Department of Economics

M.A Economics Research Project

On

Determinants of Exports of Agricultural Commodities in the World Markets: Case Study of Kenyan Tea

By;

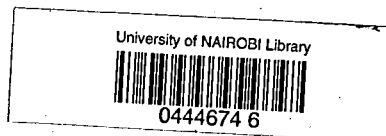## Komu, William Nzioki.
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A research project submitted to the Department of Economics, University of Nairobi, in partial fulfillment of the departmental requirements for the degree of Masters of Arts (Economics)
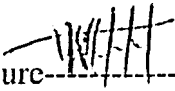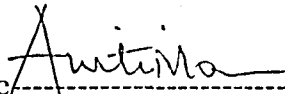
September 2005

DECLARATION.

This dissertation is my own original work and has not been presented for any academic award in any institution before now.

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DEDICATION

This work is dedicated to my Father Mr. David Komu and my Mother Paullina Syombua Komu who took the burden of educating me through all the school stages.

It is also dedicated to my daughter Karen, who has had to endure the anxiety of missing fatherly love at such early ages during the period of my study.

ACKNOWLEDGEMENT.

LIST OF ACRONYMS

CBK   :Central Bank of Kenya.

CBS   :Central Bureau of Statistics.

EATTA   : East African Tea Trade Association.

EOC   :Export Oriented Crops.

ERS   :Economic Recovery Strategy.

FAO   :Food and Agricultural Organization.

GDP   :Gross Domestic Product

IMF   :International Monetary Fund.

ITC   :International Tea Committee.

KTDA   :Kenya Tea Development Agency.

KTGA   :Kenya Tea Growers Association.

LDCs   :Less Developed Countries.

MDGs   :Millennium Development Goals.

NDP   :National Development Plan.

NPC   :Nominal Protection Co-efficient.

PRSP   :Poverty Reduction Strategy Paper.

RER   :Real Exchange Rate.

SCDA   :Special Crops Development Authority.

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ABSTRACT

Analysis of Kenyan export performance shows that the country has been able to expand its export volume to compensate for losses due to deteriorating terms of trade or achieve growth in real exchange rate.

Tea industry is playing an important role in the general export earnings. This export Market is volatile and susceptible to many factors, some of which include policies of importing countries vying for the same markets. Also on export market, tea is more exposed to a strong competitive situation by other countries vying for the same market. This paper is concerned with the factors affecting Tea export including an analysis of the export trends. Export supply functions are specified and estimated for three countries, United Kingdom, Pakistan and Egypt in addition to the overall total exports.

Two methods of analysis were employed in this study. Regression analysis was carried out to find whether prices (price of tea and its substitutes, in this case coffee), Real Exchange Rate and income of the consuming country affected tea exports and they did, to what extend.

Time series analysis was also employed to analyse the trends in tea exports.
The study utilized secondary information from Central Bureau of Statistics and information from Tea Board of Kenya annual publications.

The results of the analysis attribute the slow down of the tea Industry to a poor regulatory framework that is not in harmony with privatizing the industry; poor processing and marketing services to farmers by the tea authority and conflicts and dissatisfaction among farmers.

Also the future growth in Tea exports will rely on the government intensifying efforts to overcome the major bottlenecks in the industry. Maintenance of high quality standards of the produce is paramount to the success of the industry.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND

Kenya relies heavily on the agricultural sector as the base for economic growth, employment creation and foreign exchange generation. The sector is a major source of the country's food security and a stimulant to growth of off-farm employment, both of which are of primary concern to the government.

Exports of agricultural products are of vital importance to the economies of the less developed countries. Typically, agricultural products form an important source of domestic cash income. Problems of employment, public finance, balance of payments, income distribution, price and income stabilization are thus directly related to the agricultural export sector.

While the agricultural sector performed exceptionally well in the early years of independence (40% of the total Gross Domestic Product (GDP) in 1963), its performance in the recent years has been dismal (24% of GDP in 2004) (Statistical Abstract 2004) despite aggressive market strategies employed by the Government. Despite this downward trend, the sector still plays a leading role in the economy. Agriculture, in the early stages of development of many economies, provides raw materials and food for the other sectors. In 2004 the agricultural sector in Kenya contributed about 24% of the countries GDP, provided employment for over 80% of the total population and accounted for over 70% the foreign exchange earnings mainly from Tea, Coffee and Horticulture (Economic survey 2005). This explains the importance attached by the Government of Kenya to the agricultural sector's development strategy. Its performance directly mirrors that of the overall economy. Therefore, whenever agricultural GDP declines, overall GDP for the whole economy correspondingly declines and vice versa; hence the sector being dominant in Kenyan economy and a major contributor to economic growth.

According to the recently concluded Poverty Reduction Strategy Paper (PRSP 2001-2004), declining agricultural productivity in Kenya has led to food shortages, which

further reduced labor productivity[1].

About 24% of GDP of Kenya accrues from agriculture. Stimulation of growth of this sector through modern management techniques and optimal usage of resources will enhance employment opportunities, increase foreign exchange earnings and act as catalyst to improve the general standard of living of Kenyans. Tea industry is the largest employer in the agricultural sector and approximately 10% of Kenyan population depend either directly or indirectly in Tea industry hence the need behind the study.

Tea is a perennial crop giving its first yield about two or three years after planting. Depending on the location, its cycle ranges from seven to nine years. Tea growing is widely spread over the geographic regions. Nevertheless, the developing countries, particularly India and Sri-Lanka, are the dominant producing countries in addition to Kenya.

Tea may be broadly classified into two types, depending whether the tea leaves are fermented (black tea) or unfermented (green tea). The black tea constitute about three quarter of all tea produced. Virtually all the tea grown in Less Developed Countries (LDC's) (Except for Taiwan and Indonesia) is black tea (FAO, Production year book, various issues).

1.2 OVERVIEW OF AGRICULTURAL SECTOR IN KENYA.

The Strategy for Revitalizing Agriculture (SRA) was launched in March 2004 as a national policy document for steering development of the agricultural sector in Kenya for the period up to 2014. Under the strategy the vision of the government is "to transform Kenya's agriculture into a profitable, commercially oriented and internationally competitive economic activity".

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[1] see jhigan M.H (1997), The Economics of Development and Planning

The sector is important as a major foreign exchange earner and provides nearly all the food requirements for the Country. However, although the sector remains the most important in the Kenyan economy, its share in contribution to overall GDP has steadily declined over the years. Recent trends in the contribution of the sector to the GDP in the last fifteen years are shown in Table 1.The agricultural sector in Kenya is dichotomized into large and small production Systems. Available Statistics show that the small scale sector accounts for about 70% of the total marketed output and provides most of the employment in the Sector.

Table 1

Agricultural GDP as a share of total GDP(1990-2003)

Year	Agricultural GDP.£ million (constant 1982 prices)	Overal GDP £ million (constant 1982 prices)	Agriculture's share in GDP(%)
1990	1,192.04	4,223.63	28.2
1991	1,178.93	4,311.50	27.3
1992	1,134.83	4,332.22	26.2
1993	1,088.49	4,342.79	25.1
1994	1,119.29	4,474.58	25
1995	1,173.32	4,690.13	25
1996	1,225.35	4,907.59	25
1997	1,240.05	5,022.56	24.7
1998	1,256.08	5,112.60	24.6
1999	1,271.25	5,185.10	24.5
2000	1,244.80	5,172.82	24
2001	1,259.80	5,234.85	24
2002	1,271.25	5,217.68	24
2003	1,290.45	5,254.75	23.9

Source: statistical Abstract, 2004

1.3 HISTORICAL BACKGROUND OF TEA INDUSTRY IN KENYA

Barred by law until the dawn of independence when the legislation was repealed for the indigenous people to commence tea growing, the first tea bush was planted in Kenya in 1903. It was exclusively grown on the estates by the private companies, which were owned by the white settlers. Small-scale tea farming was started as a pilot scheme in 1954 in Nyeri and Kericho. During 1930's and 1950's expansion of tea was severely restricted both by the international tea agreement (which was terminated in 1947) and prohibition of Africans from growing tea by the colonial government. In 1961, it was declared a special crop under section 191 of agriculture Act (cap 318) and was placed under the management of the Special Crops Development Authority (SCDA) in the same year. (Sarkar (1972))

Tea Board of Kenya (TBK)[2] was established in May 1961 under Tea Act cap 383, to control the tea industry through licensing of tea growers, licensing of tea factories, regulating, controlling and improving tea cultivation and processing ,controlling pest and diseases, controlling tea marketing ,controlling investigation and other matters related to the tea industry. The Act empowers the minister for agriculture, in consultation with TBK to make regulations for protecting and promoting the tea industry and carrying out of the provisions of the Act

The Kenya Tea Development Authority (KTDA) was established by KTDA order of 20th January 1964 to take over some of the activities of the SCDA. Its initial objectives were to foster and promote the country's tea growing amongst the smallholder tea growers.

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[2] According to the Tea Act, the Tea Board of Kenya must comprise at least 16 members, who represent the Ministry of Agriculture, EATTA, KTDA small holders, and KTGA for plantations. The Act empowers the minister for agriculture, in consultation with TBK, to make regulations for protecting and promoting the Tea industry.

1.4 TEA AND KENYAN ECONOMY

Tea[3] takes 44% share of the fluid intake (with exception of tap water) compared with its main competitors: alcohol 16%, soft drinks 14% and coffee 21% in Kenya.

Despite the fluctuation of growth rates of the agricultural sector, the production of certain commodities have been contributing favorably to the Kenyan economy in terms of value of exports which are important in generating foreign earnings. The sum total of Tea and Coffee account for about 40 billion shillings of the total domestic exports as seen in Table 1.

These high valued cash crops are labour intensive and therefore act as remedy in dampening unemployment in the densely populated highlands of Kenya. Tea is and has been the leading foreign exchange earner contributing more than 20% of total foreign exchange earnings. This is shown in Table 2 and in figure 1 below. It is a labour intensive industry where more than 3 million persons directly and indirectly derive their livelihood from tea or tea related activities. Tea growing and manufacture carried out in rural areas contribute significantly to development of the economic well being of rural communities. The sector provides substantial investment opportunities in areas of tea growing, manufacturing, exporting and value adding.

Kenya gets approximately 33.3 Billion shillings from tea exports, which is equivalent to 26% of the total Agricultural exports. As shown in the following pie chart much of Kenyans exports accrue from Tea, which occupies the largest share in Kenyan exports.

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[3] See http:// www. Tea.fk@insight Kenya.com.
   http://www ktda@ktdateas.com.

Domestic export
Principal commodities, 1990-2003
percent of total value

Table 2 Years	Tea	Coffee	Horticulture	Others
1990	22.4	14.3	7.9	55.4
1991	18.5	13.2	8.5	59.8
1992	19.3	14.5	8.8	57.4
1993	19.8	15.2	9.5	55.5
1994	20.2	15.6	10	54.2
1995	19.3	15.5	11.4	53.8
1996	19.9	14.4	12	53.7
1997	21.1	14.7	12	52.2
1998	28.8	11.2	8.3	51.7
1999	28.6	10.4	15.4	45.6
2000	29.3	9.8	17.7	43.2
2001	28.4	6.1	16.3	49.2
2002	26.2	5	21.6	47.2
2003	24.1	4.6	26.7	44.6

Source: Authors computation

Figure 1

Domestic exports, percent of total value

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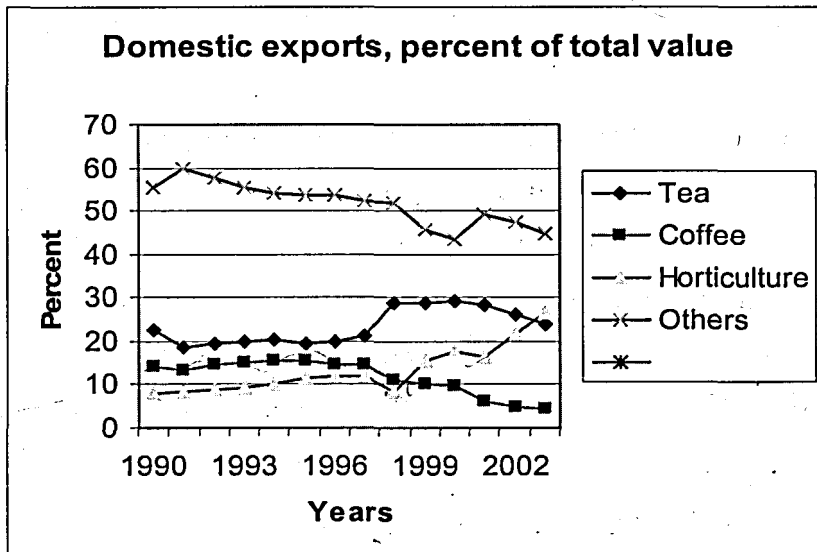
Figure 2:

Percentage Agricultural commodity exports
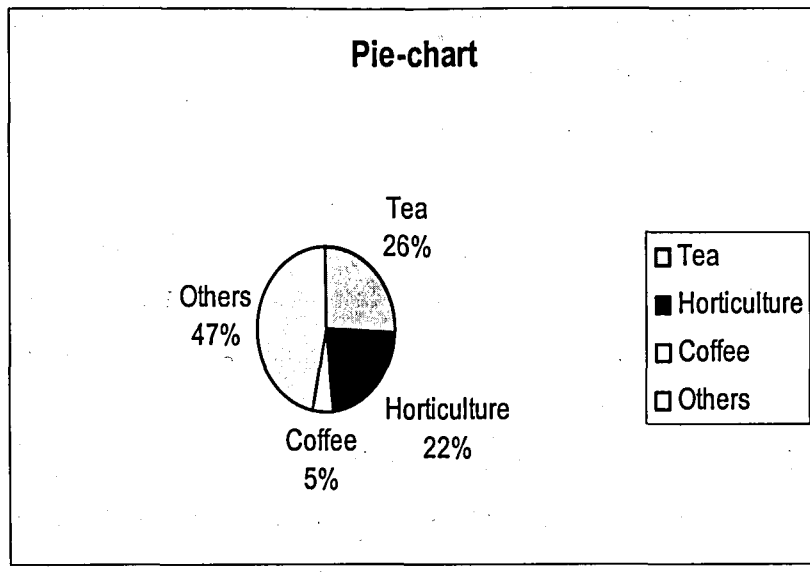
Source:International Tea
Committee,
Annual Bulletin of
statistics.2002

1.5 TEA MARKETS:

The market share of Kenyan tea is determined by the contributions of other tea exporters such as India and Sri Lanka, the main competitors of Kenyan Tea. Mombasa tea auction is the major outlet for Kenyan tea, which brings together major tea buyers, and sellers who make open bids through brokers to reach a sale agreement. In addition to the Mombasa outlet, KTDA sell tea in the London auction, in direct overseas sales by private contract, and through factory outlets for domestic sales. The direct overseas and the London auction sales are coordinated through KTDA's overseas agents and brokers. But sales through these markets have been reduced because of high cost. Overseas sales (both London auction and direct sales), result on average in lower proportion of net price than the Mombassa auction because of higher transportation and shipment costs.

Pakistan, The United Kingdom, Egypt and Middle East countries are the major market for Kenyan Tea, which account for 80% of the total exports. Sudan is also another major African countries Kenyan tea consumer, infact it is 2nd after Egypt. Although the demand

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for Kenyan tea is high, the potential in the market has not been exploited in the Americas, Eastern, Europe and Japan. Also many consumers of the Kenyan tea do not know that it is Kenyan because it is sold under brand names of the buying companies or packaging firms in the importing countries. Kenyan tea is bought in bulk for direct sales or in some cases blended with other teas for sale in the consumer markets.

Kenya loses a great deal from lack of packaging to add value to its tea exports. Countries like sri lanka and India have enhanced their tea export markets and earnings in the world market because they package and brand their tea exports[4]. Previously, packaging tea for the domestic and the Eastern and Central Africa regional markets was restricted to the Kenya Tea Packers (KETEPA). Limiting this domestic packaging is the lack of incentive for local packers. Tea packaging requires expensive material, which must be imported. The government needs to reduce import taxes on packaging material and provide tax holidays for tea packers to encourage packaging[5] tea for export. These efforts would increase tea earnings and create job opportunities in the country overtime.

1.6 THE KENYA TEA DEVELOPMENT AGENCY.

KTDA[6] is exclusively responsible for providing supplies, collecting green leaf, processing and marketing for small holder farmers. It is committed to effective management services to the smallholder tea subsector in the production, processing and marketing of high quality tea for the benefit of our farmers and other stakeholders. Its key role and objective is to meet and exceed costomers expectations in providing quality products and associated services. KTDA is one of the largest tea producing, processing and marketing companies in the world serving over 400,000 small scale tea growers and managing 54 operational tea factories in Kenya. Idirectly KTDA supports over three million Kenyans.It is responsible for the production of over 60% of the total tea produced in Kenya and over 6% of the total global tea production. However, a parallel system has

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[4]Selling tea in bulk packaging limits earnings from exports.Estimate indicate that earnings could be increased up to six times if this were done.

[5]The best tea in the world comes from Kenya. However, when you travel abroad, you Colombia Thilds, Ceylon tea, but no mention of Kenyan tea

[6]See http://www.ktdateas.com

emerged in which farmers sell green leaf directly to private factories or to intermediaries for immediate payment. This system has no contractual service arrangements between farmers and green leaf and green leaf tea buyers: It is only a sales agreement for the green leaf tea delivered to the factory or buying center.

The main advantage for farmers is that they are paid immediately instead of by the monthly or semi-annual payments that KTDA makes. If the parallel markets are encouraged without clear guidelines on how farmers can be supported, they are likely to lower tea production because they offer the smallholder farmers no input supplies or services. Benefits to farmers are doubtful because of an inadequate regulatory system of trade. Farmers have no bargaining power, leaving them open to predatory pricing and payments arrangements. Also the system seems to engender theft of green tea leaves from farms, especially at night.

The KTDA system, however, also has major problems;

- o Coordination and supervision is poor between farmers and the factory company boards of directors on one hand and the KTDA board on the other, in delivering services to farmers. Poor coordination and supervision have led to conflict between farmers and KTDA, with the farmers perceiving the directors not wholly answerable to them.

- o Information regarding tea marketing, earnings and transfer of tea ownerships unevenly distributed. KTDA has superior access to market information, which puts it unfairly way beyond farmer-friendly agreement exists between farmers and KTDA regarding final payment and farmers think the payments take far too long to reach them.

- o Significant risk exists in transferring tea ownership, or property rights from the farmer through KTDA. Whereas KTDA does not accept ownership of the tea or the associated Liabilities, it dominates the processing and marketing and passes all costs to the farmers who consider some of these costs high.

KTDA has established itself as a major tea seller in the overseas markets in a closed tea marketing system among well-known sellers and buyers. This makes it financially more attractive for factories to sell their tea through KTDA rather than directly. However to dissolve the existing mistrust between KTDA and farmers, transparency on auction prices and marketing charges, including brokerage fees to factory directors is required.

1.7 PROBLEM STATEMENT

An analysis of Kenyan export performance shows that the country has been able to expand its export volume to compensate for losses due to deteriorating terms of trade or achieve growth in real exchange rate. Although about 26% of export earning still accrues from the export of tea, the share of earnings from it has been declining for the last few years. There has been a decline in the value of domestic tea exported from Kenya, since the year 2000 despite aggressive market strategies employed by the KTDA. This is attributed to weak performance in demand for tea in the international market. The low foreign exchange earnings constrain the importation of vital raw materials and this induces the deterioration of the quality of both the social and economic infrastructure. In such a situation, and given that tea is one of the main support of Kenyan economy, an increase in Tea exports[7] is expected to contribute significantly to the improvement of most of these imbalances (budget deficit, balance of payment and debt problems).

There is a problem of rising income inequalities between the poor and the rich. Tea contributes towards elimination of this problem by achieving the goal of equitable income distribution because of the widespread smallholder tea growers in the country situated in the rural areas.

Tea industry is also playing an important role in the general export earnings. This export market is volatile and susceptible to many factors, some of which include policies of importing countries and competition from other countries vying for the same markets.

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[7] The overall success of any strategy to increase these exports will depend among others, on the knowledge of what factors constrain export growth and the responsiveness of exporters to changes in both price and non-price conditions.

Currently, the industry is faced with many problems, which limit the maximum quantity that the country could export. Each of the problems can have adverse effect on the exports of tea. The question is to what extent is each of these problems is affecting exports and how can it be eliminated?

Many studies have been done on the problem of increasing demand and supply of tea. No specific attention has been paid to the export side and this has left the gap in our understanding of this sector. Insufficient demand for this product would inhibit growth of tea industry therefore hampers exports of Kenyan tea.

In summary, the key problem is how to greatly and urgently increase the rate of growth of tea exports, and to make that growth sustainable.

1.8 OBJECTIVE OF THE STUDY

The study aims at finding determinants of exports for agricultural commodities in world market taking a case study of Kenyan tea. This will help in increasing tea export by targeting the specific markets, which have high potential of increasing tea demand.

SPECIFIC OBJECTIVES

- To describe the export market for tea from Kenya and the factors that affects these exports.
- To draw policy recommendations on how to improve economic growth on the basis of the findings of the study.

1.9 JUSTIFICATION

There is much widening disparities in income distribution between the rural and the urban areas, which is a worrying phenomenon, which must be adequately dealt with. More than 60% of tea grown in Kenya is grown by small-scale farmers who form the bulk of producers in the country, which fall in the rural areas. (International Tea Committee, annual bulletin of statistics, 2000.) Tea can be grown in relatively smallholdings and still generate enough income to sustain and supplement farm family

income. The objective of equitable income distribution can thus be attained through this crop since the low income rural community even those with small acreages can generate reasonable income from Tea cultivation.

Tea being labor intensive the employment goal can be achieved through production of this crop. The employment opportunities will therefore depend on the export prospects for export-oriented crops.

The empirical results of this study would enable us determine the demand for Kenyan tea in the existing international markets, based on factors such as income of the consuming countries, Real Exchange Rate (RER), and prices. From the changes in these variables in the importing countries authorities can be advised on which route of action to take. For instance, increase in incomes of an importing country will positively affect the country's exports of Tea.

1.10 ORGANISATION OF THE RESEARCH PROJECT

The research project consists of five chapters. Chapter one is an introductory chapter including background information, historical background of Tea industry, problem statement, objectives of the study and justification of the study. Chapter two covers literature review, both Theoretical and Empirical review.

Chapter three is a methodology chapter composed of model specification, testing of the data hypothesis data types and sources.

Chapter four gives Method of Analysis and Estimation Techniques including Trend analysis, Unit root tests, Cointegration analysis and Regression analysis.

CHAPTER TWO

2.0 LITERATURE REVIEW

Exports of agricultural products have played a vital role in the economic growth of many developing countries. However, the economic crisis of the mid 1980's disrupted the positive trend of foreign exchange earnings derived from these crops. In this respect, policies to increase these earnings have often been used as instruments to deal with debt, balance of payments, budget deficits and import capacity difficulties and to recover sustainable economic growth. This study is in line with this preoccupation and this section surveys some theoretical and empirical issues relevant to these core questions.

2.1 THEORETICAL REVIEW

For most developing countries, exports essentially comprise primary agricultural products. The terms of trade of these products in the world market after World War II created an atmosphere of export pessimism (the belief that exports from developing countries cannot successfully penetrate the industrial market economies of the developed nation). Export performance of developing countries (growth rate of world trade in agricultural products) depended on the growth rate of industrial production in the developed countries.

Abott (1973) defines marketing, as 'all those business activities involved in the flow of goods and services from production to consumption'. For the economy to achieve efficient allocation and economical use of resources, prices established through the marketing system should transmit demands back to the producers and supply conditions forward to consumers. This should be done with a minimum of lag, imperfection and distortion.

Packaging is an important component in the marketing of any commodity packages are usually divided into consumer packages and transport packages.

A consumer package is the package that is going to reach and be opened by the final consumer and which contain a product packed by the producer while a transport package

is the unit which holds a certain quantity of the product together from the producers to the consumers (Finny, 1981). Quite often the transport package is removed before it reaches the consumer, and a transport package may hold several consumer packages. In the case of Tea, We are dealing with consumer package.

Economic conditions usually change with time with the results that an economy or a country needs to export more and in order to pay for the commodities that they do not have and need to import. Duggal (1982), studies the prospects of exports marketing for Kenyan products in the Middle East with the objective of analyzing past exports product to the Middle East and finding the possibilities of exporting new products to these countries. He recommends that the government should constantly explore new and better incentives for increasing exports. However, Middle East is not the main market for Kenyan tea. It may be important to see what the situation is like in the main markets.

Ommeh (1984), trying to find out whether farmers respond to price changes in terms of carrying out husbandry operations and increasing production, found that remunerative prices both on the export and domestic market led to increased production.

Sharpley (1985), pointed out that appropriate packaging and efficient mode of transport increases volume of sales and reduces wastages. She was examining the domestic and export products in a frame that centers on the major constraints facing the macro economy. Improving the quality of packaging will also reduce product spoilage and can be a means of expanding earnings from Tea.

Daniel Gbeitnkom & Sunday A. Khan (2002) looked at determinants of Agricultural exports. They found output to be the major determinant of export performance. Price elasticities were found to be insignificant, showing that price decreases may not be effective in export promotion. This could also help to show the fact that Kenya is a price taker in world markets therefore price changes may not come from within the country.

In an exchange economy prices is one of the factors, which direct the concurrent flow of resources into alternative uses and the flow of goods and services to ultimate consumers.

Prices guide producers in their choice of enterprises and purchase of factors of production. Prices also ration the available supplies of goods and services.

According to Thomas and Nash (1991), it is less likely that the price elasticity of demand for agricultural exports for any individual economy will be less than 1. Consequently, when a single country that is not a dominant supplier increases the agricultural exports, these may be absorbed with no measurable fall in the market price and the country will increase its exports earnings. So, a small supplier of agricultural commodities in the world market faces an indefinitely elastic foreign demand for the crop it produces, and for which changes in foreign country influences only through changes in world prices. In this respect, the increase of exports of agricultural commodities becomes the main focus for most non-oil developing countries and a way of assuring a harmonious transition towards industrialization.

Increased production requires a wider market if the greater quantity of goods produced is to be sold. Increased productivity and subsequently production, is vital to any country's growth and this inevitably includes exports. Tea industry in Kenya has been and is still the major export sector offering a great prospect in net foreign exchange earnings for the country. Forrest D. (1985) trying to find the potential of expanding tea exports from Kenya did an economic and institutional analysis of alternative marketing of channels. He found that the possibility of expanding exports exists. He also found that tea prices, which tend to fluctuate considerably, are determined by forces of demand and supply. Judging from the number of people who grow this commodity it is no wonder that Cheruiyot sees the need to penetrate new markets.

Odhiambo and Nyangito (2003) Measuring agricultural productivity in Kenya observed that the prohibitive retail prices of Agricultural commodities in urban centers were beyond the reach of lower paid workers. This reduces the available market for the Agricultural commodities hence discouraging both production and consumption. Having the right prices for both producers and consumers for each commodity is very important to an economy.

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2.2 EMPIRICAL REVIEWS

The agricultural export supply responsiveness is so important that numerous empirical studies have focused on this question over the last two decades or so. The virtually unanimous conclusion of the studies that have investigated the determinants of exports supply of agricultural commodities is that exports in LDC's are more responsive to price variables (Tshibaka, 1997; Gerrard et al. 1994 ; Chu and Morrison, 1984). Price factors are therefore crucial in stimulating agricultural exports.

An econometric analysis of the smallholder tea production in Kenya was done by Dan Etherington (1973), who derived a model for predicting the production function of tea. In his study, he used regression analysis to predict tea yields by vintage approach. He considered a set of explanatory variables to be the number of stumps of a certain area; land quality and quantity; farm micro climate; the present and the past cultural practices in the farm; the distance to the buying centers and the man-equivalent hours spent in plucking tea on any farm in a given year. The statistical yield coefficients he derived were better in predicting output when compared to the KTDA predictions.

Radical changes in supply functions have been stated by Etherington to take place when structural bottlenecks or disease outbreak are created elsewhere, likewise the removal of the domestic constraints; Imposition of the constraints on competitors and improved transportation could increase the supply. He treated the role of factor product prices to play a minor role in affecting production of the export crops unlike the case in this study.

Gallagher and Houch (1976) studied the price responsiveness of U.S corn yields by using a multiple regression model. They found out that statistical relationship between net price and corn yields. They contented that any study of corn production changes in response to price changes, either market or induced by government policy, should explicitly take into account the relation between corn and fertilizer prices faced by farmers and its effect on yield. This study would assess the impacts of tea prices on tea exports in the world market.

Studies of international trade flows regularly concentrate on the formulation and estimates of demand relationships for imports and exports. Supply relationships for imports and exports have typically been handled by assumption. The usual practice being to assume that export and import supply elasticity's facing individual country is infinite.

World Bank (1983) in a survey by the IMF Staff attemted to solidify the empirical evidene on the prices of internationally traded primary commodities and analysed determinants of primary commodity volume of export movements by looking at the factors contributing to the decline in quantities of goods exported. This is done with reference to relationships between commodity prices and their principal determinants (i.e. income, exchange rate). The IMF staff identified the key variables that influence movements of prices of non oil commodities

These included the economic activity often represented by industrial production of industrial countries.

This was found to be the major demand side variable found to influence commodity prices

Sapsford (1987) in his paper presents an empirical analysis of demand for international traded primary commodities. He estimated a model, which may be summarized as.

$$Q^D = \beta_0 + \beta_1 P_1 + \beta_2 P_2 + \beta_3 q + \beta_4 i + \beta_5 ER + U_i$$

Where,

P_1 -   Commodity price

P_2 -   Price of commodity substitute

q -   Income of commodity consuming countries

i -   Interest rate

ER -   Average rate of exchange rate

U_i -   Disturbance

He assumes that markets clear and that quantity supplied is a function of the wage and capital cost in primary commodity production supply side shocks lagged demand and exchange rate between the currencies of producer countries and importing countries.

The problem with this study lies with its treatment of commodity substitute prices. Sapsford concludes that export for agricultural commodities are negatively and significantly related to own prices and that export positively related to prices commodity substitute.

Before estimating the aggregate and individual agricultural export supply, Fosu (1992) noted that RER of a domestic currency does not influence the economy's agricultural exports directly; instead, it influences agricultural exports through its effects on the incentive structure. In his study at 5% level the lagged export variable turned out to be the only significant variable in the aggregate model.

Amin (1996) estimates the effects of exchange rate policies on prices of export crops. After calculating the nominal protection co-efficient (NPC) and estimating the RER, Amin reached the following conclusion: the agricultural primary commodities sectors is heavily taxed through a high level of intervention and over-valued, tea being one of them. He specified on agricultural export supply model given as,

$X_s = f(RPP_{t-3}, XC, RPX, DICA, Y_t)$

Where

X_s	=	Is export supply measured in tons
RPP	=	The ratio of the produce price to the domestic price index
RPX	=	The ratio of the export price to the producer price
XC	=	Agricultural export credit
DICA	=	Dummy variable for quotas
Y_T	=	Income of consuming countries.

Amin extended the same specification to other products and the result from the Ordinary Least Square (OLS) estimation showed that overall the variable were non statistically significant at the 5% level, although they had the right signs.

Kwanashie et al (1997) undertook a quantitative measurement on agricultural export performance. The model proposal allows for the estimation of long run response function for exports. This approach was passed on a linear regression form.

$$X_t = X\left(Qt, Wt, \frac{Px}{Py}, Yt, Ut \right)$$

X_t =   denotes the export volumes of the crops under consideration

Qt   =   the productive capacity of the crop industry

Wt   =   weather

Px/Py =   crop producer price relative to the total price

Yt   =   the trade weighted income of the country's trading partners

Ut   =   stochastic error term satisfying the normal classical regression assumption.

He found that producer price and income of importing country's to be very important in export volume of a country.

Tshibaka (1998) addresses the effects of external shocks and domestic sectoral and macroeconomic policies on the structure of price incentives of major agricultural export commodities. In contrast to the preceding orientation, my work intends to combine prize and non-price factors to explain the behavior of agricultural products export crops with emphasis on Kenyan tea. This question is relevant as it allows us to know the influence of each factor in explaining the charges in exports.

Alemayehu, Geda (1999) conducted a deep review of literature on the supply of agricultural commodity exports, which indicated a distinction between the long run (potential supply) and the short run (a proportion of potential supply). In his study, he defines the structural equations of supply as the sum of which utilization of potential output (utilization rate approach) and the potential output (potential supply approach), which has led to the potential supply approach and utilization rate approach respectively.

Khan (2002) found that under quota system, price levels and export earnings were higher than without quotas. While the quota system had a stabilizing effect on world price, it reduced real export earnings for most small exporting countries and large producers gained.

A study by Were et al (2002) on the Analysis of Kenya's Export performance: an Empirical Evaluation, indicated that Real exchange rate (RER) has a profound influence on export performance. She used an error correction formulation to distinguish between the long run and short run elasticities. She found that the supply response to price incentive (real exchange rate depreciation) for exports of tea is significant.

In her study, income of trading partners was found to be more paramount in explaining export volumes of tea. The study also acknowledged that other non-price factors (cost of inputs, labour costs, access to credit, etc) play a vital role in export supply response.

The price focused supply models stems from Nerlove's model. Nerlove (1958) describes the dynamics of agricultural supply by maintaining the assumption that producers are influenced by their perception of normal price, which is captured through adaptive price expectation mechanism.

In this model , the existing acreage (stock of crop) in the previous period is included as additional explanatory variable. In the liquidity model; farmers income is incorporated as an additional variable indicating capacity to invest). The latter relates investment to the difference between desired and actual level of capital and investment behaviour theory presended in the Nerlovian adjustment model.

2.3 OVERVIEW OF THE LITERATURE.

With many of the studies in the literature reviewed, the emphasis in commodity supply modeling is on relative prices. For Small African Countries, Odhiambo Nyangito and Nzuma (2004) shows that for the period 1960-1970s, the shortrun elasticities are highly for annual crops while longrun elasticitiesare highly for tree crops and minerals.

Although there is a wide range of factors that have been identified as affecting supply of primary primary commodities, most studies empirically tend to narrow these factors to price variables, indicating the difficulty of quantifying non-price variables or obtaining

reliable and complete set of data (Alemayehu (1999, Mckay et al 1998, Tshibaka, 1997). There is a tendency to ignore the influence of the non-agricultural sector therefore implicitly assuming that the interactions between the two sectors are insignificant. Nonetheless the bias of literature on supply-side reflects the dominance of the small country assumption, according to which countries have a neglible weight in the world market. But generally, time series studies have tended to produce rather low empirical estimates of elasticities (Islam and Subramnian (1989), Mckay et al, 1998, Amin, 1996, Sapsford 1987, Whitley, 1994).

CHAPTER THREE

3.0 METHODOLOGY

This chapter attempts to develop an empirical model linking world export quantities for Kenyan's tea to various determinants on the basis of literature reviewed. Such factors like price of tea, price of tea substitute, income of consuming countries and RER are looked into. Price increase of tea is expected to induce a decline in tea export basing on the standard demand theory; therefore price elasticity of demand is expected to be more than unity.

Application of a simple OLS using time series data is likely to produce spurious regression results (Wooldridge, 2003, Maddala 1998; Alemayehu, 1999, Kwanashi et al, 1997). However, modern time series modeling techniques provide a better way of addressing these problems. Cointegration analysis can be used to avoid spurious regressions while at the same time providing a means of explicitly distinguishing between long-run and short run elasticities through the error correction formulation.

There is also another difficulty in determining the relative price variable as a measure of competitiveness[7]. Although most studies use real exchange rate (for instance Ndungu 1997, Ogiogi 1996, Ndungu and Ngugi, 1999; Mckay et al, 1998) the difficulty lies in the choice of the deflator (for example consumer price index index, output prices etc) Morever, the definition of real exchange rate is complex and controversial; both in theory and in practice.

Confusion still exists in the literature because different authors have used different definition of the RER. The traditional approach defines RER as Nominal exchange rate multiplied by ratio of foreign to domestic price level i.e,

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[7]Infact ,Krugman (19994) as cited in Branchi et al. (1999) argues that there is no such a thing as competitiveness in the strict sence since prices (including wages) can be flexible enough to allow balanced international trade to take in some specific sectors whatever the respective international productivity differentials. The exchange rate is just but one of these prices.

$$RER = E \, P^* \!\!\big/ P$$

Where

E = Nominal exchange rate.(shilling per foreign currency)

P^* = Foreign price level (world price index-US wholesale price) and,

P = Domestic price level (consumer price index)

Some other studies go a step further by defining real exchange rate using commodity-specific prices instead of general world price in gauging primary commodity export supply .ie.

$$RER = P_T \!\!\big/ P_N$$

Where

P_t = price of tradables

P_n = price of non tradables

In the current study the traditional approach, $RER = E \, P^* \!\!\big/ P$ was used to define the RER.

RER is the indicator of international competitiveness of domestic production. It is the real worth of foreign exchange in terms of a given domestic currency. An increase in exchange rate (depreciation of the local currency) decreases export earnings (in local currency), while an increase in export price increase export earnings. An appreciation of the local currency decreases export earnings; while an increase in export price influences the level of export positively[8].

RER thus provides a good indicator of country's competitiveness in the world market. Tea exports depend on both domestic policies and international market conditions.

3.1 MODEL SPECIFICATION:

For the tea market internationally, one would expect consumption to be primarily a function of the income level of importing country, prices of tea in world market, prices of

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[8] Changes in the RER exert profound effects on the structure of price incentives, which, in turn influence the volume of agricultural exports. Hence, agricultural export producers respond indirectly to RER changes.

tea substitute (in this case coffee) and Real exchange rate.

This study assumed that the quantity of tea exported is a function of price of tea, price of its substitute, real exchange rate and income of consuming country.

Export supply function was specified and estimated for tea as follows,

$$Q_t = f(Pt, P_s, RER, Y_t)$$

The regression equation used in the analysis is as shown below,

$$Q_t = \beta_0 + \beta_1 P_t + \beta_2 P_2 + \beta_3 RER + \beta_4 Y_t + U_t$$

$$\beta_1 > 0, \ \beta_2 < 0, \ \beta_3 > 0, \ \beta_4 > 0$$

Where,

Q_t = Total quantity of tea exported in time t

β_0 = Regression constant.

p_1 = Price of tea.

p_2 = Price of tea substitute.

RER = Real Exchange Rate.

Y_t = Income of consuming country.

t = Time

Other regression were done where Qt represented the quantity of Tea exported to individual major consuming countries. In this case, Pakistan, United Kingdom and Egypt were chosen. Each country was estimated separately to determine their responsiveness to changes in the variables.

TESTING OF THE HYPOTHESIS.

Hypothesis one,

That in absolute terms the Tea exports in terms of volume and export value has not

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expanded over the last fifteen years.

This was tested by graphing the variables, which showed that in absolute terms, the volume, and export value have increased over the years, but since the year 1995 the growth has not been stable to date. The graphical presentation in figure 14 helps to illustrate this.

Hypothesis two,

That the quantity of Tea exported is related to the prices of the Tea. Here regression results were used and showed that prices of Tea was positively related to quantity exported. Any incentive given in Tea marketing influence farmers'in tea production thus an increase in prices would lead to increased tea exports.

3.2 DATA TYPES AND SOURCES

This study relied mainly on secondary data. The main data source was from the CBS (Central Bureau of Statistics). Information such as volume of tea exported and value of it were obtained from the following policy documents the department publishes.

- Statistical abstracts (various issues).
- Leading Economic indicators.
- Economic Surveys (various issues).

Time series data on Quantity Exported, Price of tea, price of tea substitute and RER were derived from other Kenya Government Publication such as Central Bank of Kenya (CBK) Economic Financial Reviews and IMF International Financial Statistics.

CHAPTER FOUR

4.0 METHOD OF ANALYSIS AND ESTIMATION TECHNIQUES.

Purpose of it is to describe the methodologies used in the analysis of data collected.

The analysis focused on,

- Describing the organization of the export market of Tea from Kenya and the destination of these exports.
- Examining the trends in the exports and the influence of price, RER and Income of the consuming countries.

To achieve the above, time series and regression analysis were performed.

Tables and graphs were used to describe the trend in the export market for Tea in Kenya.

4.1 TREND ANALYSIS.

Gujarati D.N, (2003), defines a time series as data collected for a single entity at multiple points in time. A trend is a persistent long-term movement of time series/variable overtime. It may either be rising, constant or falling. Trend may be linear growing at a constant rate over time, or it may be any of the non-linear patterns e.g., exponential or log linear. A time series variable fluctuates around its trend. There are two types of trends seen in time series data-Deterministic and stochastic trend. If a regressor has a unit root then the OLS t-statistic can have nonstandard (that is, nonnormal) distributions, even in large samples.

According to Enders (1995) the trend is often the most important element of a time series and the simplest way to deal with it is with regression.

Since the study deals with time series data of Tea exported, it is deemed important to isolate the trend. Any trend that suggests a weakening in this sector should be speedily identified and necessary corrective action put into effect.

The upward trend for total exports was found to be significant at all levels, implying that the quantity exported has continued to increase with time.

Possible Factors influencing the Trend.

Factors affecting the trend in sales are usually demand oriented such as incomes of consumers and the population.

From the demand side the trend has been increasing overally. This could have been due to increase in income in the importing countries and due to growth in population.

It was however difficult for these factors to be considered in detail since they are for other countries other than the country where the study was carried out.

On the supply side the upward trend may be due to the increase in production resulting from the government efforts to increase production of the export commodities. Also many factors will tend to move along with the trend or with time. Again with time, the persons carrying out various activities tend to become more efficient

4.2 UNIT ROOT TESTS.

We need to know whether the variables are stationary[9] or non-stationary. Non-stationary variables might lead to spurious regression[10]. Trends in time series data can be detected by informal and formal methods. The informal methods involve inspecting a time series plot of the data and computing the autocorrelation coefficients.

Augmented Dickey-Fuller test was used to examine our variables for the presence of a unit root. The Augmented Dickey –Fuller test the null hypothesis $H_0 : \partial = 0$ against the one –sided alternative $H_1 : \partial < 0$ in the regression.

Under the null hypothesis, Y_t has a stochastic trend; under the alternative hypothesis, Y_t is stationary. The ADF statistic is the OLS t-statistic testing: $\partial = 0$ in the above equation.

$$\Delta Y_t = \beta_0 + \partial Y_{t-1} + y_1 \Delta Y_{t-1} + y_2 \Delta Y_{t-2} + \ldots + y_p \Delta Y_{t-p} + \lambda_t$$

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[9]In this case the result may suggest statistically significant relationships between the variables in the model, when in fact this is just evidence of contemporaneous correlation. An economic time series can be trend stationary (TS) or differenced stationary (DS). A TS time series has a deterministic trend, where as a DS time series has a variable, or stochastic trend. The common practice of including the time or trend variable in a regression model to detrend the data is justifiable only for TS time series. The DF and ADF tests can be applied to determine whether a time series is TS or DS.

[10]When two time series appear related when they are not, that is caused by stochastic trend

If instead the alternative hypothesis is that Y_t is stationary around a deterministic linear time trend , then this trend , must be added as an additional regressor, in which the case the dickey fuller regression becomes

$$\Delta\ Y_t = \beta_0 + \alpha_t + \partial Y_{t-1} + y_1 \Delta Y_{t-1} + y_2 \Delta Y_{t-2} + \ldots + y_p \Delta Y_{t-p} + \lambda_t$$

Where α is an unknown coefficient and the ADF[11] statistic is the OLS t-statistic testing $\partial = 0$.

Stationarity tests were performed to the variables country by country and also overally, which are captured in the appendix. The results of the Unit root tests on the variables are given as in the tables below.

THE RESULTS OF UNIT ROOT TESTS

Table 3

KENYA/EGYPT

VARIABLE	ADF	1%	5%	10%	Order of Intergration	t-probability
Qt	-5.41	-4.98	-3.87	-3.38	I (1)	0.0004
Pt	-4.171	-5.115	-3.927	-3.41	I (2)	0.0005
Pc	-4.652	-4.989	-3.873	-3.38	I (1)	0.0007
RER	-6.034	-5.115	-3.927	-3.41	I (2)	0.0003
Yt	-5.06	-4.98	-3.87	3.38	I (1)	0.0007

Table 4

KENYA/UK

VARIABLE	ADF	1%	5%	10%	Order of Intergration	t-probability
Qt	-5.923	-4.99	-3.873	-3.38	I (1)	0.0024
Pt	-4.171	-5.115	-3.927	-3.41	I (2)	0.0005
Pc	-4.652	-4.989	-3.873	-3.38	I (1)	0.0007
RER	-4.38	-5.115	-3.92	-3.41	I (0)	0.0003
Yt	-5.87	-5.115	-3.92	-3.41	I (2)	0.0057

Table 5
KENYA/PAKISTAN

VARIABLE	ADF	1%	5%	10%	Order of Intergration	t-probability
Qt	-4.407	-5.115	-3.927	-3.38	I (1)	0.0045
Pt	-4.171	-5.115	-3.927	-3.41	I (2)	0.0005
Pc	-4.652	-4.989	-3.873	-3.38	I (1)	0.0007
RER	-5.832	-5.274	-3.995	-3.41	I (0)	0.0007
Yt	-4.927	-5.115	-3.992	-3.41	I (2)	0.0003

Table 6
OVERALL

VARIABLE	ADF	1%	5%	10%	Order of Intergration	t-probability
Qt	-6.022	-5.115	-3.927	-3.41	I (1)	0.005
Pt	-4.171	-5.115	-3.927	-3.41	I (2)	0.0005
Pc	-4.652	-4.989	-3.873	-3.38	I (1)	0.0007
RER	-5.323	-5.115	-3.927	-3.41	I (0)	0.0018
Yt	-6.411	-5.115	-3.927	-3.41	I (0)	0.0007

4.3 COINTEGRATION ANALYSIS.

This analysis tests the existence of long-run relationship between an independent variable and its explanatory variables. The analysis combines both shortrun and longrun properties and the same time maintain Stationarity in all the variables.

If two or more variables are integrated of the same order and their differences have no clear tendency to increase or decrease then this will suggest that their differences are stationary. Thus if non-stationary series have a long run relationship any deviation from this long run path will be stationary. This means that if the linear combination or the residual from the the variables is integrated of order zero I(0), then this will be a case of cointegration[12].

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[12]See R. F. Enngle and W.J. Granger, " Cointegration and Error Correction; Representation, Estimation and Testing, Econometrica. Also Damoda N. Gujarati, Basic Econometrics. Third Edition. United States Military Academy, West Point.

We conduct cointegration test to test whether the variables have long-run relationship. The tests normally fall into two categories, the residual based tests and the johansen approach. This study uses the Granger and Engle-two step procedure (Residual-Based test).

In this case we first get the static equation of the variables in levels then we generate the residuals. Test of Stationarity is done on the residuals. If the residuals are stationary then the two series are cointegrated. The Engle- Granger cointegration test results on residuals of models presented in the appendix at the back.

4.4 REGRESSION ANALYSIS.

Regression[13] is one of the main tools of econometrics. According to Gujarati (2003) regression analysis is concerned with the study of the dependence of one variable (the dependent variable) on one or more other variables (the explanatory variables). Thus regression Analysis is aimed at estimating and/or predicting the mean or average values of the independent variables in the case of repeated sampling. The regression equation used in the analysis is as shown below.

$$Q_t = \beta_0 + \beta_1 P_t + \beta_2 P_2 + \beta_3 RER + \beta_4 Y_t + U_t$$

$$\beta_1 > 0, \ \beta_2 < 0, \ \beta_3 > 0, \ \beta_4 > 0$$

Where,

Q_t = Total quantity of tea exported in time t

β_0 = Regression constant.

p_1 = Price of tea.

p_2 = Price of tea substitute.

RER = Real Exchange Rate.

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[13]Regression analysis based on time series data implicitly assumes the underling time series are stationary. The classical t tests, etc are based on this assumption.

The slope coefficients (Bi) in the model measure the average rate of change in the quantity exported resulting from a unit change in the respective explanatory variables. A positive coefficient indicates that an increase in the value of the variable increases the amount of export quantity. In regression a multiple Coefficient of determination R^2 is obtained which indicates how much of the variations observed are explained in the regression. It is the ratio of explained variation to the total variation. The export functions estimated from the regressions are presented in the tables below.

RESULTS OF THE REGRESSION ANALYSIS.

KENYA/U.K

Table 7

$QT = C(1) + C(2)*PT + C(3)*PC + C(4)*RER + C(5)*YT$

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	791.8048	4.641836	1.892636	0.0910
C(2)	0.585376	1.578024	-0.370956	0.7193
C(3)	-1.705109	0.135712	1.256413	0.2406
C(4)	4.774989	2.501324	0.190897	0.8528
C(5)	0.378302	0.024023	-1.574702	0.1498
R-squared	0.479820	Durbin-Watson stat		2.081053

Substituted Coefficients:
=====================
QT =791.8048+0.585376*PT-1.705109*PC+4.774989*RER+0.378302*YT

The R^2 is 0.47982 implying that 48 percent of variations of quantity exported to United Kingdom are explained in the model. The low R^2 shows that there are other variables not captured by the model, which affect Tea exports to the United Kingdom.

The DW = 2.08 indicate that there is no existence of serial autocorrelation in the error term since the value is very close to 2.

In the above a one unit change in price of Tea would lead to a 0.59 change in quantity supplied to U.K.

KENYA/PAKISTAN

Table 8

QT=C(1)+C(2)*PT+C(3)*PC+C(4)*RER+C(5)*YT

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	705.3871	12.54535	0.5622697	0.0003
C(2)	4.290455	1.952826	0.2197049	0.0556
C(3)	-3.23.986	1.541582	-0.2101079	0.0650
C(4)	0.302997	1.211417	-0.2501179	0.0338
C(5)	4.240846	0.140571	0.3016853	0.0146
R-squared	0.704009	Durbin-Watson stat		1.824880

Substituted Coefficients:
=====================
QT=705.3871+4.290455*PT-3.23.986*PC+0.302997*RER+4.240846*YT

R^2 is 0.704 implying that 70% of the variations of the quantity exported to Pakistan are explained in the model i.e.70% of the dependent variable are explained by the explanatory variables in the model.

The DW = 1.825. This is close to two, which indicate that there is minimal serial autocorrelation in the error term.

KENYA/EGYPT

Table 9

DQT=C(1)+C(2)* DPT+C(3)* DPC+C(4)* DRER+C(6)* DYT

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	978.2121	1.614104	0.606040	0.0563
C(2)	2.977817	1.590012	-0.187283	0.0856
C(3)	-1.505915	1.382873	-1.091315	0.0311
C(4)	3.951526	0.617717	0.639698	0.0542
C(6)	0.131562	0.087504	1.503491	0.0176
R-squared	0.731954			
Durbin-Watson stat	2.152551			

Substituted Coefficients:
=====================
DQT=978.2121+2.977817* DPT-1.505915* DPC+3.951526* DRER+0.1315621328* DYT

As seen in the regression table (R^2 =0.73195) the model explains 73% of the variations in the quantity exported.

The DW is 2.15, which is close to 2 therefore minimal serial correlation in the error term.

OVERAL

Table 10

DQT=C(1)+C(2)* DPT+C(3)* DPC+C(4)* RER +C(5)*YT

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	1441.395	3.611400	0.399123	0.0052
C(2)	2.504413	0.431002	0.581067	0.0794
C(3)	-1.802180	3.832058	-0.470291	0.0524
C(4)	2.458315	0.887134	-0.282983	0.0854
C(5)	0.453127	1.143452	0.396277	0.0037
R-squared	0.679820			
Durbin-Watson stat	2.422772			

Substituted Coefficients:
=====================
DQT=1441.395+2.504413* DPT-1.802180* DPC+2.458315* RER +0.453127*YT

Only 68% of the variations in the dependent variable are explained by the explanatory variables.

DW = 2.423 indicating the presence of serial autocorrelation in the error term.

4.6 DATA LIMITATION

The study relied much on secondary data, which is bedeviled with a set of problems including collection and processing procedures, therefore may not be accurate and reliable as different publication give different information. Some data were not available in the required form e.g RER therefore necessitated computing usually under special assumptions and high-level aggregation.

Prices of other Tea substitutes such as cocoa have not been considered in the study due to data unaivalibility.

The model did not capture an effect of interest rates as it is much more related to Exchange rate.

Black market operations were not taken care of in the model.

CHAPTER FIVE

SUMMARY, CONCLUSSION AND RECOMMENDATION.

SUMMARY

Tea is an important commodity traded in the world market in terms of its value. It is a major source of foreign exchange earning for the producer countries, the majority of which are underdeveloped. The development of the tea substitutes is on the increase. This development threatens an important source of income for exporting countries who depend on tea earnings to finance development activities of which the crop is grown in rural areas where the majority of the poor lives.

Tea is the leading foreign exchange earner in the country. The most notable problems facing the Kenya Tea industry are high production costs and unfavorable prices in the world market.

The export market of Tea is volatile and susceptible to many factors some of which include price of the export commodity, Income of the importing countries and competition from other country vying for the same market among others.

The broad objective of the study was to analyse the exports of Kenyan Tea, the trends and identify the factors that affect Tea exports and suggest possible ways of enhancing Tea export development.

Two method of analysis were employed in this study. Regression analysis was carried out to find whether prices (Price of Tea and its substitute, in this case coffee), RER, income of the consuming country affected or not and if they did , to what extent. Other factors affecting Tea exports but not captured in the regression were also described. Time series analysis was also employed to analyse the trends in Tea exports.

Unit root tests were done to find out the Stationarity of various variables. Cointegration tests were also done to find out whether the variables were cointegrated.

The results of this study showed that price of tea, price of its substitute (in this case coffee), RER and income of the consuming country affected the Tea exports among other

factors. The study in addition revealed that most of Kenyan Tea only goes to 4 countries taking over 80% of the exports (Need to diversify).

CONCLUSSION AND RECOMMENDATION.

To ensure further upward trend and sustainable export and total earnings of Tea, it is expected that the present markets will expand further and additional markets found to meet the needs of the industry as production increases.

Quality tea is intended to capture the world markets but other forms of Tea blends could be tried especially to capture the Eastern markets like Pakistan. A continuous maintenance of Tea quality should be observed at all levels of production so that the present and future prices of tea which are dictated by the world market forces are secured for longer periods. High quality Tea of high value will continue to ensure that available cargo space is effectively used in terms of foreign exchange remitted per unit exported.

Sometimes there exist a problem of over supply of Tea in the world market which then influence the prices of tea in world market negatively i.e. lowering the prices hence low earnings for farmers despite high cost of productions hence the need to focus what will happen in future.

Ideally if the number of middlemen in the Tea marketing channel is reduced, then tea farmers can be paid more favorable prices boosting the production. There is a relationship between prices and quantity supplied per unit time that sellers are willing to sell. A higher price will induce additional sellers to come into the field. In case of Tea an increase in the price of it leads to an increase in the quantity of Tea exported cateris paribus basing on a perfectly competitive market which the Economic theory assumes. The future prices of tea should reflect less disparity in price differentials in the smallholder sector in the Economy. From the results of the regression analysis tea prices was found to be a significant factor influencing tea exports.

Quality tea is intended to capture the world market but other forms of tea blends could be tried especially to capture the Middle East.

Continuous maintenance of tea quality should be observed at all levels of production so that the present and future prices of tea, which are dictated by the world market forces,

are secured for longer periods. The increased prices of tea would induce the farmers to invest more on tea business despite the unsustainable tea prices.

The trade of Tea only concentrates on a few countries. For the last 10 years, four countries have held a share of over 80% in terms of volume and value. The concentration on a few countries makes export trade vulnerable to prices and market changes as well as to changing business strategies of importers in these countries.

The recommendations given in this section are aimed at improving the tea sector earnings at the world market. The recommendations are also aimed at improving the production of tea taking into consideration that more than 60% of tea exports comes from the smallholder sub sector which in the long run leads to improved tea earnings through export in the international markets.

Exploring new market and market information.

The prevailing economic conditions dictate the need to increase production in most developing countries. For country like Kenya who mainly relies on Agriculture, this implies increased Agricultural production. The increased production creates the need for a market. For export commodities this means looking for or exploiting new markets for the produce. Kenyan Tea have not entered into the Americans market which our clients in the world markets need to venture in to boost our earnings. The farmers who bear the brunt of high cost of production know little market information. This market information should trickle down from the clients, to the tea farmers representative at the world market (in this case K.T.D.A) down to the farmers to know what is happening at the world market in terms of changes in prices among others.

Marketing of Tea.

K.T.D.A should be responsible for the tea marketing as commissioned management agent for tea quality control and as an incentive to reduce losses. An agreement should be made between the agents, either K.T.D.A or another, and the tea factory board of directors setting for the terms of marketing, particularly with respect to auction agents, timing of payments and charges. The emerging parallel tea marketing system where tea is sold to intermediaries is exploitative and T.B.K should prohibit it.

Management of the tea industry.

The tea board of Kenya should continue to be the regulatory body for the tea industry with the mandate of registering the stakeholders to keep information about them and monitor their activities to ensure equitable terms for all. It should also monitor the process of manufacturing and marketing tea and publish comparative data on quality, costs and prices to help enhance the efficiency in tea processing and marketing. The T.B.K board of directors should comprise elected representatives of all stakeholders on the tea industry and should include a representative of the ministry of Agriculture to represent the government.

Marketing incentive.

- The export market news service bulletins should be promptly distributed to the exporters and other persons concerned. This is already being done by K.T.D.A and should continue.
- The government through K.T.D.A should maintain a system of minimum export prices on an ex-post weekly basis to monitor the pricing behavior of exporters.
- Increased promotional measures for more external markets are needed for Tea, particularly during the high season production to cope with the increased production.
- Development of grading standards, packaging material and generally the technologies pertaining to post-harvest handling of the produce both in transit and at collecting centers.

Tea quality

Quality tea is intended to capture the world market but other forms of tea blends could be tried especially to capture the eastern markets like Pakistan. A continuous maintenance of tea quality should be observed at all levels of production so that the present and future prices of tea, which are dictated by the world market forces, are secured for longer periods. To have high quality Tea we need to ensure availability of high quality seed, which meets the yield expectations of producers and quality aspects, which the market wants.

APPENDIX

COINTERGRATION RESULTS

Kenya-U/K
Table 11

QT & PC

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-3.78	-4.88	-3.82	-3.35	0	0.0032
RC1	-2.12	-4.98	-3.87	-3.38	1	0.0668
RC1	-1.17	-5.11	-3.92	-3.41	2	0.2842

Qt and Pc are not cointergrated since the residuals are not stationary at any lag.

Table 12

PT and PC

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-2.95	-4.88	-3.82	-3.35	0	0.0145
RC1	-2.94	-4.98	-3.87	-3.38	1	0.0187
RC1	-3.25	-5.11	-3.92	-3.41	2	0.0174

Pt & Pc are not cointergrated since the residuals are not stationary.

Table 13

PT & RER

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-1.76	-4.88	-3.82	-3.35	0	0.1083
RC1	-2.14	-4.98	-3.87	-3.38	1	0.0641
RC1	-5.45	-5.11	-3.92	-3.41	2	0.016

At Lag =2, PT & RER are cointergrated unlike in lag=1 and lag=0

Table 14

PC & RER

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-1.46	-4.88	-3.82	-3.35	0	0.1759
RC1	-3.07	-4.98	-3.87	-3.38	1	0.0153
RC1	-10.76	-5.11	-3.92	3.41	2	0.000

PC & RER are cointergrated at lag=2 unlike in lag=1 and lag= 0

KENYA/PAKISTAN

Table 15

QT &PC

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-3.08	-4.89	-3,83	-3.35	0	0.0717
RC1	-4.21	-4.98	-3.87	-3.38	1	0.030
RC1	-2.40	-5.12	-3.93	-3.41	2	0.0532

QT &PC are not cointergrated since the residuals are not stationary.

Table 16

PT & PC

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-2.95	-4.88	-3.83	-3.36	0	0.0145
RC1	-2.94	-4.98	-3.87	-3.38	1	0.0187
RC1	-3.25	-5.12	-3.93	-3.41	2	0.0174

QT &PC are not cointergrated.

Table 17

PT & RER

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-1.92	-4.89	-3.83	-3.36	0	0.0843
RC1	-2.66	-4.99	-3.87	-3.38	1	0.0287
RC1	-3.12	-5.11	-3.92	-3.41	2	0.0205

PT & RER are not cointergrated.

Table 18

PC & RER

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-3.22	-4.89	-3.83	-3.36	0	0.0091
RC1	-2.88	-4.99	-3.87	-3.38	1	0.027
RC1	-3.19	-5.11	-3.92	-3.41	2	0.0188

PC & RER are not cointergrated.

KENYA-EGYPT

Table 19

QT &PC

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-4.113	-4.887	-3.829	-3.359	0	0.0021
RC1	-4.238	-4.989	-3.87	-3.382	1	0.0028
RC1	-2.388	-5.115	-3.93	-3.41	2	0.0542

QT &PC are not cointergrated, since the residuals are not stationary.

Table 20

PT &PC

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-2.950	-4.887	-3.829	-3.359	0	0.0145
RC1	-2.941	-4.989	-3.87	-3.382	1	0.0187
RC1	-3.254	-5.115	-3.93	-3.41	2	0.0174

QT &PC are not cointergrated, since the residuals are not stationary.

Table 21

PT & RER

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-0.814	-4.887	-3.829	-3.359	0	0.4346
RC1	-0.875	-4.989	-3.87	-3.382	1	0.4068
RC1	-0.457	-5.115	-3.93	-3.41	2	0.6634

Not cointergrated.

Table 22

PC & RER

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-2.058	-4.887	-3.829	-3.359	0	0.0666
RC1	-1.353	-4.989	-3.87	-3.382	1	0.2130
RC1	-0.750	-5.115	-3.93	-3.41	2	0.4816

Not cointergrated.

OVERALL
Table 23

QT &PC

Residual	t-Adf	1%	5%	10%	Lag	t-

						Probability
RC1	-3.826	-4.887	-3.829	-3.359	0	0.0033
RC1	-4.332	-4.989	-3.875	-3.382	1	0.0025
RC1	-1.948	-5.115	-3.927	-3.41	2	0.0994

QT &PC are not cointergrated, since the residuals are not stationary.

Table 24

YT & RER

Residual	t-Adf	1%	5%	10%	Lag	t-Probability
RC1	-3.097	-4.887	-3.828	-3.358	0	0.0113
RC1	-2.535	-4.989	-3.873	-3.382	1	0.0350
RC1	-6.094	-5.1152	-3.9271	-3.410	2	0.0009

They are cointergrated.

STATIONARITY TESTS

KENYA/U.K

QT

1st level

ADF Test Statistic	-2.492863	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Not stationary at first level

2nd level

ADF Test Statistic	-1.228185	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Not stationary at 2nd level
Not stationary at level

1st difference

ADF Test Statistic	-5.922974	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730

**Since the adf statistic is significant at all critical values it is
Stationary**

PT

1st level

ADF Test Statistic	-2.210090	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Not stationary at first level

2nd level

ADF Test Statistic	-1.975058	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Not stationary at 2nd level
Not stationary at levels

1st difference (lag=1)

ADF Test Statistic	-3.240925	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Not stationary

2nd difference (lag=0)

ADF Test Statistic	-4.171374	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Stationary at 5 and 10%

PC

1st level

ADF Test Statistic	-2.665454	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Not stationary at levels

1st difference

ADF Test Statistic	-4.652165	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Stationary at 5 and 10%

RER

levels

ADF Test Statistic	-2.106504	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820
	Not stationary		

Level 1,lag=2

ADF Test Statistic	-4.382396	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Stationary at 5 and 10%

Gdp (yt)

level 1,lag1

ADF Test Statistic	-3.485622	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Not stationary

Level 1,lag2

ADF Test Statistic	-2.557664	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Not stationary
1st difference, lag 0

ADF Test Statistic	-2.579163	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

2nd difference (lag=0)

ADF Test Statistic	-5.869919	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Stationary at 1%, 5% and 10% critical value

KENYA/PAKISTAN.

QT

Level 1,lag 1

ADF Test Statistic	-3.765235	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730

		10% Critical Value	-3.3820

Level 1,lag2

ADF Test Statistic	-2.288620	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Not stationary at levels

1st difference,lag 0

ADF Test Statistic	-3.622208	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

1st difference,lag 1

ADF Test Statistic	-4.407459	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Stationary at 5% and 10% critical value

RER

level1,lag 1

ADF Test Statistic	-2.611967	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Level 1,lag2

ADF Test Statistic	-1.504250	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

1st difference,lag 0

ADF Test Statistic	-2.943938	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

1st difference,lag 1

ADF Test Statistic	-3.215636	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

2nd difference,lag 0

ADF Test Statistic	-3.524549	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

2nd difference,lag 1

ADF Test Statistic	-5.832967	1% Critical Value*	-5.2735
		5% Critical Value	-3.9948
		10% Critical Value	-3.4455

Stationarity of yt (level1, lag 1)

ADF Test Statistic	-2.871107	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Level 1,lag2

ADF Test Statistic	-4.926752	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Stationary at 5% and 10% critical value

KENYA/EGYPT.

Stationarity of QT at levels

Lag=0

ADF Test Statistic	-3.644991	1% Critical Value*	-4.8870
		5% Critical Value	-3.8288
		10% Critical Value	-3.3588

Not stationary
Lag=1

ADF Test Statistic	-2.638955	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Not stationary at levels

Stationarity of qt at differences
1st difference,lag0

ADF Test Statistic	-5.410452	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Stationary at first differences

Stationarity of RER at levels
Lag =0,

ADF Test Statistic	-1.073608	1% Critical Value*	-4.8870
		5% Critical Value	-3.8288
		10% Critical Value	-3.3588

Not stationary
Lag =2

ADF Test Statistic	1.544542	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Not stationary at levels

Stationarity of RER at 1st differences
Lag=0

ADF Test Statistic	-3.318838	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Not stationary

Lag=2

ADF Test Statistic	-0.893590	1% Critical Value*	-5.2735
		5% Critical Value	-3.9948
		10% Critical Value	-3.4455

Not stationary

Stationarity of rer at 2nd differences
Lag=0

ADF Test Statistic	-6.035700	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Stationary at 2nd differences

Stationarity of YT at levels
Lag=0

ADF Test Statistic	-3.091631	1% Critical Value*	-4.8870
		5% Critical Value	-3.8288
		10% Critical Value	-3.3588

Not stationary
Lag=2

ADF Test Statistic	-2.585873	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Not stationary

Stationarity of RER at 1st differences
Lag=0

ADF Test Statistic	-5.060642	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Stationary at 1st differences Lag = 0

OVERALL.

Qt at levels, lag=0

ADF Test Statistic	-3.708972	1% Critical Value*	-4.8870
		5% Critical Value	-3.8288
		10% Critical Value	-3.3588

Not stationary
Lag 1

ADF Test Statistic	-3.181678	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Not stationary
Lag =2

ADF Test Statistic	-1.577146	1% Critical Value*	-5.1152
		5% Critical Value	-3.9271
		10% Critical Value	-3.4104

Not stationary at levels

Qt at first difference, lag=0

ADF Test Statistic	-4.838655	1% Critical Value*	-4.9893
		5% Critical Value	-3.8730
		10% Critical Value	-3.3820

Stationary at 5% and 10% Critical levels

Lag=1

ADF Test Statistic	-6.021615	1%	Critical Value*	-5.1152
		5%	Critical Value	-3.9271
		10%	Critical Value	-3.4104

Stationary at all levels

RER at levels, lag=0

ADF Test Statistic	-3.341301	1%	Critical Value*	-4.8870
		5%	Critical Value	-3.8288
		10%	Critical Value	-3.3588

Not stationary
Lag =1

ADF Test Statistic	-2.632654	1%	Critical Value*	-4.9893
		5%	Critical Value	-3.8730
		10%	Critical Value	-3.3820

Not stationary
Lag =2

ADF Test Statistic	-5.323565	1%	Critical Value*	-5.1152
		5%	Critical Value	-3.9271
		10%	Critical Value	-3.4104

Stationary at all levels

Yt at levels, lag=0

ADF Test Statistic	-2.854190	1%	Critical Value*	-4.8870
		5%	Critical Value	-3.8288
		10%	Critical Value	-3.3588

Not stationary

Lag =1

ADF Test Statistic	-2.107480	1%	Critical Value*	-4.9893
		5%	Critical Value	-3.8730
		10%	Critical Value	-3.3820

Not stationary

Lag =2

ADF Test Statistic	-6.411058	1%	Critical Value*	-5.1152
		5%	Critical Value	-3.9271
		10%	Critical Value	-3.4104

Stationary at all levels

KENYA/U.K GRAPHS

Figure 3

Price of Tea over the Years

Figure 4

Price of coffee over the years.
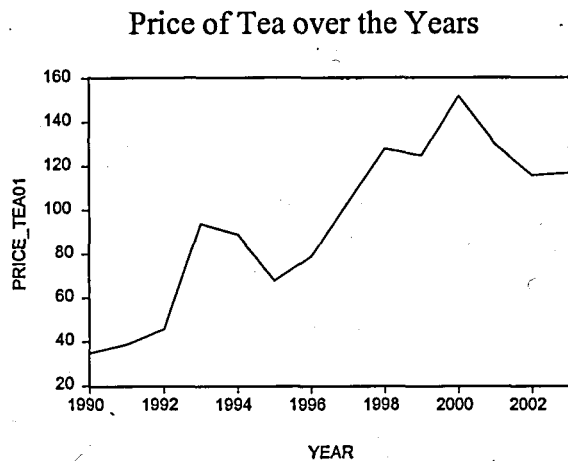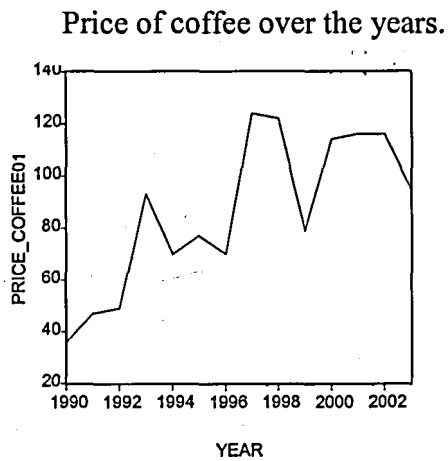
Figure 5

Quantity exported to U.K over the years.
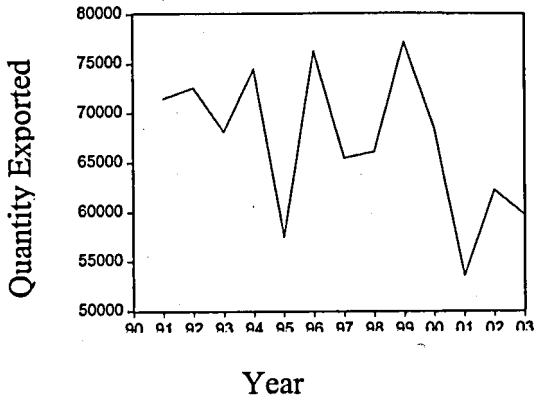
Year

Figure 6

GDP of U.K over the years
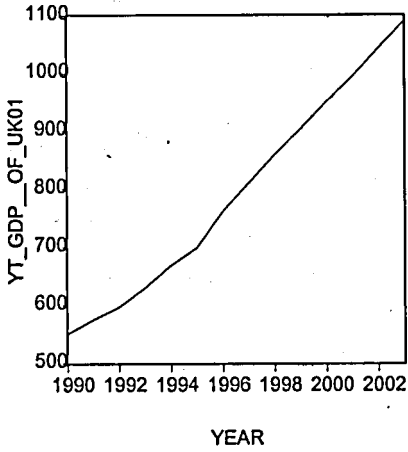
Figure 7

RER in US Dollars per pound over the years
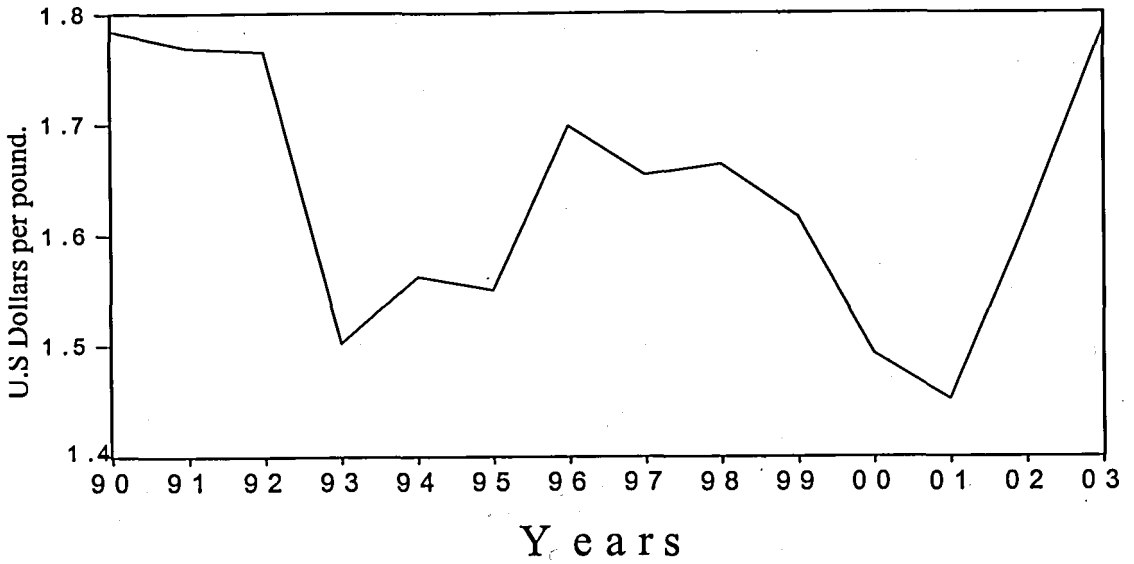
Kenya- Pakistan

Figure 8

Quantity exported to Pakistan versus time.

53

Figure 9

RER (Rupees per US Dollars) over the Years
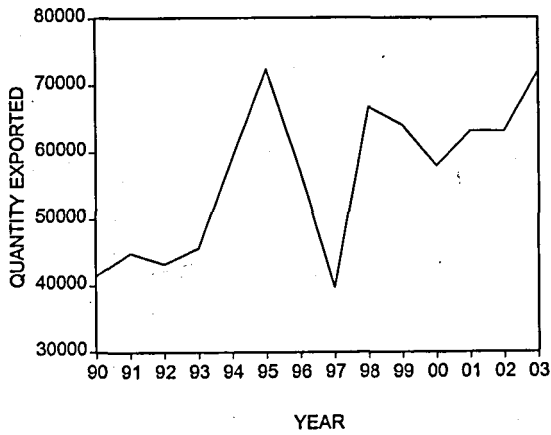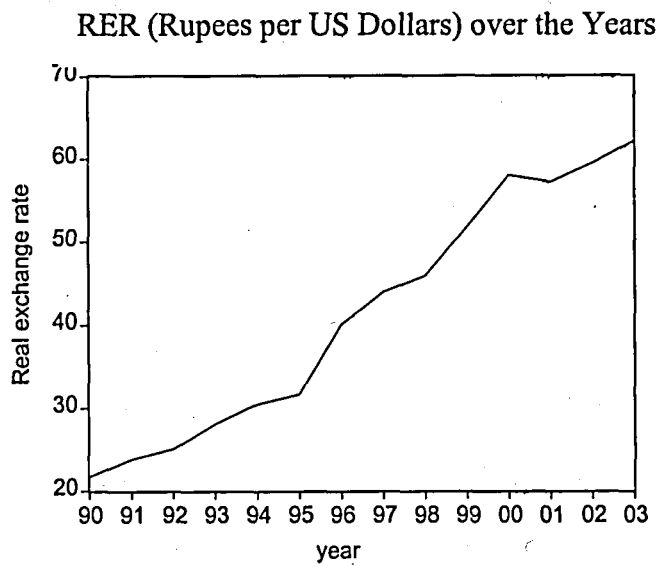
Figure 10

GDP of Pakistan over the Years.
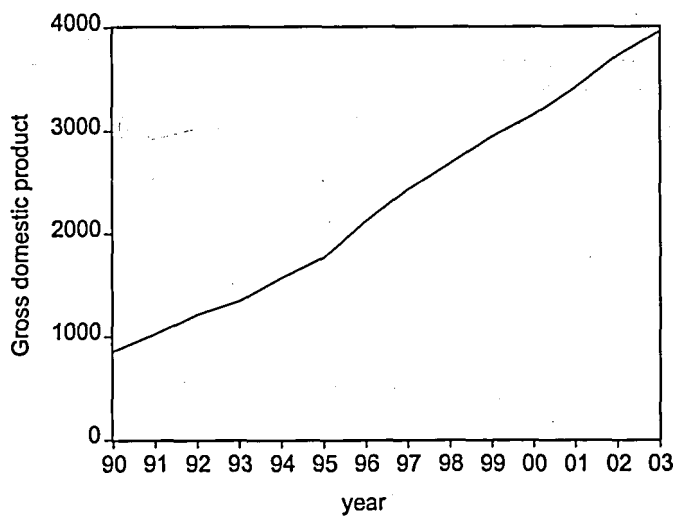
KENYA / EGYPT.

Figure 11

Quantity exported to Egypt versus time.
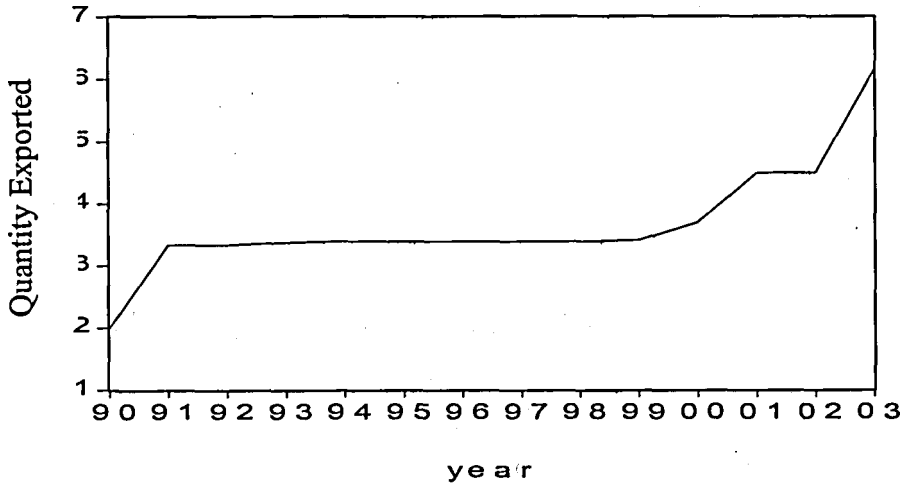
Figure 12

RER (Pounds per US Dollars) over the Years.
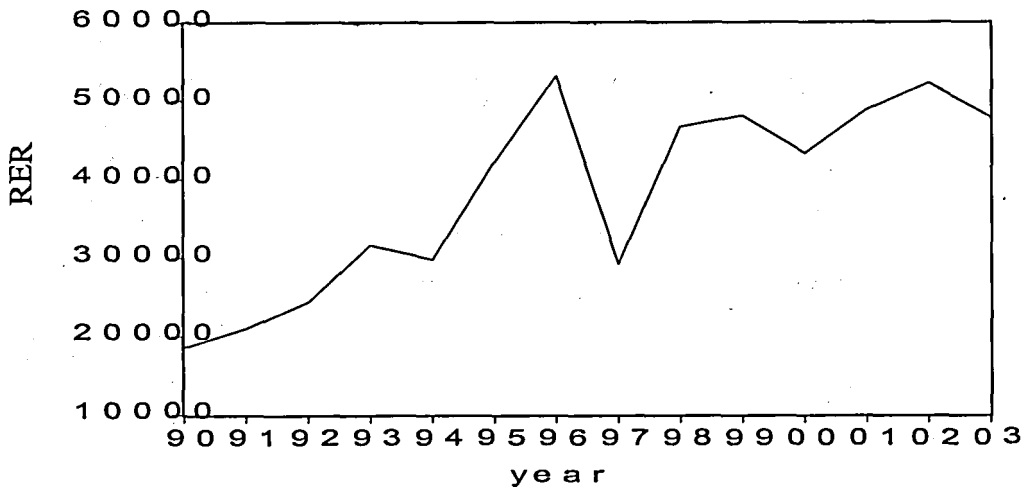
Figure 13

Gross Domestic Product of Egypt over the Years.
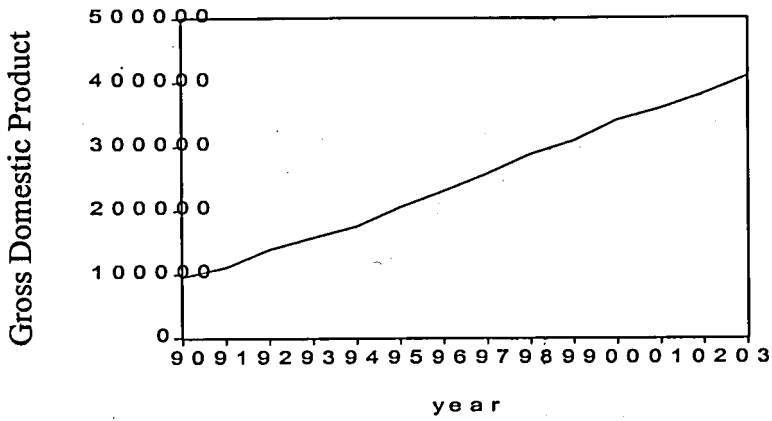
OVERALL

Figure 14

GDP of three Countries over the Years.
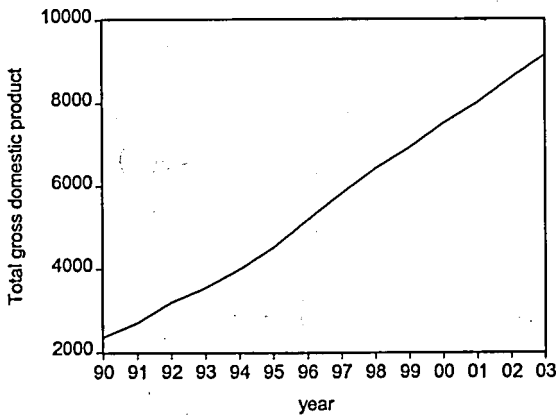
Figure 15
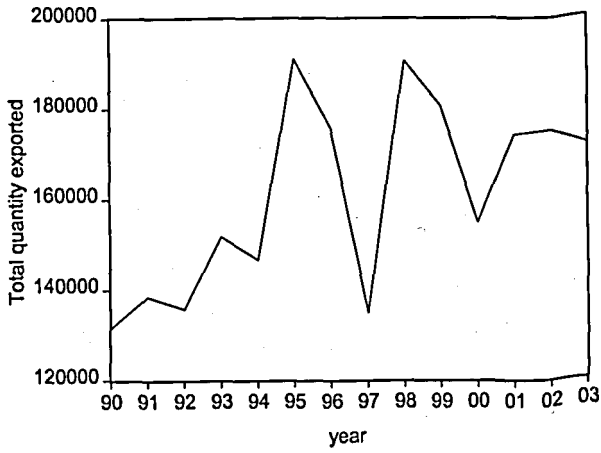
Total quantity exported to the three
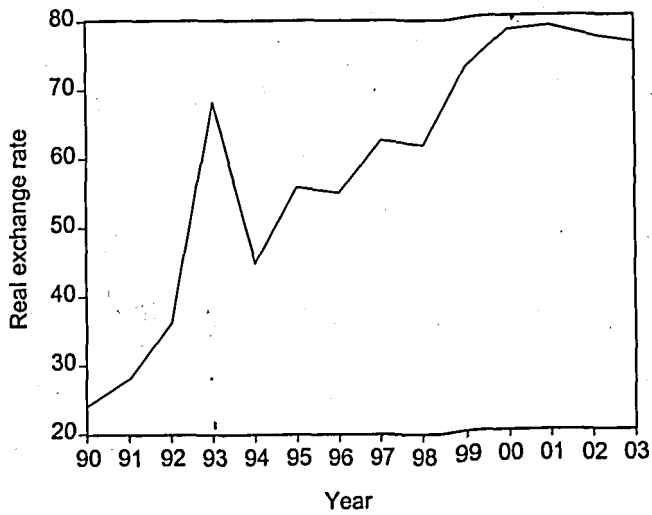
countries over the years.

Figure 16

RER (Ksh per US dollars) over the years.

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