CASH CROP VERSUS FOOD CROP PRODUCTION IN TANZANIA: AN ASSESSMENT OF THE MAJOR POST-COLONIAL TRENDS

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CONTENTS

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The opinions expressed in this book are, however, entirely those of the author and the responsibility for the faults and defects still remaining also rests squarely with the author.

CHAPTER 1: INTRODUCTION

In the less developed countries (LDCs) a substantial share of the output produced in the agricultural sector is consumed directly on the farm. This share is commonly termed subsistence consumption. The difference between total output and subsistence consumption constitutes the marketed-surplus from agriculture. In a country dominated by an agricultural sector, the growth of this surplus not only poses a constraint on the rate of structural transformation of the economy by being the main source of food supply for the non-agricultural population, but it is also the major source of investment funding, the size of which of course will also have a decisive bearing on the rate of economic growth and development that can be achieved. Some writers on economic development even argue that the presence of an agricultural surplus is a precondition for economic development.[1)]

In this study we shall concentrate on identifying the factors that have governed the development of the size and the composition of the marketed surplus. In particular the composition of the marketed surplus in terms of cash crops and food crops will be in focus. (Definitions of these two categories of crops follows shortly.) A main thesis of the study is that Tanzania should concentrate more on cash crop production than has been the case during the last fifteen years, i.e. that a change of policy in the suggested direction will have positive effects on trade, employment, income and capital formation.

In this introductory chapter we seek to provide a framework for the analysis. This will do by (1) giving a brief account of the nature of the constraint posed by the marketed surplus from agriculture on economic development, (2) providing some definitional terms that are of central im-

portance for the study, and (3) giving a short presentation of Tanzania's resources, farming structure and economic structure.

1.1 The Marketed Surplus from Agriculture as a Development Constraint

In the economics literature the constraint posed by the marketed surplus from agriculture has long been discussed. Adam Smith was apperently well aware of this constraint. In his often quoted work The Wealth of Nations he wrote: 'It is the surplus produce of the country only, or what is over and above the maintenance of the cultivators, that constitute the subsistence of the town, which can therefore increase only with the increase of surplus produce'.[2)]

In the LDCs one finds that the constaint identified by Adam Smith is almost as binding today as it was in the pre-industrial revolution Scotland. Maurice Dobb writing on the issue, expressed his opinion as follows:'.....there are reasons to suppose that it will be the marketed surplus which will play the crucial role in the underdeveloped countries in setting the limits to the possible rate of industrialization'.[3)]

Analysis of the constraint posed by the marketed surplus from agriculture on economic development is amply covered in the development literature. During the 1950s and the 1960s analytical models that posited a dual structure of an economy consisting of a labour-abundant, backward, small scale-peasant agricultural sector an a more modern industrial sector came into vogue in the development literature following the seminal ideas of Arthur Lewis in his much celebrated article on the 'unlimited supply of labour'.[4)] Gustav Ranis, John C.H. Fei and Dale W. Jorgenson made important contributions by extending the analysis of growth

in an underdeveloped dual structured economy.[5] Later Martin J. Hornby, Avinash Dixit and Paul Zarembka designed similar models aimed at studying how growth could best be accelerated given the marketed surplus constraint of the agricultural sector.[6]

A common feature of these models is that they operate with only two sectors - an agricultural and a modern sector where each sector produces only one homogeneous good, respectively food and an industrial good, that can either be consumed or invested. The 'engine of growth' in the economy described in these models is considered to be capital accumulation in the modern sector. But this engine runs on 'fuel' that is produced in the agricultural sector, which is not controlled by the state. The agricultural sector is assumed to consist of a large number of small scale producers i.e. peasants. The fuel can be obtained in a market where the industrial good can be exchanged for food. In this market the state is assumed to exercise full monoposony as well as full monopoly control. In this economy therefore the price setting of agricultural goods and industrial goods i.e. the determination of the terms of trade between the agricultural sector and the industrial sector, becomes of crucial importance for the rate at which capital accumulation in the modern sector can take place.

The determination of the appropriate terms of trade between the agricultural sector and the industrial sector is commonly known in the development literature as the 'scissors problem'. This term in fact dates back to the time of the Soviet industrialization debate of the early 1920s.

Recently Raaj Sah and Joseph Stiglitz have shown in a simple dual type model that the strategy for accelerating economic growth and development advocated by Evgeny Preobrazhensky in the Soviet industrialization debate was the

best solution given the premises specified in their model.[7] Preobrazhensky argued for the so-called 'primitive' socialist accumulation of capital i.e. a situation where the socialized industrialized sector expands by drawing on the surplus of the peasant-owned agricultural sector.[8] According to Preobrazhensky, rapid capital accumulation could most effectively be achieved by turning the terms of trade against the peasants. Hornby, Dixit and Zarambka in their models also consider changing the terms of trade as a chief policy instrument for accelerating capital accumulation. However, the effective use of this instrument is found to hinge largely on the price elasticities of the supply and demand for food. The general conclusion reached by these authors is that if the price elasticities are low, the marketed surplus from the agricultural sector can only be extracted to fuel capital accumulation by investment in the agricultural sector.

The general results which are derived in these analytical models are of course well founded within the premises of the assumptions made in the model specification. But the usefulness of these models is of rather limited value, essentially because the level of aggregation is so high. In particular, the assumption of only one homogeneous good, which is produced under constant returns to scale in each sector, is a simplification which has to be relaxed in a more thorough development study such as that undertaken in this book. Empirical studies of economic growth and development indicate that capital accumulation does not play the central role the models discussed above purport to demonstrate.[9]

1.2 Agricultural Production and Marketing in Tanzania: Some Definitional Terms

A major hypothesis of this study is that the composition of the marketed surplus will have a decisive impact on the size of the marketed surplus that can be put to use for economic development. The reason for this is that the markets in different agricultural goods function quite differently. The degree of monopoly control varies greatly, as we shall see, between different kind of goods produced in the agricultural sector.

In the agricultural sector goods as diverse as coffee and bacon are being produced. In this study we cannot analyse the functioning of the markets of all the major commodities produced. Our focus will be on crop production, which we shall defined to consist of two major categories, namely cash crops and food crops. These terms may to a non-informed reader convey the idea that food crops are non-tradeable crops. This is not so. Both cash crops and food crops are tradeable crops, but since this terminology is so entrenched in the Tanzanian English vocabulary we shall continue to use this terminology throughout this study. The following crops will be defined as cash crops: cashewnuts, cloves, coffee, cotton, pyrethrum, sisal, tea, tobacco, and oilseed crops, which comprise castor-seeds, groundnuts, sesame and sunflower-seeds. All other crops produced in Tanzania will be treated in this study as food crops. The major food crops are: food grains, root-tubers and plaintains.

Cash crops and food crops may also be identified by market criteria. For cash crops there is no local demand, where local is narrowly defined to mean the village of original production. Cash crops are primarily for export. A small share of cash crops also goes for domestic consumption, but this consumption can only take place after the crops have

been processed in a factory located outside the village of original production.

In this study we will divide the agricultural sector into two sub-sectors: the large-scale farming sector and the small-scale farming sector. The latter sector we shall call the peasant sector. In terms of total area cultivated and output produced the peasant sector is by far the biggest of the two sectors. In fact less than 10 percent of all land cultivated is in the large-scale farming sector.

The large-scale farming sector consists of such heterogeneous farming units as settle farms, missionary farms, state farms and large estates own by multinational firms. There are of cours, also a number of large farms owned privately by Tanzananians. Some of these farms cultivate only a few hundred hectares of land while others may have several thousand hectares of land under cultivation. The peasant sector is much more homogeneous. Typically a peasant farmer would cultivate some 1 - 2 hectares of land. (See Table 1.3.).

In the peasant sector a large share of output produced is consumed directly by the household. This so-called subsistence consumption consists only of food crops. We can therefore define the marketed surplus from the peasant sector to be equal to cash crop production plus the difference between total food crop production and subsistence consumption. This is in contrast to the marketed surplus from the large scale farming sector where we can for all practical purposes define the marketed surplus as comprising total production.

At this juncture, though, we have to make a distinction between the marketed surplus which the peasants produce and the marketed surplus which the state can procure and put to

use for development, since the food market in Tanzania is characterized by a dual structure. There is an official market where prices are set by the government, but there is also a traditional food market where prices are determined more or less by the free market forces of supply and demand. In general, prices in this latter market will vary considerably from one region/district to another, and on the whole they are higher than prices in he official market. In the case of cash crops there is no such dual market structure. Only an official market exists for these crops.

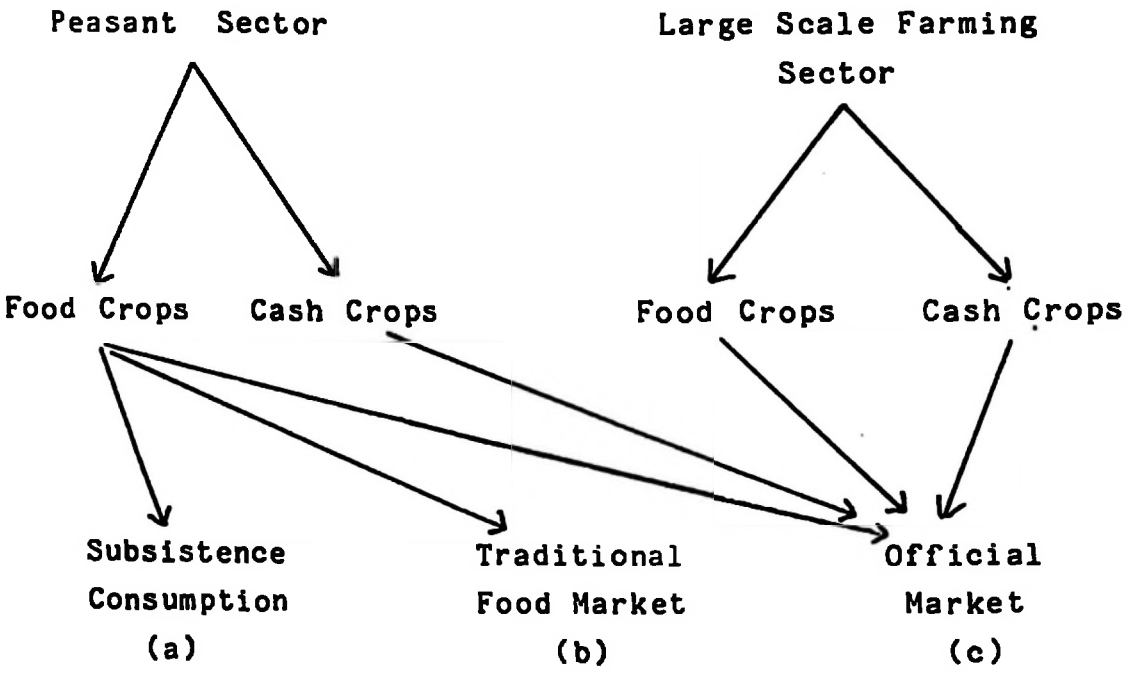
The marketed surplus which the state can procure clearly has to be marketed through the official market, i.e. the market where prices are set by the government. In general, delivery of produce to this market is made compulsory by the issue of the so-called Compulsory Marketing Order. Crops for which a Compulsory Marketing Order have been issued are termed scheduled crops. A great variety of food crops such as root tubers, plaintains and all fruit an vegetables are not covered by Compulsory Market Orders. These crops are termed non-scheduled crops.[10)]

In Tanzania no system with delivery quotas to the official market is used and outright confiscation (a practice that some countries have resorted to in the pursuit of 'development') is not practised either. Thus, as a result of this dual food market structure and the limited possibilities the government has to enforce the Compulsory Marketing Orders, peasants do have a certain degree of freedom in selling the marketed surplus of food crops in either the official market or in the traditional food market, albeit illegally in some cases. In the case of cash crops no such possibility of selling in a traditional market exists.

In Figure 1.1 we seek to illustrate the difference between the total marketed surplus from agriculture and the marke-

ted surplus which the state can procure and put to use for development. Denoting subsistence consumption (a), the volume of food traded in the traditional food market (b), and the volume of cash crops and food crops marketed in the official market (c), the total marketed surplus from agriculture is equal to (b) + (c), while the marketed surplus which the government obtains is only (c).

Figure 1.1 Farming Structure and the Marketed Surplus in Tanzania



Reading Figure 1.1 it is also of importance to note that it is only output from the peasant sector that can be sold in the traditional food market. All output from the large-scale farming sector is sold in the official market.

The dual of structure of the agricultural crop market exhibited in Figure 1.1 has an important bearing on the

received theories of agricultural cum economic development, which appear to have shifted from one extreme position to another during the past three decades. During the 1950s and the 1960s the agricultural sector was considered as a reservoir providing labour, food, raw materials and the potential savings needed to fuel industrial development. The role of the agricultural sector, according to Bruce Johnston and John Mellor, epitomized much of the orientation of this school of thought.[11)]

A reaction against the view of agriculture as a reservoir to be tapped for fuelling the development process emerged in the 1970s when 'agriculture first' became the catchword for development. The agriculture first argument, where stress is placed on the need to allow the agricultural sector to 'retain its own surplus' to increase rural welfare is central in the work of such authors as, e.g., Keith Griffin and Michael Lipton.[12)]

Recently in a study on agricultural development and demographic change Warren Robinson and Wayne Schutjer found a policy of development based on either variant of the two schools of thought referred to above to be self-defeating in the long run. The long run prospect for the agricultural first school of thought, these authors argued will be as follows: 'Any surplus left totally in the rural sector may well give rise to temporary increases in the living standard, increased population and eventual exhaustion of the surplus.'[13)] On the other hand their assessment of agriculture as reservoir of inputs to fuel development reads as follows: 'A policy which emphasizes increased output and transfer to the urban sector (or world market) without worrying about the feed back is self-defeating.'[14)]

Consequently these authors advocate a development policy where the agricultural sector helps to support a dynamic

domestic urban (industrial) sector, because the long run welfare of the rural sector depends on the inputs it can obtain from the urban (industrial) sector.

In this study we find that in Tanzania also the long run welfare of the rural population is dependent upon the inputs they can obtain from the urban (industrial) sector, which in turn is dependent upon the volume of produce marketed in the official market. The marketed surplus from the rural area traded in the traditional food market can only temporarily give rise to an increase in rural welfare, because the surplus traded in this market does not generate production of the inputs needed in the agricultural sector in order to sustain long run growth in agricultural production.

1.3 Tanzania: Some Structural Characteristics

We shall now, as a background to our study, describe some central structural characteristics of the country. In the subsequent chapters we shall learn that these structural characteristics have an important bearing on the pattern of agricultural development that has taken place.

The United Republic of Tanzania was created as late as 1964 when the Republic of Tanganyika and the Republic of Zanzibar merged to become one nation. Both republics had gained their independence from British rule a couple of years earlier.

Tanganyika covers an area of 940 000 km^2 between the 2nd and the 10th latitude degree south of the equator on the east coast of the African continent. Zanzibar is a small island just off the coast of Tanganyika. In this study we will focus on agricultual development in Tanganyika, often known as Mainland Tanzania, but we will henceforth drop the

word Mainland and simply use Tanzania. The distinction between Mainland Tanzania and Tanzania has no practical significance in this study.

1.3.1 The Cropping Pattern and the Population Settlement Pattern

The physiographic features of Tanzania are among the most varied of all countries on the African continent.[15] Crops of the tropical as well as the temperate climate zone can be produced in the country. Many of the crops presently produced in the country were brought in by the early traders and colonizers. Greenway claims that the Persians and the Arab trades brought with them rice, suger cane and oranges and that later the Portuguese brought with them cassava, sweet potatoes, mangoes, groundnuts and cashewnuts.[16] John Iliffe also states that the Portuguese brought maize to East Africa, which today has become the major food staple in Tanzania. Wheat, another food grain presently being produced, was introduced in the country at the turn of this century by the European settlers.

Among the food grains presently produced in the country, sorghum and millet are the two major indigenous food crops. Sisal, a crop which has had a profound impact on the Tanzanian economy, was brought in as late as 1892 from Brazil. Coffee, another very important crop for the Tanzanian economy is only partially indigenous. For coffee a distinction is usually made between two varieties, namely Arabica and Robusta. It is the latter variety which is considered to be indigenous to Tanzania. The Arabica coffee was brought in by the missionaries from the island of Reunion in the Indian Ocean, at the end of the previous century.[19]

The present spatial pattern of cash crop production is illustrated in Figure 1.2. A characteristic feature of the

map exhibited in Figure 1.2 is the large white areas. These white areas indicate areas infested with the tsetse flies that pose a health hazard to both man and his beasts. As a result, the population settlement pattern is characterized by clusters of densely populated areas where there are no tsetse flies. Population density figures of 100 people or more per km^2 are not uncommon in Tanzania. The population settlement pattern is set out in Figure 1.3. The map presented in this figure is admittely rather old, but as we will find in Chapter 3, the pattern has not changed very much since its construction. It still conveys a realistic picture of the settlement pattern in Tanzania.

The structural characteristics of the settlement pattern in term of urban and rural population according to the population census figures are reported in Tables 1.1 and 1.2. The great majority of the population live in rural areas. Using the more narrow definition of the rural population provided in Table 1.1, it appears that at present some 85 percent of the population is directly dependent upon agriculture for its living.

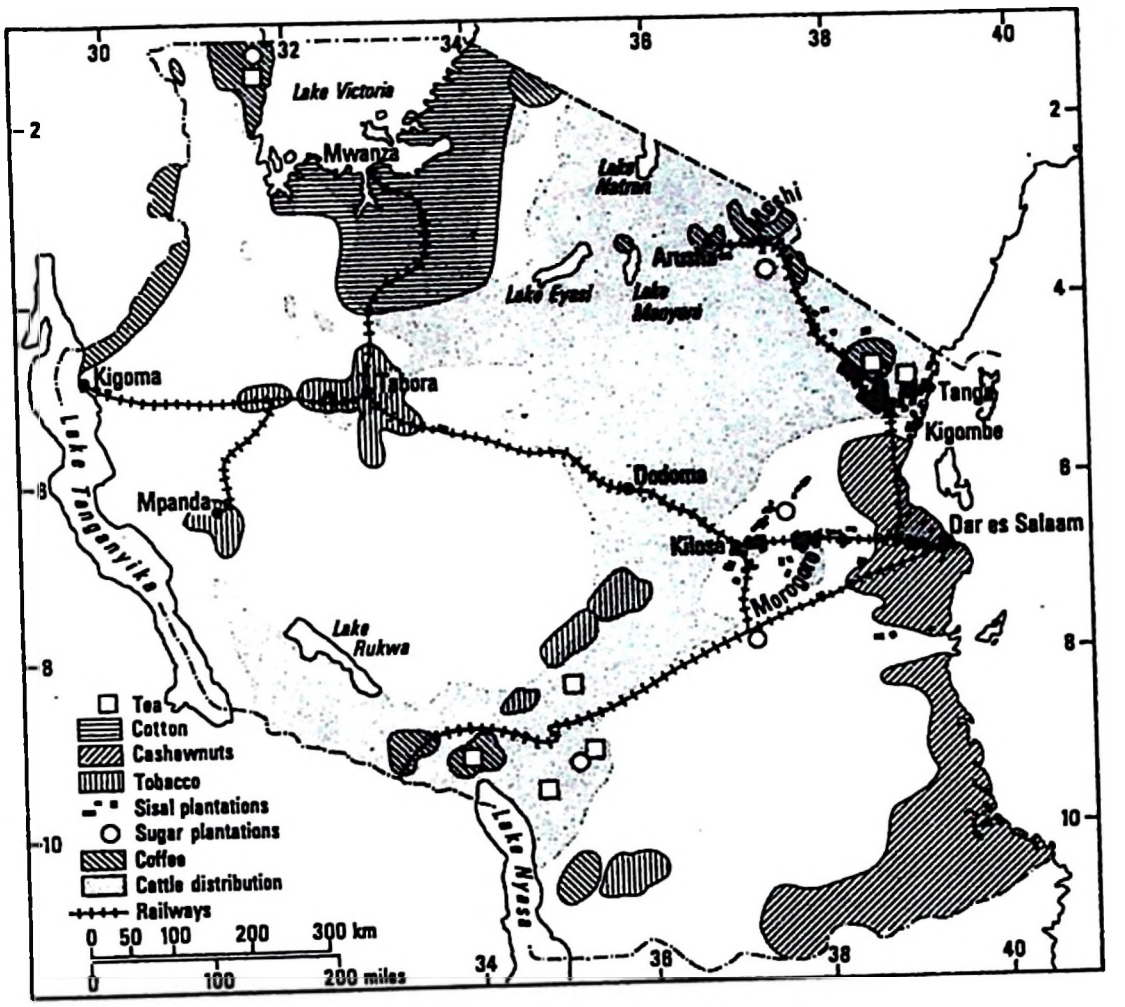
Table 1.1 Rural and Urban Population, Tanzania 1948,1957,1967 and 1978.

	1948	1957	1967	1978	
		% of Total			
Dar es Salaam	0.9	1.5	2.3	4.4	
Urban*	3.3	4.2	5.7	9.8	(12.2)[a]
Rural	96.7	95.8	94.3	90.8	(87.8)
Total ' 000	7480.4	8768.5	11958.7	17048.3	

*) defined to include Dar es Salaam and towns with regional administration
a) urban population is defined to include all towns with district administration in addition to towns with regional administration

Sources: URT/TAKWIMU, Statistical Abstract 1973, URT/TAKWIMU (1980), Tables 4-5

Figure 1.2 Spatial Distribution of Cattle and Principal Export Crops.



Source: Berry,L. ed.(1971).

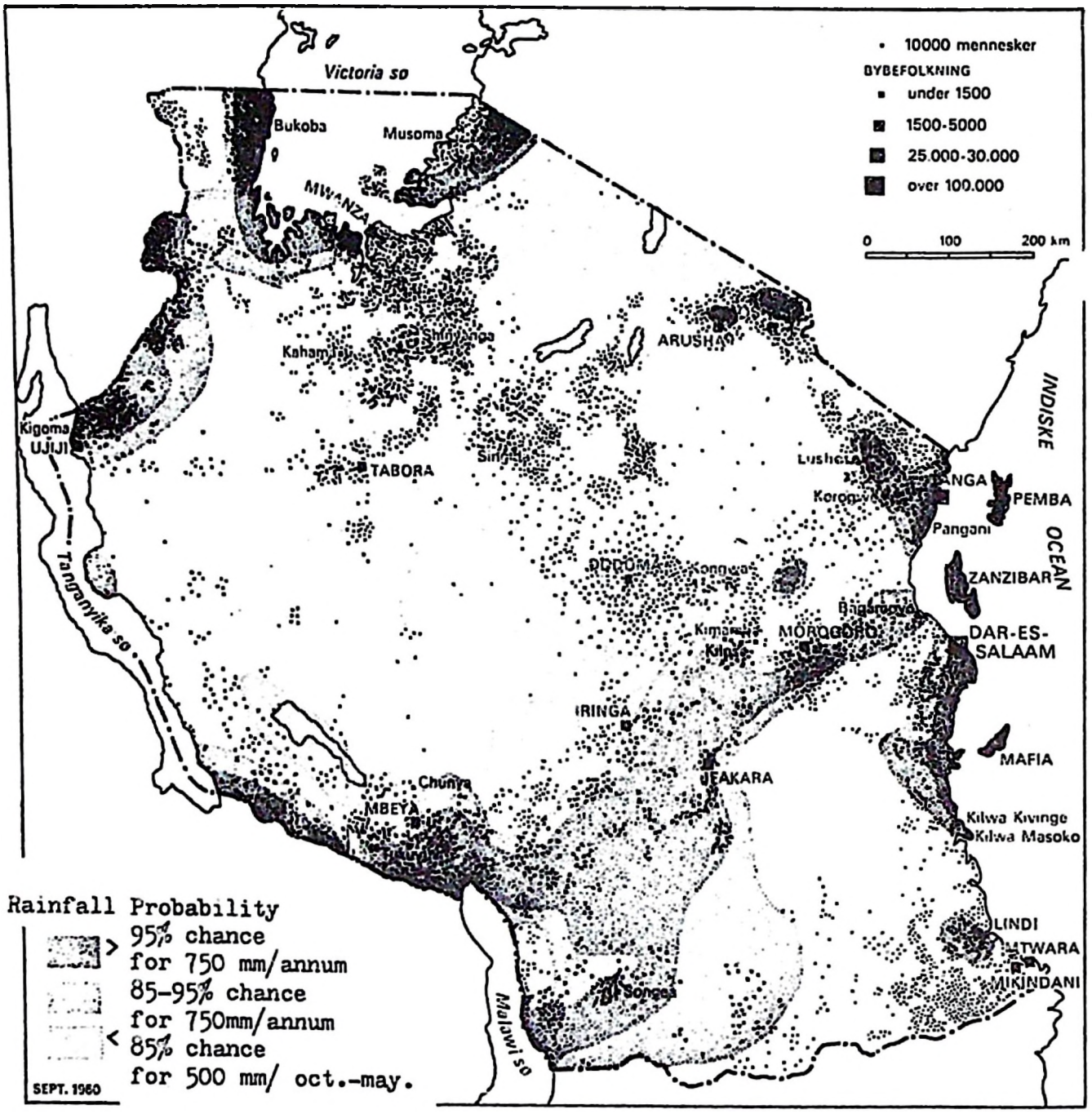
Table 1.2 Annual Population Growth Rates, Tanzania.

	1948-57	1957-67	1967-78
	%	%	%
Dar es Salaam	7.1	7.8	9.7*
Urban	7.0	6.5	8.5*
Rural	1.7	3.0	2.9
Total	1.8	3.1	3.3

*) some of the growth is due to a redefinition of town boundaries

Source: Computed from the statistics given in Table 1.1 above.

Figure 1.3 Spatial Distribution of Population and Rainfall Distribution.



Source: Svendsen and Teisen (1967),p.32.

1.3.2 Land Tenure and Farming Structure

Presently the main forms of land tenure in Tanzania are: (1) customary land tenure, (2) communal land tenure, (3) right of occupancy land, and (4) leasehold land tenure.[20] Practically all land in the peasant sector is used under the customary land tenure form that gives a usufruct right to the land. Communal land tenure is also held in the peasent sector, but as we shall see shortly this accounts for only a small share of land use. In the large scale farming sector land is used under either right of occupancy land ternure or leasehold land tenure. Much of the leasehold land consits of land for which a freehold title deed had been issued during the colonial period. But in 1963 all freehold title deed land was converted to leasehold land. There is no major difference between right of occupancy land tenure and leasehold land tenure.[21]

In Table 1.3 the regional land use pattern as revealed by an agricultural census conducted in 1971/72 is reported Reading Table 1.3 it appears that land is still in ample supply in Tanzania, with only some 4-5 percent of total land area cultivated. However, such a conclusion would be very superficial. In Figure 1.2 and 1.3 we have seen that much land is unsuitable for agricultural purposes. The rainfall pattern is in many places insufficient to give the cultivators a reliable food harvest, and the cost of eradicating the tsetse flies has so far inhibited the use of much land for agricultural purposes.

The dominance of the peasant sector over the large-scale farming sector is clearly borne out in Table 1.3. According to the census report of 1971/72 the large-scale farming sector accounted for only some 8 percent of all land cultivated. Land cultivated in the large-scale farming sector has probably increased somewhat since the date of the

census report, but it is still not likely to exceed 10 percent of all land cultivated in Tanzania. For some regions, though, the level of large-scale farming is of considerable importance, especially in regions well-endowed with fertile land such as, e.g., Arusha, Kilimanjaro, Morogoro and most obviously Tanga, where the large-scale farming sector accounts for nearly 50 percent of all land cultivated.

Table 1.3 Land Use Pattern by Regions 1971/72.

Name Region	Total land area '000 ha.	Cultivated Land*							Land Use
		Individual Plots			Ujamaa Farming		Large Scale Farming		
		Total land '000 ha.	Average size farm ha.	(a)	Total land '000 ha.	(b)	Total land '000 ha.	(c)	(d)
Arusha	8210	186	1.43	84.4	1.6	0,8	26.0	12.2	2.6
Coast	3380	150	1.19	93.5	5.2	3.3	20.4	11.6	5.2
Dodoma	4130	182	1.18	95.0	6.8	3.6	0.5	0.3	4.6
Iringa	5685	193	1.40	91.0	1.4	0.7	17.9	8.4	3.7
Kigoma	3705	67	0.80	97.4	1.5	2.2	0.3	0.4	1.8
Kilimanjaro	1320	129	0.98	95.4	-	-	29.3	18.5	12.0
Mara	2175	101	1.35	91.5	1.7	1.6	0.7	0.7	4.7
Mbeya	8315	208	1.03	94.7	4.2	2.0	7.5	3.4	2.6
Morogoro	7310	163	0.82	97.1	1.5	0.9	39.1	19.2	2.8
Mtwara	8275	282	1.07	93.1	8.4	2.9	6.3	2.1	3.6
Mwanza	1965	272	1.73	83.1	2.2	0.8	0.6	0.2	14.0
Ruvuma	6125	259	2.26	78.6	2.1	0.8	3.5	1.3	4.3
Shinyanga	5075	363	2.22	81.7	0.7	0.2	0.7	0.2	7.2
Singida	4935	114	1.55	93.6	2.4	2.1	0.4	0.3	2.4
Tabora	12200	132	1.33	90.0	1.2	0.9	1.2	0.9	1.1
Tanga	2680	118	0.85	97.1	5.0	4.1	108.8	46.9	8.6
West Lake	2875	130	0.77	97.0	0.6	0.5	4.9	3.6	4.7
Total	88360	3069	1.26	91.8	46.6	1.5	268.1	7.9	3.8

*) excludes grazing land and fallow land.

(a) = percent of peasants' farms that were less than 3 hectares

(b) = percent of all land cultivated by peasants

(c) = percent of all cultivated land

(d) = total cultivated land in percent of total land area

Sources: URT/TAKWIMU, Statistical Abstract 1973.; URT/TAKWIMU (1979c), Vol.I. Tables 2.01-2.18, and Vol. II. Tables 3.0-3.2.

The size of the peasant farm is obviously very small. The national average size of a peasant farm was, according to the census report, only 1.26 hectares. But, again, there are some marked differences in the size of the peasant farm in the different parts of the country. In densely populated areas peasant farms tend to be smaller than in areas that are less densely populated. One the whole, though, the peasant sector is apparently fairly homogeneous with some 90 percent of all peasant farms being of less than 3 hectares.

Practically all peasant farming is done on individual plots of land. Ujamaa farming, i.e. communal farming, accounted for only some 1.5 percent of all land cultivated by peasants in 1971/72. It is however clear from Table 1.3 that the extent of communal farming also varies greatly in different parts of the country. These differences can partially be explained by reference to differences in the availability of uncultivated land. In the densely populated areas, such as West Lake, Kilimanjaro, Mwanza and Shinyanga region, shortage of land has probably been a major factor behind the lack of progress on communal farming. The statistics reported in Table 1.3 are admittedly rather out of date, nevertheless communal farming has probably not increased much beyond the level reported for 1971/72 since, as we will learn in Chapter 2, communal farming has not been emphasised so much in the rural development programmes of the 1970s.

The dual structure of the agricultural sector in Tanzania is also clearly borne out by the statistics on crop marketing reported in Table 1.4. Two structural aspects of crop marketing are reported in Table 1.4: (1) the sector of supply, and (2) the type of crop. The peasant sector appa-

rently also dominates in crop marketing, accounting for some 70-75 percent of all deliveries to the official marketing system, and cash crops are the dominant crops marketed in the official marketing system - accounting for some 80 percent of the total value of all crops marketed.[22)]

Table 1.4 Cash Crops and Food Crops Marketed in the Official Market, Tanzania, 1967- 1980, selected years.

Sector / Crop	1967/68 shs. mil.	%	1970/71 shs. mil.	%	1973/74 shs. mil.	%	1976/77 shs. mil.	%	1978/79 shs. mil.	%	1980/81 shs. mil.	%
	current prices											
Peasant Sector												
Cash Crops	364		575		644		1205		1146		1432	
Food Crops	43		103		68		153		587*		300	
Total	407	60	678	71	712	65	1358	73	1735	78	1732	74
Large Scale Farming												
Cash Crops	226		214		334		384		366		454	
Food Crops§	42		62		57		117		137		163	
Total	270	40	276	29	391	35	507	27	503	22	617	26
Total Both Sectors	677	100	954	100	1103	100	1859	100	2238	100	2349	100
Total Cash Crops	592	87	789	83	978	89	1589	86	1514	68	1886	80
Total Food Crops	85	13	165	17	125	11	270	14	724	32	463	20
Total All Crops	677	100	954	100	1103	100	1859	100	2238	100	2349	100

*) A very good harvest plus large purchases of non-preferred food crops that prior to 1976 had been non-scheduled crop

§) Sugar and wheat only. Some paddy/rice are also produced in the large scale farming sector.Unfortunately the statistics for these latter crops are not readily available and therefore paddy/rice and maize are in this study being counted as being produced in the peasant sector. On the other hand all wheat is counted as being produced in the large-scale farming sector even though some wheat is also being produced in the peasant sector. But,again, the statistics on the latter are not readily available. However this treatment of the statistics of food grains is not likely to affect greatly the general picture presented in this table.

Sources: Computed from the statistics reported in Appendix Tables A.1-A.2,B.1 and Table 5.5 in Chapter 5.

1.3.3 Economic Structure

The developments in national accounts production indices of the agricultural and the manufacturing sectors in Tanzania are reported in Tabel 1.5. In a country where presently some 85 percent of the population is directly dependent upon agriculture the agricultural sector will quite naturally dominate the national accounts production statistics. The dominance of the agricultural sector in these statistics is, however, considerably less than its dominance in the population census statistics. Value added of the agricultural sector apparently only accounts for some 40 percent of total GDP.

The development in agricultural exports is also reported in Table 1.5. Agricultural exports are not equal to the marketed surplus from agriculture, but represent a substantial share of the marketed surplus channelled through the official market. In Table 1.4 we have seen that cash crops which are primarily for export, acount, for some 80-85 percent of all crops marketed in the official market. From Table 1.5 it is clear that this surplus is of great importance for the economy. Real agricultural exports show a dramatic decline and, given the dominance of agricultural exports in the export statistics, total exports have also declined. This decline seems to have had an effect on the rate of structural transformation of the economy. Output produced in the manufacturing sector increase quite rapidly during the period from the mid 1960s to the early 1970s, but with the steady decline in exports manufacturing output seems to have slackened off, and during the latter half of the 1970s it even declined. Thus the validity of Maurice Dobb's supposition (see page 2) appears to hold.

Table 1.5 Value Added in the Agricultural Sector and the Manufacturing Sector, Tanzania, 1966-1980, selected years.

Sector	1966	1970	1974	1976	1978	1980
Manufacturing						
Production index[a]	100	136	171	183	200	170
Share of GDP	8.1	9.3	10.0	9.5	9.2	7.1
Agriculture						
Production index[a]	100	108	112	135	163	174
Share of GDP	45.3	41.7	36.7	39.2	41.9	41.1
Export index [b]	100	79	63	79	71	55
Share of total export	68.2	74.7	84.5	82.8	85.8	75.0

a) index of value added in constant 1966 prices

b) agricultural exports index in real term, see Table 6.3 , in Chapter 6.

Source: Computed from the statistics reported in URT/TAKWIMU, (1981a), Table 1.

Table 1.6 Value Added in the Non-Agricultural Sectors by Public and Private Sector, Tanzania, 1970-1980, selected years.

Sector	1970	1972	1974	1976	1978	1980
			% of Total			
Public Sector	31.6	35.3	35.6	39.0	40.0	49.3
Public Services	19.0	19.5	21.0	21.3	20.1	21.8
Parastatal Firms	12.6	15.8	14.6	15.7	19.9	27.5
Private Sector	68.4	64.7	64.4	63.0	60.0	50.7
Total shs. mil.[a]	4834	6012	8520	11464	13934	17187

a) value added at factor costs in current prices

Sources: Computed from the statistics reported in URT/TAKWIMU, (1979a, 1979b, 1981a), Table 1, Appendix Tables 1-24, and Table 1 respectively.

In the non-agricultural sectors outputs produced in the public sector and in the private sector have grown at very different rates during the post-colonial period. This can be seen in Table 1.6, where a breakdown of the non-agricultural sectors value added estimates for the public sector and the private sector are reported. Reading this table it is clear that the public sector has expanded much faster than the private sector during the past two decades. Between 1970 and 1980 the share of the non-agricultural sectors' GDP produced in the public sector increased from 1/3 to 1/2.

In the course of this study we will find that this difference in the growth rates of output produced in the public sector and in the private sector outside the agricultural sector, and changes in the composition of output produced in the agricultural sector, are interrelated.

1.4 Aims and Plan of the Study

The main aim of this study is to make a contribution towards a proper understanding of the agricultural development of one LDC, in this case Tanzania. In this task the author has the advantage of having worked within the Tanzanian civil service for a total of eight years on three different occations in the course of the past sixteen years.

Central in this study is the marketed surplus produced by small-scale farmers i.e. peasants. We shall seek to learn what factors have governed the size and the composition of the surplus produced in the post-colonial period. In this task we shall rely on various sources of official statistics and the wealth of materials that have been written on Tanzania's development efforts in the post-colonial period. In addition the author will make extensive use of statis-

tics retrieved and compiled by himself.

In our search for the major determinants of peasant production and consumption decisions we shall make use of standard economic theories. This study aims to challange the view that the market forces such as relative prices do not influence peasant behaviour in Third World countries. One advocate of this view is Göran Hydén who in his 'search for the structural determinants of peasant behaviour in rural Africa'[23], argues that 'On the whole, Marxist and marginalist economists alike have overemphasized the market as the determinant of Africa development'.[24] The major determinant of peasant behaviour, Hydén claims, is what he calls 'the economy of affection'[25], where production is primarily concerned with the problem of reproduction rather than production as an end in itself. On the other hand this 'economy of affection' gives the peasants a high degree of autonomy, which Hydén argues neither market forces nor political forces have been able to break.[26]

The scope of this study prevent us from venturing too far into an analysis of political forces and their effects on production and consumption, but we shall see that market forces are significant determinants of the production and trade decisions of the peasants.

In our study we shall proceed as follows. In Chapter 2 we set the stage for an analysis of the development of agricultural production by giving a short review of agricultural development since the turn of the century to the present date. The main purpose is to trace the historical origin of the present farming structure that has been described in Section 1.3. We shall also seek to learn the extent to which the various agricultural development strategies have influenced developments in agricultural production. A more systematic analysis of the recent trend (1953-

1980) in production will, however, be given in Chapter 3.

In Chapter 3 we will find that crop production in the peasant sector during the past three decades has increased at a fairly constant rate that has been higher than the growth rate in rural population , but that the composition of the output produced has changed rather markedly during the last 15 years. Food crop production has increased whereas cash crop production has declined. This change in the composition of production we will find has been governed by market signals, that is producer prices in the official market and in the traditional food market. We will therefore in Chapter 4 and Chapter 5 go into a more detailed analysis of the factors behind the price developments in these two markets.

In Chapter 4 we examine the price system of the official market. From this examination we will find that the principal policy instruments, namely taxes, the exchange rate and the stipulated marketing margin of the official marketing agents, have all been used in such a way that producer prices of cash crops have been depressed and, as a result, the relative price between cash crops and food crops has changed strongly in favour of food crops. Moreover we find that in the process of altering the relative price between these two major categories of crop, the whole viability of the official marketing system has been undermined.

In Chapter 5 we set out to analyse the functioning of food markets in order to shed some light on what factors have governed the development of prices in the traditional food market as well as the quantities traded in the two markets. Prices of food in the traditional food market are seen to have been substantially higher than prices of food in the official market from about 1970. The higher prices of food in the traditional food market are a reflection of substan-

tial excess demand in the official market at the stipulated official price.

The presence of excess demand in the official market we shall link to two factors (1) unrealistically low prices, and (2) a decline in food grain production, notably wheat, in the lage-scale farming sector. The substantial excess demand in the official market has pushed up the prices of food in the traditional food market.

The high food crop prices in the traditonal food market have induced peasants to switch their resources away from cash crop production to food crop production. But since food crop prices in the traditional food market have been higher than in the offical market, peasants have to a large extent preferred to market their crops in the traditional food market. This has greatly weakened the viability of the official marketing system.

In Chapter 6 we shall seek finally to demonstrate that the recent change in food crop production in Tanzania has been counter-productive. This we shall do by pointing to some adverse effects the recent emphasis on food crop production has had on such national aggregates as employment, trade, savings, investment and the growth and distribution of income. The author thus advocates a policy which seeks to induce the peasant to switch some of their resources back to cash crop production.

The sucess of such a policy, we will argue, will depend inter alia on how the following two key problems are solved: (1) the 'release' of the production constraint in the peasant sector, and (2) an efficient incentive policy for cash crop production. Some suggestions as to how these two problems might be solved are offered in conclusion.

Footnotes Chapter 1

1. Kuznets (1959) pp. 59-60 cited by Nicholls (1963) pp. 1-29.
2. This quatation is borrowed from Lipton. (1977) p. 94.
3. Maurice Dobb (1954) cited by Dubey (1963) p. 689.
4. Lewis (1954).
5. Fei and Ranis (1964) and Jorgensson (1961).
6. Hornby (1968), Dixit (1969), and Zarambka (1970).
7. Sah and Stiglitz (1984).
8. In the literature a distinction is usually made between 'primitive' socialist accumulation and 'pure' socialist accumulation. The latter term refers to accumulation created out of profit made in the socialized industrial sector. For a brief account of these two form of socialist capitel accumulation see e.g. Dixit (1969).
9. Apioneering study on the role of capital accumulation for economic growth is Solow's (1957) study of the US economy 1909-1949, where he found that about 90 percent of the growth in per capita GDP per man hour was due to technological progress, whilst the rest could be attributed to increases in capitel intensity.
10. In many places in Tanzania non-scheduled crops such as e.g. bananas and sweet potatoes are the most important staple food crops. This seems to have been overlooked in a recent assessment of food crop production in Tanzania, see Moore et al. (1981).
11. Johnston and Mellor (1961).
12. Griffin (1974) and Lipton (1977).
13. Robinson and Schutjer (1984) p. 364.
14. Ibid.
15. Morgan (1972) cited by Coulson (1982) p. 6.
16. Greenway (1944/45) cited by Fuggles-Couchman (1964).
17. Iliffe (1971) Chapter 1.
18 For an account of the sisal industry in Tanzania see e.g. Gwyer (1971), Groyert (1971) and Lawrence (1971).
19. The coffee industry has also been extensively studied in Tanzania. The more well-known studies are: Sykes (1959), Beck (1961), Friedrich (1968), Ruthenberg (1968), Saylor (1973), Mbilinyi (1976), Ellis and Hanak (1980) and Tibaijuka (1984).
20. URT (1983) p. 3.
21. A good description of the land tenure system in Tanzania can be found in James (1970).
22. Quite a large number of studies on agricultural marke-

ting have been conducted in Tanzania. The more well-known that we shall draw on in this study are: Helleiner (1966, 1968), Kriesel et al. (1970), Yoshida (1970), Livingstone (1971b, 1971c), Ödegaard (1974, 1975), Temu (1974), and Ellis (1979, 1980). The statistics reported in URT/MDB Agricultural Price Review, published annually since 1976/1977, will also be extensively drawn upon this study.

23. Hydén (1980) p. 5.
24. Ibid. p. 20.
25. Ibid. p. 18.
26. Ibid. p. 30.

CHAPTER 2

AGRICULTURAL DEVELOPMENT STRATEGIES: A HISTORICAL REVIEW

In order to facilitate the analysis of the factors that have governed the recent developments in agricultural production that will be given in the ensuing chapter, we shall in this chapter give a short historical review of the agricultural development strategies pursued. The purpose will be to trace the historical origin of the cropping pattern and farming structure that we have briefly described in Chapter 1. We shall also seek to learn the extent to which the policies pursued have affected the development of agricultural production.

Based on major differences in agricultural policies pursued and changes in the institutional setting, the recent history of Tanzania may be divided into seven periods. These periods are: (1) The German Period 1885-1920, (2) The Commencement of British Rule 1920-1930, (3) The World Economic Depression 1930-1938, (4) The Second World War Decade 1938-1948, (5) The Post-Second World War Period 1948-1961, (6) The Pre-Arusha Declaration Period 1961-1967, (7) The Post-Arusha Delaration Period. Our account of the agricultural development strategies pursued in these periods follows in the same sequential order.

2.1 The German Period 1885-1920

The present borders on the African map were to a large extent drawn at a conference held in Berlin in 1884-85. At this conference the European powers decided to divide Africa into their respective spheres of influence. East Africa was divided between England and Germany. Tanzania was

claimed by the Germans to be under their protection. Kenya and Uganda were claimed by the British.[1)]

The prime objective of the Germans in Tanzania was to develop a reliable source of supply of strategic raw materials for German industry, especially for military products.[2)] Agriculture was to be based on large scale farming. Land was alienated to German settlers. The first land to be alienated was in Pangani valley. This valley was not only suitably located with its outlet on the coast, but it was also quite fertile. Before the arrival of the Germans this valley used to provide Zanzibar, a major trading town on the East African Coast, with all its requirements of food grains.[3)] The Germans found that this valley was better suited to produce sisal.

Production of sisal was to be based on the plantation system since sisal had to be processed before it could be exported to Germany. The acquisition of machinery and other equipment needed in processing meant that a considerable amount of capital was needed in order to start up sisal production.[4)] In Chapter 1 we learned that the large-scale farming sector consists of such heterogeneous farming units as estates, state farms, settler farms, missionary farms etc. This difference in the farming structure has a historical origin in the differences in capital requirement for different crops. Sisal production required more capital than settler farmers on their own could raise and partly for this reason sisal has in Tanzania primarily been produced on large estates owned by big companies, but managed by management teams from Europe. The settler farmers instead initially took up production of less capital-intensive crops such as, e.g., food grains and various types of oil-seed crops.

In order to force the natives to take up employment on the

sisal estates and the farms of the settlers a poll tax was introduced for the first time in 1898.[5] The wage paid was however very low and the working condition harsh and as a result the Germans soon learned that labour was not in 'unlimited supply', as assumed by Lewis in his famous model from1954. Rather than working for the Germans the natives preferred to take up cash crop production when such opportunities gradually arose with the development of the communication infrastructure.

The settlers naturally sought to prevent the natives from taking up cash crop production since this would reduce the supply of labour to their own farms. However, as we shall shortly discover the attitude of the colonial administration towards peasant cash crop production gradually changed and as a result peasant cash crop production started to rise quite rapidly.

The Germans initially tried to organize the natives to produce cash crops in village settlement schemes under their own direct supervision. These village settlement schemes were, however, so much resented by the natives that in 1905 a large scale rebellion/war broke out.[6] It took the Germans two years to supress this rebellion and in the end the village settlement schemes where cotton was be produced, had to be abandoned. When the rebellion was supressed a new governor arrived, Governor Rechenburg, and he started to advocate a policy of developing agriculture based on peasant farming.[7] The objective of the Germans in 1908, as expressed by the Colonial Secretary Dernburg, reads as follows: 'We have not gone to East Africa to found plantations for 300-400 people, but to make a vast country bloom, to find raw materials and create markets for German trade and industry'.[8]

An indication of the growth rate in crop production during

the latter half of the German period is reported in Table 2.1, which shows developments in the export trade. An important point to note in Table 2.1 is that during the early period most of the exports consisted of such non-cash crops as wild rubber, bee-wax and hides and skins. Export of these products has however gradually declined relative to the export of cash crops, which more and more have come to dominate the export statistics.

Table 2.1 Export Trade Structure, Tanzania 1900 and 1913.

Produce/Crops	1900 value £ '000	% [a]	1913 tons '000	1913 value £ '000	% [a]
Sisal	na		20.9	535	30
Wild Rubber	90.6	45	1.3	309	18
Hides and Skins			3.4	275	15
Copra			5.5	117	7
Cotton			2.2	98	5.5
Groundnuts			9.0	96	5
Beewax	na		0.6	71	4
Coffee			1.1	47	3
Sesame			1.5	20	1
Rice			0.8	9	0.5
Sugar			-	-	-
Others			na	200	11
Total	209.4	100	46.3	1778	100

a) in percent of total export value
na= no data available

Sources: Iliffe (1979), p. 130, and Coulson (1982), Table 7.1.

Another important aspect of the early development of the export trade in Tanzania was that production of cash crops for export in the large-scale farming sector and in the peasant sector developed roughly at the same pace.[9] As a result neither of the two sectors ever came to dominate, as happened for example in the neighbouring country Kenya, where settler production of cash crops came to dominate the early development of the export trade in that country.

No statistics are available that can indicate any trend in peasant food crop production during the German period. Brooke, writing on the heritage of famine in Central Province, reports that food shortages have occurred regularly in this area.[10] These shortages are, however, primarily the result of natural calamities such as for example droughts, locusts and rinderpests, and not the result of an expansion in cash crops production that diverted land away from food crop production. In fact in this area hardly any cash crop production has developed yet. In this study we shall find that crop failure in Tanzania is highly location-specific to the Central Province that has now been renamed Dodoma Region.

Much of the present communication network was built during the German period. The Northern Railway Line was opened in 1911. This line went inland from Tanga, a small port on the coast, up through Pangani valley to the fertile slopes of Mount Kilimanjaro. The Central Railway Line was opened up a few years later in 1914. This line went across the whole country from Dar es Salaam, the major port and administrative centre on the coast, up to Kigoma, a small trading station on the shore of Lake Tanganyika. These railway lines greatly enhanced the viability of cash crop production. However, it was not really the railways that opened up Tanzania to world trade. This, John Iliffe argues, had been done long before by the Arab traders who had establis-

hed trading stations and organized caravan trading all over the country long before the arrival of the Germans.[11)]

Nevertheless, the establishment of the plantation system by the Germans had a profound impact on the agricultural production pattern that developed. In the vicinity of the estates the natives found it more profitable to produce food crops for sale to the workers on the estates rather than to work on the estates themselves for very low wages. Further away from the estates cash crop production was taken up by the natives when such possibilities gradually arose with the expansion of the improved communication facilities. This was the origin of the present peasantry in Tanzania.

The main source of supply of labour for the estates and the settler farms was in the areas that were the most remote. In these areas the transport cost was too high for cash crops to develop and as a result there were no alternatives for the natives to earn money to pay taxes other than in seeking wage employment for the Germans. Since the wage was too low to support the worker's living and that of his family no permanent and skilled labour force could develop. All wage employment on the estates and settler farms was based on migrant labour.[12)]

2.2 The Commencement of British Rule, 1920-1930

Tanzania was declared a British Protectorate under the auspices of the League of Nation in 1920 after Germany had lost the First World War. The British continued with very much the same policy as the Germans .[13)] The policy objectives of the British as expressed by Governor Cameron in 1926 read as follows: 'The first object of the Government is to induce the native to become a producer directly or indirectly, that is, to produce or to assist in producing

something more than the crop of local foodstuffs that he requires for himself and his family'.[14)]

Initially the major methods of achieving, this objective was to expand the communication network. The road network was greatly expanded during the early years of British rule and in 1928 a branch of the Central Railway Line running through Sukumaland was completed. The construction of this branch gave a considerable spur to the development of cash crop production in this area. This is evidenced in Table 2.2, where the early developments in cash crop production in three areas that have come to dominate peasants' cash crop production are reported. These areas are Bukoba district, Kilimanjaro district and Sukumaland. Bukoba is located on the western shore of Lake Victoria, Kilimanjaro is as the name indicates located around the famous Mount Kilimanjaro, and Sukumaland covers several districts on the southern shore of Lake Victoria.

In the peasant sector the first to take up cash crop production were their leaders i.e. the local chiefs. The policy of the British to rule the natives through their leaders probably accentuated the early lead of the chiefs in cash crop production. In a survey from Shinyanga in 1923 it was found that some 76 percent of all cotton was produced by the chiefs.[15)] In Bukoba district production and consumption of coffee had for a long time been part of an ancient ritual that was controlled by the chiefs.[16)]
The opening up of Bukoba to world trade greatly enhanced the value of land in coffee production and the prominence of the chiefs.

Table 2.2 Peasants' Cash Crop Production, 1922–1938, selected districts.

year	Kilimanjaro mild coffee*)	Bukoba hard coffee*)	Sukumaland seed-cotton
1922	na	2800 (a)	na
1923	32	na	na
1924	48	4300 (81.1)	963
1925	64	5000 (83.3)	1346
1926	80	na	1941
1927	264	4200 (63.6)	1288
1928	308	na	1405
1929	413	7100 (79.8)	1340
1930	672	na	1505
1931	740	na	1178
1932	867	7700 (67.5)	1403
1933	716	6900 (54.3)	2742
1934	1275	na	4789
1935	1475	10600 (57.0)	na
1936	722	na	na
1937	1177	7600 (55.9)	na
1938	1566	9600 (70.0)	12132

*) The difference between mild coffee and hard coffee is that the former type of coffee is produced from the Arabica coffee tree whereas hard coffee is primarily produced from the Robusta coffee tree

(a) = coffee production in Bukoba in percent of total coffee export

na = do data available

Sources: mild coffee: Saylor (1973), Table 14.1, hard coffee: Friedrich (1968), Table 1 and Coulson (1982), Table 7.5, seed-cotton: Hydén (1980), Table 2.1 for the period 1924–1934 that only reports production for Mwanza district in Sukumaland. The figure of seed-cotton production for 1938 is reported by McLoughlin (1964), Table 9.

In this district the chiefs controlled the use of land under a local feudal land tenure system known as Nyarubanja. With the commercialization of coffee production the chiefs now started to demand a small fee to be paid in cash by the peasants for coffee produced on land held under the Nyarubanja land tenure form. The system was, however, probably not operated on a very large scale, but it continued until after independence. It was abolished in 1965.[17)]

The early development of coffee production in Tanzania was greatly dominated by coffee production in Bukoba. Up to the end of the 1920s some 80 percent of all coffee export was produced by the peasants in this district. The early lead in coffee production in this district was primarily due to the fact that it was only in this district that the coffee tree was an indigenous plant. In all other areas where coffee production was taken up a new plant was introduced.

Bukoba was also connected to world trade with modern communication facilities before Kilimanjaro, which was later to become dominant in coffee production. In 1903 a steam boat service had been opened up on Lake Victoria and this service was linked up with the new Mombasa-Nairobi-Kampala Railway Line. All coffee production in Bukoba was shipped out on this railway line through Kenya right up to the end of the 1960s.[18)] Kilimanjaro was connected to world trade with the railway line some 10 years after Bukoba.

2.3 The Word Economic Depression 1930-1938

In 1930 the big crash in the world economy came. Prices of Tanzania's principal export crops fell dramatically. The export price of sisal fell from £ 32 per ton in 1929 to £ 11 per ton in 1932 and likewise the export price of coffee fell from £ 59 per ton in 1929 to £ 20 per ton in 1933.[19)] The decline in export prices put a great strain on the

economy. The infrastructure had been greatly expanded and its maintenance was dependent upon a steady flow of government revenue from agricultural production. It was thus vital for the British to uphold the production level reached.[20]

In order to prevent peasant production from falling a 'carrot and stick' policy was introduced. Different rules and regulations were imposed on the peasants which all aimed at maintaining production. Minimum acreage laws were for the first time introduced. According to these laws the peasants had to plant a certain minimum acreage with both cash and food crops or else be fined or go to jail.[21] Peasants could also be finded if they did not apply a cultivation technique which the agricultural extension services thought to be the most suitable to prevent soil erosion. However, the peasants were in general not too keen on applying the cultivation technology recommended by the extension service because they considered the new technologies to be inferior to their own methods. Later agronomic research findings have also concluded that the advice offered by the extension service during this period in many cases was poor.[22]

During this period the tax burden was also increased to keep the pressure on the peasants to maintain the production level. The tax burden was simply raised by maintaining the same tax rate in spite of the dramatic fall in cash income of the peasants which resulted from the sharp falls in cash and food crop prices. The peasants who could not pay their taxes were simply conscripted into the government's labour force.[23]

Cooperatives were introduced for the first time during this period. This was done partly to facilitate the marketing of peasants' produced output, but it was also a convenient

'carrot' that could be offered to the peasants for their production efforts. (In Chapter 4 where we analyse the functioning of the price system of the official market we shall provide a more detailed account of the history of cooperatives in Tanzania.)

The policy of the British was successful in the sense that agricultural production did not fall during the 1930s. Both coffee and cotton production increased, as can be noted in Table 2.2. Reading Table 2.2 and similar tables that will be presented later in this study it is, however, of great importance to recognize that peasants have switched their land and labour resources into different lines of production depending upon which crop is most profitable.

According to export statistics provided by Andrew Coulson, between 1913 and 1938 cotton exports increased from 2,200 tons to 9,100 tons while during the same period exports of groundnuts declined from 9,000 tons to 3,600 tons.[24] Madaha reports exactly the same pattern in his historical study of the development of cash crop production in Shinyanga district, which lies in the heart of Sukumaland the major cotton growing area. In this district between 1933 and 1936 production of cotton increased from 117 tons to 1,188 tons while production of groundnuts declined from 4,177 tons to 3,078 tons.[25] This switching of resource allocation between different lines of production is a phenomenon that is very characteristic of the development of crop production in the peasant sector, as we shall see thoughout this study.

The development of food crop production during this period is much harder to assess since only scanty observations on food crop production are available. It appears from the few studies that have been made that food crop production during this period also continued to grow at a rate suffi-

cient to meet subsistence food requirements except for the occasional shocks to food supply caused by natural calamities in the Central Region.[26]

In the large-scale farming sector sisal output also continued to expand during the 1930s despite sluggish export prices. Exports of sisal increased from 50 thousand tons in 1930 to 101 thousand tons in 1938.[27] The settler farmers who did not have the same financial resources to draw on as the large sisal estates had, however, a very difficult time during this period.[28] The Second Word War probably rescued them from financial ruin.

2.4 The Second Word War Decade 1938-1948

During the Second World War all agricultural crops produced in Tanzania were classified as strategic and non-strategic crops. Food grains and sisal were classified as strategic crops immediately after the outbreak of the war[29] Large amounts of food grains were needed by British military forces overseas and the British Navy had huge requirements for the twine and ropes produced from sisal fibres.

Settler farmers were encouraged to increase food grain production. Masao Yoshida reports that the government provided the settlers with (1) a guaranteed price, (2) a guaranteed minimum return per acre, (3) advances against a guaranteed minimum return, and (4) in approved cases grants to open up new land for cultivation. [30] Food grain production on state farms was also initiated during the Second World War. A large farm was established in the Northern Province to produce wheat. The farm was never, though, very successful. In 1945 some 22 000 acres were cropped, but only an average of 3 bags per acre was harvested. The farm was abandoned in 1947.[31]

An indication of the development of peasant cash crop production during the period 1938-1948 is reported in Table 2.3. Reading this table one may get the impression that peasant production stagnated, but this was probably not the case. It is more likely that Table 2.3 reflects a change in resource allocation in different line of production. The decline in cotton production was most probably induced by a change in the price of cotton in terms of competing crops. Cotton had been declared a non-strategic crop during the war, ostensibly owing to the huge US stockpiles of cotton and as a result cotton prices were very depressed.[32] Producer prices of cotton during the early 1940s were actually lower than during the early 1930s when crop prices in general were at an extremely low level.[33] On the other hand food crop prices were probably quite buoyant during the early 1940s since food crops had been declared strategic crops. The severe drought which in 1941/42 had again caused a bad harvest of food crops probably also caused food crop prices to increase and thereby induced a change in resource allocation away from cotton to food crop production.[34]

The flexibility with which peasants have been able to switch their resources into different lines of production, depending upon which crop it has been most profitable to produce can also clearly be seen in Table 2.4 where the land use pattern of an average peasant household in Sukumaland in 1945 and 1961 is contrasted. In the next chapter we shall see that the substantial change in resource allocation which apparently took place in Sukumaland between 1945 and 1961 was partly induced by the sharp rise in the price of cotton in relation to the prices of competing crops.

Table 2.3 Peasants' Cash Crop Production and Producer Prices, 1938 - 1948, - selected districts

year	Kilimanjaro mild coffee		Bukoba hard coffee[b]		Sukumaland seed-cotton	
	tons '000	price shs./ton[a]	tons '000	price*) cents/lb.	tons '000	price cents/lb.
1938	1.57	900	na	6	12.13	6-7
1939	2.14	800	na	8	24.10	na
1940	3.25	620	7.92	6	24.48	na
1941	1.56	760	6.81	13	30.37	na
1942	2.48	1332	8.23	14	20.57	na
1943	1.69	1980	6.10	14	14.88	12
1944	3.27	2100	9.75	14	10.32	12
1945	2.51	2040	8.18	15-17	21.19	14
1946	1.83	2222	4.47	19	20.95	15
1947	3.38	2600	8.59	21	19.57	16
1948	2.62	2860	6.15	25	24.53	24

a) Average export price (auction price) for coffee sold by Kilimanjaro Native Cooperative Union (KNCU). All coffee produced by the peasants in Kilimanjaro has been marketed by KNCU.

b) Refers to total export of hard coffee. Practically all of it has been produced by the peasants in Bukoba district.

*) Producer price of Robusta dry cherry beans

Sources: mild coffee: Saylor (1973), Table 14.1, hard coffee: Yoshida (1970), Chapter VI., seed-cotton: McLoughlin (1964), Table 9.

Table 2.4 Peasants' Land Use Pattern, Sukumaland 1945 and 1961

Crop	1945 acreage*)	%	1961 acreage*)	%
Bulrush Millet	4.09	70.1	1.17	21.1
Maize	0.29	5.0	1.40	25.3
Sorghum	0.34	5.8	-	-
Rice	0.10	1.7	0.23	4.2
Cotton	1.01	17.3	2.73	49.4
Total	5.83	100	5.53	100

*) average acreage in crop production per household

Source: Collinson , (1972), Table 4.

Coffee production is of course also influenced by the price of coffee compared to the prices of competing crops. Bananas and coffee are typically interplanted on the same plot of land. But in production coffee and bananas are more complementary to each other than, for example, cotton and food grains. The banana give shade to the coffee trees that is found to enhance productivity in coffee production. But, the banana apart from being a staple food is also an important source of cash income in the coffee-growing areas.[35] In the subsequent chapters we shall learn that during more recent times there have been some dramatic changes in the relative price between coffee and bananas that most likely have greatly influenced the growth rater in coffee production.[36]

2.5 The Post-Second World War Period 1948-1961

During the late 1940s and the early 1950s there was a continued emphasis on large-scale food crop farming. The most famous example is probably the illfated Groundnut Scheme. The scheme was unfortunately very poorly planned and ended as a very costly experiment.[37] As a result a renewed interest in peasant agriculture arose. Development of the peasant sector was to be based on the so-called Focal Approach.[38] This meant that special attention should be given to the progressive farmers. The progress of these farmers was to act as a focal point and as an encouragement for other peasants to follow suit.

Special credit institutions for the agricultural sector were established during this period. The Land Bank of Tanganyika had been established in 1948, but the bank's lending was confined to the settler farmers. In order to provide peasant farmers with credit facilities the African Productivity Loan Fund was established in 1955.[39] The

major beneficiaries of this institution were the larger progressive farmers in the peasant sector, many of whom were local chiefs.

The British also wanted to abolish the customary land tenure system that was briefly described in Chapter 1. A land tenure system based on freehold title deeds was to be introduced as a means of promoting the progressive farmer-/peasant. This proposal was, however, rejected by the Tanganyika African National Union (TANU), a political party formed in 1954 and led by the future President of Tanzania Julius K. Nyerere.[40)]

During this period, production of cash crops increased quite rapidly. The statistics on crop production during the period 1953-1980 will be presented and analysed in more detail in the next chapter. In general it appears that the increases in production came more from favourable developments in producer prices as a result of high world market prices than from the 'carrot and stick' policy still pursued by the British.

By this time, however, the peasants had become more and more vocal in expressing their dissatisfaction with the agricultural development policy of the British. This dissatisfaction they channelled to a large extent through TANU, which also took over the leadership of the country when the British left in 1961.

2.6 The Pre-Arusha Declaration Period, 1961-1967

The first development plan to be written in independent Tanzania was authored by the World Bank. In this development plan two strategies for agricultural development were delineated. One was termed the Improvement Approach and

the other the Transformation Approach.[41] The Improvement Approach was nothing more than a continuation of the Focal Approach of the British. The Transformation Approach on the other hand involved the establishment of new village settlements where peasants would produce cash crops and food crops under supervision and guidance from the agricultural extension services using modern farming technology such as tractors and chemical fertilizers.

The settlement scheme idea was, as noted at the start of this historical review, nothing new either. The Germans had initially tried to force the peasants to produce cotton in such settlement schemes but had been forced to give up the idea. The British had also on several occations tried to use village settlement schemes as a means of controlling the spread of the tsetse flies, but only with meagre success.[42] The settlement schemes of the early 1960s shared the same fate as their earlier predecessors. These schemes were run for a few years with government support, but when the costs started to soar the schemes had to be abandoned.[43]

In the large-scale farming sector prospects were not so bright. With the change of the regime in 1961 many settlers left the country. At the time of independence the large-scale farming sector did not entirely consist of settlers and estates owned by multinational firms. The number of large farms owned and operated by Africans had gradually expanded. Their progress was greatly enhanced in 1947 when the government's support for large-scale food crop farming was also extended to large-scale African farmers as well. In some of the major food grain producing districts such as in Mbulu and Ismani districts, food grain production on large farms owned by Africans was of considerable importance.[44] However, the prosperity of these farmers raised fears in TANU that a rural class society was about to

develop.[45] In order to pre-empt this development a new rural development strategy was designed, this time by the President himself. The blueprint of this strategy was set out in Nyrerere's pamphlet Socialism and Rural Development[46] that by and large was based on his 1962 paper, Ujamaa - The Basis of African Socialism.[47]

2.7 The Post-Arusha Declaraction Period

In 1967 an important policy document known as the Arusha Declaration was passed by TANU. In this document it was explicitly stated that Tanzania was to follow a socialist path of development. The major means of production, such as the large industries, the large plantations/estates, and financial institutions were accordingly nationalized. In the rural areas also development had to be oriented away from the individualistic peasant form of production since it was held that such a form of production would degenerate into a capitalist form of production. The large-scale food crop farms in Mbulu and Ismani districts were seen as typical examples of the capitalist form of farming. The way to reverse this development was the establishment of yet another form of village settlement. This time they were to be termed Ujamaa Villages.

Ujamaa is a Kiswahili word which in English translation means familyhood. According to Nyerere Ujamaa is based on three fundamental principles: (1) respect each member of a family recognized the place and right of the other members, (2) common property - each person accept the principle that whatever one person has in the way of basic necessities they all have, (3) obligation to work - every member of the family and every guest who shares in the right to eat and to have shelter takes for granted the duty to join in whatever work needs to be done.[48]

The new rural development strategy intended that the principles of Ujamaa should be extended much beyond the family. It fact these principles should be extended to include all residents of the same village such that all resources of the village i.e. the land and the labour, be organized under one village leadership and that the output thus produced be communaly shared by all residents of the village.

Principles of cooperation among the villagers were of course also well-known and practised at the time when the Ujamaa rural development strategy was launched. This form of cooperation, however, was only communal in the sense that it implied mutual aid and reciprocity among the villagers, but not communal ownership. The Kiswahili word for this form of cooperation is Ujima which is not to be equated with Ujamaa: Some critics of the Ujamaa policy have agued that this is what Nyerere has done.[49)]

The blueprint of the Ujamaa rural development strategy actually shared the same charateristics as many other pamphlets written on radical social reforms. The pamphlet Socialism and Rural Development essentially contained a description of an ideal rural community, but the author was not very informative on how to create such a community. It was, however, envisaged that the conversion of the traditional way of living should progress through various stages of development. Three stages were identified, Stage 1, Stage 2 and Stage 3.[50)]

Stage 1 characterizes a stage in development where peasants have moved away from living in separate homesteads and moved to form a village but are cultivating their land on an individual basis. In Stage 2 some communal form of production has been taken up, and in Stage 3 all activities in the village are accomplished on a communal basis.

An indication of the progress of the Ujamaa rural development strategy is reported in Table 2.5 which shows statitics of the number of Ujamaa villages formed and their members for the period 1968-1978.

Table 2.5 Numbers and Members of Ujamaa Villages, Tanzania 1968–1978

Year	No. of villages	No. of members '000	(a)	Average No. of members/village
1968	180	58.0	0.5	322
1969	650	300.0	2.5	461
1970	1956	531.2	4.2	417
1971	4484	1545.2	12.5	345
1972	5556	1980.9	15.3	356
1973	5628	2028.2	15.3	360
1974	5008	2560.5	17.6	511
1975	6944	9140.2	61.6	1316
1976	7684	13061.0	85.0	1700
1977	7373	13506.0	85.0	1832
1978	7631	13775.5	87.0	1805

(a) = percent of total population

Source: Maeda (1980), Table 5.

The statistics on the number and members of Ujamaa villages are, however, poor indicators of the progress of the Ujamaa programme. In Chapter 1 we saw that, by and large, the rural population was living in villages long before the Ujamaa rural development strategy was launched. In the mid-1960s the cooperatives were actually serving the peasants in some 5 000 villages spread out over the whole country. 51)

Hardly any of the villages listed in Table 2.5 can be said to have reached Stage 3 of development. The great bulk of all villages in Tanzania are in Stage 1 and some in an embryo of Stage 2. In Chapter 1, Table 1.3, it was slown that probably not more than 1-2 percent of all land cultivated by peasants during the 1970s was communally cultivated.

A major reason for the lack of progress on communal farming was that labour was such a binding constraint on peasant production.52) The introduction of communal farming meant an additional demand for peasant labour which was already in short supply at the critical time in the agricultural production cycle. There thus arose a conflict between labour needed to secure output on the individual farm and labour needed for communal farming. Naturally in a conflict between the use of labour for communal farming and individual farming priority had to be given to the individual farm since it was the output of this farm that would guarantee a peasant's subsistence food requirements. Thus labour use on the communal farm was in practice residually determined and as a result the productivity of communal farming was much inferior to the productivity obtained on individually cultivated plots of land. Suleman Sumra reports yields per acre in food grain production to be 2-3 times higher on individual cultivated plots of land than on

communal farms.[53] Similar dismal records in communal farming are reported by e.g. Jannik Boesen et al., Dean McHenry, Göran Hydén.[54]

In the actual implementation of the Ujamaa programme during the 1970s the principle of communal production has also largely been ignored. Instead implementation centred on the establishment of the so-called planned development villages. In these villages the peasants could still retain their individual form of farming, but it was argued that productivity in farming could be better enhanced by such methods as e.g. block farming, and in the long run this could lead to the communal form of production.

Reading the general reportage of the implementation of the rural development policy in Tanzania during the 1970s one may get an impression that the whole rural population was moved to these planned villages against their own will.[55] However, no data is available to show how many new village settlements were actually established and how many peasant families were actually resettled against their own free will. The statistics reported in Table 2.5 certainly give a distorted picture, since the great majority of the villages listed in this table are only new village settlements in name but not in physical location. Philip Raikes has described the implementation of the rural development policy during the 1970s as Ujamaa by 'sign painting'.[56] No doubt quite a few peasant families were actually moved against their own will, but it appears that many of the reports on Tanzania during the 1970s tended to exaggerate the number of peasant families that were resettled. The use of force in implementing the Ujamaa policy was nevertheless in direct contradiction to the policy outline as set out by Nyerere. In the original blueprint of the Ujamaa policy great stress was put on the volontary principle in imple-

menting Ujamaa. In this policy document it was explictly stated that the policy of Ujamaa could only succeed when peasants of their own free will came to realize the benefit of the communal way of living. Yet to a certain extent this principle was apparently abandoned in practical implementation of the policy during the 1970s.

Another aspect which has probably also been exaggerated in the general reporting on Tanzania during the 1970s is the negative effect the Ujamaa policy is claimed to have had on agricultural production. Owing to the poor level of planning which preceded the establishment of these planned development villages, it is reported that in many cases the peasants ended up in worse localities than they had been before and that this had had a serious adverse effect on agricultural production.[57] The adverse effect on productionis, however, not very clearly discernable in the available production statistics, as we shall se in Chapter 3.

In general it appears that the Ujamaa policy in practice turned out to be a copy of the 'carrot and stick' policy of the British. Social amenities have been provided in these villages, but the local rules and regulations that the British introduced in the 1930s in their efforts to maintain agricultural production in face of falling prices were again put to use during the latter half of the 1970s.

In the large-scale farming sector old policies have also been revived. In this case it is the agricultural policies of the 1940s with the emphasis on large-scale food production that are being tried out anew. After the costly experiment with state farms in the 1940s and the ill-fated groundnut scheme, only experimental state farms existed in Tanzania during the Pre-Arusha Declaration period. During the 1970s a renewed interest in state farms as a means of

supplementing food grain production in the peasant sector has developed. Lucian Msambichaka reports that between 1975 and 1979 state farms expanded their acreage in food grains from 30,700 hectares to 53,500 hectares. Most of this land was in wheat production. In 1979 some 63 percent of all land in food grain production on state farms was in wheat production. Maize by contrast accounted for only 7 percent, and rice and sorghum for 14 and 11 percent respectively.[58] Some of these state farms have been fairly successful in obtaining high yields per acre, but according to René Dumont and Marie-France Mottin their economic performance did not appear to differ significantly from the records of their predecessors.[59]

2.8 Summary

In this chapter we have seen that by and large the present farming structure and production pattern were established by the end of the German period. The farming pattern which developed can be described in terms of concentric circles around the labour demand centres. Close to the centres of labour demand food crop production for exchange was taken up, further away cash crop production developed, and in the areas that were most remote from labour demand centres no crop production for exchange developed. These areas instead became the main areas of labour supply. This pattern of development is of course by no means novel. Johann Heinrich von Thünen in his study of the pattern of agricultural production in Germany during the 18th and the 19th Century, found that the agricultural production pattern had been very largely determined by its location in relation to major urban industrial centres. Similar patterns have been documented for most industrialized countries after von Thünen's pioneering study.[60]

It appears, however, that there has been a serious lack of

imagination in the agricultural policies pursued. A 'villagization' approach combined with a 'carrot and stick' policy is a common denominator of the agricultural development strategies pursued during the colonial as well as during the post-colonial period. Although this policy has undoubtedly enforced some increases in production, the major determinants of production during the colonial period seem to have been: (1) the imposition of taxes on the local population, (2) the establishment of labour demand centres, (3) the establishment of improved communication facilities, (4) the role of the local elite/leaders in initiating cash crop production, and (5) a natural environment suitable for crop produc[61)] In addition crop prices apparently have had a major impact on the agricultural production pattern that developed. This latter determinant seems to have been relegated to an inferior role in the many studies that have been conducted on the history of agricultural development in Tanzania.[62)] A closer examination of the determinants of agricultural production during the period 1953-1980 is the subject of our study in the next chapter.

Footnotes Chapter 2

1. The arbitrariness with which the borders were drawn at this conference is perhaps best illustrated by the well-known story on how Mount Kilimanjaro came to be within the borders of Tanzania. The story goes as follows: Queen Victoria of England wanted to give her cousin Kaiser Wilhelm of Germany a present. She had been told that there were no snow-covered peaks in the German Empire. Mount Kilimanjaro was therefore found to be the most suitable present. A bend on the straight border line between Kenya and Tanzania was made to accommodate the queen's wish.
2. Iliffe (1971) Chapter 1.
3. Ibid.
4. Coulson (1982) p. 37.
5. Iliffe (1979) p. 120.
6. This rebellion is known as the Maji Maji War. Maji is a Kiswahili word for water. The rebels were led to

believe by their leaders that they would become immune to German bullets after they had been given a sprinkle of blessed water on their bodies. This made them attack the Germans with great ferocity. The rebellion was on such a large scale that historians describe it as a real national war of liberation. A journal published by the TANU Youth League at the University of Dar es Salaam carries the name Maji Maji in commemoration of this war of liberation. For an account of this war see e.g. Iliffe (1979) pp. 168-202.

7. Coulson (1982) p. 39.
8. Ibid. p.33.
9. Iliffe (1979) Chapter 9 reports that in 1912, 1923 and 1929 the output produced by the European settlers accounted for 60, 40 and 55 percent respectively of total exports.
10. Brooke (1967) reports that severe droughts occurred in 1905 and in 1910. The drought in 1905 was particulary difficult because at the same time locusts had infested the area and a rinderpest had decimated the cattle herd. For the first time free famine relief food was offered by the colonial government.
11. Iliffe (1971) Chapter 1.
12. Ibid. pp. 12-18.
13. Coulson (1982) p.45.
14. Ibid. p. 43.
15. Iliffe (1979) Chapter 9.
16. Mbilinyi (1976) p. 42 writes that Robusta coffee had been introduced to Buloka by the Bunyoro conquerors over 300 years ago. The coffee bean was used primarily as iron rations for warriors and travellers.
17. A good account of the Nyarubanja Land Tenure system can be found in e.g. James (1970).
18. Friedrich (1968).
19. Iliffe (1979) p. 343.
20. Ibid. p. 349.
21. Coulson (1982) p. 30.
22. Ibid. pp. 152-157, see also von Freihold (1979) pp. 12-13.
23. Ibid. p.20. The foundation of much of the present road network in Tanzania was actually laid during the colonial period using conscript labour. For further details of the development of the transport infrastructure in Tanzania see e.g. Hofmeier (1973).
24. Ibid. Table 7.1.
25. Madaha (1975) Table 7.
26. Brooke (1967).
27. Coulson (1982) Table 7.1.

28. Jones (1982).
29. Coulson (1982) pp. 45-50.
30. Yoshida (1970) Chapter 6.
31. Ibid.
32. Coulson (1982) p. 49.
33. Madaha (1975) reports that in 1933 a producer price of 9-10 cents/lb. seed-cotton was paid in Usogoro, Kishapu and Uchunga in Shinyanga district. In 1940/41 and 1941/42 Yoshida (1970) reports that the producer price of seed cotton was 8-9 cents/lb. in the neighbouring country Uganda. However, according to Yoshida during the colonial period producer prices of cotton in Uganda were some 2-3 cents higher than in Tanzania. Thus it seems almost certain that the producer prices of cotton in Tanzania during the early 1940s were considerably lower than in the early 1930s.
34. Mwanyika (1976) reports that in Southern Pare cotton production declined from 1323 tons in 1939 to 442 tons in 1942, while production of paddy/rice increased from 800 tons in 1933 to 2130 tons in 1941.
35. Sykes (1959) reports that the value of bananas to be some 3 times higher than the value of the coffee harvest per acre in Kilimanjaro district.
36. See e.g. Tibaijuka (1984) Table 6.1.
37. Hogendorn and Scott (1981) give a total cost of some British L 266.8 millions in 1980 prices. For that amount of money only some 28,600 acres were cropped in 1955, when the scheme was finally abandoned.
38. Coulson (1982) p. 55.
39. For an account of the development of the financial institutions in Tanzania see e.g. Binhammer (1975).
40 Coulson (1982) p. 146 cites Nyerere's argument as follows: 'If we allow land to be sold like a robe within a short period there would be only a few Africans possessing land in Tanganyika and all the others would be tenants ...'.
41. The World Bank (1961).
42. Coulson (1982) p. 27 cites Kjekshus's major conclusion as follows: 'The reign of the tsetse fly in Tanganyika is a recent, twentieth century phenomenon that followed the breakdown of the man-controlled ecological system that Burton and others witnessed'.
43. Ibid. p. 159.
44. See e.g. the surveys made by Raikes (1968) and Awiti (1971).
45. Nyerere (1967) p.7 argues that as land becomes scarce: 'We shall find ourselves with a farmers' class and a labourers' class ... the latter ... They will

become a rural proletariat depending on the decision of other men for their existence'.

46. Nyerere (1967).
47. Nyerere (1962).
48. Nyerere (1967) p. 2.
49. Mushi cited by Hydén (1980) p. 91.
50. Nyerere (1967) pp. 18-20.
51. In Chapter 4 of this study we shall find that in 1967 there were some 1,200 agricultural marketing coopera tives serving the peasants spread throughout the country. At the peak season of harvesting and marketing these cooperative societies used to operate so called buying posts. Each cooperative society would normally operate 4-5 such buying posts. These buying posts were all located in villages.
52. The nature of the production constraints in peasant production will be further discussed in Chapter 3.
53. Sumra (1976) Table 3.
54. Boesen et al.(1977) chapter 4, Hydén (1980) Table 4.2.
55. See e.g. Coulson (1982) pp. 250-255.
56. Raikes (1975) p. 75.
57. See e.g. Boesen et al. (1977) pp. 170-172.
58. Msambichaka (1981).
59. Dumont and Mottin (1979) pp. 34-40.
60. For a summary exposition of von Thünen's (1826) findings see e.g. Bressler and King (1970) pp. 336-338.
61. These same determinants are also singled out by Iliffe (1979) pp 286-289.
62. E.g. Fuggles-Couchman (1964), Hydén (1980), Iliffe (1971, 1979), Ruthenberg (1964), Saul and Woods (1971), Woods (1971).

CHAPTER 3

AGRICULTURAL PRODUCTION 1953-1980: TRENDS AND DETERMINANTS

In accordance with the overall aims that we seek to meet in this study, our task in this chapter is to provide an overall description of, and an analysis of, the determinants of agricultural production during the period 1953-1980. Agricultural production statistics are presented in Appendix A, where a brief assessment of the reliability of the statistics is also given. Tanzania has a fairly long tradition in compiling statistical material that dates back to the colonial period. In general it appears that the statistical material available from official sources is of reasonable quality.

The time period 1953-1980 is chosen partly because we want to focus on present developments, but at the same time our period of observation must be sufficiently long that the trends and structural changes in agricultural production patterns can be identified. We would have liked at least a thirty year period of observations, but unfortunately 1953 is the earliest year for which crop production statistics are readily available. For the years prior to 1953 only agricultural export statistics are available, but for annual time series statistics the export and production statistics can differ quite considerably due to such factors as e.g. changes in stock holding, domestic processing and the like. Furthermore all export statistics in Tanzania are based on the calendar year whereas all agricultural production statistics are based on the crop year that runs from July to June. Thus we have to be content in our analysis of production developments with a period of observation slightly shorter than thirty years. In the case of food crops we

only have statistics that go back to 1963. Consequently much of the analysis in this chapter will refer to the period 1963-1980.

The contents of this chapter are as follows. In Section 3.1 are estimates showing the annual growth rate in production of all major crops produced in the large-scale farming sector and in the peasant sector. These growth rates are derived from production statistics presented in Appendix A. In Section 3.2 an analysis of the factors that have governed the trends in production established in Section 3.1 will be given. In this analysis the author will refrain from using econometric techniques since available input data are only scanty and cannot be used for statistical time series analysis. In Section 3.2, therefore, the emphasis will be more on identifying some of the major factors that have had a bearing on production trends without seeking to measure the underlying relationship between production and its determinants. Much of the analysis in Section 3.2 will be based on producer price statistics that are given in Appendix B.

3.1 Production Trends

The annual growth rates in production of each major crop produced in the large-scale farming sector and in the peasant sector during the period 1953-1980 are reported in Table 3.1, for three sub-periods 1953-1963, 1964-1971 and 1972-1980. The decade 1953-1963 covers primarily the last decade of the colonial period. Tanzania gained independence in 1961 but, as we learned in Chapter 2, during the intitial years following independence there were no major changes in agricultural policies. The period 1964-1971 can be considered as a period in which the development path of the country was moulded by the political leadership of the country. In Chapter 2 it was also pointed out that the

Table 3.1 Annual Output Growth Rates by Crops, Tanzania 1953 - 1980.

	1953-1963	1964-1971	1972-1980
The Large Scale Farming Sector	%	%	%
Tea	11.0	7.9	2.2
Coffee	14.0	4.2	- 5.2
Sisal	2.5	- 4.0	- 8.9
Sugar	16.9	9.3	3.3
Tobacco, flue-cured	- 5.6	12.3	1.1
Wheat	11.9	6.7	- 4.5
Total hectares harvested	3.9	- 0.7	- 5.7
The Peasant Sector			
Cotton	8.9	1.7	- 3.1
Coffee	2.6	6.5	3.3
Tea	np	np	20.0
Cashewnuts	12.7	10.0	-15.0
Tobacco, flue-cured	np	16.3	6.5
Tobacco, fire-cured	0.0	13.2	2.6
Pyrethrum	16.1	- 0.4	- 4.4
Oil-seeds	2.2	- 4.4	- 2.7
Total Cash Crops[a)]	6.6	5.0	- 1.6
Maize	na	4.1	8.5
Paddy/Rice		7.0	8.5
Sorghum and Millet		2.1	12.3
Cassava		10.7	5.7
Sweet Potatoes		3.3	4.4
Irish Potatoes		18.9	7.8
Mixed Beans		4.2	10.0
Plaintains/Bananas		6.6	2.3
Total Food Crops[a)]		6.0	7.5
Total all Crops [a)]		5.6	5.0

a) measured in constant 1967/68 producer prices
np = no production
na = no data available

Note: The production of fruit and vegetables and other minor crops are not included because no data are available. The production of these types of crops is still small compared to the combined tonnage of the crops here listed. In general production of these minor crops has increased markedly during the period 1972-1980. For further detail see the discussion given in Chapter 5, Section 5.3.

The growth rates here reported have been obtained by fitting a trend line of the general form; $\ln Q_i = \ln A + bt$, to the data reported in Appendix Tables A.1-A.3. In this trend line Q_i = production of crop i (i= 1 ,2,....n crops) in tons, A = a constant term, t = time and b = the annual growth rate here reported.

Source: Appendix Tables A.1-A.3.

future development path of the country had been set out in 1967 with the passing of the Arusha Declaration. However, the implications of this policy document did not start to gain momentum untill after 1972 when the institutions and organizations which were serving the peasants were reorganized. (An account of these organizational changes will be given in Chapter 4.)

The trends in crop production that emerge from Table 3.1 seem easy to identify. The major trends were (1) an accelerated decline in the growth rate of output produced in the large-scale farming sector, (2) a largely constant growth rate in output produced in the peasant sector during the period 1964-1980, and (3) a substantial shift in the resource allocation of the peasant sector away from cash crop production to food crop production.

In this study our focus is on the peasant sector and therefore we are not so much concerned with finding the factors that have influenced developments in production in the large-scale farming sector. At this juncture it is sufficient to explain that much of the decline in production in the large-scale farming sector was simply because of the dramatic fall in sisal prices from their peak level in 1953 and the sharp rise in wage rates following independence that induced many of the big sisal estates owned by multinational firms to curtail their scales of operation.[1)] In the large-scale farming sector production of sisal was by far the most dominant crop, although its degree of dominance gradually declined. In 1953 some 90 percent of all land cultivated in the large-scale farming sector was in sisal production. In 1980 it was down to 45 percent.[2)] In the previous chapter we found that many sisal estates were nationalized following the Arusha Declaration in 1967, but despite this nationalization sisal output continued to decline. In the early 1970s a number of large-scale wheat

farms were also nationalized, but it appears that this nationalization adversely affected production.

The trends in aggregate production in the peasant sector during the period 1953-1963 cannot be assessed properly since there are no production statistics available that can show the development in food crop production during this period. However, from the trade statistics in food grains, that will be analysed in Chapter 5, the indications are that during this period cash crop production grew more rapidly than food crop production. Therefore it seems also that during the period 1953-1963 aggregate output in the peasant sector grew at more or less the same rate as in the subsequent periods identified in Table 3.1. In the ensuing part of this chapter we turn to an examination of the factors behind the production developments in the peasant sector.

3.2 Determinants of Crop Production in the Peasant Sector

There are of course a multitude of factors that have a bearing on crop production in the peasant sector. First in a physical sense there are the input factors together with climatic conditions. Behind these physical input factors there are cultural and other non-economic factors, in addition to various types of economic factors such as e.g. organization, level of knowledge, prices and the like. A detailed examination of all these factors would very quickly take us outside the scope of this chapter. Instead we shall seek to point out some economic factors believed to be of major importance in explaining the pattern of growth in output produced in the peasant sector. In this task it is important that a distinction is made between (1) changes in the composition of production, and (2) changes in the total level of production. These two different aspects will now be discussed in Sub-Sections 3.2.1 and 3.2.2.

3.2.1 Changes in the Composition of Production

Table 3.1 indicates that peasants have to a large extent switched from production of cash crops to production of food crops. An obvious explanatory factor is the development of the relative price between these two major categories of crops.

Relative Prices of Competing Crops and Resource Allocation

The development of cash crop prices and food crop prices is reported in Table 3.2, where price indices for three major categories of crops are given: (1) perennial cash crops, (2) annual cash crops and (3) food crops. Food crops are also perennial and annual, but since annual food crops dominate the food crop production statistics, perennial food crops are not separated out. For food crops, on the other hand, separate price indices for the official market and the traditional food market are reported.

Table 3.2 Producer Price Indices Cash Crops and Food Crops, Tanzania, 1965 - 1980.

Crop Year	Cash Crops		Food Crops		Relative Prices Food Crops/Cash Crops	
	Perennial	Annual	Official Market	Traditional Market		
	(1)	(2)	(3)	(4)	(4)/(1)	(4)/(2)
1965/66	100	100	100	100	1.00	1.00
1966/67	116	94	94	100	0.86	1.06
1967/68	106	98	97	96	0.91	0.98
1968/69	97	103	97	101	1.04	0.98
1969/70	148	109	110	121	0.82	1.11
1970/71	152	106	105	137	0.90	1.20
1971/72	168	114	123	137	0.82	1.20
1972/73	165	116	110	157	0.95	1.35
1973/74	170	129	127	179	1.05	1.39
1974/75	177	149	166	220	1.24	1.46
1975/76	258	197	250	382	1.48	1.94
1976/77	437	228	262	453	1.04	1.99
1977/78	313	265	351	589	1.88	2.22
1978/79	284	271	355	614	2.16	2.26
1979/80	344	323	418	621	1.80	1.92
1980/81	380	354	423	750	1.97	2.12

Sources: Appendix Tables B.3 - B.6.

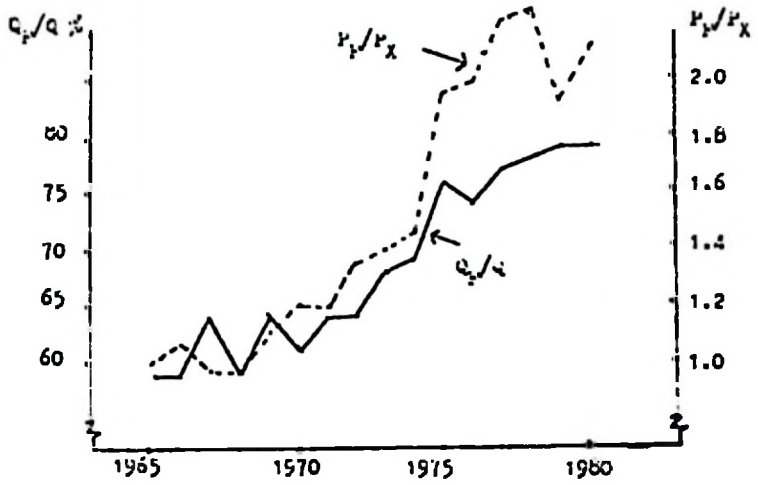
Reading Table 3.2 two trends emerge (1) an increase in the price of food crops relative to that of cash crops in favour of food crops during the 1970s, and (2) a faster increase in food crop prices in the traditional food market than in the official market.

The effect of the change of the price of food crops relative to that of cash crops on production of these crops is shown in Figure 3.1. In this figure the development of the relative price of food crops with respect to that of cash crops and the development of the composition of total production as measured by the percentage share of total production that comprised food crops, are plotted on the same time axis. Developments in the composition of output reported in Figure 3.1 are based on the estimated values of crop production measured in constant 1966/67 producer prices.

From Figure 3.1 it is apparent that the increase in the relative price of food crops was accompanied by a relative increase in food crop production as standard microeconomic theory would predict. The picture depicted in Figure 3.1 refers to aggregate production in the peasant sector, but similar patterns can be found for specific crops as well. In Figure 3.2 the developments in cotton production and changes in the relative price of cotton with respect to the maize price, are plotted on the same time axis. It is clear from this figure that a close relationship exists also between production and developments in the relative price between the two competing crops.

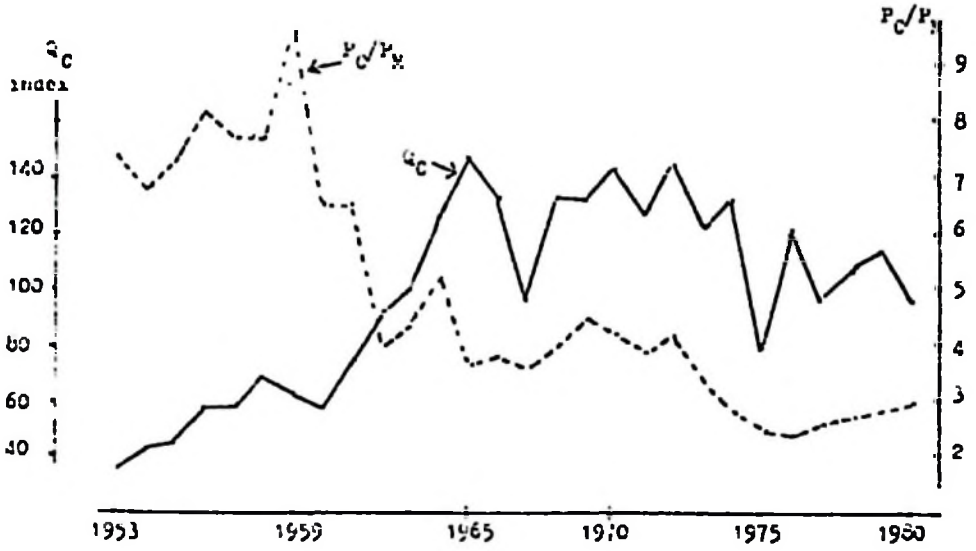
The findings reported in Figure 3.1 and 3.2 are by no means surprising. Studies of supply response in agriculture have found that peasants' resource allocation between different lines of production is quite sensitive to changes in rela-

Figure 3.1 Peasant Food Crop Production (Q_F). Relative to Peasant Total Crop Production (Q) and the Price of Food Crops (P_F) Relative to the Price of Cash Crops (P_X) , Tanzania 1965 -1980.



Sources: Computed from Appendix Tables A.2-A.3 and Appendix Tables B.1-B.2.

Figure 3.2 Seed-Cotton Production (Q_C) and the Price of Seed-Cotton (P_C) Relative to the Price of Maize (P_M) , Tanzania 1953 - 1980.



Source: As Figure 3.1 and Malima, (1971).

tive prices between competing crops.[3] In addition in Tanzania some studies point to producer prices as a major determinant of resource allocation. In a study of cotton supply during the period 1953-1969, Kighoma Malima found the short run price elasticity of supply to be as high as 2.4 in the major cotton growing area.[4] In a more recent study Benno Ndulu also reports very high price elasticities of supply for food grains.[5]

It would, however, be erroneous to attribute to prices all the changes in resource allocation that have taken place in the peasant sector. In the ensuing part of this section we shall seek to examine whether there is any relationship between the primary inputs used and their allocation. (We shall postpone an examination of the factors which have had a bearing on producer price developments in the official market and in the traditional food market to Chapter 4 and Chapter 5 respectively).

Labour Availability and Resource Allocation

In studying labour use in peasant agriculture it is very important that a distinction be made between family labour and hired labour. The importance of hired labour in peasant agriculture has often been seriously underestimated. Hired labour will in the aggregate constitute a small share of total labour use on a peasant farm, but due to high seasonality in the use of labour in agriculture, hired labour will often constitue a significant portion of total labour use at the peak season of work.[6]

A characteristic feature of the early development of peasant agriculture was that production to a large extent was based on a system of mutual help between peasants. With the development of the monetized economy the practice of paying in kind for services rendered between families gradually

gave way to a system based on cash payment in the form of a wage.

No statistics exist to show the development in the use of hired labour among peasants in Tanzania. The indications are, however, that the use of hired labour became of considerable importance. According to a survey from the mid-1960s, some 500,000 people were reported to have been hired for work on peasant farms during one crop year.[7)]

The use of hired labour in coffee production is amply documented in a study by Simon Mbilinyi. According to Mbilinyi in the major coffee growing areas some 25-30 percent of total labour used was hired labour for the 1968/69 crop year.[8)]

The launching of the Ujamaa Rural Development strategy probably greatly affected the use of hired labour. According to the Ujamaa policy hired labour was an aspect of exploitation and therefore it was condemned and discouraged. [9)] The use of hired labour was seen as a typical aspect of the capitalistic form of farming, a form of farming which the Ujamaa Rural Development strategy aimed to prevent from developing. The use of hired labour probably declined during the 1970s. Hired labour was mainly used in cash crop production since cash crops were more labour-demanding than food crops, as can been seen from Table 3.3. The decline in cash crop production shown in Table 3.1 can therefore probably also be linked to this policy of discouraging the use of hired labour.[10)]

In his study on Tanzanian agriculture René Dumont warned about the danger of discouraging the use of hired labour in peasant agriculture. One of the major findings in his report read as follows: 'In agriculture, however, progress will not be able to become general without the help of a

Table 3.3 Labour Requirements per Hectare for Selected Food Crops and and Cash Crops Produced in the Peasant Sector, Tanzania 1982.

Food Crops	manhours/ hectare	Cash Crops	manhours/ hectare
Maize	107	Coffee, Arabica	152
Paddy	120	Tea	290
Sorghum	120	Cotton	169
Cassava	142	Tobacco, flue-cured	619
		Tobacco, fire-cured	513
		Pyrethrum	148
		Groundnuts	160
		Cashewnuts	62

Source: URT/MDB, (1983), Summary , Appendix Tables VII. and VIII.

growing class of pioneers of progressive farmers. Forbidding them to employ any paid worker would seriously hinder the development of the agricultural economy'.[11)]

Land Availability and Resource Allocation

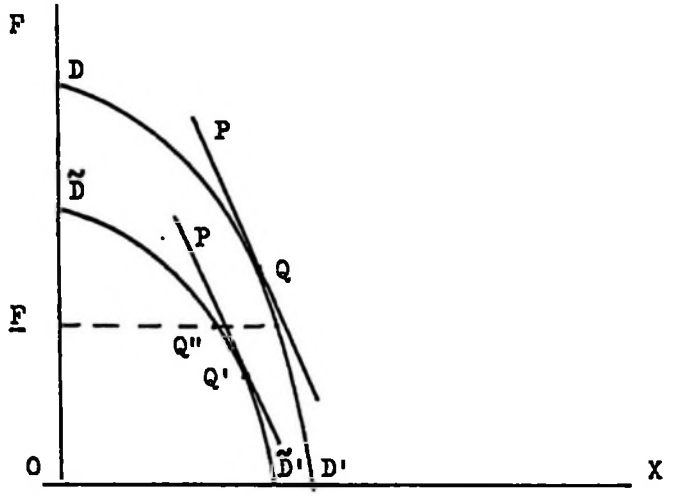
A well known theory that seeks to explain how cash crop production for export developed in LDCs is the Vent for Surplus theory. The theory is often associated with the writings of Hla Myint.[12)] According to Myint cash crop production could as a rule develop once an area was opened up to trade because some surplus land and labour were available and could be put to use in the production of cash crops without threatening the security of subsistence requirements.[13)] In Chapter 2 we saw that in Tanzania during the early years of the development of cash crop production i.e. between the turn of this century and the outbreak of

the Second Word War, Myint's version of the Vent for Surplus theory seems to have some merit. During this period it appears that production of cash crops did not result in a decline in food crop production for subsistence consumption. However in the post Second World War period the surplus land for cash crop production appears to have become depleted in many areas.

Much land in Tanzania cannot be used for agricultural purposes and partly as a result the population pattern is, as noted Chapter 1, characterized by clusters with very high population densitites. The rapid growth rate in population that has taken place during the post-Second World War period has caused population density to increase and thus the shortage of land has become more and more a constraint on production.

The importance of the land constraint on peasants' production decisions can be illustrated with the aid of a simple diagram. In Figure 3.1 we have depicted a situation where a peasant household has a fixed land resource base that allows it to produce any combination of a food crop F or a cash crop X within the production possibility frontier drawn as the line DD'. In drawing this frontier it is assumed that food crop production is land intensive whereas cash production is labour intensive. This seems to be the most appropriate assumption to make since, as we have seen in Table 3.4, the manhours required per hectare of land in cash crop production in general are substantially higher than in food crop production. Under normal circumstances we can expect to find that production takes place somewhere on the production possibility frontier. In line with standard microeconomic theory we will assume that the price line P which gives the relative price between F and X will influence resource allocation such that an output mix as defined by the point Q will be produced.

Figure 3.3 Resource Allocation of a Peasant Household and the Relative Price Between Food Crops and Cash Crops (P).



The assumptions which underlie the standard microeconomic theory on resource allocation have, however, been criticized in the development literature as being a poor description of an enviroment that governs peasants' resource allocation.

Michel Lipton, for example, points to a number of factors such as risks and various types of structural rigidities that will inhibit a peasant from pursuing profit maximizing behaviour.[14] Farm management studies have found that peasants in general are risk averters. It is therefore reasonable to assume that peasants' planting decisions first of all are governed by the need to secure their own food requirements.[15] In peasant societies there are of course markets in both food and cash crops, but in general the markets are primarily organized to facilitate the flow of produce out of the rural areas. The flow of produce between different rural areas is much less developed. Peasants will therefore first of all ensure that their own food require-

ments are secured in making their planting decisions.

There is consequently a constraint on peasants' resource allocation. In Figure 3.3 this constraint is shown by the horizontal line through the production possibility set where F = $\underline{F}$. This amount of food represents the minimum subsistence food requirement of a peasant household. The relative price between the cash crop and the food crop can thus only determine production decisions that can be made on the segment of the production possibility frontier that is above the horizontal line through $\underline{F}$.

This segment will obviously be greatly reduced when the resource base of the peasant household shrinks as a result of population pressure on the land. In Figure 3.3 this shrinking of the resource base is indicated by an inward shift in the production possibility frontier to a position indicated by the line $\tilde{D}\tilde{D}'$. The shift is not parallel because of differences in land intensities between the two categories of crops. Food crops are more land intensive than cash crops. The new output mix that will be produced after a shift in the production possibility frontier with an unchanged relative price between the cash crop and the food crop, will thus in Figure 3.3 be at the point Q" where F = $\underline{F}$.

The picture depicted in Figure 3.3 is of course a highly simplified account of the factors determining resource allocation in peasant agriculture. Nevertheless, it probably indicates a matter of great importance in the development of agricultural production in Tanzania during the last few decades. This can be seen in Table 3.4 where changes in population densities of the major cash crop producing districts are reported.

Table 3.4 Population Densities of Major Cash Crop Producing Districts, Tanzania 1948-1978, selected years and selected districts.

District	(a) %	(b) %	main cash crop	(c) %	1948	1957	1967	1978
					persons/km^2			
Arusha	0.34	1.75	coffee		35.5	46.4	60.9	90.5
Kilimanjaro	0.60	4.50	coffee	75-80	48.9	66.2	89.6	120.9
Bukoba	0.91	3.10	coffee		31.2	37.7	41.5	59.0
Mwanza	0.44	2.06	cotton		46.2	45.7	60.5	81.9
Geita	1.01	3.58	cotton		15.4	29.8	40.9	60.7
Ukerewe	0.007	0.10	cotton	70-75	135.0	147.5	170.8	217.7
Shinyanga	1.06	2.35	cotton		22.6	27.0	33.9	38.3
Rungwe	0.27	1.52	tea	60-65	48.9	56.0	74.4	98.1
Iushoto	0.40	1.85	tea		36.5	43.8	60.1	81.7
Kyela	0.006	0.07	cashewnuts		na	na	na	229.0
Newala	0.45	2.00	cashewnuts	20	38.5	44.2	68.0	76.6

(a) = percent of total land area
(b) = percent of total rural population 1978
(c) = approximate share of total production of coffee, cotton, tea and cashewnuts respectively in percent
na = no data available

Sources: URT/TAKWIMU, Statistical Abstract 1973, Table A.3 and Table C.2, and URT/TAKWIMU, (1980), Table 1.

Reading Table 3.4 it seems that the resource base of an average peasant household is shrinking rapidly in some parts of Tanzania. At present in the major cash crop producing areas hardly more than 1 hectare of land per capita is available (100 persons/km^2 = 1 hectare/person). This calculation is on a total land area basis, but a substantial share of land cannot be used for agricultural purposes and therefore arable land per capita in the major cash crop producing areas is much less than one hectare.[16] Considering the rather low yields per acre obtained in peasant food crop farming, such a small land resource base may well make the minimum food requirements (F) a binding constraint on the production decisions of a peasant household, as indicated in Figure 3.3. (The development in yields per

acre in peasant farming will be analysed in Section 3.2.2)

Signs of a depletion of surplus land for cash crop production appear to have emerged as early as the mid-1930s in some areas. In Bukoba district, for example, the growth rate in coffee production levelled off by 1935. In this year a record level of 10,600 tons of coffee was harvested and marketed. In all subsequent years production of coffee in this district fluctuated around 10,000 tons per annum.[17] In Kilimanjaro district, the other major coffee growing area, shortage of land starts to be reported in the late 1940s and the early 1950s.[18] The growth rate in coffee production for this district also slackened off considerably during the 1950s and by the mid-1960s the growth rate seems to have levelled off to around 1-3 percent.[19]

In Sukumaland, the major cotton growing area, signs of depletion of surplus land for cash crop production also start to emerge in the 1950s. In Figure 3.2 we saw that during the 1950s cotton production grew very rapidly, but this increase in production was accompanied by alarming reports that a serious soil erosion problem was about to develop as a result of an increase in the intensity of land use.[20] Another factor that subsequently has greatly aggravated the soil erosion problem in Sukumaland is the very high cattle population density in this area. In Shinyanga district which lies in the heart of Sukumaland the cattle density is twice as high as the human population density, which is itself fairly high. This high cattle density in Sukumaland reflects a very uneven distribution of the cattle population in Tanzania. In a survey from 1978 the cattle population in Tanzania was estimated at some 11 millions head of which more than one third graze in Sukumaland.[21]

The pattern of intrarural migration also indicates that the

resource base of the peasantry in quite a number of districts is shrinking. In Appendix Table D.1 it can be seen that in many cases districts with low population densities have higher population growth rates than districts with high population densities. Reading Table D.1 it is important to realize that probably most intrarural migration has only been across adjacent district or regional borders.

Summarizing this section on changes in the composition of the output produced in the peasant sector it seems clear that three major factors have been at work: (1) changes in the relative price of food crops with respect to cash crops in favour of food crop production, (2) a policy of discouraging the use of the hired labour primarily used in cash crop production, and (3) the emerging land constraint in the major cash crop producing districts that has forced peasants to reallocate land away from cash crop production to food crop production in order to secure their subsistence food requirements. In the following part of this chapter we shall discuss some of the major factors that have a bearing on the total level of production.

3.2.2 Changes in Total Level of Production

At the start of this study we indicated that lack of technological progress in the agricultural sector in LDCs is a major reason why the marketed surplus from the agricultural sector continues to be small and thus a severe constraint on economic development in these countries.[22] The lack of technological progress in the agricultural sector is also repeatedly stressed by the political leadership in Tanzania as a key factor that holds back her economic progress. Introducing the Second Five Year Development Plan (1969-1974) Nyerere interpreted the progress made in the agricultural sector as follows: 'Our farmers have expanded the acreage they cultivate, they have worked harder. But, al-

most everywhere they are still using the hoe, jembe and shoka. They have not yet changed the tools they work with.'[23])

Productivity changes in the agricultural sector can generally be linked to marked changes in factor proportions used in production, especially to an increased use of capital. The two most frequently used measurements of productivity in agriculture are average output per unit of land i.e. yields per acre, and average output per labourer. Based on the effects an increased use of capital has on these two productivity measurements, innovation in agriculture is often classified as biological or mechanical.[24])

Mechanical innovation primarily raises the average output per labourer whereas biological innovation primarily raises the productivity of the soil i.e. yields per acre. A typical form of mechanical innovation is tractor cultivation. This form of innovation can of course also raise the productivity of the soil, for example through deeper ploughing, but the main effect of mechanical innovation is that it raises the average productivity of the labourer.

The applications of purchased inputs such as chemical fertilizer, hybrid seeds, pesticides etc. are typical examples of biological innovations. Biological innovation is also often referred to as land-augmenting innovation since less land is needed to produce the same amount of output when purchased inputs are correctly applied in production. Biological innovation not only entails an increased use of capital, but also more labour must be used for the biological innovation to have positive effects on the productivity of the soil.

Mechanical innovation on the other hand is labour-saving since obviously less labour is needed per unit of land with

tractor cultivation than with hoe cultivation. Nyerere in the quotation given above is essentially referring to the lack of mechanical innovation. He reiterated the same point in a speech he gave on the occasion of a national holiday in 1981. Commenting on productivity changes in the agricultural sector his speech reads as follows: '... despite 'Siasa Ni Kilimo', there is no evidence of improved farming methods in the peasant farms as one drives along roads of rural Tanzania and it is now ten years since we proclaimed war against traditional methods of farming'.[25)]

In this section we shall seek to assess the extent to which innovation in the peasant sector may have affected the growth rates in production reported in Table 3.1. Our assessment can only be based on some scanty evidence since as already explained the records on inputs used in agricultural production are practically non-existent.

Biological Innovation in Cash Crop Production

The evidence of biological innovation is summarized and reported in Table 3.5, which shows developments in yields per acre of the major cash crops produced in the peasant sector. In the case of food crops there is hardly any evidence available to indicate any trend of the development in yields for these crops.

The developments in coffee yields reported in Table 3.5 are estimates based on the marketed output of coffee produced by peasants in Kilimanjaro district and an estimated figure of how much land was in coffee production. The figures reported are, however, in general agreement with the findings on coffee yields reported in some other surveys that have been conducted in the same area. [26)]

Table 3.5 Average yield per acre/hectare, Tanzania 1931-1979, selected years, selected areas and selected crops.

Crop year	Coffee yield (a)	Crop year	Cotton yield (b)	Crop year	Tobacco yield (c)	Tobacco yield (d)	Crop year	Tea yield (e)	Tea yield (f)
1931/32	327	1950	310	1955/56	430	330	1961/62	553	np
1939/40	316	1963	857	1964/65	770	580	1965/66	761	np
1949/50	320	1964	1024	1975/76	790	640	1970/71	898	np
1958/59	397	1965	767				1975/76	1191	249
1967/68	727	1969	492				1979/80	1362	459

(a) = Lbs.of green coffee per acre,Kilimanjaro district

(b) = Lbs.of seed-cotton per acre, Sukumaland

(c) = Kg. flued-cured tobacco per hectare at Tumbi,Tabora Region

(d) = Kg. flued-cured tobacco per hectare at Urambo, Tabora Region

(e) = Kg. made tea per hectare in large scale farming

(f) = Kg. made tea per hectare in peasant farming. Yields are much lower in peasant tea production because most of the tea bushes were still in the early 1970s immature bushes.

Sources: Coffee: Saylor,(1973),Table 14.1, Cotton: Saylor,(1970a,1970b), p. 17 and Table 1 respectively, von Rotenhan,(1968),Table 2 and Collinson, (1972), Table 62, Tobacco: Boesen and Mohele,(1979),Tables 3-4, and Tea: URT/MDB,(1981),Annex 10,Table 1.2.

The sharp increase in coffee yields reported between 1958/59 and 1967/68 may perhaps appear unrealistic. However farm management studies have found that coffee yields of about 1 250 kgs. per hectare (i.e. 1 115 lbs./acre) can be achieved with good crop husbandry practices in East Africa.[27]. The development in coffee yields reported in Table 3.5 is, however, probably not a very good indicator of the development in national average coffee yields. The indications are that biological innovation in coffee production up to quite recently has been confinded primarily to Kili-

manjaro district. In Bukoba district, the second most important area of coffee production in Tanzania, Friedrich claims that yields remained practically constant between 1935 and 1965.[28)]

In Table 3.1 we have seen that coffee production grew most rapidly during the period 1964-1972. It appears from Table 3.6 that part of this acceleration in production can be linked to increases in coffee yields, since land in coffee production does not appear to have increased significantly during this period. During the 1970s the growth rate in coffee production slackened off quite considerably which seems to indicate that the increase in yields also levelled off. More recently there are signs which appear to indicate that coffee yields have again started to rise.[29)]

Cotton yields per acre appear to have increased and then declined. During the last decade of the colonization period it seems that cotton yields increased quite rapidly, but since the mid-1960s cotton yields apparently started to decline. Care must however be exercised in reading the developments in cotton yields per acre reported in Table 3.5. In the source it is warned that the standard deviation of the estimated average yield is very high and hence the yield figures may contain a large margin of error. Nevertheless, the decline in the cotton yield has probably taken place, since in many places a monoculture in cotton production has been practised. The fertility of the soil will generally decline much more rapidly with monoculture than a cultivation system based on crop rotation.[30)]

Tobacco yields appear from Table 3.5 to have increased most sharply between the mid-1950s and mid-1960s. Thus the increase in tobacco production reported in Table 3.1 for the period 1964-1980 seems to have come primarily from an expansion of land in tobacco production.

Tea yields are reported in Table 3.5 both for estate produced tea and peasant produced tea. Tea has traditionally been produced on large estates. Peasant tea production was not initiated until the late 1960s. The tea yields reported in Table 3.5 are derived from production statistics and an estimated figure of hectares of land in tea production. These estimates are probably fairly realistic since the numbers of tea estates and peasants producing tea are quite few and well surveyed. The reason for the much lower tea yields in the peasant sector than in the large-scale farming sector reported in Table 3.5 is simply that many of the tea bushes planted by the peasants in the end of the 1960s were still in the 1970s immature bushes. Land in tea production has by and large remained fairly constant in the large-scale farming sector during the past two decades. Consequently most of the increases in the tea production reported in Table 3.1 have come from increased in tea yields.

Biological Innovations: Some Selected Determinants

Table 3.5 shows that some advances have been made in raising yields per acre during the past few decades. However, except in the cases of coffe, cotton, tea and tobacco, it appears that very little advance has been made in raising the productivity of the soil in crop production. The main reason why biological innovation has primarily been confined to cash crops can probably be linked to the dominance cash crops have had in the agronomic research programmes in Tanzania.

The Germans had by the turn of this century initiated agronomic research in Tanzania in their search for the most suitable cash crops to be produced. Later, in 1934, a separate research station for coffee production was started

up at Lyamungu on the Slope of Mount Kilimanjaro and in the following year another special research station for cotton production was established at Ukiriguru in Sukumaland. These two stations are even today two of the most important places where agronomic research is conducted in Tanzania.

The Germans and the British essentially sought to develop cash crop production for export and hence it was natural that they concentrated on agronomic research into these crops. The Germans had in addition established an enclave economy that was dependent upon the availability of cheap labour.[31]. A wage roughly corresponding to the average output per capita in subsistence food farming seems to have been paid.[32] Any increases in the productivity of food crop production could consequently be expected to create upward pressures on the general wage level. It was therefore of less interest to the colonialists to initiate agronomic research on food crop production. After independence efforts have been made to direct more research funding to food crops, but it appears that so far no major pay-off in terms of increases in yields in peasant food crop production has been achieved.

A standard prescription used by agronomists to raise yields per acre is to apply more chemical fertilizer. Fertilizer use in Tanzania during the past three decades is reported in Table 3.6. A characteristic aspect of fertilizer use in Tanzania is that it is applied primarily in the production of a few cash crops. In the large-scale farming sector the big fertilizer users are the sugar estates and the tea estates.[33] In the peasant sector fertilizer is primarily used in tea and tobacco production. According to some statistics provided by Joseph Shitundu it seems that of total fertilizer consumption during the 1970s some 40 percent was used on tobacco farms.[34]

Table 3.6 Fertilizer Consumption, Tanzania 1956 - 1980, selected years.

Year	1956	1960	1964	1968	1972	1976	1980
				'000 tons			
Consumption*)	5.5	6.7	18.6	30.6	58.2	70.4	107.1
Domestic Production	— no production ————				12.4	42.2	50.9

*) Fertilizer consumption is defined equal to total import of fertilizer for the years prior to 1972. For the period 1972-1980 is fertilizer consumption defined equal to distribution of fertilizer to regional sales outlets. In general the figures on fertilizer consumption have an upward bias because no deduction is made for losses of fertilizer due to bad storage and handling.

Sources: Raikes, (1974), Table IV., Bank of Tanzania (1979, 1981), p.7 and Table 26a, respectively.

Sales of fertilizer to the peasants are all based on credit terms. During the 1970s all agricultural credit channelled to the peasants originated from the Tanzania Rural Development Bank (TRDB). This bank has also been involved in the distribution of fertilizer, since practically all disbursement of credit has been in kind. TRDB's disbursements of seasonal credit i.e. credit enabling peasants to buy chemical fertilizer, hybrid seeds, pesticides etc. are reported in Table 3.7.

Table 3.7 TRDB's Disbursement of Seasonal Credits to Peasants, 1971 - 1980.

Crop Year:	1971/72	72/73	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81
					shs. mil.					
Credit Disbursed	21.0	62.0	85.9	141.8	38.4	52.9	170.7	125.8	133.2	74.0

Sources: Bank of Tanzania (1979), p 24, and URT, (1981), Table 23.A.

Reading table 3.7 one can note that there were great fluctuations in the amount of credit made available to the

peasants. These fluctuations were essentilly caused by variations in the flow of funds that the TRDB had available for lending purposes. The TRDB has no funds of its own. Its lending activities are almost completely dependent upon external sources of funds that are made available through the central bank. Typically the main sources of funds are international aid agencies such as, e.g., the World Bank and various UN aid agencies. The funds which are made available to the TRDB for lending purposes are actually earmarked for special projects. This earmarking had the effect during the 1970s that some 85 percent of TRDB disbursement of seasonal credit went to a small but much favoured group of peasants, namely those who produce flue-cured tobacco.[35)]

In order to foster biological and mechanical innovation in the agricultural sector the agricultural extension services was gradually expanded. Between 1962 and 1974 the number of public servants employed in the agricultural sector increased from 10 900 to 21 300.[36)] However, it appears that in spite of this rapid expansion in the labour force employed to serve the peasants with information on improved farming technologies, the technologies used have not changed drastically, as observed by Nyerere in 1981.

The use of fertilizer is, as we have just seen, not very common. Part of the reason why fertilizer application is not more common than indicated in Tables 3.6 and 3.7 may to a large extent be explained by the low incremental benefit-cost ratio fertilizer use actually gives to the peasants. Some farm management studies have been made which indicate that the net return per acre in food grain production only increased by some 10 percent as a result of fertilizer use.[37)] This low incremental benefit-cost ratio indicates that the successful application of fertilizer is conditioned by a host of other factors in addition to the mere

application of the fertilizer.

Successful application of fertilizer is in general found to hinge very much on adequate water supply and the right dose of fertilizer according to the type of soil and the crop to be planted. In Tanzania the rainfall pattern is often quite erratic, which means that an adequate water supply in many parts of the country cannot be guaranteed and often peasants do not know what dose of fertilizer should be applied to their soil. Consequently peasants have in general not been particularly impressed with the economics of fertilizer use and hence their demands for fertilizer have been rather modest.[38)]

Mechanical Innovation

The hand hoe is by far the most important agricultural implement used in Tanzania. It is therefore little wonder that peasants in Tanzania repeatedly state that the availability of labour constitutes the major constraint on production.[39)] The availability of family labour effectively sets the limits on how much land can be cultivated with a hand hoe. The result is that mechanical innovation that can release the labour constraint is a much stronger felt need among peasants in Tanzania than biological innovation. In this section we will investigate whether there have in fact been any developments that have contributed in reducing the labour constraint of the peasants.

Statistics showing developments in the overall use of agricultural implements in the peasant sector are unfortunately not readily available. However, it would be wrong to conclude that all cultivation in the peasant sector is based on hoe cultivation. Other agricultural implements besides the hoe are gradually being put to use in the peasant sector. The expansion in the use of ox-pulled implements

and tractor according to surveys conducted in one of the major cash crop producing areas in Tanzania is reported in Table 3.8.

Table 3.8 Ox-pulled Implements and Tractors in Sukumaland, 1952 - 1977, selected years.

	1952	1961	1977
Ox-pulled Implements, numbers	5000	20000	40000
Privately Owned Tractors, numbers	na	147	687*

*) survey found that some 1/3 were out of order

na = no data available

Sources: Iliffe, (1979),p.455 and University of Dar es Salaam (1982),p.23 and p. 25.

The figures on the availability of ox-pulled implements and tractors in Sukumaland are probably higher on a per farm basis than national average figures would show. But, most certainly, ox-pulled implements and tractors are used more and more in peasant farming all over the country.[40)]

Earlier in this chapter (Figure 3.2) we found a close relationship between developments in the production of cotton in Sukumaland and the relative price of cotton in terms of competing crops. Another major determinant of cotton production was found in Table 3.5 where it was shown that the development in cotton yield per acre seemed to have followed the same path of development as the overall development in cotton production. In table 3.8 we can identify a third major determinant of cotton production. The rapid increase in cotton production that took place between the early 1950s an the mid-1960s seems also partly to have been secured as a result of the efforts made by peasants to reduce their labour intensity in cotton produc-

tion.

Agricultural mechanization policies in Tanzania have since independence shifted away from emphasis on tractor cultivation to emphases on ox cultivation. The introduction of tractor cultivation in the 1950s and the rapid increase in cash crop production which these tractors helped to secure, made the tractors the true symbol of progressive farming as John Iliffe characterizes it,[41] not only to the peasants but also to national planners. As a result, in the early 1960s the new government launched an ambitious programme to make tractor hiring services available to peasants all over the country.

These tractor hiring services were, however, poorly organized and planned so that very quickly the cost of running the tractor services greatly exceeded the revenue which the tractor hiring services brought in.[42] The policy of mechanizing peasant farming with tractors was therefore gradually abandoned. Instead ox cultivation started to be promoted as a more appropriate technology for peasants in Tanzania.[43] It appears however, that the tractors still linger on in the mind of peasants as the true symbol of progressive farming. Commenting on the progress in ox cultivation on the occasion of the 10th aniversary of the Arusha Declaration, Nyerere expressed it as follows:'...people still think in terms of getting a tractor for their farms - even when they are small - rather than learning to use the ox plough.'[44]

The reason for the peasants' preference for tractor cultivation as opposed to ox cultivation we can find the conclusions which Hans Ruthenberg put forwards after having studied systems of peasant farming in various parts of Tanzania. The characteristics and sequence in which innovation has taken place Ruthenberg lists as follows: (1) innovation

in plant production before innovation in animal production, (2) innovation in cash crop production before innovation in production of subsistance food crops, (3) adoption of new lines of production and new means of production before adaption of better crop and animal husbandry techniques, and finally (4) for an innovation to be adopted it had to show conspicuousness and demonstrate high profitability.[45] Clearly a tractor is much more conspicuous in rural Tanzania than an ox.

Increases in Work Effort

In chapter 1 Table 1.2 it was shown that the rural population during the past three decades increased at a rate close to 3 percent per annum. This growth in the rural population can be used as a rough proxy indicator of the growth in the rural labour force. The enlargement of the rural labour force has in turn made it possible to cultivate a larger land area. Much of the new land cultivted has probably been rather marginal land ill-suited to cash crop production, which partly explains the alteration in the composition of output produced. Even though there has been some increase in total land area cultivated it seems most likely that the amount of cultivated land per peasant household has decreased.[46]

But since aggregate factor inputs have increased, aggregate output has also increased. The advances made in raising the productivity of both the soil and the labour force have of course also had a positive effect on aggregate production. In addition to increases in factor inputs and technological progress, Nyerere (see above) also believes that aggregate production might have increased because peasants have worked harder.

There are of course no statistics available that can show

the development in working hours of peasant households in crop production. Nevertheless, in this section we shall seek to examine whether it is possible to find signs that lend some support to Nyerere's assessment made in 1969 that peasants have worked harder.

In analysing changes in the intensity of work efforts of a peasant household two different categoris of factors can be identified. One category we may characterize as comprising push factors, and the other pull factors. Pull factors are factors that encourage a peasant to work harder because there are incentives to do so. On the other hand factors that more or less force a peasant to work harder in order to prevent per capita consumption of the peasant household members from falling we can term push factors. In the ensuing part of this section we shall briefly discuss the push and the pull factors that may have caused peasants to change their intensity of work effort.

Increases in Work Effort due to Push Factors

In Chapter 2 we found that in the 1930s certain rules were introduced which stipulated that peasants had to plant a certain minimum acreage with both cash crops and food crops. These rules were introduced in order to force peasants to maintain production levels in the face of falling output prices. A peasant found to violate these rules could be fined. These same rules have also been enforced from time to time in the post-colonial period. It is likely that these rules may also have pushed the peasants to work harder than they otherwise would have done. In this section, however, we will comment briefly on another push factor that has probably also pushed peasants into working harder. This is the change in the consumer/worker (c/w) ratio of peasant household.

One of the earliest systematic studies of peasant agriculture is Aleksandr Vassilyevich Chayanov's study of peasant farming in Russia at the turn of this century. In his study, Chayanov demonstrates that there is a positive correlation between what he defines as the consumer/worker ratio (c/w) of a peasant household and the intensity of work effort by the peasant farmer. The higher the (c/w) ratio the higher the intensity of work effort.[47)]

Jan Rudengren has tried to test Chayanov's theory with farm management data from peasant farming in Tanzania. His test consisted in estimating a regression equation with the intensity of work effort as the dependent variable and six explanatory variables among which the (c/w) ratio is one.[48)] The test gave no statistical support for Chayanov's theory in the Tanzanian case.

Rudengren's test cannot be accepted as sufficient evidence for refuting the validity of Chayanov's theory, because he fails to measure differences in the intensity of work effort among peasants. The dependent variable in Rudengren's regression equation is simply taken to be acres cultivated per peasant household. In order to measure differences in intensities of work effort one needs observations on differences in manhours worked per acre per peasant household.

A major conclusion that Hans Ruthenberg makes in his analysis of peasant farming in Tanzania is that there are great differences in crop husbandary practices.[49)] These differences are basically a reflection of differences in the intensity of work effort.

Since the Second World War there has been a rapid increase in population in Tanzania causing a substantial change in the age structure of the population. There are now many

more children of school age and younger than there have been before and hence the (c/w) ratio must have increased.[50] Chayanov's theory may still hold in spite of Rudengren's failure to find statistical support for it. Consequently since the (c/w) ratio has increased this can be interpreted to indicate that peasants may have been pushed to work harder. At the same time as the (c/w) ratio has increased the land resource base of the peasant household has probably decreased and this may also have pushed peasants to work harder.

Increases in Work Effort due to Pull Factors

Previously in this chapter we have discussed how according to the Vent for Surplus theory cash crop production could develop in LDCs. In our discussion we have seen how the availability of surplus resources was an important determinant of resource allocation in peasant farming. However, another central element in the Vent for Surplus theory is the pull effect which the benefit through trade had on production.[51]

The possibility of exchanging cash crops for imported consumer goods, Hla Myint argues, pulled surplus resources into use such that production moved from within the production possibility frontier onto the frontier and thereby secured an enlargement of the consumption set of the agriculturalists. The trading pattern that has been observed in Tanzania also seems to lend some relevance to the pull effects the import of consumer goods has had on the production of cash crops.

An indication of the development of trade in consumer goods in Tanzania during the past three decades is reported in Table 3.9, which shows the import statistics for consumer goods. The main source of supply of consumer goods in

Tanzania is through imports.

The trend which emerges from Table 3.9 is that imports of consumer goods gradually increased up to the end of the 1960s, but that from 1968 the import of consumer goods in real terms showed a clear declining trend cf. row 5. The decline in imports of consumer goods was a reflection of an import substitution industrialization policy whereby instead of importing consumer goods these goods were to be produced domestically.[52)]

Table 3.9 Total Import and Import of Consumer Goods, Tanzania 1956 - 1980, selected years.

Year		1956	1960	1964	1968	1972	1976	1980	1982
row									
1	Total Import shs.mil.	814	940	1194	1834	2878	5421	10047	9778
2	Consumer Goods [a)]	44.0	48.9	45.7	39.8	28.8	20.7	14.2	12.5
3	Import Price Index[b)]	83	88	91	97	117	225	368	
4	row (1)/(3)	43	47	58	83	108	106	120	
5	row (4) x (2)[c)]	18.9	23.0	26.5	33.0	31.1	21.9	17.0	

a) = import of consumer goods in percent of total import.

b) = index of average import prices published by UNCTAD Trade Statistics 1979, that has 1970 as base year. The figure for 1980 has been estimated by the author, see Table 6.3. in Chapter 6.

c) = index of import of consumer goods in constant 1970 prices

Sources: Computed from URT,(1979,1981), Table 9 and Table 9 respectively and from UNCTAD, (1979).

Table 3.10 National Consumer Price Index (NCPI,,Tanzania, 1966 - 1982 , selected years.

Year	1966	1968	1970	1972	1974	1976	1978	1980	1982
NCPI	89.7	95.4	100	112.7	148.4	200.6	249.3	385.1	551.8

Source: Bank of Tanzania,(1982),Table 27a.

In Chapter 1 Table 1.5 we saw that production of manufactured goods gradually increased in the post-independence period up to the early 1970s. During the 1970s, by contrast, production of manufactured consumer goods stagnated and more recently it has started to decline. The availability of consumer goods in the country thus declined rather sharply during the 1970s and as we have seen concurrent with this decline cash crop production declined.

At the same time as the availability of consumer goods declined the National Consumer Price Index (NCPI) increased. Developments in the NCPI are reported in Table 3.10. Considering the fact that the NCPI probably underestimates developments in the actual price of consumer goods because the NCPI is based on official prices that in many cases are irrelevant when the shelves in the shops are empty and the goods are not available at these official set prices.[53] It seems therefore that the pull effect on cash crop production has been rather weak during the past decade and consequently it is the push effect on peasants' work effort that has dominated during this period.

3.3 Summary

The major findings of this chapter can briefly be sum-

marized as follows. In the large-scale farming sector production has declined at an accelerated rate since 1964. This decline has occurred primarily because sisal production has declined, and since sisal is such a dominant crop in the large-scale farming sector aggregate production in this sector has also declined. A major factor causing the decline in sisal production was the substantial fall in sisal prices from their peak level in the early 1950s.

In the peasant sector, aggregate production appears to have icreased at a steady rate of about 5 percent per annum since 1953, the initial year for the analysis given in this chapter. Production might have slackened off somewhat during the 1970s due to a weaker pull effect. Unfortunately solid evidence for this slackening-off in production cannot be given since food crop production is not known with a sufficient degree of accruacy.

The major production determinant in the peasant sector has probably been the growth rate in rural population, which since independence has increased at a rate close to 3 percent per annum. This growth rate in population coupled with the advances made in reducing the labour constraint have made it possible to cultivate a larger area from where much of the increase in aggregate production in the peasant sector came. But increases in yields per acre and the push and the pull effects on production have also been at work.

The most characteristic aspect of the growth rate in production in the peasant sector is that peasants have switched away from cash crop production to food crops during the 1970s. This switch appears primarily to have been caused by an alteration in the relative price between cash crops and food crops in favour of the latter. However, the policy of condemning the use of hired labour probably also induced many peasants to switch to food crop production since food

crops require less labour inputs than cash crops. In addition it seems that in many important cash crop producing areas the population density has now reached such a high level that there may not be any surplus land available for further cash crop production. In order to secure their minimum food requirements (F), peasants in these areas now must allocate a larger and larger share of their land resources to food crop production and as a consequence cash crop production has declined.

Footnotes Chapter 3

1. The export price index for sisal fell from 236 in 1953 to 120 in 1962 and to 70 in 1968, source: Kriesel et al. (1970) Table 2.
2. See Appendix Table A.1
3. For a survey of the evidence from Africa, see e.g. Helleiner (1975).
4. Malima (1970). The elasticity estimated in this study is based on the expected price of cotton, where the expected price is defined in the usual adaptive expectations model.
5. Ndulu (1981) reports the short run price elasticity of supply of maize to the official market to be as high as 3.1 and 7.1 in Ruvuma and Iringa regions respectively. These two regions are the major maize producing regions in the country.
6. Collinson (1972) Chapter 11 contains a good discussion of the importance of hired labour in peasant agriculture. The content of this book draws primarily from the author's extensive knowledge of peasant farming in Tanzania.
7. Gottlieb (1973) in his analysis of the extent of differentiation among peasant farmers in Tanzania, cites this figure.
8. Mbilinyi (1976) Table 5.14.
9. Nyerere (1967) p. 8 in Cliffe, et al. (eds.), (1975)
10. Kanga (1977) p. xvi. finds that 'at the peak season family labour cannot be streched to cover all activitites of the farm'. As a result farmers were observed to resort to food production rather than tobacco production.
11. Dumont (1969) p. 61.

12. Myint (1958). In this article the arguments of the Vent for Surplus theory are traced to Adam Smith's (1776) analysis of the benefit of trade.
13. Ibid. p. 328-329.
14. Lipton (1968) pp. 327-351.
15. Ibid. p. 350. He concludes that peasants in general can be expected to pursue a survival algorithm and not a profit maximization algorithm that forms the basis of the neo-classical analysis of the behaviour of the firm.
16. In Arusha, Kilimanjaro, Lushoto and Rungwe district a large part of the land, perhaps 50 percent, is mountainous land that cannot be used for agricultural purpose.
17. See e.g. Friedrich (1968) Table 1 and URT/MDB (1981) Annex 7 Table 3.3. Not only has surplus land for coffee production been depleted in this district, more recently the relative price between coffee and bananas has also altered dramatically in favour of banana production. During the 1970s it was much more profitable for the coffee farmers to concentrate their family labour on banana production rather than on coffe production. For a comparison of coffee and banana prices in Bukoba district see e.g. Tibaijuka (1984) Table 6.6.
18. See e.g. Iliffe (1979) p. 347-349.
19. See e.g. Saylor (1973) Table 14.1 and URT/MDB (1981) Annex 7 Table 3.3.
20. Iliffe (1979) p. 473.
21. Raikes (1981) Table 3.6.
22. Cf. Chapter 1 section 1.1.
23. URT (1969) vol.I. p. xiv.
24. Hayam and Ruttan (1971).
25. Daily News 7.7.1981. 'Siasa Ni Kilimo' is the name of an agricultural policy document passed by TANU in 1971. The conclusion of this document reads as follows. 'But, better agricultural practice is not taught by addressing political rallies, it is thaught through person to person conversation and through cooperating. What is needed is action: better farming: not speeches from the platform'. An English version of the 'Siasa Ni Kilimo' is published by Nordiska Africainstitutet (1973) pp. 11-18, from which the quotation given here is taken.
26. See e.g. Sykes (1959) and Beck (1961). Both report the coffee yield per acre in Kilimanjaro district to be around 400 lbs. green coffee per acre. On the other hand Mbilinyi (1976) reports yields to be as low as

340 lbs. per acre for the 1968/69 crop year. This figure may be on the low side since it is based on farmers responses to a questionairre. One can suspect that peasants will understate the actual yields obtained in order not to disclose their income.

27. Acland (1972) p. 80.
28. Friedrich (1968) Table 1.
29. URT/MDB (1981) Annex 7 p. 5. These increases in yields can be linked to the Coffee Improvement Programme (CIP), which was launched in 1978/79 with substantial support from the European Economic Cumunity.
30. Von Rotenhan (1968) pp. 61-63.
31. Cf. Chapter 2.
32. Cf. Lawrence (1971) pp. 110-118 and Coulson (1982) Table 7.2.
33. Raikes (1974) p. 48.
34. Shitundu (1984) Table A.1-A.2.
35. This percentage share is derived from TRDB's Annual reports 1972-1979.
36. Cf. Appendix Table D.2.
37. Coulson (1982) Table 17.3.
38. Hydén (1980) p. 150 referring to the Daily News, reports that 15 000 tons of fertilizer were lying unused in the villages because of peasant claims that fertilizer would have no effect on production.
Coulson (1982) p. 232, also referring to Daily News, gives a revealing story about a man who had been jailed for six months because he had advised peasants not to use fertilizer because this would only increase their debt to the government.
39. Ruthenberg (1968) pp. 339-343. See also Kanga (1977) and Kamuzura (1980).
40. University of Dar es Salaam (1982) reports that a total of 2,648 privately owned tractors and a total of some 175,000 ox-pulled implements were counted in a 1977 survey. The tractors were found to be much more evenly distributed in the country than ox-pulled implements. The reason for this unequal distribution of ox-pulled implements is simply due to the very uneven distribution of the cattle herd. On the distribution of the cattle herd see Raikes (1981) Table 3.6.
41. Iliffe (1979) p. 455.
42. The weakness of the tractor hiring services is well-documented in a study by Migot Adholla (1971).
43. The contrast between World Bank (1961) and World Bank (1977) on agricultural mechanization policies in Tanzania is striking. In 1961 the so-called Transformation Approach was recommended. This approach entailed

the use of tractors and chemical fertilizer. In 1977 by contrast it was argued that the economics of tractor cultivation is much inferior to the economics of manual cultivation. World Bank (1977) Annex VII. p.31.

44. Nyerere (1977) p. 53 in Coulson (1979) ed.
45. Ruthenberg (1968) pp. 343-347.
46. According to Collinson (1972) p. 30 in 1945 the average peasant household in Sukumaland cultivated a total of 2.36 hectares of land. In 1961 it was down to 2.24. According to the agricultural census of 1971/72 it seems to have declined even further. For Mwanza region the corresponding figure was found to be only 1.71 hectares.
47. American Economic Association (1966) Table 2-8.
48. Rudengren (1981) p. 117.
49. Ruthenberg (1968) pp. 353-354. See also Shapiro, (1983).
50. The (c/w) ratio, defined as the ratio between total population and the population in the age group greater than 15 years of age but less than 55 years of age, has increased from 2.1 to 2.2 according to population censuses of 1967 and 1978.
51. Myint (1958) p. 328.
52. The state Trading Corportion was established in 1969 and given a monopoly right on all import trade. For a good account of the development of the institutions set up to control the external trade in Tanzania, see e.g. Binhammer (1975) Chapter 1.
53. For an account of the price control system in Tanzania see e.g. Rice (1976) and Kimbe (1970).

CHAPTER 4

THE PRICE SYSTEM OF THE OFFICIAL MARKET

In Chapter 3 we found that changes in the relative price between cash crops and food crops was a decisive and direct cause behind the peasants' switch towards more food crops during the last 15 years. Producer prices, however, were treated in that chapter as exogenously given. In this chapter and the next we analyse the forces behind the trend in the relative price between these two major categories of crops. A study of the price system of the official market, and thereby of the factors behind the producer prices in this market will be undertaken in this chapter while the determinants of prices in the traditional food market will be discussed in Chapter 5.

Producer prices in the official market are determined administratively by the government. These prices are set within a specific marketing system and hence also have a direct bearing on the incomes of the marketing agents of the system and indirectly have an effect on the expenses of the marketing agents as well. If prices are set such that the incomes of the marketing agents do not cover their expenses this will lead to a depletion of their financial resources and to accumulation of debts, which may eventually lead to a breakdown of the whole system.

In the course of this chapter we shall see that accumulation of debts on the part of some agents has been and still is the major problem of the official marketing system in Tanzania. To show this we shall in this chapter concentrate our study on the overall structure of the official price system, how it has worked and developed. Knowledge of the structure of the system, its development and failings is of great importance not only for an understanding of the

factors behind the developments in producer prices in the official market, but also for an assessment of the price policy pursued. The latter discussion we shall, however, postpone until Chapter 6.

We begin our study of the official marketing system in Section 4.1, where we seek to trace its historical origins. As we shall see, these origins have a bearing on the functioning of the system. In Section 4.2 we specify by means of a few equations a framework for an overall description and analysis of the system. Using this framework we point out the principal policy instruments of the official marketing system and show how the official policy, by the way these instruments were used, subsequently led to a weakening of the viability of the system. Whilst in Section 4.2 we concentrate on a perspective overall analysis of the working of the system, in Sections 4.3-4.5 we go into some important details of the development of various marketing costs and of the use of the individual instruments within the system.

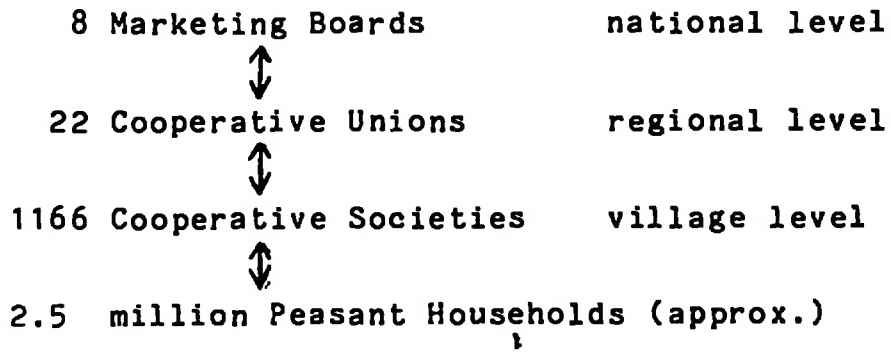
4.1 The Evolution of the Official Agricultural Marketing System

By the dawn of independence a three-tier marketing system had been evolved. Its overall structure in the mid-1960s is depicted in Figure 4.1.

In this marketing system the cooperative societies bought produce from the peasants on a cash basis and sold it to the marketing boards. The cooperative unions were organized to serve the cooperative societies in the villages. The main services provided by the unions were: (1) to organize transport of produce from the villages to a centrally located storehouse where the marketing boards would accept delivery of produce, (2) to obtain credit from the banking

system and advance it to the cooperative societies for them to pay the peasants cash on delivery of produce to the storehouse in the village, (3) to supply the societies with the necessary marketing equipment such as weighing scales, empty bags, office stationery etc., and (4) to receive payment from marketing boards for delivery of produce on behalf of their member cooperative societies. Deliveries of inputs used in agricultural production were also channelled through the cooperatives to the peasants but, as we have seen in Chapter 3, not many inputs were used by the peasants. The main activity of the cooperatives centred around crop marketing.

Figure 4.1 Three-Tier Marketing Structure, Tanzania 1967



Source: Ödegaard (1973), Table 1.

During the post-colonial period the three-tier marketing system was greatly expanded and modified. In fact in the mid-1970s the three-tier marketing system was converted to a two-tier system, but in 1982 the government decided to revert to the three-tier system. In order to understand the motivations for these repeated changes in the marketing system it will be helpful to trace the roots of the three-tier system. We will therefore give a brief account of the

history of the three-tier marketing system, treating the history of the agricultural marketing cooperatives and the marketing boards separately. In our subsequent analysis of developments in the marketing margin and marketing costs in the official marketing system it is important to keep this historical account in mind.

The History of the Agricultural Marketing Cooperatives

The growth in the number of cooperative societies and the number of cooperative members from the introduction of the cooperative form of organization in 1932 up to the mid-1960s is reported in Table 4.1.

Table 4.1 Numbers and Members of Cooperatives,[a] Tanzania 1932-1966, selected years.

Year	1932	1940	1949	1957	1960	1966
No. of Cooperative societies	16	40	79	546	691	1614
No. of Members, '000	na	na	60.4	304.8	362.2	681.0

a) The statistics reported includes all types of cooperatives such as e.g. consumer cooperatives, saving and credit cooperatives, small scale industrial cooperatives etc. in addition to agricultural marketing cooperatives. The great majority of the cooperatives reported are however agricultural marketing coperatives.

Source: URT/TAKWIMU, Statistical Abstract 1973, p. 133.

Based on differences in the motivation behind the formation of cooperatives, three periods are commonly identified in the history of cooperatives in Tanzania: (1) the pre-Second

World War period, (2) the 1950s, and (3) the post-colonial period.[1] In Chapter 2 it was mentioned that the cooperatives were introduced in 1932 as a 'carrot' in order to stimulate cash crop production at the time of the Great World Economic Depression. In one area the peasants and already by the mid-1920s started to to organize themselves in order to protect and further their common interest in cash crop production. The forerunner of the cooperatives in Tanzania is generally said to have been the Kilimanjaro Native Planter Association (KNPA). This association was formed in 1925.[2] The background to its formation was that the settlers were opposed to peasant cash crop production since this would reduce the supply of cheap labour to their farms. It was argued by the settlers that peasants would produce cash crops of inferior quality which would hurt the country's export trade. Consequently peasant cash crop production was not to be encouraged.

The KNPA was formed in response to this argument of the settlers. The initial aim of the KNPA was to help the peasants to produce coffee of equal quality to that of the settlers by providing the peasants with modern inputs. It was this organization that became the first cooperative organization when the Cooperative Societies Act was passed in 1932.[3] The KNPA was renamed the Kilimanjaro Native Cooperative Union (KNCU). Since its registration the KNCU has marketed all coffee produced by peasants in Kilimanjaro district. Developments in coffee production and the marketing of peasant-produced coffee we have already discussed in Chapter 2.

A second phase in cooperative development took place during the 1950s. In this period the great majority of the new cooperatives were formed to protect the peasants' interest in cotton production.[4] The price of cotton had skyrocketed in the early 1950s[5] and this naturally induced many pea-

sants to take up cotton production, as we have seen in Chapter 3. To a large extent they were probably switching away from the food crop production that had been profitable during the Second World War. According to Collinson, in 1945 the average peasant household in Sukumaland (the major cotton growing area) held 17 percent of its land in cotton production while the rest was used for food crop production. By 1961 this proportion had increased to 50 percent.[6)]

The rapid increase in cotton production led to the establishment of the Lint and Seed Marketing Board (LSMB) in 1952. The LSMB was given a monopoly right on all trade in cotton, but rather than buying cotton directly from the peasants the LSMB appointed so-called 'procurement agents'.[7)] At the time when the LSMB was formed, practically all cotton was bought by traders of Indian origin which was probably the major reason why the LSMB was instituted.

The peasants were, however, very suspicious of the traders. They felt they were being cheated at the weighing scales when cotton was bought in the villages. It was therefore with great enthusiasm that peasants gave their support to their local leaders when they started to organize cooperatives and demanded that the LSMB should appoint the cooperative as the sole procurement agent for all cotton produced by members of the cooperative.[8)] Since the LSMB had been set up to control and restrict the growing dominance of the Indian traders, LSMB was naturally quite prepared to appoint the cooperative as its sole procurement agent. Cooperative marketing of cotton also grew very rapidly. Between 1953 and 1959 the cooperatives took over all marketing of cotton produced in Sukumaland.[9)] The great majority of new cooperative societies formed in this period, see Table 4.1, were cooperative societies marketing cotton.

After independence cooperatives were organized for a third and different reason. In this period the initiative for the formation of cooperatives was taken by the government. During the colonization period the peasants had become quite vocal in expressing their dissatisfaction with the 'carrot and stick' policy of the British.[10] Much of this dissatisfaction was channelled through the cooperatives and TANU, and as a result close cooperation had been established between the cooperatives and TANU.[11] It was thus quite natural that TANU looked to the cooperatives as a suitable organization to foster its development strategy when it took over the leadership of the country in 1961.[12]

The new development strategy of TANU envisaged, among other things, that the entire marketed surplus of the peasants be marketed throught agricultural cooperatives by 1970.[13] To achieve this, a programme was initiated to organize cooperatives throughout the country and as a result some 1000 new cooperative societies were formed within a very short period (see Table 4.1). The cooperatives were in this period considered to be an ideal organization to foster rural development.[14]

Summarizing this brief historical account it may be said that the cooperatives formed in the colonial period were to a much larger extent formed as a result of initiatives taken by local leaders and by the peasants themselves than the cooperatives formed in the post-colonial period. In a subsequent section we shall find that this difference between the motivational factors is related to the difference in the performance of the cooperatives.

The History of Marketing Boards

State monopoly organizations play a dominant role in the marketing of the marketed surplus from agriculture in many

LDCs. William Jones, in a historical survey of agricultural trade in Africa, traces the origin of the marketing boards in East Africa to the calls of the European settlers at the time of the Great Economic Depression in the 1930s.[15] Many settlers were, as a result of the collapse of agricultural commodity prices on the world market, in great financial difficulties and called on the government to establish state control over marketing. This could guarantee them high domestic prices and at the same time enable them to export to world markets at competitive prices. State control over agricultural marketing was also considerably extended in Tanzania during this period, although no direct state participation in agricultural marketing was initiated. More restrictive trade laws were, however introduced. These laws were primarily aimed at curtailing the growing dominance of merchant traders of Indian origin.[16]

During the Second World War state intervention and control was imposed on agricultural trade in order to support the war effort. This control was later transferred to marketing boards when the war ended. In all British colonies these marketing boards developed into dominant organizations. They could in fact exert a more powerful impact on the level of economic activities through their price and investment policies than the more conventional fiscal and monetary policy instruments at the command of the government. It was thus quite natural that when independence came the new nationalistic government being anxious to exert its influence, immediately took steps to take more direct control over the marketing boards and at the same time control over the agricultural commodity market was greatly extended.[17]

The scope of operations to the marketing boards in Tanzania by the end of the 1960s is reported in Table 4.2.[18]

Table 4.2 Marketing Boards, Tanzania 1968.

Name Marketing Board	Year constituded	Crop Marketed	Export Volume '000 tons	(a)	shs. mil.
Tanganyika Coffee Board (TCB)	1957	coffee	49.2	(1.25)	265.1
Lint and Seed Marketing Board (LSMB)	1952	cotton lint	69.2	(0.08)	282.9
		cotton seed	41.5		22.2
Tangayika Tobacco Board (TTB)	1963	tobacco	5.0		39.6
Tanganyika Pyrethrum Board (TPB)	1949	pyrethrum	0.6	(40.0)	17.8
National Sugar Board (NSB)	1964	sugar	70.0		98.0b)
The Sisal Marketing Board (SMB)	1965	sisal	189.0	(35.0)	158.7
Tanganyika Tea Board (TTB)	1938	tea	6.7		45.0
National Agricultural Produce Board (NAPB)	1962	cashewnuts	81.0	(30.0)	114.4
		maize	104.8		46.0c)
		rice	30.1		22.5c)
		wheat	20.0		12.0c)
		oil-seeds	24.6		28.7

(a) = in percent of world total output

b) = domestic sales

c) = domestic purchases

Sources: Kriesel, et al. (1970) and Lamade, (1967).

Strains on the Three-Tier Marketing System

The rapid expansion of the official marketing system during the years following independence caused great strains on the marketing system. Criticism of the system mounted to the point when, in 1966, the President found it necessary to appoint a special committee of inquiry into the functioning of the marketing system. The complaints of the peasants as listed in the report read as follows:

' - We complain that the various marketing boards couse heavy expenses which have to be borne by us. These boards fix prices for us, but they do not keep us informed of the prices which our crops fetch in the outside markets.
- We complain of the method the boards use in the fixing of prices. The system takes account of the various boards' expenses, but no regard is had to our expenses from the time of clearing our fields to the time of selling our crops.
- We were induced to join societies with the promise that in addition to the payment we receive when we deliver our crop to the society, we would receive a second payment when the crop is finally marketed by the board. But now we find that there is no second payment, instead we are told every year that our societies incur losses.
- This leads us to believe that societies have been instituted not for the purpose of protecting us from exploitation of the former middleman, but to place us under another worse type of middleman under the cloak of cooperative societies, unions and marketing boards.
- We complain of the continuous economic plunder which we endure from the corrupt employees and committeemen of the cooperative societies and unions. These employees and committeemen have been completely infested with the diseases of nepotism and dishonesty.
- We complain of the inefficiency of most of the societies' and unions' employees and committeemen.
- We complain of the un-democratic malpractice of societies' and unions' committeemen, who scramble to retain their seats in these committees, thus stopping all changes of remedying these shortcommings by substitutin more enlightened committeemen.
- We complain of the improper and unfair grading of produce.
- We complain of the unnecessary delays in weighing and in payment which we suffer when we sell our crops. These delays run for days and cause us to incur unnecessary expenses for food and sometimes storage charges.'19)

No changes in the marketing system were proposed by this committee of inquiry. The only recommendation that was made was the establishment of a Unified Cooperative Service Committee.[20] It was held by the committee of inquiry that

much mismanagement arose in the cooperatives because of collusion between corrupt committeemembers and employees of the cooperatives who were dependent upon the committee members for their employment and had to go along with the committee members in fraudulent practices. The establishment of an independent organization with no local links which had the power to hire as well as to dismiss employees of cooperatives would reduce the power of the committee of the cooperatives in pressing employees to go along with the committee members in fraudulent practices. This proposal was accepted and the new Unified Cooperative Service Committee started its work in 1968.

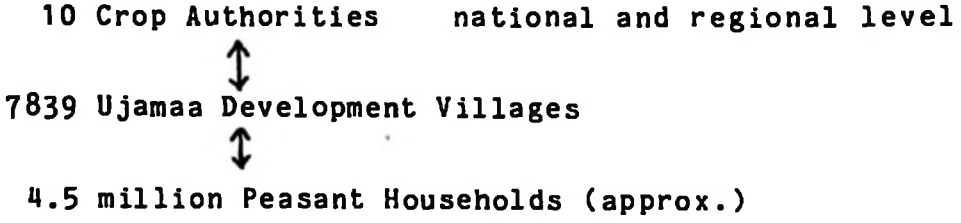
In 1969 a new team of experts was called upon to evaluate the marketing system. This time experts from the US were asked to do the evaluation. The new evaluation team revealed a continuation of the mismanagement of the cooperatives. It was therefore recommended that the cooperatives should not continue to function as sole procurement agents of the marketing boards. In cases where cooperatives failed to function satisfactorily private traders should be allowed to take over the procurement functions. This would effectively introduce an element of competition in the official marketing system. It was also recommended that an umbrella organization of the marketing boards should be established in order to secure better coordination of the agricultural marketing policy.[21)] None of the proposals for changes in the marketing system were, however, accepted by the government.

Although the recommendations of the new evaluation report were not accepted, the report probably contributed to the growing negative attitudes to the cooperatives. The cooperatives were seen as examples of European forms of organization ill-suited to the needs of peasants in Africa. In a subsequent section we shall find that the financial re-

sources of the cooperatives were gradually depleted as a result of cooperative mismanagement. This further convinced the government that the cooperatives, which were modelled in accordance with cooperative principles that had evolved in Western Europe from the time of the Rochdale pioneers in England during the Industrial Revolution, were ill-suited to Tanzania.

But the main reason why the cooperatives were seen as ill-suited to Tanzania was probably that it was held that these cooperative societies were primarily organized to serve individual capitalistic oriented peasants.[22] The new Ujamaa rural development strategy that we have described in Chapter 2 aimed to change this form of production and to develop communal farming in the village. It was argued that the cooperative were ill-suited for this purpose. In order to foster the development of communal farming in the villages the official marketing system was re-organized in the mid-1970s into a two-tier marketing system, the features of which are depicted in Figure 4.2.

Figure 4.2 Two-Tier Marketing Structure, Tanzania 1978



Source: Table 2.5

In the two-tier marketing system the functions of the cooperative societies were taken over by the Ujamaa Development Villages. The Ujamaa villages function as procurement agents for the crop authorities. The Ujamaa villages buy crops from the peasants on behalf of the crop authori-

ties for a fee. An Ujamaa village is incorporated under Tanzanian law.[23] It has a committee elected by all adult residents of the village which is charged with the duty of organizing all the activitites of the village. Most of the activities are still centred around crop marketing, although some communal farming has been undertaken, but progress has not been (as we have seen in Chapter 2) particularly impressive to date. In addition to crop marketing and communal farming some villages also run shops where some basic consumer goods are sold. The daily management of the Ujamaa village is the duty of the secretary/manager, who is an employee of the government.[24]

The functions of the marketing boards and the cooperative unions of the three-tier marketing system were merged in the two-tier marketing system into one organization called a crop authority. At the same time the responsibility of the crop authority was widened. Some of the extension services which were traditionally the responsibility of the Ministry of Agriculture were taken over by the crop authorities. The crop auithorities were also to a much larger extent than the marketing boards involved in the processing of crops within their respective jurisdictions. In general a crop authority had jurisdiction over only one crop, except in the case of food crops.[25] All trade in scheduled food crops was to be under the jurisdiction of the National Milling Corporation (NMC). (In Chapter 5 we shall give a more detailed account of the organization and trade in food crops).

4.2 The overall structure and a perspective view of the official price system

The official price system of the tree-tier marketing system can conveniently be illustrated by a few simple equations as follows.

$$(4.1)\quad ISP = WP^*/e - (TAX + m_{MB})$$

$$(4.2)\quad PP = ISP - (m_{CU} + m_{CS})$$

$$(4.3)\quad \Pi_{MB} = WP/e - (ISP+TAX+c_{MB}) = (WP-WP^*)/e + (m_{MB}-c_{MB})$$

$$(4.4)\quad \Pi_{Coop.} = ISP - (PP+c_{CU}+c_{CS}) = (m_{CU}-c_{CU}) + (m_{CS}-c_{CS})$$

The notation used in this scheme is as follows:

ISP = 'into-store price' (the term used in the official price system) paid to cooperatives for produce delived to a centrally located storehouse

e = the official exchange rate US dollar/T.shs.

WP* = the expected world marketpricepaidtothe marketing boards in US dollar

TAX = tax on cash crop export (flat tax rate of so many shs./ton)

PP = producer price paid to a peasant for produce delivered to a village storehouse

WP = actual world market price paid to the marketing board in US dollar

Π = surplus/deficit of the marketing boards (MB) and of the cooperatives (Coop.) i.e. total income (revenue) total actual expenses

m_i = marketing margin of the marketing agents = stipulated marketing costs based on 'normal' efficiency criteria set by the government[26)]

c_i = actual marketing costs of the marketing agents

subscript i = MB for marketing boards
i = CU for cooperative unions
i = CS for cooperative societies

According to equation (4.1) the into-store price (ISP) which the marketing boards pay the cooperatives is set as a residual between the expected world market price net of export tax (TAX) and a stipulated marketing margin (m_{MB}) of the marketing boards. In the three-tier marketing system the producer price (PP) is in turn set as a second residual i.e. it is equal to ISP net of the stipulated marketing margin m_{CU} of the cooperative unions and m_{CS} of the cooperative societies, as expressed in equation (4.2). The trading results of the marketing agents after the actual costs are taken into accounts, are expressed by equations (4.3) and (4.4). The trading result of the marketing boards is simply the difference between actual revenue earned for produce sold in the world market or in the domestic market and the expenses actually paid, which would simply be the into-store-price paid the cooperative unions, the tax paid the government and its own actual marketing costs (c_{MB}). The trading results of the marketing boards can alternatively be written as the difference between the actual price realized in the world market and the expected world market price and the difference between its marketing margin and the actual costs incurred.

The trading results of the cooperatives are defined by equation (4.4). For the cooperatives the trading result can be written as either the difference between the into-store price earned for deliveries of produce to a centrally located storehouse and the price paid the peasants plus the actual marketing costs incurred, or as the difference between the stipulated and the actual costs incurred by the cooperative unions and the cooperative societies.

It should be noted that the stipulated marketing margin (m_i) is not just an estimate of future costs. It is based on 'normal' efficiency set by the government. The idea is that the difference ($m_i - c_i$) should serve as an incentive

for the cooperatives to keep down their costs and thereby gain a surplus ($m_i - c_i$), which they are to distribute to farmers. This would in addition act as an incentive for farmers to join the cooperatives as members. This actually did function as hoped-for in some cooperatives but, as we shall see in Section 4.3, other cooperatives ran up large deficits and the subsequent accumulation of debts of the cooperative unions affected all cooperatives collectively, efficient as well as in-efficient.

In the system outlined in equations (4.1) - (4.4), there are three major policy instruments which the government can use in its agricultural price policy: (1) the stipulated marketing margins (m_i), (2) the export tax rate (TAX), and (3) the exchange rate (e.). The use of these instruments and more generally the control of the system, entails great difficulties. For example, over-optimistic forecasts of the world market price (WP*) and unrealistically low estimates of marketing costs can lead to serious losses for both the maketing boards and the cooperatives.

Such losses will gradually be manifested in the bank statements of the marketing agents since the working of the marketing system is entirely financed by short term loans from the bank. Peasants are paid cash on delivery of produce to the village storehouse which usually takes place some 6-12 months before the crops can be sold on the world market and payment made to the marketing boards. On the other hand the producer price is announced 12 months prior to the time when the peasants sell the crop to the cooperative society. This therefore means that in setting the producer price the world market price has to be forecast some 18-24 months ahead. Naturally such a lengthy projection of prices greatly increases the risk of making erroneous forecasts of the world market price.

An indication that the forcast WP* was in fact set unrealistically high and the marketing margin unrealistically low is given in Table 4.3, which shows the accumulation of 'bad debt' of the cooperative unions with their member societies. These debts accumulated because, as we shall see in Section 4.3, the marketing costs of some cooperative societies (c_{CS}) exceeded the marketing margin (m_{CS}). In the three-tier marketing system the cooperative unions functioned as banks for the cooperative societies. A National Cooperative Bank was established in 1964 to provide the cooperatives with short-term loans for crop marketing purposes. This bank was merged in 1967 with the National Bank of Commerce (NBC) on the latter bank's formation in that year. NBC was given a monopoly right on all lending to the business sector. This monopoly right the bank still enjoys to day.[27)]

Table 4.3 'Bad Debts' written off on member cooperative societies in the accounts of cooperative unions, Tanzania 1966 - 1971, selected years and selected cooperative unions.

Acronym Coop. Union	Main Crop Marketed	1966/67 shs.'000	1968/69 shs.'000	1971/72 shs.'000
MRCU	Cashewnuts	269	548	2838
IFCU	Maize	1186	473	249
NCU	Cotton	na	1176	na

Source: Ödegaard , (1975) Tables VII.1 - VII.5 .

The cooperative unions had taken our loans with the NBC on behalf of their member societies for crop marketing purposes. The responsibility of the repayment of the loans stayed, however, with the cooperative unions. Thus when losses were made in the cooperative societies because the actual marketing costs incurred exceeded the marketing margin, these losses simply accumulated as bad debts in the

accounts of the cooperative unions, as shown in Table 4.3. The accumulation of these debts was an important factor behind the abolition of the three-tier marketing system and the introduction of the two-tier system.

The two-tier marketing system is somewhat simpler than the three-tier system, but it works in much the same way. It may be outlined in three equations as follows:

$$(4.5) \quad PP = (1-TAX)WP^*/e - (m_{CA}+m_{UV})$$

$$(4.6) \quad \pi_{CA} = (1-TAX)WP/e - (PP+c_{CA}+m_{UV})$$

$$= (1-TAX)(WP-WP^*)/e + (m_{CA}-c_{CA})$$

$$(4.7) \quad \pi_{UV} = (PP+m_{UV}) - (PP+c_{UV}) = (m_{UV}-c_{UV})$$

In this system there is no into-store price since the crop authorities (CA) are themselves responsible for the collection of produce in the village. Thus under this system the expected world market price net of export tax, that is now linked to the world market price,[28] less the stipulated marketing margin of the Ujamaa Villages (m_{UV}) and of the crop authorities (m_{CA}) equals the producer price PP, as expressed in equation (4.5). PP is thus residually determined.

The trading result of the crop authorities is defined in equation (4.6) and the trading result of the Ujamaa villages in equation (4.7). To avoid a deficit it is necessary that the actual costs (c_{UV}) and (c_{CA}) do not exceed the stipulated marketing margin (m_{UV}) and (m_{CA}) and that (WP*) does not exceed (WP). Both the three-tier and the two-tier marketing systems may work without any accumulation of debts if the producer price is in fact set as a residual

and uses realistic values of WP* and the stipulated marketing margin (m_i), as was initially intended.

Since the early 1970s the government has, however, adopted a different and more direct approach in setting producer prices. (The motivation for this will be given in Section 4.3) The producer price was not set as a residual during the 1970s but rather the marketing margin became a residual especially in the case of scheduled food crops. This had very serious conseqences. The accumulation of debts in the three-tier system was indicated in Table 4.3. An accumulation of debts also developed within the two-tier marketing system. This is reported in Table 4.4 which shows NBC's portfolio of loans extended to the crop authorities. The important points to note in Table 4.4 are: (1) the increasing indebtedness of the crop authorities, (2) the dominance of the crop authorities in NBS's portfolio of loans, and (3) the very weak and deteriorating coverage NBC had for the loans extended to the crop authorities. The principal collateral NBC had for the loans extended to the crop authorities was the value of the crop to be harvested and marketed. The accumulation of loans shown in Table 4.4 developed essentially because the actual marketing expenses of the crop authorities exceeded the marketing margin, i.e $c_{CA} > m_{CA}$.[29)]

In order to understand the underlying causes of the developments reported in Table 4.3 and 4.4 we shall have to examine how the principal instruments of the price system have been used. In the remaining part of this chapter we shall see that the use of the instruments of the price system has failed in the sense that it has undermined the viability of the official marketing system. This has occurred because: (1) the marketing margin (m_i) increased, (2) the tax rate (TAX) for cash crop exports increased, and (3) the Tanzanian shilling was overvalued. The result was that

producer prices of cash crops were depressed and lagged behind the development of food crop prices in the traditional food market. This in turn meant that the actual marketing costs in cash crop marketing increased because peasants switched away from production of cash crops to production of food crops. This led to a reduced volume of cash crops with a consequent increase in the actual marketing costs (c_i) on a per unit basis, and hence the actual marketing costs of the marketing agents (c_i) exceeded their marketing margin (m_i). The end-results of this trend are reported in Table 4.4.

Table 4.4 NBC's Portfolio of Loans to Crop Authorities as at 31 December 1980 and 1983.

Acronym Crop Authority	Crop Marketed	Outstanding Loans 31 December 1980 shs.mil.	(1)	Outstanding Loans 31 December 1983 shs.mil.	(1)
NMC	Food Crops	2820	(532)	2080	(640)
SDC	Sugar	100	(29)	194	(165)
CAT	Coffee	531	(80)	937	(174)
TCA	Cotton	730	(78)	2042	(356)
TSA	Sisal	252	(84)	76	(na)
TAT	Tobacco	348	(268)	443	(250)
CATA	Cashewnuts	122	(153)	427	(338)
TTA	Tea	23	(18)	55	(39)
TPB	Pyrethrum	32	(320)	56	(350)
GAPEX	Oil-seeds	70	(70)	391	(797)
Total		5028*)	(186)	6680	(na)

(1) = outstanding loans in percent of the farm gate value of the crop bought

*) = total outstanding to crop authorities represents some 75 percent of NBC's total lending

Sources: UMT/NDB (1981,1983) Summary, Table 3.3, and Summary Table 8, respectively.

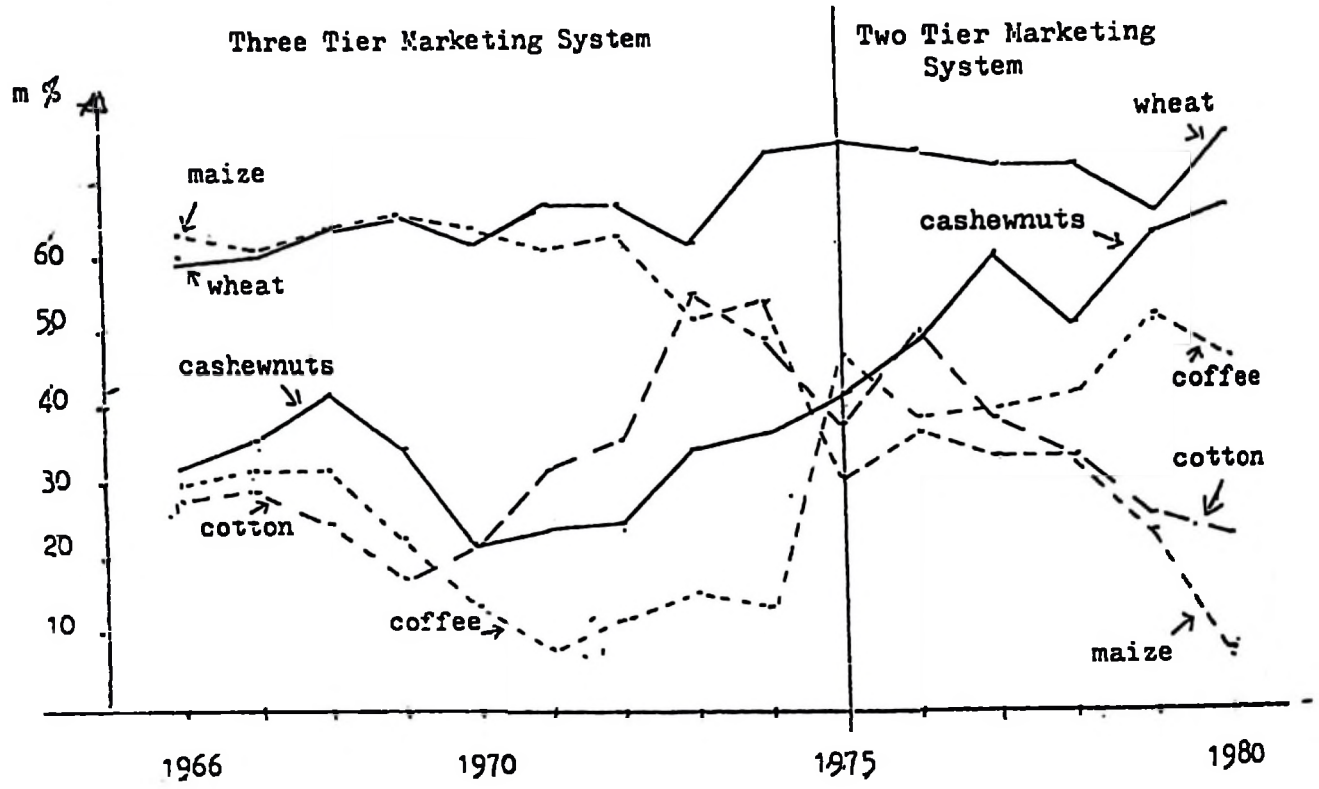
In the case of food crops we shall see that the marketing margin was squeezed to such an extent that the marketing agents involved in food crop marketing also made substantial losses because their actual marketing expenses exceeded their income. In addition we shall see in the next section that the conversion of the three-tier marketing system to a two-tier system did not prevent marketing costs from rising.

4.3 Developments in the Marketing Margin (m_i) and Marketing Costs (c_i)

An indication of developments in the marketing margin on crop marketing is reported in Figure 4.3.

Reading Figure 4.3 the general picture which emerges is that the marketing margin (m_i) developed quite differently for different crops. Up to the early 1970s the marketing margins (m_i) for different crops developed more or less in the same direction. But from the early 1970s, this was not the case. For coffee, cotton and cashewnuts the marketing margins (m_i) were in 1966 equal to 30, 32 and 28 percent of the average export price net of export taxes respectively. In 1980 by contrast the marketing margin (m_i) for cashewnuts had increased to 66 percent whereas the marketing margin for cotton had declined to 23 percent. In the case of food crops the marketing margins as measured by the differences between consumer prices and producer prices in percent of consumer prices, were also roughly equal in the mid 1960s, but between 1966 and 1980 the marketing margin for maize declined from 63 percent to 8 percent whereas the marketing margin for wheat increased from 59 percent to 76 percent.

Figure 4.3 The Marketing Margin for Selected Cash Crops and Food Crops, Tanzania 1966 - 1980.



m = sum of the marketing margin of all marketing agents in percent of average export price net of export tax.

Sources: Appendix Tables B.8 and B.9.

These changes in the marketing margins (m_i) reflect on the one hand increases in actual marketing costs (c_i) following the change to the two-tier marketing system in the mid-1970s. For some crops the increase in (c_i) pushed up the marketing margin (m_i). The decline in the marketing margin (m_i) on the other hand reflects price policy considerations

whereby the marketing margin (m_i) emerges as a residual after the producer price has been set. We shall in this section first give a short review of these policy considerations. Then we shall seek to contrast developments in the marketing costs (c_i) of the two-tier and the three tier-marketing systems.

Price Policy Considerations and the Marketing Margin

In the years immediately following independence the into-store price (ISP) that was the same all over the country, was set by the marketing boards. The producer price was in turn set as a residual after the government had approved the marketing margin which the cooperatives could deduct from the into-store price.[30] Very soon after independence, however, peasant incomes started to lag behind of wage-earner incomes and as a result pressure grew on the government to take a more active part in the determination of producer prices.[31] Thus in 1967 the authority to set the into-store price was transferred from the marketing boards to the government as represented by the Economic Committee of the Cabinet (ECC). At the same time an inter-ministerial agricultural price policy coordinating committee was established with the task of making price recommendations to the ECC. The transfer of the authority to set into-store prices to the ECC did not immediately result in any change in the procedures followed in setting producer prices. The producer prices of cash crops were still basically set as residuals from expected export prices net of the approved marketing margins of the marketing boards and the cooperatives. In the case of scheduled food crops, the producer price was set as a residual from an into-store price net of the marketing margin of the cooperatives. During the 1960s the into-store prices of scheduled food crops were kept roughly in line with world market prices.[32]

From the early 1970s the government adapted a much more active approach in setting producer prices. The producer price was not set as a residual during the 1970s but rather the marketing margin became a residual, especially in the case of maize (see Figure 4.3). In 1973/74 the practice of setting pan-territorial into-store price was abandoned and instead a system with pan-territorial producer prices was introduced.[33)]

These pan-territorial producer prices were probably introduced as part of a policy package that sought to get peasant support for the 'villagization' campaign that we saw in Chapter 2 started to gain momentum after 1972. Another element of this package was that the number of scheduled crops was increased to include some non-preferred food grains such as millet, sorghum and cassava. Up to this time only preferred food grains i.e. maize, rice and wheat had been scheduled food crops.

The demand for non-preferred food crops was relatively small, but since these non-preferred food crops are in general more drought-resistant than preferred food grains, peasants found it prudent to plant these crops in order to have a safe source of food supply in case a drought should develop. The addition of these crops to the list of scheduled food crops was therefore greatly appreciated by the peasants because it gave them assured market outlets. In years with good harvests the peasants would have ample supplies of preferred food grains, primarily maize and rice, and in such years they could sell their harvest of non-preferred food crops in the official market at attractive prices.[34)]

The drought which the country experienced in the mid-1970s had a profound effect on the government's price policy. In 1975 the producer prices of all food crops were raised an

average of 50 percent without any corresponding increase in cash crop prices.[35] This big increase in the producer price of food crops was most certainly induced by the hardships of the drought suffered in 1973/74 and in 1974/75. Drought is a recurring problem in Tanzania, but it is usually confined to the central part of the country. The drought in 1974/75 was felt in all major food grain producing regions and since some regions had also experienced crop failure the year before this aggravated the hardships of the drought suffered in 1974/75.

The dramatic deterioration in the balance of payments situation in the early 1970s probably also induced an increase in the producer prices of food crops. Between 1969 and 1973 the country's current account balance deteriorated from a net surplus of shs. 100 millions to a net deficit of shs. 750 millions.[36] The quadrupling of oil prices and the need for imports of food grains caused by the drought and the decline in wheat production, notably the latter, were the principal factors behind the dramatic deterioration in the balance of payments position.

After the drought in the mid-1970s the main policy objective of the government centred on achieving national self-sufficiency in food grain supply.[37] (The extent to which this policy objective has been achieved we shall set out to examine in the next chapter). During the latter half of the 1970s the producer prices of food crops produced in the peasant sector were successively raised in an effort to achieve this objective. The marketing margins for these food crops as a result became more and more squeezed, (see the maize margin in Figure 4.3 e.g.), because at the same time as the producer prices of food crops were raised there were no corresponding increases in the consumer prices of these crops. The consumer prices of food crops actually steadily declined in real terms during the 1970s, (see

Appendix Tabel B.9). The motivation and the explanation for this we shall take up for further discussion in Chapter 5.

Marketing Costs of the Three-Tier and the Two-Tier Marketing System

In this section we shall seek to contrast developments in the marketing costs of the three-tier marketing system with the two-tier system in order to learn what factors could have pushed up the marketing margin for some of the crops shown in Figure 4.3. Fore this purpose we shall focus three major marketing costs components (1) collection costs, (2) transport costs, and (3) administrative costs.

Collection Costs

Collection costs consist essentially of labour costs for weighing, grading, bagging, storing and recording of produce bought in the villages. The peasants must themselves bring the produce to the village storehouse. (A store-house is in Tanzania commonly referred to as a godown). In order to meet the expenses incurred in the collection of produce the cooperative societies could deduct a marketing margin (m_{CS}) from the into-store price (ISP) the marketing boards would pay the cooperatives for produce delivered to a centrally located storehouse.

An indication of the costs incurred in the three-tier marketing system is reported in Table 4.5a and 4.5b where the actual collection costs (c_{CS}) of the cooperative societies are contrasted with the stipulated marketing margins (m_{CS}) of the same cooperative societies. From these tables it can be seen that, apparently, many cooperative societies incurred marketing expenses that exceeded their marketing margins and consequently they made losses.

The differences in the performance of the cooperative societies reported in Tables 4.7a and 4.7b can in general be linked to the historical origins of the cooperative societies. Those cooperative societies that had c_{CS} greater than m_{CS}, were very often cooperative societies that had been formed in the post-colonial period. Considering the haste with which many of these cooperative societies were established performance could hardly be expected to be otherwise.[38]

It would, however, be a serious mistake to generalize about the performance of the cooperatives in Tanzania based on the unsuccessful ones, which many researchers seem to have done.[39] The fact is, and this is actually the most important point that should be noted concerning Table 4.5a, that in the three-tier marketing system there were quite a few successful cooperative societies that functioned well in relation to normal efficiency criteria set by the government such that their actual marketing costs (c_{CS}) were less than the stipulated marketing margins (m_{CS}) (cf. column (a)).

Losses suffered by the unsuccessful cooperative societies had, however, a profound impact on the three-tier marketing system, because in the end they eroded the financial viability of <u>all</u> marketing cooperatives. This was because, as a consequence of the single channel marketing system in scheduled crops, the cooperative unions could not deny the poorly performing cooperative societies cash for crop marketing purposes because that would have meant that the peasants served by such cooperative societies would be penalized by having no marketing facilities at all. Therefore when cooperative societies made losses these losses simply accumulated as 'bad debts' in the accounts of the cooperative unions, as we saw in Table 4.3. It was this accumulation of 'bad debts' that in the end eroded the

Table 4.5a Average Collection Costs of Crop Marketing 1967/68 – 1969/70, selected regions.

Region	Main Crop Marketed	Three-Tier Marketing System								
		1967/68			1968/69			1969/70		
		(n)	c_{CS}	m_{CS} (a)	c_{CS}	m_{CS} (a)		c_{CS}	m_{CS} (a)	
Sukumaland	cotton	(280)	6.2	6.6 (40)	7.2	6.6 (57)		5.6	6.6 (36)	
Iringa	maize	(60)	3.1	2.0 (80)	2.2	2.0 (78)		11.9*	2.0 (100)	
Mtwara	cashewnuts	(99)	3.5	5.0 (37)	3.9	5.0 (32)		na	5.0	
Kilimanjaro§	coffee	(42)	10.5	- -	10.5	- -		na	-	

*) crop failure that gave no crop to be marketed

§) In coffee marketing no system with stipulated marketing margin was used. Instead a system with second payment to the producers was used, such a system is still in use to day.

(n) = number of cooperative societies included in the sample for estimating average actual marketing costs (c_{CS}) of the cooperative societies.

c_{CS} = actual average collection costs of the cooperative societies cents per kg.

m_{CS} = stipulated marketing margin of the cooperative societies cents per kg.

(a) = percent of (n) that had $c_{CS} > m_{CS}$

na = no figures readily available

Source: Ödegaard, (1975) Tables VI.1 – VI.4.

Table 4.5b Average Shrinkage Losses on Collection of Crops 1966/67 – 1968/69, selected regions.

Region	Main Crop Marketed	Three-Tier Marketing System									
		1966/67				1967/68			1968/69		
		(n)	c_{CS}	m_{CS}	(a)	c_{CS}	m_{CS}	(a)	c_{CS}	m_{CS}	(a)
Sukumaland	cotton	(280)	na	0	na	0.28	0	(57)	0.65	0	(52)
Iringa	maize	(60)	4.6	4.0	(43)	4.0	4.0	(35)	0.70	4.0	(12)
Mtwara	cashewnuts	(99)	2.3	4.0	(17)	4.6	4.0	(48)	na	4.0	na

(n), (a) = see definition given in Table 4.5a.

c_{CS} = actual shrinkage losses in <u>percent</u> of tonnage of produce assembled

m_{CS} = stipulated shrinkage allowance in <u>percent</u> of tonnage of produce to be assembled

Source: as Table 4.5a above.

financial viability of the cooperative unions since such debts were not taken into consideration in setting the marketing margins of the cooperatives. The successful cooperatie societies also lost their funds when the financial viability of the cooperative unions was eroded becuse all the funds of the cooperative societies were pooled and held in the accounts of the cooperative unions.

For the Ujamaa villages, unfortunately, no detailed accounts are readily available such that their actual marketing costs can be established. To date few audited accounts of the Ujamaa villages have been produced. It is, however, most likely that the collection costs in the Ujamaa villages increased. Presently there are some 8 200 Ujamaa villages and each of these villages collects a much smaller tonnage of produce that a cooperative society did, partly because their number is much greater than the number of cooperative societies and partly because the tonnage of produce marketed through the official marketing system declined. Since assembly costs do not vary pari passu with tonnage assembled, the per unit costs must have increased. At the same time the marketing margins of the Ujamaa villages (m_{UV}) were reduced in real terms compared to the marketing margins of the cooperative societies (m_{CS}).[40]

Thus it seems most likely that many Ujamaa villages made losses on their marketing funcions. This is especially so considering the haste with which these Ujamaa villages were formed. The weak financial position of the crop authorities shown in Table 4.4 can probably also partly be linked to losses made in the Ujamaa villages, because in the two-tier marketing system the crop authorities to a certain extent functioned as banks for the Ujamaa villages.

Transport costs

Developments in the costs of transporting produce from the villages to a centrally located storehouse are indicated in Table 4.6.

Table 4.6 Transport Costs of Crop Marketing, Tanzania 1966 - 1981, selected years and selected crops.

Crop Year:		Three-Tier Marketing System 1966/67	1969/70	1971/72	Two-Tier Marketing System 1975/76	1978/79	1981/82
		cents/kg.					
Cashewnuts	(1)	4.6	5.0	8.0	10.2	20.0	23.0*
"	(2)	5.1	5.2	7.6	5.4	8.0	5.2*
Maize	(1)	3.0	3.0	2.7	na	24.8	47.8
"	(2)	3.3	3.1	2.6	na	9.9	9.3

Note:
Transport costs of the three-tier marketing system are the actual costs incurred. For the two-tier marketing system the actual costs are not readily available and hence only the estimated costs can be reported.

(1) = in current prices (2) = (1)/ National Consumer Price Index (NCPI).
*) grossly underestimated because the figure is based on estimated procurement of 60,580 tons whereas actual procurement was only 44,328 tons

Sources: The Three-Tier Marketing System: Ödegaard, (1975). Table XIII.5.
The Two-Tier Marketing System: Ellis,(1979b).Table 5 and URT/MDB, (1981) Annex 1, Table 2.4 and Annex 7 Table 4.1 and Table 3.10 in Chapter 3 above.

The sharp increases in the costs of imported fuel and spare parts for the vehicles used in transporting produce from the villages were of course two major factors behind the increase in transport costs reported in Table 4.6. However, reading Table 4.8, it appears that the cooperative unions

were more efficient in organizing transport of produce than the crop authorities. There were several reasons for this. One reason was the fuller load the cooperative unions could secure on the vehicles used for the transport of produce from the villages. This higher load factor was achieved partly because the cooperative unions coordinated the transportation of all crops produced in an area, whereas the crop authorities only had the responsibility for the crop under their respective jurisdictions.

The cooperative unions also to a large extent coordinated the distribution of some consumer goods to the villages which naturally also helped to secure a higher load factor.[41] Private transporters were also used to a much larger extent by the cooperative unions than the crop authorities and this probably not only secured a more speedy transportation of produce from the villages, but did so at a lower cost than the crop authorities were able to do.

The main reason for the much sharper increase in transport costs of maize than for cashewnuts was primarily the change in the spatial pattern of maize production that developed during the 1970s.[42] This change in the spatial pattern can be linked to the introduction of pan-territorial producer prices in the early 1970s. The background and the motivation for this change in the procedure for setting producer prices we have already commented upon in the previous section.

Administrative costs

An indication of changes in the administrative costs of crop marketing during the period from mid-1966 to the early 1980s is given in Table 4.7.

Table 4.7 Administrative Costs of Cooperative Unions (CU), Marketing Boards (MB) and Crop Authorities (CA), Tanzania 1966 - 1981, selected years and selected crops.

Crop	Year:	Three-Tier Marketing System 1966/67		1969/70		1971/72		Two-Tier Marketing System 1975/76	1978/79	1981/82
		CU	MB	CU	MB	CU	MB	CA	CA	CA
		cents/kg.								
Cashewnuts	(1)	1.4	3.6	2.1	5.3	4.2	7.3	27.0	38.3	56.0*
"	(2)	1.6	4.0	2.2	5.5	4.0	7.0	14.4	15.3	12.6*
Maize	(1)	1.4	1.2	1.5	1.6	1.5	1.6	na	9.3	36.7
"	(2)	1.6	1.3	1.6	1.7	1.4	1.5	na	3.7	8.3

Note:
The administrative costs of the three-tier marketing system are the actual costs incurred. For the two-tier marketing system the actual costs are not readily available and hence only the estimated costs can be reported.

(1) = in current prices, (2) = (1)/ National Consumer Price Index (NCPI)
*) grossly underestimated because the figure is based on estimated procurement of 60,580 tons whereas actual procurement was only 44,328 tons.

Source: as Table 4.6 above.

Reading Table 4.7 it should be observed that it is the combined costs of the cooperative unions and the marketing boards that must be compared with the costs of the crop authorities. It can then readily be seen that administrative costs also increased sharply under the two-tier marketing system. This sharp increase can partly be linked to differences in organizational structure. The crop authorities, which were basically formed out of the organizational structure of the marketing boards, are highly centralized organizations. The cooperative unions by contrast were local organizations and hence they also had a much better knowledge of local circumstances, which probably helped

them to make better decisions about crop marketing than the crop authorities have been able to do.

Another important factor that contributed in keeping the administrative costs of the cooperative unions lower than those of the crop authorities was that the cooperative unions in general were subject to much stricter annual accountability than the crop authorities have been. The audited accounts of the crop authorities have typically lagged three to four years behind the due dates of presentation and for some crop authorities they have yet to be produced.[43] Naturally such a lax control system is not very conducive to the containment of administrative costs.

4.4 Developments in Agricultural Export Taxes

Export taxes in Tanzania are confined to only a few cash crops. This can be seen in Table 4.8 which shows changes in total export taxes by crop.

Table 4.8 Export Tax Revenue by Crop ,Tanzania 1966-1980, selected years.

Crop	1966	1968	1970	1972	1974	1976	1978	1980
				% of Total Export Tax.				
Coffee	58.4	52.5	42.2	75.2	27.6	91.7	88.1	45.8*
Cotton	13.7	19.4	27.4	14.4	4.5	5.3	3.0	25.7
Cashewnuts	20.0	13.1	16.2	10.4	6.3	1.8	3.4	6.9
Sisal	-	-	-	-	35.0	1.1	1.6	21.4
Other crops	7.9	15.0	14.2	-	26.6	0.1	3.9	0.1
Total	100	100	100	100	100	100	100	100
Total shs.mil.	38	53	55	105	223	853	451	254*
(a)	5.1	5.3	4.0	5.4	7.1	16.3	8.0	3.3

(a) = total export tax in percent of total tax revenue
*) export tax on coffee was waived in the mid year

Sources: Computed from the statistics reported in URT The Economic Survey, various issues,URT/MDB,(1981), Annex 12 Table 1.1; Chaliza,(1977) and Appendix Table B.8 below.

Reading Table 4.8 it is apparent that coffee was the principal source of export tax revenue for the government. During the period 1966 - 1980 some 75 percent of all export tax revenue was collected from the export of coffee. This share we may contrast with the fact reported in Chapter 3 Table 3.3 that less than 10 percent of peasants in Tanzania produce coffee.

Table 4.8 also shows that the export tax burden increased during the 1970s. In 1966 export taxes brought in 5.1 percent of the government's total tax revenue. In 1976 by contrast export tax revenue brought in 16.3 percent of total tax revenue. The increase in the export tax burden was actually higher than indicated by this percentage increase because the increase in export taxes was collected from a smaller export volume. (In Chapter 3 Table 3.1 we saw that the production of cash crops declined rather sharply during the 1970s.)

The increase in export tax revenue came from two sources: (1) an increase in export prices, and (2) an increase in the tax rate. Up to the early 1970s a flat tax rate of so many shs. per ton was imposed on the export of such principal cash crops as coffee, cotton and sisal. Then a new tax system with a progressive ad valorem tax rate based on average export prices was introduced, thus severing the link between domestic producer prices of cash crops and world market prices.[44] At the same time as this new tax rate structure was introduced, export prices started to rise, (see Appendix Table B.8), which in combination with the new tax system brought a substantial increase in export tax revenue.

In general, though, it seems from Table 4.8 that export taxes are not a primary source of government revenue. The structure of overall taxation has, however, changed consi-

derably in Tanzania during the post-colonial period and this change has had a considerable impact on domestic price levels.

In 1966 export taxes and import duties together brought in some 45 percent of government revenue. In 1980 this figure was down to 12 percent.[45] This decline was partly due to a change in the composition of imports. Imports of consumer goods declined and since these goods had much higher import duties than machinery and raw materials which dominated the import volume in the 1970s, tax revenue collected from imports declined relatively to total imports.[46] In spite of this decline the overall tax burden increased. Between 1966/67 and 1979/80 the ratio between total tax revenue and Net Domestic Product (NDP) at factor costs increased from 11.8 percent to 20.2 percent.[47] Yet the source of finance of government expenses to an increasing extent came from foreign sources.[48]

This increase in the tax burden was primarily levelled on consumption in the form of a sales tax. The sales tax was introduced for the first time 1968/69, but by the mid-1970s sales taxes accounted for some 50 percent of all indirect taxes.[49] Indirect taxes have typically accounted for some 2/3 of all tax revenue in Tanzania during the post-colonial period. This sales tax naturally also pushed up the consumer price index that we reported on in Chapter 3 and with it prices of food crops in the traditional food market.

Thus the use of the tax instrument has on the one hand depressed producer prices of cash crops in the official market, but on the other hand it has pushed up the prices of food crops in the traditional food market since the latter prices follow overall price developments in the economy. The fact that the sales tax has a fairly narrow base has probably accentuated the increase in food crop

prices. Presently some 50 percent of all sales tax revenue is collected from such 'luxury' goods as beer and cigarettes.[50] In Chapter 5 we shall see that the sharp rise in the price of beer caused by the sharp increase in sales tax may have induced some substitution to local brewed beer which in turn may have pushed up the price of food grains in the traditional food market.

4.5 Developments in the Exchange Rate

The exchange rate obviously has a major impact on producer prices of cash crops since the world market price of these crops in domestic currency is simply the product of the exchange rate (e) and the world market price (WP) in an internationally accepted currency unit. Changes in the world market price (WP) can as a rule be analysed as being exogenously determined since the Tanzanian supply is relatively small in the world market. The exchange rate (e) on the other hand is set in Tanzania by the government.

Changes in the world market prices in domestic currency in the case of coffee, cotton and cashewnuts are reported in Appendix Table B.8. Reading this table it is important to be aware that the exchange rate (e) in Tanzania during the 1970s departed more and more from an equilibrium price as dictated by the forces of supply and demand for foreign exchange. The extent of this departure we shall briefly seek to examine in this section.

It is generally argue that such a disequilibrium exchange rate will lead to changes in domestic relative prices. The domestic price of exportable goods relative to import competing goods will fall over time.[51] A rough comparison of the changes in the domestic price of exportables relative to import-competing goods and the changes in the world market prices of these goods in US dollars is reported in

Table 4.9 row 8, together with the changes in the exchange rate (e).

Reading Table 4.9 row 8 it seems that the argument holds: the domestic price of exportable goods relative to import competing goods has apperently fallen quite rapidly and as a result the domestic price of exportables in terms of import-competing goods has departed further and further from world market prices.

A general theory of exchange rate determination in a free market economy is the Purchasing Power Parity (PPP) theory. According to this theory the exchange rate is a mirror of the purchasing power of money in respective trading countries, meaning that when there is a change in the purchasing power of money in one country, the exchange rate will have to adjust in order to keep the relative price of imported and home produced goods equal in the trading countries.[52)]

In Table 4.9 row 9 an index of the exchange rate (e) is calculated that would have made the domestic price of exportables relative to import-competing goods equal to the prevailing world market prices, treating world market prices and domestic import-competing good prices as given. Comparing row 1 to row 9 and invoking the PPP theory it seems that by the early 1980s the exchange rate (e) was overvalued by roughly 50 percent, cf. row 10.

The overvaluation of the exchange rate (e), indicated in Table 4.11 row 10, is of course a very crude approximation of the extent of disequilibrium in the foreign exchange market. In the literature one may find more refined methods proposed for estimating the shadow price of foreign exchange. A careful examination of these different approaches would take us outside the scope and intent of this section

Table 4.9 Price Indices of Exportable Goods, Import-Competing Goods and the Exchange Rate, Tanzania 1966 - 1981, selected years.

Year row	1966	1970	1974	1976	1978	1981
1. e	100	100	100	85	92	86
2. WP_X	93	100	227	219	193	262
3. WP_M	94	100	208	170	162	221
4. WP_X / WP_M	99	100	109	129	119	119
5. P_X	93	100	227	258	210	304
6. P_M	100	100	184	332	295	552
7. P_X/P_M	93	100	123	78	71	55
8. row (7)/(4)	94	100	113	60	60	46
9. e'	94	100	113	51	55	40
10.(e - e')/e	6	0	13	40	40	53

e = index Bank of Tanzania's average annual selling rate US $/ T.shs.

WP_X = index of Tanzania's average annual export prices in US $ per ton.

WP_M = index of the international price of maize in US $ per ton.

P_X = index of Tanzania's average annual export prices in T.shs. per ton.

P_M = price index of import competing goods in T.shs. per ton: as a proxy to reflect the development in the domestic price of import competing goods the price of maize in the traditional food market is used.

e' = row (2)/(row (4) x row (6))

Sources: Computed from the statistics reported in Bank of Tanzania,(1982) Table 8; URT,(1982) Table 14;URT/MDB,(1976,1983) Annex 1 Table 1.6 and Annex 1 Table 1.4 respectively;UNCTAD,(1979) and in Appendix Table B.2 below.

and besides we would not be able to establish one sharply-determined shadow price for foreign exchange. The various approaches suggested in the literture for estimating the shadow price of foreign exchange would yield somewhat different results.

The 'black market' price of foreign exchange is often used

as a shortcut method of finding the real scarcity value of foreign exchange in an economy where it is believed that the official exchange rate deviates from the exchange rate which would have prevailed in the absence of government intervention in the foreign exchang market. In the early 1980s it was reported that in Dar es Salaam the 'black market' price of foreign exchange was 3 - 4 times higher than the official exchange rate quoted by the Bank of Tanzania. The black market price is not, however, a very good proxy indicator of the real scarcity value of foreign exchange because very often this black market rate will reflect speculative pressures and the desire of some capital owners to get their capital out of a country.

Nevertheless, it seems clear enough from Table 4.9 row 10 that the exchange rate (e) was deliberately overvalued in Tanzania during the latter half of the 1970s and early 1980s. Consequently the agricultural sector was taxed much more indirectly through the overvaluation of the exchange rate than by the tax on cash crop exports as revealed in Table 4.5. The decline in tax revenue collected from the export and import trade reported in the previous section did not represent real decline in the tax burden on foreign trade. This decline simply meant that an indirect tax system had been substituted for a direct tax system.

4.6 Summary

The main aim of this chapter has been to establish the factors that have had a bearing on producer prices in the official market. These prices we have found are set administratively within a certain price system that contains three principal instruments: (1) the exchange rate, (2) export taxes, and (3) the marketing margins. The use of these instruments has had a direct and an indirect effect on producer prices. Direct because producer prices are the

residuals after taxes and the marketing margins have been deducted from final sales prices, which in the case of cash crops are export prices and for food crops domestic consumer prices.

In general export taxes were raised during the 1970s and the exchange rate was overvalued. This quite naturally had a depressing effect on cash crop prices. The taxation of agricultural exports via an overvalued exchange rate apparently was substantially higher than the direct tax on cash crop exports.

The third instrument, the marketing margin, which during the initial period covered in this chapter was set to meet the expenses of the marketing agents, developed quite differently for different crops during the 1970s. For food crops produced in the peasant sector the marketing margin decreased, whereas for cash crops it increased for some but decreased for others. The decline in the marketing margin reflected a change in the procedure for setting producer prices. Instead of having the producer price residually determined the marketing margin became residually determined. The increase in the marketing margin on the other hand reflected increases in marketing costs following the change of the marketing system in the mid-1970s.

This change in the marketing system seemed, however, primarily to have been motivated by the objective of socializing agricultural production and not for securing improvments in the efficiency of the marketing system, and as a result marketing costs increased sharply following the introduction of the new marketing system. But, it was not only this objective that caused the abolition of the three-tier marketing system in the mid-1970s. The many negative asessments of the three-tier marketing system made by researchers in the early 1970s probably also contributed to the

abolition of the marketing system that had evolved since 1932.

An important conclusion of this chapter is that, contrary to the general negative characterization of the three-tier marketing system with the cooperatives as 'exploitative middlemen', the cooperatives were not as inefficient as many researchers during the late 1960s and the early 1970s led the government to believe. The reorganization of the marketing system that followed these negative asessments, led to increases in marketing costs, and in addition it seems that the reorganizations of the system made peasants lose faith in the system which was supposed to serve them. Partly for this reason they took up production of food crops that could be sold in the traditional food market. The tonnage of produce marketed in the official marketing system consequently declined and thereby the viability of the system was undermined.

In addition to having a direct effect on producer prices, the instruments of the price system also had a direct bearing on the income and expenses of the marketing agents of the system. The income of the marketing agents declined not only because for some crops, notably food crops, the marketing margin was squeezed, but also because the tonnage of produce marketed in the official marketing system declined. At the same time as the income of the marketing agents declined their expenses increased. Marketing costs increased due to reorganizations of the marketing system that were not able to prevent marketing costs from rising and since at the same time the tonnage of produce marketed in official marketing system decline this naturally caused an even steeper increase in marketing costs on a per units basis. This increase in turn put pressure on the government to raise the marketing margin with a consequent depressing effect on producer prices. However, the increase in the

marketing margin was not been sufficent to cover the actual costs incurred and as a result the viability of the marketing system was undermined.

Footnotes Chapter 4

1. For a brief account of the history of cooperatives in Tanzania see e.g. Westergaard (1971): Coulson (1982), Chapter 8: Iliffe (1979), Chapter 9.
2. Westergaard (1971) p. 124.
3. Ibid. p. 124.
4. The history of cotton cooperatives is amply documented in the studies by e.g. McLoughlin (1964) and Malima (1971).
5. Between 1947 and 1954 the producer prices of seed-cotton rose from 16 cents/lb. to 60 cents/lb. cf. McLoughlin (1964) Table 9.
6. See Table 2.4 in Chapter 2.
7. On the different forms of trading of the marketing boards in Tanzania, see e.g. Lamade (1967).
8. Coulson (1982) pp. 66-68.
9. Ruthenberg (1964) cited in Coulson (1982) p. 67.
10. Cf. Chapter 2.
11. For a discussion of the forms of cooperation between the cooperatives and TANU see e.g. Iliffe (1979), Chapter 16.
12. Ibid.
13. Tanganyika (1964) pp. 41-42.
14. URT (1967) p. 2 reads as follows: 'there is no other type of organization which is so suited to the problem of rural development.' In this case the reference is to the cooperatives.
15. Jones (1980) pp. 27-30.
16. Ibid. p. 27.
17. Seidman (1974) Chapter 19 contains a good discussion of the expansion of the marketing boards in the post-colonial period in Sub-Saharan African countries.
18. For a brief account of the history of the marketing boards in Tanzania, see e.g. Lamade (1967).
19. URT (1966) p. 3.
20. Ibid.
21. For further details of the report see Kriesel et al. (1970).
22. Nyerere (1967) p. 8 in Cliffe, L et al. (eds.), (1975)
23. The Ujamaa Village Act was passed in 1975. By this act all villages with not less than 250 families were

obliged to register. Effectively the villages became muti-purpose cooperative societies.

24. For further discussion of the organization and management of the Ujamaa villages see e.g. Boesen et al. (1977), McHenry (1979) and Hydén (1980).

25. The functions and organizations of the crop authorities are well described in a number of reports published by URT/MDB., see e.g. URT/MDB (1979b).

26 Several normal efficiency criteria were used as:(1) that the moisture evaporation on crops stored temporarily in the villages should not exceed certain norms that varied for different crops: 4 percent for food grains, but 0 for cotton: (2) the length of storage time that crops could temporarily be stored in the villages should not exeed 3 moths.

27. The National Bank of Commerce (NBC) was formed out of all foreign bank branches when these were nationalized following the passing of the Arusha Declaration in 1967. For an account of the development of financial institutions in Tanzania see e.g. Binhammer (1975).

28. This change in the tax system will be further discussed in Section 4.5.

29. World Bank (1982) Table 3.2 shows that the crop authorities together made a loss of some shs. 680 millions in 1980/81. This correspondens to some 25 percent of the farm gate value of crops marketed.

30. A cooperative Development Department had been established in 1951 to foster and promote cooperative development. This department was headed by a Commissioner of Cooperative Development. One of the principal tasks of this department was to approve the marketing margin of the cooperatives. For further details of the functions of the Cooperative Development Department see the sources cited in footnotes 1.

31. The lagging income of peasants in the early 1960s is amply documented in many studies see e.g. Helleiner (1966) Table IV and V.

32. Livingstone (1971c), pp. 11 - 13.

33. For food grains the system of pan-territorial producer prices was abandoned in 1982/83. Presently prices of food grains are set somewhat higher in regions that are considered to have more favourable conditions for food grain production than in regions that do not have the same natural conditions for food grain production. Thus no consideration is given to transport costs in setting producer prices.

34. Ellis (1980) p. 21 reports that the NMC made substan-

tial losses on its trade in non-preferred food grains because these crops had to be exported at losses in order to free storage space.

35. See Table 3.2 in Chapter 3.
36. The export and import trade will be analysed in Chapter 6.
37. See e.g. URT (1976), vol.I.p 5, and URT/KILIMO (1983), p. 2.
38. Within a period of some 5 years following independence some 1 000 new cooperative societies were formed, see Table 4.1.
39. A frequently cited assessment of the cooperatives in Tanzania made by Saul (1970) reads as follows: 'Rather than cooperation being necessary for socialism, socialism may be necessary for cooperation.' Saul reaches this conclusion because he finds that cooperatives are mismanaged by the 'rich' peasants who use the cooperatives to enhance their own welfare. It appears, however, that Saul in his analysis has focused too much on the unsuccessful cooperatives. Certainly some mismanagement did occur in cooperative societies because 'rich' peasants misused their position as elected leaders of the cooperatives. But 'rich' peasants equally helped to secure some well-managed cooperative societies as Tables 4.5a and 4.5b demonstrate.
40. The stipulated marketing margin of the Ujamaa village has been kept constant at 10 cents per kg. produce assembled since 1975. Deflating this stipulated marketing margin by the National Consumer price index (NCPI) for 1981 which has a value of 443.7 with 1970 = 100, shows that the stipulated marketing margin for the Ujamaavillages for 1981 in real terms only is 2.25 cents per kg. produce assembled. This is substantially lower than the stipulated marketing margin of the cooperative societies.
41. By the end of the 1960s cooperative trade in basic consumer goods was of equal importance to cooperative crop marketing.
42. The changes in spatial patterns of maize production will be discussed further in Chapter 5.
43. See e.g. URT/MDB (1979b).

44. Chaliza (1977) reports the export tax rates for principal cash crops in the mid 1970s were as follows.

Coffee Arabic		Coffee Robusta		Sisal		Cotton-Lint	
Price[a]	Tax %	Price[a]	Tax %	Price[a]	Tax %	Price[b]	Tax %
<6	0	<3	0	<2.5	0	<8	0
6-10	12.5	3-6	12.5	2.5-2.7	15	8-10	10
10-11	25.0	6-7	25.0	2.7-3.5	25	10-11	25
11-12	35.0	7-8	35.0	3.5-5.5	45	11-12	35
12-13	45.0	8-9	45.0	>5.5	60	>12	45
13-14	55.0	9-10	55.0				
>14	60.0	>10	60.0				

a) shs. '000 per ton. b) shs./kg.

Cashewnuts export tax 10 percent of average export price. Copra, Tea and Cardemon export tax 5 percent of their respective average export price.

45. In 1966/67 total tax revenue amounted to shs. 740 millions of which import duties totalled shs. 297 millions i.e. 40 percent of total tax revenue. In 1980/81 total tax revenues collected were shs. 7729 millions of which import duties accounted for only 8.8 percent. During the same period import duties in percent of total import value declined from 22.9 percent to 6.8 percent. Source: Estimated from URT The Economy Survey, various issues.

46. Ibid.

47. Estimated from URT, The Economic Survey, various issues. These percentage figures corraborate quite well with Huang's finding from 1973. Based on the 1969 household budget survey, Huang (1973) estimated the overall tax burden to be equal to 18 percent of average per capita income in 1971.

48. URT/TAKWIMU (1973) Table P.2 shows that for the financial year 1969/70 some 20 percent of the governments's development budget was financed from external sources. In 1981/82 the corresponding figure was 58.8 percent, see URT (1981) Table 20. World Bank (1981) Table 4.3 shows that gross aid disbursement i.e. loans and grants, increased from US dollar 46,9 million in 1970 to US dollar 460,9 millions in 1979. The grant proportion of these disbursements has at the same time increased from 13.2 percent to 69.7 percent.

49. URT The Economic Survey, various issues.

50. Sepehri (1982).

51. See e.g. Krueger (1982b).
52. An account of this theory is provided in most standard textbooks on macroeconomics, see e.g. Dornbusch and Fischer (1978) pp. 644-648.

CHAPTER 5: THE FOOD MARKETS

We shall in this chapter examine the functioning of the official and the traditional food markets in order to analyse the main price trends in these markets. Together with our analysis of the developments in producer prices for the official market which was given in Chapter 4, we should thus get a fairly thorough picture of the development of the relative price between cash crops and food crops and of the forces behind this development. The trend in this relative price which has been very strongly to the advantage of food crops, as we found in Chapter 3, has been a decisive factor behind the recent switch in peasant production from cash crops to food crops.

The development of the production of food crops we have already established in Chapter 3. In this chapter therefore we shall focus on trade and consumption. We shall, however, confine our discussion to food grains as it is relatively difficult to obtain data for all the other food products. Furthermore, as can be seen from Appendix Table A.3, food grains greatly dominate food crop production statistics in the peasant sector. Developments in the marketed surplus of food grains we therefore interpret as indicative of developments in the marketed surplus of food crops in general.

At this juncture it must, however, be stressed that since neither production nor consumption of food crops have ever been measured properly the author's study can only present some crude estimates of the main trends.

The content of this chapter is presented as follows. Before going into a description and analysis of the two food markets we shall provide in Section 5.1 a rough picture of the consumption patterns of rural and urban households. Accounts of food crop trading in the official market and in

the traditional food market will be given in Section 5.2 and Section 5.3 respectively. The aims of these two sections are to seek to establish the order of magnitude of trade in the two markets, and to provide the necessary background information for our analysis of price determination in the traditional food market.

An analysis of supply and demand relationships for food is undertaken in Section 5.4. We seek here to clarify the main factors behind the development of food crop prices in the traditional food market. In Section 5.5, finally, we seek to offer an assessment of developments in the marketed surplus of food grains produced in the peasant sector.

5.1 Food Crop Consumption Pattern

Two comprehensive household budget surveys have been conducted in Tanzania, one in 1969 and one in 1976/77. The salient features of consumption according to these two surveys are summarized and reported in Table 5.1.

The consumption basket of food in Tanzania apparently consists of quite a broad variety of goods, of which only cereals and sugar are scheduled crops. It is important to note this because from the general reportage on Tanzanian affairs one may easily get the impression that all trade in food is controlled by the state. As Table 5.1 shows, this is not the case. Non-scheduled food constitutes a lager share of total food consumption expenditure than scheduled food crops.

Table 5.1 Rural and Urban Household (hh) Consumption Patterns, Tanzania 1969 and 1976/77.

	1969		1976/77	
	Rural	Urban	Rural	Urban
	% of Total Expenditure			
Total Food and Drinks	53.6	32.8	70.4	51.2
Cereals	17.4	9.5	28.1	16.5
Starches	8.3	1.4	10.9	3.7
Sugar and Sweets	1.7	1.9	2.4	3.8
Pulses	2.4	1.1	8.6	3.1
Nuts	1.4	1.1	1.1	1.5
Vegetables	3.0	2.3	3.9	3.4
Fruits	1.0	1.0	1.0	1.2
Meat,Fish,Eggs and Milk	11.4	8.0	10.6	12.8
Other Foods	7.0	6.5	3.6	5.2
Housing	8.1	11.4	5.1	9.4
Clothing	9.7	6.6	13.1	8.9
Miscellaneous	7.9	12.4	4.8	10.7
Non-consumption money outlay i.e. taxes and savings	20.6	36.5	6.6	19.7
Total	100	100	100	100
Average Total Expenditure shs./hh.	1701	6293	5249	8665
" " " shs./capita	378	1398	905	1693

Sources: URT/TAKWIMU,(1972) Appendix 8J:1 and 16J:1: and URT/TAKWIMU,(1984) Table 3A.1 - 3A.2.

For cereals a distinction is commonly made between preferred and non-preferred food grains. Preferred food grains in Tanzania are maize, rice and wheat. Non-preferred food grains are sorghum, millet and some other minor food grains. Per capita consumption of these principal food crops, as revealed by the two surveys, is reported in Table 5.2.

From Table 5.2 it is clear that maize is the principal food crop consumed in both urban and rural areas. In general, though, Table 5.2 seems to reveal more differences in consumption patterns between urban and rural areas than common features. In rural areas cooking bananas is the second most important source of food followed by non-preferred food grains and cassava. The ranking of these

Table 5.2 Rural and Urban Staple Food Consumption Patterns, Tanzania 1969 and 1976/77.

	1969		1976/77	
	Rural	Urban	Rural	Urban
	kg.per person per year.*			
Preferred Cereals	71.4	94.1	106.7	103.6
Paddy	2.2	0.9	0.8	0.5
Rice	4.3	24.6	11.3	25.9
Paddy and Rice[a)]	5.7	25.2	11.8	26.2
Maize,grain	37.6	11.2	17.6	10.7
Maize,flour	25.1	37.2	75.6	49.2
Maize, grain and flour[b)]	65.5	58.9	101.6	73.8
Wheat,grain	1.1	0.3	0.1	0.9
Wheat,flour	0.3	4.6	0.8	1.8
Wheat derived products (bread)	0.8	15.3	0.5	14.6
Non-Preferred Cereals	17.6	0.9	27.6	10.1
Starches	108.2	38.2	96.2	43.1
Cassava	30.6	6.2	19.9	12.9
Sweet Potatoes	18.2	7.6	18.2	8.7
Plantain (Cooking Bananas)	54.2	19.6	28.5	10.7
Other Starches	5.2	4.8	29.6	10.8
Pulses	8.8	9.6	28.3	13.8
Beans,mixed	7.1	7.8	22.7	10.6
Other pulses	1.7	1.8	5.6	3.1

*) In the source total consumption is given . Here total consumption has been converted to kg. per capita based on the number of households and number of persons per households as reported in URT/TAKWIMU, (1972,1984) respectively.

a) paddy converted to rice equivalent by assuming an extraction rate of 65 percent in the milling of paddy

b) maize flour converted to grain equivalent by assuming an extraction rate of 90 percent in rural areas and 78 percent in urban areas in maize milling

Sources: Computed from Cook,(1984) Appendix B Table 1 and URT/TAKWIMU,(1972,1984).

Table 5.3 Urban (U) and Rural (R) Consumption Expenditure by Major Food Crops.

Expenditure Group	Total		Maize		Rice		Wheat		NPG		CVA		BNA		Beans	
'000 shs. hh./year	U	R	U	R	U	R	U	R	U	R	U	R	U	R	U	R
	shs. per person per year.															
< 0.99	472	663	86	154	22	23	8	4	100	72	14	34	1	8	14	68
1.0- 1.99	[illegible]	962	90	178	35	43	11	3	71	41	35	24	1	21	21	80
2.0- 3.99	857	870	111	145	46	39	23	4	22	47	23	21	16	28	33	50
4.0- 5.99	1238	990	117	160	74	47	45	8	5	47	14	11	19	31	39	51
6.0- 7.99	1523	1282	106	183	100	47	74	10	3	32	9	13	13	58	52	58
8.0- 9.99	1697	1473	111	175	115	53	82	15	2	36	9	15	18	72	43	42
10.0-24.99	2696	1918	108	133	142	65	107	15	3	21	12	17	20	50	53	45
25.0-39.99	4668	3065	76	112	162	92	131	33	5	4	9	13	24	68	45	53
> 40.00	9552	7719	55	145	136	112	123	29	4	17	5	5	28	5	29	82

NPG= Non-Preferred Food Grains CVA= Cassava BNA = Bananas

Source: Computed from URT/TAKWIMU (1984), Tables 3A.1-3A.2.

crops varies considerably in different parts of the country. In urban areas it seems that it is rice and wheat that are the principal food crops consumed next to maize.

Judging the accuracy of the consumption patterns reported in Table 5.2 is very difficult. Rural consumption of preferred food grains for 1976/77 might be on the high side. A rule of thumb on rural food grain requirements in Tanzania reads as follows: 'A bag of food grains per household member per year.'[1)] A bag contains 90 kg. For 1969 the sum of preferred and non-preferred food grains adds up to 89 kg. which would seeems to lend some support for the 1969 figures. On the other hand urban consumption of wheat is almost certainly underestimated for 1976/77, even though urban consumption of wheat is substantially higher than for rural areas. The per capita consumption of wheat reported implies a total consumption of wheat of some 30 000 tons and yet, as we shortly shall see, in that year NMC sold a total of 68,700 tons.

An indication of the income effect on consumption of major food crops is reported in Table 5.3.

Crude measurements of the expenditure elasticities can be derived from Table 5.3 by fitting an equation of the following form.

$$(5.1) \quad q_{ij} = e^{a - bY_j^{-1}}$$

where q is equal to the expenditure om crop i, i = maize, rice etc., j = 1 ... n expenditure group, Y is equal to total expenditure, a and b are the two coefficient to be estimated using the ordinary least squares technique, and e is the irrational number (e).

Equation 5.1 has the advantage that q_i will increase/ de-

crease towards the asymptotic level e^a when Y increases indefinitely. This is an important property because consumption of food crops is in general observed to exhibit an asymptotic level.[2] This asymptotic level is also clearly discernable in Table 5.3

The expenditure elasticity of equation 5.1 is simply equal to b/Y. In Table 5.4 the expenditure elasticity of major food crops consumed in Tanzania obtained by fitting equation 5.1 to the data in Table 5.3 is reported for average values of Y. The average values of Y are reported in Table 5.1.

Table 5.4 Expenditure Elasticity of Major Food Crops in Urban and Rural Areas, Tanzania, 1976/77.

Crop	Urban	Rural
Maize	-0.05 (0.60)*	0.05 (0.20)*
Rice	0.60 (14.3)	1.51 (3.51)
Wheat	0.90 (16.2)	2.47 (2.64)
Non-Pref. Grains	-1.15 (5.76)	-1.51 (1.30)*
Cassava	-0.36 (2.73)	-1.77 (3.68)
Banana	1.05 (5.90)	0.92 (0.66)*
Beans	0.32 (3.73)	-0.11 (0.28)*

*) statistically insignificant at the 2.5 percent significance level

Note: The figures in the parentheses are the t-statistic values of the estimated coefficient b obtained in fitting equation 5.1.

The accuracy of the data base in Table 5.3 can of course be questioned. Nevertheless the picture of the consumption pattern as revealed in Table 5.4 is probably fairly realistic.[3] The reason for the much higher statistical significance of the elasticity coefficients estimated for urban areas is of course simply that in urban areas there is no subsistence consumption whereas the bulk of food consumption in rural areas is consumption of own-produced

output.

A high expenditure elasticity also indicates that the own price elasticity of demand is quite high.[4] The low expenditure elasticity for maize thus indicates that the own price elasticity of demand for maize is probably also very low. In fact maize does not appear to qualify for classification as a preferred food grain since its income elasticity may be negative and thus maize should instead be classified as an inferior good according to standard classification criteria used in economic analysis.

The preferred food grains, clearly, are wheat and rice. Non-preferred food grains and cassava are less desired by consumers in Tanzania than wheat, rice, banana and beans. Cassava and non-preferred food grains are also chiefly produced as subsistence food crops primarily because these crops are not only more drought resistant than the other food crops listed in Table 5.4, but also because these crops are much more easily stored on the farm. Storage losses are a serious problem for peasant households. A crop like cassava can however be left in the ground virtually up to the time when it is needed for consumption purposes and thus there is no storage problem. Unfortunately the nutritional quality of cassava is inferior to that of the other food crops listed. Poor quality cassava also contains a dangerous toxic substance that is found to have crippled many poor rural people.[5]

5.2 Food Crop Trading in the Official Market

Official trading in food crops was first taken up during the Second World War. In Chapter 2 we learned that food grain production was greatly encourgaed during the Second World War. At the same time as production was encouraged the government also organized a Cereal Pool for the procu-

rement and sales of food grains in all East African colonies/protectorates.[6] When the war ended this Cereal Pool was decentralized and an official food crop trading organization was set up in each of the three East African colonies/protectorates. The Grain Storage Department was set up in Tanzania in 1949. The objectives of this trading organization were listed as follows: (1) to provide producers of staple foodstuffs with an assured market, (2) to provide storage facilities, (3) to ensure orderly marketing of staple foodstuffs, and (4) to build up inventories in good seasons to meet shortages in poor seasons.

The Grains Storage Department was fairly successful during the initial years of trading and reported a profit on its trading. However, in the mid-1950s, after a bumper harvest maize had to be exported at great losses, the government dissolved the organization in 1957.[7] During the period 1957-1963 there was no official market in food crops. All trade in food crops was conducted in the traditional food market.

The official food marketing system was reestablished in 1963 when the National Agricultural Produce Board (NAPB) was formed. The objectives of this marketing board were stated to be essentially the same as those of the Grain Storage Department. But, it was also held that by participating in trade the NAPB would contribute to agricultural *cum* economic development and towards the eradication of exploitative middlemen traders.[8]

NAPB was granted a monopoly right on all trade in cashewnuts, oil-seed crops and preferred grains i.e. maize, rice and wheat. During the first years of trading the NAPB seemed to be fairly successful. The main reason for this prosperity was that cashewnut production grew very rapidly in the early 1960s and with increased trading volume this

made it fairly easy for the NAPB to absorb marketing costs which also rose very rapidly.[9] It appears however that the exploitative nature of the food market was not eradicated by the establishment of the NAPB at least not judging by the peasants' evaluation of the three-tier marketing system that we have commented upon in Chapter 4. NAPB also made substantial losses on food crop trading when again after a bumper harvest maize had to be exported at losses.[10]

In 1972/73 the NAPB was dissolved when steps were taken to reorganize the official marketing system. The trading operations of the NAPB were taken over by three new organizations. Cashewnut trading was taken over by Cashewnut Authority of Tanzania (CATA), oil-seed trading by the General Agricultural Products Exports (GAPEX) and food crop trading by the National Milling Corportation (NMC).[11] At the same time the list of scheduled food crops was extended to include cassava, sorghum and millet. Later the bean crops were added to the list. Statistics showing developments in the NAPB's and the NMC's domestic trading in food crops are reported in Table 5.5.

No real trend in the purchases of food crops can be discerned from Table 5.5. The most important features to be noted are the steep fluctuations in the purchases of food crops produced in the peasant sector. We shall seek to establish the causes of these fluctuations in Section 5.4 where the supply and demand relationships for food will be analysed.

The major food grain producing regions in Tanzania are Arusha, Kilimanjaro, Dodoma and Iringa Region. During the 1960s and the early 1970s these four regions provided some 80 percent of all food grain-purchases, as reported in Table 5.4.[12] The spatial pattern of food production, however, changed considerably during the 1970s primarily as a

Table 5.5 NAPB's and NMC's Domestic Purchases (PCH) and Sales (SAL) of Food Crops 1963/64 - 1980/81.

Crop Year	Maize		Paddy/Rice		Wheat		Sorghum and Millet	Cassava	Beans (mixed)
	PCH	SAL	PCH	SAL	PCH	SAL	PCH	PCH	PCH
	' 000 tons.								
1963/64	108.9	85.9	np	na	20.7	na			
64/65	87.1	84.7	np	na	30.1	na			
65/66	70.0	87.1	44.0	47.5	29.5	57.2			
66/67	112.9	75.6	46.0	50.3	28.0	57.1			
67/68	104.3	79.8	41.0	59.4	33.1	57.3			
68/69	127.5	104.5	45.6	68.9	27.6	66.4			
69/70	54.1	123.4	59.8	78.6	21.0	66.7			
70/71	185.0	116.6	93.5	81.8	43.0	69.9			
71/72	43.0	160.0	68.6	84.2	56.7	71.6			
72/73	104.9	143.4	73.1	na	46.8	na	0.9	14.0	
73/74	73.8	175.0	59.6	na	27.9	na	4.1	18.9	
74/75	23.9	192.6	22.6	66.0	14.4	62.8	4.4	17.8	
75/76	91.1	145.4	18.5	53.4	24.5	60.3	5.1	17.4	
76/77	127.5	132.8	22.5	80.5	27.1	68.7	21.0	20.2	
77/78	213.2	109.0	54.0	114.8	35.3	88.0	70.3	36.9	40.3
78/79	220.4	145.0	52.3	114.8	28.8	95.1	98.5	63.8	58.3
79/80	161.5	224.7	46.5	82.6	26.6	58.1	37.5	44.2	79.4
80/81	104.6	258.4	20.3	123.1	27.9	45.1	20.8	7.5	48.6

(Sorghum and Millet PCH, Cassava PCH, Beans (mixed) PCH: ↑ non-scheduled crops ↓)

np= no purchases na= no figures are readily available

Sources: Ödegaard,(1974) and URT/MDB,Agricultural Price Review, various issues.

Table 5.6 Net Import/ (Export) of Preferred Food Grains 1950 - 1980.

Calendar Year	Maize	Rice	Wheat	Crop Year	Maize	Rice	Wheat
	'000 tons.				'000 tons.		
1950	44.2	2.9	4.8	1963/64	(22.6)	na	na
1951	2.7	1.2	1.7	64/65	-	(2.2)	na
1952	(8.5)	0.5	1.1	65/66	(8.7)	14.7	21.6
1953*	53.8	0.1	1.6	66/67	(1.4)	1.4	32.1
1954*	19.0	0.7	2.9	67/68	(8.3)	3.8	13.6
1955	(87.7)	0.7	1.0	68/69	(43.3)	-	36.7
1956	(108.1)	1.7	4.7	69/70	46.9	-	35.7
1957	(5.7)	3.7	7.1	70/71	(53.4)	-	11.6
1958	-	0.9	14.6	71/72	92.3	(4.2)	49.5
1959	(6.2)	2.1	17.8	72/73	78.9	(10.2)	8.2
1960	(44.4)	1.7	24.0	73/74*	183.6	23.0	35.8
1961*	62.3	2.1	24.4	74/75*	317.6	63.0	109.6
1962*	68.9	2.1	30.6	75/76	106.5	20.8	60.2
1963	26.9	2.2	19.2	76/77	41.6	5.3	33.6
				77/78	34.3	48.1	40.5
				78/79	-	41.2	61.3
				79/80	32.5	54.7	32.5
				80/81	274.6	62.2	48.7

*) years with severe drought in Central Region

Note: The figures here reported contain both commercial and non-commercial import.

Sources: Kriesel,et al. (1970) Tables 4 - 6; World Bank (1977) Annex VI. Table 3; URT/MDB,Agricultural Price Review , various issues.

result of the introduction of a system with pan-territorial producer prices. The motive for the introduction of pan-territorial producer prices and the extension of the list of scheduled crops we have already commented on in Chapter 4. The change in the spatial pattern of food crop production had the effect that two new major food grain producing regions emerged.

These two new regions were Ruvuma and Rukwa. Presently these two regions provide the NMC with some 25-30 percent of all domestically-produced maize, whereas at the time when the NAPB was buying these two regions only supplied some 2-3 percent.[13] But, since these two regions are located much futher away from major centres of urban demand, this, as we saw in Chapter 4 Table 4.7, greatly added to the transport costs of maize marketing.

The difference between domestic purchases (PCH) and sales (SAL) reported in Table 5.5 is made up of net imports/(exports) and/or changes in the holding of stocks. Changes in the net imports/(exports) of preferred food grains during the period 1950-1980 are reported in Table 5.6. From this table it seems that domestic production of food crops went down during the 1970s since imports increased. In the course of this chapter we shall seek to show that this increase in the import of food grains was probably not caused by a decline in food production in the peasant sector, rather it was due to: (1) an alteration in the pattern of trade in the official market and the traditional food market, and (2) a decline in wheat production in the large-scale farming sector.

Reading Table 5.6 another important observation to be made is that the statistics reported contain both commercial and non-commercial imports. Non-commercial imports i.e. food aid, are not new in Tanzania. In the colonial period

drought had on several occasions necessitated the distribution of free food as famine relief in the Central Region, (now Dodoma Region). It seems that at least once every decade drought has necessitated the distribution of free food as famine relief in Dodoma Region. For the period covered in Table 5.6 Clarke Brooke reports the following tonnages distributed free as famine relief: 18400 tons of maize in 1953/54 and 63400 tons of maize in 1961/62.[14] In 1973/74 and 1974/75 free food was also distributed in Dodoma Region, but unfortunately the figures on tonnage distributed are not readily available.

Until the mid-1970s practically all food aid receipts were of maize that was distributed free as famine relief. Under the US PL 480 food aid programme a total of 88100 tons of maize was received in 1961/62 and most of this was distributed as famine relief in Dodoma Region. Changes in non-commercial food grain imports during the latter half of the 1970s are reported in Table 5.7. The important point to observe in this table is that maize was no longer the principal food crop received. It was wheat instead. Non-commercial imports of wheat accounted for some 90 percent of total (i.e. commercial plus non-commercial wheat imports) during the period 1975-1980 and this total represented some 160 percent of domestic production. By contrast total imports of maize amounted to only 4.6 percent of estimated domestic production during the same period.

Sales in the official marketing system are to a large extent a reflection of urban demand. During the latter half of the 1970s it seems that the official marketing system developed more and more to cater for demand in Dar es Salaam. An indication of this development can be seen in Table 5.8 where the NMC's sales of food grains in Dar es Salaam and other areas are contrasted. According to this table it seems that in the mid-1970s per capita sales in

Table 5.7 Non-Commercial Imports of Preferred Food Grains, Tanzania 1975–1980.

Crop Year	Maize	Rice	Wheat	Total	Total shs. mil.	(c) %
		' 000 tons.				
1975/76	27.0	-	45.7	72.7	88.4	12.2
1976/77	7.0	-	33.6	40.6	48.0	9.8
1977/78	34.3	21.6	40.5	96.4	122.6	23.6
1978/79	-	20.2	45.5	65.7	118.6	29.5
1979/80	-	50.1	32.5	82.6	230.8	30.6
1980/81	86.5	51.0	48.7	242.1	462.4	43.6
Sum	154.8	142.9	246.5			
(a)	31.6 %	61.5 %	89.1 %			
(b)	4.6 %	17.6 %	162.6 %			

(a) = non commercial import (i.e food aid) in percent of total import
(b) = total import in percent of estimated domestic production for the period 1975 - 1980
(c) = total food aid value in percent of total food imports

Source : URT/MDB (1981a) Annex 1, Tables 2.3, 3.4 and 4.4.

Table 5.8 NMC's Total Sales of Food Grains in Dar es Salaam (DsM) and Other Areas, Tanzania 1975 - 1980.

Crop Year	DsM	Other Areas	DsM	Other Areas	(a)
	'000 tons.		kg./person		
1974/75	88.6	194.0	176.0	198.6	88
1975/76	82.1	126.7	147.2	122.0	120
1976/77	96.3	127.0	156.0	115.5	140
1977/78	122.3	116.4	178.8	94.6	189
1978/79	152.8	123.2	201.8	92.7	228
1979/80	157.8	118.9	190.0	83.3	228
1980/81	180.2	162.4	197.7	105.8	186

(a) = kg. per person sales in DsM in percent of kg. per person sales in Other Areas

Note:

In order to estimate per capita sales in other areas it has been assumed that the Other Areas category is the same as Other Urban Areas. Per capita sales in DsM and Other Urban Areas have been estimated based on the population census of 1978, which reported DsM's population at 758.3 thousand and Other Urban Areas to 1328.6 thousand. The latter figure includes the population of district towns. Population in years other than 1978 has been estimated by simple projections using the growth rate in urban population reported in Table 1.2 in Chapter 1.

Source: URT/MDB (1981a), Annex 1, Tables 2.3, 3.2 and 4.1.

Dar es Salaam and other (urban) areas were roughly equal, but after that per capita sales in Dar es Salaam increased whereas per capita sales in other urban areas declined.

This development is an indication that a substantial excess demand developed in the official market. The development can partly be linked to the price policy pursued. In Chapter 4 we saw that the consumer prices of food crops in the official market were kept very low. In fact during the 1970s consumer prices in real terms declined. At the same time producer prices in the official market lagged behind price changes in the traditional food market. The result was that the government was unable to procure enough food grain to meet demand. Demand in the official market was more and more, during the latter half of the 1970s and the early 1980s, met through rationing and long queues. Those who failed to obtain their food requirements in the official market were forced to seek their food in the traditional food market.

5.3 Food Crop Trading in the Traditional Food Market

In practically every village and in all towns in Tanzania there is a central market place where free market trade in food crops has taken place for a long time. At present non-sceduled crops such as starches, pulses, fruits and vegetables are being traded in the these market places. Other types of cheap foods such as dried fish, which is a major source of protein in the diet of many Tanzanians, are also commonly sold at these market places. Cheap household utensils and some handicrafts are also sold. In a village there is usually only one market place, but in the larger towns one can find several such market places where free trade is conducted. In the village the peasant or his family member will often offer his food crop for sale himself, but in urban areas individual traders opperate.

In general, trade at these market places increased considerably during the 1970s although the statistics on trade are scanty.[15] At the wholesale market in Dar es Salaam the volume of non-scheduled food crops traded increased from 14300 tons in 1973 to 43000 tons in 1980.[16] This corresponded to an annual average growth rate of some 25-30 percent which was substantially higher than the population growth rate for Dar es Salaam. Similar trade increases were observed at all major market places in Tanzania.

At these markets trade in scheduled food crops also takes place. Some of this trade is illegal, but not all. It is not illegal for a peasant to sell a scheduled food crop to another person when it is for private consumption. It is, however, illegal for a trader to buy scheduled food crops from peasants for sale. In practice it is difficult to distinguish between these two forms of trade and as a result a considerable volume of scheduled food crops is being sold in these markets as well.

The prices at which scheduled food crops are being sold in these markets are in general substantially higher than the officially set consumer prices for scheduled food crops. In Table 5.9 the development in the official consumer price of maize and the average price at which maize has been traded at some of the major market places is contrasted.

From Table 5.9 it seems clear that the price of maize in the traditional food market was substantially higher than the officially set consumer price of maize during the latter half of the 1970s and the early 1980s. Time series statistics on changes in producer prices of maize in the traditional food market are not available. Some observations of producer prices of maize have, however, been made. These show that producer prices of maize were substantially

higher than the official producer prices.[17)]

Table 5.9 Consumer Price of Maize in the Official Market and the Traditional Food Market, Tanzania 1968 - 1981.

Year:	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
(1)	80	80	80	80	80	125	175	175	175	175	175	125	125	250
(2)	86	78	88	96	98	108	162	182	292	314	260	292	336	486
(3)	8	- 3	10	20	23	-14	-7	4	67	79	49	134	169	95

(1) = consumer price of the Official Market cents per kg.

(2) = consumer price of the Traditional Food Market cents per kg. The lower price in the Traditional Food Market reported for some years is probably due to reporting error in the official statistics.

(3) = ((2) -(1))/(1) in percent.

Sources: Appendix Table B.2 and B.9 below.

Naturally there are no statistics available that can show what volume of scheduled food crops is sold in the traditional food marketing system, but it seems that it is much more than that traded in the official market.

In a study of the maize market in the early 1970s Peter Temu found it reasonable to assume that twice as much maize was traded in the traditional food market as in the official food marketing system.[18)] It would appear that trade in scheduled food crops in the traditional food market increased quite considerably during the latter half of the 1970s and the early 1980s. For the 1983/84 crop year URT/MDB estimated that only some 25 percent of the marketed surplus of maize was being sold in the official marketing system.[19)]

This development is obviously caused by shortages of supply in the official market which cause the consumer to buy his

food requirements in the traditional food market, which in turn forces an upward movement in the price in the traditional food market. The deterioration in the efficiency of the official marketing system has also contributed to the stimulation of increased trading in the traditional food market.

In Chapter 4 we saw that a combination of increases in marketing costs and the taxation policy caused producer prices in the official market to be depressed. Increases in marketing costs also from time to time enforced changes in the official marketing system and these changes probably also contributed in undermining peasant trust in the official marketing system. The strained liquidity position of the crop authorities which from time to time meant that peasants were not paid cash on delivery of produce to the procurement agents of the crop authorities, was probably thus a major factor undermining peasants' trust in the official marketing system.

5.4 Price Formation and Quantities Supplied and Demanded in the Two Markets.

In order to simplify our analysis it will be convenient to think of food as a single homogeneous good which we shall denote F. A fully-fledged analysis of price formation and the supply of and demand for F is complicated because not only do we have two different types of markets, an official and a traditional food market where different but interrelated supply and demand characteristics can be expected to prevail, but also, as we have seen in Section 5.1, the demand pattern between urban and rural areas differs sharply, and in addition there are other important regional differences.

We cannot deal explicitly with all these differences and

characteristics, but will concentrate on main features of the working of the system and on explaining major characteristics such as the gap between the price of food in the traditional food market P^t, and in the official market P^o, and the tendency for P^t to fluctuate much more strongly than P^o. To ease exposition we start with some simple and partial considerations and extend the analysis step-wise.

We consider first the supply and demand for F of the rural population i.e. of the people who at the same time both produce and demand F. For this reason we can expect to find a causal relationship between shifts in the supply of and demand for food as a function of price, that runs from supply shifts via income shifts to demand shifts. Moreover we have to distinguish between total or gross supply of F, denoted S, and net supply or the marketed surplus MS, which is S minus rural demand D^R.

We assume at the outset constant and normal weather conditions. Gross supply S is in Figure 5.1 expressed by the kinked curve $\underline{F}S$. We assume that the price of the cash crop is constant. Below a certain relatively low price of food $\underline{P}$ the production of F is supposedly constant and equal to $\underline{F}$, which indicates a minimum subsistence level of food, cf. Chapter 3 Figure 3.3. Above $\underline{P}$ the supply increases in response to higher P.

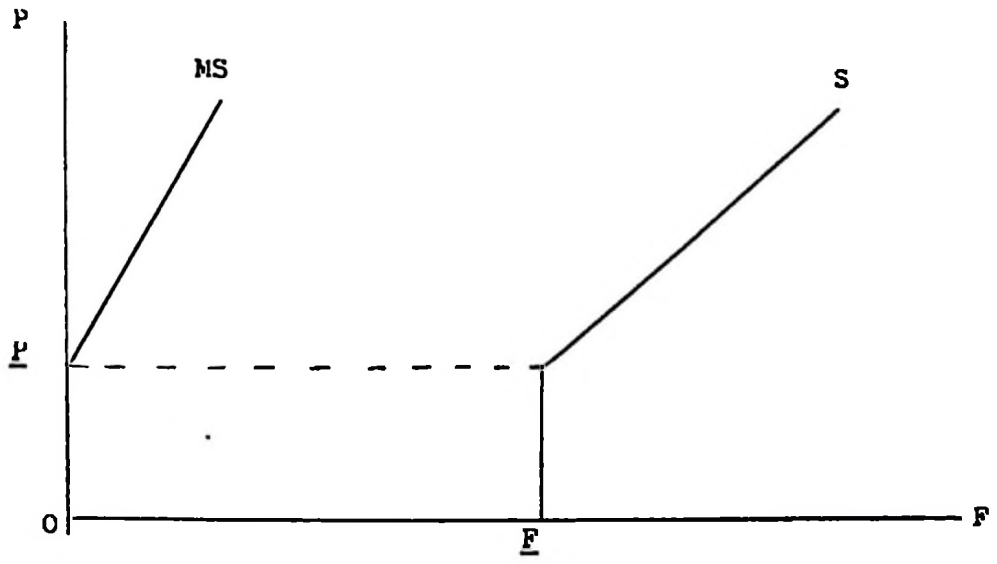
Rural demand for food D^R depends essentially on: (1) the price of food P, (2) income earned in cash and food crop production, and possibly on (3) wealth/assets.[20] We disregard the last argument and assume that total rural income is the sum of: income earned on cash crop production H(P), and on income earned on food crop production P S(P). H(P) is supposed to decrease with P since a relatively higher food price P is a stimulus to more food crop production. We assume that other prices are constant. We thus can

write:

5.2 $D^R = f\,(P, (H(P) + P\,S(P))) = g(P)$ for $P > \underline{P}$

We make the usual assumptions that the derivative of f with respect to price is negative and with respect to income positive. If P increases, rural income (H(P) + P S(P)) increases partly as a result of the higher P i.e with constant H and S, and partly because of a switch from cash to relatively more food crops since the relative price has changed. Thus, there is a tendency that D^R increases because of a higher income, while on the other hand a higher price per se tends to reduce demand. We assume that the income effect outweights the price effect.

Figure 5.1 Rural Supply of Food



A higher price P is thus supposed to raise both S and D^R. We assume, however, that S'(P) is greater than g'(P) i.e that the increase of D^R is less than that of S. Some of the increase in peasants' income will be spend on other goods.

The marketed surplus, MS = S(P) - f(P,(H(P)+PS(P)), will then according to our assumptions increase with P above the level of P = $\underline{P}$, but with a slope that is steeper than that of S(P).

We may interpret the curves in Figure 5.1 as representing gross aggregate supply and net aggregate supply of the rural sector. By doing so we disregard regional differences and other difficult aggregation problems. Since our aims is, however, to explain the existence of two types of markets with different price levels and some other characteristics, we abstract from these differences and problems.

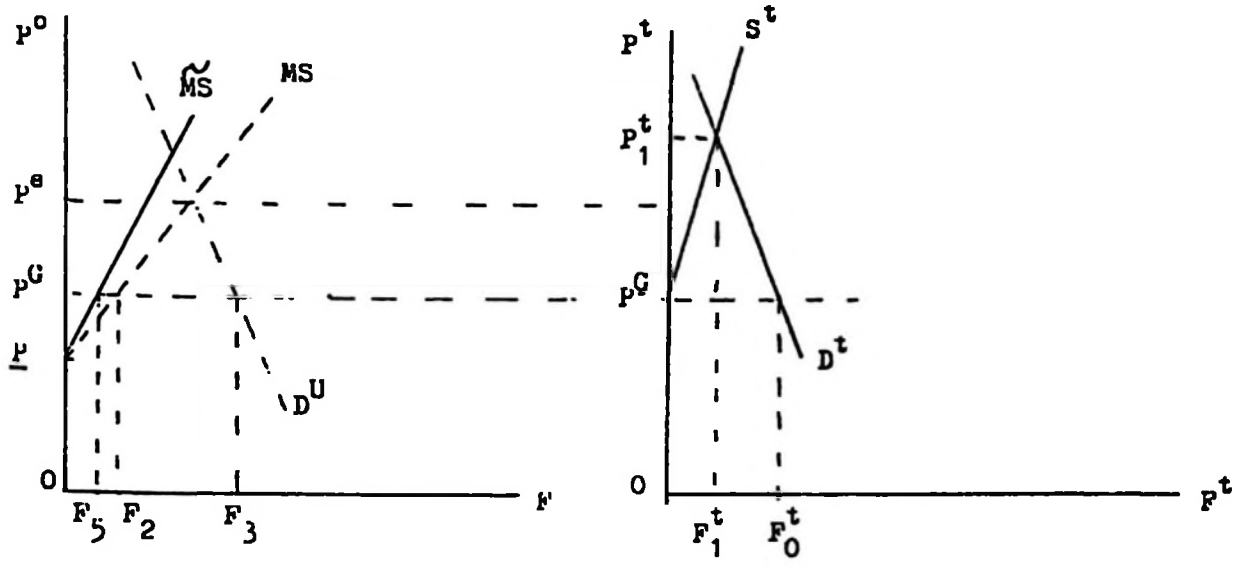
We now extend our analysis by adding urban demand for food D^U an introducing the two markets. Figure 5.2a describes supply and demand in the official F-market. We assume no import or export of food. Imagining initially that the whole marketed surplus of the rural sector is marketed in the official market the MS curve of Figure 5.1 is repeated in Figure 5.2a by the broken line MS. Moreover, we imagine that the urban population seeks to satisfy its demand for food in the official market only. We thus draw the broken negatively-sloped curve D^U. A possible equilibrium in this market is seen to be at P^e.

Now, as explained in Chapter 4, the price in the official market is fixed by the government. During the 1960s and the early 1970s it seems that the price of food in the official market was set by taking account of the movements in food grain prices in the international market. Import price parity at the official exchange rate, seemed to be a prin-

cipal rule for price determination in the official market.[21] During the 1970s the price level of food in the official market was raised, but clearly the price fixed by the government P^G, while exceeding $\underline{P}$, was considerably below the price that would have cleared the market, i.e below P^e.[22]

Figure 5.2 Supply of and Demand for Food

(a) The Official Market (b) The Traditional Food Market



The fact that P^G was fixed below a possible market clearing price P^e was of vital importance for the trading of food in the traditional market. Frustrated buyers, who preferred to buy at the relatively low price in the official market, had to turn to the second type of market to buy food. A relativly higher price in the traditional market may on the other hand have tempted sellers to switch to this market but this would often be illegal. Consequently, we may

imagine that we end up with a situation where the price in the traditional market is permanently higher than that of the official market: such a situation is sketched by the solid curves in Figure 5.2.

In Figure 5.2b we imagine that at a price in the traditional market as low as P^G the demand would be OF_O^t which is supposed to incorporate unsatisfied demand in the official market. OF_O^t may, however, not incorporate all unsatisfied demand since the trading of F in the traditional food market may be illegal depending, as mentioned in the previous section, upon whether the trading that takes place is for private consumption or not. A buyer who purchases food for trading purposes faces the risks of having his purchases of food confiscated at strategically located road blocks.

For P^t greater than P^G, the supply $S^t(P^t)$ increases with P^t. The slope of the $S^t(P^t)$ curve above P^G level depends on various factors. On the one hand one might expect that the existence of an alternative market with higher price may tempt all or most suppliers to withdraw from the official market and seek to sell their product in the traditional market. In this case the curve S^t would be very elastic in the region just above P^G level, and in the extreme case where producers and buyers can very easily switch between the two markets an equilibrium would be reached at a price P_1^t approximately equal to P^e, implying that all or almost all of the marketed surplus is traded in the traditional food market. However, since food is a scheduled crop and purchases between producers and traders are illegal in the traditional food market, this will not be the case. We may imagine that the suppliers add a risk premium to P^t to cover for fines and other sanctions that may be imposed on them for contravening the law.[23] The supply schedule in the traditional food market may therefore be relatively

steep. It is difficult to know what would be a realistic picture of supply and demand elasticitities in the traditional food market. In Figure 5.2b we have assumed that S^t is steeper than MS, implying that an equilibrium price P_1^t is considerably higher than P^G and also higher that P^e.

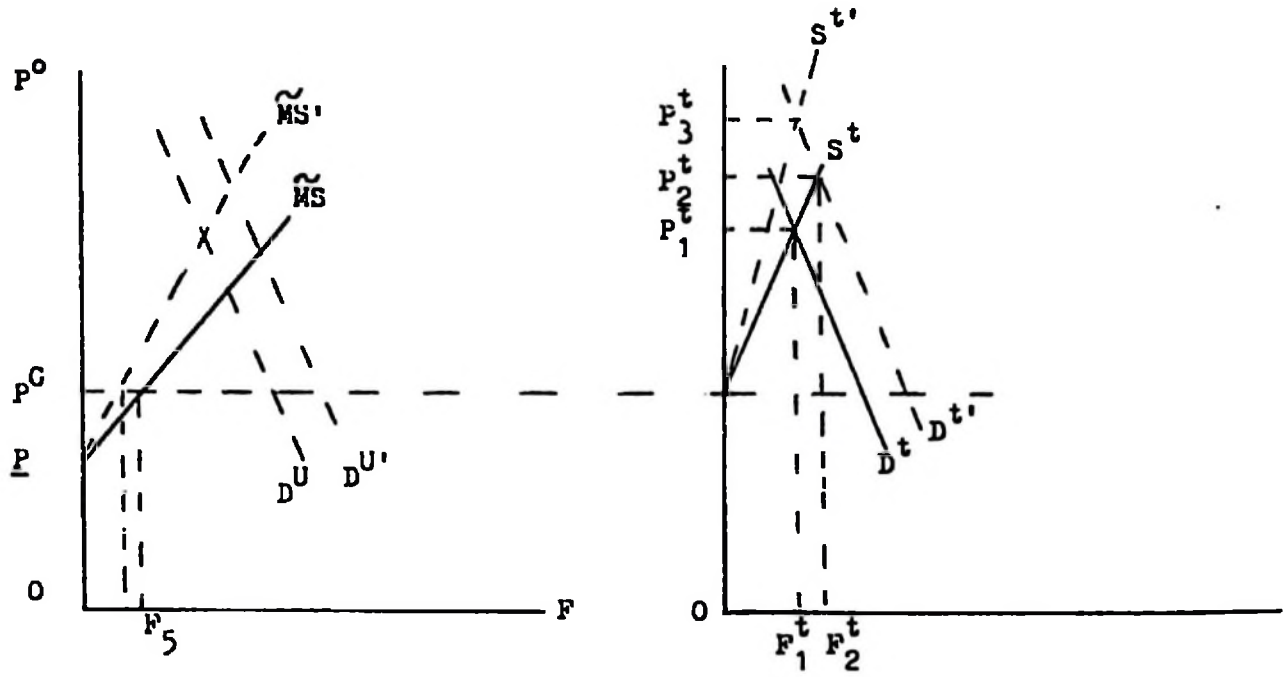
As we have drawn the curves the amount traded in the traditional market, OF_1^t, is considerably larger than the amount OF_5 traded in the official market. The amount OF_5 is somewhat less than OF_2 as the existence of an alternative, albeit to some extent illegal market with a higher price causes some suppliers to withdraw from the official market. The situation depicted in Figures 5.2a and 5.2b, with a considerably higher price in the traditional food market than in the official market and with most of the marketed surplus of food of the rural sector sold in the traditional food market, is in agreement with Table 5.9 and the observations made by Peter Temu and others.[24)]

Our figures may also be used to sketch the effects on prices and quantitites traded in the two markets as a result of shifts in the supply of and the demand for food. Figure 5.3 may help to illustrate the results of such shifts.

Consider first a shift in demand as a result of an increase in urban population and income. This will shift the demand curve in Figure 5.3a rightwards for example to a position indicated by curve $D^{U'}$. If we now assume that there is no increase in P^G this shift in the demand schedule D^U causes increased excess demand and more frustration in the official market which means that also the demand schedule of the traditional food market shifts to the rights, for example to a position indicated by the curve $D^{t'}$ in Figure 5.3b. The equilibrium price in the traditional food market will in that case increase from P_1^t to P_2^t and the quantity

Figure 5.3 Shifts in Supply of and Demand for Food

(a) The Official Market (b) The Traditional Food Market



traded from F_1^t to F_2^t. As we have drawn the curves the equilibrium price increases percentagewise more than the quantity traded. This is probably often the case.

An increase in the price of other goods while P^G is constant will cause the demand schedule D^U in the official market to shift rightwards because such an increase implies that food has become cheaper relative to other goods. It may also reduce MS because of a rise in D^R. Now as the price set by the government P^G is not raised excess demand in the official market will increase and as explained above

the demand schedule of the traditional food market will thereby shift to the right forcing an increase in the price to P_2^t and thus increasing the discrepancy between P^G and P^t. Moreover, it is easy to understand that this discrepancy may increase even if the government raises P^G somewhat, but by less than the increases in prices of other goods, i.e. less than the general rate of inflation.

A positive shift in the demand for food grains for local beer-brewing purposes may also have contributed in shifting out the demand curve in Figure 5.3b and thereby increased the price of food in the traditional food market. Nutritional studies made in Tanzania seem to indicate that a large part of the food harvest (perhaps as much as one third) is used for local beer brewing purposes.[25] Locally brewed beer is primarily made from food grains and bananas.

In the rural areas there are usually special places where local beer is brewed and consumed.[26] Consumption of locally brewed beer is not confined to rural areas but is also consumed in urban areas. It seems, however,that partly as a result of the steep rise in the price of bottled beer during the 1970s, some substitution to locally brewed beer took place. Between 1971 and 1981 the price of bottled beer virtually doubled in real terms as a result of the steep rise in sales tax.

In Chapter 4 we saw that the sales tax on beer and cigarettes became a main source of tax revenue for the government. It appears that the steep rise in the price of bottled beer induced some substitution to locally brewed beer. The official statistics on production of bottled beer show a rather sharp decline at the end of the 1970s and in the early 1980s. In 1978 some 82,000 litres of bottled beer was produced, in 1982 it was down to 64,000 litres.[27]

Some substitution to locally brewed beer probably also took place as a result of the decline in the availability of attractive imported consumer goods.

The case of shifts in supply are somewhat more complicated than shifts in demand because shifts in supply have through the income variable effects on demand. A negative shift in supply because of a drought that will obviously shift the supply curve $\tilde{MS}$ and S^t (temporarily) to the left. A leftwards shift of S^t of the traditional food market will tend to push up the price P^t which will accentuate the leftwards shift in the supply curve $\tilde{MS}$ of the official market. Now we may end up with a position of the demand schedule D^t of the traditional food market indicated by the curve $D^{t'}$ in Figure 5.3b. As a result of these shifts in both the demand and supply of the two markets we may imagine a new equilibrium in the traditional food market with a price P_3^t which is substantially higher than before the drought.

Lastly, an increase in the price of cash crops can also be expected to cause the supply curve for food to shift leftwards since this will induce peasants to reallocate their land and labour resources into more cash crop production. However, with unchanged prices of food in the official market, this shift in supply will again lead to an increase in excess demand and as a result the price of food in the traditional food market can be expected to rise. This increase in P^t will counteract the incentive effect which an increase in cash crop prices can be expected to have on cash crop production. In fact, a high increase in P^t may actually neutralize the incentive effect on cash crop production an increase in cash crop prices in relation to P^G.

Our analysis of the two food markets is of course a highly simplified account of the factors at work. Nevertheless, it may help us to understand some main phenomenon in the

development of Tanzanian agriculture the last years. Drawing on this analysis we shall now seek to examine in more detail the determinants of maize supply to the official market.

Determinants of Maize Supply to the Official Marketing System

In a recent study of the food grain market in Tanzania Gerrard and Roe have attempted to estimate the supply and demand relationships for food grains using simple regression analysis.[29] The supply equation specified by these authors was as follows.

$$(5.3)\quad QP_t = b_0 + b_1(PP/PPF)_t + b_4\,(PPE_{t-1}/PPF_t) + ct + dQP_{t-1}$$

where

QP = total quantity produced of maize, rice and wheat respectively

PP = government-announced producer price for quantities delivered to the marketing board in time period t

PPF = producer price of fertilizer for production to occur in time period t

PPE = index of producer price of export crops (this index was based on the producer prices of coffee and cotton only)

t = year 1, 2, .. t years (year 1 = 1964/65..... 1977/78)

b_0, b_1, b_4, c, d = coefficients to be estimated

The own price elasticity of the total quantity of maize produced was reported to be 0.36 with a t-statistic value of 1.5. The same equation was also estimated with the marketed surplus of maize delivered to the official marke-

ting system as the dependent variable. The own price elasticity for this variable was found to be as high as 2.29 with a t-statistic value of 3.26. The adjusted R^2 value for the regression equation of the marketed surplus was found to be 0.54 which must be considered rather low.[30]

The low R^2 obtained indicates that the authors were not very successful in identifying the correct model. A serious weakness of the model seems to be that the dual nature of the food market was completely ignored. To deflate the official producer prices by fertilizer prices does not appear to be meaningful either since, as we learned in Chapter 3, hardly any fertilizer was used in peasants' food grain production. It appears therefore that not much confidence can be placed in the results reported by these authors.[31]

There are of course a great number of variables that can be expected to have a bearing on the supply of maize to the official market. To try and incorporate all these variables in one model would be an impossible task. We shall therefore seek only to identify the main factors using simple regression techniques. In line with our previous analysis of the supply of and demand for food we can expect to find three major factors that will have a bearing on the supply of maize to the official market: (1) the price of maize in terms of a competing crop, (2) the difference in the price of maize between the official market and the traditional food market, and (3) rainfall.

The planting decision is, as we have argued, governed by the price of maize in terms of a competing crop. It is reasonable to expect that the planting decision has been primarily based on the price of maize in the traditional food market since this price has been observed to have been much higher than the officially set producer price of maize

during the 1970s.

Time series statistics on actual producer prices of maize paid in the traditional food market are not available. Some observations of these prices have, however, been made.[32] From these observations it is clear that the producer prices of maize in the traditional food market were substantially higher than the officially set producer prices. Developments in these observed prices of maize in the traditional food market seem to have followed the overall index of food crop prices for the traditional food market, as reported in Chapter 3 Table 3.2. We shall therefore use this index to reflect the development in the producer price of maize for the traditional food market.

Since at the time when the crop is planted the price at which maize can be sold later in the traditional food market, is not known, we must assume that peasants make their planting decisions based on some notion of an expected price. The simplest assumption to make on expected price is to set the expected price equal to the price obtained last year.

This may sound a little naive, but to use the conventional approach, i.e. the Nerlovian model, does not appear appropriate for our purpose. The partial adjustment model à la Nerlove or the adaptive expectations model, is probably quite appropriate for use in an aggregate analysis of supply.[33] Since we are not here analysing aggregate supply and not even the aggregate supply of the marketed surplus of maize, but only the marketed surplus supplied to the official marketing system, we will refrain from using these refined expectations models.[34] Thus, in order to capture the effect of the planting decision on the supply of maize to the official market we will simply use the price of maize in terms of a competing crop lagged one year.[35]

The alternative crop to produce instead of maize will of course vary greatly in the different parts of the country. It is therefore a problem to decide which crop should be selected to reflect the price of maize in terms of a competing crop. To overcome this problem we shall simply use the price index of annual cash crops as reported in Chapter 3 Table 3.2.

The marketing decision, we can expect, is primarily governed by the difference in the price of maize between the two markets. In the absence of time series statistics of the actual producer price of maize for the traditional food market, we shall use the development in the observed difference of the consumer price of maize as reported in Table 5.9 as a proxy variable to capture the effect differences in prices between the two markets has on the peasants' marketing decisions. By using the difference rather than the relative price between the price of maize in the two markets we may reduce the possibility of multicolinearity between our regressors of respectively the planting and the marketing decision.

In regression analysis the use of rainfall as a shift variable on supply entails great difficulties. This is because it is not simply the amount of rainfall that will decide the quality of a harvest. Too much rain can be as harmful as too little.[36] The timing of rainfall is also of great importance for the quality of a harvest. It is the right amount of rainfall at each point in time during the growing period that will determine the quality of a harvest i.e. a crop failure or a bumper harvest. Thus, to measure the effect of rainfall on the harvest one needs observations not simply on the amount of rainfall but on the deviation of rainfall from some ideal pattern of rainfall distribution during the growing period. Such observations are not available. In the absence of such observations we

shall have to fall back on the less satisfactory, but in empirical research often used, proxy variable for climatic factors, namely dummy variables.

The effect of these three variables on the supply of maize to the official market can be estimated in a simple linear equation of the following form:

$$(5.4) \quad PCH_t = b_0 + b_1(PI^T_M/PI^O_{AX})_{t-1} + b_2((P^T_M - P^O_M)/P^O_M)_t + b_3R_t + e_t$$

Where

PCH = official purchases of maize in tons (see Table 5.5)

PI^T_M = proxy of producer price of maize for the traditional food market (= overall index of food crop prices of the traditional food market, see Chapter 3 Table 3.2)

PI^O_{AX} = price index of annual cash crops in the official market (see Chapter 3 Table 3.2)

P^T_M = consumer price of maize in the traditional food market (see Table 5.9)

P^O_M = consumer price of maize in the official market (see Table 5.9)

R = dummy variable for rainfall (R = 1 in bad harvest year otherwise zero, the following crop years are classified as bad harvest years: 1964/65, 1965/66, 1969/70, 1971/72, 1973/74 and 1974/75[37])

t = year 1.... t years (year 1 = 1963/64.... 1980/81)

e = error term

b_0, b_1, b_2, b_3 = coefficients to be estimated using ordinary least squares technique

The numerical estimate of equation (5.4) for the period 1963/64 - 1980/81 is reported in equation (5.5).

$$(5.5)\quad PCH_t = 42.5771 + 83.81(PI^T_M/PI^O_{AX})_{t-1} - 0.528((P^T_M - P^O_M)/P^O_M - 76.77R_t$$

(3.28) (2.14) (5.15)

R^2 (adjusted) = 0.71, SEE = 29.45, DW 2.13.

The t-statistic values of the estimated coefficients are reported in the parentheses underneath the estimated coefficients.

Considering the rather weak data base we have on the producer prices of maize for the traditional food market, it appears that the variables chosen have been able to give a fairly realistic 'explanation' of the variation in the supply of maize to the official marketing system. The signs of our estimated coefficients are all statistically significant, and what is more important, they have the right signs.

An increase in the price of maize in terms of competing crops we must expect to have a positive effect on total supply and thus also on the marketed surplus, as we have seen in Figure 5.1. The elasticity of the marketed surplus supplied to the official market with respect to a change in the price of maize in terms of a competing crop, gives a value of 1.04 at the mean value of PCH and PI^T_M/PI^O_{AX}. This is substantially lower than Gerrard and Roe reported in their model. But these researchers probably estimated the wrong model and did not account for the dual food market.[38)]

An increase in the price of maize in the traditional food

market relative to the price of maize in the official food market we would expect to have a negative effect on the supply of maize to the official market. The elasticity of supply of maize to the official market with respect to an increase in the price of maize in the traditional food market relative to the price of maize in the official market gives a value of - 0.14 at the mean value of PCH and $(P_M^T - P_M^O)/P_M^O$. This is probably is an underestimation because P_M^T according to official statistics may be under-reported.[39]

The result reported in equation 5.4 must of course be read with great caution since we have disregarded a great number of other factors that also can be expected to have an impact on the supply of maize to the official market. For example, we have completely ignored possible changes in peasant consumption of maize, which clearly would have an impact on the marketed surplus of maize. Nevertheless, it seems that besides rainfall prices are the key determinants of the marketed surplus of maize. An increase in the price of maize relative to a competing crop will have a favourable effect on the marketed surplus, but if at the same time the difference in the price of maize in the traditional food market and the official market widens, an increase in the marketed surplus of maize is not likely to be forthcoming in the official market.

5.5 Recents Trends in the Marketed Surplus of Food Grains

In this section our task is to combine our knowledge of the production and consumption of food grains in order to indicate the development in the marketed surplus of food crops. Here we will only discuss changes in the marketed surplus of maize and wheat. Maize is, as we have seen, a good proxy variable to indicate the evolution in food production and consumption in the peasant sector because of

its dominant position in the production statistics and in the rural household consumption basket. The case of wheat warrents special discussion because of its dominant position in the import statistics of food grains during the 1970s.

Trends in the Marketed Surplus of Maize

In Table 5.10 the official estimates of maize production and rural maize consumption according to the 1969 and the 1976/77 household budget surveys are contrasted. Since rural consumption of maize according to the 1969 household budget survey probably underestimated rural consumption of maize for the 1970s, but the survey from 1976/77 was probably on the high side, a third set of estimates of rural maize consumption has been made in Table 5.10. In this third set of estimates the per rural capita consumption of maize has been projected to increase from the 1969 level at a rate of 5 percent per annum for the reasons discussed in the previous section.

Comparing developments in production and consumption, these estimates show that production of maize was seriously underestimated during the 1960s. In Appendix A we have also found that food crop production was underestimated during the 1960s. This does not necessarily invalidate the growth rate in production we reported in Chapter 3 Table 3.1, since production of maize throughout the period 1964-1972 appears to have been consistently underestimated.

On the other hand production estimates for the 1970s seem to be more realistic. Taking the estimates of production and consumption, column (4), to be within a reasonable margin of error, it seems that during this period the marketed surplus of maize increased, but that a smaller and

Table 5.10 Maize Production and Rural Maize Consumption Estimates and Official Purchases of Domestically Produced Maize, Tanzania 1963/64 - 1980/81.

Crop Year	Rural Population '000	Production (1)	Consumption '000 tons (2)	(3)	(4)	Marketed Surplus (5)=(1)-(4)	Official Purchases (6)	(6)/(5) %
1963/64	9876	612.3	642	997	642	- 30	108.9	
1964/65	10155	531.9	660	1025	660	- 128	87.1	
1965/66	10422	751.1	677	1052	677	74	70.0	
1966/67	10736	629.4	698	1084	698	- 69	112.9	
1967/68	11041	646.9	718	1115	718	- 72	104.3	
1968/69	11346	602.7	738	1146	738	- 136	127.5	
1969/70	11658	745.6	758	1172	758	- 13	54.1	
1970/71	11979	729.6	779	1210	779	- 50	185.0	
1971/72	12308	900.2	800	1243	800	100	43.0	
1972/73	12646	780.9	822	1277	822	- 40	104.9	
1973/74	12994	1022.0	845	1312	894	128	73.8	57.6
1974/75	13351	1271.6	868	1348	964	307	23.9	7.8*)
1975/76	13719	1660.8	892	1385	1040	620	91.1	14.7
1976/77	14096	1654.1	916	1423	1122	532	127.5	23.9
1977/78	14483	1610.6	941	1463	1211	399	213.2	53.4*)
1978/79	14874	1884.4	967	1502	1306	578	220.4	38.1
1979/80	15284	1840.7	994	1543	1342	499	161.5	32.4
1980/81	15709	1839.6	1021	1586	1379	461	104.6	22.6

(2) Consumption estimated by holding rural per capita consumption constant at 65 kg. per year as revealed by the 1969 household budget survey.

(3) Consumtion estimated by holding rural per capita consumption constant at 101 kg. per year as revealed by the 1976/77 household budget survey.

(4) Consumption estimated by holding rural per capita consumption constant at 65 kg. per year up to 1973. From 1973 to 1979 per rural capita consumption increased by 5 percent per year for the reasons discussed in Section 5.4.

*) In 1974/75 there was a severe drought in all major food grain producing regions. This would make the difference in price between the official market and the traditional food market large, which according to equation 5.5 would reduce supply to the official market. In 1977/78 there was a bumper harvest which make the difference in price between the two markets smaller and thereby stimulate increased purchases in the official market.

Sources: Rural Population: projected from Table 1.1 and 1.2 in Chapter 1; Maize Production: from Appendix Table A.3; Rural Maize Consumption: projected from Table 5.2, and Official Purchases of Maize from Table 5.5.

smaller share of this surplus was marketed in the official marketing system leaving a larger and larger share for the traditional food market. The declining share of the marketed surplus going to the official market was of course consistent with the divergent trend of food crop prices in the two markets.

Many observers of Tanzanian agriculture have, though, been rather sceptical of the production estimates reported in Table 5.10 since these figures do not appear to be consistent with the substantial increases in import of food grains that occurred during the 1970s. However, the import statistics for food grains do not really invalidate the production estimates for maize since, as we have seen in Table 5.6 and 5.7, a large share of food grain imports was wheat which is produced primarily in the large-scale farming sector.[40)]

The substantial increase in the estimated production of maize was of course also consistent with developments in prices. Food crop prices increased sharply relative to cash crop prices, and this no doubt gave a great spur to food crop production in the peasant sector.

It also seems likely that peasants in Tanzania tilled the soil just as assiduously in the 1970s as they did in the 1950s and the 1960s, and hence the growth in production of food crops does not really appear unrealistic. The increased production of food crops produced in the peasant sector was at the expense of a decline in cash crop production. In Chapter 3 we saw that aggregate crop production in the peasant sector increased almost at the same rate in the 1970s as it did in the 1960s and probably also in the 1950s.

The Marketed Surplus of Wheat

We have in this study treated wheat as being produced entirely in the large-scale farming sector where the marketed surplus is defined equal to production, and in Chapter 3 Table 3.1. we saw that the marketed surplus of wheat declined dramatically during the 1970s.

Wheat is the most recent food grain introduced in Tanzania. The European settlers started with wheat production at the turn of this century. Eventually the peasants took up wheat production. The structure of peasant wheat farming in the major wheat growing areas as revealed by a survey conducted at the end of the 1960s is reported in Table 5.11.

Table 5.11 Structure of Peasant Wheat Farming in the Major Wheat Growing Districts, Tanzania 1968/69.

Size of Farm acreage	Districts			
	Arusha	Mbulu	Njombe	Sumbawanga
	number of respondents			
> 1	-	-	7	-
1 - 3	6	7	66	24
4 - 5	2	2	7	10
6 - 8	5	9	2	3
9 - 15	1	8	-	2
16 - 20	2	3	-	-
21 - 30	1	2	-	-
> 30	7*	4	-	-
Total	78	100	82	84

*) six had farms with more than 1000 acres

Source: Raikes , (1970) pp.14 - 15.

In Chapter 2 we learned that the Ujamaa Rural Development strategy was launched in an effort to pre-empt the development of the capitalistic form of farming. At the time this policy was launched wheat farming was considered to be a

typical example of the capitalistic form of farming. Many wheat farms were also nationalized in the early 1970s in an effort to stop the further development of the capitalistic form of farming.

Development in producer prices of wheat have also been highly unfavourable compared to developments in other food crop prices. A comparison of the developments in the prices of maize and wheat is reported in Table 5.12.

Table 5.12 Indices of Producer Price of Maize and Wheat Deflated by the National Consumer Price Index (NCPI), 1969/70 - 1981/82, selected years.

Crop Year	1969/70	1971/72	1973/74	1975/76	1977/78	1979/80	1981/82
Maize	100	107.2	106.0	160.0	152.0	141.2	135.2
Wheat	100	100.7	84.7	86.2	80.8	74.9	60.3

Source: Appendix Table B.1 below.

At the same time as producers have been discouraged from producing wheat consumers have been encouraged to shift to wheat consumption. In Appendix Table B.9 it is shown that consumer prices of food grains all declined in real terms during the 1970s. The decline in the consumer price of wheat was more than the decline in the consumer prices of maize and rice. The NCPI deflated consumer price of wheat was in 1981 equal to 70.5 percent of its level in 1971. The corresponding figures for rice and maize were 72.0 and 73.7 percent respectively. This is admittedly not a very big difference but, given the much higher expenditure elasticity for wheat that we reported on in Table 5.4, this decline in the real price of wheat stimulated an increased demand for wheat.

Thus the increase in wheat imports that occurred during the

1970s seemed to be essentially a consequence of a policy that on the one hand sought to squeeze the wheat farmers and to discourage peasants from producing wheat, and on the other hand encouraged consumers to switch to consumption of wheat. Clearly this policy could not have been pursued if wheat had not been available on non-commercial terms in the international market to the same extent that it apparently was.

5.6 Summary

In this chapter we have had two major objectives: (1) to examine what factors were behind the developments in prices in the traditional food market, and (2) to provide an assessment of the recent trends in the marketed surplus of food produced in the peasant sector.

The major determinants of food crop prices in the traditional food market are the forces of supply of and demand for food. The recent increases in the price of food grains in the traditional food market reflect an increase in excess demand for food grains in the official market which appears primarily to have been caused by: (1) an increase in demand due to population increases and the occasional shock to supply created by droughts, (2) overall price inflation that seems to have accelerated in pace with the expansion of the public sector, (3) increased demand for food grains caused by an increased demand for locally brewed beer, which seems to have been caused by the steep increase in price of bottled beer and the disappearance of attractive consumer goods for purchases in both rural and urban areas.

These determinants pushed food crop prices in the traditional food market up at a faster rate than the officially set producer prices of food crops. At the same time as food crop prices became more remunerative cash crop prices be-

came more and more depressed as a result of the steep rise in marketing costs of the official marketing system and the increase in export taxation both direct and indirect through the overvaluation of the exchange rate (US dollar/T.shs.).

In Chapter 3 we found that as a result of these developments in crop prices peasants switched from the production of cash crops to the production of food crops. It seems most likely that the increase in food crop production in the peasant sector was more rapid than the growth in rural population and therefore the marketed surplus of food crops produced in the peasant sector probably increased during the 1970s.

When, in spite of this increase in the marketed surplus of food crops produced in the peasant sector, food grain imports increased, this to a large extent was caused by (1) a decline in wheat production which was primarily produced in the large-scale farming sector, and (2) a changing pattern of food crop marketing of domestically-produced food.

Concurrent with the decline in wheat production consumption of wheat increased. The divergent trends in production and consumption seemed primarily to be the result of a price policy that discouraged farmers/peasants from producing a food crop that consumers were encouraged to eat.

The changing pattern of food crop marketing was caused by (1) the higher food crop prices in the traditional food market than in the official market, and (2) a deterioration in the efficiency of the official marketing system that depressed producer prices in this market and thereby made prices of both scheduled and non-scheduled food crops in the traditional food market much more attractive to pea-

sants. The result was that peasants found it more and more advantageous to market a larger and larger share of the marketed surplus in the traditional food market.

Failing to buy domestically-produced food grains, the government was to an increasing extent forced to 'buy' food grains in the international food market. Many of these purchases were conducted on non-commercial terms and hence the price policy pursued in respect of food crops was not greatly constrained by the need to balance the supply of and demand for food. In the case of maize, which was the dominant food crop produced in the peasant sector, it seems that the non-commercial import of this crop was more important as a source of revenue for government finances than as an extra source of food supply to meet shortfalls from domestic sources of supply.

Footnotes Chapter 5

1. This is a rule of thumb the author learned from his Tanzanian colleagues working with cooperative development in Tanzania 1968-1971.
2. Johnston (1972) pp. 52-53.
3. The demand pattern in LDCs in general much more poorly mapped than the supply pattern. In Tanzania to date few attempts have been made to map consumption patterns. It seems that only two studies are available: Östby (1967) and Kapunda (1977). These two studies report expenditure elasticities for a few selected consumption goods based on household consumption surveys in Dar es Salaam only.The expenditure elasticities of maize and rice Östby found to be 0.32 and 0.54 while Kapunda found them to be 0.34 and 0.47 respectively.
   Unfortunately these elasticities are not directly comparable to the elasticities reported in Table 5.4 since (a) these elasticities refer to household consumption and not per capita, and (b) the commodity classification is not exactly the same. Both Kapunda and Östby only count expenditure on flour and exclude expenditure on maize grain and paddy. For maize Östby

seems to have counted expenditure on maize and wheat flour as one commodity. The model used by Kapunda and Östby also differs from equation 5.1. Kapunda and Östby both estimates a double log regression equation with several regressors. A weakness of this model is that the asymptotic level is not recognized.

4. The relationship among demand elasticities can be written as follows, assuming that the standard assumption which underly demand theory hold.

$$E_{ii} + E_{i1} + E_{i2} + ... + E_{in} + E_{iy} = 0$$

where E_{ii} = own price elasticity of good i

E_{i1} = E_{i2} = ... = E_{in} = cross price elasticities of good i with respecttoa changeinthe·price of good j (j = 1, 2, ...n)

E_{iy} = income (y) elasticity of good i

This relationship is commonly known as the homogeneity condition. It shows that the subsititution and income effects of an own price change must be consistant with the cross and income elasticities for the good. With few substitute goods the sum of the cross elasticities will be small and hence $E_{ii} \approx E_{iy}$

5. See e.g. Rostling (1984), and also Delange and Ahluwali eds. (1982).
6. Yoshida (1970) Chapter IV contains a good account of agricultural marketing in Tanzania during the Second World War period and during the 1950s. The information given here draws chiefly on this source.
7. Ibid.
8. A more detailed discussion of the marketing objectives of the NAPB can be found in Temu (1974) Chapter 3.
9. For an analysis of the marketing costs of the NAPB see e.g. Ödegaard (1975).
10. For analysis of the NAPB's food crop trading see e.g. Livingstone (1971c).
11. The National Milling Corporation (NMC) was formed in 1967 following the Arusha Declaration when seven privately owned food grain mills were nationalized. In Chapter 4 we saw that the NMC was not particulary successful in its food crop trading either. For an extensive analysis of the NMC's operations see e.g. Tibenderana (1982).

12. Ödegaard (1974) Schedule 4.
13. URT/MDB (1982) Annex 1 Appendix 2.1.
14. Brooke (1967) is a frequent used reference on food grain shortages in Tanzania during the colonial period.
15. Two good surveys on trade in the traditional food market are Mascarenhas and Mbilinyi (1969) and Mbambiti (1977).
16. URT/MDB (1974, 1981b).
17. See e.g. Temu (1974) Table XIV, and World Bank (1982) Table 1.6 and 1.7.
18. Temu (1974) p. 44.
19. URT/MDB (1984) Summary Table 1.
20. Winter (1962) cited by Jones W. (1980) p. 10 reported that the Iraqwe people in Nothern Tanganyika used cattle as a medium of exchange for food grains. The use of cattle as a medium of exchange in Tanzania was also reported by Mascarenhas (1968).
21. Livingstone (1971a).
22. Appendix Table B.9 shows that the consumer price of food grains in the official market steadily declined in real terms during the 1970s.
23. Cf. Boulding's (1966) (pp. 204-206) analysis of the supply and demand characteristics of the 'black market.'
24. Temu (1974).
25. See e.g. Shesemani (1982) and Arén (1984). On the importance of beer brewing as a source of cash income in rural areas see also e.g. Boesen et al. (1977) Table 4.5 and Tibaijuka (1984) Appendix Table 5.14.
26. For an economic analysis of the role of beer in rural areas in Africa see e.g. Hedlund and Lundahl (1984).
27. URT The Economic Survey 1982, Table no. 49.
28. Cf. Chapter 3 Table 3.10.
29. Gerrard and Roe (1983).
30. Ibid. Table 4.
31. Gerrard and Roe (1983) also report demand elasticities for the principal food grains consumed in Tanzania. The per capita consumption elasticity of maize is reported to be as high as - 0.9 and 0.85 with respect to changes in the price of maize and changes in total private per capita expenditure respectively. This can be contrasted with our findings reported in Table 5.4 where the expenditure elasticity of maize is found to be very low indicating that the price elasticity also is very low.
    For a staple food like maize it is more likely that the demand elasticity be fairly low. The regular riots that occur in LDCs whenever governments try to raise

the price of basic food staples is a strong indication that the demand for basic food staples is highly inelastic. Thus when Gerrard and Roe report the demand for maize to be more price elastic than supply in Tanzania, this finding does not accommodate well with the general observations that have been made on the pattern of supply and demand for staple foods in LDCs.

32. See reference made in footnote 17 above.

33. For a good summary exposition of these models see e.g. Yotopoulos and Nugent (1976) Chapter 8.

34. In the adaptive and the partial adjustment models the dependent variable lagged one period comes in as an explanatory variable in the model. We saw in Table 5.5 that the supply of maize to the official marketing system showed great mainly caused by aclimatic factors. These fluctuations were complete random. Therefore to include these random fluctuations as an explanatory variable is not likely to contribute in correctly identifying the main determinants of the supply of maize to the official market.

35. It can be argued that a moving averge price lagged one year should be used. But, since this approach will necessitate some arbitrary judgement as to how many years should be counted in calculating the moving average price, we will here simply use the price of maize in terms of competing crop lagged one year. In any case the result would not be very different because the trends in the average price and the actual price lagged one year are more or less the same

36. It is not only droughts that have necessitated famine relief operations in Tanzania. In 1969 and 1970 there were severe flood damages in Rufiji and Kyele districts that also necessitated the free distribution of food. The 'villagization' campaign which we reported on in Chapter 2 actually started in Rufiji district. One motive for the 'villagization' campaign in these two districts was the need to move people out of the high risk zone for floods.

37. These years are in various annual reports of the Ministry of Agriculture characterized as bad harvest years. To a certain extent this can also be supported by a careful analysis of the rainfall statistics. In studying the relationship between harvest and rainfall pattern in Tanzania one cannot use the annual observations of rainfall directly since these statistics are based on the calendar year whereas the harvest is reported for the crop year that runs from July to June.

The rainfall during the period Nov.-Dec., often called the Short Rain, and the rainfall during the period Feb.-April which in contrast is referred to as the Long Rain, is of crucial importance in determining the quality of the harvest in Tanzania. A study of the relationship between rainfall and the marketed surplus of food grains in the major food grain producing regions for the period 1963/64 - 1972/73 can be found in Ödegaard (1974).

38. These researchers also have used a set of prices that appears to be very inappropiate. Not only have they utilized a price deflator that has very little bearing on the production of maize, but also the price index of the competing crop to maize does not appear appropiate either. The latter index is based only on the producer prices of cotton and coffee. Considering the fact that coffee is a perennial crop that hardly competes with maize for peasant resources of land and labour, the choice of this index does not appear to be very sensible.
39. See Table 5.9.
40. Cf. Chapter 2 footnote 58.

CHAPTER 6

AGRICULTURAL POLICY IN TANZANIA: SELF-SUFFICIENCY IN FOOD CROP PRODUCTION VERSUS CASH CROP PRODUCTION: A SUMMARY ASSESSMENT

In this final chapter our task is to examine the merits of the agricultural policy, and especially the food self-sufficiency policy, pursued in Tanzania since the early 1970s. We shall seek to show that this policy has not been conducive to an acceleration of Tanzania's development and hence policies ought to be reformed so that peasants can be induced to reswitch some of their resources back to cash crop production.

From the historical accounts given in the previous chapters two important conclusions emerge. First we have seen that since the turn of this century peasants' crop production has increased at a rate substantially higher than the growth rate in rural population.[1)] Secondly, in the course of the past 50-60 years there have been several reversals in the trend of the composition of the output produced by the peasants.

The first notable switch in the trend of the composition of output of the peasant sector occurred in the early 1920s when the colonialists' opposition to peasant cash crop production gradually diminished and as a result peasant cash crop production started to rise rapidly, a trend which continued during the 1920s and much of the 1930s.[2)] The second switch apparently took place during the Second World War. In this period food crop prices appear to have increased more rapidly than cash crop prices and as a result many peasants reallocated some of their labour and land resources back into food crop production.[3)] The third

switch occurred in the early 1950s when cash crop prices began to rise much more rapidly than food crop prices, inducing many peasants to reallocate their resources away from food crop production to cash crop production.[4] The fourth switch in resource allocation in the peasant sector clearly took place in the early 1970s when, especially in the traditional food market, food crop prices again began to rise much more rapidly than cash crop prices and as a result peasants found it profitable to switch land and labour resources back to food crop production.[5] These repeated reversals in the composition of the output produced in the peasant sector are a strong indication that agricultural producer prices effectivly govern resource allocation in peasant farming.

In this chapter we shall argue the case for a policy which works to convert the present trend and stimulate cash crop production again. For this purpose we shall proceed as follows. In Section 6.1 we shall briefly restate the objectives of Tanzania's agricultural policy focusing on the food self-sufficiency objective and the strength of the arguments in favour of this as discussed in the literature. The main thrust of our argument concerning the need to reverse the present trend in the composition of output produced in the agricultural sector we shall seek to establish in Sections 6.2-6.4, where attempts will be made to demonstrate the adverse effects the present trend of agricultural output has had on such matters as employment, trade, savings, investment and income growth and distribution. In conclusion we will take up a brief discussion of two key policy issues that are of central importance in securing a renewed increase in cash crop production, namely (1) the release of the production constraint in the peasant sector, and (2) an appropriate incentive policy for cash crop production.

in food supply all over the country.[8] In Tanzania one may also find signs which indicate that food has moved out of an area when people have been starving in that area.[9]

In general therefore it seems that the best policy to prevent the occurrence of famine is one where the focus is on increasing the income and the stability of income of the poor rural people rather than concentrating on food crop production. In Tanzania, where the problems of food shortages are as a rule highly location-specific, the prevention of famine is likely to be better enhanced by a policy that focuses on securing a good communication infrastructure and growth of income rather than food production per se. A strategy of food self-sufficiency that implies a lowering of the income of the rural people may actually increase the risk of famine in a country.

A second argument in support of a food self-sufficiency strategy is of a more general political nature. It is argued that in order for a LDC to become more independent economically it will be necessary for the country to free itself from the colonial heritage associated with cash crop production. For this purpose it is argued that the country must look inwards for development potential and not outwards. An inward-looking development strategy is generally associated with an industrialization policy based on import substitution, whereas an outward-looking policy is linked to export promotion policies.

Without going into a general discussion of how the alternative strategies have succeeded in other countries[10], we can with regard to Tanzania stress that an import substitution industrialisation policy is likely to have unfavourable effects on agricultural production e.g. through an overvalued exchange rate and a tax structure biased against the agricultural sector, and thereby on the income of rural

people.[11] This will, as argued above, increase the risk of famine even though food crop production may be enhanced. In Chapter 4 we found that the overvaluation of the exchange rate caused the domestic price of import competing goods such as food grains to increase relative to the domestic price of cash crops.[12] Naturally such an increase in food crop prices will stimulate food crop production.

The pursuit of an inward-oriented development policy is advocated also on the grounds that there is a secular tendency for the terms of trade in primary products (cash crops) to decline. The development of the terms of trade of the LDCs has been the subject of extensive studies. In general it seems that the evidence of a secular tendency for the terms of trade of LDCs to decline is not well-founded.[13] In any case an aggregate analysis of developments in the terms of trade of the LDCs is often of poor relevance for an individual country because the country's terms of trade may differ considerably from the overall index of the terms of trade of the LDCs as a group. For Tanzania we shall shortly see that the net barter terms of trade has not declined during the post independence period.

In general and without specific studies for the country in question, it therefore seems that the food self-sufficiency strategy is based on rather weak premises. Moreover, it should be noted that the various roles of the agricultural sector such as (1) to provide food for a growing non-agricultural population, (2) to earn foreign exchange through cash crop exports, (3) to contribute to capital formation through increased savings, and (4) to function as a market for an expanding industrial sector, can by no means be assumed to be mutually compatible.[14]

It seems that with, for example, the present cost of energy, the LDCs cannot hope to compete with the industrialized

countries in food crop production, especially food grains.[15] (This is at the present time especially so since the industrialized countries for various reasons pay huge subsidies to their own farmers). The comparative advantage of the agricultural sector of an LDC country appears primarily to lie in cash crop production and hence the roles of the agricultural sector in providing food (read food grains) for the non-agricultural sector and at the same time earning foreign exchange conflict. Moreover, the role of the agricultural sector as a source of savings for capital formation and industrial development is not very compatible with the role of the agricultural sector as a market for an expanding industrial sector either.

Thus, it is of vital importance to set priorities as to what role the agricultural sector should play. In the late 1960s efforts were made in Tanzania to work out how the agricultural sector could best contribute to the economic development of the country.[16] In each district a crop production priority list was made. However, this exercise did not help much in clearifying the optimal role of the agricultural sector. In practice these priority lists did not amount to much more than long lists of which crops could possibly be produced in each district given the natural resource constraints.[17] It was the events of the early 1970s which more or less automatically gave rise to the food crop production priority in Tanzania. The background for these events we depicted in Chapter 4. The priority accorded to food crop production is also official policy today. As recently as 1983 a policy document stated as the main objectives of Tanzanian policy:

> ' To achieve national self-sufficiency in food, and to raise the nutritional standard of all people.
> Through increased output, to contribute to the general raising of the living standard of all Tanzanians.

> To earn foreign exchange for the nation, as well as to meet the needs of agriculture.
> To provide raw materials for the nation's industrial sector.'[18)]

In the ensuing sections we analyse the merits of the agricultural policies pursued since the early 1970s by seeking to trace the consequences which the switch to food crop production has entailed for the economy. Naturally we confine our discussion to some broad aspects that are of central importance in a national economic perspective.

6.2 Changes in Resource allocation in Agriculture and the Utilization of Labour

In Tanzania very few earn livings as wage earners. According to the population censuses of 1967 and 1978 the proportions of the labour force that earned livings as wage earners in these two years were 5.7 percent and 6.3 percent respectively. The large majority of the labour force earn their living as peasants.[19)]

A characteristic aspect of labour use in the agricultural sector is that it is highly seasonal which means the labour force is greatly underutilized for large parts of the year. The utilization of the labour force in the agricultural sector is however greatly influenced by the composition of the output produced since the various crops differ greatly in their labour input requirements. According to the labour input coefficients reported in Chapter 3 Table 3.3 it seems that the utilization of labour in the peasant sector is best secured with cash crop production rather than food crop production since cash crops are markedly more labour-demanding than food crops.

This was of course also one of the main reasons why the

early colonialist settlers were opposed to peasant cash crop production since this would reduce the supply of labour to their farms and estates.[20] The higher labour input requirement for cash crops than for food crops thus means that the present trend in the composition of output produced in the peasant sector, with more food crop production at the expense of cash crop production, has not been conducive in securing a higher utilization of labour in this sector.

In order to see how labour use in the large-scale farming sector and in the other sectors of the economy has developed we have to study the pattern of wage employment.

Trends in Wage Employment

The development of wage employment in Tanzania during the past three decades is reported in Appendix Tables D.2-D.3. The main trends which emerge from these tables are: (1) a relative increase in employment in the public sector, and (2) a relative and an absolute decline in wage employment in the agricultural sector i.e. in the large-scale farming sector.

In 1962 some 25 percent of all wage employees were employed in the public services. At that time very few parastatal firms had been established. At present public services and parastatal firms together employ some two-thirds of all wage earners. Concurrent with this change, wage employment in the other sectors of the economy has also changed. At the dawn of independence some 50 percent of all wage employees were employed in the agricultural sector. In 1982 this proportion was down to 20.3 percent.

Clearly in the large-scale farming sector resource allocation in different lines of production will also have a

major impact on the pattern of employment in this sector. For this sector we saw in Chapter 3 Table 3.2 that cash crop production, notably sisal production, declined, whereas sugar production increased. Practically all sugar production goes for domestic consumption. This change in the composition of output produced also explains the decline in wage employment for the agricultural sector as reported in Appendix Table D.3. The first explanation for this is that in the large-scale farming sector cash crops are more labour-demanding than food crops, see Table 6.1. Secondly food crop production in the large-scale farming sector has not increased to an extent that would have matched the decline in cash crop production. Food crop production in the large-scale farming sector would have had to increase by at least some 4-5 times the decline in cash crop production in order to keep the employment level in the large-scale farming sector constant (see Table 6.1). This has not taken place.

Table 6.1 Labour Inputs per Unit of Output of Major Cash Crops and Food Crops Produced in the Large-Scale Farming Sector, Tanzania 1978.

	Cash Crops		Food Crops	
	Sisal	Tea	Sugar	Wheat
(1)	0.586	1.244	0.106	0.025
(2)	0.270	0.166	0.116	0.027

(1) = number of labourers per ton
(2) = $(1)/P_i$ where P_i is the respective producer price per kg.

Sources: Computed from UKT/TAKWIMU(1981b) Table 25; UKT/MDB (1981) Annex 6 Table 4 and Annex 12 Table 1.1; Appendix Table A.1 and Appendix Table B.1.

Much of the decline in employment in the large-scale farming sector can also be attributed to technological progress, notably mechanical innovation in sisal production. In the early 1950s a rule of thumb on labour productivity in the sisal industry read as follows 'one ton per labourer

per year'.[21] According to employment figures and production figures reported for 1978 this figure appears to have increased to 1.72 tons per labourer per year.[22]

Changes in resource allocation in the agricultural sector will of course also have indirect effects on the overall utilization of labour in the economy since the output produced in the agricultural sector will constitute a major input to the other sectors of the economy. An indication of such indirect effects can be obtained from an input-output table that shows the input and output flows between different sectors in an economy of the goods and services produced.

In Tanzania three input-output tables for the economy exist, one for 1961, one for 1969 and one for 1976. The 1976 input-output table has, however, not yet been officially released. Based on the 1969 input-output table that contains 45 productive sectors Kwan Kim has attempted to derive multipliers that can gauge the effects an increase in final demand of the output produced by the productive sectors has on: (1) national income, (2) wage earners' income, and (3) the balance of trade. In general he finds that cash crops have a more favourable effect on all three counts than food crops.[23]

Unfortunately there are probably large errors in the 1969 input-output table and hence also in the technical coefficient matrix used to derive the multipliers in Kim's study and therefore only limited confidence can be given to the results reported by Kim. Nevertheless, the general picture that cash crops have more favourable effects on national income, wage earners' income and the balance of trade, is probably correct.

The higher multiplier on wage earners' income for cash

crops than for food crops can also be read as indicating that the overall employment effect following an increase in exogenous final demand for cash crops will be higher than for food crops. The labour intensity in cash crop processing is in general found to be substantially higher than in food crop processing industries.[24] Thus since cash crops are apparently more labour-demanding in production at the farm as well as in processing in agro-based industries than food crops, it seems most likely that the increase in food crop production at the expense of a decline in cash crop production has had a negative impact on the utilization of labour not only in the agricultural sector but also on wage employment in the other sectors in the economy.

6.3 Composition of Agricultural Production and the Trade Pattern

Changes in the Domestic Trade Pattern

According to our findings in Chapter 5 it seems that the domestic trade pattern changed markedly in Tanzania during the 1970s. The tonnage of produce marketed in the official market declined due to a decline in cash crop production without any corresponding increase in food crop marketing. No doubt food crop production in the peasant sector has increased, but this produce has increasingly found its way into the traditional food marketing system. The expansion of trade in this market appears to have been caused by a combination of demand pressure and, as described in Chapter 4, a deterioration in the efficiency of the official marketing system. For these reasons the levels of food crop prices in the traditional food market have become higher than the official prices of food crops and thereby encouraged peasants to sell their surplus food in the traditional food market. In contrast to the prices in the official market food crop prices in the traditional food market

have increased in line with the overall inflation which has partially occurred as a consequence of the rapid expansion of the public sector.[25)]

An indication that trade in the traditional food market has increased may also be obtained by noting the decline in the velocity of currency in circulation outside the banks that developed during the 1970s. In an economy like Tanzania where money as a medium of exchange has a fairly short history one would expect the velocity of money gradually to increase in the transition from a subsistence economy to a monetized economy. Yet in the most recent history of Tanzania the velocity of currency (read money) is apparently declining, according to Table 6.2.

Table 6.2 Velocity of Currency in Circulation Outside Banks, Tanzania 1967 - 1981, selected years.

Year:	1967	1969	1971	1973	1975	1977	1979	1981
Currency*)	512	605	986	1199	1756	2380	4055	6616
GDP§)	6735	7460	8856	11490	16988	26578	32572	39622
Velocity	13.2	12.3	9.0	9.6	9.6	11.1	8.0	6.0

*) currency in circulation outside the banks as at 31st Dec.,T.shs.mil.
§) GDP at factor costs in current prices, T.shs.mil.
Velocity = GDP/Currency.

Source: Bank of Tanzania (1982),Table 5.

It seems reasonable to claim that part of the explanation for the decline in the velocity of the currency in circulation is that transactions in the traditional food marketing system are made outside the banking system, not only be-

cause some of these transactions are illegal such as trade in scheduled food crops, but also because the traders in this market seek to avoid paying taxes, licences and the like. Therefore the increased money earned by these traders will be used to enlarge their cash holdings and hence the velocity of the currency in circulation will decline.

The decline in the velocity of currency in circulation is however not solely due to an expansion of trade in the traditional food marketing system. In Tanzania one can observe a large growing sector that is commonly referred to as the informal sector. All food crop trading in the traditional food market is conducted in this so-called informal sector. But, in this sector a large variety of other entrepreneurs also opperate from the shoe-shiner to the small-scale industry, workshops, repairshops etc.[26] These agents probably also keep much of their money outside the banks and so a rapid growth of this informal sector is also likely to lead to a decline in the velocity of currency in circulation.

The expansion of trade outside the official marketing system and the concurrent expansion of money in circulation outside the banking system will have serious adverse effects on such important aspect as e.g. government tax revenue and investment. In Appendix Table C.3 it can be seen that the rate of gross capital formation declined considerably during the 1970s. During the period 1964 to 1974 gross capital formation in real terms increased at an annual rate of 12.1 percent, whereas during the period 1974 to 1982 it only increased at an annual rate of 2.8 percent per annum.

Part of the reason for this decline in the rate of investment was that the tax base of the government was eroded with the expansion of trade outside the official marketing

system and the growing informal sector. In Chapter 4 we have seen that the tax base has become quite narrow. The principal source of tax revenue during the 1970s was a sales tax on such luxurious goods as beer and cigarettes. At the same time as the tax base has been eroded the government has become the principal investor and naturally this has caused the investment rate to decline.[27)]

Reading Appendix Table C.3 it also seems that the domestic source of savings for capital formation has declined. Some of this decline may also be due to the expansion of trade outside the official marketing system where money is probably primarily used for trade, speculation and consumption and very little for investment. It should be noted again from Appendix Table C.3 that investment in the agricultural sector in real terms showed a rather sharp decline during the latter half of the 1970s. In fact it seems that investment in the agricultural sector has steadily declined since the mid 1960s, except for a short lived reversal of the declining trend in 1976.

The erosion of the tax base will also quite naturally tend to enlarge the government's buget deficit and since there is a direct link between this deficit and money supply[28)] such an erosion of the tax base is also working to accelerate the inflation rate reported in Chapter 3 Table 3.10.

Thus the changing pattern of domestic trade that partly resulted from the expansion of food crop production at the expense of a decline in cash crop production, seems to have eroded the tax base of the government with consequent negative effects on the rate of investment in the economy and probably also a consequent acceleration in the inflation rate.

Changes in External Trade

In Table 6.3 price and quantity indices of agricultural exports and total imports are reported together with developments in the merchandise trade balance. The table gives an indication of the relationship between resource allocation in the agricultural sector and the external trade balance.

The most important feature to note in Table 6.3 is the dramatic deterioration in the trade balance as a result of the simultaneous decline in export volume and the increase in import volume. The net barter terms of trade, i.e. P_X/P_M, did not deteriorate during the period covered in Table 6.3. The country's indebtness to the rest of the world did not, either, decrease to the same extent as the decline in the trade balance, since during the same period the country received considerable amounts of foreign aid.[29)]

The other important point to be noted from Table 6.3 is that non-agricultural exports declined relatively more than agricultural exports as the share of agricultural exports in total exports increased.

The underlying cause of the trend reported in Table 6.3 Green, Rwegasira and van Arkadie claim is 'structural' in its origin and therefore cannot be rectified by a devaluation and government budgetary restraint, the two major policy prescriptions made by the IMF as conditions for releasing funds to countries with severe balance of payments problems.[30)]

Table 6.3 Agricultural Exports and the Merchandise Trade Balance, Tanzania 1966 - 1981.

Calendar Year	Agricultural Exports shs. mil.	(a)	P_X	Q_X	Total Imports P_M	Q_M	Merchandise Trade Balance shs. mil.	Net Barter Terms of Trade P_X/P_M
1966	1269	68.2	100	100	100	100	67	1.00
1967	1292	78.5	94.9	107	103	94	136	0.92
1968	1192	75.2	95.8	98	103	105	- 117	0.93
1969	1136	68.1	138.9	64	104	97	83	1.34
1970	1262	74.7	126.1	79	106	127	- 422	1.19
1971	1268	73.1	151.4	66	115	140	- 736	1.32
1972	1401	66.4	162.4	68	124	137	- 601	1.31
1973	1841	82.4	179.7	81	153	138	- 898	1.17
1974	2157	84.5	267.8	63	215	148	-2397	1.25
1975	2164	89.4	295.9	58	232	142	-2929	1.28
1976	3402	82.8	338.1	79	239	113	-1312	1.42
1977	3899	85.9	525.0	58	259	123	-1663	2.03
1978	3152	85.8	350.0	71	305	171	-5127	1.15
1979	3536	83.0	424.0	66	350	151	-4669	1.21
1980	3126	75.0	452.2	55	392	152	-5885	1.15
1981	4459	84.9	504.8	70	419	143	-4817	1.20

(a) = agricultural exports in percent of total exports

P_X = export price index for agricultural goods. Estimated from average export prices of cashewnuts, coffee, cotton, sisal, tea, tobacco, meat and cloves, weighted by each crop's respective share in total agricultural exports. These export prices are reported in URT The Economic Survey , (various issues).

Q_X = index of agricultural exports in constant 1966 export prices

P_M = index of average import prices according to UNCTAD, (1979). The index for the years 1978-1981 has been computed by the author by linking UNCTAD's index to an index refleting the cost of manufactured goods on the international market prepared by the World Bank. This latter index is reported in URT/MDB (1981), Summary Appendix Table 3.

Q_M = index of total imports in constant 1966 import prices

Sources: URT, The Economic Survey, (various issues), UNCTAD,(1979), and URT/MDB,(1981), Summary Appendix Table 3.

The term structural is a term often used to explain balance of payments problems and inflation. But, the term is not well defined. It is often used rather loosely to refer to various forms of bottlenecks and constraints in an economy

that cause balance of payment problems and inflation.[31] However it seems that Green, Rwegasira and van Arkadie in their analysis of the balance of payments problem in Tanzania have not made a distinction between the aggregate supply curve of the agricultural sector and the supply curves for exportable crops and food crops. While the former curve probably is fairly inelastic, for the latter two curves we have in Chapter 3 Figure 3.1 and 3.2 found indications that point to a fairly high price elasticity.

But, increased imports also played a role in the deterioration in the trade balance reported in Table 6.3. Here it may be noted that the switch towards food crop production probably also tended to increase imports. This can be inferred from Table 6.4 where an estimate of the import requirements in different lines of production in the agricultural sector is reported.

Table 6.4 Estimated Import Requirements for Production, Transport and Processing of Major Food Crops and Cash Crops, Tanzania 1981.

Sector / Crop	Imported Inputs US $/ Average Export Price US $			
	Production	Transport	Processing	Total
Large Scale Farming				
Sisal	0.1992	0.0848	0.1861	0.4701
Sugar	0.3494	0.0408	0.1852	0.5754
Tea	0.2022	0.1307	0.1215	0.4544
Wheat	0.4593	0.1407	0.0248	0.6248
Peasant Farming				
Coffee	0.1871	0.0294	0.0035	0.2200
Cotton	0.1006	0.0540	0.0986	0.2532
Cashewnuts	0.0060	0.0263	0.0848	0.1171
Maize	0.1789*	0.2256	0.0410	0.4455

*) based on marketed volume

Source: URT/NDB (1982), Table 1 and Table 2.

Reading Table 6.4 it seems that food crops were more import-demanding than cash crops. Great care must be exer-

cised in reading Table 6.4. We saw in Chapter 3 that very few purchased inputs are used in peasant food crop production. The reason for the rather high imported input requirements for maize reported in Table 6.4 is that this estimate is based on the marketed surplus and not on total production of maize. The imported inputs per unit of total production naturally are much lower. However, the principal difference in imported inputs requirements between food crops and cash crops produced in the peasant sector is in transport. For maize which is the principle food crop produced in the peasant sector the imported transport cost element is reported to be some 10 times higher than for cash crops.

There are two important matters that will have a bearing on transport costs in agriculture: (1) differences in bulk-/price ratio between different crops, and (2) the spatial pattern of crop production. Ideally the spatial pattern of crop production should be guided by the bulk/price ratio since this would work to minimize total transport costs in the agricultural sector. Crops with high bulk/price ratios should primarily be produced close to centres of demand and crops with lower bulk/price ratios could be produced further away.[32] Unfortunately, it appears that the change in the spatial pattern of crop production that developed in Tanzania during the 1970s was contrary to this principle. In Chapter 5 we saw that food grain production increased most sharply in the most remote areas while cash crop production in the same areas declined and as a result consumption of imported fuel in the agricultural sector probably increased.

The changing pattern of resource allocation in the large-scale farming sector also contributed to a worsening of the trade balance reported in Table 6.3. In the large-scale

farming sector we have seen that sisal production declined dramatically whereas sugar production increased and since sugar clearly is more import-demanding than sisal this also meant increased imported inputs including fuel.

In Chapter 2 we also found that land in food grain production on state farms during the 1970s increased. Since, according to Table 6.4 large-scale food grain farming is more import-demanding than peasant food grain farming, this expansion of land in state food grain farming also meant that the use of imported inputs for the agricultural sector increased.

Summarizing this section it seems that the expansion in food crop production at the expense of a decline in cash crop production tends to cause a decline in the trade balance that exceeds the decline in cash crop exports because imports increase. In his study Kim also reports the balance of trade multiplier for cash crop production to be much higher than one. But, in the absence of reliable data on input-output flows between different sectors of the economy, it is not possible to derive accruate estimates of the 'true' multipliers for cash crops and food crops. Nevertheless, the cash crops balance of trade multiplier is no doubt much greater than one whereas the balance of trade multiplier for food crops is substantially less than one, if not negative.

6.4 Trends in the Growth and Distribution of Income

Growth in National Income/Output

From the national accounts statistics presented and assessed in Appendix C, it seems that there are large errors in the official GDP estimates. For the latter half of the 1970s the official GDP estimates may overestimate the true

values by some 5-7 percent in real terms. Naturally such overestimation, which has varied strongly over time, will greatly affect the growth rate estimates. This is indicated in Table 6.5 where the growth rate of GDP for both the official and the author's own adjusted GDP are reported for two subperiods 1966-1972 and 1974-1980.

Table 6.5 Annual Growth of GDP and GDP in the Agricultural Sector (GDPA) in Real Terms.

	1966 - 1972		1974 - 1980	
	GDP	GDPA	GDP	GDP
Official Estimates %	4.6	2.5	4.9	5.5
Author's Estimates %	5.1	3.6	3.7	2.1

Source: Computed from Appendix Table C.2.

Comparing these two series of GDP estimates it is seen that the official estimate for both overall GDP and GDP for the agricultural sector shows a higher growth rate for the period 1974-1980 than for the period 1966-1972. The author's own adjusted estimate by contrast shows a lower growth rate for the period 1974-1980 than for the period 1966-1972.

Both series of estimates are of course very crude, nevertheless considering the fact that for the period 1974-1980 we have seen (1) a substantial decline in output produced in the large-scale farming sector[33], (2) a decline in export earnings which has aggravated the foreign exchange constraint and has probably contributed to a decline in manufactured good output[34], (3) a decline in the utilization of labour, and (4) a decline in the domestic source of savings for capital formation and a decline in real investment in the agricultural sector[35], it seems highly unlikely that aggregate domestic output would have increased at a faster rate during the period 1974-1980 than during the period 1966-1972. Therefore since the author's

adjusted growth rate of GDP for the period 1974-1980 is only slightly higher than the growth rate in population it means that the GDP per capita most likely stagnated and perhaps even declined slightly during the last decade.

At the same time as per capita real GDP stagnated, it appears that wage earners have received a smaller and smaller share of the GDP produced. In 1970 the total wage bill of public services represented some 68.8 percent of the total value of public services. In 1978 the corresponding figure were down to 60.7 percent.[36] For the parastatal firms the trend was the same. Labour's share of the income of parastatal firms fell from 46.8 percent in 1970 to 41.7 percent in 1978.[37] For the peasants we saw in Chapter 4 that they received a smaller and smaller share of the value of the crops sold in the international market. Thus on the whole it appears that the real income of the average citizen in Tanzania fell significantly during the past decade.

Trends in Income Distribution

In his address to the nation on the 10th year anniversary of the Arusha Declaration the President had this to say on the trends in income distribution: 'Although reliable statistics are non-existent in this area, it appears that since 1967 the hard working peasant (especially in areas with a good cash crop) has improved his lot faster than an equally hard working wage-earner in the towns'.[38]

The lack of reliable statistics on income distribution has apparently not deterred researchers from attempting to derive income distribution indicators for Tanzania. In their most recent study on Tanzania ILO discuss thoroughly their own measurements on income distribution compared to the findings reported by Jumanne Wagao.[39] This comparison

is particulary interesting because both studies are based on the same sources of data and the same methodology, and yet the findings of these two studies are diametrically opposite.

The Gini coefficients on rural and urban income reported in these two studies are restated in Table 6.6.[40)]

Table 6.6 Gini Coefficients for Rural and Urban Income , Tanzania 1969 and 1976/77.

Researcher	Rural[a)]		Urban	
	1969	1976/77	1969	1976/77
ILO (1982)	0.57	0.49	0.51	0.44
Wagao (1981)	0.36	0.42	0.49	0.59

a) refers to rural cash expenditure (read income) only

Source: ILO (1982),Table TP 13.1.

The most important points to note in Table 6.6 are (1) Wagao's estimates indicate that income distribution in both rural and urban area has deteriorated between 1969 and 1976/77 whereas ILO reports the opposite, (2) Wagao shows that income is more equally distributed in rural areas than in urban areas, whereas ILO shows the opposite, and (3) Wagao reports a much lower Gini coefficient for rural areas than ILO for both 1969 and 1976/77. In the urban areas, by contrast, both report practically the same Gini coefficient for 1969, but for 1976/77 ILO estimates that the Gini coefficient declined whereas Wagao got the opposite result.

It is indeed difficult to reconcile these contradictory findings. ILO suggests that one reason for the differences is that Wagao worked with too few income classes in his derivation of the Lorenz curve, which would bias his esti-

mates downwards.[41] This may be a valid point. On the other hand since peasants farms appear to be fairly homogeneous in terms of size (cf. Chapter 1 Table 1.3), it seems quite reasonable that incomes in rural areas be more equally distributed than in urban areas as Wagao reports.

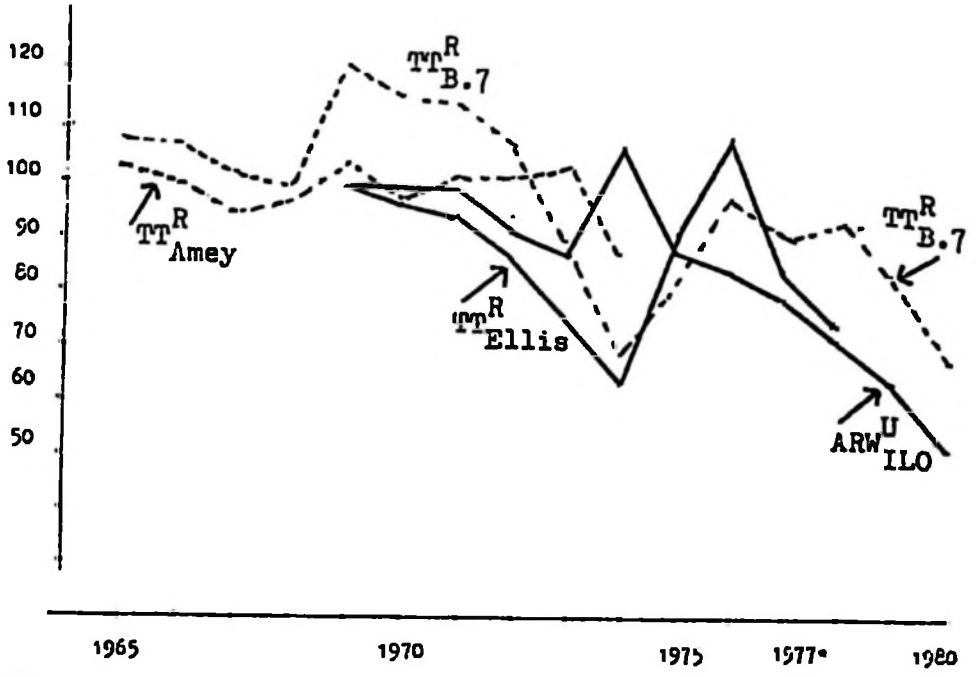
However, whether the Gini coefficients estimated by Wagao have a downward bias or ILO reports an upward bias of the Gini coefficients, does not really explain the reason why one researcher can report a deterioration in income distribution while another researcher using the same data and the same methodology can obtain a diametrically opposite result.

In order to shed some light on these contradictory findings it might be helpful to study some other indicators that have a bearing on the changes in income distribution in Tanzania. These are shown in Figure 6.1 where three indices of the rural net barter terms of trade (TT^R) from three different sources are plotted on a time axis together with an index which shows changes in the average urban real wage (ARW^U).

The TT^R plotted in Figure 6.1 is simply defined as an index of average producer prices of cash crops and food crops deflated by a consumer price index that presumably reflects prices of goods and services bought by rural people. The reason for the different results reported by the three sources of the TT^R, is that different price indices are used. Alan Amey and Frank Ellis use only producer prices of the official market in computing the rural net barter terms of trade.[42] The index of the rural net barter terms of trade computed in Appendix Table B.7, by contrast, seeks to take account also of prices of food crops in the traditional food market. It is for this reason that the latter index does not exhibit the same sharp decline towards the

end of the 1970s as the index reported by Ellis.

Figure 6.1 Indices of Rural Net Barter Terms of Trade (TT^R) and Average Urban Real Wage (ARW^U), Tanzania 1965/66 - 1980/81.



Note: ARW^U is defined equal to the average non-agricultural wage
*) 10 year anniversary of the Arusha Declaration

Sources: Amey,(1976).Table 6; Ellis,(1980) Appendix Table C; ILO,(1982) Table 19.8, and Appendix Table B.7 below.

However, even though the three indices are not directly comparable, it seems clear enough that the rural net barter terms of trade (TT^R) declined almost continously after 1969. The decline was reversed substantially but only for a short while in the mid-1970s when food crop prices were drastically raised following the severe droughts in 1973/74 and 1974/75, but apparently this reversal in the trend of falling TT^R was only short-lived.

It was, however, not only the rural net barter terms of trade that declined. In Figure 6.1 it can readily be seen that the urban real wage also declined rather sharply during the 1970s. In fact by the end of the 1970s it seems that the urban real wage had been much more eroded than the rural net barter terms of trade. The income distribution of the whole country may thus have improved somewhat since it appears that the real income of the urban wage earners fell more than the real income of the peasants. The net barter terms of trade of the peasants probably did not fall as sharply as the urban real wage and in Chapter 3 we saw that output produced by the peasants probably did not decline.

The overall distribution of income in the country may also have improved somewhat with increased food crop prices since food crop production was much more evenly distributed in the country. At the dawn of independence economic development was very unevenly distributed in the country being confined primarily to the major cash crop producing regions. This unequal distribution of economic development has been greatly mitigated in the post colonial period, partly by direct government direction of resources to less developed regions, but also by the sharp rise in food crop prices that took place during the last decade.

The President was therefore probably in error when he linked the improvement in peasants' incomes vis-à vis the urban worker to the possibilities of earning a good income in cash crop production, (cf. the quotation given above). It is more likely that it was the possibility of earning a good income in food crop production that enhanced the income of the peasants, if it was enhanced at all during the 1970s.

It is however of great importance to realize that although there has been a redistribution of income between the

regions this cannot be read to signify that there has been any redistribution of income within each region. Thus in the absence of more reliable data on income distribution that those which underly the estimates presented in Table 6.6, the only safe conclusion that can be made is that some improvement of the spatial distribution of income in the country has taken place, but that there is no solid evidence that can show that the distribution of income from the rich to the poor has changed markedly for the better or worse.

6.5 Summary and Conclusions

An important conclusion which emerges from this study is that the marketed surplus produced by the peasants in Tanzania seems to have increased at a fairly constant rate, at least during the past three decades. But we have also found that, in spite of this growth in the marketed surplus produced by the peasants, the recent agricultural policy emphasising food crop production has not been conducive to an acceleration of the development process in Tanzania. In Section 6.1 we have found that the general arguments in favour of food self-sufficiency are not very well founded. In the subsequent sections we have found: (1) that the utilization of the labour force has declined, (2) that the tax base of the government has been eroded as a result of a change in the domestic trade pattern, (3) that the rate of investment has declined and inflation accelerated, (4) how the contraction of trade in the official market has caused exports to decline but imports to increase leading to a severe balance of payments problem that is strangling efforts to secure a more balanced production structure of the economy, and (5) how growth in the national income has stagnated and how the acceleration of the inflation has eroded the income of the urban workers and probably also the peasants.

It seems that these unfavourable developments can be more or less directly linked to the switch to food crop production in the peasant sector and a similar switch in the large-scale farming sector. In order to improve the situation it seems that what needs to be done is to turn the tide again to initiate a renewed increase in cash crop production. It can fairly safely be assumed that Tanzania, being a small country in the international market for cash crops[43], can increase its export of cash crops without any serious adverse effects on its terms of trade with the rest of the world.

Securing an increase in cash crop production is basically a matter of (1) releasing the production constraint in the peasant sector, and (2) providing the appropriate incentives for peasants to alter their resource allocation such that more cash crops will be produced. We will now highlight some important aspects of these matters that are of crucial importance for securing an increase in cash crop production.

Elimination of the Production Constraint in the Peasant Sector

In Chapter 3 we saw that there are basically two major constraints on peasants' crop production namely a labour constraint and a land constraint. By and large it seems that the rural development policies pursued during the past three decades instead of working to release these constraints have in fact made the constraints more binding.

The rural development policies pursued during the past three decades apparently have shifted from one extreme to another by targeting on different groups in the rural areas. In the 1950s and the early 1960s the target groups for the rural development policies and programmes were the

progressive peasants/farmers. By the end of the 1960s this policy was reversed and the target group became the poor rural people. The rural poor was to be distinguished from the progressive peasant/farmer (kulak). The motive for this reversal in rural development policies was, as we saw in Chapter 2, the fear that a rural proletariat with no access to land was about to develop.

In the early 1970s there was a 'witch-hunt' for the so-called kulak farmers in Tanzania. The hunt was, however, rather unsuccessful: only a handful or so could be found.[44] In a study on the extent and character of differentiation in rural areas in Tanzania Manfried Gottlieb also concluded that rural society, contrary to the prevailing opinion, was quite homogeneous.[45] The structure of peasant farms reported in Chapter 1 Table 1.3 and the Gini Coefficients reported in Table 6.6also point to the presence of a fairly homogeneous rural society.

One can of course observe differences in living standards among rural people, but it seems that the age-old fabric of the extended family system is still able to secure a fairly even distribution of welfare not only among rural people but also between urban and rural people. Urban living is still a recent phenomenon in Tanzania that there hardly exists any urban Tanzanian who does not maintain strong ties with his or her family in the village where he or she was born and raised. The strength of this ties has become quite visible during the 1970s with the falling real incomes of the urban workers. For the urban poor it seems that, to a certain extent, their living is supported by the food they obtain from their families in the villages.

The fear of an emerging rural proletariat with no access to land thus seems to have been grossly exaggerated and consequently the rural development polices pursued have by and

large been misdirected. Rural development policies should first and foremost be directed at releasing the binding constraint on production in the peasant sector. Policies that condemn and discourage peasants from using hired labour in farming obviously do not help to release the binding constraint on peasant production.

The chief means of releasing the contraints on production in the peasant sector has, though, to come through the adoption of improved technology that will raise the productivity of the soil as well as the productivity of the tiller of the soil. In this respect it seems that some fundamental changes in policies are long overdue.

In Chapter 3 we saw that during the colonial period technological progress in the agricultural sector was primarily confined to cash crops. This was of course natural since the colonialists were primarily concerned with increasing the output of cash crops. In the economic literature on international trade it has long been established in a conventional 2x2 model, (i.e. two factor inputs e.g. labour and land, two output sectors - an export sector and an import-competing sector, where each sector produces only one output), that neutral technological progress in the export sector will lead to an expansion of output for this sector.[46] But at the same time the output produced in the import-competing sector will decline and so also will the terms of trade. We may in this context assume the export producing sector to produce a cash crop X and the import competing sector to produce a food crop F. Thus neutral technological progress in cash crop production would give the colonialist increased output of cash crop. This would, however, not lead to a decline in the terms of trade since as we have seen Tanzania's output of cash crop is only a small fraction of world's total output of cash crop.

The same result would also follow if the technological innovation in cash crop production were biased in favour of the inputs used intensively in cash crop production.[47] For cash crops this would be labour since cash crops are considerably more labour-demanding than food crops. Thus labour-saving technological progress in cash crop production would also yield an expanded volume of cash crops. On the other hand, for a strongly biased land-saving technological innovation in cash crop production, theoretical analysis in a 2x2 model cannot provide conclusive answeres as to what will happen to production and prices in such an economy.

From the historical accounts given in this study we have seen that much of the technological innovation that took place in the agricultural sector during the colonial period was of a labour-saving form both in the large-scale farming sector and in the peasant sector. In the large-scale farming sector sisal production greatly dominated and much of the innovation that took place in sisal production was of a labour-saving form. In the peasant sector labour-saving technological progress may not have dominated to the same extent as in the large-scale farming sector. But, there can be no doubt that the rapid increase in cash crop production that took place in the peasant sector during the last decade of the colonial period was partly achieved because the use of ox-and tractor-pulled agricultural implements also increased rapidly during this period.

The colonialists' strategy for increasing cash crop production does not appear to be very appropriate to the present day, since land has become a progresively more binding constraint on production in the peasant sector. In Chapter 3 we found that in the major cash crop producing areas the surplus land that was available for cash crop production during the colonial period now appears to be exhausted. Thus for these areas no increase in cash crop production

can be expected to be forthcoming unless efforts are made to raise the productivity of the land (i.e. the soil) in food crop production so that surplus land can be released for cash crop production.

Efforts have been made in Tanzania during the post-colonial period to direct more research and development funding towards food crop production, but it appears that a large part of this increased funding has only been used in the large-scale farming sector and very little has benefited food crop production in the peasant sector.[48] In Chapter 3 we also saw that by far the greatest part of all modern farming inputs such as chemical fertilizer, pesticides, hybrid seeds etc. were made available for cash crop production. The case of tobacco production is striking.

It seems therefore that there is a great need to make modern inputs available for food crop production such that the productivity of the soil in food crop production can be increased and thereby free land for cash crop production. The land thus released will not, however, be used for cash crop production unless there are incentives for peasants to do so.

Possible Incentives for Cash Crop Production

In the course of this study we have found that the principal motivating factor for production of a crop is the price of the crop, which obviously partly determines the profitability of producing the crop seen from the peasant's point of view. In peasant agriculture where, as a rule, very few purchased inputs are used, at the margin a crop i is more profitable to produce than a crop j if:

$$(6.1) \qquad \frac{P_i}{P_j} > \frac{Y_j}{Y_i}$$

where P_i = price of crop i
P_j = price of crop j(j=1,2.....n competing crops)
Y_i = yield per acre of crop i
Y_j = yield per acre of crop j.

Thus when the relative price between two competing crops, crop i and crop j, is greater than the reciprocal of the corresponding yield ratio, crop i is more profitable to produce than crop j and hence the peasant is likely to allocate his surplus land and labour resources for production of crop i.

Thus letting i represent cash crop X and j food crop F, the peasant is likely to allocate his surplus land and labour resources in cash crop production if

$$(6.2) \qquad \frac{P_X}{P_F} > \frac{Y_F}{Y_X}$$

In the previous chapters of this study we have found that the relative price of cash crops during the 1970s declined since P_F increased much more rapidly than P_X. The yields of both food crops and cash crops on the other hand appear to have remained fairly constant. In the 1950s and the early 1960s by contrast the relative profitability of cash crop production was greatly enhanced because both P_X and Y_X were increased, whereas P_F declined and Y_F stagnated.

The possibility of stimulating cash crop production with the aid of prices is however much harder now than was the case in the 1950s and the early 1960s, since surplus land for cash crop production must be found. In the major cash crop producing areas it appears that there is no surplus

land available.[49] In these areas land for cash crop production can now only be found by fostering land-augmenting technological progress that will increase Y_F. An increase in Y_F will mean that less land will be needed by the peasant households to secure their minimum food requirements $\underline{F}$.

However by raising Y_F we see from the inequality (6.2) that the relative price P_X/P_F must be raised even more in order to make cash crop production profitable. This will be very difficult, since as we have seen in Chapter 5, there are two markets for food crop - an official market and a traditional food market, and the government only directly controls the price in the official market.

The price of food in the traditional food market (P_F^t) has, as we have seen, increased much more rapidly than the official price of food (P_F^o), primarily as a result of an increase in the excess demand for food in the official market. It is as analysed, the decline in the relative price P_X^o/P_F^t that has made peasants switch their resources away from cash crop production to food crops during the 1970s.

Thus in order to enhance the profitability of cash crop production the change in the relative price P_X^o/P_F^t has to be greater than the change in the yield ratio between food crops and cash crops (Y_F/Y_X). The yield of food Y_F must however be increased in order to free land for cash crop production. It is primarily through an increase in Y_F that land can be freed for cash crop production since food crop production is considerably more land-intensive than cash crop production.

In Chapter 5 we saw that there is a direct causality between the size of the excess demand in the official market

and P_F^t. The larger the excess demand is, the higher P_F^t will be. Thus in order to reduce P_F^t and make cash crop production more profitable excess demand in the official market must be reduced or eliminated. Barring massive imports of food or food aid, this can only be achieved by raising the price of food in the official market P_F^o. At the same time the prices of cash crops must be raised even more.

For cash crop prices (P_X^o) Tanzania is a price taker in the world market and there are in the short run not many possibilities for raising the producer price of cash crops by squeezing the marketing margin. Too servere a squeeze of the marketing margin can, as we saw in Chapter 4, be counterproductive and lead to a further weakening of the official marketing system. Thus the natural way to raise cash crop prices will have to be through a devaluation of the exchange rate. Producer prices of cash crops could be raised in the same proportion as the devaluation. However, as we saw in Chapter 5, an increase in the prices of cash crops may led to a further increase in excess demand for food in the official market causing an increase in P_F^t, and thus the incentive effect for cash crop production as a result of an increase in cash crop prices P_X^o may be neutralized.

It therefore appears that given the dual structure of the food market, it is very difficult to secure an increase in cash production simply by altering the producer prices in the official market. The price of food in the traditional food market P_F^t must also be controlled. This price, however apart from being connected to excess demand in the official market, is also directly connected to the overall price level in the country. Changes in the overall price level i.e. inflation are of course essentially endogenously determined in the economy.

Therefore changes in the official price policy alone are not sufficient to secure increases in cash crop production: one must consider the whole marketing system. Our study does not allow us to draw firm conclusions as how to increase the efficiency of the marketing system. This has not been our purpose in this study. On the other hand it is of crucial importance in formulating price policies that seek to govern resource allocation in agriculture that consideration is given to the actual structure of the marketing system.

The dual food marketing system in Tanzania essentially owes its origin to the belief that the traditional food marketing system was inefficient in such matters as: (1) providing timely needed inputs in production to farmers, (2) distributing seasonally produced output over time, space and form from the farmer to the consumer at minimum costs, (3) through its price signals fostering an efficient allocation of resources in agriculture, and (4) serving a growing agricultural sector as well as a growing agro-based industrial sector. These are generally listed as the main functions of an agricultural marketing system.[50]

As we found in Chapter 4, however the official food marketing system does not appear to have contributed to improvements in the efficiency of the food market. On the other hand we also found in Chapter 4 that the official marketing system in cash crops with the cooperatives as the marketing agents was after all not such an inefficient marketing system as many researchers led the government to believe in the early 1970s. This view concerning inefficiency subsequently led to the alteration of the official marketing system and at the same time to an expansion of the official food marketing system.

These changes in the official marketing system and the

expansion of the official food market have apparently not been for the better. This could also have been predicted. In 1974 Uma Lele concluded after surveying the food markets in various LDCs that the traditional food marketing system in general is highly competitive and operates efficiently given the conditions under which it operates. She also found that the failure of the public marketing system was greatest in handling dispersed small marketed surpluses of subsistence crops.[51)]

Such a conclusion is hardly surprising since the efficiency of an agricultural marketing system as a rule hinges more on the economic infrastructure that is available to serve the marketing agents, rather than the marketing agents themselves. Therefore the role of the government should primarily be directed at fostering an efficient economic infrastructure that can serve the existing marketing agents, since the marketing agents of a traditional food marketing system can be expected to be much more efficient than any new public marketing agents.

This therefore lead us to the conclusion that in order to stimulate an increase in cash crop production, the food marketing system must be liberalized. A liberalization of the food marketing system we can expect, based on the anlysis given in Chapter 5, will lead to a reduction in P_F^t and, if at the same time cash crop prices in the official market can be raised e.g. through a devaluation, this will make cash crop production profitable because the relative price P_X^o/P_F^t will increase. It is, as we have seen in Chapter 3 the decline in this relative price that has primarily caused the dramatic decline in cash crop production during the 1970s.

The price of food in the traditional food market can be expected to decline further if in addition the government

concentrates its resources on improving the physical, financial and communication infrastructures that can serve the marketing agents of the traditional food marketing system. This may also lead to a reduction in the level of minimum food requirements $\underline{F}$ that we found in Chapter 3 is probably now a binding constraint on production decisions made by peasant household in some areas. Thus land can be freed for cash crop production.

This conclusion might sound irresponsible, especially today when hunger is causing so much human suffering in Africa. It appears however that much of this hunger is man-made since an age old social structure has broken down, and not the result of a diverson of land from food crop production or natural calamities. The historical records from Tanzania show that there have never been any major global food shortages. When there have been shortages they have been highly location-specific. Thus for Tanzania there does not appear to be any serious danger of an overall shortage in food supply. The problem concerning food in Tanzania is, rather, the poor nutritional quality of the food consumed.

It is believed that a policy where stress is on incomes rather than on food production as such will not only help to guarantee food availability to rural people, but also to improve the nutritional standard of their food intake. The food supply for urban Tanzania can be obtained in the international market by exchanging cash crops for food grains should it be the case that domestic sources of supply be insufficient. Finally, it would appear that a liberalization of the food market would ensure an adequate supply of food from domestic sources of supply for the urban people.

Footnotes Chapter 6.

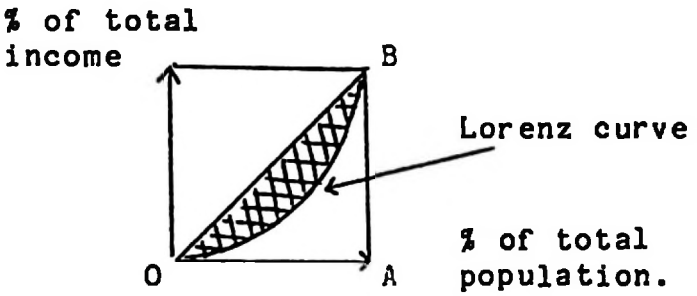
1. Cf. growth rates reported in Tables 1.1 and 3.1.
2. Cf. Table 2.2.
3. Cf. Table 2.3.
4. Cf. Table 3.1.
5. Cf. Figure 3.1.
6. Sen (1981) p. 433
7. Ibid.
8. Mascarenhas (1968) pp. 37-59.
9. The sharp fluctuations in the supply of maize to the official marketing system from regions that are highly susceptible to droughts such as e.g. the Central Region, indicate that in years with poor harvest, some of the food surplus produced in the region may actually have been marketed in the traditional food market outside the region, because people in the drought suffering region are too poor to be able to pay the high price which the surplus food can fetch in the neighbouring regions where people in general are better off.
10. The development literature is enormous on the merits and demerits of these two different development strategies. For a fairly recent assessment of the records of the two see e.g. Krueger (1982a).
11. A standard reference on how an import substitution industrilization policy may harm agricultural development is Little, Scitovsky and Scott (1970).
12. Cf. Table 4.19.
13. See e.g. Lewis (1969). For the more recent records of the East African Economies see e.g. Stein (1981).
14. Myint (1975) argues that none of the four roles listed are mutually compatible.
15. This does not prove that peasant food grain production is an inefficient form of production. René Dumont (1977) pp. 149, argues that the efficiency of food production by the peasants in Africa is far superior to the large-scale food grain producers in US, if efficiency is measured in terms of energy used in production. Modern farming in industrialized countries Dumont characterizes as 'terrible gaspillage d'energe'.
16. A good discussion of agricultural planning in Tanzania in the 1960s can be found in Livingstone (1971b).
17. Ibid.
18. URT (1983) p. 3.
19. The labour force is here simply defined to contain total population in the age group older than 14 years

of age but less than 65 years of age.

20. Cf. the discussion given in Chapter 2.
21. Lawrence (1971) Table IV.
22. This productivity figure is simply calculated as the reciprocal of the labour-output ratio reported in Table 6.1.
23. Kim (1976) Table 2.
24. A good illustration of the higher capital intensity in food crop processing than in cash crop processing is the case of the automatic bread bakery project in Tanzania. For a revealing analysis of this project see e.g. Coulson (1978) pp. 179-184. To a certain extent inferences of a higher labour intensity in cash crop processing than in food crops processing can also be made from URT/TAKWIMU (1973).
25. Cf. Chapter 1 Table 1.6 and Appendix Table D.2.
26. An illustrative description of the informal sector in one region in Tanzania is provided by Bagachwa (1981). See also ILO (1982) pp. 341-350.
27. According to national accounts statistics, in 1964 out of total monetary capital formation 33.7 percent was in the public sector. In 1970 it had increased to 65.7 percent. In 1980 it had however declined to 51.5 percent. Source: Estimated from URT, The Economic Survey, various issues.
28. This direct link arises because in a LDC the capital market is often very poorly developed and hence the Central Bank has very limited possibilities for regulating the money supply. The money supply is basicaly regulated by the size of the government budget.
29. Cf. Chapter 4, footnote no. 48.
30. Green, Rwegasira and van Arkadie (1980) p. 52 argue that 'Insofar as visible trade is concerned, any desired effects of devaluation could be achieved by the use of other policy instruments'. Further on in the same study on page 122 it is argued on the government's budgetary restraint that if external finance cannot be found to finance a balance of payments deficit, 'there can be little alternative to reducing the development effort, cutting down both the ambition of investment programmes and the provision of public services. But, this would reduce the possibility of tackling the underlying root causes of Tanzania's balance-of-payment problem: the limited and unbalanced development of productive capacity'.
31. For a further elaboration of the arguments, see e.g. Kirkpatric and Nixon (1976). This contains a good discussion of the forces of inflation and balance of

payments problems in LDCs as explained by the Structuralists as well as by the Monetarist School of Thought.

32. See e.g. Bressler and King (1970) Chapter 6.
33. Cf. Chapter 3 Table 3.1.
34. Cf. Chapter 1 Table 1.5.
35. Cf. Appendix Table C.3.
36. Sources: Estimated from URT/TAKWIMU (1979b, 1981b) and from URT, The Economic Survey, various issues.
37. Ibid.
38. Nyerere (1977) p. 51.
39. ILO (1982) pp. 383-388.
40. The Gini coefficient can most conveniently be defined with the aid of a simple diagram as follows.



In the above diagram the Gini coefficient is simply defined as the relationship between the shaded area and the triangle OAB. The Gini coefficient can take a value between zero and one. When it is zero it means that the income is equally distributed.

41. ILO (1982) p. 384.
42. The index used to reflect prices of goods and services bought by the rural people differs slightly in the study by Amey and Ellis. Amey simply uses the national consumer price index (NCPI), whereas Ellis seeks to modify the NCPI to take account of differences in cost of living between rural and urban areas. With the present statistics available it is not, however, possible to argue which price index best reflects rural costs of living. It seems as we have argued in Chapter 3 that official price statistics tend to understimate the actual cost of living in both rural and urban areas.
43. URT/MDB (1981) Annex 9 Table 5.1 shows for instance that in 1981 Tanzania's output of coffee which is the principal cash crop produced, only represented some 1 percent of world coffee output. Cotton, the second important cash crop produced in the peasant sector was

less than 1/2 percent of world cotton production.

44. It seems from the records of the hunt during this period that Awiti (1972) and van Veltzen (1970, 1973) were the two most successful hunters.

45. Gottlieb (1973).

46. Technological progress is conventionally classified according to how the marginal rate of subsistition between different inputs used in production will change following an innovation in production technology keeping factor prices constant. When there is no change in the marginal rate of substitution, this means that the marginal productivity of each input used has changed exactly in the same proportion and therefore technological progress is said to be neutral. If on the other hand the marginal productivity of land in our two factor input model (land and labour), changes more than the marginal productivity of labour, the innovation that has taken place is classified as labour-saving, and vice versa when the marignal productivity of labour changes more than the marginal productivity of land: the innovation is classified as land-saving.
For further details of this classification scheme see e.g. Södersten (1978) Chapter 11 and Yotopoulos and Nugent (1976) Chapter 9. For a thorough analysis of how technological progress may have an impact on a country's international trade pattern, see e.g. Södersten (1964) Chapter 4.

47. Ibid.

48. Msambichaka and Ndulu (1984).

49. Cf. Chapter 3 Table 3.4.

50. See e.g. Abott (1967) and Lele (1974).

51. Lele (1974) p. 432.

Appendix A. Agricultural Production Statistics

Appendix Tables A.1-A.3 contain time series statistics that show the developments in annual production of all major crops produced in Tanzania. All agricultural production statistics are given by the crop year, which runs from 1st July to 30th June.

In the case of cash crops the statistics are based on the marketed volume, i.e. the volume of produce marketed through the official market as explained in Chapter 1 Figure 1.1. The statistics for cash production are all based on actual measurement figures at the time when the crop was originally bought from the farmer/peasant and hence the error margins in these stastistics are probably quite small.

On the other hand the error margins in the production statistics for food crops are very large because all production statistics for food crops are all purely estimates or 'guesstimates'. Several time series statistics exist for food crop production. The most authoritative are probably the estimates provided by (1) The Ministry of Agriculture (KILIMO) and (2) Food and Agricultural Organization of the United Nations (FAO).

The series of annual estimates of food crop production provided by KILIMO is based on annual reports submitted by district agricultural officers through the regional agricultural office of KILIMO to the Statistical and Planning Section in the head office of KILIMO. Presently the longest time series available on food crop production is one provided by KILIMO that runs from 1963/64. Prior to this crop year no aggregate estimate of food crop production is readily available. The series of food crop production estimates provided by FAO commenced a few years later.

Two other sources of food crop production in Tanzania are estimates provided by the Tanzania Food and Nutrition Centre (TFNC) and by the United States of America Department of Agriculture (USDA). TFNC reports a series of estimates that runs from 1973/74 to 1979/80, that differs only marginally from KILIMO's estimates, and the set of estimates provided by USDA appears to be more or less a copy of the set of estimates provided by FAO. There are, however, no indications that either of these latter two estimates should be better than those provided by KILIMO and by FAO, and therefore we have found it unnecessary to report the sets of estimates provided by TFNC and USDA, and besides these later series are also much shorter than the ones provided by KILIMO and by FAO.

In addition to these sets of estimates, the Bureau of Statistics (TAKWIMU) in its annual exercise of compiling the national accounts, apparently uses yet another serie on food crop production. In this case the estimates are partly based on a household survey from 1969. However, after having scrutinized the set of figures on agricultural production used by the Bureau of Statistics for preparation of the national accounts, ILO found that these sets of figures contained such a high degree of inconsistency that they concluded that the figures on food crop production published by KILIMO were probably the most realistic figures available.[1)]

Comparing the two sets of estimates given in Table A.3 it is of importance to note that it is primarily in respect of the estimates of maize and cassava production that the two sets of estimates differ: FAO reports a stagnation in maize production but some increase in cassava production. KILIMO on the other hand reports a substantial increase in production of both maize and cassava, but the level of cassava

production is in KILIMO's estimates much lower than FAO reports. The important question, of course, is which set of estimates best reflects reality.

A rough check on how reasonable the estimates of food crop production are may be obtained by calculating the rural per capita calory availability per day implied by the production estimates reported in Table A.3. This is done in Table A.4, where the estimated rural per capita calory availability per day implied by the regional estimates on food crop production provided by KILIMO for 1967 and 1978, two years that gave good harvests in Tanzania, are reported. These regional estimates of food crop production and the implied rural per capita calory availability are contrasted to national average figures on rural per capita calory availability per day that are implied in the food crop production estimates provided by FAO. (In its statistical publication, FAO does not report estimates on regional food crop production.)

Reading Table A.4, it seems that the set of estimates of food crop production provided by KILIMO for 1967 is grossly underestimated. Nutritional standards of per capita calory requirements per day range between 2 200 - 3 200 depending on age, sex, drugery of work etc. For Tanznia one can expect to find the average rural per capita calory availability per day to be somewhere between these two values. In some regions where surplus food is normally available, the rural per capita calory availability can of course be much higher than the upper bound. But it is most unlikely that any region would not produce enough food to secure 2 200 calories rural per capita per day at least in years with good harvests. Thus for 1967 KILIMO's estimates of food crop production is most certainly to low. On the other hand the estimates provided by FAO appear to be suspiciously high.

The set of estimates provided by KILIMO for 1978 appears to be much more realistic. The estimate correctly identifies two new major food surplus producing regions, namely Rukwa and Ruvuma. The few nutritional studies that have recently been made also, by and large, confirm the picture of rural per capita calory availability that is depicted in Table A.4.[2)]

The spatial pattern of crop production identified in the estimates provided by KILIMO for 1978 is also in close agreement with the observed differences in food consumption patterns between the different regions.[3)] Banana is a major food crop in Arusha, Kigoma, Kilimanjaro, Mbeye, Tanga and West Lake (Kagera) regions, whereas cassava is a major food in Coast, Mtwara, Lindi, Mwanza and Shinyanga regions. Table A.4 also correctly located the major food grain producing regions, which presently are Arusha, Iringa, Mbeya, Ruvuma and Rukwa.

Thus in general it seems that the estimates on food production provided by KILIMO contain a fairly high degree of internal consistency except that during the 1960s the estimates have a general downward bias, especially in the case of cassava. This latter point one may deduce by observing that for 1967 the implied per rural capita calory availability is lowest in those regions where cassava is the major food staple. In Table A.3 it can also be noted that the discrepancy between the set of estimates provided by KILIMO and FAO is biggest in respect of cassava production.

The estimates provided by FAO for 1978 show a small decline in rural capita calory availability. This decline does not appear to be very realistic since it is generally held that for 1978 the food crop harvest was exceptionally good.[4)] In their estimates FAO show cassava to be the dominant food

crop produced in Tanzania. But, this assessment is not confirmed by the household budget surveys and nutritional surveys that have been conducted. Cassava is, as we have already pointed out, only dominant in some regions. It thus appears that FAO in their estimates consistently overestimate the importance of cassava production and as shown in Chapter 5 probably consistently underestimate the level of maize production.

Thus it appears that in spite of the downward bias in the estimates of food crop production provided by KILIMO during the 1960s, this source is still the best set of estimates available. Therefore in this study we base our analyses on KILIMO's assessment of the developments in food crop production, keeping in mind the downward bias of the figures reported during the 1960s.

Footnotes Appendix A.

1. ILO (1982) pp. 353-360.
2. See e.g. Shesemani (1981) and Arén (1984).
3. URT/TAKWIMU (1972) Appendix 16.
4. In this year an unprecedented amount of food grains was bought by the official food marketing system, see Table 5.5.

Appendix Table A.1 Crop Production, Large-Scale Farming Sector.

Crop Year	Tea (made)	Coffee (clean)	Sisal	Sugar	Wheat	Tobacco (flue-cured)	Land Harvested a) Total '000 has.	b.) %
			'000 tons.					
1953/54	1.6	1.5	178.2	10.7	9.8	1.6	198.0	90.0
1954/55	2.0	2.3	176.5	10.4	4.2	1.5	193.8	91.1
1955/56	2.4	2.9	185.7	18.0	4.8	1.4	207.5	89.5
1956/57	2.8	3.3	184.9	18.4	3.9	1.5	207.6	89.1
1957/58	2.8	2.5	196.6	21.0	6.6	1.5	219.6	89.5
1958/59	3.6	3.4	205.3	27.0	7.8	2.0	235.1	87.3
1959/60	3.7	3.1	204.9	28.7	11.7	1.6	236.9	86.5
1960/61	4.4	5.8	198.0	28.7	5.4	1.3	232.5	85.2
1961/62	4.3	3.1	214.0	39.2	12.7	0.8	248.5	86.1
1962/63	5.0	7.8	217.7	50.0	13.7	1.0	217.8	80.1
1963/64	4.8	9.2	235.5	61.4	22.6	0.9	302.4	77.2
1964/65	5.6	7.6	217.6	67.4	30.1	1.8	209.9	74.8
1965/66	6.7	8.7	225.1	71.0	29.5	1.2	292.4	76.9
1966/67	8.0	12.5	220.1	71.8	28.0	1.6	309.6	71.1
1967/68	9.5	9.7	196.9	82.4	33.1	1.8	284.6	69.2
1968/69	8.2	14.8	209.3	92.0	27.6	2.3	312.3	67.1
1969/70	7.8	11.2	202.2	87.2	21.0	2.5	286.1	70.6
1970/71	8.4	11.3	181.1	95.8	43.0	2.5	287.7	62.9
1971/72	10.4	10.8	156.8	88.5	56.7	2.8	274.7	57.1
1972/73	11.7	11.2	155.4	105.1	46.8	2.9	270.2	57.5
1973/74	10.6	7.8	143.4	96.2	27.8	4.0	228.4	62.8
1974/75	11.9	7.4	120.5	103.2	14.4	3.1	193.1	62.4
1975/76	10.9	7.3	113.7	112.1	24.5	3.8	197.1	57.7
1976/77	12.1	7.5	104.8	99.2	27.1	3.8	189.8	55.2
1977/78	12.9	6.8	91.9	135.5	35.3	3.7	189.3	48.5
1978/79	12.3	8.5	81.4	114.0	28.8	3.4	173.9	46.8
1979/80	12.5	4.9	85.9	122.5	26.6	3.4	166.1	51.7
1980/81	12.3	7.9	73.7	121.7	27.9	3.1	164.5	44.8

a) Estimated from the production statistics based on the following yields tons/ha. Tea 1.2, Coffee 0.3, Sisal 1.0, Sugar 5.0, Wheat 1.1, Tobacco 0.7.
b) Hectares in sisal production in percent of total hectares harvested.

Note: Wheat is being counted as being produced all in the large scale farming sector. All other food grains are being counted as being produced in the peasant sector.

Sources: For the period 1970/71-1980/81 the statistics are extracted from URT/MDB Agricultural Price Review, (various issues). Prior to 1970/71 the statistics reported have been extracted from URT/TAKWIMU Statistical Abstracts, (various issues). In the case of tobacco the statistics have been extracted from Boesen and Mohele (1979), Table 1.

Appendix Table A.2 Cash Crop Production, Peasant Farming.

Crop Year	Seed-cotton	Coffee (clean)	Tea (made)	Cashew-nuts	Tobacco		Pyreth-rum	Cil-seeds.
					Flue-cured	Fire-cured		
				'000 tons.				
1953/54	54.5	15.1	-	16.3	-	0.9	0.5	32.3
1954/55	65.5	15.2	-	18.2	-	0.6	0.6	30.2
1955/56	70.9	17.8	-	16.7	-	0.5	0.7	52.4
1956/57	90.8	19.0	-	33.6	0.1	0.5	0.7	57.8
1957/58	90.2	17.4	-	31.3	0.1	0.8	0.6	50.6
1958/59	108.1	18.1	-	33.2	0.1	0.7	0.7	43.2
1959/60	100.5	18.7	-	36.7	0.2	0.5	1.0	55.7
1960/61	89.9	21.2	-	40.0	0.3	1.0	1.3	36.3
1961/62	114.0	15.1	-	59.0	0.3	0.6	1.9	39.9
1962/63	139.8	19.7	-	43.2	0.5	0.9	2.3	54.8
1963/64	156.1	22.5	-	56.7	0.9	0.3	2.3	43.0
1964/65	196.7	21.4	-	64.6	2.2	1.1	3.7	32.4
1965/66	231.3	36.0	0.1	74.3	2.4	1.5	4.4	33.7
1966/67	207.8	35.2	0.2	84.2	3.0	3.2	6.7	30.3
1967/68	150.7	33.5	0.4	73.3	3.3	2.2	4.8	22.6
1968/69	207.6	37.3	0.6	118.0	5.8	3.5	3.8	21.5
1969/70	205.8	33.4	0.7	110.3	6.4	2.1	2.4	22.9
1970/71	223.8	35.4	0.8	112.5	6.3	3.1	2.7	30.6
1971/72	193.5	41.6	1.2	126.0	7.8	3.6	4.3	30.6
1972/73	225.7	36.3	1.6	125.5	7.9	2.2	4.0	30.5
1973/74	188.4	34.6	1.7	145.1	11.3	2.9	3.3	19.8
1974/75	206.5	44.7	2.0	118.9	8.8	2.2	4.7	16.6
1975/76	122.9	48.1	2.2	83.7	10.7	4.5	4.2	15.4
1976/77	194.0	41.3	3.1	97.6	14.6	3.7	3.6	14.0
1977/78	150.5	45.1	5.6	68.4	13.4	2.6	3.7	17.4
1978/79	167.5	41.1	5.3	57.1	13.8	4.0	2.2	23.2
1979/80	177.8	43.2	4.7	41.4	13.4	3.6	1.6	24.0
1980/81	148.9	58.8	4.0	34.1	13.0	4.0	2.0	20.6

Source: as Appendix Table A.1 above.

Appendix Table A.3 Food Crop Production, Peasant Farming.

Crop / Year	Source	Maize	Paddy	Sorghum and Millet	Cassava	Potatoes: Sweet	Potatoes: Irish	Beans (mixed)	Plantain*) (cooking-bananas)
					'000 tons.				
1963/64	(1)	612	147	238	423	195	26	93	698
"	(2)								
1964/65	(1)	532	73	266	404	200	16	80	698
"	(2)								
1965/66	(1)	751	133	295	465	230	18	102	808
"	(2)	503	84						
1966/67	(1)	629	110	265	526	254	29	112	893
"	(2)	880	140	389	3000	237	24	145	1345
1967/68	(1)	647	126	286	627	253	40	112	742
"	(2)	750	114	344	3500	254	35	174	891
1968/69	(1)	602	138	282	715	229	55	102	972
"	(2)	770	131	374	3600	253	46	172	800
1969/70	(1)	746	184	326	857	245	68	122	1069
"	(2)	730	144	372	3500	238	62	159	850
1970/71	(1)	730	193	279	798	229	60	108	998
"	(2)	870	192	413	3444	248	74	180	950
1971/72	(1)	900	171	294	869	289	73	131	1232
"	(2)	850	202	367	3209	229	67	183	998
1972/73	(1)	781	214	296	891	287	72	178	1509
"	(2)	940	178	409	3189	234	120	224	1206
1973/74	(1)	1022	193	333	1111	288	66	179	1575
"	(2)	750	193	423	3388	296	165	193	1400
1974/75	(1)	1272	241	435	986	334	58	204	1735
"	(2)	750	141	280	3688	302	101	182	1440
1975/76	(1)	1661	294	525	1182	377	72	227	1646
"	(2)	825	157	440	3800	320	87	181	1500
1976/77	(1)	1654	354	606	1348	402	95	181	1740
"	(2)	897	180	390	3900	330	92	210	1540
1977/78	(1)	1611	375	826	1253	356	98	203	1731
"	(2)	968	203	390	4000	335	96	219	1580
1978/79	(1)	1888	351	857	1311	375	103	217	1710
"	(2)	1000	260	410	4450	330	85	212	1466
1979/80	(1)	1841	304	850	1207	396	109	369	1813
"	(2)	900	250	380	4550	330	85	213	1492
1980/81	(1)	1839	350	705	1457	419	115	398	1876
"	(2)	800	180	169	4600	332	84	219	na.

*) KILIMO's estimates have been adjusted by the author of this study because it it seems that for West Lake region the estimates reported only shows marketed volume of bananas and not production. In the adjustment made it has been assumed that the reported figures represent 20 percent of estimated production. This assumption seems to give reasonable figures on production that are in accordance with a study of the banana trade in West Lake region, see URT/MDB (1972).

Sources:

(1) = KILIMO's estimates reported in URT/KILIMO (1979). For the years 1978/79-1980/81 the statistics reported have been obtained from the internal work-sheets files of the Statistical and Planning Section of KILIMO by the author of this study.

(2) = FAO's estimates reported in URT/KILIMO (1982), also reported in Cook , (1984) Appendix A.

Appendix Table A.4 Food Crop Production by Regions, 1967 and 1978, Peasant Farming.

Region	Rural Population		Maize		Paddy		Sorghum and Millet		Cassava	
	1967	1978	1967	1978	1967	1978	1967	1978	1967	1978
	'000 nos.					'000 tons.				
Arusha	578	873	53	201	0.4	1.4	7.0	29.6	-	13
Coast	511	517	5	37	3.0	23.1	4.8	5.5	15	207
Central	686	813	62	51	0.2	-	21.4	138.1	9	3
Iringa	668	866	88	266	1.8	0.5	2.3	3.2	3	10
Kigoma	452	591	18	45	0.7	1.2	20.8	6.8	65	108
Kilimanjaro	626	850	41	50	7.0	2.5	2.5	1.4	3	3
Mara	529	679	21	60	3.0	2.6	21.3	49.8	61	55
Morogoro	660	865	52	77	20.3	40.2	32.5	53.5	31	41
Mbeya	741	1001	57	159	13.6	44.0	63.8	9.4	28	13
Mtwara	601	723	6	75	1.1	11.0	5.4	33.0	59	148
Mwanza	1021	1333	33	76	7.4	31.3	15.3	37.3	152	292
Lindi	407	511	na	60	na	29.5	na	14.4	na	54
Ruvuma	393	515	15	184	0.9	22.4	3.5	13.5	43	85
Rukwa	276	349	na	147	na	8.0	na	82.7	na	16
Shinyanga	899	1254	23	97	20.2	26.2	13.3	159.0	13	190
Singida	458	558	26	24	0.6	1.2	26.6	104.2	2	4
Tabora	481	751	79	91	42.4	88.3	29.8	83.5	98	20
Tanga	710	935	68	158	2.6	16.4	3.9	23.9	45	178
West Lake	651	932	2	30	-	0.7	11.2	8.5	4	22
Total	11274	15384	647	1888	126	351	286	857	627	1311

Region	Bananas		Beans		Potatoes Irish		Potatoes Sweet		Calories/Capita[a] per day.	
	1967	1978	1967	1978	1967	1978	1967	1978	1967	1978
	'000 tons.									
Arusha	63	140	14	23	5	19	5	9	1503	3244
Coast	4	6	-	-	-	-	1	24	422	3922
Central	1	-	1	4	-	-	7	4	1188	2030
Iringa	3	2	1	17	14	32	6	10	1332	3110
Kigoma	69	55	14	5	-	-	8	5	2512	2425
Kilimanjaro	187	239	3	5	4	12	2	3	1752	2047
Mara	5	50	1	1	2	-	31	25	1691	2318
Morogoro	5	19	7	9	-	1	8	11	1761	2112
Mbeya	92	159	13	28	13	28	19	22	1755	2725
Mtwara	1	4	-	-	-	-	-	1	510	2835
Mwanza	6	50	15	23	-	-	40	140	1718	2897
Lindi	na	-	na	-	na	-	na	-	510	2381
Ruvuma	-	2	3	16	1	2	1	2	1243	5104
Rukwa	na	1	na	28	na	4	na	8	1755	6915
Shinyanga	-	1	1	-	-	-	35	30	686	2966
Singida	-	2	1	-	-	-	30	3	1191	1992
Tabora	2	4	1	12	-	-	44	37	4167	3201
Tanga	35	158	2	36	2	-	8	5	1573	4028
West Lake	270	700	35	11	-	1	10	18	2048	3116
Total	742	1710	111	218	40	98	253	356	1530b)	2831b)
									3495*)	3388*)

a) Estimated by assuming the following calories per 1000 grams edible food and conversion factor as follows: maize 3620, 0.9, paddy 3600, 0.65, sorghum 3330, 0.9, cassava 3600, 0.7, plaintains 1190, 1.0, beans 3390, 0.9, Irish potatoes 750, 0.9, sweet potatoes 1140, 0.7.
b) national average according to KILIMO's estimate of production.
*) national average according to FAO's estimate of production.

Source: as Appendix Table A.3 above.

Appendix B. Producer Price Statistics

In Appendix Table B.1 developments in producer prices of all crops marketed through the official marketing system during the post-colonial period are reported. As with the production statistics, producer prices of the official market also refer to a crop year. Producer prices in the official market are in general announced 2-3 months in advance of planting. The sequence in which producer prices are announced, and planting, harvesting and marketing take place is indicated in Figure B.1.

Figure B.1 Crop Calander, Tanzania.

Prices of some major food crops traded in the traditional food market are reported in Appendix Table B.2. In Tanzania there is in practically every village a small marketplace where trade in non-scheduled food crops takes place. In the major towns one can find several marketplaces where essentially free market trade in non-scheduled crops takes place. In addition to these non-scheduled food crops some trade in scheduled food crops also takes place at these marketplaces. During the 1970s it appears that there was a sharp increase of trade in scheduled food crops at these marketplace. In Appendix Table B.2 the developments in prices of some scheduled as well as some non-scheduled food crops are reported for the major urban marketplaces. These prices are, however, consumer prices and therefore not directly comparable to the producer prices reported in Appendix Table B.1. Price indices from these two different

markets can, however, be compared if we are prepared to assume that there have been no major changes in the trade margins in the traditional food market during the period reported in Appendix Table B.1 and B.2. Such price indices are computed and reported in Appendix Tables B.3-B.6.

Appendix Table B.1 National Average Producer Prices of Cash Crops and Food Crops of the Official Market.

Crop Year	Coffee (clean)	Tea (green leaves)	Pyrethrum	Cashewnuts	Seed-cotton	Tobacco (fire-cured)	Tobacco (flue-cured)	Castorseeds	Sunflower seeds	Simsim	Groundnuts	Maize	Paddy	Wheat	Millet	Sorghum	Beans (mixed)	Cassava
	cents/kg. (100 cents = 1 T.shs.)																	
1963/64	334	-	491	66	104	95	-	48	-	97	73	24	40	50	35	35	31	13
1964/65	334	61	469	75	104	100	477	45	35	91	86	20	44	45	35	26	32	13
1965/66	272	61	473	84	104	112	547	45	40	84	96	29	42	45	35	35	41	20
1966/67	342	61	416	84	96	143	527	45	40	86	87	26	46	50	38	28	37	21
1967/68	313	61	397	74	96	182	527	48	42	100	87	27	48	50	40	30	45	19
1968/69	280	61	284	75	101	178	515	54	38	107	94	25	55	52	38	30	45	15
1969/70	474	46	300	91	107	175	513	62	43	100	100	24	60	51	40	33	50	15
1970/71	488	46	277	91	105	169	494	60	46	108	103	25	60	56	42	33	50	20
1971/72	544	52	285	91	105	210	500	50	43	113	115	27	60	56	41	37	55	20
1972/73	545	52	275	91	108	213	585	57	57	120	115	26	60	56	45	35	60	20
1973/74	580	52	275	91	108	240	585	58	55	120	115	33	60	56	50	40	65	25
1974/75	556	95	421	103	142	255	585	70	75	200	150	50	65	56	55	55	120	35
1975/76	792	105	421	103	190	300	700	75	100	200	200	75	100	86	80	75	150	39
1976/77	1357	110	421	103	190	450	740	75	110	250	250	80	100	89	89	95	175	45
1977/78	952	150	421	112	218	520	740	100	150	300	300	85	120	96	200	100	275	55
1978/79	848	150	500	164	228	520	740	100	150	330	330	85	120	96	200	100	275	60
1979/80	1015	150	650	174	283	625	880	100	150	350	350	100	150	113	200	100	275	60
1980/81	1068	150	850	280	303	625	1050	120	160	400	400	100	175	121	150	100	275	60
1981/82	na	150	1100	280	350	750	1200	170	180	450	450	150	230	142	150	100	275	65

Sources: Ödegaard , (1974) Annex Tables II.1-II.45, and III.1-III.9, URT/MDB, Agricultural Price Review, (various issues).

Appendix Table B.2 Food Crop Prices of the Traditional Food Market.

Crop Year	Maize	Rice	Beans (mixed)	Potatoes Sweet	Potatoes Irish	Cooking Bananas
			cents/½ kg. (100 cents= 1 T.shs.)			
1965/66*)	45	75	45	20	38	14
1966/67	45	75	45	20	38	14
1967/68	40	80	40	20	38	14
1968/69	43	80	48	19	38	14
1969/70	39	78	55	26	38	23
1970/71	44	89	61	23	39	29
1971/72	48	88	60	27	39	27
1972/73	49	82	72	37	50	31
1973/74	54	82	68	40	48	42
1974/75	81	91	97	39	49	49
1975/76	91	213	202	76	76	87
1976/77	141	237	235	97	120	89
1977/78	157	188	213	71	117	177
1978/79	130	189	223	100	188	178
1979/80	146	202	302	91	216	141
1980/81	168	363	305	185	256	175
1981/82	243	600	380	235	351	208

Note:
The price here listed are simple average consumer prices at the central market place in eight regional towns quoted during the period May-August. These towns are; Arusha,Dodoma ,Mbeya,Moshi,Musoma,Mwanza and Songea.

*) Project from prices reported for 1966/67. Frior to 1966/67 no such price serie as here reported is readily available. However in the mid 1960s prices were on the whole fairly constant in Tanzania.

Source: URT/TAKWIMU (1978), Appendix Tables I.1-I.8. For the period 1978/79-1981/82 , the prices reported have been obtained from the internal worksheet files of URT/TAKWIMU by the author of this study.

Appendix Table B.3 Producer Price Indices, Perennial Cash Crops, (1965/66 = 100).

Crop Year	Coffee (clean)	Tea (made)	Cashewnuts	Average*) (weighted)
1963/64	123	100	78	108
1964/65	123	100	89	112
1965/66	100	100	100	100
1966/67	126	100	100	116
1967/68	115	100	88	106
1968/69	103	100	89	97
1969/70	174	75	108	148
1970/71	179	75	108	152
1971/72	200	85	108	168
1972/73	200	85	108	165
1973/74	213	85	108	170
1974/75	204	156	123	177
1975/76	291	172	123	258
1976/77	499	180	133	437
1977/78	350	245	133	313
1978/79	312	245	195	284
1979/80	373	245	207	344
1980/81	393	245	333	380

*) weighted by value of production.

Source: Appendix Table B.1 above.

Appendix Table B.4 Producer Price Indices, Annual Cash Crops, (1965/66=100).

Crop Year	Seed-cotton	Tobacco		Pyre-thrum	Sun-flower seeds	Castor-seeds	Simsim	Ground-nuts	Average*
		Flue-cured	Fire-cured						
1963/64	100	87	85	104	88	98	116	76	105
1964/65	104	87	89	99	88	100	108	89	102
1965/66	100	100	100	100	100	100	100	100	100
1966/67	92	96	128	88	100	100	102	91	94
1967/68	92	96	163	84	105	107	119	91	98
1968/69	97	94	159	60	95	120	127	98	103
1969/70	103	94	156	63	108	138	119	104	109
1970/71	101	90	150	58	115	133	128	107	106
1971/72	101	106	188	60	108	111	134	120	114
1972/73	104	107	190	58	143	126	142	120	116
1973/74	104	107	214	58	138	129	142	120	129
1974/75	136	107	228	89	188	156	238	156	149
1975/76	183	128	268	89	250	167	238	208	197
1976/77	183	135	402	89	275	167	298	260	228
1977/78	210	135	464	89	375	222	357	313	265
1978/79	219	135	558	106	375	222	392	343	271
1979/80	272	160	558	137	375	222	417	365	323
1980/81	291	192	669	180	400	267	476	417	354

*) weighted by value of production.

Source: Appendix Table B.1 above.

Appendix

Table B.5 Producer Price Indices Food Crops, The Official Market, (1965/66 = 100).

Crop Year	Maize	Paddy	Millet	Sorghum	Beans	Cassava	Average*
1963/64	83	95	100	100	76	65	83
1964/65	70	105	100	74	78	65	70
1965/66	100	100	100	100	100	100	100
1966/67	90	109	109	80	90	105	94
1967/68	93	114	114	86	110	95	97
1968/69	86	131	109	86	110	75	97
1969/70	82	145	114	94	122	75	110
1970/71	86	143	120	94	122	100	105
1971/72	93	143	117	106	134	100	123
1972/73	89	143	129	100	146	100	110
1973/74	114	143	142	114	158	125	127
1974/75	172	155	157	157	129	175	166
1975/76	259	238	229	214	365	195	250
1976/77	275	238	271	257	427	225	262
1977/78	293	285	571	285	671	275	351
1978/79	293	357	571	285	671	300	355
1979/80	345	417	571	285	671	300	418
1980/81	345	548	428	285	671	300	423

*) weighted by value of official purchases.

Source: Appendix Table B.1 above.

Appendix

Table B.6 Price Indices Food Crops, The Traditional Food Market, (1965/66 = 100).

Crop Year	Rice	Maize	Beans	Potatoes		Cooking Bananas	Average*
				Sweet	Irish		
1965/66	100	100	100	100	100	100	100
1966/67	100	100	100	100	100	100	100
1967/68	106	89	89	100	100	100	96
1968/69	106	96	107	95	100	100	101
1969/70	104	87	122	130	100	164	121
1970/71	119	98	136	115	103	207	137
1971/72	117	107	133	135	103	193	137
1972/73	109	109	160	185	132	221	157
1973/74	109	120	151	200	126	300	179
1974/75	121	180	215	195	129	350	220
1975/76	284	202	449	380	200	621	382
1976/77	316	313	522	485	316	635	453
1977/78	250	349	473	355	308	1264	589
1978/79	252	289	496	500	494	1271	614
1979/80	271	424	671	455	568	1007	621
1980/81	484	373	678	925	673	1250	750
1981/82	800	540	844	1175	924	1486	965

*) There are no sources available that could give the correct volume of these crops traded in the traditional food market. The author will therefore here rely on his own subjective 'gusstimates' of the relative magnitude of these crops traded in the traditional food market. The weights are therefore chosen as follows: maize 0.25, rice 0.1, beans 0.2, sweet potatoes 0.1, Irish potatoes 0.1, and cooking bananas 0.25.

Source: Appendix Table B.2 above.

Appendix Table B.7 Summary Producer Price Indices.

Crop Year	Food Crops				Cash Crops					Rural Net Barter* Terms of Trade
	(1)	(2)	(w)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1963/64	83				108	105	106			
1964/65	70				112	102	105			
1965/66	100	100	0.50	100	100	100	100	100	na	107
1966/67	94	100	0.50	97	116	94	104	101	93	106
1967/68	97	96	0.50	97	106	98	102	101	95	102
1968/69	97	101	0.50	99	97	103	100	100	99	100
1969/70	110	121	0.50	116	148	109	128	126	100	121
1970/71	105	137	0.50	121	152	106	128	126	104	118
1971/72	123	137	0.50	130	168	114	143	140	107	117
1972/73	110	157	0.50	134	165	116	140	139	119	108
1973/74	127	179	0.50	153	170	129	152	152	129	90
1974/75	166	220	0.45	196	177	149	163	168	169	67
1975/76	250	382	0.40	329	258	197	232	250	249	81
1976/77	262	453	0.35	386	427	228	345	353	307	99
1977/78	351	589	0.30	518	313	265	293	379	358	90
1978/79	355	614	0.25	549	284	271	277	416	419	95
1979/80	418	621	0.25	570	344	323	332	422	437	82
1980/81	423	751	0.25	669	380	354	368	440	512	66

(1) = price index of food crops of the official market
(2) = price index of food crops of the traditional food market
(w) = relative share of total food crops traded in the official market. There are no statistics available that can give the correct share of food crops traded in the official market and hence an equal weight of the two markets has been used during the first half of the period reported in Table B.7. During the latter half of the period the weight of the official market has been reduced while the weight of the traditional food market has been increased for the reasons discussed in Chapter 5.
(3) = $w(1) + (1-w)(2)$
(4) = price index of perennial cash crops of the official market
(5) = price index of annual cash crops of the official market
(6) = weighted average of (4) and (5), weighted by value of crop marketed
(7) = weighted average of (6) and (3), weighted by value of crop marketed
(8) = price index of official retail prices of goods consumed by minimum wage earners in Dar es Salaam.
(9) = $(7)_t/(8)_{t+1}$

*) The overall average producer price index has been deflated by retail prices of the succeeding year, because, as we have argued in Chapter 3, during the 1970s official price indices tended to understate the actual retail prices. By using the succeeding year's retail prices this under-reporting of the actual retail prices can be partly adjusted for.

Sources: Appendix Tables B.1 - B.6, URT The Economic Survey 1982, Table 27.

Appendix
Table B.8 Average Export Price, Export Tax, Stipulated Marketing Margin and Producer Prices for Coffee, Cotton, and Cashewnuts.

Crop Year	Coffee (clean)				Cotton[a]				Cashewnuts			
	WP/e	TAX	m_i	PP	WP/e	TAX	m_i	PP	WP/e	TAX	m_i	PP
	cents/kg. (100 cents = 1 T.shs.)											
1966/67	545	54	149	342	410	6	113	96	134	10	40	84
1967/68	515	52	150	313	422	9	122	96	129	6	49	74
1968/69	465	52	133	280	422	17	99	101	136	6	55	75
1969/70	670	56	140	474	411	18	69	107	147	6	50	91
1970/71	623	61	74	488	427	18	91	105	127	10	26	91
1971/72	655	61	50	544	484	17	149	105	129	9	29	91
1972/73	757	136	76	545	538	23	188	108	131	10	30	91
1973/74	956	266	110	580	759	24	408	108	151	11	49	91
1974/75	766	123	87	556	872	23	419	142	177	13	61	103
1975/76	1826	345	687	792	946	20	350	190	190	14	73	103
1976/77 -	3969	1742	870	1357	1227	82	569	190	224	22	99	103
1977/78	2740	1142	646	952	1121	46	414	218	308	31	165	112
1978/79	2320	865	607	848	1081	34	356	228	374	37	173	164
1979/80	2743	639	1089	1015	1265	121	286	283	525	53	298	174
1980/81	2151	183	900	1068	1348	156	274	303	905	91	534	260

a) Cotton export prices refers to cotton-lint whereas producer prices refers to seed-cotton. In estimating the marketing margin (m_i) the producer prices have been converted to cotton-lint equivalent by assuming an average outturn factor of 0.33 in cotton ginning.

WP/e = average actual export price. Export prices are in the source URT, The Economic Survey, (various issues), given by the calendar year. Here a simple average price of two consecutive years is reported in order to be able to compare to producer prices that are reported by the crop year.
TAX = average export tax.
m_i = stipulated marketing margin of the marketing agents.
PP = average producer price (see Appendix Table B.1)

Sources: Computed from URT, The Economic Survey (various issues); Ellis,(1979b) Table 5, Ellis and Hanak,(1980) Table 10 and Table 11; Ödegaard,(1975) Table IV.1, Table IV.2, Table IV.31 and Table IV.32; and Chaliza (1977).

Appendix
Table B.9 Consumer Prices and Marketing Margin for Maize, Rice and Wheat. Tanzania 1966 - 1981, selected years.

Year	Maize			Rice			Wheat		
	(1)	(2)	m_i	(1)	(2)	m_i	(1)	(2)	m_i
1966	80	89	63	165	184	57	135	151	59
1970	80	80	64	183	183	50	164	164	62
1973	80	64	52	165	133	44	165	132	62
1974	125	84	54	200	135	50	240	162	74
1976	175	87	47	400	199	62	375	187	74
1978	175	70	44	350	140	47	375	150	72
1980	125	32	8	535	139	50	565	146	76
1981	250	56	31	535	121	34	565	127	72

(1) = consumer price cents/kg.
(2) = (1)/ NCPI, see Table 3.10
m_i = the marketing margin = difference between consumer price and producer price in percent of consumer price

Sources: Appendix Table B.1, URT/MDB (1981) Annex 1, Table 2.8, and Ödegaard (1974) Table 12.

Appendix C. National Accounts Statistics.

National income/output estimates are clearly the most frequently used indicator of economic development. The use of GDP estimates for such purposes is however often very dubious because the margin of error in these estimates is in general so large that one cannot really know whether the reported estimates reflect true changes. National accounting data are generally less reliable in LDCs than in DCs because the level of recording and reporting is much less developed.

The value of goods and services in the subsistence agricultural sector can only very crudely be estimated. Often these estimates are only projected to increase at a certain constant rate based on out of date surveys. Considering the dominant role the subsistence agricultural sector plays in an LDC the estimates of GDP or GNP become very uncertain. Not only is there usually a large subsistence agricultural sector, but also in an LDC there is often a large and growing sector that is commonly referred to as the informal sector. The value of goods and services produced in this so-called informal sector is probably even less known than the value of subsistence consumption in the agricultural sector.

However, the high degree of error in the national accounts estimates does not necessarily mean that the estimates are useless. They probably give, for one thing, a fairly realistic picture of the overall structure of the economy, and read with care give a realistic indication of substantial changes. But for small changes this is not the case.

An indication of the magnitude of possible errors in the national accounts statistics for Tanzania is reported in Table C.1, where an estimate made by the present author of

the farm gate value of crop production according to production statistics and producer prices reported in this study, is contrasted with the estimate of farm gate value of production according to national accounts statistics. As can be noted there is a large discrepancy between the two estimates, cf. row 11. On the whole it seems that, according to the author of this study, the national accounts statistics have tended to overestimate the farm gate value of crop production, especially during the latter half of the 1970s. The estimated values for 1974 by contrast were practically identical. ILO (1982) Technical Papers number 8 and number 9 also concluded, after studying the internal worksheets used by the Bureau of Statistics (TAKWIMU) in their annual exercise of compiling national accounts estimates, that the estimated value af crop production is overestimated.

Considering the dominant role of the agricultural sector in the Tanzanian economy such an overestimation of the farm gate value of crop production will also quite naturally greatly affect the national output estimates. An indication of how much such a discrepancy in the estimated value of crop production will affect the estimate of national output (GDP) is shown in Table C.2 where an adjusted estimate of GDP is contrasted with the official estimate of GDP. The adjustment made is simply that the GDP value for the agricultural sector is based on the estimate made in Table C.1. According to Table C.2 it seems that during the latter half of the 1970s the official estimates of GDP may overestimate the true value by some 5-7 percent in real terms. It must be stressed that this conslusion is only based on an assessment of possible errors in the national accounts statistics for the agricultural sector. The errors could possibly be larger if in addition there are large error in the estimates of the value of goods and services produced in the other sectors of the economy.

Appendix

Table C.1 Estimated Farm Gate Value of Crop Production, Tanzania 1966-1980, selected years.

Years	1966	1968	1970	1972	1974	1976	1978	1980
Sector / Crop	T.shs. mil. in constant 1966 prices.							
Peasant Sector								
row								
1. Cash Crops	462	380	468	521	515	449	471	463
2. Food Crops	1108*	1051*	1313*	1429	1596	1751	2039	2155
3. sub-total	1570	1431	1781	1950	2111	2200	2510	2618
Large-Scale Farming								
4. Cash Crops	254	259	246	217	177	168	151	141
5. Food Crops	36	41	50	55	38	43	49	51
6. sub-total	290	300	296	272	215	211	200	192
7. Grand Total	1859	1732	2078	2222	2326	2412	2709	2809
8. Q_A	2112	2071	2347	2715	3822	7275	13246	14751
9. P_A	100	99.2	105.5	117.4	164.1	248.9	363.4	402.0
10. row (8/9) x 100	2112	2087	2224	2312	2329	2922	3645	3669
11. row (10-7)/row 10	11.9	17.0	6.5	3.8	0.1	17.4	25.6	23.4

*) probably underestimated by some 5-10 percent, see Appendix A

Q_A = estimated farm gate value of crop production according to National Accounts statistics in current prices, reported in URT/TAKWIMU (1981a) Table 9

P_A = National Accounts Statistics implicit price deflator for the agricultural sector

Sources: The estimated values of crop production have been estimated based on the production statistics and producer prices reported in Appendix Tables A.1-A.3 and B.1-B.2.

Appendix

Table C.2 Estimated Gross Domestic Product (GDP), Agricultural and Non-Agricultural Sectors, Tanzania 1966-1980, selected years.

Year	1966	1968	1970	1972	1974	1976	1978	1980
row.	T.shs. mil. in constant 1966 prices.							
1. GDPA	2953	3077	3205	3425	3315	3772	4326	4560
2. GDPNA	3561	4051	4475	5114	5705	6391	6893	7454
3. GDP = row(1+2)	6514	7128	7680	8539	9020	10163	11219	12014
4. GDPCP	1859	1732	2078	2222	2326	2412	2709	2809
5. GDPNCP	841	928	980	1111	986	909	828	953
6. GDPA*= row (4+5)	2700	2660	3058	3333	3312	3321	3537	3762
7. GDP* = row (2+6)	6261	6711	7533	8447	9017	9712	10430	11216
8. row (3-7)/row 3 %	3.9	5.9	1.9	1.1	0.03	4.4	7.0	6.6

GDPA = GDP at factor cost in the agricultural sector

GDPNA = GDP at factor cost in the non-agricultural sectors

GDPCP = GDP in crop production = Farm Gate Value of Crop Production = row 7 Appendix Table C.1

GDPNCP = GDP in non-crop production in the agricultural sector

GDP* = adjusted GDP

GDPA* = adjusted GDP in the agricultural sector

Sources: computed from URT, The Economic Survey, various issues, and URT/TAKWIMU (1981a) Table 9.

Saving and Investment Trends

Saving and investment trends according to national accounts statistics are reported in Table C.3. Care must of course also be exercised in reading this table since the figures are only derived from statistics that are consistant within the national accounts statistics, which we have just seen

probably contain large errors. Nevertheless, the figures reported in Table C.3 probably give a fairly realistic picture of the trends.

Appendix

Table C.3 Gross Capital Formation and Sources of Finance, Tanzania 1966-1982, selected years.

Year	1966	1968	1970	1972	1974	1976	1978	1980	1982*
				% of GCF.					
row									
1. S^G	16	8	7	38	- 3	3	- 44c)	- 21	- 24
2. $S^P = GCF - (S^G + S^F)$	86	72	67	38	30	87	91	67	88
3. $S^D = S^G + S^P$	102	80	74	76	27	90	47	46	64
4. S^F	- 2	20	26	24	76a)	10b)	53	54	36
5. $GCF = S^G + S^P + S^F$	1092	1396	2067	2439	3516	4761	6902	8486	9562
6. IGCF	152	193	276	261	313	319	355	372	392
7. GCFA. in % of GCF	12.8	9.8	6.7	7.0	6.4	8.0	4.2	4.2	na
8. row 7 x row 6	19.5	18.9	18.5	18.3	20.0	25.5	14.9	15.6	
9. row 3 x row 6	155	154	204	198	84	287	167	171	

*) preliminary estimates

a) drought year that necessitated large import of food grains

b) boom in coffee prices which caused exceptionally high export earnings

c) large government cash deficit caused by military operation in Uganda

S^G = Government Savings = Taxes and Miscl. Revenue - Expenses exclusive of investments

S^F = Foreign Savings = - Current Account Balance

S^P = Private Savings

S^D = Domestic Savings = $S^G + S^P$

GCF = Gross Capital Formation in current prices in T.shs.mil.

IGCF = Index Gross Capital Formation (monetary) in constant 1966 prices, 1964 value = 100

GCFA = Gross Capital Formation in the Agricultural Sector

Sources: Computed from URT The Economic Survey, various issues, and from URT/TAKWIMU (1981a) Table 15.

Appendix

Table D.1 Population Density and Population Growth Growth Rate by Districts, Tanzania 1967-1978.

Region District	Total land area '000 km^2	Population Density nos./ km.^{2} 1978	Annual Growth % 1967-78
Arusha	82.10		
Arusha	2.98	90.5	3.6
Masai	63.06	2.8	4.8
Mbulu	16.06	26.5	3.6
Coast	33.72		
Bagamoyo	9.84	13.8	1.3
Kisarawe	8.94	24.9	1.9
Mafia	0.52	44.4	3.0
Mzizima	1.08	na	
Rufiji	13.34	10.1	1.0
Dodoma	41.31		
Dodoma	16.58	16.7	1.0
Kondoa	13.21	20.8	2.4
Mpwapwa	11.53	22.7	3.6
Iringa	56.85		
Iringa	28.62	10.1	2.1
Mufindi	7.12	24.4	3.5
Njombe	21.11	19.0	2.1
Kigoma	37.04		
Kasulu	9.32	27.5	1.9
Kibondo	16.06	8.7	0.2
Kigoma	11.66	16.7	5.5
Kilimanjaro	13.21		
Kilimanjaro	5.31	120.9	2.7
Pare	7.90	26.3	3.1
Mara	21.76		
Musoma	17.87	23.9	2.1
North Mara	3.89	64.9	2.7
Morogoro	73.04		
Kilosa	14.24	19.3	3.2
Morogoro	19.30	17.8	1.5
Ulanga	39.50	6.2	3.2
Mbeya	58.36		
Chunya	25.90	3.4	4.7
Mbeya	18.43	13.9	3.2
Mbozi	9.19	25.6	4.3
Rungwe	2.39	98.1	na
Kyela	0.50	229.0	1.4
Ileje	1.95	36.6	na
Mtwara	16.71		
Mtwara	3.76	38.4	2.1
Masasi	8.94	30.4	2.2
Newala	4.01	76.6	1.1
Mwanza			
Geita	9.07	60.7	3.6
Kwimba	6.09	53.4	0.6
Mwanza	3.88	81.9	2.8
Ukerewe	0.65	213.7	2.2
Lindi	66.04		
Lindi	9.45	25.9	0.6
Kilwa	13.85	8.2	1.4
Nachingwea	42.74	3.5	5.9
Ruvuma	61.25		
Mbinga	8.42	23.3	2.8
Songea	34.06	5.4	1.7
Tunduru	18.78	7.2	3.0
Shinyanga	50.76		
Kahama	19.94	14.6	6.4
Maswa	21.37	28.1	3.1
Shinyanga	9.45	38.3	1.1
Singida	49.34		
Singida	12.82	16.7	1.3
Manyoni	28.62	3.6	2.2
Irimba	7.90	30.6	2.5
Tabora	76.15		
Nzega	13.73	30.2	2.9
Tabora	62.42	5.4	5.9
Rukwa	68.63		
Sumbawanga	22.79	10.9	1.3
Mpanda	45.84	3.2	8.3
Tanga	26.81		
Handeni	13.21	14.0	3.1
Korogwe	3.76	50.8	2.8
Lushoto	3.50	81.7	2.8
Pangani	1.42	23.4	1.4
Tanga	4.92	48.8	1.8
West Lake	28.45		
Biharamulo	10.88	14.4	6.6
Bukoba	8.03	59.0	2.1
Karagwe	7.70	27.6	6.0
Ngara	2.85	37.8	1.0

Sources: URT/TAKWIMU Statistical Abstract 1973, URT/TAKWIMU (1980).

Appendix

Table D.2 Wage Employment by Public and Private Sector, Tanzania 1954-1982, selected years.

Year	Grand Total	Public Sector				Private Sector			
		Services	Parastatal Firms	Total	(a)	Sisal Estates	(a)	Total	(a)
		'000 persons.							
1954	409.1	na		na		137.6	33.6	na	
1962	391.2	101.3	na	na		109.6	28.0	na	
1965	333.8	107.4	na	na		63.1	18.9	na	
1967	346.7	126.2	26.3	152.5	44.0	52.0	15.0	194.2	56.0
1970	375.6	155.1	54.6	209.7	55.8	37.5	10.0	165.9	44.2
1972	405.7	164.5	68.3	232.8	57.4	36.5	9.0	172.9	42.6
1974	484.1	206.0	80.1	286.1	59.1	43.5	9.0	198.0	40.9
1978	535.9	208.4	104.6	313.0	58.4	47.7	8.9	222.9	41.6
1980	603.2	na	142.1	na		na		na	
1982	672.0	na	na	na		na		na	

(a) = percent of Grand Total

Note:

Sisal estates are both privately and publically owned firms. Before 1967 all sisal estates were privately owned. Following the Arusha Declaration in 1967, a large number of sisal estates were nationalized.

Sources: URT The Economic Survey, various issues, URT/TAKWIMU (1977, 1981b) Valentine, (1980) and Lawrence, (1971).

Appendix

Table D.3 Wage Employment in the Agricultural and the Non-Agricultural Sectors, Tanzania 1954-1982, selected years.

Year	Grand Total	Agricultural Sector					Non-Agricultural Sectors Total	
		Public Services	Sisal Estates	Others	Total	(a)		(a)
		'000 persons						
1954	409.1	na	137.6	80.5	na		na	
1962	391.2	10.9	109.6	78.4	198.9	50.8	192.3	49.2
1965	333.8	11.8	63.1	64.2	139.1	41.7	194.7	58.3
1967	346.7	17.2	52.0	54.6	123.8	35.7	222.9	64.3
1970	375.6	15.9	37.5	53.9	107.3	28.7	268.3	71.3
1972	405.7	15.9	36.5	61.4	113.8	28.0	291.9	72.0
1974	484.1	21.3	43.5	58.6	123.4	25.5	360.7	74.5
1978	535.9	18.8	47.7	56.9	123.4	23.0	412.5	77.0
1980	603.2	na	na	na	131.0	21.7	472.2	78.3
1982	676.0	na	na	na	137.5	20.3	538.5	79.7

(a) = percent of Grand Total

Sources: same as Table D.2.

IBIBLIOGRAPHY

Abott,J.C.
(1967), ' The Development of Marketing Institutions', in Southworth,H. and Johnston,B.F. (eds.),(1967).

Acland,J.C.
(1972), East African Crops. London, FAO/Longman.

Ahrén,B.
(1984), ' Koststudie i Tanzania', Tika Information, no.2,Lund.

Aldington,T.J.
(1975), ' Tanzania Agriculture: A Decade of Progress in Crop Production', Tanzania Notes and Records, no.76.

Amann,V.F.(ed.),
(1973), Agricultural Policy Issues in East Africa. Kampala,Makerere University.

American Economic Association,
(1966), A.V. Chayanov on the Theory of Peasant Economy.,Homewood,R.D.Irwin Inc.
(1969), Readings in the Economics of Agriculture. Homewood,R.D.Irwin Inc.

Amey,A.B.
(1978), ' Urban-Rural Relations in Tanzania:Methodology,Issues and Preliminary Results', Economic Research Bureau,paper no.76.12,Dar es Salaam.

Andreon,P. (ed.),
(1977), Contemporary Issues in Agriculture and Economic Development of Poor Nations.,Nairobi,East African Literature Bureau.

Awiti,A.
(1972), ' Ismani and the Rise of Capitalism', in Cliffe,L. et al.(eds.),(1975).

Bagachwa,M.S.D.
(1981), ' The Urban Informal Enterprise Sector in Tanzania: A Case Study of Arusha Region', Economic Research Bureau, paper no.81.4, Dar es Salaam.

Bank of Tanzania,
(1979), Credit for the Development of Agriculture in Tanzania.,Dar es Salaam.
(1982), Economic and Operation Report. (annual publication), Dar es Salaam.

Bardan,K.
(1970), ' Price and Output Response of Marketed Surplus of Food Grains', American Journal of Agricultural Economics, pp. 51-61.
(1975), ' The Price Response of Home Consumption of Marketed Surplus of Food Grains', American Journal of Agricultural Economics, pp.111-115.

Barker,C. and Wield,D.
(1978), ' Notes on International Firms in Tanzania', UTAFITI,no.2, pp.316-342, Dar es Salaam.

Barker,J.
(1974), ' Ujamaa in Cash-Crop Areas of Tanzania:Some Problems and Reflections', Journal of African Studies, pp.441-463.
(1979), ' The Debate on Rural Socialism in Tanzania', in Mwansasu,B.U. and Pratt,C. (eds.), (1975).

Barnum,H.N. and Squire,L.
(1979), ' An Econometric Application of the Theory of the Farm-Household', Journal of Development Economics, pp.79-102.

Bates,R.H. and Lofchie,F. (eds.)
(1980), Agricultural Development in Africa: Issues of Public Policy. New York, Praeger.

Beck,R.
(1961),'An Economic Study of Coffee-Banana Farms in Machame Central Area', Mimeo,USAID, Dar es Salaam.

Berry,L. (ed.)
(1971), Tanzania in Maps., London,University of London Press.

Binhammer,H.H.
(1975), The Development of A Financial Infrastructure in Tanzania. Dar es Salaam, East African Literature Bureau.
Boesen,J.,Madsen,B.S. and Moody,T.
(1977), Ujamaa-Socialism from Above., Uppsala,Scandinavian Institute of African Studies.
Boesen,J. and Mohele,A.T.
(1979), The "Success Story" of Peasant Tobacco Production in Tanzania. Uppsala, Scandinavian Institute of African Studies.
Boserup,E.
(1965), The Conditions of Agricultural Growth: The Economics of Agrarian Change Under Population Pressure. London, G.Allen & Unwin Ltd.
Boulding,K.E.
(1966), Economic Analysis Vol.I. Micro-Economics. (4th edition), New York, Harper & Row Publisher.
Bressler Jr,R.C. and King,R.A.
(1970), Market Prices and Interregional Trade. New York,J.Wiley & Sons Inc.
Brooke,C.
(1967), ' The Heritage of Famine in Central Tanzania', Tanzania Notes and Records, Vol.LXII.,pp.15-22.
Chaliza,A.E.
(1977), ' Taxation for Socialist Development in Tanzania', MA. thesis, University of Dar es Salaam.
Chenery,H.B.,et al. (eds.),
(1974), Redistribution with Growth. Sussex, Oxford University Press.
Clerk,P.G.
(1965), ' The Rational and Use of Projection Model for the East African Economies', East African Economic Review,Vol.1,no.2,pp.1-17.
Cliffe,L. and Saul,J. (eds.),
(1972), Socialism in Tanzania: An Interdisciplinary Reader.Vol.I., Dar es Salaam, East African Publishing House.
(1973), Socialism in Tanzania: An Interdisciplinary Reader. Vol.II.,Dar es Salaam, East African Publishing House.
Cliffe,L.,et al. (eds.),
(1975), Rural Cooperation in Tanzania. Dar es Salaam, Tanzania Publishing House.
Cline,R.W. and Weintraub,S. (eds.),
(1981), Economic Stabilization in Developing Countries., Washington, The Brooking Institute.
Collinson,M.P.
(1972), Farm Managment in Peasant Agriculture: A Handbook for Rural Development Planning in Africa. New York, Praeger.
Cook,K.D.
(1984), ' Dimensions of Food Security/Insecurity: Tanzania,A Case Study', MA. thesis, University of Dar es Salaam.
Coulson,A.
(1978), ' Agricultural Policies in Mainland Tanzania', Review of African Political Economy, pp.74-100.
(1979),ed. African Socialism in Practice: The Tanzanian Experience. Nottingham, Spokesman.
(1982), Tanzania A Political Economy. , Oxford,Clarendon Press.
Dahl,H.E. and Faaland,J.
(1967), The Economy of Tanzania: An Econometric Study of Structural Relationships 1956-1965 with Projections of Trade and Resource Gap for 1970 and 1975. Bergen, The Chr. Michelsen Institute.

Delange,F. and Ahluwalia,R.
(1982), Cassava toxity and thyroid research and public health issues: proceedings of a workshop held in Ottawa Canada 31 May - 2 June. Ottawa, International Development Research Centre.
de Wilde,J.C.
(1980), ' Price Incentives and African Agricultural Development', in Bates,R.H. and Lofchie,M.F. (eds.),(1980).
Dixit,A.K.
(1969), ' Marketable Surplus and Dual Development', Journal of Economic Theory, pp. 203-219.
(1973), ' Models of Dual Development', in Mirrlees,J.A. and Stern,N.H. (eds.).
Dornbusch,R. and Fischer,S.
(1978), Macro-Economics., New York, McGraw Hill Book Company.
Dovring,F.
(1964), ' The Share of Agriculture in a Growing Population', in Eicher,C. and Witt,L. (eds.), (1964).
Dubey,V.
(1963), ' The Marketed Agricultural Surplus and Economic Growth of Under-developed Countries', Economic Journal, pp.689-702.
Dumont,R.
(1969), Tanzania Agriculture after the Arusha Declaration. Dar es Salaam, Government Printer.
(1975), La Croissance de la Famine! Une Agriculture Repensée.Paris,Seuil.
Dumont,R. and Mottin,M.F.
(1979), Self-Reliant and Rural Development in Tanzania: 12 Years after Arusha Declaration on Socialist Lines. Dar es Salaam.
(1981), L'Afrique Etranglée. Paris,Seuil.
Ehrlich,C.
(1964), ' Some Aspects of Economic Policy in Tanganyika 1945-1960', Journal of Modern African Studies, pp.265-277.
Eicher,C.K. and Witt,E. (eds.),
(1964), Agriculture in Economic Development. New York,McGraw Hill Book Company.
Eicher,C.K. and Baker,D.C.
(1982), Research on Agricultural Development in Sub-Saharan Africa. Michigan State University.
Ellis,F.
(1979a),' A Preliminary Analysis of the Decline in Tanzanian Cashewnut Production 1974-1979: Causes,Possible Remedies and Lessons for Rural Development Policy', Economic Research Bureau paper no.79.1,Dar es Salaam.
(1979b),' Marketing Costs and the Processing of Cashewnuts in Tanzania: An Analysis of the Marketing and the Potential Level of the Producer Price', Economic Research Bureau paper no.79.2, Dar es Salaam.
(1980), ' Agricultural Pricing Policy in Tanzania 1970-1979: Implications for Agricultural Output,Rural Incomes and Marketing Costs', Economic Research Bureau paper no.80.4, Dar es Salaam.
(1982), ' Agricultural Price Policy in Tanzania',World Development,pp.263-283.
(1984), ' Relative Agricultural Prices and the Urban Bias Model: A Comparative Analysis of Tanzania and Fiji', Journal of Development Studies,pp.28-51.
Ellis,F. and Manak,E.
(1980), ' An Economic Analysis of the Coffee Industry in Tanzania 1969/70-1978/79: Towards a Higher and More Staple Producer Price', Economic Research Bureau paper no. 80.4, Dar es Salaam.
Elliot,C.M.
(1969), ' Agriculture and Economic Development in Africa,Theory and Experience 1880-1914', in Jones,E.L. and Woolf,S.J. (eds.),(1969).

Ellman,A.
(1969), ' Development of Ujamaa Policy in Tanzania', in Cliffe,L.,et al. (eds.),(1975).
Etherington,D.M.
(1973), ' An International Tea Trade Policy for East Africa', in Amann,V.F. (ed.),(1973).
Fei,J.C.H. and Ranis,G.
(1964), Development of the Labour Surplus Economy Theory and Policy. New Haven, Yale University Press.
(1975), ' Agriculture in Two Types of Open Economies', in Reynolds,L.G. (ed.),
Fortmann,L.
(1977), ' Women and Tanzanian Agricultural Development', Economic Research Bureau paper no.77.4, Dar es Salaam.
Friedrich,K.H.
(1968), ' Coffee-Banana Holding at Bukoba: The Reasons for Stagnation at Higher Level', in Ruthenberg,H. (ed.),(1968).
Fuggles-Couchman,N.R.
(1964), Agricultural Change in Tanganyika 1945-1960. Food Research Institute, Standford University.
Gerrard,C.D. and Roe,T.
(1983), ' Government Intervention in Food Grain Markets: An Econometric Study of Tanzania', Journal of Development Economics, pp.109-132.
Gottlieb,M.
(1973), ' The Extent and Characterisation of Differentiation in Tanzanian Agricultural and Rural Society', The African Review,no.III.pp.241-262.
Griffin,K.
(1974), The Political Economy of Agrarian Change. London,McMillan Press.
Green,R.H.,Rwegasira,D.G. and van Arkadie,B.
(1980), Economic Shocks and National Policy Making in Tanzania in the 1970s. Hague Institute of Social Studies,Research Report Series no.8.
Groyert,C.D.
(1971), ' Long and Short Run Elasticity of Sisal Supply', Eastern Africa Economic Review,Vol.3,no.2.
Gwyer,G.D.
(1971), Perennial Crop Supply Response:The Case of Tanzanian Sisal.,London, University of London,Wyseley College.
(1973), ' Three International Commodity Agreements, The Experience of East Africa', Economic Development and Cultural Change, pp.456-476.
Hawkins,H.G.C.
(1966), Wholesale and Retail Trade in Tanganyika A Study of Distribution in Eastern Africa. New York, Praeger.
Hayami,Y. and Ruttan,V.W.
(1971), Agricultural Development: An International Perspective. Baltimore, The John Hopkins Press.
Hedlund,H. and Lundahl,M.
(1984), ' The Economic Role of Beer in Rural Zambia', Human Organization, Vol.43,no.1,pp.61-65.
Helleiner,G.K.
(1966), ' Agricultural Export Pricing Strategy in Tanzania',Economic Research Bureau paper no.66.6, Dar es Salaam, also in Kim,K.S.,Mabele,R.B. and Schultheis,M.(eds.),(1979).
(1968a),' Agricultural Marketing in Tanzania Policies and Problems', Economic Research Bureau paper no.66.1, Dar es Salaam.
(1968b),' The Composition of Agricultural Development Expenditure in Tanzania', Economic Research Bureau paper no.66.11, Dar es Salaam.
(1975), ' Smallholder Decision Making Tropical African Evidences', in Reynolds,L.G. (ed.),(1975).

Hofmeier,R.
(1973), Transport and Economic Development in Tanzania. Munich, Weltforum Verlag
Hogendorn,J.S. and Scott,K.M.
(1981), ' The East African Groundnut Scheme: Lessons of a Large-Scale Agricultural Failure', African Economic History no.10.
Hornby,J.M.
(1966), ' Investment and Trade Policy in the Dual Economy', Economic Journal, pp.96-107.
Huang,Y.
(1973), ' Distribution of the Tax Burden in Tanzania', Economic Journal, pp.73-86, also in Kim,K.S.,Mabele,R.B. and Schultheis,M.(eds.),(1979).
Hydén,G.
(1970), ' Cooperatives and their Socio-Political Enviroment', in Widstrand, C.G. (ed.),(1970).
(1972), Socialism och Samhällsutveckling i Tanzania. En Studie i Theori och Praktik. Bo Cavefors Bokförlag.
(1980), Beyond Ujamaa in Tanzania Underdevelopment and an Uncaptured Peasantry. London,Heinemann.
Iliffe,J.
(1971), ' Agricultural Change in Modern Tanganyika: An Outline History', Historical Association of Tanzania paper no.10, University of Dar es Salaam.
(1979), A Modern History of Tanganyika. Cambridge,Cambridge University Press.
ILO International Labour Office,
(1977), Towards Self-Reliance:Development,Employment and Equity Issues in Tanzania., Addis Ababa, JASPA Jobs and Skills Programme for Africa.
(1982), basic Needs in Danger: A Basic Need Oriented Development Strategy for Tanzania. Addis Ababa, JASPA Jobs and Skills Programme for Africa.
Islam,N. (ed.)
(1974), Agricultural Policy in Developing Countries. London, The Mchillan Press.
Jackson,D.
(1971), ' Economic Development and Income Distribution in Eastern Africa', Journal of Modern African Studies, pp. 530-542.
James,R.W.
(1971), Land Tenure and Policy in Tanzania. Dar es Salaam,East African Literature Bureau.
Johnston,B.F.
(1970), ' Agriculture and Structural Transformation in Developing Countries: A Survey of Research', Journal of Economic Literature, pp.367-394.
Johnston,B.F. and Mellor,J.W.
(1961), ' The Role of Agriculture in Economic Development',American Economic Review, pp 556-593.
(1984), ' The World Food Equation: Interrelations Among Development Employment and Food Consumption', Journal of Economic Literature, pp.531-574.
Johnston,J.
(1972), Econometric Methods. (2nd edition), New York, McGraw Hill Book Company.
Jones,E.L. and Woolf,S.J. (eds.),
(1969), Agrarian Change and Economic Development: The Historical Problem. London,Methuen & Co.
Jones,W.O.
(1972), Marketing of Staple Food in Africa. Ithaca,Cornell University Press.
(1980), ' Agricultural Trade within Tropical Africa: Historical Background', in Bates,R.H. and Lofchie,M.F. (eds.),(1980).
Jorgenson,D.W.
(1961), ' The Development of a Dual Economy', Economic Journal, pp.309-334.
(1969), ' The Role of Agriculture in Economic Development: Classical vs. Neoclassical Model of Growth', in Wharton Jr,C.R.(ed.),(1969).

Kamuzora,C.L.
(1980), ' Constraints to Labour Time Availability in African Smallholder Agriculture', Development and Change, Vol.11,no.1.
Kanga,S.N.
(1977), ' An Economic Assessment of Smallholder Tobacco Village Project in Tabora Region', MA. thesis, University of Dar es Salaam.
Kapunda,S.M.
(1977), ' An Econometric Analysis of Consumer's Behaviour in Selected Areas of Tanzania', Economic Research Bureau paper no.77.7,Dar es Salaam.
Kim,K.S.
(1976), ' The Linkage Effects of Basic Industries in Tanzania Some Policy Issues and Suggestions', Economic Research Bureau paper no.76.11, Dar es Salaam.
Kim,K.S., Mabele,R.B. and Schultheis,M.
(1979), Papers on the Political Economy of Tanzania. London,Heinemann.
Kimbe,H.
(1979), Price Control in Tanzania. Dar es Salaam,Tanzania Publishing House.
Kirkpatric,C. and Nixon,F.
(1976), ' The Origin of Inflation in the Less Developed Countries: A Selective Review', in Parkin,M. and Zis,G. (eds.),(1976).
Kjekshus,H.
(1977), Ecology Control and Economic Development in East African History. London,Heinemann.
Kjärby,F.
(1980), ' Agricultural Productivity and Surplus Production in Tanzania', UTAFITI, Vol.V.no.1,pp.59-95, Dar es Salaam.
(1982), Problems and Contradictions in the Development of Oxcultivation in Tanzania. Uppsala,Scandinavian Institute of African Studies.
Kriesel,H. et al.
(1970), Agricultural Marketing in Tanzania: Background Research and Policy Proposals. USAID,Dar es Salaam/Michigan State University.
Krishna,R.
(1967), ' Agricultural Price Policy and Economic Development', in Southworth, H. and Johnston,B.F. (eds.),(1967).
(1975), ' Measurement of the Direct and Indirect Employment Effect of Agricultural Growth and Technological Change', in Reynolds,L.G.(ed.).
Kuznets,S.
(1964), ' Agriculture Contribution to Economic Growth', in Eicher,C. and Witt,E. (eds.),(1964).
Lamade,W.A.
(1967), ' The Role of Marketing Boards in Tanzania',Economic Research Bureau paper no.67.1, Dar es Salaam.
Lawrence,P.E.
(1971), ' Plantation Sisal, the Inherited Mode of Production', in Cliffe,L. et al. (eds.), (1975).
Lele,U.
(1974), ' The Role of Credit and Marketing in Agricultural Development', in Islam,N. (ed.),(1974).
(1975), The Design of Rural Development: Lessons from Africa., Baltimore, The John Hopkins Press.
(1979), ' Considerations Related to Optimum Pricing and Marketing Strategies in Rural Development', in Andreon,P. (ed.),(1979).
Lewis,S.R.
(1967), ' Agricultural Taxation in a Developing Economy', in Southworth,H. and Johnston,B.F. (eds.), (1967).
Lewis,W.A.
(1954), ' Economic Development with Unlimited Supplies of Labour', The Manchester School of Economic and Social Studies, pp.139-191.
(1969), Aspects of Tropical Trade 1883-1965. Stockholm,Almquist and Wiksell.

Lipton,M.
(1968), ' The Theory of the Optimising Peasant', Journal of Development Studies, pp. 327-351.
(1977), Why Poor People Stay Poor: A Study of Urban Bias in World Development. London,Temple Smith Ltd.
Little,I.,Scitovsky,T. and Scott,M.
(1977), Industry and Trade in Some Developing Countries. A Comparative Study. New York, Oxford University Press.
Livingstone,I.
(1968), ' Agriculture versus Industry in Economic Development', Journal of Modern African Studies, Vol.6.no.3.
(1971a)ed. Economic Policy for Development. Harmondsworth,Penguin Books Ltd.
(1971b) ' Some Requirements for Agricultural Planning in Tanzania', Economic Research Bureau paper no. 71.15, also in Kim,K.S.,Mabele,R.B. and Schultheis,M. (eds.),(1979).
(1971c),' Production,Price and Marketing Policy for Staple Food Stuff in Tanzania', Economic Research Bureau paper no.71.16, Dar es Salaam.
Livingstone,I. and Ord,H.W.
(1979), Economics for Eastern Africa. London,Heinemann.
Lofchie,M.F.
(1976), ' Political and Economic Origin of African Hunger', Journal of Modern African Studies, pp. 551-567.
(1978), ' Agrarian Crisis and Economic Liberalization in Tanzania', Journal of Modern African Studies, pp. 451-475.
Mackenzie,W.
(1973), ' The Livestock Economy of Tanzania', Economic Research Bureau paper no.73.5, Dar es Salaam.
Madaha,J.
(1975), ' Cash Crop Production in Shinyanga District Tanzania 1920-1967', MA.thesis, University of Dar es Salaam.
Maeda,J.H.J.
(1980), ' Promoting Rural Development through Villagisation', Paper presented at an ILO/ University of Dar es Salaam national seminar on Development, Employment and Equity Issues in Tanzania, Dar es Salaam.
Malima,K.A.
(1971), ' The Determinants of Cotton Supply in Tanzania', Economic Research Bureau paper no. 71.4, Dar es Salaam, also in Kim,K.S.,Mabele,R.B. and Schultheis,M. (eds.),(1979).
Mascarenhas,A.C.
(1968), ' Aspects of Food Shortages in Tanganyika 1925-1945', Journal of Geographical Association of Tanzania, pp.37-59. Dar es Salaam.
Mascarenhas,A.C. and Mbilinyi,S.M.
(1969), ' The Source and Marketing of Cooking Bananas in Tanzania', Economic Research Bureau paper no. 69.14, Dar es Salaam, also in Kim,K.S., Mabele ,R.B. and Schultheis,M. (eds.),(1979).
Maxwell,S.J. and Singer,H.W.
(1979), ' Food Aid to Developing Countries:A Survey', World Development, pp. 225-246.
Mbambiti,M.E.
(1977), ' Structural Pattern in Produce Marketing at Morogoro', Tanzania Notes and Records, no.81 and no.82. pp. 79-97.
Mbilinyi,S.
(1976), Economics of Peasant Coffee Production in Tanzania. Nairobi, Kenya, Literature Bureau.
McHenry Jr,D.F.
(1979), Tanzania Ujamaa Villages: The Implementation of a Rural Development Strategy., University of California.
McLoughlin,P.
(1964), An Economic History of Sukumaland Tanzania to 1964: Field Notes and Analysis. New Brunswick,Peter McLoughlin Associates Ltd.

Meier,G. (ed.)
(1976), Leading Issues in Economic Development. (3rd edition), New York, Oxford University Press.

Mellor,J.W.
(1968), ' The Functions of Agricultural Prices in Economic Development', The Indian Journal of Agricultural Economics. Vol.XXIII. no.1.
(1969), ' Agricultural Price Policy in the Context of Economic Development', American Journal of Agricultural Economics, Vol. 51, no.5.
(1979), ' Food Price Policy and Income Distribution in Low Income Countries', Economic Development and Cultural Change. Vol. 27.

Migot-Adholla,S.E.
(1969), ' The Politics of Growers Cooperative Organization' , in Cliffe,L., et al.(eds.),(1975).
(1970), ' Traditional Society and Cooperatives', in Widstrand,C.G.(ed.),(1970).

Millikan,M.F. and Hapgood,D.
(1967), No Easy Harvest: The Dilemma of Agriculture in Underdeveloped Countries. Boston, Massachusetts Institute of Technology.

Mirrelees,J.A. and Stern,N.H. (eds.) ,
(1973), Models of Economic Growth. London, The McMillan Press.

Moore,M.P. et al.
(1981),'Smallholder Food Production in Tanzania: A Report to the Swedish International Development Authority (SIDA) and the Government of Tanzania', Mimeo, Institute of Development Studies, University of Sussex.

Msambichaka,L.A.
(1981), ' State Farms in Tanzania: Their Economic Viability', Seminar paper, Department of Agricultural Economic, University of Illinois.

Msambichaka,L.A.,Ndulu,B.J. and Amani,H.K.R.
(1982),'Agricultural Development in Tanzania: Policy Evaluation and Assessment', Mimeo,Economic Research Bureau, Dar es Salaam.

Mwaisaka,F.R.
(1975), ' Cocoa in the Economy of Kyela District', MA.thesis, University of Dar es Salaam.

Mwansasu,B.U. and Pratt,C. (eds.) ,
(1979), Towards Socialism in Tanzania.,Dar es Salaam, Tanzania Publishing House

Mwanyika,N.A.
(1978), ' Agricultural Change in South Pare 1920-1969', MA.thesis, University of Dar es Salaam.

Myint,H.
(1958), ' The "Classical Theory" of International Trade and the Underdeveloped Countries', Economic Journal, pp.317-327, also in Livingstone,I. (ed.),(1971a).
(1975), ' Agriculture and Economic Development in the Open Economy', in Reynolds,L.G. (ed.), (1975).
(1980), The Economics of Developing Countries. (5th edition), London, Hutchinson & Co. Publishers.

Nakajima,C.
(1969), ' Subsistence and Commercial Family Farms: Some Theoretical Models of Subjective Equilibrium', in Wharton Jr,C.R. (ed.),(1969).

Ndulu,B.J.
(1980), ' The Impacts of Inter-regional Transport Subsidy Policy on Commercial Supply of Food Grains in Tanzania: The Case of Paddy and Maize', Economic Research Bureau paper no. 80.1. Dar es Salaam.
(1981), ' Towards estimation of official marketed grain supply responses in Tanzania, the case of paddy and maize', Seminar paper Department of Economics, University of Dar es Salaam.

Ndulu,B,J. and Msambichaka,L.A.
(1984), ' The Agricultural Sector in Tanzania: An Overview of Performance and Major Constraints', Seminar paper Economic Research Bureau, Dar es Salaam.

Nerlove,M.
(1956) ' Estimation of the Elasticity of Supply of Selected Agricultural Commodities', Journal of Farm Economics, Vol.37, pp.286-301.

Nicholls,W.H.
(1963), ' An "Agricultural Surplus" as a Factor in Economic Development', Journal of Political Economy',pp.1-29.
(1964), ' The Place of Agriculture in Economic Development', in Eicher,C. and Witt,L. (eds.),(1964).

Nordiska Afrikainstitutet,
(1973), Tre Dokument från Tanzania., Uppsala,Scandinavian Institute of African Studies.

Nyerere,J.K.
(1962), ' Ujamaa-the Basis of African Socialism', in Nyerere,J.K. (1966).
(1966), Freedom and Unity: A Collection from Writings and Speeches 1952-1962. Oxford,Oxford University Press.
(1967a),' Socialism and Rural Development', in Nyerere,J.K. (1967b), also in Cliffe,L. et al.(eds.),(1975).
(1967b),Freedom and Socialism:A Selection from Writings and Speeches 1965-1967. Oxford, Oxford University Press.
(1977), The Arusha Declaration Ten Years After. Dar es Salaam,Government Printer, also in Coulson,A.(ed.),(1979).

Oloya,J.J.
(1969), Coffee,Cotton,Sisal and Tea in the East African Economies. Nairobi, East African Literature Bureau.

Parkin,M. and Zis,G. (eds.),
(1976), Inflation in Open Economies. Manchester,Manchester University Press.

Raikes,P.L.
(1968), ' A Study of Wheat Production in Tanzania', Economic Research Bureau, paper no. 68.35, Dar es Salaam.
(1970), ' Peasant Wheat Production in Four Districts of Tanzania', Economic Research Bureau paper no.70.3, Dar es Salaam.
(1971), ' Wheat Production and the Development of Capitalism in North Iraqw', in Cliffe,L. et al. (eds.), (1975).
(1974), ' Fertilizer Projections for Tanzania up to 1974 and 1980', Economic Research Bureau paper no. 74.2, Dar es Salaam.
(1975), ' Ujamaa and Rural Socialism', Review of African Political Economy, pp.33-52.
(1978), 'Statslig Politik og Landbruksudvikling i Tanzania', Den Nye Verden, Vol.12,no.4,pp.6-31.
(1981), Livestock Development and Policy in East Africa. Uppsala,Scandinavian Institute of African Studies.

Reynolds,L.G. (ed.),
(1975), Agriculture in Development Theory. New Haven, Yale University Press.

Robinson,W. and Schutjer,W.
(1984), ' Agriculture Development and Demographic Change: A Generalization of the Boserup Model', Economic Development and Cultural Change, pp.355-367.

Rosling,H.
(1984), ' Health Effects of Cassava-Diet in Mozambique', thesis, Department of Paediatrics, Uppsala University.

Rudengren,J.
(1981), Peasants by Preference? Socio-Economic and Enviromental Aspects of Rural Development in Tanzania. Stockholm,Stockholm School of Economics.

Ruthenberg,H.
(1964), Agricultural Development in Tanganyika. Berlin, Afrika-Studien no.2 Springer Verlag.
(1968),ed. Smallholder Farming and Smallholder Development in Tanzania:Ten Case Studies. Munich, Weltforum Verlag.

Rutman,G.
(1967), The Economy of Tanganyika. ,New York,Praeger.

Rwegasira,K.S.P. and Kanneworff,L.A. (eds.),
(1982), Inflation in Tanzania:(Causes,Effects and Control). Dar es Salaam, Intitute of Finance Management.

Rweyemamu,J.
(1973), Underdevelopment and Industrialization in Tanzania: A Study of Perverse Capitalist Industrial Development. Oxford,Oxford University Press.

Sabot,R.H.
(1979), Economic Development and Urban Migration in Tanzania. Oxford,Oxford University Press.

Sah,R.K. and Stiglitz,J.E.
(1984), ' The Economics of Price Scissors', American Economic Review,pp.125-138.

Saul,J.S.
(1970), ' Marketing Cooperatives in Tanzania', in Cliffe,L. and Saul,J. (eds.), (1972).
(1972), ' From Marketing Cooperatives to Producer Cooperatives' in Cliffe,L. , et al. (eds.),(1975).

Saul,J.S. and Woods,R.
(1971), ' African Peasantries', in Shanin,T. (ed.),(1971).

Saylor,R.C.
(1970a) ' Variations in Sukumaland Cotton Yield and the Extension Service', Economic Research Bureau paper no.70.5, Dar es Salaam.
(1970b),' A Social Cost/Benefit Analysis of the Agricultural Extension and Research Services in Selected Cotton Growing Areas of Western Tanzania', Economic Research Bureau paper no.70.24, Dar es Salaam.
(1973), ' A Social Cost/Benefit Analysis of the Agricultural Extension and Research Services Among Smallholder Producers in Kilimanjaro District', in Amann,V.F. (ed.),(1973).

Schultz,T.W.
(1964), Transforming Traditional Agriculture. New Haven, Yale University Press.
(1972), ' Economic Growth From Traditional Agriculture', in Wall,D.(ed.),(1972).

Seidman,A.W.
(1974), Planning for Development in Sub-Saharan Africa. Dar esSalaam,Tanzania Publishing House.

Sen,A.K.
(1981), 'Ingredients of Famine Analysis:Availability and Entitlements', Quarterly Journal of Economics,pp.433-464.

Sepehri,A.
(1982), ' Budget 1982/83: A Critical Evaluation', Seminar paper Department of Economics, University of Dar es Salaam.

Seshamani,L.
(1981), ' Food Consumption and Nutritional Adequacy in Iringa - A Case Study of Four Villages', Economic Research Bureau paper no.81.5,Dar es Salaam.

Shanin,T. (ed.),
(1971), Peasants and Peasant Societies. Harmondsworth, Penguin Books Ltd.

Shapiro,K.
(1983), ' Efficiency Differentials in Peasant Agriculture and their Implications for Development Policies', Journal of Development Studies,pp.179-188.

Shitundu,J.L.M.
(1984), ' An Econometric Analysis of the Demand for Fertilizer in Tanzania', MA.thesis, University of Dar es Salaam.
Solow,R.W.
(1957), ' Technical Change and the Aggregate Production Function', Review of Economics and Statistics, pp. 312-320.
Southworth,H. and Johnston,B.F. (eds.)
(1967), Agricultural Development and Economic Growth. Ithaca,Cornell University Press.
Stein,L.
(1981), The Growth of East African Export and their Effect on Economic Development. London, Croom Helm.
Sumra,S.
(1975), ' Problems of Agricultural Production in Ujamaa Villages in Handeni District', Economic Research Bureau paper no.75.3, Dar es Salaam.
Svendsen,K.E. and Teisen,M.
(1967), Tanzania vil selv. Copenhagen,Mellemfolkeligt Samvirke.
Sykes,A.
(1959),'Coffee-Banana Survey', Mimeo, KILIMO, Dar es Salaam.
Södersten,B.
(1964), A Study of Economic Growth and International Trade. Stockholm, Almquist and Wiksell/Gebers Förlag AB.
(1978), International Economics. (2nd edition),New York, Harper & Row.
Tanganyika,Government of,
(1961), Development Plan for Tanganyika 1961/62-1963/64. Dar es Salaam, Government Printer.
Tanganyika,Republic of,
(1964), The Tanganyika Five Year Plan for Social and Economic Development July 1964 - June 1969, Dar es Salaam, Government Printer.
Tanzania see URT The United Republic of Tanzania.
Temu,P.E.
(1974), Marketing Board Pricing and Storage Policy:The Case of Maize in Tanzania. Nairobi,East African Literature Bureau.
Tibaijuka,A.K.
(1984), An Economic Analysis of Smallholder Banana-Coffee Farms in the Kagera Region Tanzania. Uppsala,Swedish University of Agricultural Sciences.
Tibenderana,H.K.
(1982), ' The Factors Affecting Tanzania's National Milling Corporation (NMC) Performance 1968-1981', MA.thesis, University of Dar es Salaam.
University of Dar es Salaam,
(1982),'Evaluation of the Iringa Resolution " Siasa ni Kilimo" 1972-1982', Mimeo, Dar es Salaam.
UNCTAD United Nations Conferance on Trade and Development,
(1979), Trade Statistics. Geneva.
URT The United Republic of Tanzania,
(1966), Report of the Presidential Special Committee of Enquiry into the Cooperative Movement and Marketing Boards. Government Printer.
(1967a),Wages,Income,Rural Development,Investment and Wage Policy. Government paper no.4,Government Printer.
(1967b),The Arusha Declaration and TANU's Policy of Socialism and Self-Reliance. TANU Publishing Section.
(1969), Second Five Year Development Plan for Economic and Social Development, July 1969-June 1974. Vols.I-IV. ,Government Printer.
(1976), Third Five Year Development Plan for Economic and Social Development, July 1976-June 1981. Vols.I-III.Government Printer.

URT The United Republic of Tanzania,

continued,

(1979), The Economic Survey 1977-78. Government Printer.
(1981), Hali ya Uchumi wa Taifa katika Mwaka 1980-81, Government Printer.
(1982), Structural Adjustment Programme for Tanzania. Government Printer.
(1983), The Economic Survey. Government Printer.

URT/KILIMO The United Republic of Tanzania/ The Ministry of Agriculture,
(1979), Bulletin of Food Crop Production Statistics 1963/64-1977/78.
(1983), The Agricultural Policy of Tanzania. Government Printer.

URT/MDB The United Republic of Tanzania/ The Marketing Development Bureau,
(1972), 'The Banana Trade in West Lake Region with Special Reference to the Proposal for the Karagwe Development Corporation to Trade in Banana outside the Region', Mimeo.
(1974), 'The Wholesale Market for Agricultural Products in Ilala/Dar es Salaam, Prices and Transactions', Mimeo.
(1976a), Agricultural Price Review 1977/78. Summary, and Vols. I-IV.
(1976b), 'The Present Fertilizer Distribution System in Tanzania and Proposals for its Improvement', Mimeo.
(1977), Agricultural Price Review 1978/79. Summary, and Annexes 1-10.
(1978), Agricultural Price Review 1979/80. Summary, and Annexes 1-7.
(1979a), Agricultural Price Review 1980/81. Summary, and Annexes 1-11.
(1979b), Report on Investigation into the Financial and Operating Position of KILIMO Crop Authorities, Overall Review.
(1980), Agricultural Price Review 1981/82. Summary, and Annexes 1-11.
(1981a), Agricultural Price Review 1982/83. Summary, and Annexes 1-13.
(1981b), 'The Wholesale Market for Agricultural Products in Kariakoo Market', Mimeo.
(1981c), Estimation of the 1981/82 Import Requirements for the Production, Processing and Marketing of Major Crops in Mainland Tanzania', Mimeo.
(1983), Agricultural Price Review for the July 1983. Summary, and Annexes 1-13.

URT/TAKWIMU The United Republic of Tanzania/ The Bureau of Statistics,
Statistical Abstracts. (various issues), Government Printers.
(1972), 1969 Household Budget Survey. Vols 1-3.
(1973), An Input-Output Table for Tanzania 1969.
(1977), Survey of Employment and Earnings 1973-1974.
(1978), Prices and Price Index Numbers for Twenty Towns in Tanzania, September 1977-June 1978.
(1979a), National Accounts of Tanzania 1966-1976.
(1979b), Analysis of Accounts of Parastatals 1966-1977.
(1979c), Agricultural Census of Tanzania 1971/72. Vols. I-III.
(1980), 1978 Population Census, Preliminary Report.
(1981a), National Accounts of Tanzania 1966-1980.
(1981b), Survey of Employment and Earnings 1977-1978.
(1984), 1976/77 Household Budget Survey.

Valentine, T.
(1980), ' Wage Policy in Tanzania Since Independence, Trends and Perceptions', Paper presented at a joint ILO/ University of Dar es Salaam seminar on Development, Employment and Equity Issues in Tanzania.

van Velzen, T.
(1970), ' Some Social Obstacles to Ujamaa: A Case Study from Rungwe', in Cliffe, L., et al. (eds.), (1975).
(1973), ' Staff, Kulaks and Peasants', in Cliffe, L. and Saul, J. (eds.), (1973).

von Freyhold, M.
(1979), Ujamaa Villages in Tanzania: Analysis of a Socialist Experiment. London, Monthly Review Press.

von Rotenhan,D.
(1968), ' Cotton Farming in Sukumaland,Cash Cropping and its Implications', in Ruthenberg,H. (ed.),(1968).
Wall,D. (ed.),
(1972), Chicago Essays in Economic Development. Chicago, The University of Chicago.
Weaver,J.H. and Anderson,A.
(1981), ' Stabilization and the Development of the Tanzanian Economy in the 1970s', in Cline,C. and Weintraub,S.(eds.),(1981).
Westergaard,P.
(1970), ' Cooperatives in Tanzania,Their Functions as Economic and Democratic Institutions: Some Economic Comments', Economic Research Bureau paper no.70.16, Dar es Salaam, also in Widstrand,C.G. (ed.),(1970).
(1973), ' Analysis of the Accounts of the Cooperative Societies in Tanzania for the Years 1967-1969', Economic Research Bureau paper no.73.2, Dar es Salaam.
Wharton Jr,C.R. (ed.),
(1969), Subsistence Agriculture and Economic Development. Chicago, Aladin Publishing Company.
Widstrand,C.G. (ed.),
(1970), Cooperatives and Rural Development in East Africa. Uppsala,Scandinavian Institute of African Studies.
Woods,R.
(1971), ' Peasants and Peasantries in Tanzania and their role in Socio-political Development', in Cliffe,L.,et al. (eds.),(1975).
World Bank,
(1961), The Economic Development of Tanganyika.Baltimore,John Hopkins Press.
(1974), Tanzania Agriculture and Rural Development,Sector Study.Vols. I-III. Washington DC.
(1977), Tanzania Basic Economic Report. Annexes I-VII.,Washington DC.
(1982), Tanzania Agricultural Sector Report. Washington DC.
Yaffey,M.J.H.
(1967), Balance of Payment Problems of a Developing Country: Tanzania. Munich,Weltforum-Verlag.
Yotopoulos,P.A. and Nugent,J.
(1976), Economics of Development: Empirical Investigations. New York,Harper & Row.
Yoshida,M.
(1970), ' Government Intervention in Agricultural Marketing in East Africa 1900-1965: An Historical Study', Phd. thesis, University of East Africa.
Zarembka,P.
(1970), ' Marketed Surplus and Growth in the Low Income Country', Journal of Economic Theory, pp. 107-121.
Ödegaard,K. and Tungaraza,B.B.,
(1969),'Marketing Study of Cooperatives Mtwara Region', Mimeo,KILIMO,Dar es Salaam.
Ödegaard,K.
(1973), ' The Changing Role of Marketing Cooperatives in Rural Development: The Tanzanian Approach', MPS. thesis, Cornell University.
(1974), A Study of Agricultural Producer Prices and Their Interrelationships and Impact on Agricultural Marketing in Tanzania 1962-1972. Prime Minister's Office, Dar es Salaam.
(1975), An Analysis of the Development of Marketing Cost Structure for Cotton, Cashewnuts,Coffee and Maize. Prime Minister's Office,Dar es Salaam.
Östby,I.
(1968), ' An Econometric Study of Demand Patterns in Dar es Salaam:Preliminary Results', Economic Research Bureau paper no.68.5,Dar es Salaam.