THE INSTABILITY OF THE KENYAN COFFEE ECONOMY WITH SPECIAL REFERENCE TO THE 1962 INTERNATIONAL COFFEE AGREEMENT

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CHAPTER 1

INTRODUCTION

The instability of coffee prices and the disequilibrium between supply and demand for coffee during the post war period led to the formulation of the 1962 International Coffee Agreement. The Agreement seeks the collaboration of the principal coffee producing and consuming countries in its efforts to reduce price fluctuations and to bring production and consumption into long-term equilibrium. The participating producing countries are required by the Agreement to limit their exports to the traditional coffee market to specified annual quotas and to restrict planting of new coffee trees. The degree to which a country may be able to adopt these recommendations is largely dependent on the structure of production and marketing of coffee in that country.

1.1. Statement of the Problem:

The purpose of this study is (1) to locate and assemble data on production and marketing of coffee in Kenya for the period 1946 to 1964; (2) to describe and analyse the development and the structure of coffee production and marketing in Kenya; (3) to determine the degree of instability in production, yield, volume of exports, export proceeds, unit export value and purchasing power of the unit export value with respect to exports from the United Kingdom; (4) to illustrate and determine the relationship between the instability of various variables and especially between export proceeds, unit export value, volume of exports and total production; (5) to discuss and demonstrate the implications on the Kenyan coffee economy of either participation or non-participation in the 1962 International Coffee Agreement.

1.2. Importance of the Study:

This is a pioneer study and its first task is to assemble data on various aspects of coffee production and marketing in Kenya. The coffee industry in Kenya is almost entirely based on the production and marketing of arabica coffee. The production of other coffee species is negligible. For this reason the study covers exclusively the production and marketing of arabica coffee. The investigation covers the period 1946 to 1964 and therefore the data assembled covers a sufficiently long period so that their analysis should bring out the characteristic features of coffee production and marketing. Detailed information on these features is necessary especially at a period when the coffee industry may be required to adjust to new market conditions. Therefore the analysis should provide a sound basis for the formulation of coffee production and export policies for Kenya in the light of changing world market conditions for coffee. It should also provide a basis for evaluating and understanding sympathetically the problems of adjustment that Kenya, as a member nation of the International Coffee Agreement, may face in attempting to implement the recommendations of the Agreement.

It is also anticipated, that the study will reveal fields where operational and economic efficiency in the organisation of coffee production and marketing need to be improved. The identification of these fields of weakness may attract attention of the Coffee Board, the Marketing Board and the government who jointly share the responsibility of developing efficient production and marketing structures. It is hoped therefore that this investigation will stimulate interest in the coffee industry and act as a guide in directing further investigation especially into the fields where reliable information is at present negligible or even absent.

1.3. Definition of Instability:

The instability of variables in production and marketing of Kenyan

coffee is defined in terms of the residual component of these variables. The variables are measured over time and therefore form sets of time series data. Any such set may have four components, namely the secular trend, seasonal, cyclical and random components. The latter two are jointly often referred to as the residual component. For the purposes of this study a measure of instability in the coffee industry is the residual component of the sets of production and marketing data.

Changes in various variables of the coffee industry that may be prompted by changes in the residual component of these variables are generally considered harmful to the industry. The principal criticism against these changes is that they do not facilitate efficient allocation of resources. On the contrary, changes in the trend and seasonal components of such variables reflect supply and demand conditions and are therefore conducive to efficient allocation of resources.

1.4. Methods of Determination:

The calculations in this investigation include the determination of residual components of the following variables: total production, production in large-scale and small semi-commercialised farms, average yield and yield in the two sectors of the industry, total export proceeds, volume of exports, unit export value and the purchasing power of unit export value with respect to exports from the United Kingdom.

Instability of each set of data was expressed in instability indices. Each index value represents average year to year percentage change of the observations adjusted for trend. This result was obtained by using a log-variance method of calculation which was developed by Joseph Coppock in 1962 (1). The actual procedure employed in the calculations is shown in Appendix I. The method incorporates the adjustment of data for trend and the determination of average year to year percentage change for each set

of data.

Besides instability, the growth of various variables, notably volume of exports, export proceeds, acreages, total production and average yield, was determined using linear equations. The dispersion of the observations over time was also examined and expressed in percentages, range, mean and standard deviation.

In order to examine and compare changes in various production and marketing variables, it was necessary to remove the secular trend from the data. In this exercise, each annual observation of a series was expressed as a percentage of a straight line trend. The straight line trend was estimated by the method of least squares. This operation was performed on four kinds of observations namely, total proceeds, volume of exports, unit export value and total production. The inter-relationship of annual changes of these variables was examined and this was further elaborated with the aid of multiple regression equations and multiple correlation co-efficients.

An elaborate study on changes in the purchasing power of coffee ran into difficulties because no suitable price indices for the Kenyan economy have been prepared for a sufficiently long period. Lack of such indices was also the main reason for employing the least squares method for eliminating the trend value of data of various variables. However, the purchasing power of coffee was examined with respect to the United Kingdom export price index. This index was selected for the determination of the purchasing power of coffee because Kenya imports more from the United Kingdom than from any other single country.

1.5. Source of Data:

Data on the production and marketing of Kenyan coffee was assembled largely from the Annual Reports of the Department of Agriculture for the

period 1946 to 1964. The observations whose data was available in these reports in useful form include total acreages, acreages in the small semi-commercialised farms, total production, production in small semi-commercialised farms, total export proceeds, gross returns to the small semi-commercialised farms, volume of exports, unit export value and number of pulping stations. Where it was necessary to use data from other sources, these were acknowledged either on the tables or on the list of references.

The data from the annual reports of the Department of Agriculture was mainly used in its raw form although at times it was necessary to make several conversions. Conversion factors that were used in calculations are shown below:

1. Ratio of coffee cherry : clean coffee = 7:1
2. Ratio of coffee cherry : coffee parchment = 5.6 : 1
3. Out-turn = $\frac{\text{Bulk parchment - Bulk clean}}{\text{Bulk Parchment}} \times 100$

For the Kenyan coffee industry, the out-turn was assumed to be 20 per cent.

4. 1 metric ton = 0.98 long ton.
5. 132 lb. bag of clean coffee = 60 kilo bag of clean coffee.

For the purpose of comparing the unit export value with its purchasing power with respect to exports from the United Kingdom, it was necessary to use the United Kingdom export price index. This was obtained from the H.M.S.O. Central Statistical Office publication; the Annual Abstracts on Statistics 1947 to 1965.

Statistical information on coffee export quotas and the destination of coffee exports from Kenya was largely assembled from the F.A.O. Monthly

Bulletins of Agricultural Economics and Statistics and C.E.C. Plantation Crops publications. The particular volumes from which particular kind of data was extracted are duly acknowledged at the bottom of respective tables.

1.6. Guide to the Thesis:

The investigation into the problem of instability of production and marketing variables in the Kenyan coffee industry together with a review of pertinent literature is recorded and discussed in the nine chapters of this thesis. Chapter 1 is the introduction and covers the statement of the problem, importance of the study, definition of instability, methods of determination and source of data. Chapter 2 of the thesis covers the review of literature on the general problem of instability of markets for primary products. The review of literature covers in some detail the guiding principles of stabilisation schemes as stipulated by the United Nations, measures of reducing instability and the principal weaknesses of commodity stabilisation schemes.

In Chapter 3 an attempt has been made to record and analyse past and present factors that have influenced the development of the coffee industry. These factors vary widely in their effects on the industry because of their economic, technical, social and political nature. This chapter prepares the way for Chapter 4 in which growth and instability of various production variables are discussed and analysed. The variables used in the analysis include total acreage, bearing acreage, total production and average yield.

Chapter 5 of the thesis presents an appraisal of the development of present marketing institutions and their functions. The principal institutions are the Coffee Marketing Board, the Kenya Planters Co-operative Union, the Mild Coffee Trade Association of Eastern Africa, Co-operative Societies and Unions. The chapter is followed by the analysis of various

marketing variables in chapter 6. Here the changes of annual total proceeds from coffee exports is related to annual changes of the unit export value, total annual production, the United Kingdom export price index and the annual volume of exports. The chapter ends with a discussion on the implications of results of Appendix E in which the contributions of supply factors to the instability of the unit export value and total coffee export proceeds are determined.

The survey and appraisal of the structure of production and marketing of coffee in Kenya provides a basis for discussing the implications of the 1962 International Coffee Agreement on the coffee industry. Chapter 7 contains a description of the functions, objectives and organisation of the 1962 International Coffee Agreement. It also contains an examination of the Kenyan coffee export quota in relation to the total coffee production in Kenya and to the Kenyan share of the world coffee trade before the Agreement. This is followed by an appraisal of the case for and against Kenya participating in the International Coffee Agreement in Chapter 8.

A summary of the thesis is given in Chapter 9.

CHAPTER 2

REVIEW OF LITERATURE

THE GENERAL PROBLEM OF INSTABILITY OF MARKETS FOR PRIMARY PRODUCTS

2.1 Recent Developments in International Economic Instability.

In the twentieth century international economic instability has been and still remains a problem of great international and national concern. Although pressure on nations to adopt measures that would ameliorate the problem has been present over the whole period, one can identify four peaks of international crisis which stimulated nations to active co-operation. The first peak was during the aftermath of World War I, the second during the Great Depression in 1930's, the third around the end of Workd War II and the fourth in the period after 1950. It was in this period that the problem of raising the standards of living of the developing countries was recognised as an international rather than a national problem only.

The first three phases of international co-operation involved mainly the nations comprising the high income market economy countries. Recent developments have not only brought in the developing nations but have transformed the problem of international economic instability in that the instability of markets for primary products has become a more important issue in the fourth phase than in the previous three phases. Also

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NOTE: The United Nations definitions for "Developed", Developing", and "Centrally planned economies" and their synonyms have been adopted in this Thesis, (3 p. 3). The synonyms, as defined below, will be used interchangeably.

(1) "Developed" or "high income" market economy countries: North America, Western Europe, Australia, New Zealand, South Africa and Japan.

political and economic developments have brought greater ties between nations and especially between the high income and the developing nations.

The United Nations agencies have been in the fore in the analysis of international economic instability. Their studies have recently given emphasis on the effect of economic instability to economies of the developing countries (2) (3). Such studies have shown that the economies of developing countries are heavily dependent on the stability of export markets for primary products. A study by the Food and Agricultural Organisation of the United Nations, published in 1964, revealed that in 1961 the developing countries were dependent on exports of primary products for up to 90% of their export earnings (4). It also showed that developing countries accounted for less than 40 per cent of world primary commodity trade. In 1961 total exports of primary commodities were valued at $66.1 billion and the developing countries accounted for only $24.3 billion. Therefore their share of the world primary commodity market was only 37 per cent. The study also showed that in the same year the total export value of Agricultural commodities was $39.1 billion and the developing countries accounted for $14.2 billion. Thus their share of the world agricultural commodity trade was only 36 per cent.

These figures show that although developing countries have a high degree of dependence on export proceeds from primary products, they export less than the rest of the world. Theoretically therefore,

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(2) "Underdeveloped" or "less developed" or "developing" or "low income countries": Africa, Asia and Far East (excluding Japan: Mainland China and other Asian centrally planned economies), Latin America, i.e., World minus (1 and 3).

(3) "Centrally Planned" economies: U.S.S.R., Eastern Europe (excluding Yugoslavia), Mainland China, N. Vietnam, N. Korea, Mongolia.

instability of markets of primary products would be more likely to have a greater effect on incomes of primary producers in countries outside the developing countries than those inside this group of countries. In practice this does not happen because primary producers outside the developing countries are protected from international economic instability through national policies which ensure direct or indirect subsidies to the primary producing sector. While these measures are possible elsewhere they are unsuitable to developing countries, because these cannot afford the financial burden that is demanded by such support programmes. It is for this reason mainly that economic instability of markets for primary products is now regarded as a special problem of the less developed countries.

2.2 Future Prospects for Primary Products.

The economic instability of markets for primary products has resulted in instability of export earnings. This instability has been accompanied by poor future prospects. Schultz identifies three categories of economic prospects for primary products: first, the prospects of primary products relative to prices of all commodities at wholesale; second, the prospects of countries benefiting from economic development as producers of primary products; and finally, the prospects of countries which depend on the availability of primary products from abroad (5). He points out that the first type of prospects can be subjected to economic analysis and measurement, but the latter two are less amenable to economic analysis. It is in the analysis of the latter two categories of prospects that much controversy has arisen, even among economists.

During the post war years, prospects for agricultural exports have

been closely associated with four factors: first, a declining share of agricultural products in world trade; secondly, a sluggish rate of growth of agricultural exports; thirdly, declining unit values for agricultural exports and finally declining terms of trade for agricultural producers. This has been especially demonstrated in a study published by the Food and Agricultural Organisation of the United Nations (4). The study covers the period 1952-53 to 1959-61. It reveals that in 1959-61 the world agricultural trade increased by 36% and 14% in volume and value respectively over values for the period 1952-53. These values compare with 50% increases in both volume and value of world merchandise trade in the same period. Therefore these figures show a declining share of agricultural products in world trade.

The relative slow rate of growth of world agricultural trade has not been equally shared between the developed and the developing countries. The study by the Food and Agricultural Organisation of the United Nations shows that in 1959-61 agricultural exports from the high income countries stood at 46% and 24% in volume and value respectively above 1952-53 values. The corresponding figures for the low-income countries were 28% and 7%. Therefore in the period under review, the growth of agricultural exports from the high income countries was higher in both value and volume than in the low income countries. It is also evident that the expansion in volume of agricultural exports was accompanied by a more severe decline in the unit value in the low income than in the high income countries.

The severe decline of prices for agricultural exports partly explains the decline in purchasing power of the developing countries. The decline in purchasing power has been a consequence of the absolute decline in agricultural prices and a slow but steady increase in the prices of manufactured products. This has been demonstrated by the

results of the study by the Food and Agricultural Organisation of the United Nations(4). It reveals that between 1950 and 1962 the purchasing power of agricultural exports from developing countries declined by 32 per cent. The decline of export prices for food and agricultural raw materials from the developing countries accounted for 34% and 41% respectively of the total decline in purchasing power. This development has tended to impair the import capacity of the developing countries. Since investment in capital goods is a requirement for rapid economic development, the restraint in imports of capital goods that is imposed by the declining purchasing power forms a bottleneck in economic development.

The decline in purchasing power threatens the achievement of minimum growth targets in the developing countries. The growth rate targets set for the United Nations Development Decade by 1970 require minimum rates of growth of 5 per cent per annum. For many developing countries a rate of growth 5 per cent of income per capita will just keep ahead of the average rate of population. This is of the order of 2.5 per cent in most developing countries (7). Studies conducted by G.A.T.T., the United Nations and Alfred Maizels indicate that an annual rate of growth of 5 per cent in per capita incomes will not be achieved in the absence of major changes in the present market prospects, production and trade policies (8) (9) (10). Calculations by Blau point to the same conclusions (11). Assuming ceteris paribus conditions and a hypothetical growth rate of 5 per cent in the total gross domestic product up to 1970, she estimates that the deficit on current account in the developing countries is expected to rise to $20 billion in 1970. This figure is four times the deficit in 1959. From these studies it appears that the prospects of primary products generating economic development in the developing countries are poor in the light

of declining unit export values.

In conclusion, the economic prospects of primary products appear to be poor. The recent trend in unit export values of primary products relative to those of all commodities appear to be ominous, especially to producers in low income countries. In these countries, the export receipts from primary products may not meet the demands made on primary products to finance capital imports that are essential for economic development. From the point of view of importing countries, the prospects of importing agricultural products are somewhat unpredictable, for these are to some degree dependent on world political conditions (5).

2.3 Arguments on the Long Run Terms of Trade Between Agriculture and the Manufacturing Industry.

Economists have for a long time attempted to predict and explain the long run terms of trade between primary production and the manufacturing industry. A group of economists, notably Torrens, Ricardo, Malthus and Keynes, held that primary production and manufacturing were subject to different economic laws (12) (13). They postulated that primary production was subject to the law of diminishing returns while manufacturing was subject to the law of increasing returns. From these laws, Keynes and his collegues concluded that the long run terms of trade between primary products and manufacturers would favour the former over the latter. Objections have been voiced over this conclusion and Kindleberger says that, although the identification of decreasing returns with land intensive processes and increasing returns with capital intensive processes may be correct, it is a mistake to link decreasing returns to primary production and increasing returns to the manufacturing industry. This is because neither primary production nor the manufacturing industry is wholly dependent on the one kind of

resource, namely land and capital respectively, which are supposed to be their chief characteristics (12).

Historical developments do not support the above hypothesis, instead they have nurtured another school of thought bearing opposite views. This contends that the terms of trade between primary products and manufactures have been shifting over time in favour of the latter and that this trend is what should be expected in the past and in the future. The proponents of this thesis base their arguments, first, on monetary and wage policies; secondly, on administered prices in the industrial countries and finally on the operation of Engel's Law (14). It should be pointed out that this thesis has been used by Raul Prebisch, Hans Singer, W.A. Lewis and Gunnar Myrdal among others to explain the contention that the less developed countries have suffered secular deterioration in the commodity terms of trade. In so doing they have identified the terms of trade between developed and under-developed countries with those of manufactures and primary products. They justify this identification by pointing out that export prices of primary products from the developed countries are relatively more stable than those received by exporters in developing countries. The French economists point out that international transactions in agricultural products are divorced from cost and demand functions by subsidies and public policy. The costs of production are manipulated to achieve domestic objectives of income equalization (15). It is for these reasons that primary production in the high income countries tends to have similar characteristics to the manufacturing industry.

Raul Prebisch and his colleagues argue that monetary and wage policies and administered prices in high income countries have been designed to promote rising money wages and stable or rising prices. For this reason the higher rate of technological progress and increasing

productivity in these countries relative to similar developments in the developing countries has not resulted in low consumer prices. Low production costs resulting in low consumer prices would have been of benefit to the low income countries who purchase both consumer and capital goods from the high income countries. But the slower technological progress and lower productivity in the developing countries have resulted in low costs of production and low prices for food and raw materials. The products, especially the latter category, are exported to the high income countries. Following this argument Singer maintains that the high income countries have benefited both ways, first as consumers of primary products from the developing countries and secondly as producers and exporters of manufactured articles to the developing countries (16). While Haberler acknowledges the fact that many economists in the developed countries feel that, from the point of view of cyclical stability and social justice stable wages and falling prices would be a better system than the one ruling, he maintains that there is not evidence that the present system has hurt the economies of the developing countries. He is also sceptical that the present system has produced serious economic instability to producers of primary products in the developing countries (13).

The supporters of the long term deteriorating terms of trade for primary products, also argue that differential price movements between manufactures and primary products have been accentuated by a relative decrease in demand of primary products over time coupled by a relative increase of demand for manufactures. This has been attributed to the operation of Engel's Law and to technological progress in manufacturing, which has reduced the amount of raw materials used per unit of output (16). In addition to the reduction of the amount of raw materials used in

manufacturing, technological progress has produced synthetics which have adversely affected the demand for primary products through substitution. This is what Hirschman, in a controversial article calls "creative destruction" (17). Objections have been raised to the use of Engel's Law to explain the long run terms of trade between primary products and manufactures. The Law states that the percentage of expenditure on food is a decreasing function of income. Haberler points out that the law applies strictly to food and not to raw materials and further the differential price movements depend on not only demand but also on supply. Following these lines of argument, Haberler discounts that there has been any clear trend one way or another, but accepts irregular of at least cyclical fluctuations (13).

2.4 Estimates of the Long Run Terms of Trade Between Agriculture and Manufacturing Industry.

Statistical measurements of the long run trends of the terms of trade between primary products and manufactures have been undertaken recently but contributions to this field have been few and methods of analysis have been different. The most widely known study is that of the League of Nations in "Industrialisation and Foreign Trade", which was later reproduced and expanded in the United Nations study, "Relative Prices of Exports and Imports of Underdeveloped Countries" (2). Other more recent studies include those of Colin Clark, W. Arthur Lewis and E. Lerdau. The studies have been reviewed in several articles, including those of Morgan and Lerdau. The United Nations study reveals that the terms of trade were in favour of the primary producers from 1801 to the 1860's but after 1870's the decline in their terms of trade started and has tended to continue since then. The continuation of the trend has been supported by studies by G.A.T.T. and F.A.O. (20) (4).

It should be pointed out that the United Nations used trade data of the United Kingdom for the above analysis. This was justified by the fact that she has been the most important single exporter of manufactures and also the most important single consumer of imported primary products. United Nations generalisation about the long-run terms of trade for primary producers has been based on this study. This generalisation has been criticized and among the critics Haberler has been in the fore (13). He argues that the analysis of the United Kingdom data cannot be an adequate basis for generalising the terms of trade to primary producers with respect to other industrial countries. Further, he points out that the trade data do not allow for product quality changes, changes in transport costs and do not sufficiently take account of new products. The short-comings of trade data in these respects would therefore give faulty results.

For the purpose of long run economic policy in the primary producing countries, Clark and Lewis ventured to project the future course of their terms of trade. They used different models in their analysis and this resulted necessarily in different results (19). Lerdau has gone into pains to check whether the long run trend of the terms of trade as forecast by Lewis and Clark was maintained in 1950's. Clark calculated that by 1960 the price of primary products would be 90% more favourable to the primary producers than they were in the period 1925 - 24. Lewis obtained a lower figure of between 22% and 39% for the same period. By 1957 the forecast made by Lewis on the terms of trade turned out to be much nearer to the actual terms of trade than that made by Clark. Lerdau later used Lewis' equations to calculate the terms of trade for food and raw materials for 1950. He also calculated the actual terms of trade for that year. Using Lewis' equations the terms of trade were 94 and 96 for food and raw materials

respectively. While the calculated terms of trade for the year were 85 for both types of products. Therefore Lewis' equations predicted the future terms of trade with some degree of accuracy. However, Haberler emphasizes the problems of these projections and how these problems influence accurate forecasting (13). He therefore maintains that statistical forecasting does not allow a precise evaluation of the long run changes in the terms of trade.

2.5 Cyclical Fluctuations and the Terms of Trade Between Primary Products and Manufactures.

The supporters of the thesis of secular decline in the terms of trade between primary products and manufactures also argue that the prices of primary products fluctuate more than those of manufactured articles, especially during a business cycle. They point out that during a boom or a depression the prices of primary commodities fluctuate more than prices of manufactures. It follows from this, that the terms of trade for countries whose exports are predominantly composed of manufactures will tend to deteriorate less during the business cycle down-swings and improve to a less degree during upswings when compared to the terms of trade of countries with insignificant quantities of manufactures in their exports. The latter category of countries experience greater fluctuations in their terms of trade. Following this argument, its proponents argue that primary producers in the developing countries are not only faced by long term declining terms of trade for their primary exports, but also more violent cyclical fluctuations. Given the characteristic behaviour of prices in a business cycle, depression effects are intensified by the deteriorating terms of trade for countries exporting predominantly primary products while the same effects are ameliorated by favourable terms of trade in

countries that export predominantly industrial manufactures.

Kindleberger has attempted to test the foregoing theory statistically for industrial Europe and especially for the United Kingdom (21). He found that during the inter-war period the movements of the terms of trade during booms and depressions were as postulated in the theory of business cycles. Haberler does not disagree that there are cyclical changes in the terms of trade for primary producers, but he points out that economists should not exaggerate the magnitude of the problem and the degree of regularity of the cyclical pattern over time and space (13). He also asserts that economists should not assume without proof that the movement of the British terms of trade are always indicative of direction of change and amplitude of movements of the terms of trade for countries whose exports are dominated by primary products. To illustrate this point he draws on a study of C.M. Wright which revealed pronounced cyclical changes in ocean freight rates (22). Wright also showed that in the past depressions, drastic falls in freight rates resulted in lower prices c.i.f. in Britain and this gave rise to higher f.o.b. prices at distant ports of shipping. Consequently transport costs have tended to dampen the impact of depressions on the overseas primary producers. This effect has not been taken into account when calculating the terms of trade for primary producers who sell in the British market.

SUMMARY:

It is generally agreed that between 1870 and 1940 the terms of trade for countries exporting predominantly primary products declined. However, controversy still remains on the future trends, the regularity of the future pattern of the terms of trade and above all, the importance and magnitude of the problem. One group of economists is pessimistic about

the future prospects of primary products while the other is optimistic. It is not surprising therefore that they express diverse opinions on measures that should be adopted to either ameliorate or contain the declining terms of trade for countries whose exports are dominated by primary products. Perhaps Schultz makes a fair observation about this controversy; "The diversion on this issue also seems to depend on where we are, for in general those of us who are closest to countries or sectors that produce primary products foresee for them a bleak future, whereas those who are identified with countries that use them do not share this view. It could be that we are thus divided because we lack the virtue of being independent of our environment." (5).

The foregoing arguments show that controversy exists in the following fields:

1. The long run terms of trade between primary products and manufactures.
2. The terms of trade between countries predominantly exporting primary products and those whose exports are dominated by manufactures;
3. The economic prospects of primary products.

Despite the above controversy, there exists some agreement that market conditions for individual primary products are subject to cyclical and sporadic fluctuations. For instance, the instability of markets for primary products like tin, coffee, sugar and rubber has long been recognised and international measures have been in operation at one time or another to alleviate the problem (23). Several commodity stabilisation schemes have been designed to deal with unstable market conditions for individual primary commodities.

2.6 Guiding Principles of Stabilisation Schemes.

International commodity agreements have been popular weapons in the quest for price stabilisation. Wallich discerns three different periods

in which stabilisation schemes have been used; before the Great Depression; during the Depression itself; and the period following World War II (24). These periods were characterised by different commodity problems and for this reason the stabilisation principles employed were specific to each period.

During the boom period before the Great Depression, stabilisation schemes were organised solely by the producers. They leaned more towards price pegging than towards fixing a price range and paid little attention to the principle that the price mechanism should be left free to allocate resources according to market conditions. The instability of proceeds from exports of primary products was not widespread but limited to a few commodities. For this reason, commodity stabilisation schemes dealt with maladjustments of specific commodities (24). However during the Great Depression nearly all primary commodities were affected and conditions then not only necessitated the stabilisation of groups of commodities, but also the co-operation of both the producing and the importing countries. Prices were extremely low and there accumulated large stocks of commodity surpluses. Therefore the major concern was not maintaining prices at specific levels but that of lifting prices to cover the costs of production and disposing of large surpluses simultaneously. Unlike both these periods, the post war years have been characterised by unstable prices. Over this period, the primary concern of stabilisation schemes has been to smooth out price fluctuations and both producer and consumer participation has been assured. Although fluctuations of prices of primary products have been general, the commodity-by-commodity approach to stabilisation has been preferred. However, the recent evolution of more non-traditional methods of stabilisation, for instance compensatory financing, has resulted in schemes that are likely to render the commodity-by-commodity approach

obsolete.

During and after the World War II, the problem of international economic instability received more international co-operation than during the inter-war years. This resulted in the formation of many international organisations to deal with the problem. Coppock reviews developments leading to the formation of these agencies and in particular those formed under the auspices of the United Nations (1). The various agencies that tackle the problem of international economic instability come under the Economic and Social Council whose formation was provided for in the United Nations Charter. Under this Council emerged five specialised agencies, namely, the International Monetary Fund (I.M.F.), the International Bank for Reconstruction and Development (I.B.R.D.), the International Trade Organisation (I.T.O.), the Food and Agricultural Organisation (F.A.O.) and the International Labour Organisation (I.L.O.). The International Trade Organisation (I.T.O.) was to provide countries with a set of rules to govern international trading relations. The agency finally drew out the ITO Charter, popularly known as the Havana Charter, for an International Trade Organisation meeting in March, 1948. Unfortunately the Organisation failed to materialise because the United States failed to ratify the Charter. However, the commercial provisions of the Charter were wholly adopted and in effect became an international agreement after 1947 under the General Agreement on Tariffs and Trade (G.A.T.T.). It was under the commercial provisions of the Charter that the functions which international commodity agreements could serve, and the conditions under which they would be appropriate, were specified. The principles embodied in the commercial provisions have been accepted for general guidance by governments seeking to conclude international commodity agreements. Hudson summarises the principles as follows: (23):

(a) Agreements should be open to all governments who care to participate;

(b) They should provide for equal representation of exporting and importing countries;

(c) They should provide for equal protection of producer and consumer interests;

(d) That prices should be fair to consumers and producers;

(e) They should lay emphasis on expansion of consumption as well as on programmes for orderly adjustment of production;

(f) They should provide for a definite termination date to the Agreement, for review and amendment as necessary.

In formulating national price stabilisation and support schemes, national interests sometimes influence economic planners to adopt measures that turn out to be harmful to other nations. Davis records that such national efforts, especially in the form of commodity controls, were of some importance in the 1920's (25). During and after the Great Depression of the 1930's, similar national measures were multiplied in an effort to strengthen national economies. Nations used devices that manipulated commodity trade and in effect restricted international trade. Such devices included high tariffs, quantitative restrictions on imports, domestic import quotas and subsidies. These devices were widely used in Continental Europe and in the United States of America. The results of such policies did not take long before they became harmful to international trade thereby affecting other nations. It is due to this development that nations have created forums in the United Nations and in the General Agreement on Tariffs and Trade in which such issues can be discussed. For the purpose of avoiding the formulation of harmful national policies in agricultural production, the Food and Agricultural Organisation of the United Nations drew up a set of guiding principles for agricultural price stabilisation and support policies in 1961 (26).

So far more than 50 nations who are members of F.A.O. have notified their formal acceptance.

The general aims of agricultural price stabilisation policies within a country and the criteria by which they may be evaluated are outlined below:-

(i) they should provide an agricultural industry that is economically capable of providing for farmers and farm workers a standard of living commensurate with general standards of living in the country;

(ii) they should provide for an increase in the efficiency and competitiveness of agricultural production with particular aim of reducing protective measures;

(iii) the policies should seek to avoid excessive fluctuations of agricultural prices and incomes;

(iv) they should allow agricultural production to adjust to effective demand in such a way as to avoid shortage and burdensome surpluses;

(v) the policies should also facilitate balanced and expanding consumption of agricultural products at reasonably stable prices at a level equitable to both producers and consumers;

(vi) the policies should provide for balanced development between agricultural and other sectors of the economy thereby avoiding excessive transfer of payments from one sector to the other;

(vii) the policies should seek to improve international distribution of primary products bearing in mind that the attainment of this objective is a joint international responsibility involving both the importing and the exporting countries.

2.7 Measures for Reducing Instability.

The commodity-by-commodity approach to the price stabilisation problem has become the standard procedure because of the peculiarities

of commodity problems, thereby calling for specific treatment. For this reason the objectives of international commodity agreements may differ, but only in detail. The broad objectives remain the same. Blau has identified five objectives as opposed to only two as envisaged by the Havana Charter (27). These are outlined below as follows:-

(i) To uphold or raise export proceeds by restricting either production or exports or both;

(ii) They can attempt to prevent undue short term fluctuations of prices and quantities traded;

(iii) To facilitate long term structural adjustments as may be required in cases of persistent disequilibrium between production and consumption, particularly under conditions of inelastic supply and demand;

(iv) They can also contain measures to counteract the shrinkage of markets, especially shrinkage that results from protectionist policies, preferential arrangements between importing countries and some exporting countries and the effect of substitutes;

(v) They can be used to co-ordinate intergovernmental commodity programmes in commercial policy, production, prices, stocks, loans and aid for development programmes.

There have been many types of price stabilisation schemes that have either been attempted or proposed. These, however, can be classified using their major characteristics and Sir Sydney Caine identifies six types (28). An outline of his classification and problems facing each type of stabilisation scheme is discussed below. The types are as follows:-

2.7.1. International Regulation Schemes.

Typical in this category is the 'export quota' type of international commodity agreement. This has been the basis of the Rubber Agreement, 1934-44; the Tea Scheme, 1933-55 and the International Coffee Agreement,

1962. The salient features of the international regulation schemes are as follows; (25):

(a) they are negotiated by governments;

(b) the agreement is open to adhesion by all countries exporting or importing the commodity but include the principal exporting and consuming countries;

(c) it is negotiated to last for a specific term of years but it is renewable;

(d) the basic mechanism involves export regulation by quotas, usually production restrictions and in some instances specific controls over imports, stocks, export and import prices;

(e) it is enforced with the co-operation of all participating countries;

(f) the agreement usually has negotiated range of prices or a 'price goal' which it strives to maintain;

(g) the agreement is administered by either a Council, Board or Committee;

(h) voting powers in the administrative body are usually equally distributed between net exporting and net importing countries;

(i) the agreement contains measures to prevent non-participants from weakening or taking advantage of the international arrangements, for instance, by limiting imports from non-participants;

(j) the agreement adopts policies favourable to the expansion of consumption.

2.7.2 International Buffer-Stock Schemes.

These consist of arrangements for an organisation that holds off supplies when prices are declining and puts them back on the market when prices rise to a satisfactory level. An example of this type of scheme is the International Tin Agreement, 1956-61. The features that characterise buffer-stock schemes are as follows:-

(a) the agreement is contracted between governments of both the producing and importing countries;

(b) the agreement establishes an international buffer-stock agency which becomes the sole operator;

(c) the agreement is operated primarily to reduce short-term fluctuations of commodity prices;

(d) it also aims at diminishing disturbing shifts in production;

(e) the goals of the agreement are achieved by fixing 'ceiling' and 'floor' prices at which the agency would sell and buy respectively;

(f) a key factor in the success of the agreement is the creation of the 'buffer-stock', the contribution of which comes from the member countries;

(g) a possible impediment is the creation of a 'buffer-fund', which is provided by participating governments supplemented by funds borrowed from the financial markets;

(h) the buffer stock agency is supposed to be self-supporting financially.

2.7.3. International Agreements for Bulk-Sales and Purchases at Agreed Prices.

This is usually referred to as the "multi-laterial contract" type of agreement and it was the basis for the Wheat Agreement, 1949-59. The chief characteristics of this type of agreement include the following:-

(a) they negotiated by governments of both exporting and importing countries;

(b) the agreement is administered by either a Council, Board or a Committee;

(c) the objectives of the agreement are to reduce the instability of prices and incomes to producers and to assure the latter of market for their products while at the same time assuring consumers of supplies at reasonably stable prices;

(d) it involves setting minimum and maximum prices;

(e) it also involves a commitment on the part of the importing countries to purchase a 'guaranteed quantity' at prices within the agreed price range even when market prices may be below the minimum price;

(f) similarly, the exporting countries are committed to sell a 'guaranteed quantity' of the commodity to the signatory importing members, at prices within the agreed range of prices even when the ruling market price is above the maximum fixed price.

2.7.4 International Compensation Schemes.

The conclusion of international commodity agreements of the three types outlined above is proceeded by weary and often lengthy negotiations. The historical performance of agreements that have been concluded has been discouraging because more often than not, they work satisfactorily for short periods only. It is for this reason, besides the growing awareness of the need to maintain and even raise the export receipts of primary products, that has prompted a search for new methods either to replace or supplement the traditional ones. It was to fill this need that international compensation schemes have been devised.

Although compensatory financing was suggested as early as 1953, it did not meet popular approval until early in 1960's. Since then various compensatory financing schemes have been devised by some economists, various agencies of the United Nations and other political groups, for instance the Organisation of American States. Lovasy, in an analytical article, has discussed in detail the major characteristics and weaknesses of compensatory financing schemes, and also analyses in some detail, ten of the proposed schemes (29). The ten schemes consist of the Mutual Insurance Scheme devised by Olano (30); the Intergovernment

Compensation Agreements proposed by Hazelwood (31); the Principle of Compensation as an alternative by R.F. Kahn; the Development Insurance Fund (DIF) (32); the Stabilisation of Export Receipts devised by a group of experts appointed by the Organisation of American States; the Compensatory Facility of the International Monetary Fund; the Compensatory Financing to Counter Effects of Deterioration in the Terms of Trade devised by Raul Prebisch; The Price Compensation Agreements devised by J.E. Meade; the Supplementary Financial Measures presented by the United Kingdom and Sweden as a formal recommendation to the United Nations Conference on Trade and Development, (UNCTAD), May 1964; and finally the Import Guarantee Scheme proposed by the Indian Delegation to the same Conference. These schemes, and other types of compensatory financing schemes as well, differ in their finer details but broadly they have the following characteristics:-

(a) they are negotiated by governments of exporting and importing countries;

(b) the underlying motive of the schemes which may or may not be explicitly stated is to facilitate the primary producing countries to proceed with their economic development;

(c) compensatory financing may be based on individual commodity prices, or total export proceeds of a large number of commodities, and with reference to either their short term or long run fluctuations or both;

(d) all schemes have a 'price standard', this could be in form of stated price, price range, or terms of trade deviation, outside which compensatory financing occurs;

(e) the schemes may be divided into two categories namely those that transfer incomes from importing to exporting countries only and those that effect transfers to either group of countries depending

on which way the relevant economic variables are changing;

(f) payments are made to governments and not to individual consumers and producers;

(g) financing is not levied by taxing the consumer but may be made by taxing the producer;

(h) the essence of the mechanism is to leave the ruling market prices free of interference.

2.7.5 National Marketing Boards.

Commodity marketing Boards are multifunctional in nature, usually performing the normal duties of a marketing body, but they can be designed with a specific purpose of stabilising prices and incomes received by farmers. Boards that have functioned in this manner include the West African Cocoa and Groundnut Marketing Boards and the East African Cotton Marketing Boards (33), (34). National marketing boards are in fact monopoly-monopsony bodies for they acquire powers to handle all the sales and purchases of a commodity or a defined group of commodities. To the producers the Marketing Boards are monopsonies and the former are usually required to sell all their produce to the Board. They acquire these powers through government legislation and for this reason national marketing boards are under the over-all supervision of the government. The salient features of price and income stabilisation boards are outlined below. For further details, see Warley (35).

(a) the Board has power to buy and sell a specified product or a group of products;

(b) it has powers to determine the quantity and quality of produce which each producer may offer for sale;

(c) it therefore prescribes the manner in which the commodity may be

graded, packaged and marketed.

(d) it determines the prices that the farmers will receive and the manner of making the payments;

(e) it may be empowered to impose fines on those producers who may break its regulations;

(f) the Board usually has power to impose levies on producers to finance its activities;

(g) the Board determines the terms and conditions under which the commodity will be sold;

(h) it also determines the persons to whom the product may be sold and the agents who may handle the product at various stages of the marketing channel;

(i) the Board is constituted by farmers, usually through representative members who are elected from various producer districts;

(j) besides the elected members, the Board has a permanent staff which executes and administers its policies.

2.7.6 National Taxation Systems.

These systems are designed to tax exports of primary products during periods of high prices and to subsidise primary production when the prices are declining. Their chief objective is to dampen the impact of price fluctuations in international markets on demestic production, thereby evening out the disposable income received by primary producers. In this way the taxation policy provides a cushioning effect on the domestic economy. This may be effected by taxing the primary producing sector only or by general taxation. Nurkse prefers the latter to the former (36). The taxation of sectors that are sources of price and income fluctuations can be effected by two methods:-

(a) by the establishment of a system of variable taxes and export

subsidies; or,

(b) by an exchange control agency. This would lower and raise the official exchange rates at which it takes over the foreign exchange proceeds of primary products. For this purpose besides others, a country adopts multiple exchange rates (37).

Nurkse prefers a general taxation policy to taxation of sectors that are cyclical leaders. This would be achieved through excise revenues, income taxes, import as well as export duties. These would be increased during export booms and reduced during slumps. Using this method the country would keep under control the expansion of incomes and increase of imports and this would enable it to accumulate a buffer fund of foreign exchange. This buffer fund would then be used for subsidies in depression years.

2.8 Principal Weaknesses of Commodity Stabilisation Schemes.

While some stabilisation schemes may have more defects than others, they all tend to influence certain common factors, but by varying degrees. Their common fields of weaknesses are really the weak provisions of the agreements and involve factors which by nature are difficult to determine statistically. The common fields of weaknesses are discussed in the following paragraphs.

(a) Stabilisation Price and the Long-Term Trend of Commodity Price:

The difficulties of stabilisation reduce to the single problem of maintaining contact with the long-run trend of commodity price. The greater the disturbance of the stabilisation price from the long-run trend the greater is the danger of chronic disequilibrium between supply and demand functions of the commodity in question. The Bufferstocks, Multi-laterial Contract, Compensatory Financing and Counter-cyclical fiscal Policy have attracted economists because these stabilisation

schemes have least interference on the producer and consumer prices and this enables the price mechanism to transmit market conditions to both the producer and the consumer. On the other hand, in stabilisation schemes where the prices are fixed through negotiations, the chief problem that arises is that of maintaining contact with the long-run trend. Hudson points out that the greater the income stability created by the agreements the greater is the distortion of desirable long-run adjustments (23). The danger of delaying or distorting the reactions on both the supply and the demand conditions is greatest where the elasticities are large.

It should be noticed too that nearly all stabilisation schemes have a specified 'price-goal'. This may be the maintenance of a given price level, a price range, terms of trade, compensation at a specified 'deviation ratio' from a trend and so on. In schemes where operations to maintain such goals are divorced from the price mechanism, the problem still remains that of determining payments that are consistent with the long-run trends. On the whole payments have been based on weighted or unweighted historical price data. Moving averages are popularly used and some experts emphasize the importance of weighting the moving average formula in order to give more importance to the current year prices in the calculation. In the determination of payments to producers Bauer and Paish maintain that the higher the elestacity of supply the higher should be the importance attached to current year prices and the declining importance of past year prices (33). Other experts, for instance Goudriaan and Lovasy, prefer simple interpolation of a trend line calculated as a moving average over many years (38) (29).

Some economists prefer stabilisation schemes that leave the price mechanism free to move to those that impose rigidity. The supporters

of the former schemes have faith in the allocative function of the price mechanism. In so doing they assume that the elasticities of both the demand and export supply functions are positive and not perverse. Whether these are actually elastic is not known, for it would be a difficult task to establish this assumption for all countries that are involved in the production and consumption of primary products. However, where the export supply functions are elastic, the stabilisation policy would interfere with the export production. Farmers would tend to produce more when prices are declining and less when prices are rising. Under circumstances where the export supply function is inelastic the stabilisation policy would have little influence on production. Also there would be no advantages in leaving the price mechanism free. Where the elasticity of demand for primary products is high persistent high prices encourage the production of substitutes and economising of materials used per unit output of finished product. This development results in permanent reduction of demand for primary products.

Further criticism levelled against stabilisation schemes that allow the prices of primary commodities to fluctuate arise from disruptive short-run structural adaptation that may be stimulated by prices during a boom or a business recession. Under such circumstances resources may shift into or away from the sector producing primary products for export. Such short term structural adjustments are disruptive to any economy and no responsible government would allow this to happen for welfare reasons.

In developing countries a period of high prices is usually accompanied by expansion of consumer requirements especially through the demonstration effect. Once consumption has increased in good years, it must be maintained in bad years. For this reason, periods

of fluctuating prices of primary products are likely to be characterised by inflation and reduced investment. The policy of making payments to governments instead of producers during such periods would undoubtedly mean an overall improvement on investment funds.

(b) Stabilisation Funds and their Opportunity Cost.

All stabilisation schemes involve the expenditure of large amounts of resources. These are used to purchase stocks, constructing storage facilities, establishment of buffer funds, running costs of the agreements and such other expenses. In particular, the requirements of capital in buffer-stock type of stabilisation schemes are very high. Also, although it is the expressed wish to both producers and consumers to negotiate agreements that would assure both parties of equitable prices, the negotiated prices almost invariably result in a build up of stocks in the producing countries. All forms of stocks represent wasteful and unproductive investment. For this reason stabilisation schemes that result in holding of stocks have been severely criticised especially because the idle resources are desperately needed for development purposes.

However, Nurkse warns that stabilisation costs should not be analysed in isolation, for they may pay substantial dividends in terms of long-term development in the primary producing countries, (36).

(c) Transfer of Income and Revenue Implications of Stabilisation.

The compensatory financing schemes have been commended as superior means of stabilising prices of primary products as opposed to the traditional types of arrangements because they assure developing countries of funds that they require for economic development. Singer points out that such transfer of incomes from the importing to the

producing countries will contribute to economic development only if absorbed into their economic system (16). Wallich observes that the transfer of income is effected in form of income and not investible capital. For this reason, he argues that the recipient country may save a substantial proportion of the transferred income and only a small proportion may be invested. He further suggests that probably the same amount of funds would be more effective on development if this was issued in form of an investment grant or loan (24).

Stabilisation has been criticised in favour of instability for the reason that more capital may be formed when incomes are high periodically, with large profits going to export producers than when incomes are more stable and more evenly distributed (39). This contention by Caine has been criticised because of the risks of inflation engendered by fluctuating prices and the crippling effect on economic development because of speculation that narrows the investment horizon (24). However, Caine raises a number of issues on the effect of stabilisation on the total income received by primary producers. He points out that statistical studies on instability are followed by inferences that claim that instability is a ruinous phenomenon but without further detailed studies to evaluate these inferences. Studies on Australian greasy wool tend to support Caine's contentions.

In the course of evaluating a buffer stocks programme proposed for Australian greasy wool, Powell and Campbell point out that without knowledge of demand elasticities and how these change with rising or falling prices, the profitability of buffer-stock operations become a matter of chance (40). Their study showed that buffer stock receipts were sensitive to small changes of the elasticity of demand. Consequently buying on a market characterised by an inelastic demand

and selling in another characterised by an elastic demand would generally lead to gains. Operations in markets with opposite characteristics would lead to losses. Thus, there are hidden gains and losses in operating buffer stock schemes. Previous analysis justifying the operation of buffer stocks assumed that the elasticity of demand did not alter between the time of buying and the time of selling the acquired stocks. Such revelations by Powell and Campbell point out the difficulties into which stabilisation schemes may be falling unwittingly.

(d) Rigidity in Patterns of Trade and Production.

Most stabilisation schemes whether at the national or international level raise the problem of rigidity in patterns on trade and production and especially the 'export-quota' type of international commodity agreement. The problem in this type of agreement arises from the basis on which export quotas and annual increments of productive capacity are negotiated. Usually negotiation on these allocations is based on historical performance in export trade and the current level of production. The increment of export quotas and the productive capacity is fixed on a pro-rata basis. Consequently, negotiations ignore the fact that some producing countries are more efficient than others and therefore the agreement tends to shield high cost producers. The latter are not only allowed to maintain their share of the export market and their productive capacity but also to expand them. Although this weakness has been pointed out for the 'export quota' type of agreement, the defect is less noticeable with other types of stabilisation schemes. Bauer and Paish have shown that national measures taken especially through marketing boards may have a restrictive output effect. They showed that stabilisation practices of the West

African Marketing Boards in the post war boom years resulted in restricting the volume of output for export (33).

(e) Conflict between National and International Stabilisation Policies.

Internation stabilisation schemes are usually negotiated for short periods only. They are supposedly designed to influence the short term supply and demand conditions. The negotiators emphasize that the operations of the stabilisation schemes should not tamper with the long-run trends of prices. The negotiations are based therefore on the assumption that the phenomenon of fluctuating prices for primary products is temporary and when removed the level of prices should return to normal. Usually there is no unanimity on the sources of factors that cause or even influence this temporary phenomenon. One of the factors that usually gets least attention in the negotiations is the capacity of production in each producing country. The capacity of production in each such country is influenced by the national production policy. Nearly all countries involved in negotiations are reluctant to invite external bodies to examine their national production policies. Among other factors, such policies are designed to incorporate the following requirements:-

(i) national policies are designed to counteract inflationary tendancies that are likely to be transmitted to the national economy by changes of prices in the world market;

(ii) national policies are designed also to avoid short-run structural adjustments especially those that may be generated by economic cycles in other countries;

(iii) they are designed to encourage the development of rural processing industries which would provide valuable means of saving and earning additional foreign exchange through creation of

"added value" on primary products previously exported or on products imported previously as processed products;

(iv) the government usually takes the responsibility of organising numerous small producers who have no means of knowing what quantity or quality of product is required on the world market; besides the producers may have no means of getting information on short term price fluctuations;

(v) national policies are also designed to eliminate the possibility of exploitation of the producer by the middlemen;

(vi) national policies are designed to facilitate easy taxation to provide general revenue for development purposes;

(vii) national policies are often designed to protect domestic production from competition from foreign producers. An example of this is the reluctance of developed countries to allow processed products from developing countries to compete with domestic production. As pointed out by Singer, the traditional type of foreign investment in the primary producing countries created outposts of economies of the developed countries (16). This relationship stimulated capital investment in the industrial nations to process primary products. In order to protect these industries and for revenue purposes, national policies in the high income countries have implemented high tariffs on processed products from primary producing countries, quotas, internal taxes on consumption and even quantitative restrictions.

In conclusion, it would appear, therefore, that the problem of fluctuating prices for primary products is recurring. Efforts to stabilise the prices are largely frustrated by national policies which are rarely discussed in the formulation of international stabilisation schemes.

2.9 SUMMARY.

Recent developments in international economic instability with special reference to the marketing of primary products have been reviewed. The economic prospects of primary products remains a controversial subject. Controversy is particularly rife in two fields, namely the long-run terms of trade between primary products and manufactures and the long-run terms of trade between countries that predominantly export primary products and those whose exports are dominated by manufactures.

Despite the above controversy, there exists some agreement that market conditions for individual primary products are subject to cyclical and sporadic fluctuations. Several commodity stabilisation schemes have been designed to deal with the unstable market conditions for individual primary commodities. A number of international agencies have been associated with these stabilisation schemes and principles under which the schemes may be established have been formulated.

There are several devices that may be employed in an attempt to stabilise markets for primary products. These include International Regulation Schemes, International Buffer-stock Schemes, International Agreements for Bulk-sales and Purchases, International Compensation Schemes, National Marketing Boards and National Taxation Systems.

While some stabilisation schemes may have more defects than others, they all tend to influence certain common factors, but by varying degrees. They also have common fields of weaknesses. These include the difficulty of maintaining contact with the long-run trend of commodity prices; the employment of large quantities of resources at high opportunity cost; they impose rigidity in patterns of trade and production and finally they have so far failed to find a compromise solution to the conflict between national and international interests.

CHAPTER 3.

FACTORS INFLUENCING COFFEE PRODUCTION IN KENYA.

In this chapter an attempt is made to classify and analyse factors that have influenced and continue to influence coffee production in Kenya. These factors may be divided into eight categories and each set of factors has been examined under the appropriate heading. The headings are namely: historical and political factors; systems of production and their characteristics; species of coffee grown and their cultural problems; background to coffee legislation; legislation of coffee production; structure of production costs; problems of land tenure and availability of agricultural credit.

3.1 Historical and Political Factors:

The Republic of Kenya, formerly a British Crown Colony, achieved political independent status on 12th December, 1963. Exactly a year later, the constitution was changed to that of a Republic. Kenya is a member of both the Commonwealth of Nations and the United Nations Organisation.

The Republic of Kenya covers 224,960 square miles and lies astride the equator extending approximately four degrees North and South of the equator. The climate is influenced by the close proximity to the Indian Ocean, Lake Victoria and the presence of the highlands which rise to the slopes of 17,040 ft. Mt. Kenya, which is continually snow covered. These factors have given rise to a wide variety of climatic conditions.

For administrative purposes the Republic is divided into seven provinces, namely: Nyanza, Western, Rift Valley, Central, Eastern, North Eastern and Coast. Agricultural extension services are organised on the basis of these administrative units. The location of the provinces and

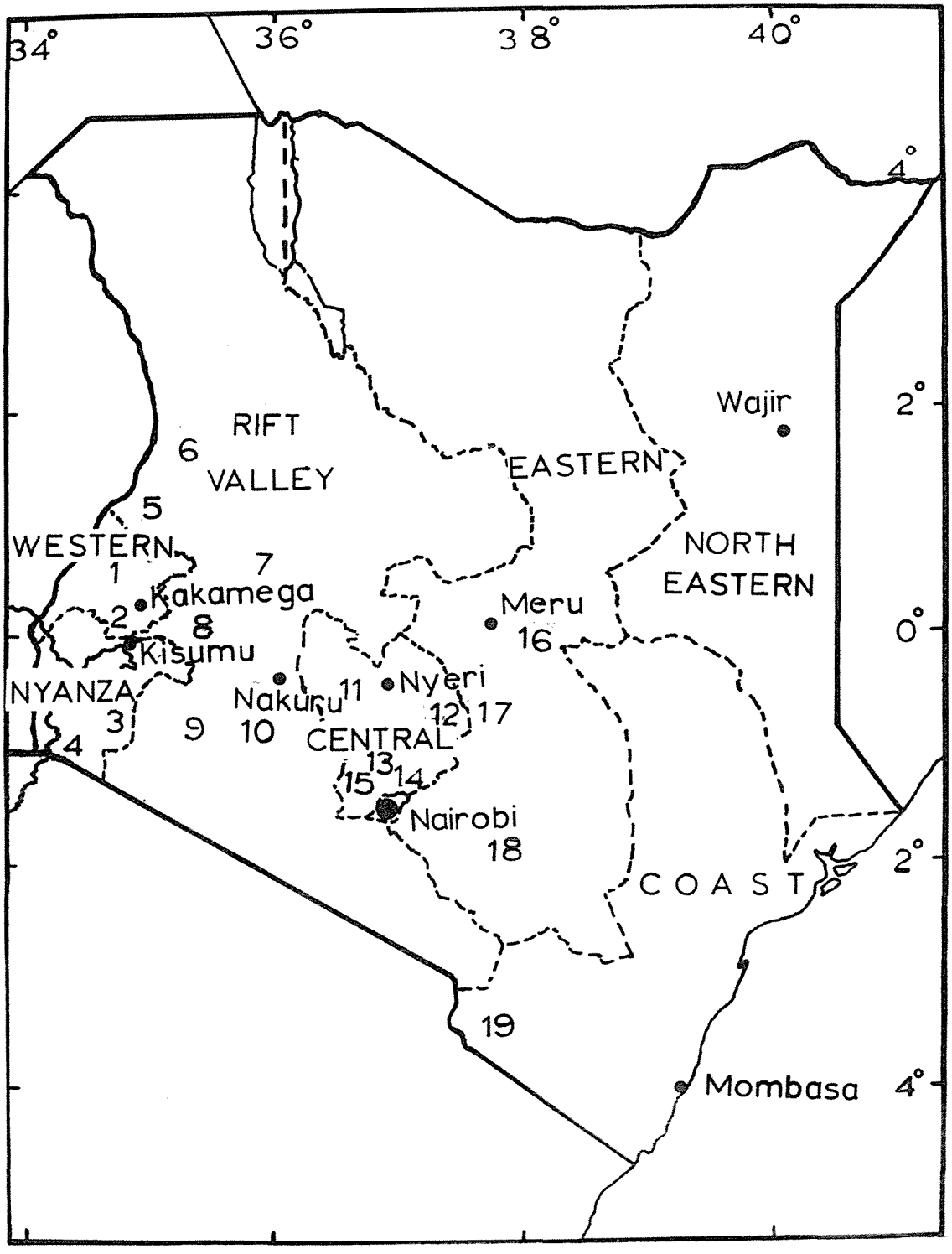

Fig. 3.1.1. Administrative Provinces and Principal Coffee Districts

KEY TO FIG. 3.1.1.

I. Administrative Provinces.

1. Western
2. Nyanza
3. Rift Valley
4. Central
5. Eastern
6. North Eastern
7. Coast

II. Principal Coffee Districts.

1. Bungoma
2. Kakamega
3. Kisii
4. South Nyanza
5. Trans Nzoia
6. West Pokot
7. Baringo
8. Nandi
9. Kericho
10. Nakuru
11. Nyeri
12. Kirinyaga
13. Muranga
14. Thika
15. Kiambu
16. Meru
17. Embu
18. Machakos
19. Taita

principal coffee areas is shown on Fig. 3.1.1. The coffee industry is important in Nyanza, Western, Rift Valley, Central Eastern and Coast Provinces. The chief coffee producing districts, however, are situated in the Central and Eastern Provinces. In other provinces the production of coffee is not widespread but is located on some suitable isolated areas as well as on land that is marginal for coffee. Historical and political reasons have influenced the establishment of production units on such marginal land.

The population of Kenya was estimated at 9,104,000 at the end of June, 1964 (41). Its annual rate of growth was reported to be 3 per cent. The non-African population is composed mainly of Asians, some Europeans and a few Arabs. In mid 1964 there were 183,000 Asians, while at the end of that year the European population stood at 40,000.

Of the non-African population, the Europeans are the only important coffee producers. The European farmers were in fact responsible for the early development of the coffee industry. Even today they account for more than 50 per cent of total coffee exports. But a significant proportion of the coffee plants in their plantations and mixed farms are old, low yielding and produce coffee of varied quality. On the other hand, the bulk of coffee plants in African areas are young, high yielding and produce coffee of high cup quality.

The difference in the state of coffee plants represents old and recent investment and not management. The European pioneer farmer planted coffee when there was little knowledge on yields and suitability of the coffee plant to various climatic zones. Although many farms and plantations have changed hands several times, they have done so as going business concerns and that is why these old and sometimes nondescript coffee plants have tended to remain unchanged. Other factors that have influenced their perpetration include high costs of establishing new

plants and long duration between planting and the first harvest. In the face of declining coffee prices the government policy should be to aid replanting programmes in the suitable coffee areas and to encourage the diversion of marginal areas to more economic agricultural enterprises.

3.2. Systems of Production and their characteristics.

The Production of coffee in Kenya may be classified into three major systems, namely, production in plantations, mixed farms and small semi-commercialisedfarms. The plantation system is characterised by large-scale production organised by both individuals and companies. Usually there are no other forms of enterprise on the property; the plantation system is essentially monocultural. This system of production is prevalent in the chief coffee producing districts which are situated to the east of the Great Rift Valley. The system of mixed farming involves the cultivation of several crops which are usually selected in such a way as to fit into a predetermined and balanced pattern of mutual dependence between crops and stock. This practice is widespread in properties situated to the west of the Great Rift Valley. Both the plantation and mixed farm systems are organised on a profit making basis and definitely form part of the cash economy.

Coffee production in the small semi-commercialised farm system is almost entirely conducted by Africans. Production for the market has had to fit into traditional non-commercial agricultural patterns. Management decisions are taken on both profit making and subsistence bases. It is this complexity in decision making that distinguishes this system of production from the plantation and the mixed farm systems. The evolution of the small semi-commercialised farm system has been due largely to the agricultural development policy adopted by the previous colonial government. In all African areas, the Department of Agriculture dictated and determined what was to be grown each year (42). For many years the

Department ensured that every African family produced its own food supplies before growing any other types of crops. This has been referred to as the policy of self-sufficiency in food supplies (43).

It was through this policy that the present coffee production system in African districts developed. No farmers were allowed to grow coffee or other crops for sale unless they had already cultivated enough land for staple foodstuffs. Production for the market was therefore considered secondary to the production of subsistence food supplies. Consequently the small semi-commercialised farm system is characterised by small properties with coffee growing along side many foodstuffs, for instance maize, millets, beans, potatoes and bananas. Livestock may also be kept.

3.3. Species of Coffee Grown and their Cultural Problems.

On a species basis coffee production in Kenya may be divided into two categories, namely, the production of arabica and robusta coffees. Given annual rainfall of 35 - 70 inches, fertile friable and well drained soils, and the absence of frosts, arabica coffee grows in tropical and semi-tropical conditions. On the other hand, with similar soil characteristics robusta coffee thrives best in typical tropical and equatorial climatic conditions. The latter conditions are not widespread in Kenya and suitable land is restricted to parts of the Nyanza and Western provinces. Conditions suitable to arabica coffee are more widespread especially on the highlands up to an altitude of 6,000 feet above the sea level. Consequently the production of arabica coffee is dominant and the coffee industry is highly dependent on this species. In 1963/64 the total acreage planted to coffee was 206,380 and arabica coffee accounted for 99.81 per cent of the aggregate.

The production of arabica coffee is based on many varieties which continue to be evolved through selection, importation of seed and cuttings. Such programmes are carried out by the Coffee Research Foundation which is a research organisation financed by the coffee industry. Through years of research the Coffee Research Station, now the Coffee Research Foundation, evolved arabica coffee varieties suited to various climatic zones and characterised by high yields and high cup quality. The varieties in widespread use include S.L.6, S.L.14, S.L.28, S.L.34 and K.7. However, a large proportion of coffee in plantations and mixed farms probably originated from seed of Bourbon coffee first grown at St. Austin's Mission, Nairobi, in 1901 (43). Since crop research was at its embryonic state at the time, no rigorous selection of plants with respect to yields and climatic suitability was undertaken.

The coffee research services have also evolved cultural practices to deal with problems of weed control, fertilizer application, coffee pruning, availability of soil moisture, pests and disease control. The insect pests that attack coffee plants and fruits in Kenya are numerous, but successful control measures have been developed to contain all pests of economic importance. However, the remarkable advance in pest control has not been matched by similar advance in disease control. The two main diseases of coffee are the Coffee Leaf Rust and the Coffee Berry Disease. These are caused respectively by the fungi Hemileia vastatrix and Colletotrichum coffeanum. The Coffee Leaf Rust is no longer a serious problem and timely copper sprays prevent the fungus from causing significant decreases in coffee yield. The Coffee Berry Disease remains a serious threat to the industry. Research work on methods of control and related fields is in progress. It has already been established that precisely timed fungicide sprays will considerably

reduce the incidence of this disease (44). A most recent fungal disease to cause further concern in the industry is the Coffee Bark Disease. This is caused by Fusarium stilboides (45). This disease was reported in Taita District in 1963 and has added further burden to research on coffee pathology.

3.4 Background to Coffee Legislation.

The development of legislation in the coffee industry has been influenced by the general agricultural legislation and the policies of the Department of Agriculture. Prior to 1963, agriculture was covered by legislation enacted under the 1926 Crop Production and Livestock Ordinance. The ordinance empowered the Governor to legislate differently for African and non-African agriculture. Under powers of the Ordinance too, Proclamations, Rules and Regulations were passed and these covered all forms of production processes in agriculture. These forms of legislation reflected the policy of the Department which prior to political independence in 1963 remained that of developing the African and the non-African agriculture separately. This bi-sectorial development necessitated the delineation of agricultural land into Scheduled and Non-Scheduled Areas. The latter included all African Agriculture, while Scheduled Areas encompassed non-African agriculture. The non-African agricultural land has been and still is, largely occupied by European farmers.

In the Scheduled Areas the Department of Agriculture adopted an advisory role and intervened legally in the production of any type of stock or crop only when gross contravention of the Ordinance took place. In this way, farmers were left free to make their own management decisions. With government co-operation the European farmers quickly organised statutory boards, Land Banks and Co-operative societies. These bodies

since their inception have provided services that are necessary to a growing commercial agricultural community. The most important of these services included organised sources of agricultural credit, marketing, arrangements for purchases of farm requisites and sale of agricultural produce. It was in this environment that the coffee planters in the Scheduled Areas in co-ordination with the Government, established the Kenya Coffee Board in 1933, to co-ordinate production and marketing policies.

In the non-Scheduled Areas, the Department of Agriculture adopted a paternalistic policy towards African agriculture. This policy was evolved through the belief that the government was responsible for the welfare of the African (43). It was therefore thought desirable that farming policy should to a large extent, be dictated in the light of the experience and knowledge of officers of the government (42). The government was particularly anxious to ensure adequate food supplies, else it would be required to institute famine relief measures from time to time. Therefore it authorised the Department of Agriculture to adopt production programmes that encouraged district, regional and territorial self-sufficiency in food supplies (43). In launching the programmes, the Department of Agriculture took onto inself the task of making management decisions for all African producers. It was therefore responsible for making decisions on when and how and what livestock and crops were to be introduced into various districts. In this way, it was empowered to control the rate of expansion of each agricultural enterprise. In effect, the government through the Departmen of Agriculture, controlled the rate of commercialisation of African agriculture.

The reasons advanced for the desirability of the bi-sectoral agricultural development can be reduced to the supposed need for self-

sufficiency in food supplies, diversity of knowledge of production methods, lack of capital, problems of land tenure and especially problems of agricultural credit. However, other views on the desirability of such a policy have been put forward.*

With the advent of majority rule, the bureaucratic machinery which controlled the development of agriculture in African Areas began to change. To a large extent this was due to the change in political climate and increased rate of employment of African Officers at policy-making and administrative levels. A definite change of policy in the Department of Agriculture was effected by the termination of the bisectorial approach to agricultural development. Subsequently the racial zoning of agricultural land came to an end and development is now on a basis of a national agricultural development programme. It is worth noting that while these changes benefited agricultural production amongst African farmers, they created political and economic uncertainty amongst farmers of other nationalities.

3.5 Legislation on Coffee Production.

Despite the differences in development policy between the African and non-African agricultural areas prior to 1963, legislation in the coffee industry was basically the same for the two areas. The differences were those of detail to secure tighter control on the development of the industry in the African agricultural sector. The implementation of legislation was different and in the former Scheduled Areas it was largely left to the Coffee Board. In the African areas this task was undertaken by the Department of Agriculture, and farmers were not represented on the

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* Footnote: A United Nations team which reported its findings in a United Nations publication; "Enlangement of the Exchange Economy in Tropical Africa, 1952," stated that some governments of East and Central Africa envisaged that the development of African agriculture may have given rise

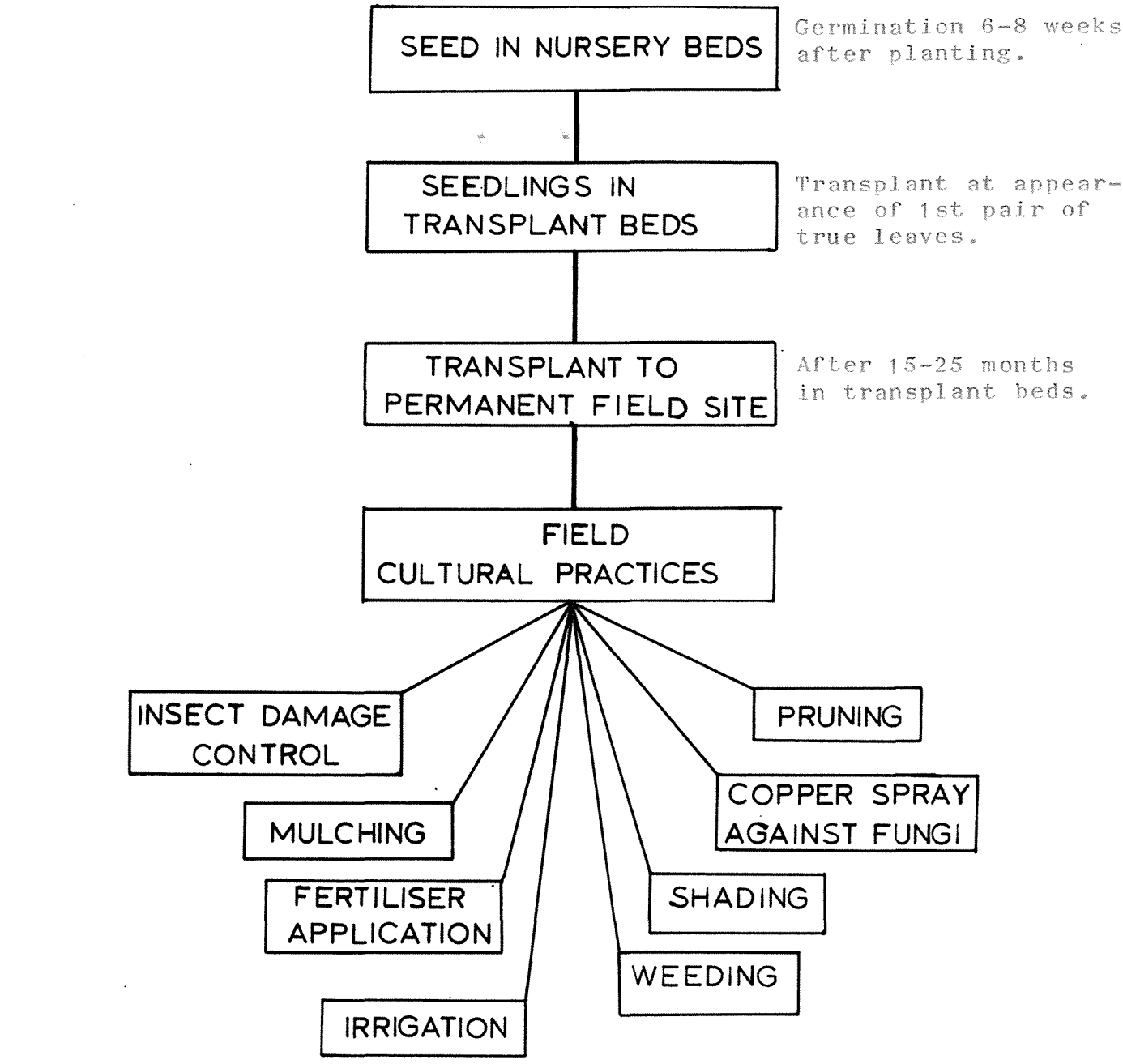

Fig. 3.5.1. Principal operations in Coffee Production.

Board. However, the Board was keen that produce from the African agricultural sector should be of as high quality as that from the Scheduled Areas. The Board in conjunction with the Department of Agriculture ensured this by a system of legislation and licensing that covered the chief processes in production.

The recent political changes in the country also effected changes in the composition of members of the coffee production and marketing agencies, so that African farmers are now represented on the Coffee Board by their elected members. Despite the change in the composition of the Board, the system of legislation and licensing that covered important production processes in the African areas prior to the change still exists. Its importance has been recognised and instead of lessening the degree of control to the level previously experienced in the Scheduled Areas, the system of legislation and licensing has been extended to the latter areas. This has been done in the interests of a unified agricultural policy. The important processes in production that are covered by legislation and licensing are discussed below. The principal processes in production are illustrated on Fig. 3.5.1.

3.5.1. Location of Production.

Prior to 1963, the location of production in the African areas was defined from time to time by the Director of Agriculture. It was

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to the following problems:-

1. African agriculture could have come into competition with production of non-African producers in local markets;
2. African agriculture could have competed in the demand for labour which was in great demand by all non-African enterprises;
3. rapid development of African Agriculture demanded large capital outlays and if undertaken this would have been diverted from other sectors of territorial economy;
4. rapid development of African agriculture would have improved economic opportunities of the rural people and this might well have reduced the flow of migrant labour from rural areas. This would have resulted in labour shortage outside the non-African enterprises.

TABLE 3.5.1. LEGISLATION ON COFFEE PLANTING

District.	Date First Planting Allowed.	Coffee Variety.
Kiambu	7/9/51	C. arabica
Forthall	10/1/51	c. arabica
Nyeri	1/12/49	c. arabica
Embu) Kirinyaga)	1934	c. arabica
Meru	1934	c. arabica and robusta
Machakos	10/4/53	c. arabica
Taita	1/12/49	c. arabica
Kisii) South Nyanza)	1934	c. arabica
Central Nyanza	1/10/37	c. robusta
North Nyanza	1/10/37	c. robusta
Kericho	26/7/56	c. arabica
Nandi	6/11/57	c. arabica
Elgon Nyanza	1/12/49	c. arabica

Note: The dates denote when coffee production was allowed in various African districts for the first time. However, only selected parts of each district were permitted to plant coffee and the varieties to be planted were specified.

Source: Proclamations, Rules and Regulations, Colony and Protectorate of Kenya, Vols. XIII - XXXIX, 1934 - 1960.

specifically stated that no African farmer should grow coffee outside such a defined area. The delineation of zones suitable to coffee cultivation was usually done after the completion of experimental field trials. Besides ecological suitability, the Director of Agriculture was expected to relate the zoned area to availability of supervision and costs of such supervision (46). He was also expected to take into account economic considerations that might have affected the interests of the African coffee growers. Table 3.5.1. shows the dates when various districts were granted permission to plant coffee.

The most limiting factor in the expansion of the coffee zone was the shortage of skilled and semi-skilled departmental staff whose duty was to supervise the production process. Their numbers were largely dependent on availability of funds, the rate of recruitment and on competition for trained personnel between the African and the non-African enterprises.

The farmers in the former Scheduled Areas were free to choose the location of their coffee enterprises. They had access to information and advice relevant to such a decision.

The Department of Agriculture and the Coffee Board continue to support the government policy of increasing the rate of commercialisation of agriculture in the African areas. For this reason limiting factors in coffee production, for instance absence of agricultural credit agencies, difficulties in obtaining farm inputs and the absence of reliable produce marketing agencies, are being speedily overcome. Nevertheless it is still necessary to limit the expansion of the coffee industry to areas that are suitable ecologically.

3.5.2 The Production Unit.

No coffee planter is legally allowed to plant coffee without a licence. Prior to 1960 a licence was issued to every intending planter

by the district administrative authority and the licence expired at the end of each year. The administrative authority in each district was expected to issue or re-issue the licence only after consultation with the Director of Agriculture or his representative. However, where coffee was a proved crop in the Scheduled Area districts, the licence was issued without delay. This was not so in the African areas where each intending planter in a defined coffee zone was required to obtain a permit from the Director of Agriculture prior to the issue of a licence. Before issuing the permit the Director had to be satisfied that his departmental staff had access to the planter's coffee holding for control and supervisory service. This consisted of the following:-

(a) ascertaining that the site was within the defined coffee zone and that the planting site was suitable;

(b) measuring out planting holes at a spacing of 9' by 9' and a depth of 3' and 3' in diameter;

(c) checking on the amount of manure or fertiliser used per hole;

(d) ensuring that the approved variety of coffee for the area was planted;

(e) ensuring that no more seedlings were planted out per season than the number permitted;

(f) ensuring that subsequent advice on cultural practices and picking would be available.

In addition to these strategies in coffee planting, the Director of Agriculture required to be satisfied that sufficient evidence was forthcoming from the intending planter showing that he could afford to carry out recommended cultivation practices. He relied on his field officers for advice on such matters. In practice, therefore, the officers had the discretion to select who should or should not plant coffee in their respective districts.

On 5th July, 1960, a new Coffee Ordinance came into operation and brought an end to the above restrictive legislation (47). Since then the control of production in African areas is largely done through producer co-operatives. Therefore, a planter's licence is issued to co-operative societies on behalf of their members. It is becoming increasingly clear that it is in the interests of the society that each member grower should follow the recommended cultural and management practices in production. Consequently the control of coffee quality is progressively passing from the Department of Agriculture to the co-operative societies and the planters themselves.

The Director of Agriculture, however, still controls the location and establishment of coffee pulping stations in areas where production is carried on in small semi-commercialised farms. The department's policy is to establish coffee pulping stations under co-operative societies. Such societies are credit-worthy and the department considers them more amenable to control than unorganised, small, scattered and numerous producers, in its efforts to ensure high quality coffee production.

The location of a co-operatively owned coffee pulping station is dependent on several factors, the major ones being the presence of enough coffee acreage in the area, the availability of a permanent water supply and roads and other transport facilities. The presence of adequate coffee acreage is considered to be the principal factor. The acreage is related to the capacity of the pulping machines that are available. Coffee pulpers range from small hand operated to large power driven machines. The Department of Agriculture has for a long time recommended the installation of pulpers with capacities of approximately 5 to 200 tons of clean coffee per season. Assuming an average yield of 4 cwt. clean to the acre, the minimum area would be

25 acres.

3.5.3 Coffee Seed:

In order to ensure that correct coffee varieties are established, seed disposal in African areas has been covered by legislation ever since the beginning of the industry. No African planter is legally allowed to dispose of any seed from his property without the permission of the Department of Agriculture. The only permissible disposal is that of selling his produce to the Coffee Marketing Board.

The nurserymen and co-operative societies obtain seed from an approved source, usually from the Coffee Research Foundation. [1.] They are forbidden from importing any seed. None of the above restrictions, with the exception of the prohibition of seed importation applied to planters in the Scheduled areas until 1962.

3.5.4 Coffee Nurseries and Disposal of Seedlings.

From 1962 no coffee planter, co-operative society or firm is allowed to sell coffee seedlings to any person unless the vendor is licensed to operate a commercial nursery. Individual planters, companies and co-operative societies are forbidden from purchasing seedlings from commercial nurseries without written authority from the Coffee Board. The Board sanctions the release of seedlings from the commercial nurseries.

The Department of Agriculture usually inspects and recommends the nursery site. It requires certain minimum standards of nursery management and in consultation with the Coffee Board it can refuse permission for the sale of seedlings. To attain the required level of management requires high capital expenditure, especially on labour, water supply, pests and disease control. These standards have often limited the supply of seedlings that a co-operative society can sell to

1. Formerly the Coffee Research Station, until October, 1963.

its members. This factor, coupled with poor management and unpredictable weather hazards, sometimes creates seedling shortages in African areas. Such shortages are met by purchases from African nurserymen but even these are too few to meet the total demand and usually further purchases are made from the former Scheduled Areas where each planter almost invariably operates his own nursery. Such transactions, however, require the approval of the Department of Agriculture, which first of all ascertains the variety of the seedlings, their health and the absence of pests and diseases.

3.6 Structure of Production Costs.

The nature of production costs varies between the large scale and the small semi-commercialised farms. In the large scale farms, capital inputs have to a considerable extent been substituted for labour inputs. This development has occurred especially in initial land preparation, cultivation, fertiliser application, spraying against fungal diseases and insect damage. In many farms where rainfall may at times prove inadequate for growth and carrying a crop through to ripening stage, overhead irrigation is becoming yet another economic capital investment. Picking of ripe cherry, mulching and pruning, still remain predominantly labour intensive operations.

In the small semi-commercialised farms, production is labour intensive. Initial land preparation, cultivations, mulching, pruning, picking of cherry, transport of cherry to pulping stations, fertiliser and manure application are all performed by hand labour. Spraying against fungal diseases and insect damage is done using all types of hand operated sprayer, the dominant type being the knapsack sprayer.

To the small semi-commercialised coffee grower, spraying is another production process, besides fertiliser application, which

requires high capital investment. In most coffee districts, spraying is done by the grower using his own spraying equipment. Equipment is largely purchased through the co-operative societies. In some districts, however, notably Kisii/South Nyanza, Kakamega and Bungoma, spraying is performed by teams which are hired and organised by co-operative societies. Team spraying programmes have had limited success and this has resulted in the build up of fungal diseases and high insect infestation in some districts. This problem is particularly serious in Kisii/South Nyanza districts. The major reason behind the failure of co-operatively operated spray teams is poor management. This may be explained by the low level of basic education and training in leadership that is common among the executive staff of co-operative societies. Therefore, until co-operatives can afford to employ staff with high management skills, it would appear that the Department of Agriculture should encourage owner-operated knapsack sprayers instead of co-operatively managed spray teams.

The costs of coffee production vary with the yields per acre. Although there is little reliable information on average yields, it is known that these vary widely between farms and districts. J.W.F. Rowe (1963) reported that between seasons 1954/55 and 1959/60, 34 per cent of total acreage in large scale farms yielded at least 7 cwt. of clean coffee per acre, while 17 per cent of total acreage realised below 3 cwt. of clean coffee per acre. The remaining proportion of total acreage realised yields of 3 to 7 cwt. per acre of clean coffee (48). Rowe also stated that costs of production were estimated at £200 per ton of clean coffee for yields of 10 cwt. clean coffee per acre, £220 per ton for 8 cwt. per acre and £280 per ton for 5-6 cwt. per acre.

There is no reliable information on coffee yields and their diversity in the small semi-commercialised coffee farms. Also hardly

any reliable work has been done on costs of production in this sector of the coffee industry. The determination of average costs per grower would be complicated by the level of capital inputs that is determined and provided for by co-operative societies on the behalf of the grower. However, it is generally agreed that production costs and response to coffee prices in this sector are low. A regional study of coffee farms in Nyeri District, by Eric Clayton, and in particular the study of input and output on two typical farms showed through normative supply functions, that coffee production would cease to be profitable, relative to other alternative enterprises, when the grower received less than £200 per ton for his product (49). But where coffee was the only cash crop, the supply of coffee would be inelastic over a wide price range. Under such conditions, Clayton found that if the grower received £150 per ton, it would be economic to reduce his acreage, but at £100 per ton coffee production would be uneconomic.

It would appear from the above analysis that costs of production in large scale and small semi-commercialised farms are in the order of at least £200 and £100 respectively.

3.7 Problems of Land Tenure.

For administrative and development purposes, agricultural land was classified into Scheduled and non-Scheduled Areas prior to 1963. The latter area was exclusively inhabited by the Africans while the Scheduled Area was occupied by non-Africans. The non African occupants were predominantly of European descent.

According to 1961 estimates by the Department of Agriculture, the Scheduled and the non-Scheduled Areas comprised of 7.5 and 120 million acres respectively (50). Of the 120 million acres in the non-Scheduled Area, only 11.65 million acres receive sufficient rainfall to support crop production. There were 3,600 and 950,000 farms in the Scheduled

and non-Scheduled Areas respectively. In the latter area, farms are smaller is size than in the Scheduled Areas. The 1961 census revealed that in the Scheduled Area more than 50 per cent of the farms were less than 1,000 acres in size but the range of farm size was 20 to over 50,000 acres.

Property rights have not been a problem in the development of agricultural production in the former Scheduled Areas. Land tenure evolved and developed along the traditional forms of land ownership in the western world. In 1961 there were 560,000 acres on freehold, 591,000 acres on 99 year leases and 6,350,000 on 999 year lease (50).

In the African areas land tenure has evolved along the traditional forms of property rights. These are of many forms and tend to differ between tribes. Land tenure may be based on family ownership or on tribal ownership and between these extremes there are numerous complicated forms of group ownership. No form of group ownership has been embodied in statutory law.

Among the majority of the African people individual land ownership is a recent development. This has actually affected only a small proportion of agricultural land and communal land ownership remains a widespread practice. This form of tenure was recognised early as a hinderance to commercialisation of agriculture. In 1934 the Kenya Land Commission recommended land reforms towards individual ownership, but this process did not start until the beginning of the Swynnerton Plan in 1954 (51), (52). The Swynnerton Plan was prepared in 1954 and was one of a series of development plans to accelerate the rate of agricultural production amongst the African farmers. This Plan necessitated changes in the laws governing land tenure. Consequently in 1956 the Native Tenure Rules were enacted under the Native Lands

Trust Ordinance and conferred security of tenure to individual land owners. These rules were followed by the 1959 Land Registration (Special Areas) Ordinance which ensured the indefeasibility of land titles (53).

These legal changes enhanced land reform and registered land titles continue to be issued as fast as the process of land consolidation, demarcation and surveying is completed. At the end of June, 1962, the Department of Agriculture reported that 1,081,000 acres comprising of 186,000 holdings had been registered for title (50). During the period 1964 - 1970, the Ministry of Economic Planning and Development envisages that the annual rate of consolidation will be 150,000 acres and in this period a total of 900,000 acres will have been consolidated and registered at a cost of £2.03 million (54).

Land reform is financed by the government in the hope that this will result in increased farm productivity (54). The total agricultural production on properties which are in transition from subsistence to market agriculture may be divided into production for subsistence and production for sale (55). Production for sale may further be divided into production for export and production for the domestic market. In Kenya the production for export market relies heavily on a narrow range of crops, the most important of which are coffee, tea, sisal, pyrethrum and cotton. Favourable market conditions for these products are vital to the success of the land reform.

3.8 Availability of Agricultural Credit.

Access to agricultural credit, especially to small co-operative societies and owners of small scale farms, will continue to influence the development and expansion of the coffee industry. Agricultural credit is now available from the Agricultural Finance Corporation, the Land and

Agricultural Bank, some co-operative societies, traders and from the development corporations of the commercial banks. The latter are, the Barclays Overseas Development Corporation Ltd., the National and Grindlays Finance and Development Corporation and the Standard Bank Finance and Development Corporation Ltd. (50). These corporations and traders issue loans to farmers with negotiable security while the Land and Agricultural Bank secures loans by a first mortgage of the land (54). Most small co-operative societies and owners of small scale farms cannot qualify for loans issued on strictly commercial basis because they cannot offer enough security. The principal function of the Agricultural Finance Corporation is to meet such demand for credit which is not sufficiently provided for by commercial banks and other credit institutions. Its loans are issued on special terms and special security arrangements. Their issue is combined with agricultural development programmes and extension services.

The present agricultural credit arrangements are only recent and prior to 1963 the small co-operative societies and owners of small scale farms did not have many sources of agricultural credit. The principal source of loans was the African Land Development Board which was established in 1950 (43). No security of loans was required by the Board and loans were issued under a closely supervised scheme. The loanees were nominated on the basis of integrity and past personal contact between each borrower and the government officers. For this reason the nominees for the loans were mostly influential persons in the community.

This source of agricultural credit was hardly adequate although it enhanced the introduction of some high milk yielding breeds of livestock and planting of export crops, for instance coffee, tea, pyrethrum and sisal.

The other government-sponsored credit institutions prior to 1963,

were the Board of Agriculture, the Land Settlement Board and the Land and Agricultural Bank. These, besides Commercial banks, trading companies, some co-operative societies for instance, the Kenya Farmers Association, provided agricultural credit to farmers in the former Scheduled Area. The activities of these institutions were closely combined with those of statutory boards and with the extension services of the Department of Agriculture. In this way these credit institutions were conducive to rapid development and sustainance of the coffee industry in the Scheduled Area.

The government-sponsored agricultural credit institutions, commercial banks and traders were unable to provide the volume and quantity of credit which farmers and co-operatives in the African areas needed. These institutions were operated on strictly commercial lines and therefore required the existence of a negotiable security for loans and some evidence that the borrower would be able to repay the loan. Since individual property ownership among the African farmers is not widespread, farmers had neither land nor other valuable assets which they could mortgage. Therefore lending would have involved a considerable degree of risk. The small size of farms, the large proportion of subsistence production in total farm production and the low level of management skills amongst most farmers further aggravated the risk element. A lending programme for the farmers would have involved high overhead costs on account of establishing lending facilities and maintaining accounts of many but small borrowers. Therefore the issue of loans to African farmers would not only have involved great risks but also high overhead costs. For these reasons the issue of loans in African areas was unattractive to commercially operated credit institutions.

In this old setting there was really no lack of agricultural credit. But by insisting on tangible assets as security for loans, agricultural

credit was rationed, not according to need and ignored the prospective net increase in production. Perhaps the existence side by side of the two agricultural sectors which characterised agricultural development prior to 1963 made the government overlook the need for an overall national policy and programme for economic development and social welfare. In other countries, when such a policy has been adopted there has been a general acceptance of the important role of farm credit. Under such circumstances government-sponsored agricultural credit institutions have been launched and operated on special terms and security arrangements. (56). An institution of this nature has been regarded as an instrument of agricultural development and primarily as a public service rather than a profit-making enterprise.

3.9. SUMMARY

Factors that have influenced and continue to influence coffee production in Kenya include historical and political factors; systems of production and their characteristics; species of coffee grown and their cultural problems; legislation of coffee production; structure of production costs; problems of land tenure and availability of agricultural credit. The manner in which these factors influence coffee production has been discussed and analysed. The establishment of institutions associated with these factors has also been appraised and this indicates the high degree of control that the government has on their functions. Therefore investment of resources in the coffee industry is amenable to government control should this be necessary.

CHAPTER 4.

CHANGES IN PRODUCTION

This chapter examines temporal changes and distribution of production in the Kenyan coffee industry. The development of production as a whole is also related to the expansion of the industry in both the large-scale and the small semi-commercialised farms. The variables used in the analysis include total acreages, bearing acreages, total production and average yield.

The growth of the coffee industry in the small semi-commercialised farms which are owned almost entirely by Africans, has been greatly influenced by the Swynnerton Plan (50). The Plan was prepared in 1954 and was designed to accelerate the rate of agricultural production amongst the African farmers. It identified several factors as the chief prerequisites in increasing agricultural production in the small semi-commercialised farms. These factors included consolidation of fragmented and scattered land-holdings, enclosing consolidated holdings, establishing individual title to land, provision of capital and supervisory services, encouraging production of export crops and improved livestock. On the assumption that each family would have planted a particular acreage by the end of a 15 year period, phased 15 year targets were set for the major export crops. Amongst the major export crops, coffee is the most important. The plan envisaged to eventually raise the standard of living of African farmers to the level of a full subsistence, plus an income of about £100 per annum in cash.

A comparable plan to the Swynnerton Plan for the large-scale farms was the Troup Report which was prepared at the same time. The Report emphasized and recommended increased use of capital and trained advisory

TABLE 4.1:1. TREND, GROWTH AND VARIATION OF TOTAL ACREAGES

Year	Acreage	Annual Absolute Change	Annual Percentage Change	Relative Change 1960=100
	Acres			Percentages
1946	76,720			74.84
		-11,890	-15.50	
47	64,830			63.24
		— 40	- 0.06	
48	64,790			63.20
		- 4,040	- 6.24	
49	60,750			59.26
		+ 340	+ 0.56	
50	61,090			59.59
		+ 710	+ 1.16	
51	61,800			60.29
		+ 1,740	+ 2.82	
52	63,540			61.98
		+ 1,030	+ 1.62	
53	64,570			62.99
		+ 330	+ 0.51	
54	64,900			63.31
		+ 2,290	+ 3.53	
55	67,190			65.54
		+ 4,740	+ 7.05	
56	71,930			70.17
		+ 4,810	+ 6.69	
57	76,740			74.86
		+ 5,460	+ 7.11	
58	82,200			80.19
		+10,810	+13.15	
59	93,010			90.73
		+ 9,500	+10.21	
60	102,510			100
		+11,480	+11.20	
61	113,990			111.20
		+25,380	+22.27	
62	139,370			135.96
		+45,720	+32.80	
63	185,090			180.56
		+20,890	+11.29	
64	205,980			200.94
Algebraic Sum		+129.260	+110.17	
Average		+7181.11	+ 6.12	

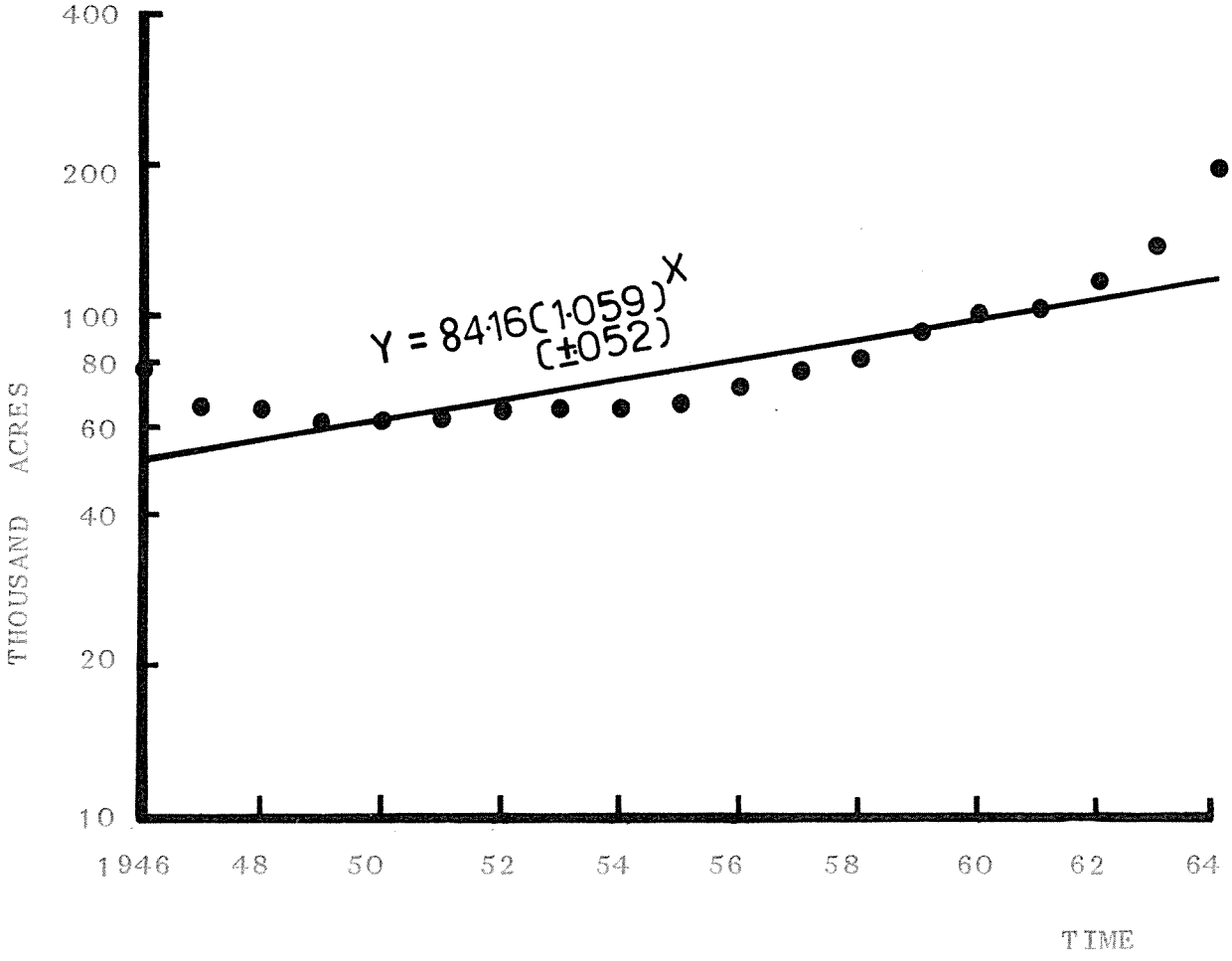
staff as two principal factors in increasing agricultural production in the large-scale farms (57). The two plans were therefore complementary in that both aimed at increasing agricultural production.

4.1 Total Acreage.

The trend, growth and year to year variation of the total coffee acreages during the post war period until the end of 1964, are shown on Table 4.1.1.

World War II disrupted coffee production and resulted in the decline of the total acreage from 104,630 in 1937 to 76,720 in 1946. The immediate post war years were characterised by shortage of capital, and manpower and the continuation of a grain production policy (58). Consequently coffee acreages continued to decline, reaching the lowest level of 60,750 in 1949. From 1950 on there were sharp increases in annual coffee plantings, contraction of production from marginal areas and intensive rehabilitation of old coffee estates. The table shows that the annual absolute change averaged approximately 7,180 acres for the whole period but ranged from -11,890 between 1946 and 1947 to +45,720 acres between 1962 and 1963. The corresponding percentages were - 15.50 per cent and + 32.80 per cent, respectively. The table shows that the average annual change in acreages over the period 1946 to 1964 was + 6.12 per cent.

The trend and growth of total acreages between 1946 and 1964 were further examined by plotting the national acreages on a semi-logarithmic scale and fitting an exponential trend line. The trend of the national coffee acreages is shown on Fig. 4.1.1. The graph shows that the national acreages were below the trend values between 1950 and 1960. This was largely due to a slow rate of acreage expansion in the large scale farms. However, over the period 1960 to



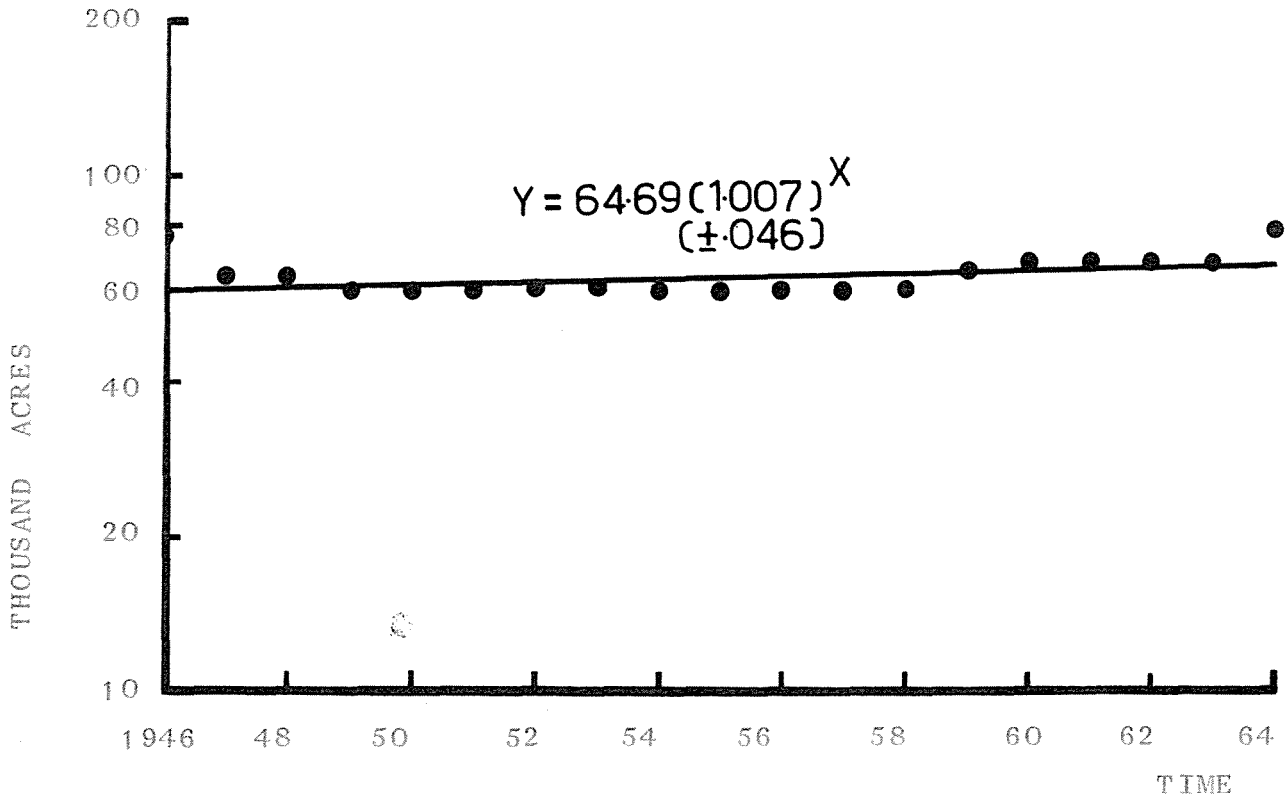
Y = the trend value of annual acreages in thousand acres.

x = calendar years with origin at the end of 1955.

Fig. 4.1.1. Trend of National Coffee Acreages.

TABLE 4.1.2 DISTRIBUTION OF ACREAGE CHANGES

Year	Large Scale farms	Semi-Commercialised farms	Large Scale farms	Semi Commercialised farms
	Annual Absolute Change		Annual Percentage Change	
1946	-12,010	+ 120	-15.72	+ 37.50
47	- 130	+ 90	- 0.20	+ 20.45
48	- 4,260	+ 220	- 6.63	+ 41.51
49	- 280	+ 620	- 0.47	+ 82.67
50	+ 340	+ 370	+ 0.57	+ 27.01
51	+ 440	+ 1,300	+ 0.73	+ 74.71
52	+ 200	+ 830	+ 0.33	+ 27.30
53	- 1,140	+ 1,470	- 1.88	+ 37.98
54	+ 110	+ 2,180	+ 0.18	+ 40.82
55	+ 210	+ 4,530	+ 0.35	+ 60.24
56	+ 120	+ 4,690	+ 0.20	+ 38.92
57	+ 2,000	+ 3,460	+ 3.33	+ 20.67
58	+ 5,000	+ 5,810	+ 8.06	+ 28.76
59	+ 2,570	+ 6,930	+ 3.84	+ 26.64
60	+ 400	+ 11,080	+ 0.57	+ 33.64
61	0	+ 25,380	0	+ 57.66
62	0	+ 45,720	0	+ 65.88
63	+10,530	+ 10,360	+15.05	+ 9.00
64				
Algebraic Sum	+ 4,100	+125,160	+ 8.31	+731.36
Average	+227,78	+6953.33	+ 0.46	+ 40.63



Y = the trend value of annual acreages in thousand years.

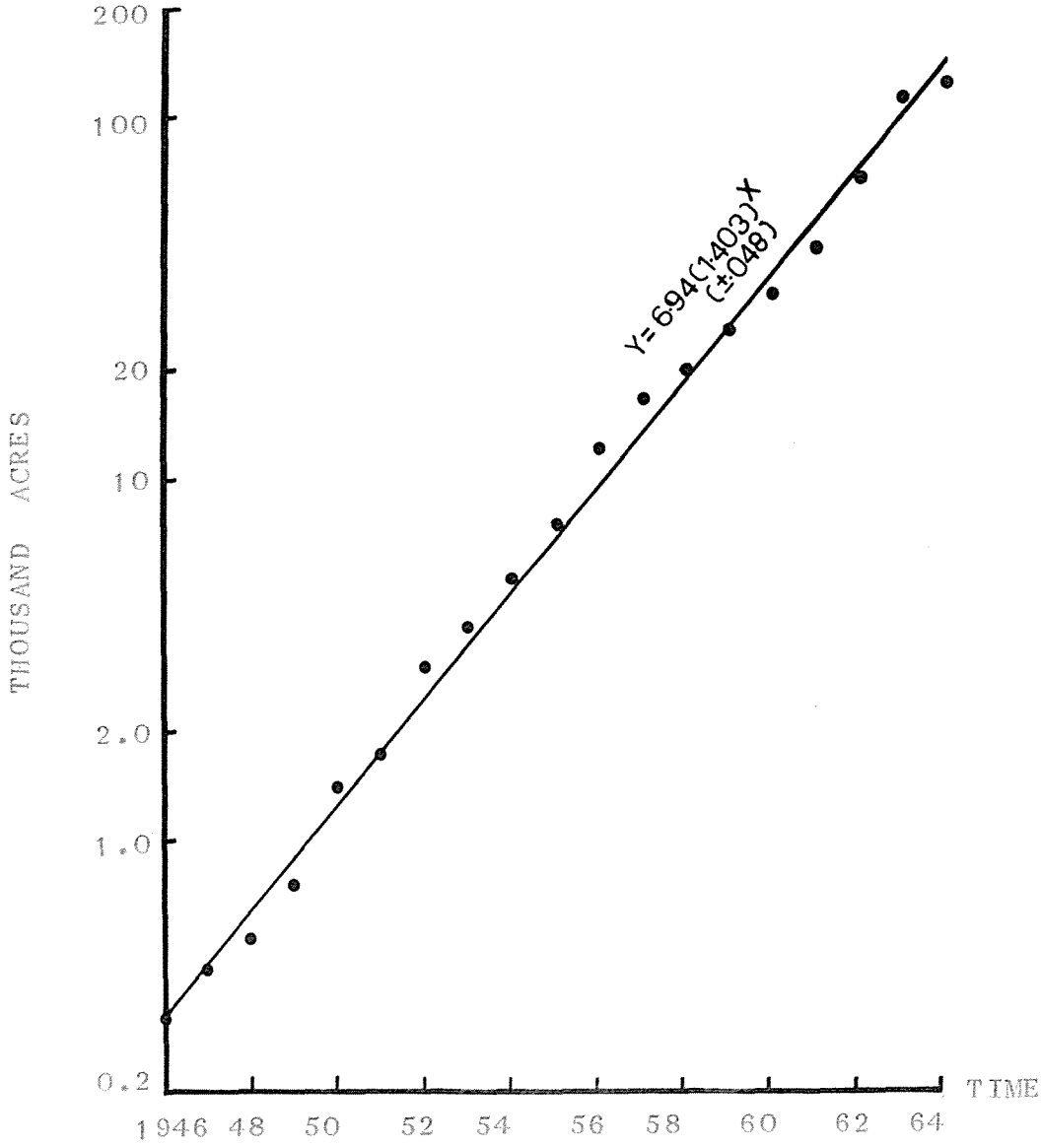
x = calendar years with origin at the end of 1955.

Fig. 4.1.2. Trend of Acreages in Large Scale Farms

1964 the national acreages were above the trend. The trend of national acreages increased at a constant percentage rate of 6 per cent per annum. During the period 1946 to 1964 the total acreages increased from 76,720 acres in 1946 to 205,980 in 1964.

The distribution of acreage changes between the large-scale and the small semi-commercialised farms is shown on Table 4.1.2. The large-scale farms were adversely affected by the effects of the World War II and acreages continued to decline in post war years. After 1949 the decline was halted but expansion of acreages was slow, perhaps, in part, due to political uncertainty. The average absolute change between 1946 and 1964 was + 4,100 acres but with a range of - 12,010 and + 10,530 recorded during the periods 1946 to 1947 and 1963 to 1964, respectively. The corresponding percentage changes were - 15.72 and + 15.05, respectively. Table 4.1.2. shows that the average annual change in acreages in large-scale farms over the period 1946 to 1964 was + 0.46 per cent. This compares with + 40.63 per cent in the small semi-commercialised farms. The average annual change in the small semi-commercialised farms was approximately + 6,950 acres per year with a range of + 90 and + 45,720 recorded during the periods 1947 to 1948 and 1962 to 1963, respectively.

The trend and growth of acreages in the large-scale and small semi-commercialised farms were further evaluated by plotting the acreages on semi-logarithmic scales and fitting exponential trend lines. The graphs and the trend lines are illustrated on Figs. 4.1.2. and 4.1.3. During the period 1949 to 1958 acreages in the large-scale farms were below their trend. This was offset by developments in the small semi-commercialised farms where acreages remained above the trend over the period 1952 to 1958. During the period 1959 to 1964 acreages in the large-scale farms were above their trend value while the opposite was



Note:

Y = the trend value of acreages in thousand acres

x = Calendar years with origin at the end of 1955.

Fig. 4.1.3. Trend of Coffee Acreages in Small Semi-commercialised Farms.

TABLE 4.2.3. DISTRIBUTION OF BEARING ACREAGES

Year	Total Acreage	Per Cent in Semi-commercialised Farms.	Bearing Acreages as % of Aggregate Acreages.		
			Total	Large Scale	Semi-Commercialised
1949	60,320	0.53	99.29	100	42.67
50	60,160	0.73	98.48	100	32.84
51	60,250	0.88	97.49	99.43	30.46
52	60,470	1.24	95.17	98.71	24.67
53	61,090	2.24	94.61	98.39	35.40
54	60,660	2.87	93.47	98.93	32.58
55	62,400	4.87	92.87	99.48	40.43
56	63,430	6.10	99.18	99.47	32.12
57	64,900	8.23	84.57	99.27	31.90
58	67,190	11.19	81.74	96.24	32.23
59	71,930	16.75	77.34	89.37	46.33
60	76,740	21.81	74.86	86.24	50.81
61	82,200	24.57	72.11	88.61	45.89
62	93,010	27.96	66.74	95.76	37.48
63	102,510	32.13	55.38	99.43	28.61
64	113,990	38.62	55.34	86.92	35.08

TABLE 4.2.4 DISTRIBUTION OF VARIATION IN BEARING ACREAGE

Year	Total Acreage	Large Scale	Semi-Commercialised	Total Acreage	Large Scale	Semi-Commercialised
	Annual Absolute Change			Annual Percentage Change		
1949						
50	- 160	- 280	+ 120	- 0.54	- 0.47	+ 37.50
51	+ 90	0	+ 90	+ 0.23	0	+ 20.45
52	+ 220	0	+ 220	+ 0.37	0	+ 41.51
53	+ 620	0	+ 620	+ 1.03	0	+ 82.67
54	- 430	- 800	+ 370	- 0.70	- 1.34	+ 27.01
55	+ 1,740	+ 440	+ 1,300	+ 2.87	+ 0.75	+ 74.71
56	+ 1,030	+ 200	+ 830	+ 1.65	+ 0.34	+ 27.30
57	+ 1,470	0	+ 1,470	+ 2.32	0	+ 37.98
58	+ 2,290	+ 110	+ 2,180	+ 3.53	+ 0.18	+ 40.82
59	+ 4,740	+ 210	+ 4,530	+ 7.05	+ 0.35	+ 60.24
60	+ 4,810	+ 120	+ 4,690	+ 6.69	+ 0.20	+ 38.92
61	+ 5,460	+2,000	+ 3,460	+ 7.11	+ 3.33	+ 20.67
62	+10,810	+5,000	+ 5,810	+13.15	+ 8.06	+ 28.76
63	+ 9,500	+2,570	+ 6,930	+10.21	+ 3.84	+ 26.64
64	+11,480	+ 400	+11,090	+11.20	+ 0.57	+ 33.64
Algebraic Sum	+53,670	+9,970	+43,700	+66.17	+15.81	+598.82
Average	+ 3,578	+664.67	+ 3,914	+ 4.41	+ 1.05	+ 39.92

generally true in the small semi-commercialised farms. The trend values show that acreages increased by constant percentages per annum. The growth rates were 1 per cent and 40 per cent in the large-scale and small semi-commercialised farms respectively. The acreages in the large-scale farms increased from 76,400 in 1946 to 80,500 acres in 1964. During the same period acreages in the small semi-commercialised farms increased from 320 acres to 125,480 acres.

The expansion of total acreages was therefore largely accounted for by changes in the small semi-commercialised farms. In 1964 the latter accounted for 60 per cent of the total acreage as opposed to approximately 0.40 per cent in 1946. This dramatic increase of acreage was largely due to the launching of the Swynnerton Plan, whose objective was to raise farm income among the African farmers. The slower rate of acreage expansion in the large-scale farms may be attributed to reduced capital investment as a result of mounting political uncertainty, especially during the period 1950 to 1963.

4.2 Bearing Acreages.

The analysis of estimated bearing acreage is shown on Tables 4.2.3. and 4.2.4. Table 4.2.3. shows the total bearing acreage expressed as a percentage of aggregate acreage, acreage in large-scale and in the small semi-commercialised farms. It also shows percentage distribution of the bearing acreage between the two production systems.

In 1949 the bearing acreage was 60,320 acres as compared with 113,990 in 1964. The expansion of the total bearing acreage was accounted for by increases of bearing acreage in both the large-scale and the small semi-commercialised farms but increases in the latter were dominant. In 1949 they accounted for 0.53 per cent of total bearing acreage as compared with 38.62 per cent in 1964. The large-scale farms

therefore accounted for 99.47 and 61.38 per cent in the same periods.

The increases in bearing acreage during the period 1949 to 1964 were accompanied by a fall in the proportion of bearing to non-bearing acreage. Thus in 1949 99.2% of total coffee acreage was bearing but the figure fell to 55.34 per cent by the end of 1964. This trend was evident in both the large-scale and the small semi-commercialised farms. In the large-scale farms, the increase in non-bearing acreage caused the proportion of bearing to non-bearing acreage to decline from 100 in 1949 to 86.92 per cent in 1964. The corresponding figures for the small semi-commercialised farms were 42.67 and 35.08 per cent. The bearing acreages expressed as percentage of aggregate acreages are illustrated in Fig, 4.2.4. The figure shows that the proportion of national bearing acreage decreased over the period 1949 to 1964. This was due to decreases in the proportion of bearing acreage in both the large-scale and small semi-commercialised farms.

The above analysis shows that approximately 45 per cent of total coffee acreage was not in bearing in 1964. The non-bearing acreage was distributed unevenly between the two production systems. In 1949 all the non-bearing acreage was in the small semi-commercialised farms. In 1964 this category of farms accounted for 88.55 per cent of total non-bearing acreage leaving 11.45 per cent in the large-scale farms.

Table 4.2.4. shows the distribution of changes in the bearing acreages between 1949 and 1964. The analysis reveals that the average annual change in acreage was + 3,578 acres over the period 1949 to 1964. This corresponded to an average annual change of 14.41 per cent. However, the year to year changes ranged from - 0.54 per cent to + 13.15 per cent recorded in 1949 and 1962 respectively. The average annual change in bearing acreage in large scale farms was 664.67 acres. This compared with an average of 3,914 acres in the small semi-

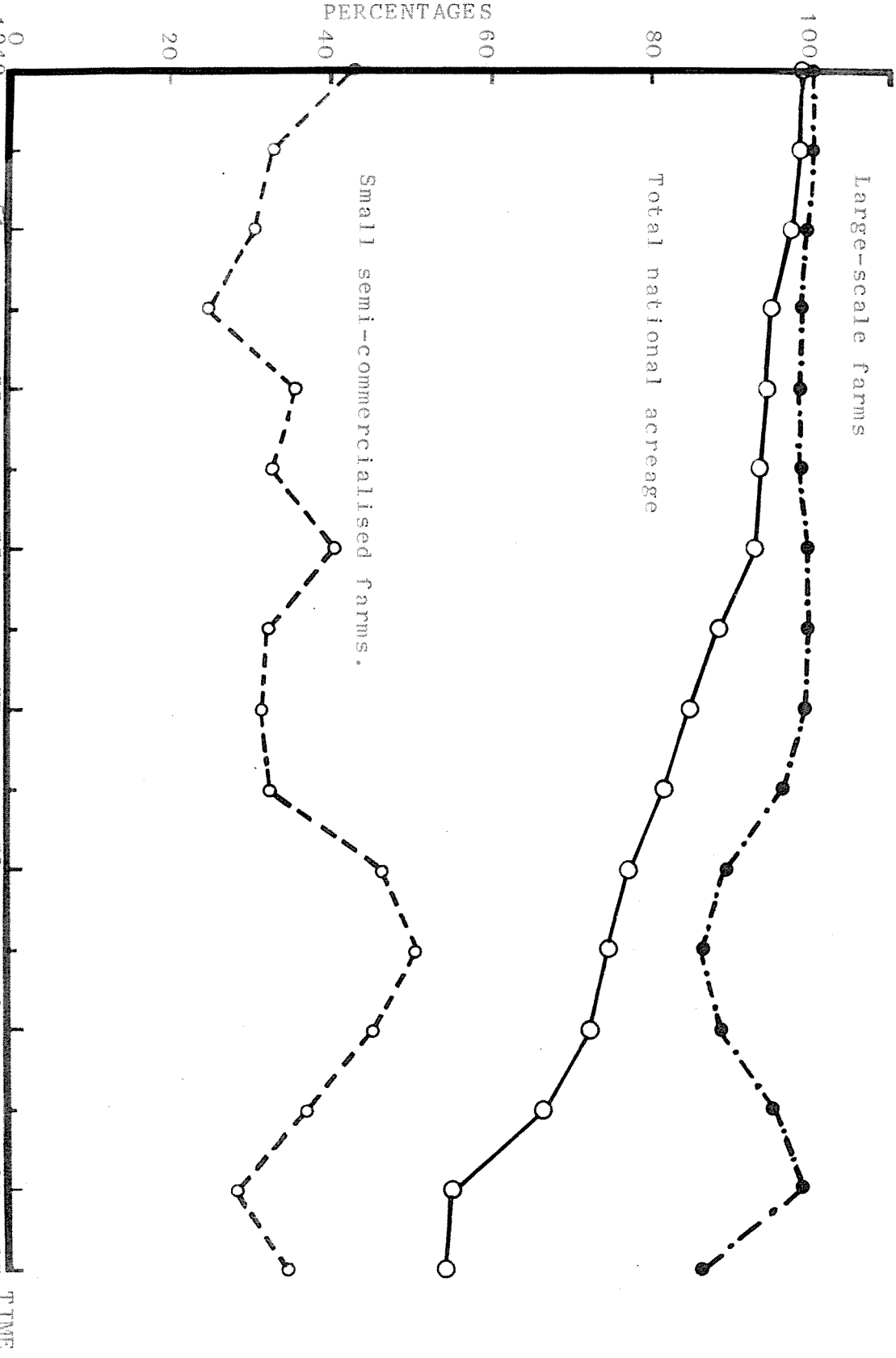
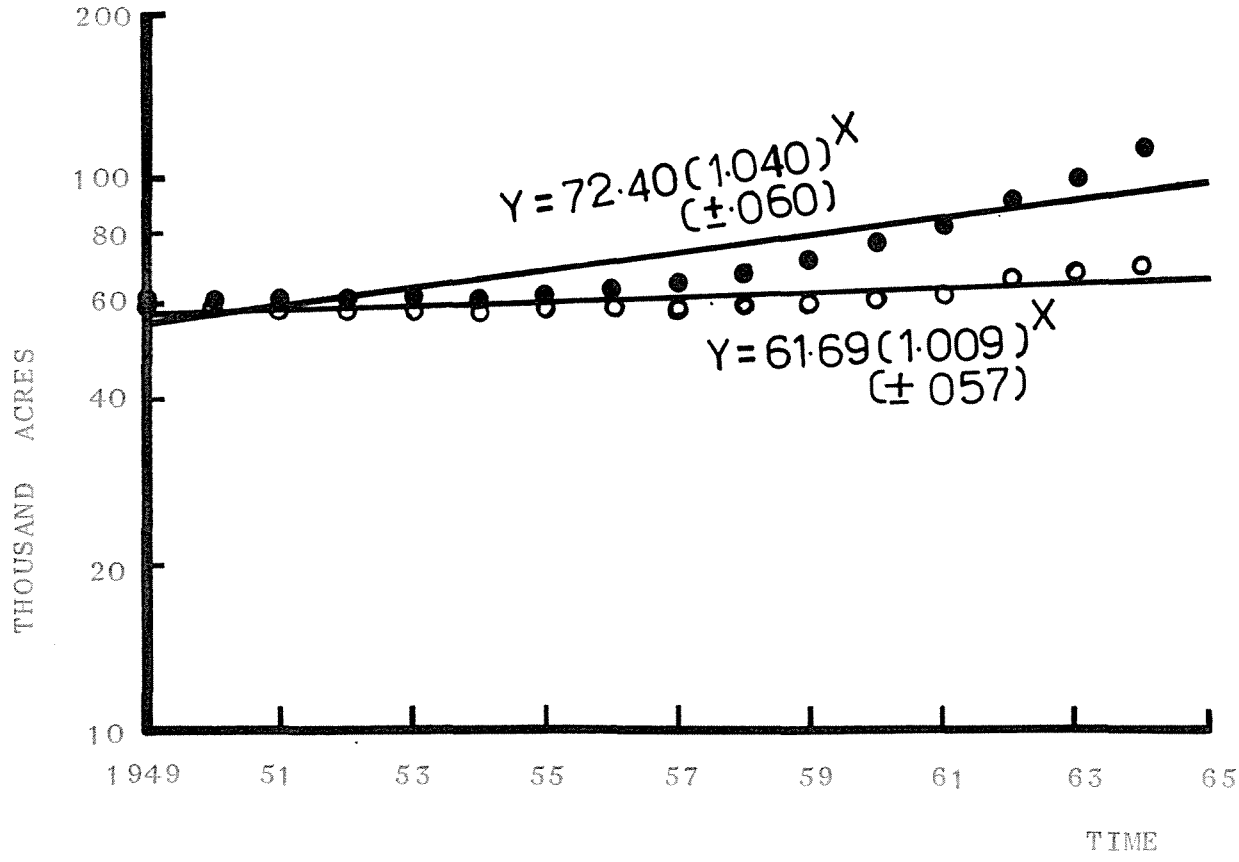


Fig. 4.2.4. Bearing acreages expressed as percentages of aggregate acreages.

TABLE 4.3.5 VARIATION IN TOTAL PRODUCTION

Year	Production in Tons*	Absolute Change	Percentage Change
	TONS		PERCENT
1945/46	6,950		
		+ 2,090	+30.07
46/47	9,040		
		+ 5,040	+55.75
47/48	14,080		
		- 7,520	-53.41
48/49	6,560		
		- 220	- 3.35
49/50	6,340		
		+ 3,600	+56.78
50/51	9,940		
		+ 6,100	+61.37
51/52	16,040		
		- 3,850	-24.00
52/53	12,190		
		- 840	- 6.89
53/54	11,350		
		+ 990	+ 8.72
54/55	12,340		
		+11,580	+93.84
55/56	23,920		
		- 5,570	-23.29
56/57	18,350		
		+ 2,490	+13.57
57/58	20,840		
		+ 2,520	+12.09
58/59	23,360		
		+ 30	+ 0.13
59/60	23,390		
		+ 8,830	+37.75
60/61	32,220		
		- 4,960	-15.39
61/62	27,260		
		+ 6,400	+23.48
62/63	33,660		
		+ 9,840	+29.23
63/64	43,500		
Algebraic Sum		+36,550	+296.45
Average		+2030.56	+ 16.47

* These figures are for deliveries of clean coffee to the Coffee Board for the 12 months beginning on 1st. July of the year shown.



(1) = Total National bearing acreage.

(2) = Bearing acreage in large-scale farms.

Note: x is in years with origin at the end of 1956.

Fig. 4.2.5. Growth and Trend of Bearing Acreages.

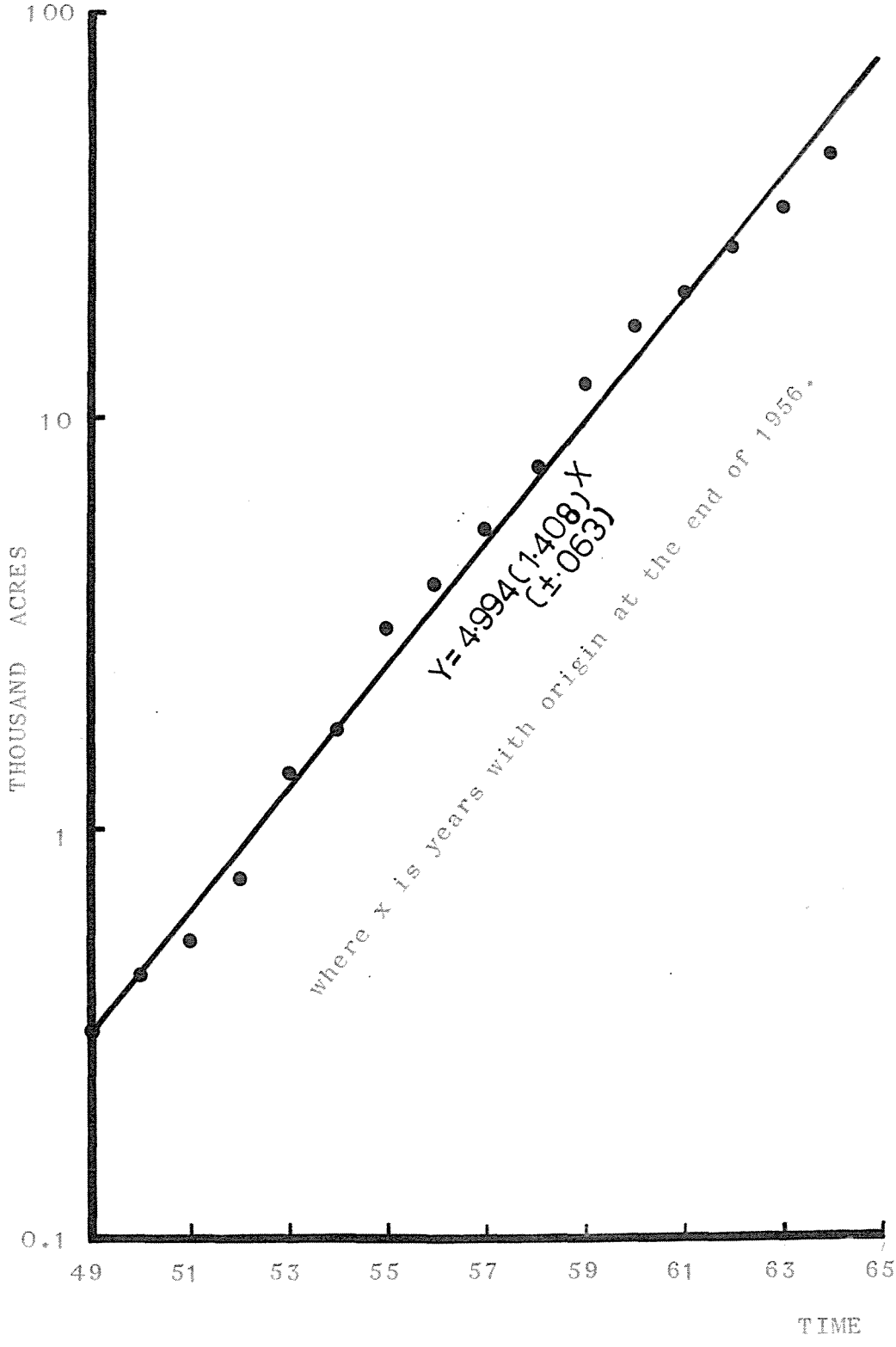


Fig. 4.2.6. Bearing Acreages in Small Semi-Commercialised Farms

commercialised farms. The corresponding average annual percentage changes for the two categories of farms were + 1.05 per cent and + 39.92 per cent respectively.

The distribution of changes in bearing acreage shows that increases in the small semi-commercialised farms were largely responsible for increases in the total bearing acreages. The trend and growth of bearing acreages over the period 1949 to 1964 are illustrated on Figs. 4.2.5. and 4.2.6. Fig. 4.2.5. shows that the trend of total national bearing acreage increased approximately at a constant percentage rate of 4 per cent. Over the same period the trend of bearing acreages in the large-scale farms increased at the rate of approximately 1 per cent per annum. This compares with a growth rate of 40.8 per cent per annum in the small semi-commercialised farms.

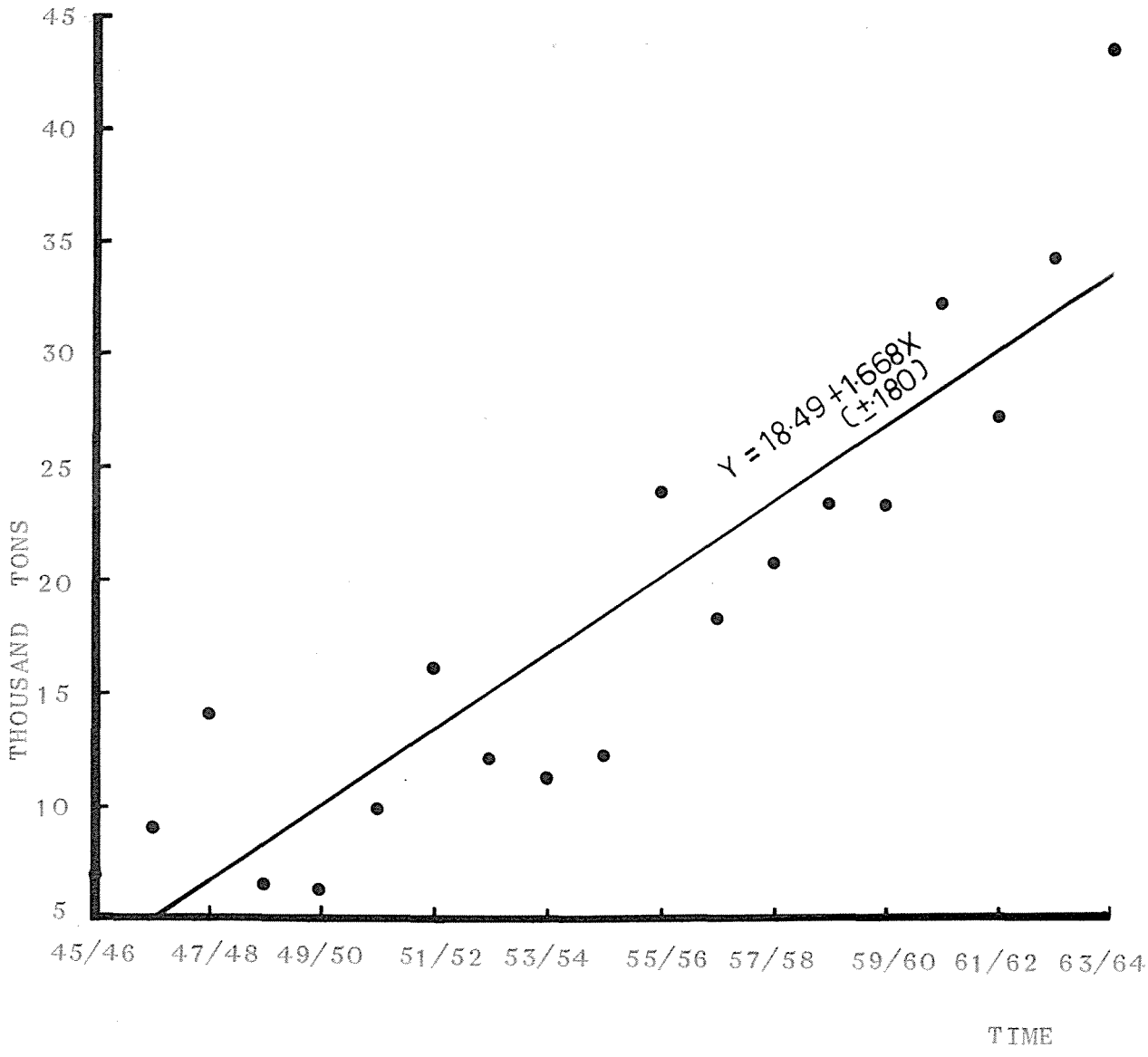
4.3 Total Production.

The growth and variation of the total coffee production for the period 1945/46 to 1963/64 is analysed in Table 4.3.5. During this period production was characterised by large crop increases but punctuated by small positive and even negative changes. Apart from the influence of management and coffee planting policy of the Department of Agriculture, climatic and market conditons, this pattern of cropping was largely influenced by the biological nature of the coffee plant. The physiological functions of the coffee plant are subject to endongeneous rythms which result in what is widely known as biennial bearing (59). Over the period under examination, the annual absolute and percentage changes show that large crop increases occurred for approximately two consecutive years and then this was followed by definite decreases in cropping for at least one year.

TABLE 4.3.6. VARIATION IN PRODUCTION

LARGE SCALE AND SMALL SEMI-COMMERCIALISED FARMS

Year	Large Scale	Semi-Commercialised	Large Scale	Semi-Commercialised
	Annual Absolute Change (Tons)		Annual Percentage Change	
1945/46				
46/47	+ 2,100	- 10	+30.35	-33.33
47/48	+ 5,020	+ 20	+55.65	+ 100
48/49	- 7,510	- 10	-53.49	-25.00
49/50	- 240	+ 20	-36.75	+66.67
50/51	+ 3,560	+ 40	+56.60	+80.00
51/52	+ 6,120	- 20	+62.13	-22.22
52/53	- 3,990	+ 140	-24.98	+ 200
53/54	- 1,000	+ 160	- 8.35	+76.19
54/55	+ 620	+ 370	+ 5.65	+ 100
55/56	+11,500	+ 80	+99.14	+10.81
56/57	- 6,330	+ 760	-27.40	+92.68
57/58	+ 1,800	+ 690	+10.73	+43.67
58/59	+ 370	+ 2,150	+ 1.99	+94.71
59/60	- 610	+ 640	- 3.22	+14.48
60/61	+ 6,380	+ 2,450	+34.81	+48.42
61/62	- 5,200	+ 240	-21.04	+ 3.20
62/63	+ 3,340	+ 3,060	+17.12	+39.48
63/64	+ 7,060	+ 2,780	+30.90	+25.72
Algebraic Sum	+22.990	+13,560	229.84	915.48
Average	+1277.22	+753.33	12.77	50.86



Note: x is in years with origin at the end of 1955/56.

Fig. 4.3.7. Trend in Production

This cropping pattern was also evident in large scale and small semi-commercialised farms as shown on Table 4.3.6. It is significant that crop decreases and increases in the two sectors did not often coincide. Consequently, the crop changes had a compensating effect on the total production.

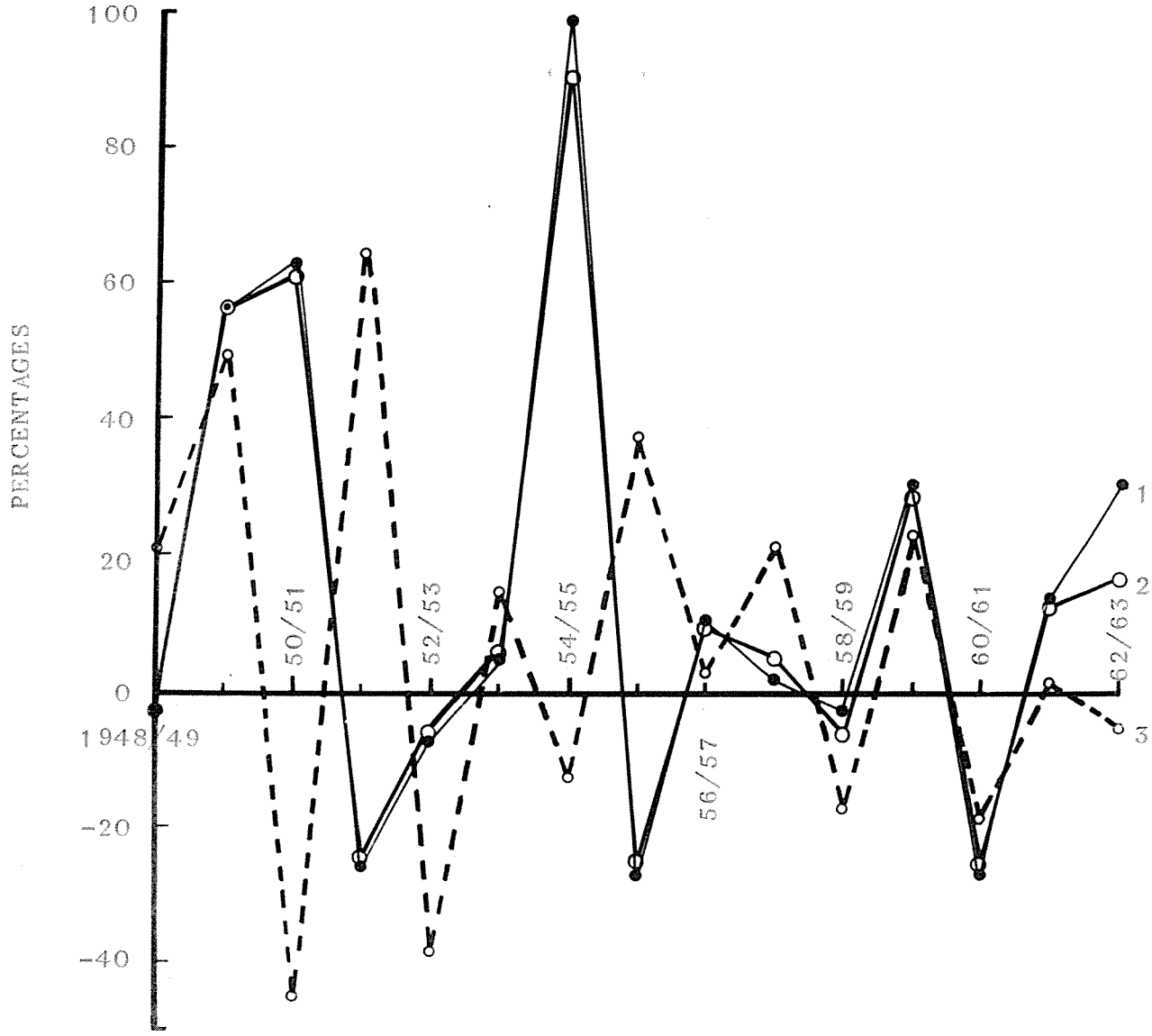
Despite the effect of biennial bearing, the average annual change in total production was + 2,030 tons or + 16.47 per cent. Changes in the total production were associated with large crop changes in both the large scale and the small semi-commercialised farms. The average change of production in large scale farms, despite some large decreases, was + 12.77 per cent over the period 1945/46 to 1963/64. This compares with + 50.86 per cent for production in the small semi-commercialised farms.

The trend and growth of total national production over the period 1945/46 to 1963/64 is illustrated on Fig. 4.3.7. During this period total production increased by 36,550 tons, thereby raising production from 6,950 tons in 1945/46 to 43,500 tons in 1964/64. The trend of production over the period increased at the rate of 9.02 per cent per annum.

4.4. Average Yield.

The growth and variation of the average yields for the industry, large scale and small semi-commercialised farms are shown in Table 4.4.7. and illustrated on Fig. 4.4.8.

The average yield for the industry rose from 2.18 cwt. in 1948/49 to 7.84 cwt. per acre in 1960/61 but declined to 7.63 cwt. by 1963/64, see Appendix F.4. The absolute and percentage year to year variation show the same pattern of cropping as described for total production. Large increases in the average yield were followed by



Changes in

1. Large scale farms.

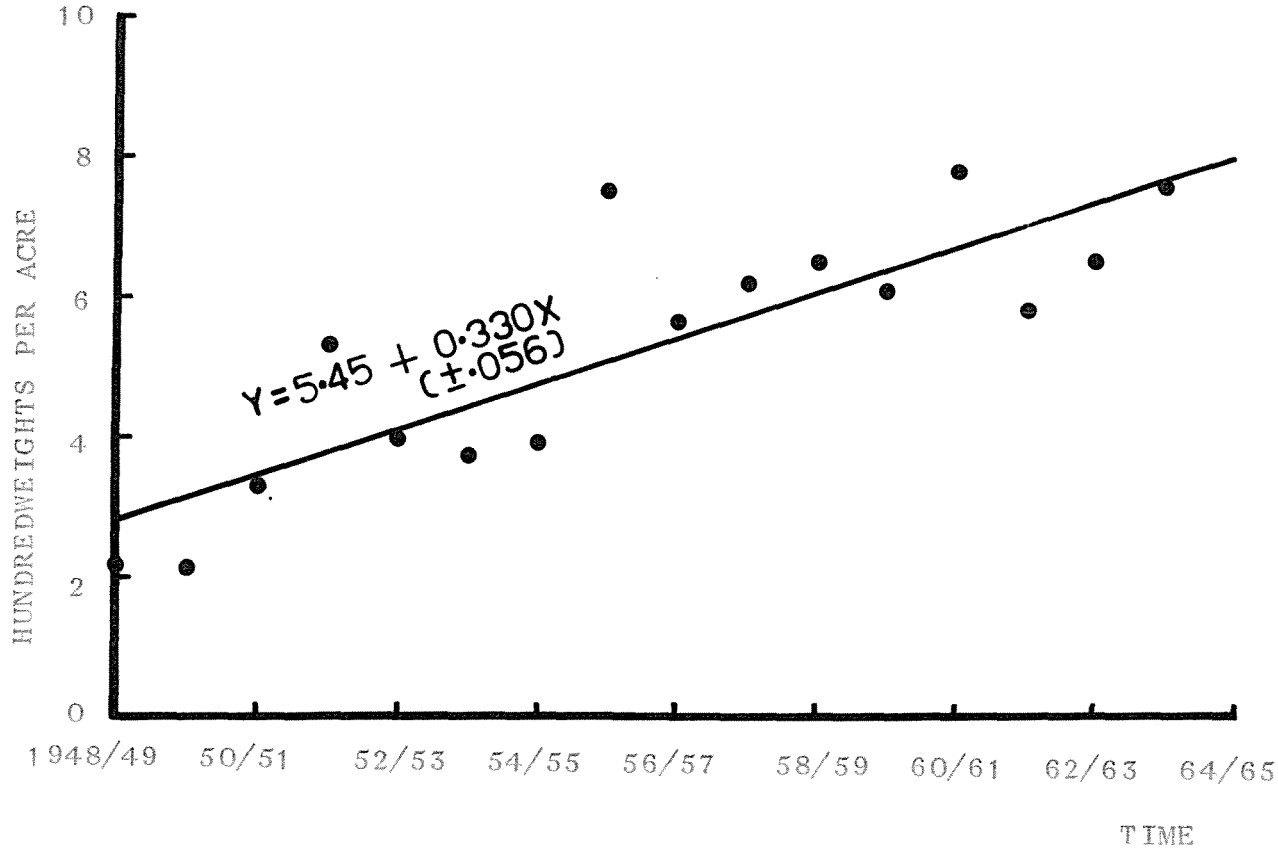
2. Industry.

3. Small semi-commercialised farms.

Fig. 4.4.8. Annual changes in Average yield.

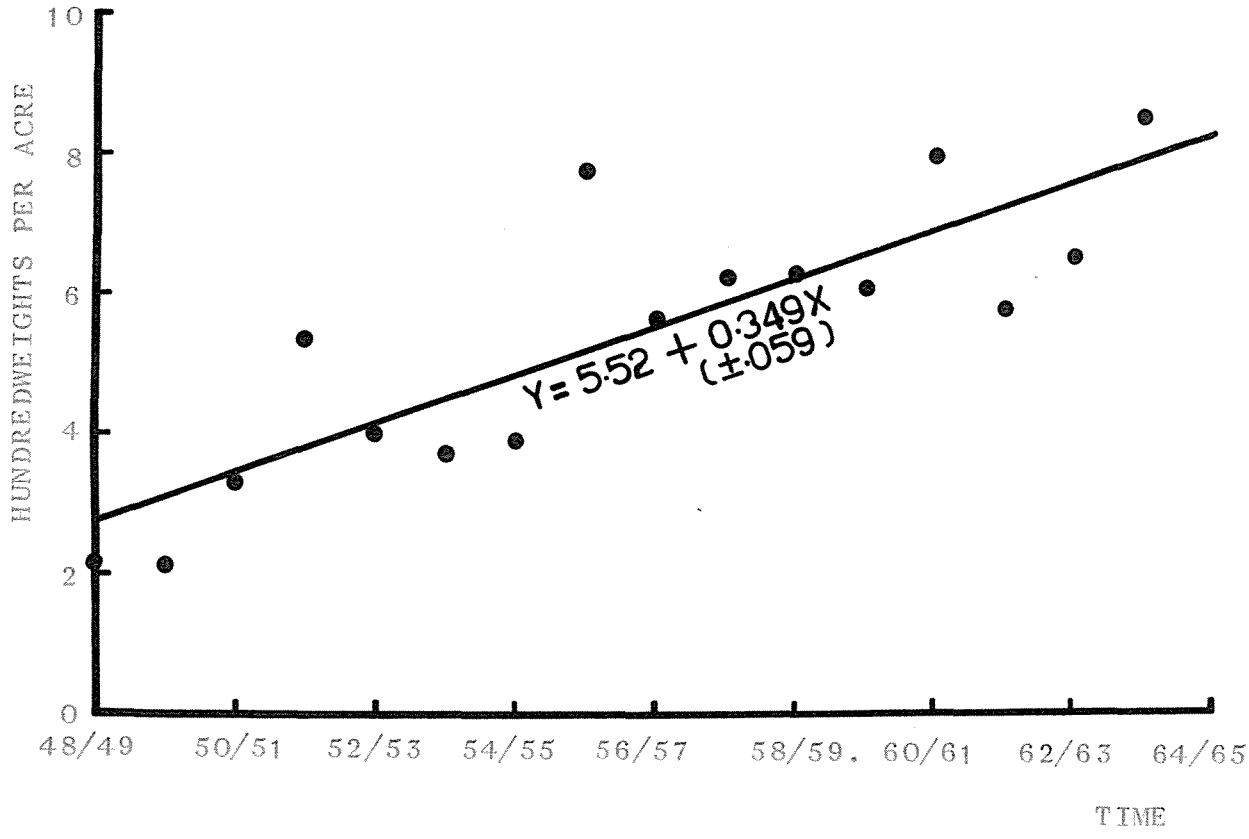
TABLE 4.4.7 GROWTH AND VARIATION IN AVERAGE YIELD

Year	Industry	Large Scale	Semi-Commercialised	Industry	Large Scale	Semi-Commercialised
	Absolute Change (cwt)			Percentage Change		
1948/49						
	-0.07	-0.07	+0.39	- 3.21	- 3.21	+20.74
49/50						
	+1.19	+1.19	+1.13	+56.40	+56.40	+49.78
50/51						
	+2.01	+2.06	-1.53	+60.91	+62.92	-45.00
51/52						
	-1.32	-1.35	+1.20	-24.86	-25.19	+64.17
52/53						
	-0.25	-0.28	+1.18	- 6.27	- 6.98	+38.44
53/54						
	+0.22	+0.18	+0.62	+ 5.88	+ 4.83	+14.59
54/55						
	+3.58	+3.85	-0.63	+90.40	+98.47	-12.94
55/56						
	-1.89	-2.13	+1.68	-25.07	-27.45	+39.62
56/57						
	+0.55	+0.59	+0.12	+ 9.73	+10.48	+ 2.03
57/58						
	+0.30	+0.11	+1.30	+ 4.84	+ 1.77	+21.52
58/59						
	-0.40	-0.22	-1.29	- 6.15	- 3.48	-17.57
59/60						
	+1.74	+1.86	+1.39	+28.52	+30.44	+22.98
60/61						
	-1.98	-2.15	-1.48	-25.30	-26.98	-19.89
61/62						
	+0.71	+0.75	+0.60	+12.12	+12.89	+ 1.01
62/63						
	+1.06	+1.98	-0.39	+16.13	+30.14	- 5.95
63/64						
Algebraic Sum	+5.45	+6.37	+4.29	+194.07	+214.55	+173.53
Average	+0.36	+0.42	+0.29	+ 12.94	+ 14.30	+ 11.57



Note: x is in years with origin at the end of 1956/57.

Fig. 4.4.9. Average annual yield for the Industry



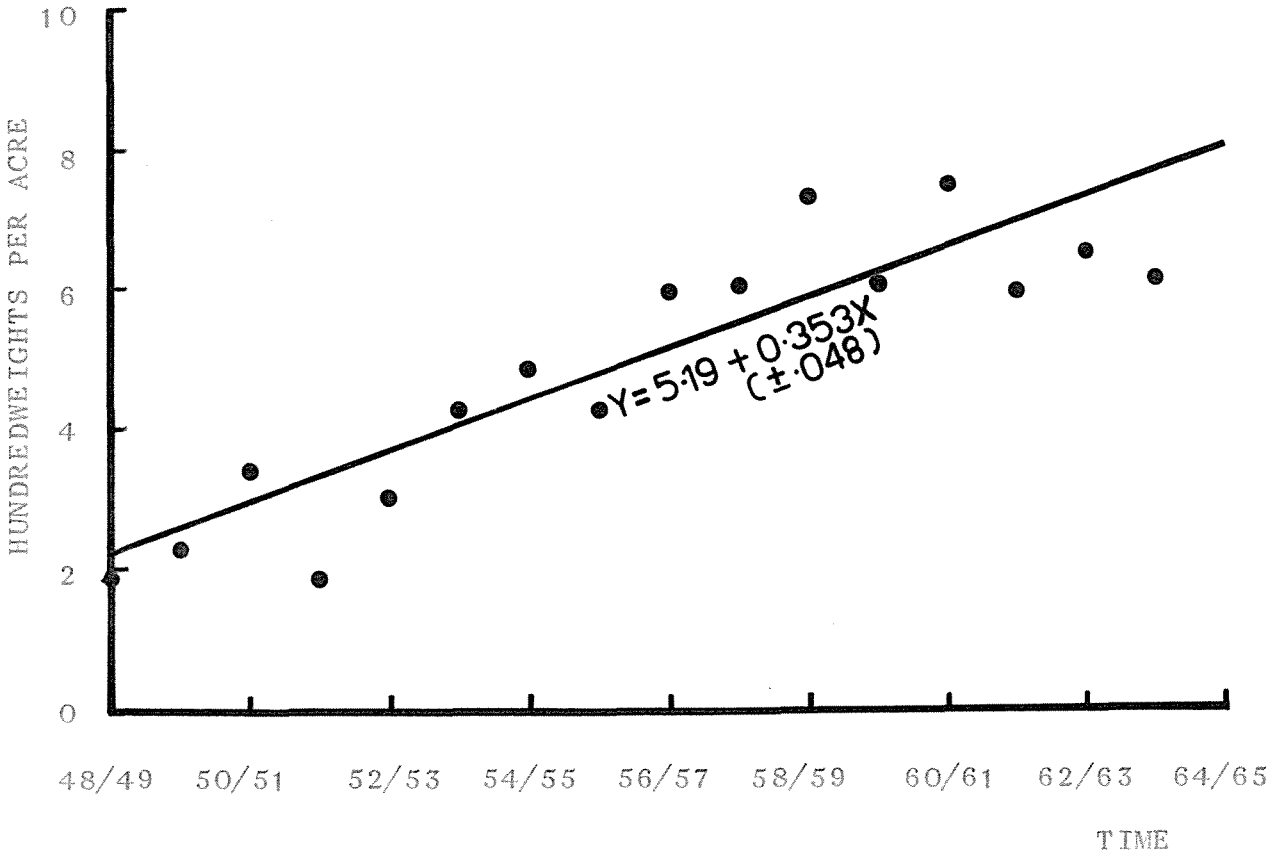
Note: x is in years with origin at the end of 1956/57.

Fig. 4.4.10. Average Annual Coffee Yield in Large-scale Farms.

small increases and sometimes the value fell even below the value for the previous year. The swings of increases or decreases in average yield were realised in the same years as upturns and downturns in total production. Despite negative changes recorded during 1949/50, 1952/53, 1953/54, 1956/57, 1959/60 and 1961/62, the average variation in the average yield was + 12.94 per cent.

The average yield in the small semi-commercialised farms increased from 1.88 cwt. per acre in 1949/49 to 7.44 cwt. per acre in 1960/61 but later declined to 6.17 by 1963/64. The average of the algebraic sum of absolute average yield changes between 1948/49 and 1963/64 was + 0.29 cwt., showing the extent of compensating changes during the period. This was equivalent to an average annual change of + 11.57 per cent. This compares with + 14.30 per cent in the large scale farms.

The growth of the average yield during the post war period can be attributed to the use of high yielding varieties, increased use of fertilisers, irrigation, increase in extension services and better control of coffee pests and diseases. The trends in average yields for the industry and for large-scale and small semi-commercialised farms are illustrated on Figs. 4.4.9, 4.4.10 and 4.4.11. The average national yield for the period 1948/49 to 1963/64 was 5.45 cwt. This compared with 5.52 cwt. and 5.19 cwt. in the large-scale and small semi-commercialised farms respectively. The trend in average national yield increased at the rate of 6.06 per cent per annum. The corresponding rates of growth in the large-scale and small semi-commercialised farms were 6.32 per cent and 6.80 per cent respectively. Therefore, although the average yield was higher in the large-scale farms than in the small semi-commercialised farms, the growth rate in average yield was higher in the small semi-commercialised farms than in



Note: x is in years with origin at the end of 1956/57.

Fig. 4.4.11. Average Annual Yield in Small Semi-Commercialised Farms

the large-scale farms.

4.5 Instability of Production.

The instability of coffee production for the period 1945/46 to 1963/64 has been calculated and results are shown on Table 4.5.8.

The table shows that during this period the instability index for total production was 39.1. This value compares with 40.6 and 47.1 for production in large-scale and small semi-commercialised farms respectively. Thus over this period the year to year fluctuations in production, adjusted for trend, were higher in the small semi-commercialised farms and accounted for greater instability of total production than those experienced in the large-scale farms.

During the first and second halves of the period under study, the instability of production varied widely. Over the periods 1945/46 to 1954/55 and 1954/55 to 1963/64, the instability indices for total production were 46.9 and 29.7 respectively. These values show that year to year fluctuation from the trend were higher during late 1940s and early 1950s than in the last decade. This is more evident from instability indices of production from the two sectors of production. During the periods 1945/46 to 1954/55 the instability indices were 47.2 and 65.1 for production in large-scale and the small semi-commercialised farms respectively. These values compare with 33.0 and 23.9 for the period 1954/55 to 1963/64. Therefore, while production in the small semi-commercialised farms experienced greater instability than in the large scale farms until 1954/55, it has since then become more stable.

There were several factors that influenced the instability of production during the period 1945/46 to 1954/55. The principal factors included structural adjustment in production whereby marginal

TABLE 4.5.8. INSTABILITY INDICES

Variable	Period	Industry	Large Scale	Semi-Commercialised
Production	1945/46 - 1963/64	39.1	40.6	47.1
	1945/46 - 1954/55	46.9	47.2	65.1
	1954/55 - 1963/64	29.7	33.0	23.9
Average Yield	1948/49 - 1963/64	31.2	33.4	34.5
	1948/49 - 1954/55	31.8	32.8	43.3
	1954/55 - 1963/64	30.7	34.0	26.4

coffee farms shifted to more profitable alternative enterprises and problems associated with shortage of investment capital despite the need to renovate farms which had been neglected or badly managed during the war. Routine pest and disease control measures were also necessary. Besides these managemental factors, instability of production was influenced by unco-ordinated production and marketing practices, especially amongst the small semi-commercialised farms.

During the last decade relative stability in production can be attributed largely to technological progress and increased extension services. Coffee varieties did not only undergo intensive experimentation to determine their yields and yield patterns but also scientific methods to manage them were evolved. Production techniques for instance pruning, fertiliser applications, tonic sprays and overhead irrigation, have been used to influence the size of the annual crop. The last decade was also characterised by realisation of increased need for extension services in both the fields of marketing and production. These developments have in particular influenced production in the small semi-commercialised farms.

4.6 Instability of Average Yield.

The instability of average yield is represented by instability indices on Table 4.5.8. The indices represent instability of average yields for the industry, large-scale and the small semi-commercialised farms. Between 1948/49 and 1963/64 the instability index for the industry was 31.2 and this compares with 33.4 and 34.5 for the large-scale and the small semi-commercialised farms respectively. The distribution of the instability appears to have been higher during the early 1950s than in the last decade. This is revealed by instability indices for the periods 1948/49 to 1954/55 and 1954/55 to 1963/64.

For these two periods the year to year fluctuations, adjusted for trend, gave index values of 31.8 and 30.7, respectively.

The distribution of instability between the two periods was more marked in the two production sectors. Over the periods 1948/49 to 1954/55 and 1954/55 to 1963/64, the average yield in the small semi-commercialised farms had instability indices of 43.3 and 26.4, respectively. In the large scale farms, the corresponding indices were 32.8 and 34.0. Thus average yields in the small semi-commercialised farms were more unstable in early 1950's than in the last decade. In the large scale farms instability indices show the reverse situation. Therefore the two sectors appear to have had a compensating effect on the stability of the average yield for the industry.

CHAPTER 5

M A R K E T I N G

This chapter attempts to analyse and describe the structure and functions of the coffee marketing system in Kenya. The introduction to the chapter is a brief theoretical treatment on marketing, which covers the definition of marketing and marketing efficiency. This treatment prepares way for a discussion on the establishment and development of coffee marketing institutions in Kenya. The performance of the marketing system is then appraised by examining the functions performed by each institution.

5.1 Definition of Marketing.

Marketing may be defined as the economic process by means of which goods and services are exchanged and their values determined in terms of money. Marketing of a commodity involves the integration of all functions that are necessary in moving it from the point of production to the final user, the consumer. The functions may be divided into two categories namely, physical and allocative. The physical or operational functions of marketing include transporting, processing, storage, grading and such other services that constitute the creation of form, time and place utility. The allocative functions are those of buying, selling and price formation; thereby effecting the allocation of resources in production, goods in consumption and incomes between sellers.

5.2 Criteria of Efficiency in a Marketing System: A Theoretical Note:

The efficiency of a marketing system may be appraised by examining

the performance of various functions that constitute marketing. These functions represent economic activity in the marketing system. Market performance therefore is the composite end result of economic activity. The composite includes profits, quantity and changes in production, costs, levels and variation in quality, growth of these variables and their development.

Market performance may be divided into two categories corresponding to the two categories of functions of a marketing system. These are physical or operational performance and performance in the establishment of prices and total returns. The criterion of appraising performance in these two fields is the ratio of consumption utility to the resources used in its creation (60). This criterion gives rise to two separate measures of efficiency corresponding to the two categories of market performance. These are measures of operational or physical efficiency and pricing efficiency. The operational efficiency of a marketing system evaluates input-output relationships that are involved in moving products from producers to consumers, while pricing efficiency measures the performance of the marketing system in establishing equilibrium prices and quantities. It therefore measures the relationship between costs and accuracy, rapidity and effectiveness with which market information is developed and transmitted to market participants (61).

While it is easy to calculate the ratio of input to output in appraising operational efficiency, the appraisal of pricing efficiency is more complicated. The major field of difficulty lies in deciding what is to be included as consumption utility. However, pricing efficiency has been traditionally evaluated with respect to the perfectly competitive model. Therefore equilibrium price and quality exchanged under perfectly competitive conditions have been

used as reference standards when determining pricing efficiency. Under perfectly competitive conditions transactions between buyers and sellers would result in an equilibrium price at which marginal cost of supply of a given commodity equals the marginal satisfaction obtained by the buyers. This equilibrium situation also represents minimum supply costs and nowhere could a market participant gain without loss to another. The values of various variables measured at the equilibrium situation represent the best use of resources from the point of view of maximising welfare of a given community. This is what Hall and Winstein refer to as social efficiency in marketing (62).

The perfectly competitive market is rarely encountered in reality. Even in market simulation it is difficult to synthesize a perfectly competitive market for a given product. For these reasons the perfectly competitive model remains useful only as an ideal against which market performance may be evaluated qualitatively.

5.2.1. Some Other Concepts of Marketing Efficiency.

Although all measures of marketing efficiency fall into two categories, namely, operational and pricing efficiency, the performance of segments of the marketing system give rise to several sub-concepts of marketing efficiency.

A marketing system is characterised by institutions which perform different marketing operations. The efficiency in performing these operations is influenced by the organisational structure of such institutions. In this way, the organisational structure of marketing institutions influences the efficiency of the whole marketing system. Therefore in appraising the efficiency of a marketing system, the sub-concept of organisational efficiency may be important. Its evaluation seeks to reveal the degree of collusion between market participants which

tends to influence the outcome of market transactions through concerted action.

Often concerted action by market participants is influenced or counteracted by government action. The influence of a government may be exercised through purchases of commodities and services, provision of basic information relevant to a marketing system, and finally regulation of the marketing process through legislation. The consensus of opinion amongst marketing economists however is that the functions of a government should be to prevent misconduct and to preserve competition in a marketing system. This constitutes the sub-concept of government efficiency in a marketing system (63) (64).

Associated with organisational efficiency is managerial efficiency. This involves long-term and short-term judgement and decision making on marketing problems. The comparison of management performance between managers is made difficult by different environments in which they make their decisions. Often a manager may be interested in improving the performance of a given operation to the maximum level possible in a particular environment. This involves efficiency which can be measured since the desired limit is known. This has been referred to as target efficiency (63). There might be alternative techniques which the manager could use to achieve target efficiency. The decision-making process in this case involves the choice between alternative techniques. In this case the management is concerned with a problem of technical efficiency.

5.2.2. The Nature of Factors Involved in Appraising the Efficiency of a Marketing System.

Although problems of efficiency may demand different methods of appraisal, they all involve comparisons. The performance of a

particular variable in the marketing system is assessed with reference to a previously selected criterion. The comparison may be expressed quantitatively or qualitatively. Some variables in marketing are quantifiable while others are not and therefore the latter can only be appraised qualitatively. Some of the quantifiable variables include trading volume and marketing effort, market viability and stability, revenue of market participants, and realisation of potential transactions (65) (66). The non-quantifiable variables include managerial efficiency, consideration of equity, national security, freedom and other social values.

The importance of non-quantifiable variables tends to increase as more and more firms in the marketing system become incorporated in any framework that may be designed to appraise efficiency in the system. At the firm level, non-quantifiable variables are minimal and the formulation of an analytical framework using quantifiable variables to determine intra-firm efficiency may be relatively simple. At this level variables of importance include level and quality of product output, firm costs and profits. These are of greater importance and take precedence over social and other non-quantifiable variables. But non-quantifiable variables become increasingly important from the intra-firm level through inter-firm and industry levels to the economy-as-a-whole level. At the latter, variables like freedom of the individual, security of the nation, stability, optimum growth, level of output, its composition and distribution, organisation of production, degree of competition and distribution of income become essential components of any analytical framework (60).

5.3. Coffee Marketing Institutions and their Development in Kenya.

Prior to the outbreak of World War II, the bulk of Kenyan coffee was

marketed through two principal channels. The first channel involved, in order of succession, the planter, commission agents, the merchant houses in London and finally the British housewife. This was usually the channel for marketing fine quality coffees (67). The second marketing channel involved, in order of succession, the planter, commission agents or Nairobi branches of London coffee exporting firms, London coffee exporting firms or their branches overseas or their agents there and finally the housewife in the principal coffee markets of the world. This was the outlet for the medium and low quality coffees.

After World War II an improvement in the marketing system was effected through the formation of the Coffee Marketing Board; the introduction of coffee classification into 13 classes and the establishment of the sole auction market in Nairobi. The institutions that have developed to facilitate this form of marketing include the Kenya Planters Co-operative Union, the Mild Coffee Trade Association of Eastern Africa, Co-operative Societies and Unions.

5.3.1. Establishment of the Marketing Board.

During World War II, the Ministry of Supply of the United Kingdom bought the entire coffee crop and distributed it to other coffee markets. It was during this period too, that the need for a central marketing authority was recognised. After the war, the planters, through a referendum, decided to market coffee through a board. In response to this wish the Coffee Marketing Board was formed under the Coffee (Marketing) Ordinance of 1946 (68). The Board was to be composed of six elected planters, one member appointed by the Coffee Board and two members who were to be appointed by the Governor. Since then the composition of the Board has changed and so has the ratio of planters to non-planters. Today, the Board is composed of six planters who are

elected at the Annual Coffee Conference to represent regional grower interests, five other elected persons and five appointed persons, one to represent the Coffee Board and four attend meetings subject to nomination by the Minister of Agriculture. The five other elected persons are supposed to be persons experienced in coffee marketing. It would appear that over time, the Board has become more conscious of the need to co-opt persons who are knowledgeable in problems of Coffee marketing. This venue, however, could be used by trade interests to influence the marketing policies of the Board.

5.3.2. Kenya Planters Co-operative Union Limited.

During the Great Depression of 1930's, coffee planters in Thika and Ruiru Districts formed the Thika Planters' and Ruiru Co-operative Unions respectively. They were essentially formed for the purpose of reducing purchasing costs of farm requisites. In 1937 the two co-operative Unions amalgamated to form the Kenya Planters' Union. Besides dealing with purchases of farm requisites, the Union became a coffee agent. Its activities were expanded in 1947 when the Union purchased the old Nairobi Coffee Curing Company. The latter was then the only coffee curing concern in Nairobi since it had been formed through a merger of all Nairobi coffee curing mills. The Union has recently expanded the mill capacity to enable it to handle increasing production. It is the only other curing agent of the Board besides Endebess Coffee Mills, Endebess.

The Union is both a Company under the companies Ordinance and a Co-operative under the Co-operative Ordinance. Despite its Thika-Ruiru origin, the Union has become an asset in the industry. Consequently the original Union has been reorganised to take into account the interests of all producers. It is now jointly owned by individual

coffee farmers, co-operative societies and unions.

5.3.3. Licensing of Marketing Agencies and the Mild Coffee Trade Association of Eastern Africa.

All coffee marketing agencies in Kenya are licensed. Licensing was introduced in 1932 and since then no person is legally allowed to sell, export, mill, warehouse, transport or transact any business in coffee without a licence. The licences are issued by the Marketing Board but with the advice of its Licensing Advisory Committee. An exception to licensing is retailing of clean coffee in the domestic market. A retailer may purchase clean coffee from a dealer who holds a current licence provided he retails in quantities not exceeding 5 lb. in weight. He is also required to keep a register of all quantities of coffee that he purchases from any coffee dealer.

The Board has eight categories of licences and these are issued on recommendation from the coffee licensing Advisory Committee. This is composed of seven persons. Three persons represent the Board and are elected by a majority vote of the Board. The fourth person is the chairman of the Advisory Committee and is similarly elected by the Board. The three other members of the committee represent trade interests. Two of them are elected to the Committee by majority vote of the Mild Coffee Trade Association of Eastern Africa. The other one is similarly elected by the Hard Coffee Trade Association of Eastern Africa.

In advising for or against the issue of a licence the Advisory Committee considers the capital assets and the level of marketing knowledge possessed by the applicant. The licences are renewable every year and may be suspended or cancelled subject to contravention of the marketing provisions of the Coffee Act. However,

appeals against such a ruling or even refusal of a licence on application may be made to the Agricultural Appeals Tribunal.

Table 5.3.1. shows the licence categories and the functions it allows them to undertake. The licensing fee is also shown. The fees have been the same since 1944.

TABLE 5.3.1. DETAILS OF LICENCE CATEGORIES DURING 1965/66 SEASON.

Licence	Fee in E.A. (Shs)	Number of Dealers	FUNCTIONS
A	200	55	Deal in and export coffee of any country of origin. They mainly deal with coffee from Kenya, Uganda, Tanzania, Burundi, Ruanda and the Congo.
B	150	4	Coffee trading within Kenya but dealing in coffee of any country of origin.
C	5	9	Deal in and export coffee grown outside Kenya. They mainly deal with robustas from Uganda, Tanzania, Ruanda and Burundi.
Buni	100	10	To handle and export buni from any country of origin.
Brokers	150	14	Forward selling and act as intermediaries between buyers and sellers and especially between Kenya based buyers and sellers in other African territories.
Commission Agents	200	6	Arrange finance and give business advice almost exclusively to large-scale producers. Also handle marketing of coffee for its clients.
Millers	200	17	Conduct business of a miller, coffee roasting, grinding and packaging.
Warehouseman	200	16	Conduct business as a warehouseman, includes storage, bulking and arranging for shipment.
	TOTAL:	131	

Licensed coffee dealers are eligible for membership of the Mild Coffee Trade Association of Eastern Africa. Other dealers who may seek membership include those of Tanzania, Uganda and holders of extra-territorial government licences. The Association plays an important role in marketing and aims at orderly marketing and the formation of a united front especially when negotiating for its members. The Association also seeks to standardise the documentation of commercial transactions, especially with regard to contracts, bills of lading and insurance policies. All commercial transactions between the dealers are subject to the Rules of the Association. These form a basis for the settlement of disputes by arbitration among members and between them and non-members. The Association also influences grading, condition and classification of clean coffee. It also acts as a source of information and statistics relevant to the industry.

The influence of the Association has been enhanced by its representation on coffee statutory boards in Kenya and Tanzania. They are represented in the Coffee Licensing Advisory Committees of both countries while in Kenya they are also represented in the Standing Joint Committee and the Advisory Panel of the Marketing Board.

5.3.4 Co-operative Societies and Unions.

The production and marketing of coffee in the small semi-commercialised farms is heavily dependent on services provided by producer co-operative societies. The producers are served by local co-operative societies which are almost invariably affiliated into District Unions. In some districts, all major production and marketing transactions are a responsibility of the Union. Under such circumstances the Union is a dominant body. In other areas Unions are weak because all major production and marketing transactions

are conducted by the co-operative society themselves. In this case each society is directly responsible for the welfare of its members.

The co-operative societies and Unions own capital in form of coffee pulperies, stores, water reservoirs, transport vehicles and even shops for farm requisites. At the end of 1964, there were 149 co-operative societies with just under a quarter of million growers owning 300 coffee pulping stations (10). These stations jointly handled 10,811 and 13,589 tons of clean coffee in the years 1963 and 1964 respectively. The volumes of coffee handled by co-operatively owned pulping stations in the two years were respectively 29.4 per cent and 32.6 per cent of total coffee exports.

5.4 Functions of the Marketing System.

A large proportion of Kenya coffee is exported and only a small quantity of the order of 2.5 - 3 per cent is retained for home consumption. Therefore the functions of the marketing system are mainly related to the movement of the crop from the grower to the exporter. Fig. 5.4.1. is a schematic diagram showing the flow of produce through the marketing system and business transactions which illustrate the various functions of the marketing system. These may be divided into physical and allocative functions. The marketing system is, however, dominated by the physical functions. These functions include the transformations of the product, coffee classification, transport and storage. The dominant physical function however is the transformation of the product.

The transformations of coffee, from its raw state, when it leaves the coffee plant, to the end product, may be divided into three categories. The categories are primary and secondary processing and manufacturing. The first two processes are performed at home before

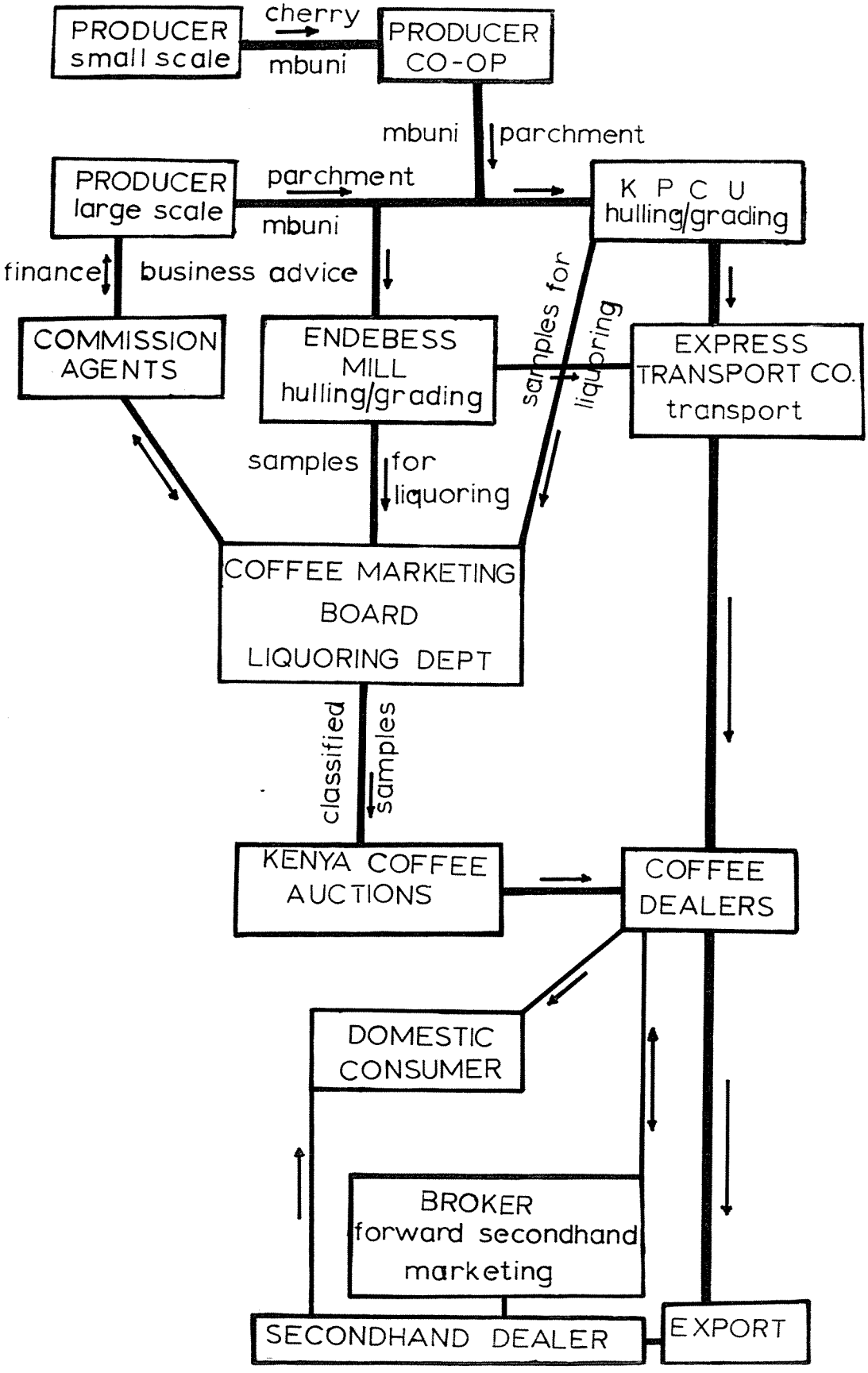


Fig. 5.4.1. A Schematic Diagram Showing flow of Produce from the Producer to the Exporter and accompanying business transactions.

coffee is exported. The transformation of the product and the accessory services demand large capital investments. The marketing system therefore employs many firms and individuals but their actions are superintended by the Coffee Marketing Board. This has only a small team of staff and consequently physical handling of coffee is performed on its behalf by agents who are paid a commission for their services.

5.4.1. The Board as a Producer Outlet.

The Board is the sole buyer of coffee from the growers. Exporting and selling both raw and roasted coffee to any other person or organisation except the Board is prohibited by law. However, somebody could perform these operations on behalf of the Board and licensed dealers are considered to be agents of the Board.

Individual planters, on completion of primary processing on their properties, transport coffee parchment by rail or road to licensed millers. For the small grower, this is performed by the co-operative society or the Union. Each planter's and co-operative society's delivery bags bear registered distinguishing marks to ensure that coffee quality can be traced back to the source of the consignment. The Board has two milling agents namely, the Kenya Planters Co-operative Union, Nairobi and the Endebess Coffee Mills, Endebess.

Besides arranging for secondary processing, the Board has a liquoring department which classifies the whole crop. All coffee consignments to milling agents are sampled and the samples of clean coffee sent to the Board. They are then subjected to a routine examination. Each sample is roasted, ground and prepared into coffee liquor. Before the preparation of the liquor, the liquoring staff examine visually the colour of the raw and roasted coffee,

the colour of the centre cut of the bean and the evenness of the roast (70). The liquor is subjected to a subjective test by a coffee 'taster'. He examines the liquor for acidity, body and flavour, the best liquors being those with well balanced acidity and body. Using these subjective standards the coffee consignments are classified into 9 classes. There used to be 13 classes but the classification was reviewed and revised to meet changing market conditions at the close of 1964 coffee calendar year (71).

After the classification of clean coffee, the Board mails this information to the planter, the co-operative society or the Union or whoever is the owner of the classified coffee. This is usually done within seven days after the classification. Any coffee owner who disagrees with the Board's classification may appeal against it to an Appeal Board. The appeal should be made within 21 days of notification.

Once clean coffee is classified it is ready for sale. This is done by auction. The Board performs this function through the Kenya Coffee Auctions Ltd., Nairobi. The Board has the machinery to influence quality and to determine the quantity of coffee that may be marketed each year. So far the Board has been able to sell nearly all produce received from the coffee producers. The volume of coffee stocks on 30th September, 1964, was 1,288.23 tons or 2.96 per cent of the total crop.

The Coffee Board of Kenya retains the responsibility for local publicity while the Coffee Marketing Board undertakes overseas publicity but with funds provided by the Coffee Board. The latter draws funds for publicity from the Coffee Levy Fund. This is a fund whose source of finance includes licensing of production, annual growers' levy and export taxation which is levied on all exported coffees except buni.

Coffee promotion and advertising overseas is undertaken by the

Kenya, Tanganyika and Uganda Coffee Industries, which is a publicity organisation based on London. In the year 1963/64 Kenya contributed £15,500 to the organisation and in 1964/65 budgeted the contribution at £10,000 (72).

All proceeds from coffee sales are received by the Marketing Board and form a fund known as the Pool. The auction receipts of each class of coffee are entered into accounting documents in order to obtain the gross sales realisation of each class of coffee for the whole year. The corresponding quantities of coffee falling into each class are similarly recorded. After subtracting from the Pool, marketing and miscellaneous charges, the Pool payments for each class of coffee are subsequently determined. Table 5.4.2. shows the Pool payments per ton of clean coffee for the period 1963/64.

Table 5.4.2. Payments to Planters, 1963/64.

Class of Coffee.	Pool Payments £ per Ton	Pool Payments plus Premium Payments £ per ton
1	411.04	415.65
2	389.76	392.77
3	369.60	372.91
4	353.92	357.52
5	339.36	345.10
6	329.28	334.18
7	84.00	No premium Payments
8	53.76	
9	16.80	

SOURCE: Kenya Coffee.

The Coffee Board of Kenya Monthly Bulletin, November, 1964.

The Table shows that the classes of coffee that ranged from 1 to 9 and Pool payments to planters in large-scale farms and to co-operative societies, ranged from £411.04 per ton to £16.80 per ton.

Within a coffee class there may be significant quality variation which may be reflected as class price variation in an auction. Under such circumstances above average quality coffees in a class may fetch above average prices. Also a sudden demand for certain coffee classes at an auction where only a few consignments of these coffee classes are on the auction floor may result in above average prices. The Marketing Board facilitates the transmission of these market changes back to the producers through a Premium Payments system. When a coffee consignment from an individual grower or a co-operative society realises above class average price for class 1 to 6, the owner of the coffee is paid a premium. Table 5.4.2. shows that in 1963/64 Pool payments plus premium payments ranged from £415.65 per ton for Class 1 to £334.18 per ton for Class 6. In 1963/64 the total Pool and Premium payments for classes 1 to 6 totalled £15,689,550 and Premium payments accounted for only 1.14 per cent of the total. The Premium payments were largely accounted for by classes 3, 4, 5 and 6.

The payments to growers are spread over time and are actually done by the Kenya Planters Co-operative Union Limited on behalf of the Board. The producers receive the auction price less marketing expenses, miscellaneous expenses and the Coffee Board Levy. The marketing expenses are predominantly agency fees for transport, storage, milling and insurance.

In 1963/64, the Marketing Board handled a total crop of 43,454 tons which was valued at £15.302,257 ex store, Nairobi. The average return was £352 per ton. The total net marketing expenses were £5.47 per ton and this value compares with £5.36 per ton in 1962/63. The total crop

then was 42,309 tons and the average return £284 per ton. Miscellaneous expenses include contributions to international organisations. The activities of the Board have stretched to the international field since the inception of the International Coffee Agreement. It therefore makes contributions to the World Coffee Promotion Committee and Inter-African Coffee Organisation. Including the Coffee Board Levy, agency fees and miscallaneous expenses, total deductions from gross proceeds stood at £18.88 per ton in 1963/64. This figure compares with £8.29 per ton in 1962/63 (72). Thus total deductions by the Board were 2.92 per cent and 5.36 per cent of the average unit value in 1962/63 and 1963/64 respectively.

5.4.2 Primary Processing.

Primary processing involves the transformation of coffee cherry into parchment coffee. The Board insists on the wet method of processing as opposed to the dry method of processing which is practised in some other coffee producing countries. The process is carried on in pulping stations. A pulping station consists of one or more pulping machines, stores and clerical offices, a drying site and probably a water reservoir. There are many brands and sizes of pulping machines. Their sizes range from small hand-operated to large power-driven machines. The policy of the Department of Agriculture is to encourage the installation of large capacity power-driven pulpers and to discourage the installation of the small capacity hand or power operated pulpers. The capacity of pulping stations on large-scale farms varies widely but co-operative societies commonly use two sizes of factories. The first has an annual throughput of 30 - 50 tons of clean coffee while the second and larger size has a capacity of 50 - 100 tons of clean coffee per year. The cost of building a pulping

station of a capacity of 50 - 100 tons of clean coffee per year may vary between £1,500 and £2,500 depending on costs of materials and labour.

To ensure high quality, only ripe coffee is hand picked from the plants and this is immediately taken to the pulping stations. The sequence of operations in the transformation of cherry to parchment coffee are: removal of the pulp, separation of the pulp from the bean, separation of light coffee from the more dense and hence higher quality coffee, fermentation of both grades of coffee, washing and drying of the beans. Drying the wet parchment coffee on wire mesh trays is the dominant practice in Kenya, although a few mechanical driers have also been tried. The services that are associated with drying include constant turning of the drying parchment to facilitate even drying and to ensure that fermentation does not continue on the drying trays. Once the pulping station manager is satisfied that the parchment coffee has dried and lost moisture to approximately 12 per cent, then the coffee is put into new bags, marked and stored or dispatched to the coffee mills where the next processing operation is performed.

Sometimes the cherry received at the pulping station is faulty. Such faults include under and over-ripeness, disease and insect damage. Usually this category of cherry is dried without primary processing and sold to the Board as Buni or dried coffee. There are licensed Buni dealers who purchase this grade of produce on behalf of the Board.

The primary processing of coffee may be performed on the farm or by a co-operative society. All farms with more than ten acres of coffee may own pulping machinery but this is prohibited among growers with less coffee acreage. It is mandatory therefore for a small grower to become a member of a co-operative society. The society performs the above operations for the members, markets the coffee and hands over

the proceeds to members after charging a fee for the services rendered. To facilitate the necessary calculations all coffee cherry received from growers is weighed and the weight entered into accounting cards and books under the names of the growers. A few societies which have more skilful management also grade the cherry from individual growers and the weights of different grades are entered into the accounting documents. All cherry is then bulked and processed and sold in bulk. With the exception of a few societies the basis of payments to growers is therefore largely quantity rather than quality or both.

On large-scale farms primary processing is performed on the farm. The property owner or his manager is therefore responsible for all the operations that are necessary in the transformation of cherry into parchment coffee. It is mandatory to such farmers to sell their coffee to the Marketing Board. Therefore on completion of primary processing, dry parchment and Buni are consigned to the appropriate agents of the Board. The grower receives a payment for his produce directly from the Board. Such payment is based on both quantity and quality.

5.4.3 Secondary Processing, Grading and Storage.

Secondary processing of coffee involves the transformation of parchment coffee into clean coffee and this is called curing in the coffee trade. This process is largely market oriented. In this field the agents for the Board, as shown on Fig. 5.4.1., are the Endebess Coffee Mills, Endebess and the Kenya Planters Co-operative Union, Nairobi.

The above mentioned firms receive parchment coffee, weigh it and then test it for moisture. Then coffee is stored either in bags or in large aluminium bins. From the bins or the bags the process of coffee

TABLE 5.4.3. DISTRIBUTION OF 1963/64 CROP BETWEEN GRADES AND CLASSES

CLASSES	1	2	3	4	5	6	7	8	9	TOTAL	% OF CROP
GRADES	WEIGHT IN TONS										PER CENT
PB	1.89	35.68	269.36	449.28	271.15	77.10	7.99	0.32	0.11	1,112.88	2.56
AA	784.63	2,585.09	3,100.69	1,902.47	710.23	198.06	24.63	-	-	9,305.80	21.41
A	37.66	1,240.75	4,147.26	3,221.89	1,453.30	365.43	34.88	0.82	1.12	10,503.11	24.17
B	-	-	251.01	2,252.84	4,722.78	3,146.29	130.40	0.06	0.34	10,503.72	24.17
C	-	-	-	115.64	1,069.33	1,824.27	166.96	6.51	0.17	3,182.88	7.32
E	1.69	91.85	117.58	295.34	338.97	282.43	24.67	0.12	0.03	1,152.68	2.65
TT	-	-	-	87.52	1,144.74	2,880.06	625.25	59.43	7.36	4,804.36	11.06
T	-	-	-	-	-	276.58	947.53	386.51	15.70	1,626.32	3.74
M	-	-	-	-	-	11.94	1,022.31	110.39	0.14	1,144.78	2.63
UG	-	-	-	-	-	36.34	63.95	20.88	2.61	123.78	0.29
TOTAL	825.87	3,953.37	7,885.90	8,324.98	9,710.50	9,098.50	3,048.57	585.04	27.58	43,460.31	100.00
% OF CROP	1.90	9.10	18.14	19.16	22.34	20.94	7.01	1.35	0.06	100.00	

curing begins and entails the following sequence of events: milli.., separation of the husk and any dust, polishing and finally grading. Grading is accomplished by the use of screens of different sizes. The smaller size beans pass through the screens while the bigger ones are retained. The coffee is graded into a maximum of nine grades which are designated by PB, AA, A, B, C, E, TT, T and M. The coffee which does not fall into any of the nine grades falls into the category of Under-grades, denoted UG. Samples of every coffee grade are then despatched to the Liquoring Department of the Board for classification. Table 5.4.3. shows the distribution of the 1963/64 crop over 10 grades and 9 classes. Most of the crop was simultaneously in the first 5 grades and the first 6 coffee classes. Thus the coffee grades PB, AA, A, B and C accounted for approximately 86 per cent of the total crop, while classes 1 to 6 accounted for 91.58 per cent of the total crop.

The total coffee crop for the season 1963/64 and the portion of the crop that fell into the first six classes are shown on Table 5.4.4. The table also shows their distribution between the various coffee grades. Columns (1) and (2) of the table taken together show simple frequency distribution of coffee over the ten coffee grades. Column (3) similarly shows the total quantity of coffee in the first 6 classes and its frequency distribution over the ten grades. Columns (4) and (5) give the respective percentage distributions of columns (2) and (3). Columns (6) and (7) represent cumulative totals of columns (4) and (5), respectively.

Column (6) shows that 2.56 per cent of coffee in the 1963/64 season was accounted for by the PB grade. However PB grade coffee accounted for 2.78 of the total quantity of coffee in the first six coffee classes. The table shows that the most important coffee grades were AA, A, B, C

TABLE 5.4.4.

DISTRIBUTION OF TOTAL CROP
AND CROP IN 1ST 6 CLASSES OVER TEN COFFEE GRADES

GRADES	TOTAL CROP	CROP IN 1ST 6 CLASSES	TOTAL CROP	CROP IN 1ST 6 CLASSES	TOTAL CROP	CROP IN 1ST 6 CLASSES
	WEIGHT IN TONS		PER CENT		ACCUMULATED PERCENT	
PB	1,112.88	1,104.46	2.56	2.78	2.56	2.78
AA	9,305.80	9,281.17	21.41	23.32	23.97	26.10
A	10,503.11	10,466.29	24.17	26.30	48.14	52.40
B	10,503.72	10,372.92	24.17	26.06	72.31	78.46
C	3,182.88	3,009.24	7.32	7.56	79.63	86.02
E	1,152.68	1,127.86	2.65	2.83	82.28	88.85
TT	4,804.36	4,112.32	11.06	10.33	93.34	99.18
T	1,626.32	276.58	3.74	0.70	97.08	99.78
M	1,144.78	11.94	2.63	0.03	99.71	99.91
UG	123.78	36.34	0.29	0.09	100.00	100.00
TOTAL	43,460.31	39,799.12	100.00	100.00		
(1)	(2)	(3)	(4)	(5)	(6)	(7)

and TT. These grades accounted respectively for 88.13 per cent and 93.57 per cent of the crop for the season 1963/64 and the total quantity of coffee falling in the first 6 coffee classes.

When columns (6) and (7) are graphed, one against the other, as shown on Feg. 5.4.2., a Lorenz curve is obtained. If the total crop fell into the first 6 coffee classes and the total crop was equally distributed between the coffee grades and classes, then every coffee grade would be represented by equal quantities in all the six coffee classes. Under such conditions 20 per cent of the total crop would account for 20 per cent of the crop in the six coffee classes, 40 per cent for 40 per cent, and so on. In this situation, the Lorenz curve would be a straight line drawn diagonally across the graph as represented by AC on Fig. 5.4.2. The extent to which the actual curve ABC diverges from the diagonal line is therefore illustrative of the degree of inequality between coffee grades in accounting for coffee falling in the first six coffee classes. This inequality is greatest for the grades T, M and UG.

The graded clean coffee is removed from the mill building into a neighbouring warehouse by an air current apparatus. The latter is owned by the Express Transport Company, Nairobi, who are the warehousing agents of the Board. Once in the warehouse, the coffee is bagged according to the Board's classification and coding. Lots of coffee may be bulked according to instructions from either the Board or the coffee dealers.

When the coffee changes hands from the mills to the warehousemen, the latter prepare a document, often referred to as a "Warrant" for each batch or out-turn. A batch consists of 150 bags of 132 lb. (60 kilo) each. Whenever the batch is sold, the warehouseman passes the "Warrant" to the buyer. The "Warrant" is a legally negotiable

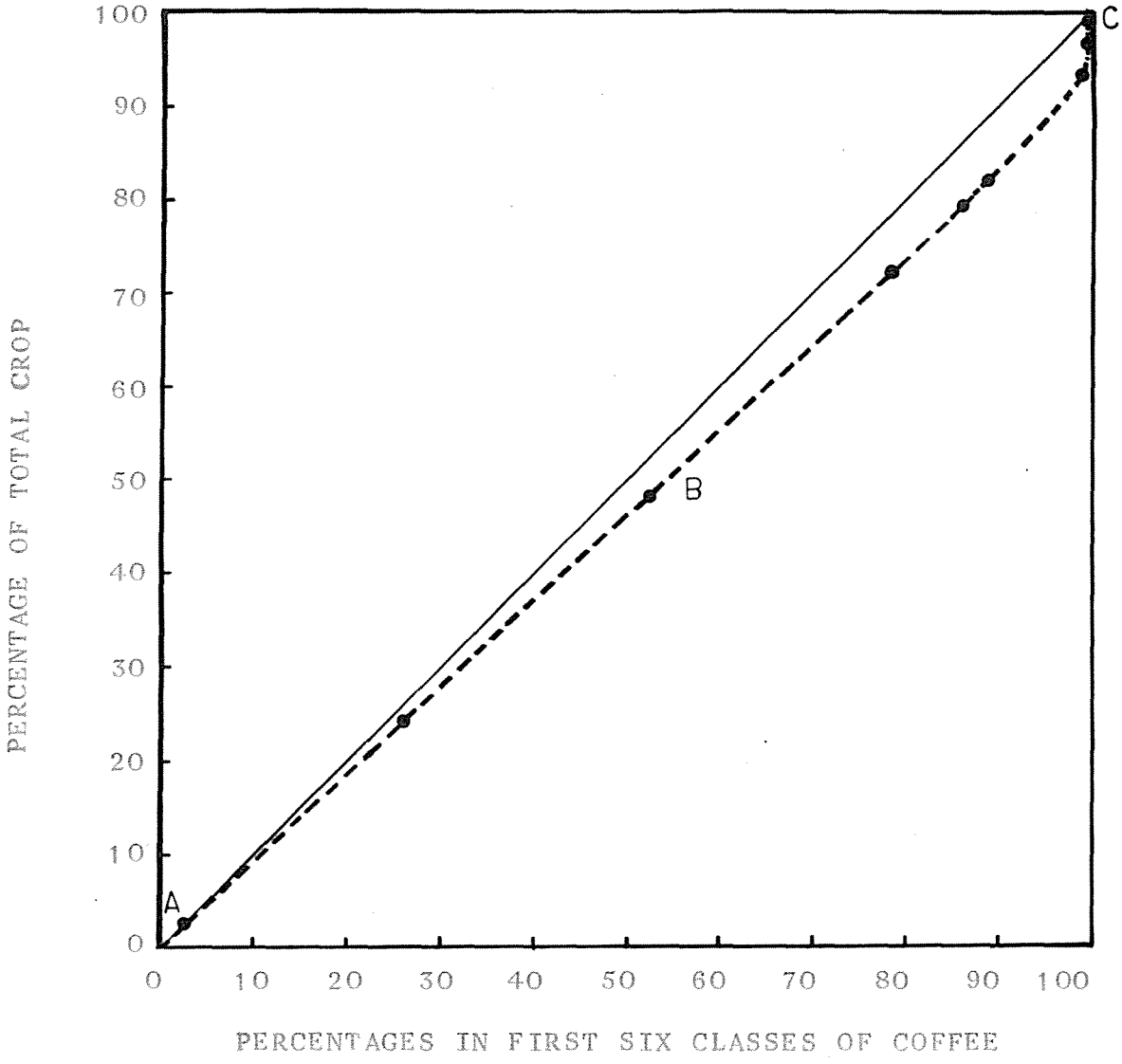


Fig 5.4.2. Distribution of Total Crop into first six classes of Coffee.

document and may be passed between dealers, brokers and bankers.

The Express Transport Company is responsible for the dispatch of coffee from Nairobi to the port for export.

5.4.4. Coffee Sale and Auctions.

All coffee is sold by auction and the Kenya Coffee Auctions Ltd., are the sole sale and auctioneering agents of the Board. The firm organises coffee sales in East Africa to licensed dealers. Only members of the Mild Coffee Trade Association of Eastern Africa may make purchases in the auctions. Also the sales are conducted in accordance with the rules of the Association. In order to provide adequate basis for bidding in the auction, the auctioneering firm prepares samples and catalogues of what is to be sold at each auction. Other duties of the firm include, conducting of auction, debiting the buyer and the release of the coffee to the buyer. The buyers pay cash for coffee before they take possession of it which is usually within a week following the date of the auction.

SUMMARY:

The various functions of the coffee marketing system are organised and superintended by the Coffee Marketing Board. All coffee dealers are licensed by the Board. Besides licensing the only other direct form of participation of the Board in marketing is in coffee classification. All coffee is classified through quality tests which are performed by the Liquoring Department of the Board. All other physical and allocative functions of a marketing system are performed by the agents of the Board. For this reason, the Board finds it economical to employ only a handful of employees and is apparently contented to remain far removed from the actual marketing operation.

However, licensing of all marketing operations by the Board enables it to implement any market reforms readily. Thus the organisational structure of the marketing system renders it amenable to control in times of market crises.

CHAPTER 6

CHANGES IN EXPORT PROCEEDS

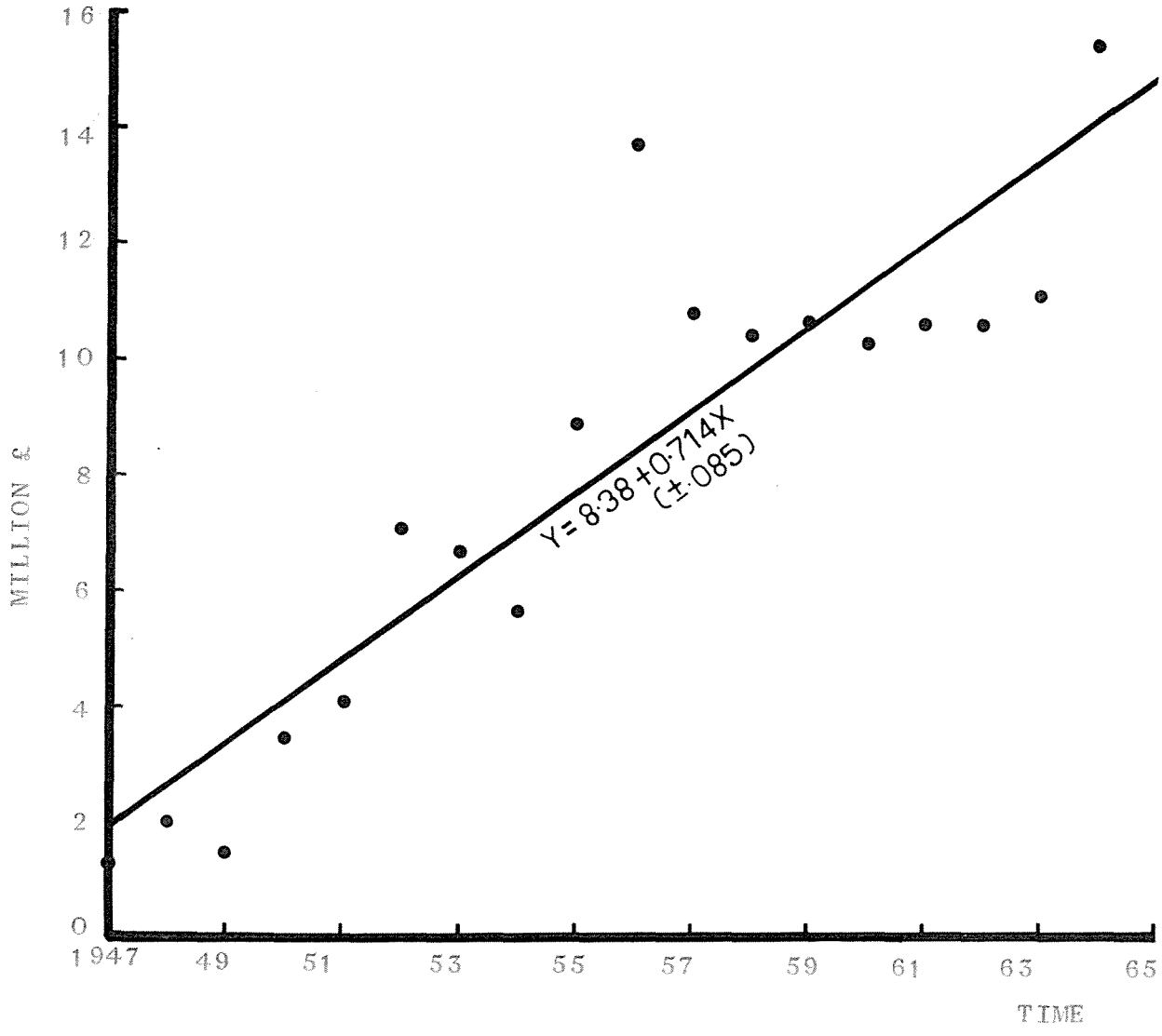
This chapter contains the analysis of export proceeds of coffee for the period 1947 to 1964. The changes of annual total proceeds have been related to annual changes of several other variables in the same period. These include the average annual export unit value, the total annual production, the United Kingdom export price index and the annual volume of exports.

6.1. Changes in Total Annual Export Proceeds:

The total annual export proceeds of coffee increased from £1,311,630 to £15,411,170 between 1947 and 1964. This was an increase of £14,099,540 over a period of eighteen years. As shown in Fig. 6.1.1. the average annual proceeds for the period was approximately £8.38 million and the total proceeds increased at an average annual rate of 8.52 per cent, over a period of eighteen years.

The absolute and percentage changes in total annual export proceeds and their trend corrected values are shown on Table 6.1.1. Between 1947 and 1964 the total export proceeds showed ten positive changes out of possible seventeen. The annual increases ranged from £171,070 to £4,747,660 recorded in 1959 and 1956 respectively. The positive changes were spread over the whole period without a definite pattern but at no time were more than three consecutive annual increases realised without being intercepted by a negative change. The range of negative changes was £12,220 to £2,862,290 recorded in 1962 and 1957 respectively.

The trend adjusted data reveal that the total annual export proceeds were increasing and relatively high during the period 1952 to 1959. The trend changed after a peak in 1956 and for the period 1960 to 1963 the



Note: x is in years with origin at the end of 1956.

Fig. 6.1.1. Trend in Export Proceeds

TABLE 6.1.1. CHANGES IN TOTAL EXPORT PROCEEDS

Year	Total Export Proceeds £	Total Export Proceeds: Absolute Change £	Total Export Proceeds: Per Cent Change	$\frac{X_1}{Y_1} \times 100$	$_1$
1947	1,311,630			68.4	
		+ 706.940	+ 53.90		+ 7.9
48	2,018,570			76.3	
		- 508,730	- 25.20		-31.4
49	1,509,840			44.9	
		+2,039,570	+135.09		+41.3
50	3,549,410			86.2	
		+ 546,910	+ 15.41		- 0.4
51	4,096,320			85.8	
		+3,027,040	+ 73.90		+43.3
52	7,123,360			129.1	
		- 410,630	- 5.76		-21.4
53	6,712,730			107.7	
		- 985,910	- 14.69		-25.6
54	5,726,820			82.1	
		+3,200,090	+ 55.88		+34.1
55	8,926,910			116.2	
		+4,747,660	+ 53.18		+47.3
56	13,674,570			163.5	
		-2,862,290	- 20.93		-44.8
57	10,812,280			118.7	
		- 389,560	- 3.60		-12.8
58	10,422,720			105.9	
		+ 171,070	+ 1.64		- 5.3
59	10,593,790			100.6	
		- 315,940	- 2.98		- 9.1
60	10,277,850			91.5	
		+ 347,040	+ 3.38		- 3.0
61	10,624,890			88.5	
		- 12.220	- 0.12		- 5.0
62	10,612,670			83.5	
		+ 518,760	+ 4.89		- 0.8
63	11,131,430			82.7	
		+4,279,740	+ 27.77		+26.2
64	15,411,170			108.9	

X_1 = Actual export proceeds, £

Y_1 = Trend value, £

$_1$ = % Changes in trend adjusted values.

total export proceeds were decreasing and relatively low.

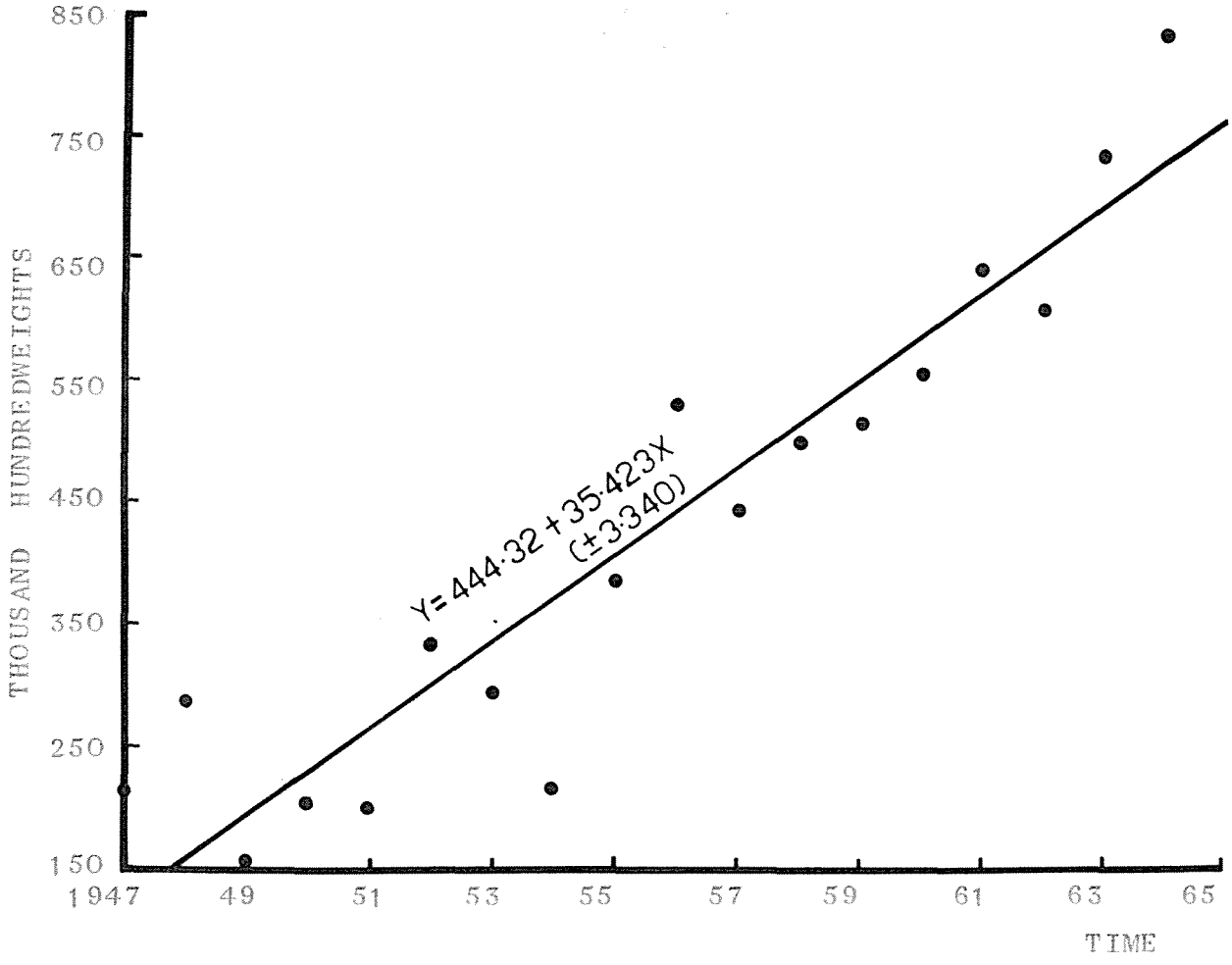
The instability index for export proceeds for the period 1946 to 1964 was 34.2 as compared with 35.2 for the period 1947 to 1964. This was the average year to year percentage variation of export proceeds, corrected for trend. The instability was higher during the period 1946 to 1955 than over the period 1955 to 1964. For the trend adjusted data, the instability indices were 41.9 and 20.6 respectively.

6.2. Changes in the Volume of Exports:

The volume of coffee exports increased approximately fourfold from 213,810 cwt. to 833,710 cwt. between 1947 and 1964. Fig. 6.2.2. shows the scatter of the volume of exports and a trend line fitted by the least squares method. The equation of the trend line reveals that the average volume of exports for the period was 444,320 cwt. and the total volume of exports increased at a rate of 35,423 cwt. per annum. The volume of coffee exports increased at the average rate of 7.97 per cent per annum.

The absolute and percentage changes of the annual volume of exports between 1947 and 1964 are shown on Table 6.2.2. Changes in the trend adjusted values are also shown. The minimum and maximum annual export increases were 17,010 cwt. and 287,280 cwt. recorded in 1959 and 1961 respectively. The corresponding percentages were 3.40 and 80.60. The range of absolute annual declines was 155,030 cwt. and the minimum and maximum declines were 6,040 cwt. in 1951 and 161,070 cwt. in 1960. The corresponding minimum and maximum negative changes were 3.0 and 31.10. The results show that the range of annual export increases was greater than that of export decreases. There were also more instances of export increases than decreases over this period.

After trend adjustment, the annual volume of exports showed greater stability when compared with raw data. However, the method of trend adjustment tended to accentuate export decreases. The instability index



Note: x is in years with origin at the end of 1956.

Fig. 6.2.2. Trend in volume of exports

TABLE 6.2.2. CHANGES IN EXPORT VOLUME

Year	Volume of Exports (CWT)	Volume of Exports		$\frac{X_2}{Y_2} \times 100$	2
		Absolute Change (CWT)	Per Cent Change		
1947	213,810			164.6	
		+ 73,830	+34.53		+11.0
48	287,640			175.6	
		-131,340	-45.66		-96.4
49	156,300			79.2	
		+ 48.500	+31.03		+ 9.5
50	204,800			88.7	
		- 6,040	- 2.95		-13.3
51	198,760			75.4	
		+139.680	+70.28		+38.0
52	338,440			113.4	
		- 42,640	-12.60		-24.2
53	295,800			89.2	
		- 79,670	-26.93		-30.0
54	216,130			59.2	
		+172,340	+79.74		+38.0
55	388,470			97.2	
		+145,740	+37.52		+26.4
56	534,210			123.6	
		- 88,530	-16.57		-27.9
57	445,680			95.7	
		+ 54,860	+12.31		+ 4.7
58	500,540			100.4	
		+ 17,010	+ 3.40		- 3.2
59	517,550			97.2	
		-161,070	-31.12		-34.4
60	356,480			62.8	
		+287,280	+80.59		+44.5
61	643,760			107.3	
		- 33,470	- 5.20		-11.1
62	610,290			96.2	
		+125,920	+20.63		+14.1
63	736,210			110.3	
		+ 97,500	+13.24		+ 8.7
64	833,710			119.0	

X_2 = Actual export proceeds, £

Y_2 = Trend Value, £

$_2$ = Annual percent change in trend adjusted values.

for the annual volume of exports, corrected for trend, was 37.90 over the period 1946 to 1964. The period 1946 to 1955 experienced greater instability than the period 1955 to 1964. The respective instability indices were 44.70 and 40.50.

6.3. Instability of the Unit Export Value:

The unit export value increased from £98 per ton between 1946 and 1954, but thereafter followed an unsteady course to gravitate to £370 per ton in 1964. The annual changes in the unit export value are shown on Table 6.3.3. The minimum and maximum annual increases were £9 per ton and £154 per ton, recorded in 1952 and 1950 respectively. The corresponding minimum and maximum percentages were 2.20 and 79.80 respectively. The range of negative annual changes was £63 per ton and the minimum and maximum declines were £7 per ton and £70 per ton recorded in 1959 and 1955 respectively. The corresponding percentages were 1.70 and 42.80. These figures reveal that the range of unit export value increases was greater than that of its decreases.

Table 6.3.3. also shows that the period 1946 to 1954 was characterised by unit export value increases, while in the later years there were only a few and isolated incidences of increases. The period 1956 to 1963 was a phase of declining unit export values. There was a temporary rise in the unit export value in 1962 but this collapsed and the unit export value declined to £302 per ton in 1963, the lowest since 1950.

The mean unit export value for the period 1946 to 1964 was £354 per ton with a standard deviation of £126.4. The average year to year per cent variations of the unit export value, corrected for trend, was 20.40. During the period 1946 to 1955 the unit export value was more stable than over the period 1955 to 1964. The respective instability indices were 21.10 and 27.50.

TABLE 6.3.3. CHANGES IN UNIT EXPORT VALUE

Time	Unit Export Value £ per ton.	Absolute Change £/ton	Per Cent Change
1946	98		
		+ 25	+ 25.50
47	123		
		+ 17	+ 13.80
48	140		
		+ 53	+ 37.90
49	193		
		+154	+ 79.80
50	347		
		+ 65	+ 18.70
51	412		
		+ 9	+ 2.20
52	421		
		+ 33	+ 7.80
53	454		
		+ 76	+ 16.70
54	530		
		- 70	- 13.20
55	460		
		+ 52	+ 11.30
56	512		
		- 27	- 5.30
57	485		
		- 69	- 14.20
58	416		
		- 7	- 1.70
59	409		
		- 39	- 9.50
60	370		
		- 40	- 10.80
61	330		
		+ 18	+ 5.50
62	348		
		- 46	- 13.20
63	302		
		+ 68	+ 22.50
64	370		
Algebraic Sum		+272	+173.80
Average		+ 15.10	- 9.66

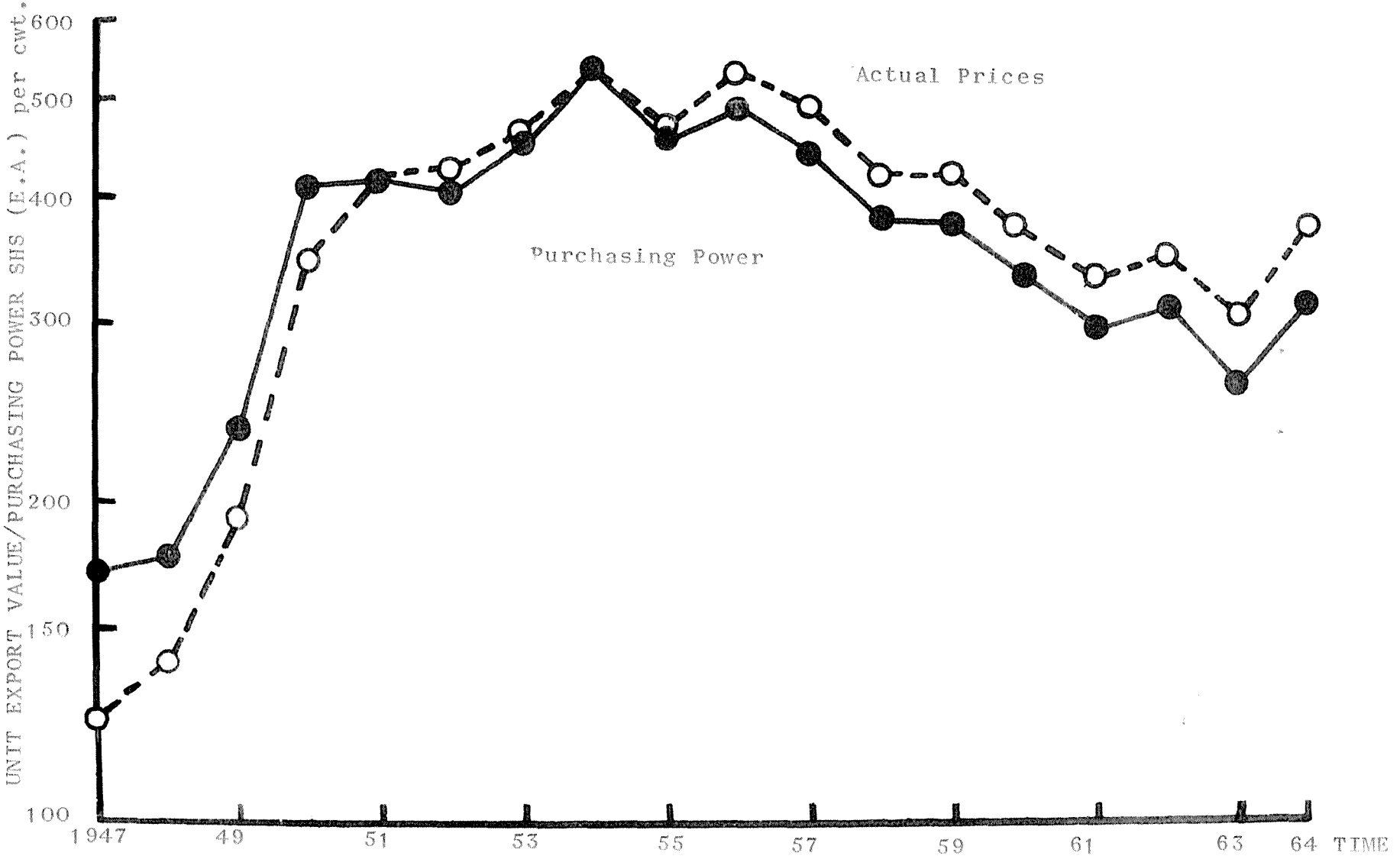


Fig. 6.4.3. Unit Export Value and its Purchasing Power Relative to the Export Price Index of the United Kingdom.

6.4. Changes in the Purchasing Power of Coffee:

The relationship between the unit export value and the purchasing power of coffee with respect to exports from the United Kingdom for the period 1947 to 1964 is shown on Fig. 6.4.3. The purchasing power of coffee was obtained by dividing export unit value of coffee by the export price index of the United Kingdom.

Fig. 6.4.3. shows that if 1954 is taken as the base year, the purchasing power of coffee was higher than the unit export value during the period 1947 to 1954. After 1954 the situation reversed and since then to 1964 there was a widening gap between the unit export value and the purchasing power. The mean of the purchasing power for the period 1947 to 1964 was also higher than that of the unit export value. The corresponding means were £357 per ton with respective standard deviations of £99.45 per ton and £126.42 per ton.

The purchasing power of coffee was more unstable over the whole period than the unit export value. The instability index for the purchasing power was 26.70, as compared with 20.60 for the unit export value. The purchasing power was also more unstable over the period 1955 to 1964 than over the period 1947 to 1955. This was shown by the respective instability indices of 26.90 and 22.50. The corresponding instability indices for the unit export value were 27.50 and 22.40. These reveal that while the purchasing power was slightly more unstable for the period 1947 to 1955, it was more stable than the unit export value over the period 1955 to 1964.

6.5. Relationship Between Changes in the Volume of Exports, Total Production and the Unit Export Value:

The instability exhibited by trend adjusted values of total production, volume of exports and the unit export value of coffee is demonstrated on Fig. 6.5.4. and instability indices are shown on Table 6.5.4. The graph

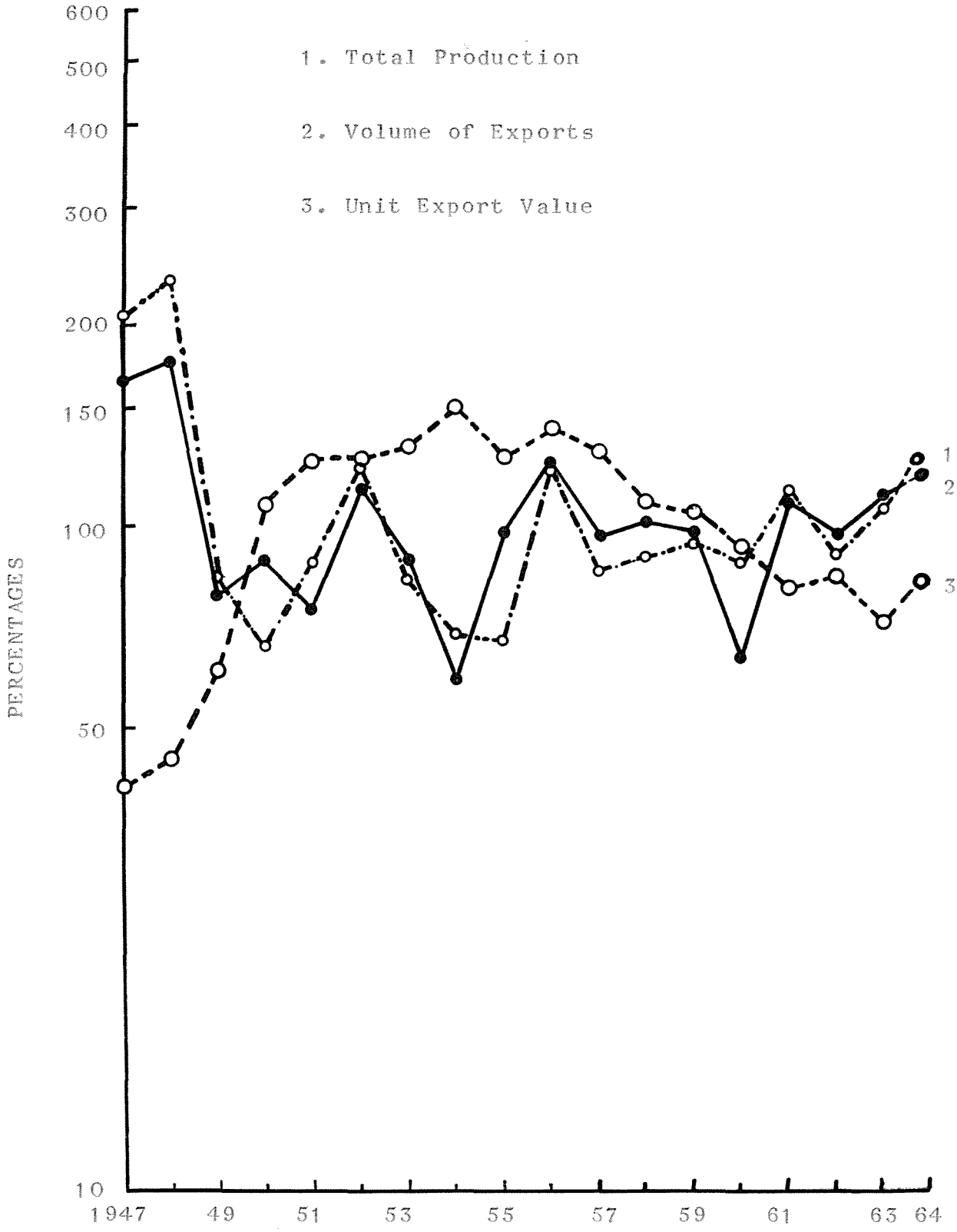


Fig. 6.5.4. Fluctuations around the Trends of Total Production, Volume of Exports and Unit Export Value.

shows that between 1947 and 1964, changes in the volume of exports closely followed changes in total production. The changes in unit export value did not exhibit a high degree of association with changes of either production or the volume of exports.

Changes in both total production and the volume of exports show that the industry experienced five-year cycles between 1948 and 1961. The cyclical tendancies however were less defined between 1961 and 1964. The interruption of cyclical tendancies during this period was accompanied by a downward swing in the unit export value which started in 1957 but became progressively more severe.

The relationship between the volume of exports and the other two factors can be represented by the following regression equation:

$$Y = 20.95 + \underset{(\pm.061)}{0.686\ X_1} + \underset{(\pm.086)}{0.086\ X_2}$$

Where Y = volume of exports

X_1 = total production

X_2 = unit export value.

The coefficients of determination and multiple correlation were also calculated and their values are as follows:

$$R^2 = 0.93$$

$$R = 0.96$$

The coefficient of multiple correlation, $R = 0.96$, indicates that there was a high degree of association between the volume of coffee exports, Y, and the other two factors, namely, total production X_1, and the unit export value X_2. The square of the multiple correlation coefficient, $R^2 = 0.93$, is the coefficient of multiple determination. It shows that 93 per cent of the variance in the volume of exports was in common with the variance of the

TABLE 6.5.4. INSTABILITY INDICES

Parameter	1946-64	1946-55	1955-64
	INSTABILITY INDICES		
Total Production	39.10	46.90	29.70
Volume of Exports	37.90	44.70	40.50
Total Export Proceeds	34.20	41.90	20.60
Unit Export Value	20.40	21.10	27.50
Purchasing Power	26.70*1	22.50*2	26.90

*1 Covers only 1947 to 1964

*2 Covers only 1947 to 1955

two variables in the regression equation taken in combination.

In order to determine the predictive qualities of the regression equation significance tests were performed on the regression coefficients and the variance between the actual volume of exports Y and the predicted value, Y. The t-test for the regression coefficients revealed that changes in production were more reliable in explaining changes in the volume of exports than changes in export unit value. The F-ratio of the variance of actual and estimated volume of exports was significant at the 5 per cent level.

Table 6.5.6. ANALYSIS OF VARIANCE OF VOLUME OF EXPORTS:

Source of Variation	Degrees of Freedom : Sums of Squares : Mean Square		
Total	17	$\sum_y{}^2 = 15{,}502$	
Regression	2	$\sum \hat{y}_{12}{}^2 = 14{,}422.14$	7211.07
Deviations	15	$\sum d_{y.12}{}^2 = 1{,}079.86$	71.99
	$F = \frac{7211.07}{71.99} = 100.17$		$P < 0.05$

6.6. Relationship Between Total Export Proceeds, Volume of Exports and the Unit Export Value:

The annual data for total export proceeds, the volume of exports and the unit export value were corrected for trend and their average instability over the period 1947 to 1964 was determined. The average instability was expressed in form of instability indices and these are shown on Table 6.6.6. The annual fluctuations of these variables around their trend was

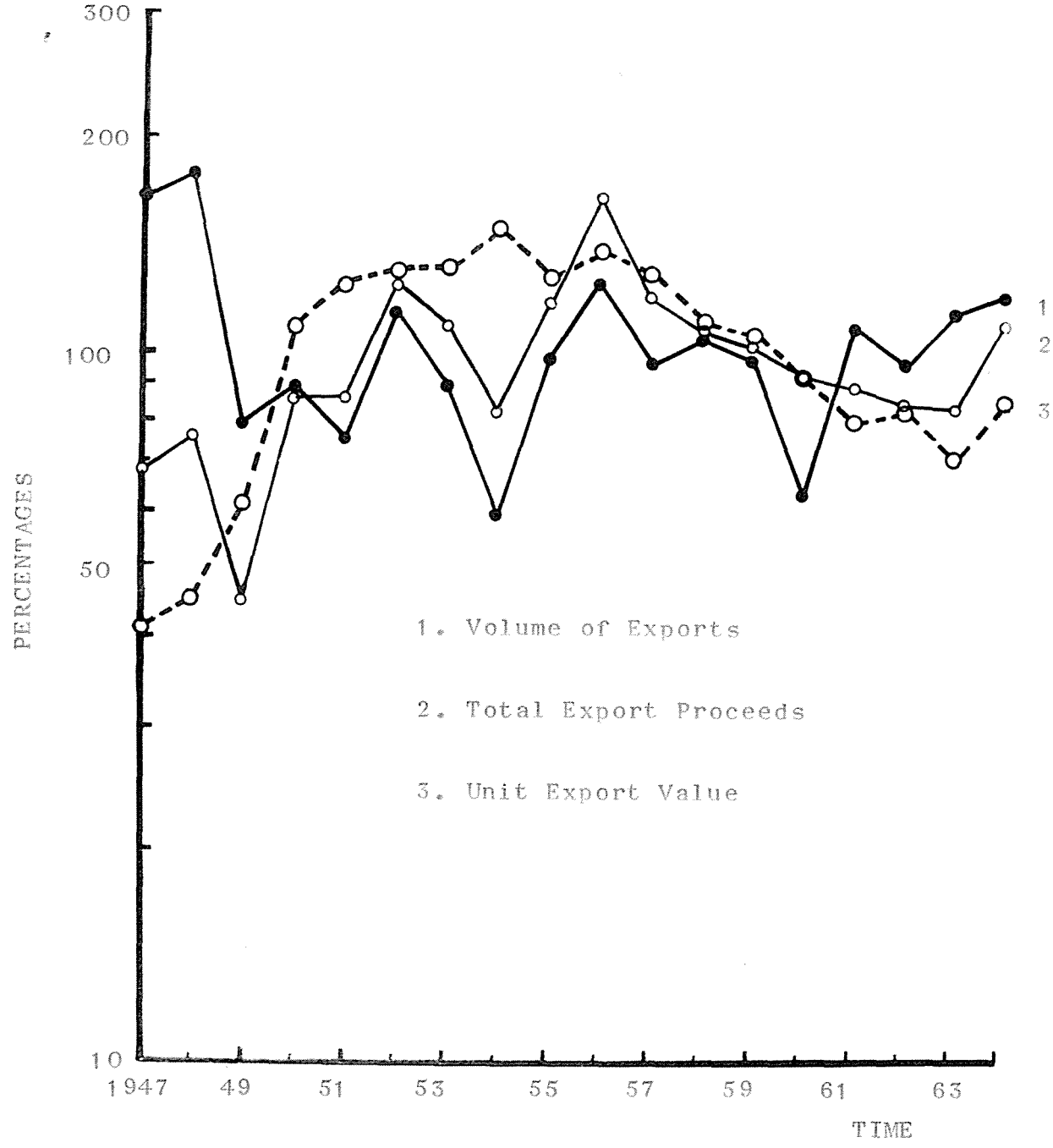


Fig. 6.6.5. Fluctuations around the Trends of Total Export Proceeds, volume of Exports and unit export Value.

also calculated and the annual changes are shown diagrammatically on Fig. 6.6.5. The graph shows that changes in total export proceeds, between 1947 and 1957, were positively associated with changes in the volume of exports. Between 1957 and 1964, the changes in total export proceeds were more positively associated with changes in the unit export value.

The relationship between the total export proceeds and the other two variables can be described by the following regression equation:

$$Y = -46.43 + \underset{(\pm.145)}{0.564^{*}} X_1 + \underset{(\pm.138)}{0.854^{*}} X_2$$

Where

Y = total export proceeds;

X_1 = volume of exports;

X_2 = unit export value.

The coefficients of determination and multiple correlation were also calculated:

$R^2 = 0.72$

$R = 0.85$

The high multiple correlation coefficient $R = 0.85$ shows that there was a high degree of positive correlation between the total export proceeds and the other two variables. The coefficient of multiple determination $R^2 = 0.72$ shows that 72 per cent of the variance in export proceeds was in common with variations in the volume of exports and the unit export value.

For predictive purposes, significance tests were performed on the regression coefficients and the actual regression. Both the regression coefficients and the regression were statistically significant at the 5 per cent level of probability.

Table 6.6.7 ANALYSIS OF VARIANCE OF TOTAL EXPORT PROCEEDS:

Source of Variation	Degrees of Freedom	Sums of Squares	Mean Square
Total	17	$\sum y^2$ = 11,626.50	
Regression	2	$\sum \hat{y}_{12}^2$ = 8,389.63	4194.82
Deviations	15	$\sum d_{y.12}^2$ = 3,236.87	215.79
		$F = \frac{4194.82}{215.79} = 19.44$	$P<0.05$

6.7. Supply and Demand Effects in Causation of Fluctuations.

A supply Stabilisation Model which may be used to evaluate the effect of stabilising the supply of coffee on the unit export value and total export proceeds is discussed in Appendix E. The results of calculations indicate that should a supply stabilisation programme be launched to control coffee supply fluctuations around a growing trend, it could only be expected to remove 12 per cent of fluctuations in the unit export value and 16 per cent in total export proceeds.

From these calculations, it would appear that fluctuations of the unit export value and total export proceeds are largely accounted for by demand factors. Therefore the control of fluctuations in the unit export value and total export proceeds could be achieved largely from adopting measures that affect the demand function for coffee. Since Kenya is only a small exporter of coffee, effective arrangements to influence the demand function could only be made in collaboration with other coffee exporters.

SUMMARY

The foregoing analysis shows that the total annual proceeds over the period 1947 to 1964 increased at a higher average annual rate than the volume of exports. However, over the period 1946 to 1964, the volume of exports experienced greater instability than the total export proceeds. In turn, the instability of the total export proceeds was greater than that experienced by the unit export value over the same period. The variation in total export proceeds was highly correlated to changes in the volume of exports and the unit export value. The multiple correlation between the volume of exports on one hand and total production and unit export value on the other was also high. However a t-test on the coefficients of the regression equation revealed that changes in production were more reliable in explaining changes in the volume of exports than changes in the unit export value. The same test showed that changes in the volume of exports and unit export value were important in explaining changes in the total export proceeds.

Efforts to control the supply of coffee along its growing trend appear capable of removing 12 per cent and 16 per cent of fluctuations in the unit export value and total export proceeds respectively. Therefore sole attention to the removal of fluctuations in the growth of coffee supply appears insufficient to control fluctuations in total export proceeds. This indicates the need to supplement supply control arrangements with arrangements that affect the demand for coffee. Since Kenya cannot launch programmes that would affect the total demand for coffee, it would be in her interests to co-operate with other countries in their attempts to implement programmes to influence the total demand for coffee.

CHAPTER 7

THE INTERNATIONAL COFFEE AGREEMENT AND THE ALLOCATION OF EXPORT QUOTAS FOR KENYAN COFFEE

As an introduction to the organisation and functions of the International Coffee Agreement, the chapter begins with a brief review of other stabilisation efforts during the post war period. This review precedes the discussion on how the International Coffee Agreement operates in its search for measures to stabilise the international coffee market. This coverage is followed by an appraisal of the basis and subsequent coffee quotas that have been allocated to Kenya through the Agreement. These quotas have been compared with the Kenyan share of the world coffee export trade before the Agreement came into operation. The appraisal also examines the extent to which export quotas cover total coffee production.

7.1. Background to the 1962 International Coffee Agreement.

The period immediately following the end of World War II was characterised by the exhaustion of Brazilian coffee stocks, adverse weather, market speculation, removal of price controls in the United States and rather stagnant coffee output as a result of detrimental effects of the war on production (73). This environment caused coffee prices to rise and this was followed by a wave of new planting. Coffee prices came to a peak in 1954 but declined later to the 1953 level where they remained more or less constant until 1957. During this year it became apparent in the coffee industry that disequilibrium between supply and demand was

forcing prices onto a downward trend.

The initiative to halt the downward trend of coffee prices came from Latin American producers. In October 1957 seven Latin American coffee producing countries signed the Mexico Agreement. The countries included Brazil, Columbia, Costa Rica, El Salvador, Guatemala, Mexico and Nicaragua. The contracting parties agreed to restrict the flow of their coffee exports in the traditional coffee markets of North America and Western Europe. The Agreement was to last for one year. It also provided for the establishment of a body to co-ordinate production policies, promote world coffee trade and expand consumption. It was for these objectives that the International Coffee Organisation was formed early in 1958 (74).

In mid 1958 the membership of the Mexico Agreement was expanded from seven to fifteen. All the members were Latin American and the name of the Agreement was altered to Latin American Coffee Agreement. The Agreement was extended to cover marketing operations for 1959 and 1960. The leading coffee exporting countries, Brazil and Colombia, agreed to withhold 40 per cent and 15 per cent respectively of their exportable crop from the world market as soon as the Agreement came into operation. The other members in turn agreed to hold 5 per cent of their exportable production less than and including 300,000 bags and 10 per cent of any crop above 300,000 bags from the world market.

For the first time in the history of coffee stabilisation schemes, the African coffee producing countries were drawn into stabilisation efforts in September, 1959. The former French territories in Africa and territories of Portugal were successfully persuaded to join a revised version of the Latin American Coffee Agreement. The negotiations were conducted by France and Portugal on behalf of the African producing countries. The name of the Agreement was appropriately changed to International Coffee Agreement.

The United Kingdom and Belgium were asked to join the Agreement on behalf of their territories but declined to do so. They, however, made formal declarations that their African territories would restrict exports on the basis laid down by the Agreement. The Republic of Kenya was then a colonial territory of the United Kingdom and therefore the coffee export trade was managed in accordance with the policy of the United Kingdom. The United Kingdom government promised to ensure that exports of coffee from Kenya, Tanganyika and Uganda during the agreement year did not exceed 2,262,000 bags. In June, 1960, the Board of Directors of the International Coffee Agreement agreed to increase this export figure to 2,648,000 bags (75). Thus the three East African territories at the time shared a joint export quota.

In 1960 Britain was successfully persuaded to join the Agreement on behalf of her coffee producing territories. By this time, the Agreement had a membership of 28 producing countries which accounted for more than 90 per cent of the world exportable production (74). The only significant exporters who remained outside the Agreement were Ethiopia, the Belgium Congo and Indonesia. The minor exporters who remained outside it included India, Yemen, Ruanda and Burundi.

The transformation of the Latin American Coffee Agreement into the International Coffee Agreement incorporated provisions that furnished it with greater flexibility. The Agreement was essentially of the export type but the operation of export quotas and their management had great flexibility. Thus in 1960 and 1961 the participating countries with the exception of Brazil and Colombia had no real fixed quotas. They were given the option to export either the maximum annual exports for any one year between 1949 and 1958 or 88 per cent of the then current annual exportable production (74).

These arrangements were not elaborate and the absence of methods of enforcement made the Agreement heavily dependent on the goodwill of the participating members. The co-ordination of marketing policies among African producing countries was vested in the Inter-African Coffee Organisation which was formulated in 1960.

The Latin American Coffee Agreement provided for the establishment of an international institution to study production, consumption, and marketing of coffee. For this purpose, the International Coffee Study Group was formed in June, 1958. The Coffee Study Group survived all the changes that transformed the Latin American Coffee Agreement to an international one. In November, 1958, the Study Group sought assistance in their studies from the Food and Agricultural Organisation of the United Nations. The latter institution agreed to co-operate and in 1961 completed a production and marketing study which covered several aspects of the coffee industry. The study indicated that the co-operation of both consumers and producers was essential in the formulation of an effective international stabilisation scheme (73).

In December, 1961, the Coffee Study Group distributed to governments a preliminary draft for an agreement of a more permanent nature which would incorporate importing and exporting countries (75). In March, 1962, the Group decided to request the United Nations to convene a Coffee Conference to negotiate a comprehensive international coffee agreement. A twelve-member committee was appointed in the meantime to study and rationalise matters arising from the preliminary draft of the agreement.

After the United Nations promised support in the negotiations for a more permanent international coffee agreement, the Coffee Study Group appointed a co-ordinating and drafting committee (76). The Committee was composed of five coffee producing and five coffee importing countries.

The producers were represented by Brazil, Colombia, Ivory Coast, Mexico and El Salvador, while consumer interests were represented by Sweden, France, Italy, the United Kingdom and the United States of America. The committee produced a preliminary document which, after some revision by yet another committee of twelve, became the basis of the present Agreement.

The United Nations Coffee Conference, which was held in New York between 9th July and 25th August, 1962, agreed on the basic text of an International Coffee Agreement. The coffee producing and importing countries who were willing to collaborate were requested to sign the Agreement by 30th November, 1962. By this date, 54 governments had shown willingness to participate in the Agreement. The Agreement came into force provisionally on 1st July, 1963, and definitely on 27th December, 1963.

The government of the United Kingdom ratified the Agreement on 5th April, 1963 (77). It also declared that the Agreement would extend to Kenya and her other territories whose international relations it was responsible for.

7.2 The 1962 International Coffee Agreement.

The International Coffee Agreement is a price stabilisation scheme of the export quota type. It is administered by the International Coffee Council, whose seat is in London and it is a body which represents all the signatory countries. The Council is assisted by an Executive Board and on both the Council and Board meetings, votes are equally distributed between exporting and importing countries. The duration of the Agreement and its institutions is five full years but could be extended according to the provisions of the Agreement (77). The principal objective of the Agreement is to achieve reasonable balance

between supply and demand of coffee in the long run at prices would be acceptable to both consumers and producers. The Agreem to achieve this end mainly by regulating the flow of coffee exports chief producing countries and the flow of imports to the principal consuming countries. For the purposes of the Agreement, the world was divided into two categories namely the traditional and non-traditional markets. These are often referred to as quota and non-quota markets respectively. The quota and non-quota countries are listed on Appendixes D and C respectively. The traditional markets include all the countries where coffee is a traditional drink and consumption is widespread. The non-traditional markets include those countries where for various reasons import figures are low and coffee consumption is not widespread.

The traditional coffee markets are characterised by low price elasticities of demand. An F.A.O. study, published in 1961, confirmed this fact for several coffee markets which included the United States, Switzerland, Sweden, Germany, Finland, Denmark and Argentina (73). The results of the study are shown on Table 7.2.1. The Table shows price and income elasticities for selected countries. The elasticities were calculated using time series coffee import data. The Table shows that price elasticities were generally lower than income elasticities. Low price elasticity values were also reported in the F.A.O. 1964 Commodity Review (Special Supplement). The price elasticity of demand for coffee in 1959-61 at import and retail levels in developed countries was estimated at -0.20 and-0.34 respectively. From these results it would appear that coffee consumption in these countries is probably more influenced by income than price changes. The consumption of coffee is also influenced by the use of coffee substitutes. For instance, large numbers of French, Italian and German consumers insist on adding

TABLE 7.2.1. PRICE AND INCOME ELASTICITIES FOR SELECTED COUNTRIES, CALCULATED ON THE BASIS OF TIME SERIES.

Country	Period Covered	Calculated 1958 Elasticity		Coefficient of Determination R^2
		Price	Income	
Argentina	1935-58	-0.26(±0.04)	+0.62(±0.12)	0.627
Canada[1]	1921-35 & 1948-58	[2]0.27(±0.15)	+0.56(±0.09)	0.922
Denmark	1921-38 & 1953-58	-0.32(±0.06)	...	0.437
Finland	1929-39 & 1954-58	-0.24(±0.05)	+0.57(±0.06)	0.885
Germany[1]	1925-37 & 1953-58	-0.45(±0.06)	+0.52(±0.10)	0.815
Greece	1927-38 & 1952-58	-0.40(±0.11)	[2]0.31(±0.18)	0.476
Italy[1]	1921-38 & 1949-58	-0.61(±0.13)	+0.72(±0.12)	0.759
Sweden[1]	1920-38 & 1952-58	-0.25(±0.06)	+0.26(±0.08)	0.468
Switzerland	1924-38 & 1950-58	-0.28(±0.09)	+0.68(±0.19)	0.402
United States	1920-41 & 1946-58	-0.29(±0.05)	+0.52(±0.04)	0.824

1. A time variable was also included in the regression equation for these countries.

2. Not significantly different from zero.

SOURCE. F.A.O. The World Coffee Economy. Commodity Bulletin Series No. 33; Rome 1961. P. 31.

substitutes like chicory and figs to their coffee to keep down the cost of blends. In several traditional market countries, coffee consumption is discouraged by high retail prices. The prices are kept high by a variety of trade devices which include tariffs, quantitative restrictions, consumption tax and empire and colonial preference arrangements.

The non-traditional coffee markets are characterised by high price and income elasticities. But the low incomes per head of population in most non-traditional markets and the fact that coffee is not a traditional beverage conditute obstacles to consumption. These characteristics are also typical of markets in most coffee producing countries. However, coffee consumption continues to increase as per capita incomes rise and particularly in the urban areas (73).

In the quest for methods to stabilise the coffee market, the above characteristics required the International Coffee Agreement to adopt different measures in the traditional and non-traditional markets. Consequently while export quotas were negotiated for the traditional market, no coffee quota limitations were deemed necessary for the non-traditional markets. Besides regulating exports and imports, the Agreement resorted to other stabilisation devices which include restriction of further coffee planting; encouraging coffee producers to shift from coffee production to other forms of production; encouraging coffee consumption through promotion and advertising; discouraging the use of coffee substitutes and negotiating the removal of coffee import and export duties; consumption taxes on coffee and such other obstances to consumption (77).

The Agreement states that its objectives will be achieved under conditions where the general level of coffee prices does not decline below the general level of such prices in 1962. The coffee prices received by each exporting country depend on the quality of her coffee. There are

numerous coffee grades but the general price provisions of the Agreement made no reference to specific price and grades. The absence of specific price provisions in the Agreement was rectified by the International Coffee Council in March, 1965 by adopting a semi-automatic mechanism for adjusting export quotas to price changes (78). The semi-automatic mechanism was adopted to support an indicator price range. If the daily price of coffee, taken over a period of fifteen working days, was below the lower limit or above the upper limit, the Executive Board was authorised to make adjustments in export quotas. The adjustments were allowed up to 6 per cent in the first quarter of the year, falling to 1.5 per cent in the last quarter of the year. The price range for the year 1964/65 was from 38 to 44 U.S. cents per pound of clean coffee.

The indicator price was to be calculated daily taking the arithmetic mean of the New York prices (ex dock for prompt shipment) for mild arabicas, unwashed arabicas and robustas. It was agreed that prices of clean coffee types and grades adequately reflected demand conditions for all other coffees. For mild arabicas, the prices of Salvadorean Central Standard, Guatemalan Prime Washed and Mexican Prime Washed taken together were to be averaged with that of Colombia MAMS. For unwashed arabicas, the price of the Brazilian coffee grade Santos 4 was to be taken while for robustas the average price was to be calculated from the prices of Angolan Ambris 2AA, Ivory Coast Superior 2 and Uganda Native Standard (78).

In August, 1966, the International Coffee Council made improvements on the semi-automatic machanism for adjusting export quotas to price changes. The Council agreed that in future a country's export quota should be tied to the price performance of the type of coffee it sells. This, in effect, meant that a country can export more than its basic quota plus bonus, should the price of its coffee rise relatively to any other coffee types (79). To facilitate export quota adjustments, all coffees were divided

into four broad quality types; then 'floor' and 'ceiling' prices were fixed for each type. If the price of any of the four main coffee types fell outside the price limits for 15 days consecutively, the export quotas for the producers affected would be regulated accordingly.

The robusta coffees fell into one coffee type with 'floor' and 'ceiling' prices of 30.50 U.S. cents per lb. and 34.50 U.S. cents per lb. respectively. All arabica coffees from Central America were lumped into one group with 'floor' and 'ceiling' prices of 37.50 U.S. cents per lb. and 41.50 U.S. cents per lb. respectively. All the other arabica coffees were divided into two types namely unwashed arabica from Brazil and MAMS from Colombia. The price changes of the principal Brazilian coffee grade, Santos 4, were considered to adequately reflect demand changes for all unwashed arabicas. Therefore minimum and maximum price limits for Santos 4 were set at 37.50 U.S. cents per lb. and 41.50 U.S. cents per lb. respectively. The corresponding price limits for MAMS were 43.50 U.S. cents per lb. and 47.50 U.S. cents per lb. Details on the minimum and maximum prices for the four coffee types are shown on Table 7.2.2.

The highest quality arabica coffees fell into the MAMS category. The quality of Kenyan coffee is high and consequently was placed in this top quality group. For this reason, the Kenyan coffee export quota may be regulated if the price of MAMS happen to remain outside the minimum or maximum price limits for 15 consecutive days.

TABLE 7.2.2. MINIMUM AND MAXIMUM PRICES FOR THE FOUR COFFEE TYPES

	Coffee Type	Minimum Price U.S. cts. per lb.	Maximum Price U.S. cts. per lb.	Price Range U.S. cts. per lb.
1	Colombian MAMS	43.50	47.50	4.00
2	Central American Milds	40.00	44.50	4.50
3.	Brazil's Santos 4	37.50	41.50	4.00
4.	Robustas	30.50	34.50	4.50

7.3. Allocation of Coffee Quota for Kenya.

At the time when the International Coffee Agreement was negotiated Kenya was a dependent territory of the United Kingdom. Her government therefore, had no mandate to determine her foreign policy and could not participate in international forums. However, the government of the United Kingdom signed the Agreement and made the necessary declaration under the terms of Article 67 (77), that the Agreement would extend to Kenya. Consequently, Kenya was granted a basic quota of 516,835 bags plus annual exports of approximately 101,667 bags to Britain. These arrangements were binding to the government of Kenya as long as it was directly responsible to the government of the United Kingdom.

On 12th December, 1963, Kenya became an independent country and therefor qualified to deal directly with the International Coffee Organisation.

TABLE 7.4.3. RELATIONSHIP BETWEEN BASIC & INITIAL QUOTAS

	BASIC QUOTA	ANNUAL EXPORT QUOTA	ANNUAL EXPORT QUOTA EXPRESSED AS PER CENT OF BASIC QUOTA
	Bags of 132 lb.		Per Cent
1963/64			
TOTAL	45,530,183	45,732,622	100.4
KENYA	516,835	511,667	99.0
1964/65			
TOTAL	45,530,183	47,506,518	104.34
KENYA	516,835	530,629	102.67
1965/66			
TOTAL	45,878,183	43,700,000	95.25
KENYA	516,835	487,430	94.31

SOURCE: Monthly Bull. of Agricultural Economics and Statistics, Vol. 13, No. 10, October, 1964.

NOTE: The Coffee Year starts on 1st. October of each Calendar Year and ends on 30th. September of the following year. In this Chapter 1963/64, 1964/65 etc. refer to Coffee Years while 1963, 1964 etc. refer to Calendar Years.

After this date therefore, the government of Kenya decided to consult the Organisation and negotiate afresh conditions under which it could accede to the Agreement. During the course of the negotiations however, the government undertook to take into consideration, the provisions of the Agreement when formulating national coffee marketing and production policies. In August, 1966, at the annual general meeting of the International Coffee Organisation, Kenya signed the Agreement.

7.4. Basic and Initial Quotas.

The basic export quota allocated to Kenya under the Agreement was 516,835 bags. The quota has not been altered since the Agreement came into operation. The International Coffee Council uses the basic quotas to determine the volume of annual exports for each member country. These quantities of coffee exports may be altered during the course of the year and are therefore usually referred to as the initial annual quotas. Table 7.4.3. shows the relationship between basic and initial quotas for Kenya and other members countries taken as a group.

At its first session, the International Coffee Council established initial annual quotas for the Coffee Year 1st October, 1963, to 30th September, 1964, at 99 per cent of the basic quotas of the Agreement. The initial export quota for Kenya was set at 511,667 bags while the total annual quota for all participants rose to 45,732,622 bags. During the course of the year, some countries were granted additional export quantities under the hardship clauses of Article 60 of the Agreement (80). Also, Ethiopia's basic quota was raised following a survey which revealed great disparity between her quota and existing production capacity. Therefore, the total initial quota was significantly exceeded at the close of the year. Thus at the close

TABLE 7.5.4. RELATIVE VOLUME OF KENYAN COFFEE EXPORTS TO WORLD COFFEE EXPORTS.

YEAR	WORLD	KENYA	PER CENT OF WORLD EXPORTS
	Thousand Bags (= 60 kilos each)		
1946	29,137	142	0.49
47	28,592	162	0.57
48	32,281	237	0.73
49	34,164	125	0.37
50	29,171	170	0.58
51	31,854	168	0.53
52	32,283	287	0.89
53	34,492	227	0.66
54	28,986	180	0.62
55	33,845	328	0.97
56	38,042	452	1.19
57	35,997	377	1.05
58	35,771	423	1.18
59	42,101	438	1.04
60	42,451	472	1.11
61	44,468	545	1.23
62	46,001	517	1.12
63	49,568	623	1.26
64	45,301	705	1.56

Note: These export volume figures have been calculated using the conversion factor, 60 kilos = 1 bag.

SOURCE: (1) 1946-1958 F.A.O. The World Coffee Economy. Commodity Bulletin Series No. 33, Rome 1961.

(2) 1959-1964 F.A.O. Monthly Bulletin of Agricultural Economics and Statistics; Vol. 13, No. 12, December 1965.

of the year in 1964 the export quota stood at 100.4 per cent of the total basic export quota. Kenya did not experience hardships in disposing her crop and therefore her volume of exports remained fixed at 99 per cent of her basic quota.

In August, 1964, the International Coffee Council fixed the total initial quota for the year 1964/65 at 102.67 per cent of the basic quotas. The actual export volume for the year was 47,506,518 bags or 104.34 per cent, of the basic quota. The initial quota was exceeded due to export quota adjustments which were granted to some member countries which had unexpected heavy crops. The initial export quota for Kenya was fixed at 530,629 or 102.67 per cent of her basic export quota (81). Kenya did not obtain any initial quota alterations during the period. For the year 1965/66 the initial export quotas for Kenya and all members as a group were fixed at 487,430 bags and 43.7 million bags respectively. These volumes of exports correspond to 94.31 per cent and 95.25 per cent of the basic export quotas.

7.5 Export Quotas and Kenyan Share of World Coffee Export Trade.

The total basic quota for 1963/64 of 45,530,183 bags compares with a basic export quota for Kenya of 516,835 bags. The latter was therefore fixed at 1.14 per cent of the total basic quota. This share of the total basic export quota may be compared with Kenya's share of the world coffee export trade before the Agreement came into operation. The growth of Kenya's share of the world coffee export trade is shown on Table 7.5.4. The volume of export trade for Kenya in 1961 and 1962 was 1.23 and 1.12 per cents respectively, of the world coffee export trade. These relative values compare with 1.14 per cent which was the share of the total basic export quota. It would appear, therefore, that the United Kingdom managed to negotiate for export quota for Kenya which was

TABLE 7.6.5. INITIAL ANNUAL AND QUARTERLY QUOTAS,

1963 / 64

	KENYA	OTHER COUNTRIES	TOTAL	KENYAN QUOTA AS % OF TOTAL QUOTA
	.....Bags of 132 lb.....			.....Per Cent
1st QUARTER (OCT-DEC)	153,500	11,075,056	11,228,556	1.37
2nd QUARTER (JAN-MARCH)	153,500	12,177,271	12,330,771	1.24
3rd QUARTER (APRIL-JUNE)	102,334	10,926,119	11,028,453	0.93
4th QUARTER	102,333	11,042,509	11,144,842	0.92
TOTAL	511,667	45,220,955	45,732,622	1.12

SOURCE: F.A.O. Monthly Bulletin of Agricultural Economics and Statistics, Vol. 13, No. 10, October 1964.

TABLE 7.6.6. INITIAL ANNUAL AND QUARTERLY QUOTAS

1964/65

	KENYA	OTHER COUNTRIES	TOTAL	KENYAN QUOTA AS % OF TOTAL QUOTAS
	Bags of 132 lb. = (60 kilograms)			
1st QUARTER (OCT-DEC)	159,189	11,569,990	11,729,179	1.36
2nd QUARTER (JAN-MARCH)	159,188	12,802,841	12,962,029	1.23
3rd QUARTER (APRIL-JUNE)	106,126	11,297,261	11,403,387	0.93
4th QUARTER (JULY-SEPT)	106,126	11,305,797	11,411,923	0.94
TOTAL:	530,629	46,975,889	47,506,518	1.12

SOURCE: F.A.O. Monthly Bulletin of Agricultural Economics and Statistics: Vol. 13, No. 10, October, 1964.

comparable to her previous share of the world coffee export trade.

In 1963/64 the initial export quota for Kenya was 511,667 bags and compares with the total annual exports for all member countries of 45,732,622 bags. Therefore exports from Kenya accounted for 1.12 per cent of total annual exports in that year. In 1964/65 the total exports of all member countries was 47,506,518 bags and this compared with 530,629 bags for Kenya. In this year, the Kenyan share of total export trade was 1.12 per cent. This per cent share remained the same in the year 1965/66. Therefore the Kenyan share of the total coffee trade that is administered by the Agreement appears to have remained the same.

7.6 Regulation of Trade through Quarterly Quotas.

The flow of coffee exports from the producing countries to the traditional coffee market is not only regulated through annual quotas but also through a quarterly export quota system. The initial annual and quarterly quotas are shown on Tables 7.6.5, 7.6.6. and 7.6.7. The tables show the total and quarterly quotas in each year for Kenya and other signatory countries taken as a group.

In 1963/64 the coffee quota for Kenya during the first, second, third and fourth quarters of the year, were fixed respectively at 1.37, 1.24, 0.93 and 0.92 per cents of the total quarterly quotas. Therefore a relatively higher proportion of coffee export trade for Kenya was performed during the first two quarters than during the last two quarters of the coffee year. This pattern of export trade was also exhibited by the distribution of quotas during the 1964/65 and 1965/66 coffee years.

7.7. Export Quota and Production.

For three consecutive coffee years, since the inception of the Agreement, the basic export quota for Kenya remained constant in spite of

TABLE 7.6.7. INITIAL ANNUAL AND QUARTERLY QUOTAS

1965/66

	KENYA	OTHER COUNTRIES	TOTAL	KENYA QUOTA AS % OF TOTAL QUOTAS
	Bags of 132 lb.			Per Cent
1st QUARTER (OCT-DEC)	146.229	11,194,273	11,340,502	1.29
2nd QUARTER (JAN-MARCH)	146,229	11,510,674	11,656,903	1.25
3rd QUARTER (APRIL-JUNE)	97,486	10,325,607	10,423,093	0.94
4th QUARTER (JULY-SEPT)	97,486	10,182,016	10,279,502	0.95
TOTAL	487,430	43,212,570	43,700,000	1.12

SOURCE: F.A.O. Monthly Bulletin of Agricultural Economics and Statistics, Vol. 14, No. 10, October, 1965.

TABLE 7.7.8. RELATIONSHIP BETWEEN ANNUAL QUOTAS AND PRODUCTION

	ANNUAL QUOTA	PRODUCTION	ANNUAL QUOTAS AS % OF PRODUCTION
	Bags of 132 lb.		
1963/64			
BASIC QUOTA	516,835	738,114	70.02
INITIAL QUOTA	511,667		69.32
1964/65			
BASIC QUOTA	516,835	760,000 [1]	60.00
INITIAL QUOTA	530,629		69.82
1965/66			
BASIC QUOTA	516,835	n.a.	
INITIAL QUOTA	487,430		

1. Figure is obtained from F.A.O. Monthly Bulletin of Agricultural Economics and Statistics: Vol. 14, No. 11, November, 1965.

changes in production. The relationship between the basic quota, the initial annual quotas and total production is shown on Table 7.7.8.

In 1963/64 the basic and initial annual quotas were 70.02 per cent and 69.32 per cent of total production. The increase in production in 1964/65 without any change in the basic export quota reduced the proportion of total production that was covered by the basic export quota to 68.00 per cent. However, the initial annual quota in the same year was raised to cover 69.82 per cent of total production. Therefore the Kenya Coffee Marketing Board had to divert approximately 30 per cent of total production to domestic and non-traditional markets. The corresponding figure for the year 1963/64 was approximately 31 per cent.

SUMMARY.

In the past war period, efforts to stabilise the coffee market were initiated in October, 1957, by seven Latin American countries which are usually referred to as the 'Mexico Club.' They formulated the Mexico Agreement which was eventually transformed into the International Coffee Agreement of 1959. It was through the initiative of contracting parties of the latter Agreement that the 1962 International Coffee Agreement was negotiated and finally ratified. The Agreement included the principal coffee producing and importing countries. The participating parties agreed to regulate coffee exports and imports according to the directives of the International Coffee Council.

During the early stages when stabilisation efforts were initiated, Kenya was a dependent territory of the United Kingdom. The government of the United Kingdom was responsible for her foreign affairs until she became independent in 1963.

When the government of the United Kingdom decided to join the 1959 International Coffee Agreement, she negotiated for a joint coffee quota for Kenya, Uganda and Tanganyika. This could not be repeated in

negotiations for basic export quotas during the formulation of the 1962 International Coffee Agreement. However, as Kenya was still a dependent territory, the government of the United Kingdom organised and handled basic export quota negotiations on her behalf. Kenya was allocated a basic export quota of 516,835 bags, plus annual exports of approximately 101,667 bags to Britain. The Kenyan share of the traditional coffee market, which then came under the control of the Agreement, compared favourably to her share of world coffee trade before the Agreement came into operation.

The basic export quota allocated to Kenya was fixed at 70.02 percent of total coffee production in 1963/64. This value dropped to 60 per cent in 1964/65.

CHAPTER 8

THE CASE FOR AND AGAINST KENYA PARTICIPATING IN THE INTERNATIONAL COFFEE AGREEMENT.

The economic benefits which may be reaped by the Kenyan coffee industry as a result of joining the Agreement are discussed in this chapter. The limitations of obtaining such benefits are also examined. The analysis is followed by an appraisal of alternative marketing arrangements that might be adopted in the event of Kenya remaining outside the Agreement. The possibilities of the coffee industry being faced by mounting marketing problems as a result of non-participation in the Agreement are examined. The possibility of declining coffee sales in the traditional coffee markets and the doubtful ability of the Marketing Board to develop alternative markets would in particular affect the process of transforming traditional agricultural production to market-oriented production in the African farm sector. The chapter ends with a theoretical model on the determinants of gains in a bilateral-monopoly situation.

8.1. Possible Gains from Participation.

The coffee economy in Kenya and elsewhere would be beneficially affected by the International Coffee Agreement if its objectives were achieved. The benefits of the Agreement were embodied in the declaration of its objectives; which may be broadly summarised as follows:-

(i) to achieve a reasonable balance between supply and demand at prices which would be acceptable to both the producing and consuming countries;

(ii) to alleviate economic hardships caused by excessive fluctuations in coffee prices and surplus coffee stocks which may be held in exporting countries;

(iii) to contribute to development of productive resources and thereby increase employment, national income and national welfare in the producing countries;

(iv) to assist in increasing the purchasing power amongst the coffee exporting countries through increased consumption;

(v) to assure adequate supplies to consumers and markets to producers;

(vi) to further international co-operation in the interests of stable trade and in recognition of economic interdependence between the coffee exporting and the coffee consuming countries.

These objectives were to be achieved largely through export restriction, regulation of flow of trade between the major producing and importing countries and finally through a ban on new planting of coffee. However, replacement of old coffee trees or dead ones may be carried out. This provision is one of the basic weaknesses in the Agreement, because farmers were left free to replace old coffee trees with younger trees and of higher yielding varieties. The farmer was also left free to employ other inputs except land to maintain or even to increase farm production. Therefore a coffee planter could maintain or increase his output by intensifying the use of land through greater utilisation of capital and more labour resources. Capital intensive innovations include irrigation, mechanical cultivation, new methods of pest and disease control and introduction of new varieties.

For each coffee exporting country, its economy would be benefited by export restriction if its foreign demand were inelastic. Under such conditions then, export restriction would have a protective effect

on production, improve the terms of trade and the balance of payments, effect a re-distribution of incomes between the consumers and producers and also stimulate growth of the national income. However, the improvement in the terms of trade is counter-balanced by the consumption effect. This signifies the reduction of coffee consumed in the importing country as a consequence of higher prices.

Under conditions where the foreign demand curve facing an exporting country is elastic, the benefits of export restriction depend on the country's marginal production costs. While the aggregate demand facing all coffee producers as a group may be inelastic, the demand curve of an individual producer is likely to be more elastic. Therefore the International Coffee Agreement will achieve limited success if the inelasticity of aggregate demand and inelasticities of individual exporting countries are overestimated. While some statistical analysis on the aggregate demand for coffee in some traditional markets has been done, there has been virtually no coverage on elasticities of foreign demand facing individual coffee exporting countries (73). In the absence of such information it is difficult to state the extent to which the coffee industry in Kenya would benefit from export restriction.

If it is assumed, (1) that the relevant portion of the marginal cost function in the production of Kenyan coffee is upward sloping; and (2) that the aggregate demand function facing all the coffee producers as a group is not perfectly elastic; then it would beenfit Kenya to co-operate in export and production restriction programmes as envisaged by the International Coffee Agreement. But as discussed in Chapter 3, it would appear that the marginal cost of production in the coffee industry in Kenya is well below the world coffee price. Therefore coffee producers in Kenya would benefit by expanding coffee output.

If programmes to increase output were launched in Kenya and in other coffee producing countries which have similar cost-price structure, the subsequent increase in coffee output would force down the world coffee prices. This would eliminate some high cost coffee producers and eventually result in a new coffee supply and demand equilibrium but at lower prices. It is difficult to determine what the new equilibrium would be and how long the adjustment process would take. Therefore in considering such a production policy, the crucial factor would be the financial ability of the country to withstand a period of low prices during the adjustment process. Such a process would most likely start once the International Coffee Agreement collapses.

Although coffee production in Kenya is considered relatively efficient, there is still room for improvement. By joining the International Coffee Agreement, Kenya would qualify for assistance in her efforts to improve efficiency in coffee production. The Agreement provided for the establishment of the International Coffee Fund from which development capital would be available for investment in programmes that are designed to adjust coffee production to market demand (77). The International Coffee Organisation, working in co-ordination with other international agencies has been contributing experience and funds towards solving the problem of diversification in coffee production. Such other international agencies include the Food and Agricultural Organisation of the United Nations and the International Bank for Rehabilitation and Development (78).

Development capital may be profitably employed in the Kenyan coffee industry for the following programmes:-

1. rehabilitation of coffee estates and plantations to replace old coffee trees with young ones which would reduce production costs;

2. diversification programme for farms in the highlands where Coffee Berry Disease is severe, to enable a complete shift of resources from coffee production to other enterprises;
3. diversification programme for areas in Nyanza and Western Provinces where production of arabica and robusta coffees has never been successful;
4. rehabilitation and diversification programme for areas of the Eastern Region where replanting programmes may be undertaken in some areas and at the same time allow some farms to move out of coffee production in marginal coffee areas;
5. diversification programme in areas of the Rift Valley Province to enable crop and livestock enterprises to replace coffee production;
6. plans to widen the scope of research in coffee production and to investigate the possibilities and problems of shifting resources from coffee production to economically higher yielding or equally profitable alternatives.

8.2 Penalties for Non-participation.

In order to prevent non-members from increasing their exports to the traditional markets at the expense of members, the participating importing countries undertook to implement the provisions of Article 45 of the Agreement to limit imports from non-members when advised by the Council. During the first year of the Agreement the participating importing countries agreed to limit imports from non-members as a group to the average level of imports recorded in the three years prior to the year 1963/64. However, it was recognised that some importing countries may face import adjustment problems since they had contracted bilateral or multilateral arrangements with non-member countries. Therefore the Agreement stipulated that such importing countries should continue to

honour trade obligations if they were contracted prior to 1st August, 1962. This was permissible on condition that any such importing member carried out its obligations in such a way as to minimise conflict between them and those of the Agreement. Such an importing country was also required to inform the International Coffee Council of its contracts and details of its conflicting obligations as well as steps taken to minimise or eliminate them (75).

The government of Kenya does not have bilateral or multilateral coffee trade contracts with any importing country. The growth and importance of the chief markets for Kenyan coffee for the period 1952 to 1962 is shown on Table 8.2.1. The table shows imports of Kenyan coffee expressed as per cent of total imports in her principal markets. For the period 1960 to 1962, the nine markets accounted for 92.59 per cent of total exports. The bulk of exports during this period were absorbed into six chief markets. In order of importance the six chief markets were West Germany, the United States of America, the United Kingdom, Canada, Netherlands and Sweden. These accounted for 86.78 per cent of average coffee exports during the period 1960 to 1962.

The nine major markets shown on Table 8.2.1. were in countries whose governments signed the International Coffee Agreement. If the government of Kenya decided not to participate in the Agreement in the absence of bilateral or multilateral trade arrangements with governments of these major coffee markets, then implementation of the provisions of Article 45 of the Agreement would affect the growth of these important markets.

Under such circumstances, the coffee industry in Kenya would have to re-formulate its marketing policy. This would be influenced mainly by two marketing alternatives:-

1. Develop sales techniques that would expand coffee sales in the traditional market at the expense of other non-signatory countries.

TABLE 8.2.1. IMPORTS OF KENYAN COFFEE EXPRESSED AS PER CENT OF TOTAL COFFEE IMPORTS IN HER PRINCIPAL MARKETS.

COUNTRY	1952	53	54	55	56	57	58	59	60	61	62
UNITED KINGDOM	11.8	16.03	9.98	10.93	8.72	6.94	8.75	6.16	6.01	6.84	5.80
CANADA	2.41	1.15	1.64	1.29	3.47	2.03	1.32	0.92	2.89	3.78	2.27
UNITED STATES	0.10	0.02	0.08	0.25	0.51	0.29	0.35	0.19	0.37	0.56	0.25
WEST GERMANY	4.91	8.17	3.05	6.02	6.58	6.86	7.51	7.84	6.19	5.33	6.23
AUSTRALIA	14.29	14.63	7.81	13.33	7.25	14.63	15.07	12.12	8.18	7.07	1.83
NETHERLANDS	7.40	0.14	0.26	3.38	4.10	1.47	2.16	1.44	1.67	2.36	1.91
UNION OF SOUTH AFRICA*	7.83	5.43	3.90	4.21	5.00	5.05	4.69	5.56	4.39	4.13	4.92
SWEDEN	-	-	-	-	-	-	-	0.82	1.39	1.83	1.58
ITALY	1.75	0.69	0.29	0.98	0.81	0.52	0.44	0.48	0.67	0.63	0.59

* Not a member of the International Coffee Agreement.

SOURCE: Commonwealth Economic Committee. Plantantion crops London: H.M.S.O. 1948 to 1964.

The signatory coffee importing countries gave an undertaking to limit imports from non-member countries as a group, at a certain level when asked to do so by the International Coffee Council (77). They did give an undertaking to limit coffee imports of individual non-member countries at a certain level. Therefore by means of agressive sales technique, non-member coffee exporters could expand their sales in the traditional market at the expense of other non-member exporting countries.

2. Launch sales programmes to develop alternative markets outside the traditional market to facilitate the disposal of that portion of the crop which cannot be sold in the traditional markets.

At least some minimum selling effort would be necessary to maintain the volume of sales in the traditional market. In launching advertising and promotional programmes, the Marketing Board would incur high capital expenditure. It would also have to recruit trained staff. The present expenditure on promotion and advertising is largely spent on the traditional coffee markets. The task is performed by the Kenya, Tanganyika and Uganda Coffee Industries, which is a publicity organisation based on London. The organisation receives financial contributions from coffee industries of the three East African territories. In 1963/64 the coffee industry in Kenya contributed £20,151 (82). The small size of this organisation, its divided loyalties and multiplicity of its advertising and promotional programmes, cast doubt on its suitability in launching agressive sales programmes for Kenyan coffee.

The present marketing institutions may not be particularly suited to new market development programmes. Coffee exporters are predominantly of either European or Asian descent. They are largely either private foreign firms or representatives of foreign companies in the major importing countries. The coffee dealers are licensed by the Marketing

Board and their interests are expressed through the Mild Coffee Trade Association of Eastern Africa. These marketing arrangements have divorced the Marketing Board from active participation in export Trade. There would be no need for the Board to incur expenses on the development of new markets if coffee delivery may not be assured. Therefore the development of alternative markets would either have to be done with the support of the trade Association or through a new marketing institution.

The major markets for Kenyan coffee not only absorb a large volume of total exports but also pay relatively higher prices. The Coffee Marketing Board has over the years improved coffee processing techniques while the Coffee Board through its research and advisory roles has emphasized on planting and development of high quality coffee varieties. As a result of these efforts the coffee industry is to a large extent specialised in the production of high quality coffee. The three top coffee grades are AA, A and B. Quantitatively A and B grades are the most important and jointly account for 45 to 70 per cent of total annual production (48). In an effort to diversify export trade it is doubtful whether the Board could find alternative markets with buyers who are prepared to pay prices for high quality coffee that are comparable to those realised in the traditional principal markets.

8.3. Effect of the Decline of Principal Markets on the Economy.

In the event of Kenya not participating in the International Coffee Agreement, the maintenance and expansion of coffee sales in the Traditional coffee market may present marketing problems as more and more coffee acreages come into bearing. Therefore Kenya could ignore the effects of decreasing coffee sales in her principal markets at a great economic loss. The consequences of the decline of the principal markets for Kenyan coffee may be shown by comparing the growth and contribution of coffee export

proceeds with receipts of total domestic exports. This comparison is shown on Table 8.3.2. The table reveals that in earning overseas exchange, Kenya increased her dependence on the export of coffee from 13.4 per cent to 32.71 per cent between 1946 and 1964.

The importance of the coffee industry in the agricultural sector is also shown on Table 8.3.2. The table shows a comparison of growth and contribution of coffee export proceeds to the total proceeds from exports of agricultural origin. Between 1946 and 1964, the contribution of coffee export proceeds to total proceeds from exports of agricultural origin grew from 16.9 per cent to 38.5 per cent. The table shows that the agricultural sector of the economy would be more economically disrupted than the economy as a whole if the markets for coffee declined. Since the traditional principal markets account for more than 90 per cent of total exports, it is logical to conclude that the decline of these markets would have depressing effects on both the agricultural sector and the economy as a whole.

The agricultural sector of the economy may be divided into two, namely the large-scale and small-scale farm sectors. The development of these sectors has a historical setting which transformed the large-scale farm sector into the principal export sector. This export sector is characterised by high productivity and despite its much smaller area relative to the small farm sector, it has remained the dominant source of foreign earnings in the agricultural sector of the economy. In contrast to the productivity of the large-scale farm sector is the low productivity of the small-scale farm sector. However, in recent years the government has implemented development programmes designed to increase the productivity of the small-scale farm sector. The objectives of these programmes is to transform the sector from subsistence-oriented production activities to market-oriented production activities.

TABLE 8.3.2. RELATIVE IMPORTANCE OF PROCEEDS FROM TOTAL DOMESTIC EXPORTS, TOTAL AGRICULTURAL EXPORTS AND COFFEE EXPORTS

YEAR	COFFEE PROCEEDS AS PER CENT OF DOMESTIC EXPORT PROCEEDS	AGRICULTURAL EXPORT PROCEEDS	COFFEE EXPORT PROCEEDS	COFFEE PROCEEDS AS PER CENT OF AGRICULTURAL EXPORT PROCEEDS
	Per Cent	THOUSAND £		Per Cent
1946	13.4	5,622	950	16.9
47	13.6	7,590	1,312	17.3
48	17.8	8,783	2,019	23.0
49	13.8	9,636	1,510	15.7
50	20.7	14,750	3,549	24.1
51	17.0	20,721	4,096	19.8
52	23.6	22,752	7,123	31.3
53	27.1	16,718	6,713	40.2
54	21.9	17,823	5,727	32.1
55	34.8	23,555	8,927	37.9
56	36.0	26,178	13,675	52.5
57	28.6	23,446	10,812	46.1
58	24.8	26,321	10,423	39.6
59	23.2	29,648	10,594	35.7
60	21.0	31,395	10,278	32.7
61	30.1	30,815	10,625	34.5
62	28.0	33,731	10,613	31.5
63	25.4	39,133	11,131	28.4
64	32.7	40,073	15,411	38.5

NOTE: Percentages expressing the importance of Coffee Export Proceeds relative to total domestic exports for 1946 to 1962 were obtained from "Plantation Crops", Commonwealth Economic Committee; 1948 - 1964.

This transformation is highly dependent on the production of export crops. Coffee production has been the key activity in many districts where the commercialisation of small farms has already started.

The importance of coffee production in the small-scale farm sector may be shown by comparing proceeds from the sale of coffee with the gross farm income in this sector. The comparison is shown on Table 8.3.3. The table shows that receipts from coffee accounted for 0.43 per cent of gross farm income in 1946 but thereafter the importance of coffee sales in the small-scale farm sector increased rapidly and especially between 1953 and 1964. In 1964 receipts from coffee accounted for 47.86 per cent of gross farm income.

The distribution of average income per coffee grower among the coffee producing districts for the period 1960 to 1964 is shown on Table 8.3.4. In 1964 the highest average income per grower was £71.63 in Kiambu District while the lowest was £10.18 in Central Nyamza District. Districts which received more than £25 per grower in the same year included Machakos, Meru, Embu/Kirinyaga, Nyeri, Muranga, and Kiambu.

The average income received by individual growers in the small-scale farm sector may be compared with the average level of wages in the country. The small-scale farms are almost exclusively operated by African growers and therefore their receipts should be compared with wages received by African wage-earners. The average annual earnings of African employees in 1964 was £108 (41). The average income of coffee growers in all producing districts was below the average earnings of African employees in that year. But since receipts from coffee in the small-scale farm sector account for approximately half the gross farm income, farmers in some coffee districts may well have realised gross farm incomes comparable to the average wage earnings of African wage-earners. This would

TABLE 8.3.3. RECORDED FARM INCOME

(Small-Scale Farm Sector)

YEAR	GROSS FARM INCOME	RECEIPTS FROM COFFEE	COFFEE RECEIPTS AS PER CENT OF GROSS FARM INCOME
	THOUSAND £		PER CENT
1946	1,129	4.8	0.43
47	1,514	5.5	0.36
48	1,587	6.7	0.42
49	2,125	8.8	0.41
50	3,019	23.5	0.78
51	3,289	54.9	1.67
52	3,342	47.0	1.41
53	3,533	147.0	4.16
54	5,381	291.9	5.42
55	4,986	309.8	6.21
56	4,614	485.1	10.51
57	5,216	894.7	17.15
58	5,781	1,266.1	21.90
59	7,531	2,188.1	29.05
60	8,266	2,408.8	29.14
61	9,363	2,651.9	28.32
62	8,836	3,012.2	34.09
63	8,692	3,252.7	37,42
64	10,000	4,785.6	47.86

NOTE: 1. Recorded gross farm income represents the value of surplus produce marketed after the requirements of the producer have been met.

2. 1946-1960. Data collected from all small-scale farms in all provinces except Rift Valley and Northern Provinces.

3. 1960-1964. Data collected from small-scale farms in all provinces except Northern Province and Masai District.

TABLE 8.3.4. ESTIMATED ANNUAL INCOME PER GROWER

DISTRICT	1960	1961	1962	1963	1964
	£	£	£	£	£
Kisii/South Nyanza	42.09	28.77	17.18	15.65	19.36
Bungoma	14.83	15.01	17.15	15.11	11.58
Kakamega	7.85	8.03	6.33	12.12	12.29
Central Nyanza	3.39	1.23	2.11	11.62	10.18
Kericho	6.40	8.85	5.53	8.52	12.69
Taita	12.33	13.02	12.06	10.81	14.98
Machakos	32.24	17.36	20.35	17.89	37.47
Meru	36.75	36.76	39.05	12.70	48.80
Embu/Kirinyaga	52.88	64.58	62.52	55.73	29.11
Nyeri	27.36	46.92	30.18	36.27	31.08
Muranga	37.50	46.18	48.30	38.76	55.08
Kiambu	41.50	53.29	18.98	57.68	71.63

NOTE: In estimating annual income per grower, the annual data on number of growers and coffee receipts as recorded by the Department of Agriculture were used. It was necessary to assume that the coffee plant does not reach maturity until 3 years after planting. Consequently the annual number of growers were lagged three years.

be feasible in districts with other cash crops besides coffee.

The above analysis illustrates that coffee production is an important source of income in the small-scale farm sector. But the level of annual returns per coffee grower is still typical of earnings of a developing country. A major bottleneck in the growth of growers incomes is the physical size of the coffee holdings. Most of them are less than one acre and very few are over five acres. The distribution of average acreage per grower in the small-scale farm sector for the period 1960 to 1964 is shown on Table 8.3.5. The table shows that even in the principal coffee growing districts of Meru, Embu/Kirinyaga, Nyeri, Muranga, Kiambu, Bungoma and Kisi/South Nyanza, the average size of coffee holding per grower in 1964 was still under one acre.

The foregoing analysis shows the degree to which the country is dependent on coffee exports in earning overseas exchange which is vital in purchasing capital imports. It further reveals the significant proportion of gross farm income that is accounted for by coffee receipts. This contribution has been shown to be of vital importance in the small-scale farm sector to which a large portion of developmental effort is being directed. In the light of the key role in development that coffee export trade must continue to play, a decline of principal markets for Kenya Coffee would have a depressing effect on the agricultural sector of the economy. A depressed agricultural sector in a predominantly agricultural country like Kenya would have unfavourable effects on economic activity of the economy as a whole.

8.4. Determinants of gains from the Agreement.

The monetary gain that each member producing country may receive as a result of management of coffee trade by the International Coffee Agreement is dependent on her export quota and the price at which her

TABLE 8.3.5. AVERAGE ACREAGE PER GROWER IN THE SMALL-SCALE FARM SECTOR

	1960	1961	1962	1963	1964
Kisii/South Nyanza	.25	.27	.33	.34	.32
Bungoma	.26	.24	.31	.47	.39
Kakamega	.22	.23	.27	.45	.28
Central Nyanza	.23	.28	.70	.19	.17
Kericho	.31	.38	.43	.50	.90
Taita	.23	.25	.26	.57	.53
Machakos	.15	.19	.25	.34	.22
Meru	.30	.37	.54	.62	.55
Embu/Kirinyaga	.37	.20	.43	.67	.71
Nyeri	.39	.37	.45	.60	.62
Muranga	.39	.40	.65	1.00	.84
Kiambu	.76	1.01	1.13	1.30	.91
Baringo	.18	n.a.	n.a.	.66	1.09
Nandi	.20	n.a.	n.a.	.35	1.02
West Pilot	.20	n.a.	n.a.	.91	1.19
Kitui				.33	0.54
Masai				.48	n.a.

n.a. = data not available in useful form.

brand of coffee sells. Recent developments in price and annual export quota arrangements have resulted in a price differential system based on categories of raw coffee and 'floor' and 'ceiling' prices. Consequently a country can now sell a volume of coffee equivalent to her initial annual export quota plus a bonus volume which is dependent on the movement of the price of her type of coffee relative to other coffee types. The Kenyan coffee has been placed in the top coffee category which includes all the high quality coffee types. The Colombian coffee is the dominant coffee type in this category. The stabilisation efforts of the Agreement are directed at maintaining prices of this top category of coffee types within 'floor' and 'ceiling' prices of 43.50 U.S. cents per pound and 47.50 U.S. cents per pound respectively.

In order to maintain the price within the 'floor' and 'ceiling' prices, the initial annual export quota would be either reduced if the price falls below the 'floor' price or increased when the price exceeds the 'ceiling' price. The process of reducing and increasing the initial annual export quota would result respectively in the build up and disposal of stocks. There are three principal conditions that must be fulfilled if the operation of stocks is to bring some economic gains. First, the demand function for this category of coffee must remain less than perfectly elastic during the duration of the Agreement. Secondly, the elasticity of demand in time t_1 when the initial annual export quota is reduced must be less than that ruling at period t_2 when the initial annual export quota is increased thereby enabling the stocks brought forward from period t_1 to be sold. Finally, the receipts from the sale of stocks must exceed the costs of handling, storage and disposal between the periods t_1 and t_2.

The economic gains from coffee import trade that participating importing countries as a group may receive is dependent on the total

volume of trade and the prices at which the imports are purchased. But the Agreement includes all important coffee exporters and these account for 97.4 per cent of world coffee exports. Therefore the magnitude of economic gains that may be received by the importing member countries are largely dependent on the total quota and prices of coffee imports that they manage to negotiate with the exporting member countries. The determination of the total export quota and the level of prices through bargaining, may be analysed using a bilateral-monopoly model.

In Fig. 8.4.1. let AC be the competitive supply curve of coffee facing the importing countries as a group when the exporting countries are unorganised. Similarly AVP is the demand curve facing the exporting countries as a group when the purchasing activities of dealers from the importing countries are purely competitive. The corresponding marginal curves are respectively MC and MVP.

Given the above demand and supply functions assume that exporters of coffee as a group select their optimal export quota along the demand function of importers. The demand function is the marginal value product function. In establishing their optimal volume of imports, the importers as a group similarly consider the supply function of coffee facing them. This is the marginal cost function of coffee in the exporting countries.

In order to maximise returns from coffee sales, the coffee exporting countries as group, equate their marginal cost function (MC) to the marginal revenue which is (MMVP). Similarly, the importing countries as a group would maximise economic gain by purchasing that quantity of coffee which equates the marginal function corresponding to the supply function of coffee (MMC) with their own marginal value product function (MVP). The exporting and importing countries equilibria constitute respectively monopoly and monopsony equilibria. The

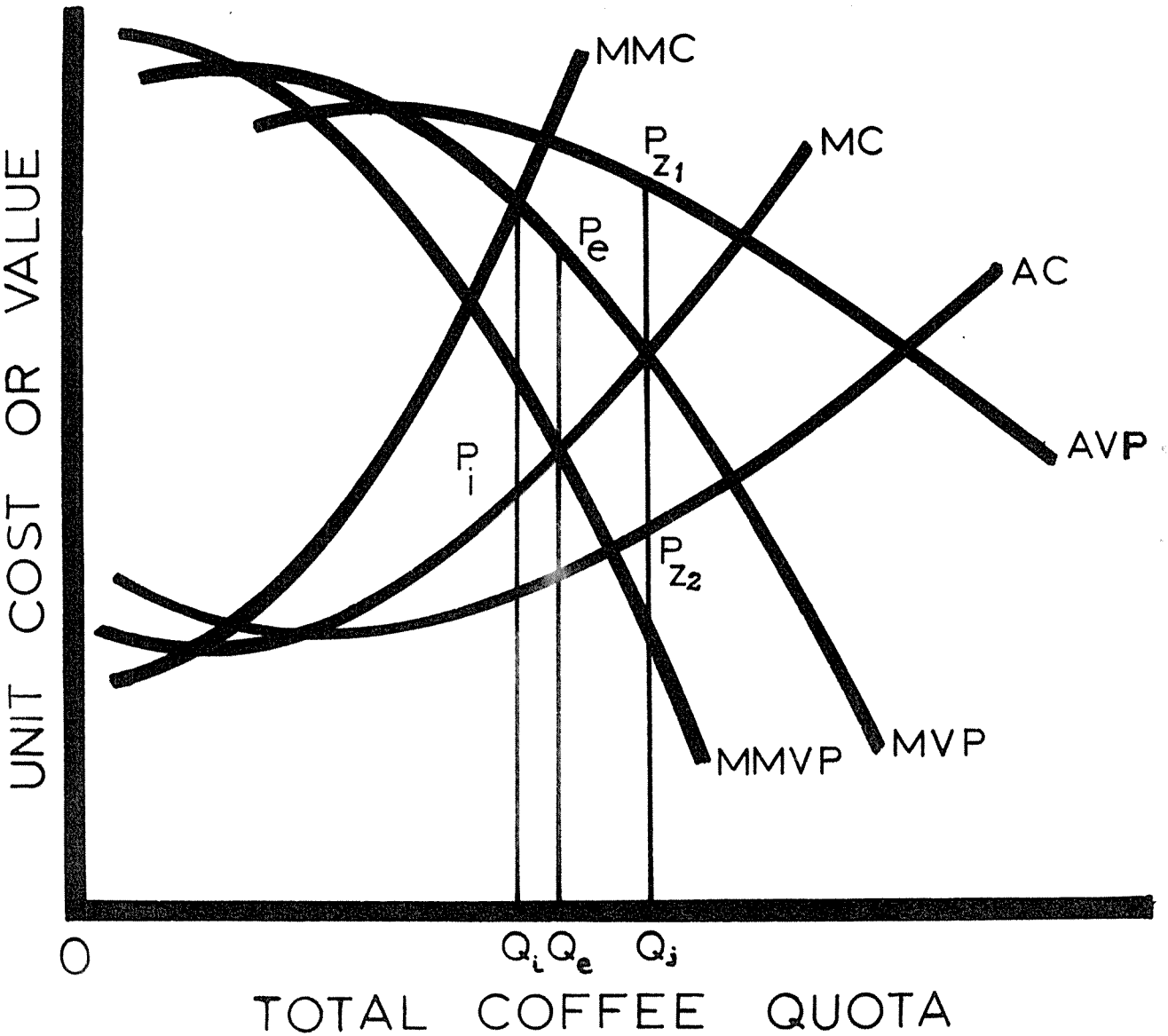


Fig. 8.4.1. Determination of Coffee Quotas and Import Prices Through Bargaining.

KEY TO FIG. 8.4.1.

AC	=	Average cost
MC	=	Marginal cost
MMC	=	Marginal to marginal cost
AVP	=	Average value product
MVP	=	Marginal value product
MMVP	=	Marginal to the marginal value product
Qi	=	Total coffee quota if importers dominate
Pi	=	Price paid for Qi
Qe	=	Total coffee quota if exporters dominate
Pe	=	Price paid for Qe
Qj	=	Total coffee quota if joint profit is maximised
$P2_1$) $P2_2$)	=	Zero profit limits

importing countries as a group establish their most profitable terms on the basis of MMC and not MC because they now face a single seller, the exporting countries as a group, and therefore the supply curve of coffee is MC rather than AC, which would be the supply curve if the exporting countries were unorganised and hence perfectly competitive. The profit maximisation process for the exporting countries is identical for similar reasons. The monopsony price and volume of coffee imports would be P_1 and Q_1 while the monopoly price and volume of exports would be P_e and Q_e. The monopsony or monopoly equilibria would be attained through negotiations but on condition that one of the negotiating parties has dominant negotiating strength. Under such conditions the dominant party assumes leadership (83).

If the coffee exporting countries as a group and importing countries as another negotiated prices and volumes of imports with a view of equitable distribution of gains from the Agreement, then both parties would be interested in maximising the joint profit. Under such conditions the negotiated coffee export quota would be fixed at a level which would equate the marginal cost of production to the marginal value product of the importing countries as a group. On the diagram, the fixed export quota would be Q_j but the price would be indeterminate. This would lie anywhere between the average cost function (AC) and the average value product function (AVP). If the price was fixed at the level of average cost, then exporting countries would earn no profit and similarly if the price was fixed at the average value product, the importers would get no benefit from the Agreement. Between these "zero profit" limits (Pz_1 and Pz_2) the price would be determined by relative bargaining strength (83).

Bargaining strength may be used not only in negotiations between coffee exporters as a group and coffee importers as another group, but

also amongst the producing countries especially when distributing the negotiated total annual export quota. The bargaining strength of negotiating parties depends on both economic and non-economic factors. In negotiating the International Coffee Agreement and in subsequent bargaining for export quotas and price differentials two factors appear to be important. The first factor is the ability of negotiating groups to withstand and inflict economic losses when bargaining parties fail to concur on important provisions of the Agreement. The other factor that may be taken into consideration is the uncertainty of costs of non- co-operation since these would be largely subjective and involve not only monetary costs but also "social and political" costs, for instance loss of international co-operation.

The factors that determine gains and losses from participating or not participating in the Agreement are of economic, social and political nature. It is difficult to assign quantitative values on social and political gains and losses. For this reason, gains and losses incurred through participation or non-participation will always remain difficult to establish with unquestionable accuracy.

SUMMARY.

The coffee industry would be benefited if the objectives of the International Coffee Agreement were achieved. However, the ideal situation for the industry in Kenya would be that which would facilitate coffee producers to expand their coffee output because the marginal cost of production appears to be well below the world coffee price.

By remaining outside the Agreement, Kenya faces the possibility of declining sales in the traditional coffee markets which are also her principal markets. In an attempt to maintain sales, the Coffee Marketing Board would have to launch agressive marketing techniques but the present marketing institutions appear inadequate in implementing

such programmes. The probable shrinkage of sales would retard the process of transferming traditional agricultural production into market-oriented production in the African coffee producing districts.

Assuming the existence of a bilateral-monopoly situation in the negotiations of quotas and prices in the International Coffee Agreement, the bilateral-monopoly model shows that gains from participation are dependent on the bargaining strength of participating countries. The distribution of bargaining strength among negotiating parties is dependent on economic and non-economic factors. For this reason gains from participating in the Agreement are also economic and non-economic. The non-quantifiable nature of gains and losses is an impediment to quantitative evaluation of a case for and against participating in such an Agreement.

CHAPTER 9

SUMMARY & CONCLUSION

The study was conducted to investigate the structure of production and marketing of Kenyan coffee and the implications to the industry of participating and not participating in the 1962 International Coffee Agreement. The degree of instability and growth of the coffee industry were investigated using mainly Coppock's Log-variance method and least squares method respectively. The relationship between various production and marketing variables were examined using regression and correlation methods among others. The pertinent points of the study are outlined as follows:-

9.1. The Kenyan Coffee Economy is characterised by two managerial systems of production, namely, the large-scale farm system and the small semi-commercialised farm system. The growth and development of these production systems, until recently, were influenced differently by the policy of the Department of Agriculture. The policy centred around separate development of African and non-African agriculture. The policy affected the two systems of production differently because the small semi-commercialised farms were predominantly owned and operated by Africans while the large-scale farms were largely in the possession of non-Africans. Besides this policy, coffee expansion was influenced by the availability of developmental capital which was enhanced by suitable systems of land tenure, marketing institutions and high skills in farm management. These conditions were satisfactorily met in large-scale farms but were virtually absent amongst the small semi-commercialised farms. Their scarcity in the last category

of farms delayed rapid expansion until 1950's when effective programmes were launched to increase production amongst African farmers.

9.2. During the period 1946 to 1964 the average growth rate of total coffee acreages was 6.12 per cent and the total acreage was 205,980 at the end of 1964. The acreages were not equally distributed between the large scale and small semi-commercialised farms. In 1964 the latter accounted for 60 per cent of the total acreages as opposed to approximately 0.40 per cent in 1946. The average annual growth rate for the period 1946 to 1964 was 40.63 per cent which raised acreages from 320 to 125,480 acres respectively. This expansion compares with an annual growth rate of 0.46 per cent in the large-scale farms which raised the acreage from 76,400 in 1946 to 80,500 in 1964.

9.3. In 1949 the bearing acreage was 60,320 acres as compared with 113,990 in 1964. This growth of the bearing acreage was recorded both in the large-scale and the small semi-commeecialised farms. In 1949 the small semi-commercialised farms accounted for 0.53 per cent of total bearing acreage as compared with 38.62 in 1964. The large scale farms therefore accounted for 99.47 per cent and 61.38 per cent in the same periods.

The increases in bearing acreage were accompanied by a fall in the proportion of bearing to non-bearing acreage. Thus in 1949, 99.29 per cent of total coffee acreage was bearing but this figure fell to 55.34 per cent by the end of 1964. This trend was also evident in both the large-scale and the small semi-commercialised farms. In the large-scale farms the increase in non-bearing acreage caused the proportion of bearing to non-bearing acreage to decline from 100 in 1949 to 86.92 per cent in 1964. The corresponding figures for the small semi-commercialised farms were

42.67 per cent and 35.08 per cent respectively.

Between 1949 and 1964 the total bearing acreage experienced an average annual growth rate of 4.41 per cent. The corresponding average annual rates of growth in the large scale and small semi-commercialised farms were 1.05 per cent and 39.92 per cent.

9.4. During the period 1945/46 to 1963/64 total production increased from 6,950 to 43,500 tons. This represented an annual increase of 16.47 per cent. The corresponding growth rates in the large-scale and small semi-commercialised farms were 12.77 per cent and 50.86 per cent respectively.

The average yield for the industry rose from 2.18 cwt. per acre in 1948/49 to 7.84 cwt. in 1960/61 but declined to 7.63 cwt. per acre in 1963/64. The average rate of growth of the average yield between 1948/49 and 1963/64 was 12.94 per cent. The corresponding rates of growth in the large scale and small semi-commercialised farms were 14.30 per cent and 11.57 per cent respectively. During this period the average yield in the large-scale farms increased from 2.18 cwt. per acre to 8.55 cwt. per acre. This increase in average yield compares with 1.88 cwt. per acre and 6.17 cwt. per acre that was achieved in the small semi-commercialised farms in the same periods.

9.5. The instability of production was examined at the industry level, as well as at the level of large scale and the small scale semi-commercialised farms. The instability index for the industry during the period 1945/46 to 1963/64 was 39.1. This value compares with 40.6 and 47.1 in the large scale and small semi-commercialised farms respectively. The instability of production at the industry level was higher during the period 1945/46 to 1954/55 than over the period

1954/55 to 1963/64. The same pattern of instability was observed in the large scale and small semi-commercialised farms.

Instability of production was higher in the small semi-commercialised farms than in the large scale farms during the period 1945/46 to 1954/55. The respective instability indices were 65.1 and 47.2. But during the period 1954/55 to 1963/64 the instability of production in the small semi-commercialised farms was the lowest when compared with the large-scale farms and the industry as a whole. The instability indices in order of magnitude were 23.9, 29.7 and 33.0 for the small semi-commercialised farms, the economy as a whole and the large-scale farms respectively.

9.6. The instability of average annual yields was also examined at the industry level as well as at the level of the two categories of production systems. Between 1948/49 and 1963/64 the instability index for the industry was 31.2. In the same period the instability index for the large scale and the small semi-commercialised farms were 33.4 and 34.5 respectively. Therefore instability of the average yield was highest in the small semi-commercialised farms. But when the period was divided into two, namely 1948/49 to 1954/55 and 1954/55 to 1963/64, the instability indices revealed that while the small semi-commercialised farms had the highest instability index for the period 1948/49 to 1954/55, their instability index was the lowest for the period 1954/55 to 1963/64. In order of magnitude, the instability index for the period 1948/49 to 1954/55 were 31.8, 32.8 and 43.3 for the industry as whole, the large scale and the small semi-commercialised farms respectively. During the period 1954/55 to 1963/64 the instability indices were 26.4, 30.7 and 34.0 for the small semi-commercialised farms, the industry as a whole and the large scale farms respectively.

9.7. The Coffee Marketing Board supervises the purchases and sales of coffee through powers conferred to it by the government. In 1963/64 the Board handled a total crop of 43,454 tons which was valued at £15,302,257 ex store, Nairobi. The average net marketing expenses were £5.47 per ton. This compares with £5.36 per ton in 1963/64 when the Board handled a total crop of 42,309 tons.

Besides marketing expenses the Board has other expenses to levy before paying out proceeds to the coffee growers. These include contributions to the World Coffee Promotion Committee, the Inter-African Coffee Organisation, the Coffee Board Levy and at times an export tax. Total deductions from gross proceeds were £18.88 per ton in 1963/64 as compared with £8.29 per ton in 1962/63. The total deductions more than doubled in 1963/64 mainly due to the imposition of an export tax in the same year.

The Board performs marketing operations almost entirely through agents. The principal operations include transportation of parchment coffee to the hulling and cleaning mills, transportation of coffee to port, coffee milling, grading and classification, auctioneering of coffee and payment of proceeds to growers. The principal agents of the Board include the Kenya Planters' Co-operative Union, Endebess Coffee Mills, growers Co-operative Societies and Unions, the Kenya Coffee Auctions Ltd., the Express Transport Co., and the Kenya, Tanganyika and Uganda Coffee Industries, which is a publicity organisation based on London.

9.8. The total annual export proceeds from coffee increased from £1,311,630 to £15,411,170 between 1947 and 1964. The mean annual export proceeds for the period was £8.02 million and the total export proceeds increased at an annual rate of 4.48 per cent over the eighteen year period.

The instability index for export proceeds for the period 1946 to 1964

was 34.2. The instability was higher for the period 1946 to 1955 than over the period 1955 to 1964. The respective instability indices were 41.90 and 20.60.

9.9. The volume of coffee exports increased approximately fourfold from 213,810 to 833,710 cwt. between 1947 and 1964. The average annual volume of exports for the period was 415,500 cwt. and the total volume of exports increased at a rate of 16.78 per cent per annum.

The instability index for the volume of exports over the period 1946 to 1964 was 37.90. This was unequally distributed over the two halves of the period so that the period 1946 to 1955 experienced greater instability than the period 1955 to 1964. The respective instability indices were 44.70 and 40.50.

The instability indices revealed that the volume of coffee exports experienced greater instability than the export proceeds. During the period 1955 to 1964, the instability index for the volume of exports was nearly double that for the total export proceeds. The instability index for the volume of exports was 40.50 as compared with 20.60 for the total export proceeds.

9.10. The unit value of coffee exports increased from £98 per ton to £530 per ton between 1946 and 1954 but thereafter gradually declined to £370 per ton in 1964. The mean unit export value during this period 1946 to 1964 was £354 per ton with a standard deviation of £126.4.0.

The instability index for the unit export value for the period 1946 to 1964 was 27.20. However, the unit export value was more stable over the period 1946 to 1955 than over the period 1955 to 1964. The instability indices for the two periods were 21.10 and 27.50 respectively.

The instability index for the unit export value was less than the

instability indices for both the volume of exports and the total export proceeds during the period 1946 to 1955. But between 1955 and 1964 the instability index for the unit export value was greater than the instability index for the total export proceeds.

9.11. The instability of the unit export value was compared with that of the purchasing power of coffee with respect to exports from the United Kingdom. During the period 1946 to 1964, the instability index for the purchasing power was 26.70 as compared with 20.40 for the unit export value. Therefore the purchasing power experienced greater instability. This pattern of instability was however reversed for the period 1955 to 1964. Over this period the instability indices were 26.90 and 27.50 for the purchasing power and the unit export value respectively.

9.12. During the period 1947 to 1964 changes in the volume of exports were closely related to changes in production. The relationship between the volume of exports, total production and the unit export value may be represented by the following equation:

$$Y = 20.95 + \underset{(\pm .061)}{0.686} * X_1 + \underset{(\pm .086)}{0.086} X_2$$

where Y = volume of exports;

X_1 = total production;

X_2 = unit export value.

The co-efficients of determination, R^2 and multiple correlation, R, were 0.93 and 0.96 respectively. Therefore there was a high degree of association between the volume of coffee exports, Y, and the two factors: the total production X_1, and the unit export value, X. The co-efficient of determination indicated that 93 per cent of squared

variability in the volume of coffee exports was explained by the two factors, namely, total production and the unit export value. However, a t-test on the regression co-efficients revealed that changes in production were more reliable in explaining changes in the volume of exports than changes in the unit export value. Although the regression equation was statistically significant at 5 per cent level of probability, only the regression co-efficient of total production X_1, was statistically significant at the same level of probability.

9.13. The relationship between the total export proceeds, the volume of exports and the unit export value was determined by the following regression equation.

$$Y = -46.43 + \underset{(\pm.145)}{0.564 * X_1} + \underset{(\pm.138)}{0.854 X_2}$$

where Y = total export proceeds;

X_1 = volume of coffee exports;

X_2 = export unit value.

The co-efficients of determination, R^2, and multiple correlation, R, were 0.72 and 0.85 respectively. The high multiple correlation co-efficient, R = 0.85 showed that there was a high degree of positive association between the total export proceeds and the other two variables. The co-efficient of multiple determination, $R^2 = 0.72$, showed that 72 per cent of the variance in export proceeds was in common with variations in the volume of exports and unit export value. A t-test on regression co-efficients and an F-test on the regression equation revealed that both the regression co-efficients and the regression equation were statistically significant at the 5 per cent level of probability.

9.14. The portion of instability in the unit export value that was accounted for by supply effects was at most 12 per cent. The corresponding value in the instability of total export proceeds was 16 per cent. Therefore programmes that may be launched in Kenya to control fluctuations of coffee supply around a growing trend could only be expected to remove about 12 per cent of fluctuations in the unit export values and 16 per cent in the total export proceeds. These values indicate that demand effects may be more important in explaining the instability in the unit export value and in the total export proceeds.

9.15. The total basic quota of coffee exports to the traditional coffee market was set at 45,530,183 bags by the 1962 International Coffee Agreement. The basic export quota allocated to Kenya was 516,835 bags. This quota was therefore fixed at 1.4 per cent of the total basic quota. This share of the total basic quota compared favourably with the Kenyan share of world coffee trade. In 1961 and 1962 coffee exports from Kenya accounted for 1.23 per cent and 1.12 per cent respectively of the world coffee trade.

9.16. In 1963/64 the basic and initial annual quotas were respectively 70.02 per cent and 69.32 per cent of total production. Total production continued to increase but without change in the basic export quota so that by 1964/65 the proportion of total production covered by the basic export quota was reduced to 60.00 per cent. The initial annual export quota in the same year was raised and covered 69.82 per cent of total production. Therefore approximately 30 per cent of total production had to be diverted into the domestic and non-traditional markets.

9.17. In the absence of bilateral and multilateral coffee trade contracts between Kenya and governments of her chief coffee importing countries, non-participation in the International Coffee Agreement would most likely have had adverse effects on the coffee industry. In order of importance the six principal markets for Kenyan coffee are West Germany, the United States of America, the United Kingdom, Canada, Netherlands and Sweden. During 1960 to 1962, these countries jointly accounted for 86.78 per cent of the average coffee exports for the period.

The governments of countries which are the chief markets for Kenyan coffee signed the International Coffee Agreement. If the government of Kenya had decided against participating in the Agreement, then the implementation of the provisions of Article 45 of the Agreement would have affected the growth of these markets. Under such circumstances, the coffee industry in Kenya would either have had to develop alternative markets outside the traditional market to cater for the portion of coffee crop that could not be disposed in the principal markets, or attempt to capture market in the traditional coffee markets from the other non-signatory countries, or both. Some minimum selling effort would at least have been necessary to maintain the volume of sales in the traditional market. These developments would have required the co-ordination of selling effort and would probably have been most efficiently undertaken by a single marketing institution. It would appear from the study that the existing marketing institutions would have been inadequate in assuring the coffee industry of necessary market expansion if Kenya decided against joining the International Coffee Agreement.

9.18. Although some statistical analysis on the aggregate demand for coffee in some traditional markets has been done, there has been virtually

no coverage on elasticities of foreign demand facing individual exporting countries. It is known that the economy of a country imposing export restrictions would be benefited, in the absence of retaliation, if its foreign demand curve were inelastic. In the absence of this information, it is difficult to gauge the magnitude of gains that Kenya would get by restricting her coffee exports.

Probably, the uncertainty shrouding the expansion of the principal markets, the effect of this uncertainty on national development programmes and especially those designed to transform subsistence agricultural production to market-oriented production and the desire to show faith in political and economic international co-operation prompted the government of Kenya to accede to the International Coffee Agreement.

9.19. According to Article 48 of the Agreement, producing members are required to undertake production adjustment measures to maintain output at levels that may be needed for domestic consumption, exports and stocks. The level of stocks would be recommended by the International Coffee Council subject to provisions of Article 51 of the Agreement.

The production process of coffee is licensed and supervised by the Coffee Board of Kenya. It has prohibited non-authorised expansion of coffee acreage. But the wide dispersion of coffee farms and especially the scatter of small semi-commercialised farms poses the problem of detecting illegal planting. The cost of policing against and detecting illegal acreage expansion would be substantial and it is doubtful whether the Board could afford this extra expenditure. While acreage expansion is prohibited, increases in coffee output through intensive cultivation methods is permissible. It would appear that the industry must expect increased coffee

production from both illegal planting and intensive cultivation. Therefore, although the Marketing Board has not faced a serious stocks problem in the past, it must expect and plan for it in the future.

9.20. The efficiency of coffee production and marketing in Kenya could be increased by increasing the size of the present uneconomic coffee holdings. The output from these holdings would in turn increase the turnover of parchment and clean coffee from the coffee factories and curing mills. This development would utilise unexhausted economies of scale especially in the co-operatively owned coffee factories. In the event of the Agreement not fostering this development, the industry should complain for this would give other members of the Agreement an unfair advantage. Under such circumstances, the International Coffee Council is authorised to temporarily relieve a member of relevant obligations of the Agreement under Article 60 of the Agreement. Therefore the above problem, if clearly substantiated, may elicit the right response from the Council which would then allow controlled coffee expansion at least in the small semi-commercialised farms and in large farms where coffee trees are too old and low yielding.

9.21. The economic gain that Kenya may expect, by participating in the International Coffee Agreement, is largely dependent on her negotiating strength, the negotiating strength of the coffee exporting countries as a group and on the efficiency of the Agreement in regulating world coffee trade. The negotiating strength of the coffee exporting countries as a group depends largely on both economic and political factors which may not be related to the Coffee insustry. On the contrary, the negotiating strength for Kenya will continue to be largely dependent on the quality of her Coffee and the cost structure of her Coffee industry.

THE END

A P P E N D I X A

Determination of index of instability by Coppock's Method.

Let the annual observation of the variable in year t be denoted by Y_t.

(a) Obtain logarithms for each annual observation of the variable for year t:

$t = 1,2,3 \ldots\ldots\ldots\ldots\ldots n.$

i.e. $\text{Log } Y_1, \ \log Y_2, \ \log Y_3 \ldots\ldots\ldots\ldots\ldots \log Y_n$ (1)

(b) Subtract the logarithmum of the observation for year t + 1 from logarithm of the observation of year t to transform the logarithmic values into first logarithmic differences.

i.e. $$\sum_{t=1}^{n} \log Y_t - \log Y_{t+1}$$ (2)

(c) Calculate the arithmetic mean of the series of first logarithmic differences.

i.e. $$\sum_{t=1}^{n} \frac{\text{Log } Y_t - \log Y_{t+1}}{n - 1} = M$$ (3)

(d) The arithmetic mean of the first logarithmic differences in then subtracted from the series of the first differences. This gives the logarithmic difference between the actual and the average year to year logarithmic differences. The solution is denoted by the symbol

$$\begin{aligned}
(\log Y_t - \log Y_{t+1}) - M &= \lambda_1 \\
(\log Y_{t+1} - \log Y_{t+2}) - M &= \lambda_2 \\
(\log Y_{t+2} - \log Y_{t+3}) - M &= \lambda_3 \\
&\vdots \qquad\qquad \vdots \\
(\log Y_{t+n} - \log Y_{t+n}) - M &= \lambda_{n-1}
\end{aligned} \tag{4}$$

(e) The logarithmic deviations from the mean (trend) are then squared, summed and averaged. The average is called the log-variance and is denoted by

$$\frac{\sum_{t=1}^{n-1} (\lambda_t)^2}{n-1} = \mu \tag{5}$$

(f) Take the square root of the log-variance and then find the antilog of the square root value. This is converted into a percentage by subtracting unity from the antilog and moving the decimal point two places to the right. This gives the average year to year percentage change of the observations adjusted for trend. This is the instability index I.

$$\text{Antilog} \quad \sqrt[2]{\mu} - 1.0 = I \tag{6}$$

APPENDIX B.

Basic Export Quotas -
(60 Kilogramme bags)

Brazil	18,000,000
Colombia	6,011,280
Costa Rica	950,000
Cuba	200,000
Dominican Republic (a)	425,000
Ecuador	552,000
El Salvador	1,429,500
Guatemala	1,344,500
Haita (a)	420,000
Honduras	285,000
Mexico	1,509,000
Nicaragua	419,100
Panama	26,000
Peru	580,000
Venezuela	475,000
Cameroun	762,795
Central African Republic	150,000
Congo (Brazzaville)	11,000
Dahomey	37,224
Gabon	18,000
Ivory Coast	2,324,278
Malagasy Republic	828,828
Togo	170,000
Kenya	516,835
Uganda	1,867,737
Tanganyika	435,458
Portugal	2,188,648
Congo (Leopoldville) (b)	700,000
Ethiopia	850,000
India	360,000
Indonesia	1,176,000
Nigeria	18,000
Rwanda and Burundi (b)	65,000
Trinidad	44,000
Yemen	77,000
GRAND TOTAL	45,587,183

(a) The Republic of Haiti and the Dominion Republic shall be permitted to export 20 per cent more than their respective adjusted basic quotas in the coffee year 1963-64. In no event, however, shall such increases be taken into account for the purpose of calculating the distribution of votes. In the review of the Agreement, provided for in Article 72, the two-year production cycle in those countries shall be given special consideration.

(b) In the first coffee year, the Republic of the Congo (Leopoldville), after presentation to the Council of acceptable evidence of an exportable production larger than 700,000 bags, shall be authorized by the Council to export up to 900,000. In the second and third coffee years it is permitted to increase its coffee exports by an amount not to exceed 20 per cent over those for the previous year. After presentation to the Council by acceptable evidence of an exportable production larger than 340,000 bags, Rwanda and Burundi may be authorized by the Council to export a combined total of up to 450,000 bags in the first coffee year and 565,000 bags in the third coffee year. In no event, however, shall the increases allowed those countries in the first three years be taken into account for the purpose of calculating the distribution of votes.

Source: International Coffee Agreement, 1962.
Treaty Series No. 31,
Cmnd. 2640, London: H.M.S.O. 1965, P. 229.

A P P E N D I X C

Non-Quota Countries of Destination, referred to in Article 40, Chapter VII. The geographical areas below are non-quota countries for purposes of the 1962 International Coffee Agreement:

Bahrein
Basutoland
Bechuanaland
Ceylon
China (Taiwan)
China (Mainland)
Federation of Rhodesia and Nyasaland
Hungary
Iran
Iraq
Japan
Jordan
Kuwait
Muscat and Oman
Oman
Philippines
Poland
Qatar
Republic of Korea
North Korea
Republic of Viet-Nam
North Viet-Nam
Romania
Saudi Arabia
Somalia
South-West Africa
Sudan
Swaziland
Thailand
Republic of South Africa
Union of Soviet Republics

Source: International Coffee Agreement, 1962.
Treaty Series No.31, Cmnd. 2640.
London: H.M.S.O., 1965, p. 230.

APPENDIX B.

Imports of Coffee to Quota Countries in 1961.

(thousands of 60-Kilogramme bags)

Country	Bags	Per Cent
Afghanistan	(a)	0.0
Albania	(a)	0.0
Argentina	574	1.3
Australia	156	0.4
Austria	218	0.5
Belgium	1,036	2.4
Bulgaria	60	0.1
Burma	(a)	0.0
Cambodia	(a)	0.0
Canada	1,119	2.6
Chad	(a)	0.0
Chile	113	0.3
Cyprus	(a)	0.0
Czechoslovakia	175	0.4
Denmark	727	1.7
Federal Republic of Germany	3,540	8.1
Federation of Malaya	109	0.2
Finland	638	1.5
France	3,882	8.9
Greece	132	0.3
Iceland	29	0.1
Ireland	(a)	0.0
Israel	74	0.2
Italy	1,753	4.0
Laos	(a)	0.0
Lebanon	158	0.4
Libya	(a)	0.0
Mali	(a)	0.0
Mongolia	(a)	0.0
Morocco	129	0.3
Nepal	(a)	0.0
Netherlands	1,147	2.6
New Zealand	35	0.1
Niger	(a)	0.0
Norway	450	1.0
Pakistan	(a)	0.0
Senegal	(a)	0.0
Spain	300	0.7
Sweden	1,295	3.0
Switzerland	541	1.2
Syria	31	0.1
Tunisia	48	0.1
Turkey	36	0.1
United Arab Republic	70	0.2
United Kingdom	978	2.3
United States	22,464	51.7
Uruguay	45	0.1
Yugoslavia	143	0.3
	42,205	98.2

SOURCE: International Coffee Agreement 1962.
Treaty Series No. 31, Cmnd. 2640
London : H.M.S.O. 1965, p. 233.

A P P E N D I X E

A Supply Stabilisation Model

The model is a modified version of Alan Powell's model which appeared in the Australian Journal of Agricultural Economics; Vol. 4, No.1, July, 1960, under the article "Production and Income Uncertainty in the Wool Industry: An Aggregate Approach."

The author is grateful to C.B. Yap for the loan of his computer programme which was used to estimate the portion of instability in the unit export valueand export proceeds that is attributable to the supply function. The programme was also used to estimate the level of stocks necessary to maintain these parameters at specified levels.

The model is formulated to evaluate the effect of stabilising the supply of coffee on the unit export value and total export proceeds. In addition, the model makes it possible to calculate the stocks of coffee that Kenya may have to hold in order to maintain the export unit value and the total export proceeds from coffee at specified levels.

E.1 Assumptions of the model:

(i) the demand curve for Kenyan coffee has constant elasticity and may be expressed as follows:

where $q = kp^n$

q = volume of coffee exports;

p = the unit export value of annual coffee exports;

n = elasticity of the demand curve;

k = shift parameter.

(ii) the elasticity of demand for Kenyan coffee is constant. In the short run which represents the duration from one year to another, the demand curve does not shift.

(iii) the supply function for Kenya coffee is assumed to be perfectly inelastic.

(iv) changes in price of coffee between seasons may be explained by shifts of short run supply and demand functions.

E.2. Calculation of degree of instability that may be eliminated by stabilising supply.

Given the demand function $q = kp^n$ and the elasticity n which is constant in all years, then

$$\hat{k}_i = \hat{q}_i \hat{P}_i^{-n} \qquad \text{.....(1)}$$

where

$\hat{k}$ = estimated shift parameter;

i = 1,2,3 ....., N;

$\hat{q}$ = volume of coffee exports adjusted for trend;

$\hat{P}$ = unit export value adjusted for trend.

Following the estimation of k, the unit export value p^* for an average volume of exports $\bar{q} = \sum_{i=1}^{N} \hat{q}_i / N$ may be calculated using the following equation:

$$P_i^* = \left(\frac{\hat{q}}{\hat{k}_i}\right)^{\frac{1}{n}} \qquad \text{.....(2)}$$

The total export proceeds R from the sale of the average volume of exports $\bar{q}$ would be:

$$\hat{R} = \hat{P}_i^* \bar{q} \qquad \text{.....(3)}$$

The variance of estimated unit export value for average volume of exports may be denoted by $\text{Var.}(P_i^*)$

where $$\text{Var.}(P_i^*) = \sum_{i=1}^{N} \left(P_i^* - \bar{P}^*\right)^2 / N-1 \qquad \text{.....(4)}$$

where $\bar{P}^*$ = the mean of P_i^*

The variance of observed unit export value corrected for trend may be denoted by $\text{Var.}(\hat{P}_i)$,

where $$\text{Var}(\hat{P}_i) = \sum_{i=1}^{N} \left(\hat{P}_i - \bar{\hat{P}}\right)^2 / N-1 \qquad \text{.....(5)}$$

where $\bar{\hat{P}}$ = the mean of $\hat{P}_i$

The variability of estimated unit export value for an average volume of exports may be compared with that of the observed unit export value adjusted for trend by calculating a ratio, r,

$$r_1 = \frac{\text{Var.}(p_1^*)}{\text{Var.}(\hat{p}_1)} \qquad \text{.....(6)}$$

Similarly, the variability of estimated total export proceeds (3) may be compared with that of observed total export proceeds adjusted for trend by calculating a ratio, r_2.

$$r_2 = \frac{\text{Var.}(R_1)}{\text{Var.}(R_1)} \qquad \text{.....(7)}$$

Where R = observed total export proceeds adjusted for trend.

$(1 - r_1)$ represents that portion of instability in the unit export value that is attributable to changes in the supply function. Therefore this fraction of instability represents the maximum amount of instability in the unit export value that may be reduced by a supply stabilisation programme. Similarly $(1 - r_2)$ represents the maximum instability that may be eliminated from the instability of total export proceeds by the same programme.

The actual estimates of the model are shown in the tables below. The unit export values and volumes of coffee exports for the period 1947 to 1964 were used in the calculation. The unit export values were corrected for trend using the United Kingdom export price index while for the volume of exports, the least squares method was employed for trend adjustment. The mean volume of exports for the period was 415,000 cwt.

Table E.2.1. Estimated instability components in unit export values, 1947-64.

n	r_1	$1 - r_1$
- .25	7.38	No instability due to Supply Function
- .50	2.03	
- .75	1.29	
- 1.00	1.06	
- 1.50	0.92	0.08
- 2.00	0.89	0.11
- 2.50	0.88	0.12
- 3.00	0.89	0.11
- 4.00	0.90	0.10
- 5.00	0.91	0.09
- 6.00	0.92	0.08
- 7.00	0.93	0.07

The table reveals that a supply stabilisation programme would be most beneficial to Kenya if the elasticity of demand for her coffee was -(2.50). Under such conditions 12 per cent of instability in the unit export value would be eliminated by the programme.

TABLE E.2.2. Estimated instability components in total coffee export proceeds, 1947 - 64.

n	r_1	$1 - r_1$
- .25	6.98	No instability due to supply function.
- .50	1.92	
- .75	1.22	
- 1.00	1.00	0.00
- 1.50	0.87	0.13
- 2.00	0.84	0.16
- 2.50	0.84	0.16
- 3.00	0.84	0.16
- 4.00	0.85	0.15
- 5.00	0.87	0.13
- 6.00	0.87	0.13
- 7.00	0.88	0.12

The table reveals that a supply stabilisation programme may eliminate a maximum of 16 per cent of the instability of total export proceeds. This would be feasible if the elasticity of demand for Kenyan coffee was between -(2.00) and -(3.00).

E. 3. Calculation of necessary stocks:

Stocks are defined as the total differences between the observed volume of coffee exports corrected for trend, $\hat{q}$; and the estimated volume of exports for the same period q^* . Therefore stocks may be estimated by the following equation:

$$S_1 = \sum_{i=1}^{N} \left(\hat{q}_i - q_i^* \right) \qquad \ldots\ldots\ldots\ldots\ldots (8)$$

Where S_1 = estimated total stocks required to maintain given unit export value at a specified level.

For each given level of unit export value, P_e ; q_i^* is estimated by the following function:

$$q_i^* = \hat{k}_i \, P_e^{n} \qquad \ldots\ldots\ldots\ldots\ldots (9)$$

where $\hat{k}_i$ = estimated shift parameter;

n = elasticity of demand.

Similarly $S_2 = \sum_{i=1}^{N} \left(\hat{q}_i - q^*_i \right)$ .....(10)

where S_2 = estimated total stocks required to maintain given total export proceeds at the specified level.

At every level of total export proceeds

where $e = \left(\hat{P}_e \, q^*_i \right)$ .....(11)

e = total export proceeds;

$\hat{P}_e$ = estimated unit export value;

q^*_i = estimated volume of exports.

The estimated unit export value may be calculated from the following function:

$$\hat{P}_e = \left(\frac{e}{\hat{k}_i} \right)^{\frac{1}{n+1}} \qquad \text{.....(12)}$$

After determining $\hat{P}_e$, the level of stocks necessary to maintain total export proceeds at a specified level is given by

$$q^*_i = \hat{k} \hat{P}_e^{n} \qquad \text{.....(13)}$$

Note: If $\hat{q}_i > q^*_i$ the build up of coffee stocks would be necessary to maintain the total export proceeds at the specified level. On the other hand, if $\hat{q}_i < q^*_i$ the level of stocks would be run down in order to maintain the total export proceeds at the desired level.

TABLE E.3.4. ESTIMATED TOTAL COFFEE STOCKS FOR THE PERIOD 1947 - 1964 REQUIRED FOR MAINTAINING TOTAL EXPORT PROCEEDS AT VARIOUS LEVELS, GIVEN ELASTICITIES -0.25 to -7.00.

	-.25	-.50	-.75	-1.10	-.150	-.200	-2.50	-3.00	-4.00	-5.00	-6.00	-7.00
£.000,000	STOCKS IN THOUSAND HUNDREDWEIGHTS											
65	-2247	-9463	-102612	- 7314	+ 6321	+ 5533	+ 5112	+ 4857	+ 4567	+4406	+4305	+4235
80	-1597	-6287	- 51571	- 5857	+ 5320	+ 4531	+ 4133	+ 3899	+ 3638	+3496	+3406	+3345
95	-1091	-4113	- 27784	- 3264	+ 3863	+ 3322	+ 3024	+ 2847	+ 2649	+2541	+2541	+2427
110	- 683	-2532	- 15236	- 4641	+ 1866	+ 1906	+ 1791	+1708	+ 1606	+1548	+1511	+1485
125	- 342	-1331	- 8001	- 212386	- 757	+ 2819	+ 440	+ 488	+ 515	+ 520	+ 521	+ 521
135	- 144	- 678	- 4809	- 505167	- 2896	- 916	- 523	- 368	- 238	- 182	- 152	- 132
145	+ 35	- 116	- 2438	- 1117630	- 5377	- 2205	- 1535	- 1256	- 1010	- 898	- 835	- 794
165	+ 349	+ 805	+ 749	- 4635421	-11464	- 5061	- 3701	- 3124	- 2605	-2367	-2229	-2140
185	+ 616	+1526	+ 2704	- 16399752	-19221	- 8285	- 6050	- 5109	- 4267	-3880	-3658	-3514
200	+ 792	+1973	+ 3700	- 38671616	-26257	-10946	- 7927	- 6671	- 5554	-5043	-4750	-4561
250	+1271	+3074	+ 5544	-450275670	-58411	-21309	-14868	-12296	-10070	-9071	-8505	-8141

TABLE E.3.3. ESTIMATED TOTAL COFFEE STOCKS FOR THE PERIOD 1947 - 1964, REQUIRED FOR MAINTAINING EXPORT UNIT VALUE AT SPECIFIC LEVELS, GIVEN ELASTICITIES -0.25 to -7.00.

	-.25	-.50	-.75	-1.00	-1.50	-2.00	-2.50	-3.00	-4.00	-5.00	-6.00	-7.00
E.A. SHS.	.....THOUSAND			HUNDREDWEIGHTS			.....THOUSAND			HUNDREDWEIGHTS		.....
200	-1032	-2269	-3752	-5531	-10241	-17074	-27039	-41648	-95042	-213283	-479637	-1088868
250	- 570	-1240	-2021	-2959	- 5200	- 8235	-12280	-17674	-34514	- 64860	-120215	- 222442
300	- 212	- 480	- 807	-1195	- 2167	- 3434	- 5047	- 7077	-12772	- 21593	- 35286	- 56688
320	- 60	- 168	- 324	- 527	- 1075	- 1819	- 2776	- 3970	- 7224	- 12004	- 18976	- 29163
350	+ 79	+ 110	+ 98	+ 44	- 175	- 538	- 1041	- 1688	- 3452	- 5971	- 9480	- 14332
370	+ 205	+ 360	+ 47	+ 540	+ 577	+ 495	+ 309	+ 26	- 816	- 2047	- 3732	- 5978
400	+ 322	+ 586	+ 801	+ 974	+ 1214	+ 1341	+ 1377	+ 1338	+ 1071	+ 580	- 132	- 1086
420	+ 429	+ 792	+1098	+1356	+ 1759	+ 2042	+ 2235	+ 2359	+ 2451	+ 2384	+ 2189	+ 1876
450	+ 529	+ 980	+1366	+1697	+ 2229	+ 2629	+ 2933	+ 3166	+ 3479	+ 3651	+ 3725	+ 3723
500	+ 710	+1314	+1830	+2275	+ 2996	+ 3551	+ 3986	+ 4335	+ 4854	+ 5218	+ 5484	+ 5683
550	+ 869	+1601	+2220	+2748	+ 3593	+ 4232	+ 4727	+ 5117	+ 5686	+ 6075	+ 6353	+ 6557

APPENDIX F.
PRODUCTION DATA
COFFEE ACREAGES

TABLE F.1.

TIME	TOTAL	LARGE-SCALE FARMS	SEMI-COMMERCIALISED FARMS
1946	76,720	76,400	320
47	64,830	64,390	440
48	64,790	64,260	530
49	60,750	60,000	750
50	61,090	59,720	1,370
51	61,800	60,060	1,740
52	63,540	60,500	3,040
53	64,570	60,700	3,870
54	64,900	59,560	5,340
55	67,190	59,670	7,520
56	71,930	59,880	12,050
57	76,740	60,000	16,740
58	82,200	62,000	20,200
59	93,010	67,000	26,010
60	102,510	69,570	32,940
61	113,990	69,970	44,020
62	139,370	69,970	69,400
63	185,090	69,970	115,120
64	205,980	80,500	125,480

TABLE F.2. BEARING COFFEE ACREAGES

YEAR	TOTAL	LARGE-SCALE FARMS	SEMI-COMMERCIALISED FARMS
1949	60,320	60,000	320
50	60,160	59,720	440
51	60,250	59,720	530
52	60,470	59,720	750
53	61,090	59,720	1,370
54	60,660	58,920	1,740
55	62,400	59,360	3,040
56	63,430	59,560	3,870
57	64,900	59,560	5,340
58	67,190	59,670	7,520
59	71,930	59,880	12,050
60	76,740	60,000	16,740
61	82,200	62,000	20,200
62	93,010	67,000	26,010
63	102,510	69,570	32,940
64	113,990	69,970	44,020

TABLE F.3. COFFEE PRODUCTION

YEAR	TOTAL PRODUCTION	LARGE-SCALE FARMS	SEMI-COMMERCIALISED FARMS
	.....Production in tons ..... (Clean Coffee)		
1945/46	6,950	6,920	30
46/47	9,040	9,020	20
47/48	14,080	14,040	40
48/49	6,560	6,530	30
49/50	6,340	6,290	50
50/51	9,940	9,850	90
51/52	16,040	15,970	70
52/53	12,190	11,980	210
53/54	11,350	10,980	370
54/55	12,340	11,600	740
55/56	23,920	23,100	820
56/57	18,350	16,770	1,580
57/58	20,840	18,570	2,270
58/59	23,360	18,940	4,420
59/60	23,390	18,330	5,060
60/61	32,220	24,710	7,510
61/62	27,260	19,510	7,750
62/63	33,660	22,850	10,810
63/64	43,500	29,910	13,590

NOTE: Production 1946-53: Data was compiled by converting parchment coffee figures to clean coffee using assuming an out-turn of 20%.

$$\text{Out-turn} = \frac{\text{Bulk parchment} - \text{Bulk clean}}{\text{Bulk Parchment}} \times 100$$

TABLE F.4. AVERAGE ANNUAL COFFEE YIELD

YEAR	TOTAL	LARGE-SCALE FARMS	SEMI-COMMERCIALISED FARMS
	.....AVERAGE YIELD CWT / ACRE		
1948/49	2.18	2.18	1.88
49/50	2.11	2.11	2.27
50/51	3.30	3.30	3.40
51/52	5.31	5.36	1.87
52/53	3.99	4.01	3.07
53/54	3.74	3.73	4.25
54/55	3.96	3.91	4.87
55/56	7.54	7.76	4.24
56/57	5.65	5.63	5.92
57/58	6.20	6.22	6.04
58/59	6.50	6.33	7.34
59/60	6.10	6.11	6.05
60/61	7.84	7.97	7.44
61/62	5.86	5.82	5.96
62/63	6.57	6.57	6.56
63/64	7.63	8.55	6.17

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