Sum of squared resid	0.000
Durbin-Watson stat	2.018
F-statistic	2.634

Where:

RLNY = Rate of growth in real output

RLNKF = The rate of capital formation

RLNR = The rate of foreign reserves

LNKFL = The level of capital stock

RLNX = Rate of change in export earnings

LNYLAG = Real output lagged one period

The results of the growth equation suggest that the variables included in the model explain 47% of the total variation in change in output. With the low R^2, we can not rule out mis-specification of the model since the major determinants of growth may not be quantifiable. However, R^2 is not very meaningful as a test of explanatory power when instrumental variables approach is used for estimation. This is because the distribution of the statistic is not bounded between zero and unity. Instead, its value lies between negative infinity and unity (Hossain, 1987:79).

All signs of the coefficients in the growth in output equation except the coefficient of the capacity output, are consistent with prior expectations. The export coefficient is not statistically significant from zero at 5% level of significance indicating that in Kenya factors other than exports explain growth. The result is contrary to the findings of most studies in LDCs which show that exports have statistically significant effect on the growth performance of the economy. The result, however, is consistent with Salvatore's findings.

The coefficient of the rate of capital formation is statistically significant from zero at 9.8 percent level while that of the stock of capital in the previous period is significant at 2 percent level. This suggests

that a unit increase in the capital stock is expected to increase growth of output by 0.14 percent. Our result is consistent with those of Tyler (1981) who found an elasticity of 0.25 and Balassa (1978) who found an elasticity of 0.16.

The fact that the constant term is not statistically significant from zero implies that autonomous growth is not important in Kenya's growth process. Balance of payments (foreign reserves) has the expected sign and is statistically significant from zero at 12.7 percent level of significance. This means that there is a 87 percent chance that a one percent change in balance of payments will be associated with a 0.02 percent rise or fall in the growth rate in real output.

The coefficient of GDP lagged is negative and statistically significant from zero at 5% level of significance which imply that other things held constant, change in real output will fall if real GDP of the last period is higher than the real GDP of this period. This is particularly true in Kenya especially in the 1970's and 80's when growth in real output has been falling.

From the F - test statistic, we can conclude that the joint effect of the regressors on the growth of real income was not significant from zero at 5 percent level of significance.

The Durbin-Watson (D-W) statistic shows no problem of serial correlation with adjacent residuals (i.e no serial correlation). Usually if D-W is less than 2 there is evidence of positive serial correlation, and when it is above 2 there is evidence of negative serial correlation (Pindyck and Rubinfeld, 1981: 158-161). When there is no serial correlation D-W will be close to 2. In this equation therefore, there is no evidence of serial correlation (D-W = 2.018). The standard error of regression is very low close to zero (0.0032). The sum of squared residuals is also very small (0.0002). Therefore, the results of the regression are valid with minimum specificational error.

4.2.2 The Impact of Exports on Investment (the indirect impact)

The TSLS estimation results of the indirect effects of exports on output are summarized in table 4.2, below:

Table 4.2: TSLS Estimation of the Capital Formation Equation (Dependent variable RLNKF)

Var	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
CONS.	1.271	0.431	2.946	0.011
RLNY	1.318	0.708	1.863	0.084
LNG	0.048	0.017	1.886	0.012
LNX	0.019	0.019	1.972	0.144
LNF	-0.008	0.005	-1.547	0.144
LNIR	-0.023	0.017	-1.349	0.199
LNY	-0.152	0.050	-3.030	0.009

R-Squared	0.691
Adjusted R-squared	0.559
S. E. of regression	0.010
Sum of squared resid	0.001
Durbin-Watson stat	2.385
F-statistic	5.222

Where: LNG = Government of expenditure

LNX = Real export earnings

LNF = Foreign capital inflows

LNIR = Rate of interest

The results suggests that only a few variables have statistically significant impact on investment. While the coefficient of the interest rate has the expected signs (-0.023), it is not statistically significant from zero at 5% level. This means that investment in Kenya is independent of interest rates. The result was expected because interest rates in Kenya are statutorily controlled and have not been varying much. The fixation of interest rate ceilings on deposits discourages domestic investment and limit supply of

foreign savings. Less funds are attracted as deposits raising the borrowing rates that discourage investments. The finding on interest elasticity of investment agrees with a general consensus that has emerged in recent years that in contrast to the case in industrial countries, the principal constraint to investment LDCs is the availability of credit rather than its cost. The administrative control of interest rates at low real levels results in chronic excess demand for capital, with some investments with low rates of return receiving priority over the higher yielding investments (Khan, 1987: 346).

The insensitivity of investments to interest rates in Kenya may be explained by the fact that most of the investments in Kenya have mainly been undertaken by the central government, local government, and parastatal organizations. The government, has invested heavily in infrastructural activities such as roads, education and health programmes. The government sector is still large in many developing countries. Furthermore, a lot of the investible surplus in Kenya by the private sector has always found a way to community programmes through Harambee contributions. In this case, such investments are much more politically induced than by economic considerations. Indeed the coefficient of government expenditure is both positive and statistically

significant from zero at 1% level. Elasticity of gross capital formation with respect to government expenditure is 0.048. Thus, fiscal policy has important influence on output through the effects of public sector investments.

As expected the coefficient of export earnings is positive. It is also statistically significant from zero at 14.4 per cent level of significance. This means that exports do contribute positively to capital formation with low variability.

The coefficient of the growth rate in real output is both positive (1.318) and statistically significant at 8.4 per cent level of significance. This means that there are 92% chances that investments will rise by 1.3 per cent with a one per cent rise in the growth rate in output.

The constant term is elastic (1.27) and statistically significant from zero at 1% level of significance. This means that autonomous investment is positive and statistically significant from zero.This could be attributed to factors such as technology inherent in capital equipment.

The coefficient of foreign capital inflow is negative and not statistically significant from zero at 5% level. Though foreign capital inflows have increased over time, they do not appear to have contributed significantly to

domestic capital formation. The negative sign of the coefficient could be attributed to the fact that most of the capital inflows usually come in to cover balance of payments deficits. Thus, it is not available for domestic capital formation. On the other hand, foreign capital particularly of the concessionary type may discourage domestic capital formation. Furthermore, most of the foreign capital inflows is spent in the importation of consumables, hence less is available for investment.

All the explanatory variables account for about 69 per cent of the total variations in the capital formation rate in Kenya (i.e R^2 is equal to 69%). The joint effect of the explanatory variables of the capital formation rate in the country is statistically significant from zero at 1 per cent level. There is evidence of negative serial correlation (D-W = 2.38) but it is not statistically significant from 2 at 5% level. The sum of squared residuals is approximately zero (0.001) which implies that the estimators are efficient.

4.3 The Impact of Trade Incentive on Exports

Table 4.3, below, presents TSLS regression results for the export earnings equation. The result show that data fits the equation well with a high R^2 (0.881) which means that 88 per cent of the variation in export earnings is explained. The D-W statistic is 2.30 indicating the presence of negative first order serial correlation but not statistically significant at 5% level.The F - test statistic shows that the joint effect of the variables is statistically significant from zero at less than 1 percent level of significance. Both the standard error of the regression (0.1) and the sum of squared residuals (0.15) are low. This means that the coefficients of the explanatory variables are unbiased and efficient.

Table 4.3: TSLS Estimation Results of the Export Earnings Equation (Dependent variables LNX)

Var.	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
CONS.	3.567	1.024	3.484	0.004
LNY	-0.114	0.175	-0.652	0.525
LNRXR	0.226	2.662	4.892	0.000
RLNKF	6.807	2.662	2.557	0.023
LNW	0.076	0.028	2.749	0.016
LNKFL	0.420	0.162	2.597	0.021
RLNY	2.497	7.264	0.344	0.736

R-squared	0.881
Adjusted R-squared	0.830
S.E. of regression	0.103
Sum of squared resid	0.149
Durbin-Watson stat	2.300
F-statistic	17.319

LNRXR = Real Exchange Rate

LNW = An Index of world income

All the variables except capacity output and rate of growth of real output have the expected signs and are statistically significant from zero at 5% level of significance. The constant term is statistically significant at 0.4 percent level indicating that autonomous export earnings contribute significantly to total export earnings. This can be explained by the fact that most of Kenya's exports are agricultural products whose output depends highly on weather. During the drought, it matters less how much price or other incentives are given. The output is dictated by weather. On the other hand, poor harvest in countries which are major exporters leads to shortages in the world market and consequently price increases. In such circumstances, Kenya benefits from higher earnings. This was the case during the 1976-77 "Coffee Boom". Thus if such favourable booms could occur, other things constant, from historical data, we project that export earnings on average will increase by 3.6 times.

The negative elasticity coefficient of the real output coefficient (-0.114) indicate that with growth in real output, exports are likely to decrease. The argument here is that as output and incomes grow, many people become richer and will purchase most of the output that may otherwise be exported. Indeed, this is

the case in many developed countries which export only a small proportion of their output. With a rise in real income, the country will reduce its dependence on external markets.

The coefficient of RLNKF(6.8) which is statistically significant from zero at 2% level of significance show that export earnings are very elastic with respect to the rate of capital formation. This imply that the rate of capital formation has been a major determinant of Kenya's export earnings. A one per cent increase in the rate of investment (i.e increasing investments to maintain or expand infrastructure, investing heavily in non-traditional exports and productivity raising investments) will lead to about seven-fold increase in export earnings. The coefficient of capital stock is both statistically significant from zero and positively related to export earnings. Though exports are inelastic with respect to the level of capital stock (0.420), the effect of the variable is statistically significant from zero at 2 percent level.

The most important determinant of exports is the rate of capital formation. Therefore, to increase export earnings, we need to increase the rate of capital formation in Kenya. Other important determinant are those factors not included in the model. It is important to note that such factors, some of which are

random, like weather, are important factors in Kenya's export performance. However, since such are effectively exogenous factors, little or nothing can be done about them. For example, weather modification can be attempted by the current programmes in environmental conservation being intensified and by investments in infrastructural facilities such as irrigation schemes.

The income elasticity of demand for Kenyan exports is low (0.076). An increase in world income by 1 percent will increasing export earnings by 0.076 per cent. This is consistent with most statistical studies of world demand patterns which show income elasticity of demand for primary commodities to be low. An increase in world income therefore will not affect Kenya's export earnings much.

Export earnings are elastic with respect to real-exchange rate for exports. The coefficient of real exchange rate is statistically significant from zero at zero percent level. This means that if real exchange rate rises, export earnings certainly will increase by 1.1 times. Real exchange rate is determined by the exchange rate (Exr), export tariffs (tx), foreign prices for exports (Px*) and the domestic price level (Pd).

The results in table 4.3 above suggest that Kenya's export earnings can be improved significantly by concentrating on offering good price incentives to

exporters. This can be done by making inputs cheaper, in which case, import tariffs, on imported inputs which go into the production of exports ought to be reduced; by keeping the domestic price level low; by devaluing the local currency or reducing export tariffs.

The coefficient of the real exchange rate has unitary elasticity. Thus, a one percent increase in the real exchange rate for exports increases export earnings by 1.1 percent. By devaluing the local currency, the effect may not be realized if countries which produce the same commodities also did the same or if the major importers also follow suit and devalue. Export tariffs may be reduced for particular commodities with elastic demand patterns. In this case exporters will be compelled to expand their scales of operation and export more as it becomes profitable to do so.

One sure strategy may be to reduce the domestic price level. Here, in essence, what is done is control domestic inflation. To do so, the determinants of inflation must be explored and understood. By controlling inflation, the country can maintain international competitiveness.

Table 4.4: OLS Estimation Results of the Inflation Equation

VAR.	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	0.033	0.024	1.360	0.195
RM	-0.090	0.101	-0.891	0.388
RFD	0.008	0.005	1.716	0.108
IN*	0.143	0.076	1.873	0.082
DEVAL.	-0.005	0.151	-0.035	0.972
IN_{t-1}	0.473	0.153	3.102	0.008
R-squared		0.715		
djusted R-squared		0.614		
S.E. of regression		0.040		
F-statistic		7.037		

The econometric results presented in table 4.4,above indicate that devaluation in Kenya did not have any significant effect on inflation. The rate of change in money supply did not affect inflation either. The fact that the coefficient of the rate of devaluation is not statistically significant from zero at 5% level may be because there have been very few devaluations since independence.

The joint explanatory power (R^2) of the inflation equation is statistically significant from zero at 1% level of significance. The coefficient of determination (R^2) shows that the model explains 72 percent of the variation in inflation. The most important determinants of inflation in Kenya are the foreign inflation rates and the rate of fiscal deficit, at (8%) and (10.8%) level of significance respectively. As expected inflation in the previous period has a positive and

statistically significant effect on the rate of inflation in the present period.

4.4 Effects of Trade incentives on Balance of Payments

It has sometimes been asserted that the nature of balance of payments stabilization programme depends on the origin or proximate cause of disequilibrium. This view asserts that if a payments deficit is a result of the expansionary demand management policies, the appropriate cure involves domestic demand restraint, whereas if the problem is caused by exogenous factors, such as fall in terms of trade, no domestic policy adjustment is necessary and foreign financing should be provided. The regression results displayed in Table 4.5, show that the empirical results of external factors (represented by the secular decline of terms of trade, the slow down of economic growth in industrial countries and the rising outstanding debt) as well as domestic factors (captured by the fiscal deficit and the real exchange rates for exports and imports) were both relevant in explaining the deterioration of the current account in Kenya. These results suggest the importance of exercising circumspection in attributing to any single cause the current account imbalances experienced

by Kenya.

The model has a good fit with the explanatory variables accounting for 77 per cent of the variation in current account. The D.W. statistic shows the existence of first order serial correlation, probably due to the inclusion of the balance of payments lag. The coefficient of terms of trade is positive and statistically significant from zero at 1 per cent level. Fiscal deficit coefficient is negative and statistically significant from zero at 1 per cent level while the coefficient of real exchange rate for imports is positive and statistically significant from zero at 4 per cent level. The coefficient of outstanding foreign debt and the rate of growth of world income are not statistically significant from zero and hence not important factors in explaining Kenya's current account variation. The debt variable has the least effect on the current account.

Table 4.5: OLS Regression Results for Balance of Payments Equation

VAR.	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-20221.260	6420.917	-3.149	0.008
TOT	9954.896	3124.727	3.186	0.007
FD	-1.122	0.368	-3.048	0.009
DB	-0.001	1.544	-0.001	0.999
RW	21.546	24.513	0.879	0.395
RERX	116167.27	75537.384	1.538	0.148
RERM	973.031	427.287	2.277	0.042
RLAG	13.709	3.450	-3.973	0.002
R-squared		0.769		
Adjusted R-squared		0.645		
S.E. of regression		1198.527		
Durbin-Watson stat		1.115		
F-Statistic		6.20		

From the results only terms of trade (TOT), fiscal deficits (FD) and foreign exchange reserves (R) were statistically important factors in explaining Kenya's current account balance. The result tend to imply that reserves were inadequate and any increase of them mostly went to meeting more imports or servicing foreign debt. This view is shared with the IMF which holds that reserves share of imports have been below the norm (IMF, 1983:199).

The coefficients of the real exchange rates for exports and imports (RERX, RERM) are positive. The positive RERM coefficient indicate that an increase in the real price for imports will lead to a fall in imports and, hence, an improvement in the current

account balance. While the coefficient of RERX is higher than that of rerm, it is not statistically significant from zero.

4.5 Some Simulation Results

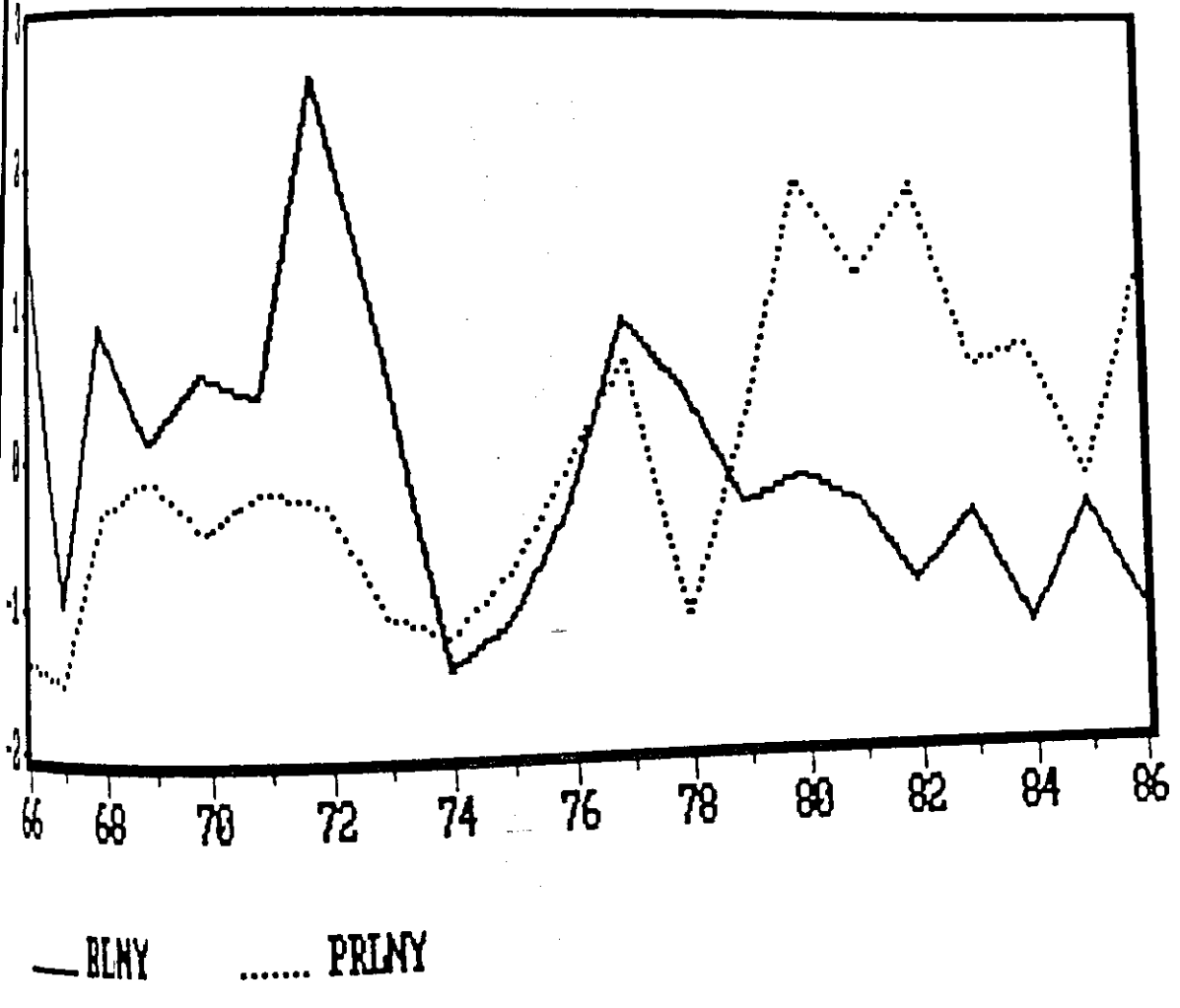
More important than the statistical significance of individual parameters, and for the purpose of analyzing the effectiveness of trade incentives on exports and economic growth, a dynamic ex-post simulation or "historical simulation" was run. By simulating the model for the period during which historical data was available, a comparison of the original data series with the simulated series for each of the three endogenous variables in the simultaneous equations model provided us with a useful test of the validity of the model. Also, by changing the parameter values of the policy variables, we examined and compared what might have taken place as a result of alternative policies.

Even though the model was highly aggregative, its simulation performance is surprisingly good. To see this, we examine the ex-post simulation over the estimated period 1965-86. The actual and simulated series for each of the endogenous variables are plotted on the same set of axes.

Looking at figures (4.1), (4.2) and (4.3), we observe that the simulated series do seem to reproduce the

general long run behavior of the actual series, although short run fluctuations in the actual series are not reproduced well and some turning points are missing altogether. The simulated values are compared with actual values in order to determine whether the model accurately tracks the historical period. Policy simulation determines values of the endogenous variables for alternative assumed sets of values of policy variables, corresponding to alternative policies that are under consideration.

Figure 4.1: Ex-Post Simulation of Growth in Output

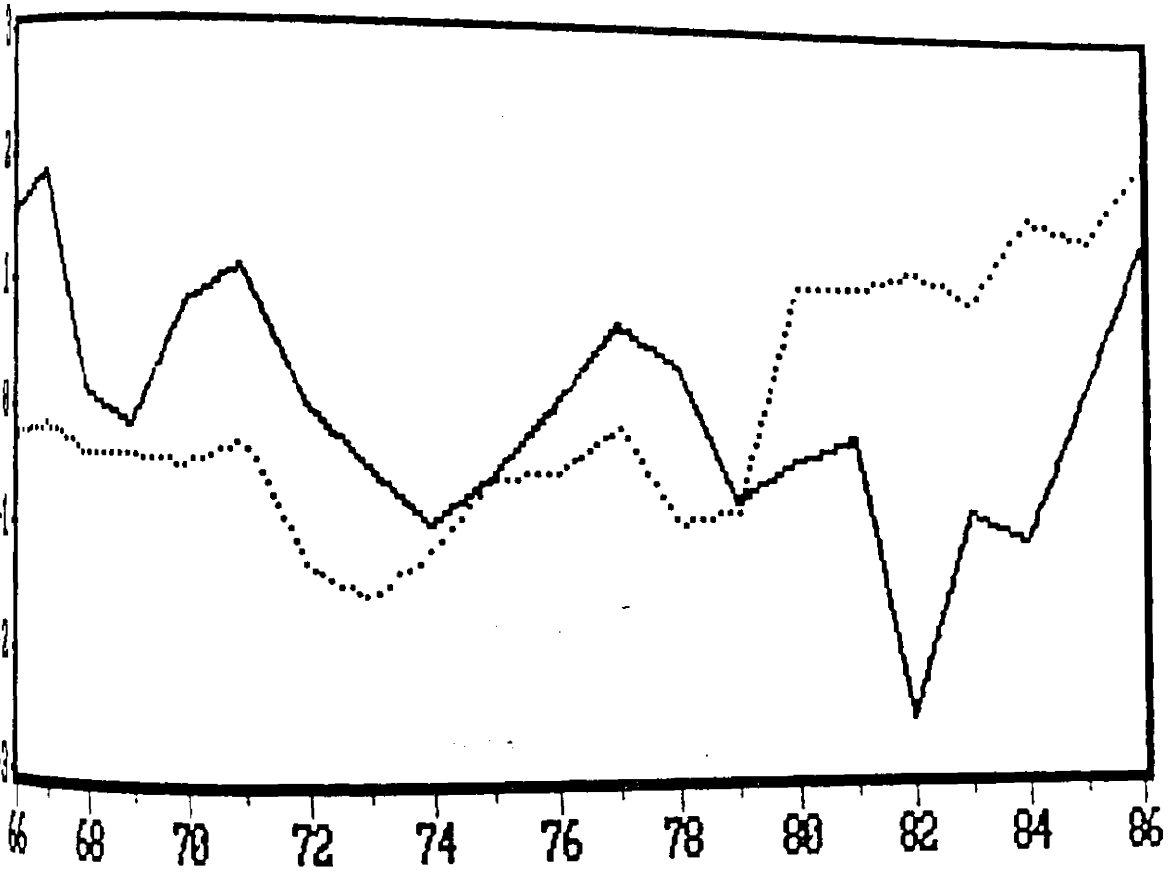


Where:

RLNY - Observed Series

PRLNY - Simulated Series

Figure 4.2: Ex-Pst Simulation of Investment

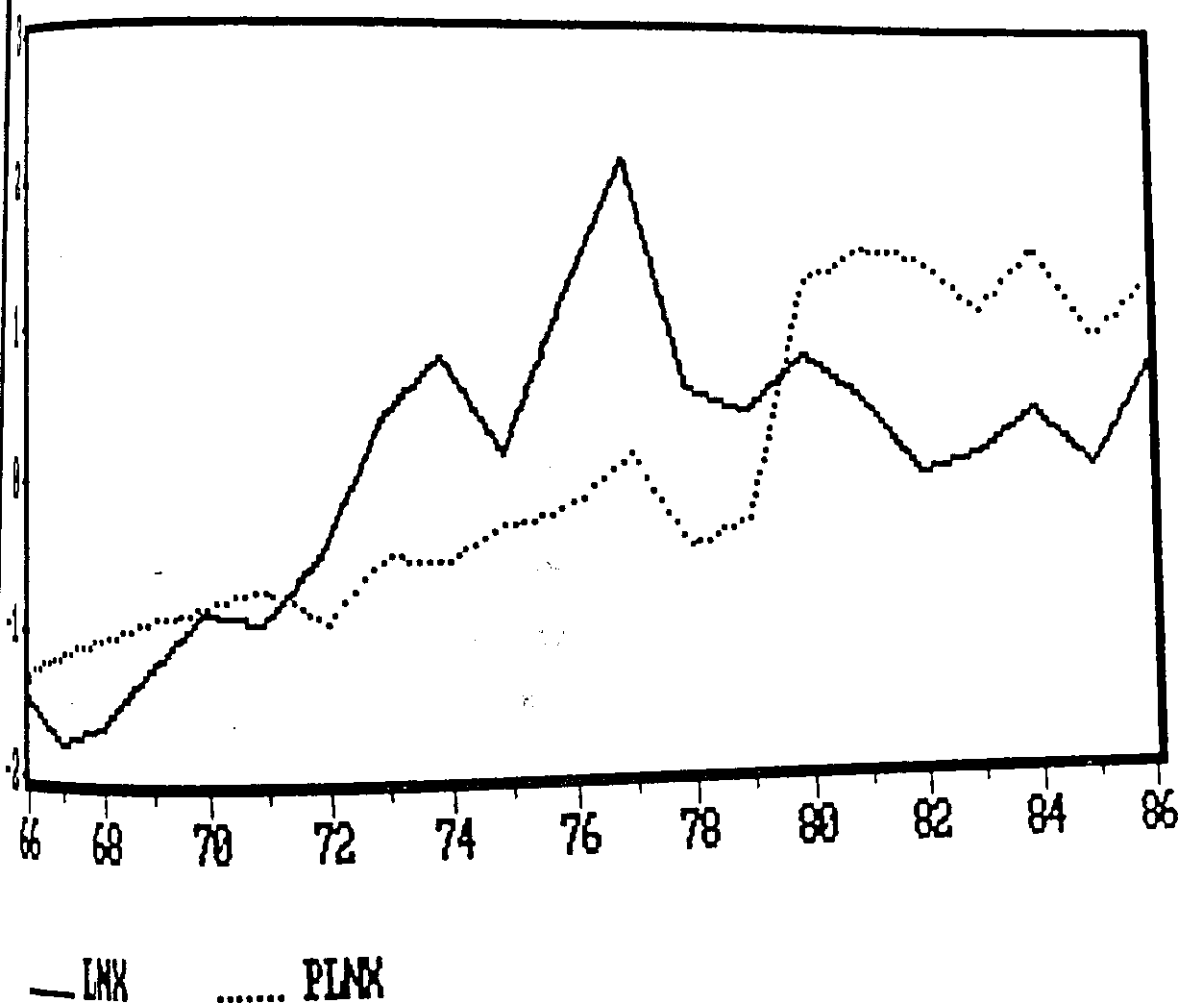


Where:

RLNICF - Observed Series

PLNKF - Simulated Series

Figure 4.3: Ex-Post Simulation of Export Earnings



Where:

LNX - Observed Series

PLNX - Simulated Series

To analyze the effectiveness of alternative policy instruments, the model was simulated for the sample period 1980-86 by making assumptions of a ten percentage mark higher than in the actual series of the policy variables. In particular, values of real exchange rate, government spending and foreign capital inflows were used in the simulation experiments. Table (4.6),(4.7) and (4.8) below show both the historical and simulated values of the dependent variables.

The government could attempt to increase the rate of growth by operating on trade incentives as policy instruments. In our model these are the components of the real exchange rate(LNRXR). Suppose the government was able to raise the LNRXR by 10%. Such could be possible if the government reduces inflation[6] by 10%; in a 'ceteris paribus' sense, reduce the level of export tariffs by 10%, devalue Kenyan currency by 10% or a combination of any of the above policies.

Table 4.6: Actual and Simulated values (Real exchange rate 10% higher)

obs	RLNY	SRLNY	LNX	SLNX	RLNKF	SRLNKF
1980	.0043	.0143	9.24	11.10	.0013	.0722
1981	.0036	.0127	9.16	11.28	.0043	.0729
1982	.0015	.0142	9.04	11.20	-.0283	.0763
1983	.0003	.0110	9.07	10.94	-.0041	.0697
1984	.0004	.0114	9.15	11.28	-.0076	.0893
1985	.0034	.0087	9.06	10.76	.0098	.0824
1986	.0008	.0125	9.22	11.07	.0270	.1006

[6] This can possibly be achieved by less deficit financing and by greater effort in removing bottlenecks in the economy.

Where:

RLNY = Historical log-values of real output

SRLNY = Simulated log-values of the real output

LNX = Historical log-values of export earnings

SLNX = Simulated log-values of export earnings

RLNKF = Historical log-values of investment

SRLNKF = Simulated log-series for investment

Since LNRXR appears explicitly in equation (3.3) the strongest effect of the policy (i.e increasing real exchange rate by 10%) is generally to increase exports. However, with the elasticity of export earnings with respect to real exchange rate being unity since exports have a weak impact on investment and economic growth, the increase in LNRXR only changes RLNY and RLNKF slightly.

On the other hand, the government may aim at increasing capacity output. This can be done for example, by increasing government expenditure in investment projects. Suppose the government increases fiscal expenditures by 10%. The simulation result for this policy variable is shown in table (4.7) below.

Table 4.7: Actual and simulated values (Government expenditure 10% higher).

obs	RLNY	SRLNY	LNX	SLNX	RLNKF	SRLNKF
1980	.0043	.0214	9.24	11.49	.0013	.1278
1981	.0036	.0200	9.16	11.67	.0044	.1296
1982	.0016	.0215	9.04	11.60	-.0283	.1330
1983	.0033	.0183	9.07	11.34	-.0041	.1269
1984	.0004	.0190	9.15	11.70	-.0076	.1485
1985	.0034	.0164	9.06	11.18	.0098	.1424
1986	.0008	.0203	9.22	11.50	.0270	.1621

The third policy could be the policy of attempting to increase the rate of foreign capital inflows. By raising investments, this would increase both economic growth and export earnings. Suppose that Kenya succeeded in increasing average foreign capital inflows by 10% over historical values, table (4.8) show results that would have been expected if the government was able to increase foreign capital inflows.

Table 4.8: Actual and Simulated Results (Foreign capital inflow 10% higher)

obs	RLNY	SRLNY	LNX	SLNX	RLNKF	SRLNKF
1980	.0043	.0200	9.24	11.41	.0013	.1628
1981	.0035	.0185	9.16	11.60	.0044	.1183
1982	.0016	.0201	9.04	11.53	-.0283	.1225
1983	.0033	.0170	9.07	11.27	-.0041	.1166
1984	.0004	.0177	9.15	11.62	-.0076	.1381
1985	.0035	.0153	9.06	11.11	.0098	.1332
1986	.0007	.0192	9.22	11.43	.0270	.1526

The results of these simulation exercises suggest

that trade policies i.e the components of real exchange rate are consistent to Kenya's macroeconomic structure and any increase in them will increase both real output, investments and export earnings. Hence, the ineffectiveness of the policies could be attributed to sub-optimal or mild application. The results also show that fiscal expenditures has a strong impact in raising both exports and economic growth. Though the estimated structural coefficient of foreign capital inflow was statistically insignificant, the dynamic simulation of the policy show that if the government succeeds in raising capital inflows, it will have a positive effect on both exports and growth of output. This implies that capital inflows were sub-optimal.

CHAPTER FIVE

SUMMARY OF RESULTS AND POLICY IMPLICATIONS

5.1 Introduction

The object of this paper was to develop, estimate and simulate the effects of trade incentives on exports, balance of payments and economic growth. Chapter two reviewed both theoretical and empirical literature. Based on the literature reviewed, the empirical model was developed in chapter three. Estimation results were presented and interpreted in chapter four.

In this chapter, we summarize findings and make some policy implications of the study arising from the analysis of results in the previous chapter. We also look at the limitations of the current study and areas of further research.

5.2 Summary of Regression Results

The empirical evidence presented in chapter four shows that economic growth in Kenya was affected primarily by the rate capital formation and the level of capital stock. The rate of capital formation was shown to depend on the level of government expenditure and the rate of growth of real output. Exports were seen to depend on the real exchange rate, the rate of capital

formation, capital stocks, and the rate of growth of world income. Exports showed a positive but statistically insignificant relation with growth in real output and investment. The results showed that exports are inversely related to capacity output though the elasticity is small and statistically insignificant. This indicates that as capacity output (was proxied by real GDP) grows, less will be exported. So, as people become richer, more of the output destined for export will be consumed locally.

Domestic inflation is positively affected by the rate of fiscal deficits and foreign inflation rates, while the balance of payments on current account show significant inverse relations with fiscal deficits and positive relations with the real exchange rate for imports.

The World Bank's structural adjustment lending programme unquestionably emphasizes, in its conditionality in Africa, greater outward orientation and restructuring incentives to that end. "African countries should increase incentives for exporters, reduce barriers to imports and generally liberalize and open up their economies" (Helleiner, 1986:139). The regression results for this study show that exports bear a positive, but not statistically significant, relation with the growth rate of output and investments. The most

important incentives on exports include increased investments in the export sector. real exchange rates and capital stock. Thus to increase export earnings, more expenditure in investments and the building of capital stocks will be required. It was also shown that investments are determined principally by government expenditures. However, to finance government expenditure will require higher taxes and other forms of financing other man deficit financing. Deficit financing has a positive and significant effect on inflation. Higher inflation revalues the real exchange rates and leads the country to loosing international competitiveness.

Fiscal deficits have a negative effect upon balance of payments on current account. The elasticity of export earnings with respect to real exchange rate was shown to be unity. Hence a one percent devaluation will proportionately increase export earnings. Offering more export subsidies and/or reducing export taxes would increase export earnings. However, devaluation will worsen the balance of payments on current account (since current account balance is negative) through the impact of real exchange rates. Thus to improve upon balance of payments by devaluing, government expenditure must increase, particularly in public investment in the export sector. This conclusion is consistent with

Muller and Solimano (1987) who argued that a ten percent devaluation should be accompanied by an 8 to 55 per cent increase in government expenditure which will further call for increase in general taxes for 3.06 percent.

The signs and statistical significance of the estimated coefficients, as well as the dynamic validity simulation strongly supports the model empirically. The study clearly and strongly confirms the conclusion that trade is very important in Kenya's development process but is more in the nature of a handmaiden than an engine of growth.

The policy simulation exercises show that trade policies, if improved, could significantly raise export earnings, investments and economic growth. It is, however, shown that fiscal expenditures are more powerful policy incentives to increase both exports and economic growth. Hence, the observed ineffectiveness of trade policies to increase both export earnings and economic growth can be attributed to mild application rather than inconsistence in structural relations or lack of implementing them.

5.3 Policy Implications

The governments of low income countries in Africa and elsewhere have grounds for caution as they consider policy advice based upon evidence from samples of

countries that do not look or behave like theirs. This study can be used to provide a rational basis for selecting optimal trade policies given the existing structural relations, government policy in force and constraints. Indeed, there are many African governments that have severely discriminated against exports, and which should be encouraged to seek greater overall balance in their incentive structures. The results of the empirical analysis in this study shows evidence of inadequate trade incentives on exports. However, the results show clearly that there is no scope for liberalization of trade in Kenya since the impact of exports on economic growth and domestic investments is very weak.

Increasing the growth of exports and foreign capital inflows and curbing domestic inflation are not very effective in increasing economic growth in Kenya because of the weak empirical results. Foreign capital inflows were shown to have a negative impact on domestic savings and investment (not significant though). The simulation experiment however shows that foreign capital inflows, if increased can have a positive impact on both exports output through increased investments. On the other hand, real exchange rate for exports were shown to have unit elasticity, which means, curbing domestic inflation, depreciating the kenya shilling or reducing export

tariffs will have a positive but proportionate effect on export earnings.

The coefficient of real exchange rate for exports on balance of payments on current account was shown to be high but less statistically significant from zero. Real exchange rate for imports were shown to have a positive impact on current account, hence, any policy to increase real exchange rates is recommended. Thus imposing tariffs on imports, particularly if such type of imports have elastic demand patterns is a good policy for Kenya.

Devaluation, to the extent that it affects the real exchange rate will be beneficial to Kenyan exporters. Reducing export taxes to zero (Khan and Zahler, 1983) and increasing subsidies to exporters to enable exporters compete favorably in the external market, as long as such subsidies are not financed by deficit financing would be a viable policy for Kenya's external trade.

The current intentions towards trade liberalization (see Republic of Kenya, 1989) for Kenya are not supported by our empirical analysis. To reduce tariffs on imports of competitive goods will almost certainly not only kill domestic industry but also lead to unfavorable balance of payment crises.

The results also suggest that fiscal deficits have

been cause of inflation and balance of payment crises. Therefore to maintain international competitiveness and balance of payments equilibria, the government must strive to reduce fiscal deficits and seek alternative financing.

5.4 Limitations of the study and Areas of Further Research

Given the nature and width of the subject, it is necessary to recognize problems which may limit both the scope and the contribution of the current study. First, as already noted, some of the data which was used was not available in the required form. This necessitated computing some indices, usually under stringent assumptions and high level aggregation.

Secondly, problems related with impact analysis studies will limit the contribution of this study. In simulating the effects of proposed policies, it is assumed that they are promptly implemented. However, practically there is a lag period between pronouncement and adoption. While it takes sometimes for proposed policies to be adopted, some policies are not adopted or implemented at all. This is practically true for kenya where some policies many not be implemented through a development plan period.

Thirdly, some trade policies are sector specific.

The present study focused on the aggregate economy. Such treatment may not capture sectoral effects of proposed or adopted trade incentives. Furthermore, different sectors have different degrees of responsiveness to particular trade incentives which this study was not able to capture.

With those limitations in mind, the study was not able to venture into accounting all trade incentives exhaustively. For future research, sectoral impact analysis in relation to capacity utilization and elasticity of production will be an interesting area.

This study showed that fiscal policy can influence output through the effect of public sector investment. However, there is some considerable uncertainty as to whether, on balance, public investment raises or lowers private investment. In broad terms, public sector investment can displace scarce physical and financial resources that would otherwise be available to the private sector, or it produces marketable output which competes with private output. At the same time, public investment to maintain or expand infrastructure and provision of public goods can also be complementary to private investment. Thus the effect of public investment on private capital formation is a virgin area for future research.

BIBLIOGRAPHY

Ajako, A.B. and Manundu, A. (1988) "Devaluation and Inflation in Kenya: A Theoretical and Empirical Framework." Economics Department University of Nairobi: Mimeo.

Balassa, Bela (1979) "Trade Policies in Developing Countries," A.E.R., Proceedings, (May) pp. 178 - 187

_____(1976) "Export incentives and Export Performance in Developing Countries: A Comparative Analysis." World Bank Staff Papers, No.248, Washington D.C.: World Bank.

_____ (1978) "Export and Economic Growth Further Evidence."J.D.E., Vol. 5, pp. 181 -189.

_____ (1983) "Exports, policy choices and Economic Growth in Developing countries After the 1973 Oil Shock," Discussion Paper, DRD, World Bank, No. DRD.48.

Bhagwati, Jagdish (1958) "Immiserizing growth: A Geometric Note," Review of Economic Studies, 25, no. 3, pp. 201 - 5 (June).

_____,(1978). Foreign Trade Regimes and Economic Development: Anatomy and Consequences of Exchange Control Regimes, Vol.11, New York: Ballinger Publishing Company.

Chenery, H.B. and Eckstein, P. (1970) "Development Alternative For Latin American." J.P.E., Vol. 78, pp. 966-1006.

Chow, Peter C.Y. (1987) "Causality Between Exports and Industrial Development: Empirical Evidence from NICs," J.D.E., Vol. 26, pp.55-63.

Dell, Sidney (1980) "The International Environment For Adjustment in Developing Countries." World Development, Vol. 8 pp. 833-842.

Diaz-Alejandro, Carloss (1984) "IMF Conditionality: What Kind? PIDE Tidings (Islamabad), No. pp. 7-9.

Ebrahim, Tigania E. (1980) "Prospects For Export Growth in an African Economy: The Kenya Case." World Bank Reprint Series No.188 pp. 121-138.

Fajana, Olufemi (1979) "Trade and Growth: The Nigerian Experience." World Development, Vol. 7. No. 1 pp.73-78.

Brendan, Rupley. L. and Tony Killick (1985) "Economic Literature for Kenya, Tanzania and Uganda." E.A.E.R., new series Vol. No.1. (December) pp.107-112.

Herbert G. and Ryan, T.C.I. (1979) "A Monetary Model of Kenya's Balance of Payments," mimeo, University of Nairobi.

Nadavu (1972) "Effective Devaluation and Exports: Some Issues in Empirical Analysis with Illustrations from Israel." Economica, Vol. 39, pp. 292-300.

R. (1984) "Applied General Equilibrium Analysis of Small Open Economies and Imperfect Competition", A.E.R., Vol. 74 No. 5 pp 1016-1032.

G.K. (1986), "Outward Orientation, Import Instability and African Economic Growth", In Lall and Steward (eds.), Theory and Reality in Development, St. Martin's Press pp. 139-153.

Jan S. (1987) Economic Development, Harper and Pow.

Akhtar (1987) "Impact of Inflation on Fiscal Deficits in the Bangladesh Economy" "Pakistan Development Review, Vol. XXVI, No. 2 (Summer).

(1983) World Economic Outlook. Washington: IMF.

International Financial Statistics (Various issues), Washington:IMF.

Government Finance Statistics Yearbook (Various issues), Washington: IMF.

Omutunde (1981) "Currency Devaluation and Export Expansion." Finance and Development, Vol. 24. No.1, pp.23-250.

Rastam M. (1984) "Export Expansion and Economic Growth: Further Empirical Evidence."J.D.E. vol.14,no.1:23-26.

Donald B. (1979), "Trade policy for Developing Countries", World Bank Staff Working Papers No. 353 (August).

Moshin S. (1987) "Stabilization and Economic Growth in Developing Countries". Pakistan Development Review, Vol. XXVI, No. 3 (Autumn).

and Knight, M. (1982) "Some Theoretical and Empirical Issues Relating to Macroeconomic Stabilization in Developing Countries." World Development, Vol. 10 No.9 pp. 709-730.

(1983) "Determinants of Current Account Balances of Non-Oil Developing Countries in the 1970s: An Empirical Analysis." IMF Staff Papers, Vol. 30 pp. 819-842.

(1985) Fund Supported Adjustment Programmes and Economic Growth. IMF Occasional Paper no. 41 (November).

and Zahler, Roberto (1983) "The Macroeconomic Effects of Changes in Barriers of Trade and Capital Flows: A Simulation Analysis." IMF Staff Papers, Vol. 30, No. 2 (June) pp. 223-282.

(1985) "Trade and Financial Liberalization Given External Shocks and Inconsistent Domestic Policies." IMF Staff Papers, Vol. 32 No. 1. pp. 22-55, (March).

Biggundu, S. I. (1984) "The Consequences of Macroeconomic Stabilization For Poverty and Income Distribution: A Case of Kenya: "A Paper Presented for a Mid-term ODI-IDRC Workshop, Nairobi.

Killick, Tony (1981) "Causes and Consequences of Disequilibria in Developing Counties", Overseas Development Institute Working Papers, No. 1 (March)

Killick, Tony and Maurice Thorne (1981) "Problems of an Open Economy: The Balance of Payments in the 1970s." in Tony Killick (ed.) Papers on the Kenyan Economy: Performance, Problems and Policies. Nairobi: Heinnemann.

Koutsoyiannis, A. (1984) Theory of Econometrics, 2nd edition, London: Macmillan.

Kravis, I. B. (1970) "Trade as a Handmaiden of Growth: Similarities Between Nineteenth and Twentieth Centuries", E.J., Vol. 80 pp. 850-810.

Krueger, Anne (1978) Foreign Trade Regimes and Economic Development: Liberalization Attempts and Consequences. NBER, Vol. 10, New York: Ballinger Publishing Company.

, (1980) "Trade Policy as an Input to Development." A.E.R., Vol. 70, No. 2 pp. 288-292.

Lee, J. (1971) "Exports and Propensity to Save in LDCS." E.J., Vol.81, pp. 341-351.

f, N. H. (1967) "Export Stagnation and Autarkic Development in Brazil, 1947 - 62. Q.J.E. Vol. 81 pp. 286-301.

ert, Peter M. (1986) International Economics, 8th edition. Delhi: All India Bookseller.

, patrick (1982) "Export Subsidies and Trade Policy: The Experience of Kenya." World Development Vol. 10 No. 4, pp.293-304.

tha, J.K., Tony Killick and G.K Ikiara (1978) "Balance of Payments Adjustments Process: Kenya". A report to UND/UNCTAD, (March).

ssel, B.F., Pearson, S.R. and Fitch, J.B. (1972) "Foreign Exchange and Economic Development: An Empirical Study of Selected Latin American Countries." R.E.S., Vol. 54, pp. 208-212.

yer, Wolfgang (1984) "The Infant - Export Industry Argument" Canadian Journal of Economics, pp. 249-269

chaely, Michael (1977) "Exports and Growth: An Empirical Investigation." J.D.E., Vol. 4 pp. 49-53.

inistry of Finance, Kenya Annual Trade Reports, (Various issues) Nairobi: Ministry of Finance.

inistry of Finance and Planning (1987), Macro-Economic Policy Model for Kenya: An Explanatory Manual, Update, Nairobi: Ministry of Finance and Planning.

ller, Patricio and Andre's Solimano (1987) " A Simple Macro-Model for a Small Open economy Facing a binding External Constraint (Chile)." J.D.E., Vol. 26 no. 1. (June) pp.25-35.

amandzingo, M. (1988) "The Determination and Effects of Exchange Rate Changes in Kenya: A Simultaneous Equation Approach," M.A. Research Paper, Department of Economics, University of Nairobi.

ore, J. O. (1987) "Determinants of Kenya's Manufactured Exports: An Empirical Analysis "M.A. Research Paper, Department of Economics, University of Nairobi.

indyck, Robert S. and Daniel L. Rubinfeld (1981) Econometric Models and Economic Forecasts 2nd Edition, Singapore: McGraw-hill Book Company.

...er, R. C. and Susan I. Ranney (1982) "An Eclectic Model of Recent Macroeconomic Policy Analysis." World Development, Vol. 10, No. 9 pp. 751-765.

...bisch, R. (1959) "Commercial Policy for underdeveloped Countries" A.E.R., Vol. 44, (May) pp. 751-765.

..., Mangat (1980) "Export, External Capital Inflows and Economic Growth in Developing Countries With Special Reference to South Asian Countries. Indian Economic Journal, Vol. 27. No. 4

..., Rati (1987) "Exports and Economic Growth in Developing Counties: Evidence From Time Series and Cross-Sectional Data." Economic Development and Cultural Change, Vol. 36, No. 1 (October) pp. 51-72

...public of Kenya (1986), "Economic Management For Renewed Growth." Sessional Paper No.1 of 1986, Nairobi: Government Press.

____ (1989) Development Plan, 1989-1993, Nairobi: Government Press.

____ Statistical Abstracts (Various issues), Nairobi: Government Press.

____ Economical Surveys (Various issues), Nairobi: Government Press.

...temberg,Julio (1987) "Export Promotion as a Development Strategy," J.D.E., Vol. 26, pp. 343-355

...alvatore, Dominick (1983) "A Simultaneous Equation Model of Trade and Development With Dynamic Policy Simulations." Kyklos Vol. 36 pp. 66-90.

...later, C.C., Walsham, G. And Shah, M. (1977), KENSIM: A Systems Simulation of the Developing Kenyan Economy 1970-76, Boulder, Colorado: Westview Press.

...teckler, O. (1968) "Forecasting With Econometric Models: An Evaluation." Econometrica Vol. 36 pp. 437 - 464.

...tein, L. (1979), The Growth of East African Exports and Their Impact on Economic Development, London: Groom Helm.

...teinherr, Alfred (1981), "Effectiveness of Exchange Rate Policies for Trade Account Adjustment", IMF Staff Papers, Vol. 28 pp. (199-224).

Taylor, Lance (1979) Macro-Models for Developing Countries New York: McGraw-Hill Book Company.

Todaro, M. P. (1985) Economic Development in Third World, Third Edition. New York: Longman.

Tyler, William (1981) "Growth and Exports in Developing Countries: Some Empirical Evidence," J.D.E., Vol. 9 No. 1, pp. 121-130.

Van Der Hoeven, R. and Vandemoortele, J. (1987) Stabilization and Adjustment Policies and Programmes in Kenya. World Institute for Development Economic Research (WIDER), United Nations University.

Vandermoortele, Jan (1985) "Causes of Economic Instability In Kenya: Theory and Evidence." E.A.E.R., New Series Vol. 1 No. 1 (December), pp. 87-96.

Vlivodas, Constatain (1974), "Exports, Foreign Capital Inflows and South Korean Growth," Economic Development and Cultural Change, Vol. 22, pp. 480-484.

BIBLIOGRAPHICAL APPENDIX

A.E.R. - American Economic Review

E.A.E.R. - East African Economic Review

E.J. - Economic Journal

J.D.E. - Journal of Development Economics

J.P.E. - Journal of Political Economy

Q.J.E. - Quarterly Journal of Economics

R.E.S. - Review of Economics and Statistics

Table 1: Analysis of Kenya's Exports:

Country of destination in M. Kshs.

BELGIUM	CANADA	ITALY	JAPAN	SWEDEN
12.09000	36.96000	22.42000	32.86000	29.24000
9.890000	36.18000	24.04000	34.46000	32.28000
10.04000	40.66000	32.86000	35.84000	36.94000
8.650000	41.48000	28.72000	24.36000	42.04000
8.520000	25.00000	25.62000	33.88000	32.86000
11.04000	27.84000	28.30000	25.74000	42.90000
12.68000	36.10000	30.78000	24.50000	67.84000
10.56000	21.02000	30.20000	52.60000	59.10000
15.61000	34.60000	57.06000	41.82000	61.60000
63.47000	53.24000	68.18000	100.1000	98.00000
161.8200	61.67000	88.36000	107.6700	84.21000
48.00000	100.2500	115.4900	90.81000	80.77000
69.75000	121.0800	272.2800	126.7700	203.1300
124.2700	169.1600	268.8300	104.6600	221.8200
109.9200	107.5600	377.8100	76.19000	166.3700
126.5300	114.2900	476.0800	102.0100	138.6300
152.7100	101.8400	478.3400	80.56000	157.8500
108.5900	80.48000	403.8600	79.98000	111.5100
182.0600	93.92000	303.9500	69.27000	94.10000
175.5100	102.6000	295.1100	92.67000	171.0400
249.9300	118.2200	425.6700	122.7000	256.9900
217.7600	108.4000	355.6000	124.6000	352.1200
305.9500	184.0000	409.2000	171.2000	366.9900

Source: Central Bank of Kenya (1987) Annual Report

Table 1 Continued.

	U.K.	U.S.A.	W.G.	N.L.	UGANDA	OTHER
64	201.1400	95.08000	145.0800	40.60000	251.6000	721.5100
65	202.7600	52.86000	147.4800	40.76000	306.7800	741.8700
66	245.7800	105.6400	162.0400	67.76000	312.3800	775.2400
67	281.8200	72.10000	98.18000	33.22000	295.9100	808.8600
68	297.1800	80.86000	115.7200	56.74000	265.3000	843.7000
69	296.0400	100.1600	156.9400	47.78000	318.9900	890.4100
70	296.9400	121.1400	136.3400	75.00000	333.9500	1042.750
71	295.1600	98.50000	140.6000	66.52000	385.0000	1085.440
72	397.2000	105.7200	189.6400	137.0000	334.8600	1297.170
73	403.5800	145.2400	269.8400	159.1400	446.0000	1806.470
74	367.8000	158.4100	356.7700	226.8400	552.3100	2551.960
75	448.2700	165.3900	383.9200	147.0900	514.0300	2667.650
76	410.0800	366.2300	842.2500	338.9100	654.0500	3196.700
77	1271.540	551.8800	1719.020	1026.890	1039.010	3395.810
78	1145.470	369.4700	1338.700	485.9700	768.5800	3168.820
79	1175.710	334.7300	1216.690	354.0100	764.9000	3465.400
80	1298.790	346.7400	1165.860	356.0300	1327.570	4847.790
81	1198.280	310.9500	1172.600	421.0000	1052.390	5629.310
82	1444.920	703.6200	1216.590	555.2900	1169.300	5538.740
83	1924.970	782.0400	1640.210	651.4300	1429.520	5836.260
84	2845.330	776.4500	1960.920	1051.610	1351.660	6378.670
85	2711.200	1081.000	1869.200	1055.000	1401.400	6775.220
86	2861.200	1715.800	2729.600	1836.800	1452.400	7685.460

Table 2 : Kenya and World Income.

	Y.KEN.	Y.BEL.	Y.CAN.	Y.IT.	Y.JAP.	Y.NL.
64	21280.00	1918.000	148.4600	205487.0	77060.00	176.1100
65	21219.00	1992.000	158.2500	208098.0	90373.00	185.1500
66	23540.00	2048.000	169.0000	224905.0	99853.00	190.5800
67	23822.00	2129.000	173.9500	241049.0	110237.0	201.3700
68	25870.00	2221.000	183.2600	256825.0	124046.0	213.6000
69	27296.00	2364.000	193.0800	272486.0	139055.0	240.3000
70	29311.00	2573.000	198.0900	286950.0	152208.0	253.2500
71	31319.00	2664.000	209.4900	291641.0	158767.0	263.6000
72	36368.00	2809.000	221.5000	301012.0	172318.0	272.7000
73	39528.00	2968.000	238.5800	322177.0	185923.0	286.3500
74	39352.00	3095.000	249.0800	335520.0	183285.0	298.2300
75	39664.00	3048.000	255.5700	323322.0	188189.0	295.4800
76	41199.00	3224.000	271.3100	342306.0	197215.0	310.8200
77	45063.00	3236.000	281.1200	348804.0	207738.0	318.4100
78	48330.00	3325.000	293.9800	358168.0	218522.0	324.6800
79	50234.00	3382.000	305.3600	375732.0	230074.0	332.7000
80	52649.00	3507.000	309.8900	390433.0	239915.0	336.1200
81	54723.00	3459.000	321.2700	394873.0	248726.0	333.6000
82	55661.00	3500.000	310.5200	395828.0	256395.0	328.7200
83	57735.00	3507.000	320.1800	399984.0	264704.0	334.3200
84	57988.00	3587.000	337.9400	412677.0	278140.0	344.0500
85	60226.00	3637.000	351.3500	424390.0	291207.0	353.6500
86	NA	3738.000	362.3700	436830.0	298454.0	359.8200

Source: IMF, International Financial Statistics (Various)

Notes

Y.KEN - Kenya's GDP in M.Kshs.

Y.BEL.- GNP of Belgium in B. Francs:

Y.CAN - GNP of Canada in B.C. dollars

Y.JAP. - Japan's GNP in B. Japanese Yen.

Y.NL - Nertherland's GNP in B Guilders.

Y.IT. - Italy's GNP in B. Lire.

Table 2 Cont.

obs	Y.SW.	Y.UG.	Y.UK.	Y.US.	Y.WG.
1964	337.7100	NA	164.3100	1691.900	875.8000
1965	350.0000	NA	168.1500	1789.400	922.8000
1966	357.9600	NA	171.4000	1892.000	950.2000
1967	370.0100	NA	176.2000	1946.900	945.4000
1968	383.4900	1428.000	183.6700	2027.700	1004.400
1969	407.0300	1586.000	186.1600	2077.100	1079.700
1970	432.6500	1609.000	190.2600	2071.100	1134.200
1971	436.7300	1657.000	195.3300	2129.900	1168.000
1972	446.7300	1667.000	199.6400	2335.900	1217.200
1973	464.4600	1657.000	215046.0	2352.100	1274.200
1974	279.3100	1660.000	213.0400	2339.500	1276.500
1975	491.5500	1627.000	211.5000	2310.100	1258.100
1976	496.7500	1639.000	219.5900	2422.900	1328.300
1977	488.8200	1664.000	221.8200	2536.100	1363.500
1978	497.3800	1573.000	230.5600	2670.200	1408.000
1979	516.4800	1400.000	235.4800	2736.300	1463.700
1980	525.1000	1352.000	230.6000	2732.000	1485.200
1981	523.5100	1404.000	228.4100	2784.800	1485.500
1982	527.7300	1520.000	230.9600	2713.800	1471.100
1983	340.5300	1586.000	239.1500	2810.700	1449.000
1984	561.8800	1501.000	244.1200	2991.400	1548.300
1985	373.9000	1419.000	253.6900	3093.200	1579.700
1986	580.5600	NA	261.1300	3182.900	1618.500

Y.SW - GNP for Sweden in B. Kronor.

Y.UG - Uganda's GNP in M.UG. Shs.

Y.UK - GNP for Britain in B. Sterling Pound

Y.US - US's GNP in B. US dollars.

Y.WG - German's GNP in B.DM.

Table 3: Exchange Rates for Kenya's Trading partners (in Country's Currency/SDR).

obs	ER.BEL	ER.CAN	ER.IT.	ER.JAP	ER.NL.
1964	49.63300	1.073800	624.8000	3.977000	3.592000
1965	49.64300	1.075000	624.7000	4.005600	3.611000
1966	50.05300	1.083800	624.5000	3.977300	3.614000
1967	49.62800	1.080600	623.9000	3.999000	3.596000
1968	50.14000	1.072800	623.5000	9.999500	3.606000
1969	49.66600	1.072800	625.5000	3.689900	3.624000
1970	49.67500	1.011200	623.0000	3.648000	3.597000
1971	48.59100	1.088100	644.9100	3.548100	3.537400
1972	47.83900	1.080900	632.4300	3.476400	3.503000
1973	49.84600	1.201300	795.1200	3.260800	3.407300
1974	44.22700	1.213600	800.2000	2.950100	3.068800
1975	46.27300	1.189900	1016.600	3.069800	3.147300
1976	41.80600	1.172500	1058.680	2.744800	2.854600
1977	40.01300	1.329400	1080.990	2.567000	2.769500
1978	37.52000	1.547100	1059.130	2.381500	2.565200
1979	36.94800	1.538800	1186.800	2.281000	2.510200
1980	40.20500	1.523700	1396.800	2.498500	2.716000
1981	44.76600	1.380300	1511.300	2.624500	2.873200
1982	51.75800	1.356200	1737.400	2.621500	2.895100
1983	58.25200	1.302800	1879.600	2.851700	3.208400
1984	61.83200	1.295200	1843.700	3.085700	3.479300
1985	55.31600	1.535000	1661.300	2.703500	3.044800
1986	49.42900	1.688600	1661.300	2.374000	2.681200

Source: IMF, International Financial Statistics (various).

Table 3 Cont.

obs	ER.SW.	ER.UG.	ER.UK.	ER.US.	ER.WG.
1964	5.148000	0.070000	0.358410	1.000000	358.3000
1965	5.180000	0.070000	0.356790	1.000000	360.9000
1966	5.180000	0.070000	0.358400	1.000000	362.4700
1967	5.185000	0.070000	0.415600	1.000000	361.9100
1968	5.180000	0.070000	0.419400	1.000000	357.7000
1969	5.170000	0.070000	0.417800	1.000000	357.8000
1970	5017.000	0.070000	0.425800	1.000000	357.6500
1971	5.282000	0.080000	0.462400	1.085710	341.7800
1972	5.149000	0.080000	0.519300	1.085710	327.8800
1973	5.534100	0.080000	0.521300	1.206350	337.7800
1974	4.996000	0.090000	0.578500	1.224350	368.4700
1975	5.133900	0.100000	0.682500	1.170660	351.2300
1976	4.794300	0.100000	0.637300	1.161830	340.1800
1977	5.679100	0.100000	0.640300	1.214710	391.5300
1978	5.596100	0.100000	0.592300	1.302790	253.5200
1979	5.462300	0.100000	0.534800	1.317330	315.7600
1980	5.577100	0.100000	0.610100	1.275410	258.9100
1981	6.484400	0.990000	0.683200	1.163960	255.9500
1982	8.046600	1.170000	0.721800	1.103110	259.2300
1983	8.376600	2.510000	0.847600	1.046950	243.1000
1984	8.811600	5.100000	0.760400	0.980210	246.1300
1985	8.365000	15.38000	0.829500	1.098420	220.2300
1986	8.340900	17.12000	0.829530	1.223190	194.6100

Table 4: Other Data.

obs	EXR	F.CAP	FD	G	CPI	R
1964	7.143000	14.00000	-310.0000	70.54000	28.40000	NA
1965	7.143000	-9.600000	-393.0000	77.54000	29.80000	20.00000
1966	7.143000	12.70000	-404.0000	84.90000	31.00000	52.00000
1967	7.143000	11.40000	-204.0000	94.70000	31.50000	76.00000
1968	7.143000	17.90000	-260.0000	105.0000	31.70000	100.0000
1969	7.143000	20.50000	-340.0000	121.5000	31.60000	170.0000
1970	7.143000	31.70000	-376.0000	156.8000	32.20000	220.0000
1971	7.755000	15.30000	-335.0000	180.5000	33.40000	157.0000
1972	7.755000	32.80000	-782.0000	201.4000	35.50000	186.0000
1973	8.324000	53.40000	-696.0000	230.2000	38.80000	193.0000
1974	8.754000	85.80000	-558.0000	301.6000	45.70000	158.0000
1975	9.660000	68.90000	-1259.000	373.6000	54.40000	148.0000
1976	9.660000	88.60000	-1558.000	409.8000	60.60000	237.0000
1977	9.660000	102.4000	-1020.000	590.8000	69.60000	431.0000
1978	9.660000	174.8000	-871.0000	697.6000	81.40000	273.0000
1979	9.660000	253.8000	-2411.000	781.3000	87.90000	479.0000
1980	9.660000	261.7000	-1122.000	972.0000	100.0000	388.0000
1981	11.95000	236.3000	-397.0000	1123.000	111.8000	201.0000
1982	14.06000	153.0000	-4462.000	1114.410	134.7000	195.0000
1983	14.41700	158.6000	-1597.000	1197.380	150.2000	362.0000
1984	15.18700	183.9000	-2710.000	1534.660	165.4000	400.0000
1985	17.73800	85.90000	-3775.000	1674.600	187.0000	358.0000
1986	19.13500	110.9000	-5586.000	2014.840	194.4000	341.0000

Source: (1) IMF, International Financial Statistics (Various)

(2) Republic of Kenya, Statistical Abstracts (Various)

(3) Republic of Kenya, Economic Surveys (Various)

(4) Central Bank of Kenya, Annual Reports (Annual)

Table 4 Continued.

obs	CON.M	MAN.EX	PM.INT	PX.INT	X.DTY	M.DTY	T.EXP.
1964	1587.560	4591.000	17.60000	25.60000	NA	14971.00	1583.580
1965	1844.240	4532.000	17.90000	25.40000	NA	17941.00	1629.360
1966	2071.020	6206.000	17.90000	25.40000	NA	21444.00	1824.180
1967	2037.540	5696.000	17.90000	25.40000	NA	19307.00	1715.340
1968	2203.440	6835.000	18.10000	25.70000	NA	23228.00	1785.380
1969	2250.120	7441.000	18.40000	26.00000	NA	24507.00	1946.140
1970	2850.080	25406.00	18.80000	28.50000	NA	28585.00	2178.020
1971	3575.100	28353.00	20.40000	27.40000	NA	35229.00	2244.700
1972	3611.320	25427.00	23.00000	28.50000	9.000000	29404.00	2654.280
1973	4203.380	37587.00	27.90000	33.50000	14.00000	36048.00	3814.260
1974	7296.060	43804.00	40.90000	43.40000	NA	46572.00	4717.820
1975	6602.650	39978.00	50.20000	48.60000	NA	47368.00	4761.670
1976	7541.150	49272.00	51.30000	57.60000	NA	47990.00	6901.230
1977	9908.580	47995.00	56.00000	82.70000	7.880000	66159.00	9892.890
1978	12823.05	48344.00	83.30000	74.80000	185.0000	84293.00	7914.860
1979	11503.13	53072.00	75.70000	82.50000	56.00000	90304.00	8288.960
1980	17492.60	67148.00	100.0000	100.0000	140.0000	12387.00	10314.08
1981	16847.80	74495.00	104.9000	89.90000	63.00000	150440.0	10647.01
1982	16620.27	67794.00	99.90000	81.90000	106.0000	158572.0	11371076
1983	17051.20	77698.00	104.9000	80.60000	136.0000	152261.0	13101.36
1984	21004.40	85746.00	99.20000	89.30000	310.4100	188093.0	15538.15
1985	23161.54	103360.0	102.9000	77.30000	541.0000	186182.0	16228.60
1986	25461.64	114284.0	NA	NA	120.8100	221868.0	19377.00

Table 4 Continued

obs	ER /SDR	K	MS	PR.X	TOT
1964	7.143000	903.0000	NA	1491.760	1.454546
1965	7.143000	930.0000	NA	1538.720	1.418994
1966	7.143000	1224.000	90.30000	1700.060	1.418994
1967	7.143000	1644.000	102.4000	1601.420	1.418994
1968	7.143000	1790.000	115.1000	1648.680	1.419890
1969	7.143000	1875.000	135.4000	1797.320	1.413044
1970	7.143000	2254.000	175.3000	1669.900	1.515957
1971	7.143000	2884.000	188.5000	1677.640	1.343137
1972	7.143000	3302.000	214.8000	2145.740	1.239130
1973	6.900000	3645.000	267.8000	2862.520	1.200717
1974	7.143000	4075.000	291.0000	3841.740	1.061125
1975	8.260000	4837.000	340.7000	3962.110	0.968127
1976	8.310000	5808.000	422.8000	5915.790	1.122807
1977	7.947000	7800.000	620.7000	8932.989	1.476786
1978	7.404000	10280.00	705.9000	6947.980	1.181675
1979	7.328000	10809.00	819.8000	7207.520	1.089828
1980	7.569000	12451.00	810.4000	8971.120	1.000000
1981	10.28600	14508.00	918.2000	9157.109	0.857007
1982	12.72500	13367.00	1066.200	11369720	0.819820
1983	13.79600	14350.00	1118.300	11547.40	0.768351
1984	15.78100	14738.00	1262.100	13823.23	0.900202
1985	16.28400	18208.00	1346.500	14161.40	0.751215
1986	16.04200	24246.00	1784.300	17091.32	NA

Table 4 Continued

obs	CAB	IR	PN
1965	10.62947	5.500000	0.049296
1966	-380.6871	5.500000	0.040268
1967	-1171.686	6.500000	0.016129
1968	-773.9855	6.500000	0.006349
1969	-151.4615	6.500000	-0.003155
1970	-892.8750	6.500000	0.018987
1971	-1946.032	6.500000	0.037267
1972	-1225.285	6.500000	0.062874
1973	-1910.769	6.500000	0.092958
1974	-4254.023	6.500000	0.177835
1975	-3074.479	7.000000	0.190372
1976	-1483.088	7.000000	0.113971
1977	249.4876	7.500000	0.148515
1978	-5755.481	7.500000	0.169540
1979	-4050.238	8.000000	0.079853
1980	-6716.731	12.50000	0.137656
1981	-5214.676	15.00000	0.118000
1982	-35.43407	15.00000	0.204830
1983	-501.5779	12.50000	0.115070
1984	-1369.856	12.50000	0.101198
1985	-1003.347	12.50000	0.130592
1986	-988.8373	12.50000	0.039572