THE MARKETING OF FOODGRAINS IN ETHIOPIA

By

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DEDICATION

I dedicate this thesis to the memory of my late father who kindled the light and inspired a burning desire in my heart and in my mind for education and who was determined to see his children through school; to my late mother, who selflessly devoted her time and energy to the well-being of her children and to her family; and to the new life of hope in my beloved daughter, Blene' Bekure.

ABSTRACT

This thesis seeks to investigate the efficiency implications of the operation of the Agricultural Marketing Corporation (AMC) established in 1976 with the aim to succeed where the 'invisible hand' of the market was ineptly presumed to have failed. The thrust of the analysis, however, indicates that policies governing the operation of the markets for foodgrains have been wrongly conceived. It is shown that the AMC, as a major marketing agent, has served neither the efficiency nor the equity objectives of policy, and that farmers would perform much better without it.

In Ethiopia, the marketing of foodgrains has always covered a relatively small part of the total output, with most of the production earmarked for subsistence. Historically, the weak farm-to-market link has widely been believed to be a major constraint on the marketing of foodgrains and hence on the expansion of marketable surplus. This still remains to be the case in most parts of Ethiopia. But on the basis of the evidence borne by this study, it appears that the advantages of proximity to market can be substantially eroded by the prevalence of marketing policies restricting the flow of foodgrains from points of production to points of consumption.

Peasants in Dibandiba and Oudie, the districts chosen for our survey, have the advantage of being near to the Addis Ababa foodgrain market, and also to big

local markets, namely, Nazareth and Debre Zeit respectively. Despite this locational advantage, however, most of the farmers in the sample - particularly those from Oudie - are observed to be inefficient. This appears to give credence to the view that proximity to Addis Ababa, by making them more accessible to control, had, the effect of embarrassing their productive effort. And yet, peasants are not unresponsive to price and other material incentives. Indeed, the rate of marketable surplus of farmers in Dibandiba and Oudie is observed to be much higher than the national average. Rather than improving the income status of the peasants, the high rate of marketable surplus, however, goes to subsidise the AMC and to benefit a handful of licensed foodgrain merchants working under the vassalship of the AMC.

If present marketing policy were allowed to continue to apply for long, it would blunt the supply resposiveness of most of the farmers in the areas surveyed; and agricultural efficiency would suffer the more for it. The study, therefore, suggests that it is high time the AMC gave way for the market to handle the production and distribution of foodgrains. The evidence from Dibandiba and Oudie suggests that where the AMC failed on grounds of efficiency and equity the market can succeed.

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While a lot of people have contributed to the timely completion of this thesis, I, however, take the responsibility for any errors or omissions.

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GLOSSARY OF TERMS

AA - Addis Ababa, the capital city of Ethiopia

AMC - Agricultural Marketing Corporation established in 1976.

Birr (no symbol used) - The monetary unit since September 20, 1976, when it replaced at par the Ethiopian dollar. Birr consists of 100 cents, US$1 equals Birr 2.07 to Birr 2.08.

Debre Z - Debre Zeit, a town about 42 kilometers away from Addis Ababa.

GDP - Gross Domestic Product. The total value of goods and services produced within a country's borders during a fixed period, usually one year. Obtained by adding the value contributed by each sector of the economy in the form of compensation of employees, profits, and depreciation (consumption of capital).

GNP - Gross National Product. GDP plus the income received from abroad by residents less payments remitted abroad to nonresidents.

IBRD - International Bank for Reconstruction and Development, which is part of the World Bank Group.

Kebele - Popular term used to describe co-operative urban neighborhood associations, which were formed after the nationalisation of all urban land and rentable dwellings in July 1975; These cooperatives became the counterpart of the peasant associations developed under the 'Provisional Military Government's' land reform proclamation of March 1975. Since their development, kebeles have become elements of local government that serve as instruments of sociopolitical control in urban areas.

KSh - Kenyan Shilling.

NAZ - Nazareth, a town about 85 kilometres away from Addis Ababa.

N.A - Data not available.

PA - Peasant Association.

PC - Producer Cooperatives.

Teff - A cereal indigenous to Ethiopia to which its consumption is almost entirely confined. It is the most widely grown grain in the highlands where its flour is preferred in the making of the unleavened bread ingera, the traditional form of cereal intake.

Quintal - Measurement of weight. 100 kilo grams equal one quintal.

Awrajas - Sub-regions or provinces.

Woredas - Districts.

CHAPTER I

1. INTRODUCTION

1.1 BACKGROUND TO THE PROBLEM

The persistence of drought and famine in Ethiopia has brought the country much publicity and given rise to continuing food aid. Among the important questions raised is whether Ethiopia can feed its population to a nutritional level adequate to sustain active life. Historically, agriculture in Ethiopia is known to have suffered gross policy neglect. This was reflected in a persistent reluctance to reform the age-old and, in many places, counterproductive agrarian structure. When the long overdue reform came in 1975, the accompanying policy measures discriminated against the individual peasant farms - which contribute 95 per cent of foodgrain supply. Co-operative and state farms have been accorded preferential treatment with respect to the provision of a broad spectrum of incentives in spite of the contention that such farms are generally less efficient than individual peasant farms. Moreover, the rigid control and manipulation of agricultural markets, restricting the free movement of foodgrains from surplus to deficit regions is believed to have acted as a constraint on the supply response in the preponderant peasant sector. Hence the 'foodgrain crisis' that has already become endemic to the Ethiopian socio-economic culture.

The 'foodgrain crisis' here refers to the inability of foodgrain supplies to satisfy growing demand. While the general problem of foodgrain supply in Ethiopia is self-evident, it is nontheless, relevant to query whether the problem is primarily a result of absolute shortage of supplies or whether it is one of relative shortage induced by deficiencies in the system of marketing and distribution.

Many would attribute the problem - and rightly enough so - to the growth of population at a rate faster than what the means of subsistence would warrant.

This view may run at odds with Ester Boserup's thesis [1] that in traditional societies, population increase, far from being counterproductive, provides conditions for positive agricultural change. But the Ethiopian experience - with total population growing at 2.8 per cent per annum, urban population at 6 per cent, and food grain supply at scarcely 2 per cent - stands as a clear vindiction that tradition-constrained agriculture has not at all been well adapted to coping with rapid population growth. Rather than provoking positive agricultural change, the population pressure on land has by accelerating the rate of deforestation and overgrazing, contributed to soil erosion and degradation, weakening the ability of the system to cope with drought. It is for instance, estimated that some 270,000 square kilometres of highland soils in Ethiopia, representing 50 per cent of total cultivable land, have already been

significantly eroded. Of this, about 140,000 square kilometres have been seriously eroded leaving little or no scope for rehabilitation. It is also estimated that cultivated land in the Ethiopian highlands loses about 100 tons of fertile soil per hectare per annum, thus weakening the water-holding capacity and the rooting anchorage of the ground [2]. Hence the constraint on the expansion of food supply.

Peasant agriculture is the major source of food-grain supply in Ethiopia. But little has been done to date by way of policy to enhance the capacity of peasants to cope with the risks due to the vagaries of nature. Until 1975, the traditional land tenure system operated as a major constraint on the growth of peasant agriculture in Ethiopia. The land reform of 1975 was radical, if sweeping. Its merit lies in posing a challenge to the hitherto 'sacred cow' status of the tenant land-lord relationship governing traditional Ethiopian agriculture. Beyond that, questions have been raised as to the adequacy and relevance of its contents and orientation. Moreover, the predominantly traditional character of the Ethiopian agriculture still remains.

But the extent of the foodgrain supply problem in Ethiopia cannot be fully appreciated merely by pointing to high rate of population growth. Availability of nutritional food items, food costs and relation to income levels and access to foodgrain producing assets must also be considered. It can, for example, be claimed that

the lack of protein, vitamins and minerals in food intake is such as to provide cause for alarm in Ethiopia. It is, however, beyond the scope of this study to discuss this claim in addition to data being scarce and often unreliable.

For A. K. Sen [3] the 'food crisis' in Ethiopia, as expressed by the outbreak of famines, results not from a deficiency in food supply, but rather from the collapse of "direct entitlement" for peasants and trade entitlement for other classes in the regions hit by famine. Direct entitlement refers to subsistence production, and trade entitlement to the food supply that wage income commands in trade. In his case study of the Wollo famine of 1972-73, taking Ethiopia as a whole as the relevant unit of analysis of food supply, Sen notes that the shortfall in the output of foodgrains in that period was no more than 6 to 7 per cent, which he considers to be "hardly a devastating food availability decline". In terms of Sen's framework of analysis, this means the famine in Wollo resulted from crop failure (direct entitlement), a resultant collapse in related incomes (trade entitlement) and failure in relief provision (relief entitlement). Sen's view is that famine could be avoided if there are adequate surpluses in areas not stricken by drought, and if the economy and policy are sufficiently integrated to permit smooth transfers of food from surplus to deficit areas. Whether this point of view could be made to stand in the case of Ethiopia

is, however, doubtful, to say the least, given that production of food surpluses and the degree of integration of regional supply and demand functions are contingent on the level of economic development, and that absolute levels of foodgrain output in Ethiopia in a normal year are very close to the margin of subsistence.

But the importance of efficient marketing arrangements cannot be underestimated. Historically, relatively little of agricultural output has been marketed; and there has been heavy reliance on local supplies. This means that the whole regions could be prone to famine when food gaps occur consequent upon the depletion of supplies from one harvest before supplies from the new harvest are readily available. The scope for such risk can, however, be narrowed by enhancing the system of inter-regional marketing operation, and by encouraging farmers to adopt mixed cropping practices that are capable of extending the harvest period or minimizing (i) the interval between harvest and hence, (ii) the probability of famine due to shortage in the supply of foodgrains. The food gap problem due to the rather longish intervals between harvests is limited to isolated regions that rely on single staple crops.

There are different types of staple grains and cereals in Ethiopia grown in different localities and in the different seasons of the year, and with gestation periods varying from two months to six months. This means that depending on proper ecological considerations,

the famine risk can be minimised if grains with short gestation periods could be widely produced. The wide-spread adoption of such strategy by small producers would, in order to be effective in the face of regional variations of soil and weather conditions, require the availability of technical assistance in terms of the provision of fertilisers and improved seed varieties.

In recent years, there have been serious disruptions in production and trade due to the occasion of wars and political instability. Forced with interruptions in transport and excessive trade controls the supply of domestic foodgrains has subsequently suffered giving way to the occurrence of famine in many localities.

Famines resulting from natural disasters such as the Sahelian drought pose serious problems for human survial and hence demand attention from both national and international relief agencies. However, their occurence must be distinguished from the more general and persistent foodgrain problem which is at the basis of the discussion of this thesis.

The above discussion suggests that Ethiopia's food problem is not only one of absolute deficiencies in food supplies in relation to population. It is also one of maldistribution both of income and of available food-grain supplies between and within surplus producing and deficient regions. This means that there can be shortage in the supply of foodgrains despite the fact that the absolute foodgrain supply might be potentially sufficient

to feed the growing Ethiopian population. It follows that the arrangements for marketing the surplus food-grains should be judged both in terms of (a) their efficiency in allocating available surplus, and (b) their impact - positive or negative - on production. Such judgement, in the context of Ethiopian development, is the main purpose of this study.

1.2 THE ISSUE

The production and marketing of foodgrains are two sides of the same agricultural coin. Marketing, affects production and is, in turn, affected by it. There are therefore, two broad analytic strands to the thesis, viz:

a) Historically, the low level of marketable surplus in foodgrain production in contemporary Ethiopia has been accompanied by the emergence of marketing agents operating subject to little or no competitive pressure, and acting as a wedge between the supply of and demand functions for foodgrains. Thus, at the point of supply (farm gates) the marketing agents have behaved as monopsonists, and at the points of demand (mainly urban centres) these same agents have operated as monopolists. In the pre-1974 period, individual merchants played the role of capable middlemen thriving on monopoly rent. In the post-1974 period, they have been superseded by a highly centralised agent, namely the Agricultural Marketing Corporation (AMC). This broad observation would raise the question as to whether there is any analytical

link worthy of empirical investigation between the level of marketable surplus and the character of marketing agents and the organisational framework within which they operate;

b) Historically, too, the low level of marketable surplus in foodgrain production has been accompanied by the existence of marketing agents fixing prices (procurement and sales) which, while maximising their own profits, have left : (i) farmers with producer surplus often too small to obviate their risk averse production behaviour; and (ii) households in the monetized sector of the economy with too small income to allow the generation of savings of material proportion. While the sensitivity of peasant producers to price incentives is widely documented, it cannot, however, be generalised, particularly in view of the variability of such factors as soil and water conditions and other supply constraints. Given these parameters, though, it would be useful to examine the empirical link between the conditions of agricultural marketing and the level of marketable surplus. Also,in view of the general observation that expenditure on food items constitutes a substantial proportion of household budgets in low income groups, it would be interesting and profitable policy-wise to investigate the savings and investment response of households to changes in foodgrain prices.

Where there is no effective marketing system, consumer prices of foodgrains are likely to be higher

than under competitive conditions. Moreover, it would be difficult for farmers to get buyers, and when they do, the prices they will get for their produce are likely to be lower than prices that would obtain under competitive conditions. This in turn, is likely to result in supply deficiency in food products in the face of growing population and even more rapid increase in the numbers in urban areas. This deficiency is further amplified by weakness in the distribution of foodgrains within and between regions.

In this study, it is argued with appeal to evidence that although there is a crisis in foodgrain supply, the production of foodgrains is potentially sufficient to feed the growing Ethiopian population. A marked improvement in the marketing of cereals is a necessary condition for realising this potential. It follows that the arrangement for marketing surplus foodgrains should be judged in terms of efficiency in allocating food-grains according to demand, and in terms of the impact of these marketing arrangements - be it positive or negative - on production.

To explain the marketing of foodgrains in Ethiopia against the background of the foregoing, it is convenient to begin from some analytical considerations. To this end, the actual and immediately potential situations are portrayed in Figure 1.1. In this, S_1 S_1 - reflecting present costs of peasant farming - is the prevailing supply curve. In the light of monopsonistic purchasing by

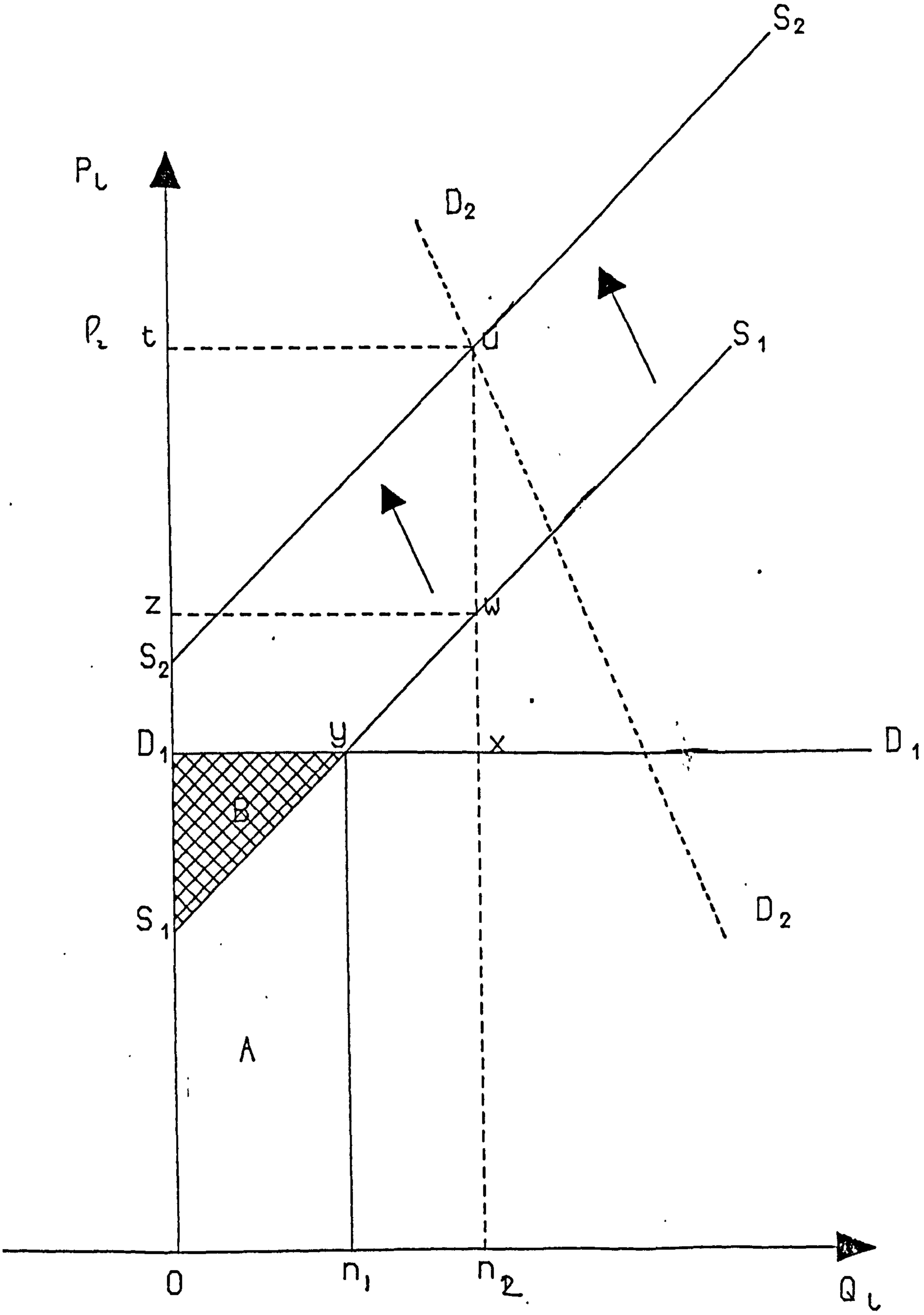
the marketing corporation, the operative demand curve is D_1 D_1.

As a consequence, price is fixed at OD_1 and the amount supplied to the market "voluntarily" is On_1. In the absence of marketing controls, the demand curve would be D_2 D_2. The market price would then be P_2 and the quantity supplied would be On_2. In these circumstances, the price and the quantity traded would both increase on the removal of controls, so that broadly speaking, the farmers would gain and the consumers would lose from the introduction of competitive marketing. This is, of course, to simplify. Nevertheless it captures well enough the fact of urban subsidy.

Whether this is the eventual outcome depends on subsequent and consequent changes - particularly on the supply side. The static price rise just described could - by increasing the absolute surplus of the peasants - induce supply-augmenting investments. This could be combined with policy measures designed to encourage technical innovation. As a result, the supply curve could move south-eastwards - to, say, S_2 S_2, and so cause price to fall and output to rise. This, of course, assumes that the demand schedule is unchanged. Rapid population growth will, however, cause this increase, other things being equal.

FIGURE 1.1

ANALYTICAL CONSIDERATIONS EXPLAINING
THE MARKETING OF FOODGRAINS IN ETHIOPIA



Most critiques of the Ethiopian agricultural policy - notably those the World Bank and the European Economic Community (EEC) - argue that the producer price would need to be above the cost of production and the supply quota obligation removed if peasant productive effort is to be increased. In effect, this amounts to the dismantling of the bureaucratic marketing structure represented by the Agricultural Marketing Corporation (AMC), or else relegating it to a position whereby its activity would be limited to a price stabilisation role counteracting the excesses of market forces operating in a liberalised marketing framework. Two questions are bound to arise in this respect, namely (a) whether the Ethiopian Government would be willing to yield to such pressures, and if it did, to what extent; and (b) how far market liberalisation would relax the constraint on growth of peasant agriculture in the face of continued mismanagement and/or neglect of soil and water resources, and the operation of other supply constraints.

There is no doubt that depressed farm-gate prices act as a strong disincentive for expanding the production of a marketable surplus. Unless there is improvement in this respect, production could be reduced to the bare subsistence level. The subsequent deterioration in the growth of agricultural GDP is bound to act as a heavy drag on the growth performance of the economy as a whole. A low volume of supply at "rigged" prices is unlikely to be in the consumer's interest either. The AMC price may

seem attractive, but the supply response is likely to divert growing quantities of food to parallel markets - at prices well above those ruling the world markets, and higher than those that would obtain in competitive conditions in Ethiopia. It is important not to underestimate the damage done by this kind of misallocation of resources. This has to include the general disincentive effect and the waste represented in frantic search for and - since this is successful - more or less patient queuing for limited supply.

1.3 SOURCE OF DATA

Sources of information and statistical data used in this study include original survey data covering a sample of 110 farmers in two agricultural districts in Shoa; and secondary data obtained from published works, journals, newspapers (proclamations) and official reports of government and international organisations. A close look into most previous studies of the issue show that despite the comprehensive sifting and analysis of large quantities of primary and secondary source materials, a number of gaps in information necessarily remain on certain subjects. The data available on economic and social institutions are uneven, and are sometimes contradictory and hence of questionable reliability. This is particularly true of statistical material.

1.4 SCOPE AND ORGANISATION OF STUDY

The scope of this study is limited to the investigation of government policies affecting the prices of agricultural products and relative efficiency of government or parastatal organisations in marketing farmers' output. The analysis will, of course, take into account factors affecting the supply response of farmers and the role of agricultural prices in this respect. The significance of such factors as the availability of market research and consumer needs will also be investigated in this connection.

The remainder of this thesis comprises five chapters. Chapter Two sets out the main features of the Ethiopian economy with particular focus on the Ethiopian agriculture and in its role in economic development. Chapter Three deals with the principles and practice of agricultural marketing in the context of a developing economy like that of Ethiopia. It describes the operations and limits of the free market mechanism, sets out the arguments for intervention and examines the experience of agricultural marketing in developing countries in general and African marketing boards in particular. In Chapter Four present marketing arrangements in Ethiopia are described and scrutinised in light of the experience of agricultural marketing in Ethiopia. Chapter Five which embodies the major contribution of this study, evaluates the economic

consequences of the current agricultural marketing regime in Ethiopia based on location specific survey data. The summary and conclusions of the study including recommendations for policy are presented in Chapter Six.

NOTES

1. For more detailed discussion on the this topic, refer to Ester Boserup, **The Conditions of Agricultural Growth: Economics of Agrarian Change**, London: Allen and Unwin, 1965, p.

2. See for example, Europa, **Africa South of the Sahara**, London: 1985, pp. 402-403.

3. Refer, for instance, to A.K. Sen, **Poverty and Famines: an Essay on Entitlement and Deprivation**, Oxford Clarendon, 1981, pp. 86-112. See also pp. 44-51 of the same work for detailed explanation of terminologies.

CHAPTER II

REVIEW OF THE ETHIOPIAN ECONOMY WITH PARTICULAR REFERENCE TO THE AGRICULTURAL SECTOR

2.1 INTRODUCTION

Ethiopia has a long history of independence stretching over a period of 3,000 years, save for the short-lived Italian occupation between 1936 and 1941. For all its splendid record of independence, Ethiopia, however, stands out prominently as one of the poorest countries in the world.

History and geography combine to explain the pervasive poverty of contemporary Ethiopia. Ethiopia's history is replete with accounts of feuding fiefdoms and a long process of empire building which culminated in the birth of contemporary Ethiopia under Menelik the Great in the latter part of the 19th century. If the mountains and deep gorges afforded a large amount of protection from outside forces, thus allowing Ethiopia to develop its political system in relative insulation, they also kept Ethiopia isolated through the ages from the crosscurrents of technological, economic and political civilisation. According to one observer of Ethiopia in the 1930s:[1]

> Abyssinians rarely travelled, even within their own boundaries; the number who had been to Europe was minute. They judged Europeans as they saw them in Ethiopia, and what they saw did not impress them. ...

> They treated visitors rather better than their own people, but not so much better as to make the country agreeable. ... The result was that the natural resources of the country were unexplored and unexploited even to the extent that Abyssinians imported tropical products such as sugar, rather than venture themselves into the lowlands where they might be produced or allow more enterprising races to undertake the work for them.

Contemporary Ethiopia evolved as a country endowed with ethnic and regional diversity, lacking, however, in both sustained political stability and the physical and social infrastructure that are among the prerequisites for the development of a tightly-knit, unified state.

The country spans an area of 472,000 square miles which is just about equal to the combined size of France and Germany; and with a population of 43.5 million (mid-1986), it stands as the most populous country after Nigeria in Sub-Saharan Africa.

Notwithstanding the legacies of history and the constraints imposed by geography and resource endowment, contemporary Ethiopia has yet to grapple with the challenges of modern economic growth and development. The aim of this chapter is to set the general context for analysing the problems of agricultural development, and more particularly, of agricultural marketing in Ethiopia. To this end, it reviews the Ethiopian economy, including its structure and growth, and explores the implication for marketing efficiency of changes made in agricultural

policies and organisations in recent years.

2.2 THE ECONOMY: STRUCTURE AND GROWTH TRENDS

The Ethiopian Economy exhibits characteristics that are broadly similar to that of other developing countries. Ethiopia is, however, poorer than most. Agriculture is the dominant sector, contributing 50 per cent to GDP, 86 per cent to the employment of labour force, and 90 per cent to total exports. Agriculture is, however, characterised by abysmally low productivity. Not surprisingly, Ethiopia has the lowest per capita income in the world - $120 in 1986, which falls far short of the $200 average for low income countries excluding China and India. (See Table 2.1 below.)

For many years, Ethiopia's export items have been the same in terms of quality, quantity and variety. Still the main export items are coffee, hides and skins, and oil seeds and pulses. Agricultural products dominate Ethiopian exports. Two-thirds of the total exports is normally accounted by coffee alone which provides 65 per cent of the total annual foreign exchange earning.

The industrial sector, broadly defined, accounts for about 16 per cent of GDP and for about 5 per cent of total employment. The manufacturing sub-sector is dominated by cottage industries and formally established modern small scale enterprises producing between them consumer goods such as food items, beverages, textiles, leather and

shoes. But the country depends on imports for the supply of consumer as well as capital goods. The question here is not why Ethiopia has not been able to meet the growing investment and consumption demand by substituting for imports, thus relaxing dependence on foreign sources of supply, but whether its areas of comparative advantage - notably in agriculture - have been developed sufficiently to provide the resources for the acquisition of imported manufactures. However, given the fact that world prices of agricultural products have been sliding down yearly while the prices of capital goods and manufactured goods in general have been going up, it is not hard to realise the country's difficulty to earn adequate foreign exchange.

The mining sector of the economy is the least developed. Several studies [2] indicate, mineral resources such as oil, natural gas, gold, gold manganese ore, quarry salt, platinum, copper, potash, zinc, nickel, iron ore, coal and geothermal energy exist in various parts of the country. However, the quantity and quality of most of these mineral resources have not yet been fully determined.

According to a recent report [3] the highest mineral potential lies in the West and South-west in Wollega, Illubabor and Kaffa Administrative Regions. However, these areas are at the moment the least

TABLE 2.1

BASIC INDICATORS OF CHANGES IN THE LEVEL OF DEVELOPMENT (1965-1985)

		Ethiopia	Low Income Economies	Developing Economies	Sub-Saharan Africa
GNP per Capita (1985) - in $		110	270	610	400
GNP per Capita: Average Annual Growth Rate %	(1965-85)	0.2	2.9	3.0	1.0
GDP per Capita (1985) - in $		101	241	551	384
GDP: Average Annual Growth Rate %	1965-80	2.8	4.8	6.8	5.3
	1980-85	0.3	7.3	3.3	-0.7
Agriculture GDP: Annual Growth rate %	1965-80	1.2	2.7	3.1	1.9
	1980-85	-3.4	6.0	4.0	0.9
Industry GDP: Annual Growth Rate %	1965-80	3.2	7.6	7.6	9.7
	1980-85	2.8	9.3	3.5	-2.4
Manufacturing GDP: Annual Growth Rate %	1965-80	5.0	7.8	-	9.8
	1980-85	-	10.8	-	3.5
Services GDP: Annual Growth Rate %	1965-80	5.3	5.0	6.4	5.4
	1980-85	3.2	6.3	2.8	-0.4
Agriculture Share of GDP	1965	58	41	29	39
	1985	44	32	20	34

TABLE 2.1 Cont'd

		Ethiopia	Low Income Economies	Developing Economies	Sub-Saharan Africa
Percentage of Labour Force in Agriculture	1965	86	77	70	79
	1980	80	72	62	75
Percentage of Labour Force in Industry	1965	5	9	12	8
	1880	8	13	16	9
Percentage of Labour Force in Services	1965	9	14	18	13
	1980	12	15	22	16
Average Annual Rate of Inflation (%)	1965-80	3.3	4.5	16.8	12.7
	1980-85	2.6	7.5	44.2	16.7
Average Index of Food Production per Capira (1979/81 = 100)	1983-85	97	120	116	107
Fertilizer Consumption (Hundreds of Grams of Plant Nutrient per Hectare of Arable Land)	1970	4	177	232	32
	1984	35	657	608	70
Share of Food and Agriculture in Manufacturing Value Added (% : at 1980 Prices)	1970	30	-	-	
	1984	38	-	-	
Share of Textiles and Clothing in Manufacturing Value added (% : at 1980 Prices)	1970	34	-	-	
	1984	28	-	-	

TABLE 2.1 Cont'd

		Ethiopia	Low Income Economies	Developing Economies	Sub-Saharan Africa
Industry Share of GDP (%)	1965	14	28	29	19
	1985	16	33	34	27
Manufacturing Share of GDP (%)	1965	7	21	-	10
	1985	-	26	-	10
Services Share of GDP (%)	1965	28	32	42	42
	1985	39	35	47	40
Gross Domestic Investment:					
Annual Growth Rate (%)	1965-80	-0.6	7.2	8.2	9.0
	1980-85	1.6	11.4	0.8	-11.4
Private Consumption:					
Annual Growth Rate (%)	1965-80	3.6	3.9	5.6	4.4
	1980-85	1.0	5.6	2.7	0.3
Government Consumption:					
Annual Growth Rate (%)	1965-80	6.4	5.4	6.6	8.0
	1980-85	5.8	6.6	4.1	0.7
General Government Consumption					
as % of GDP	1965	11	13	12	11
	1980	20	13	12	12
Private Consumption as %					
of GDP	1965	77	69	68	70
	1985	66	64	64	76
Gross Domestic Investment					
as % of GDP	1965	13	21	21	16
	1985	10	29	23	13
Gross Domestic Savings					
as % of GDP	1965	12	19	20	18
	1985	-6	24	23	13

TABLE 2.1 Cont'd

		Ethiopia	Low Income Economies	Developing Economies	Sub-Saharan Africa
Share of Machinery and Transport Equipment in Manufactring Value Added (%: at 1980 Prices)	1970	1	-	-	-
	1984	-	-	-	-
Share of Chemicals in Manufacturing Value Added (%: at 1980 Prices)	1970	2	-	-	-
	1983	2	-	-	-
Total Earnings as % of Value Added in Manufacturing	1970	24	-	-	-
	1983	19	-	-	-
	1984	18	-	-	-
	1985	17	-	-	-
Earnings per Employee in Manufacturing - Average Annual Growth Rate (%)	1970-80	-6.0	-	-	-
	1980-85	-2.7	-	-	-
Energy Consumption per Capita (in Kilograms of Oil Equivalent)	1965	10	131	251	62
	1985	17	306	502	107
Energy Consumption: Annual Growth Rate (%)	1965-80	4.1	8.2	7.2	6.3
	1980-85	-8.1	5.7	3.8	2.3
Energy Production: Annual Growth Rate (%)	1965-80	7.5	9.0	5.8	15.7
	1980-85	5.5	6.7	4.1	-2.6
Exports: Annual Growth Rate (%)	1965-80	-0.5	2.7	3.1	9.6
	1980-85	-0.8	5.0	3.9	-5.0

TABLE 2.1 Cont'd

		Ethiopia	Low Income Developing Economies	Sub-Saharan Economies	Africa
Imports: Annual Growth Rate (%)	1965-80	-0.9	2.4	5.3	9.8
	1980-85	6.8	7.3	0.4	-9.4
Percentage Share of Primary Commodities (other than fuels and minerals) in total exports	1965	100	-	48	60
	1985	89	31	21	31
Percentage Share of Manufacturing in Total Exports	1965	-	-	20	8
	1985	1	45	41	6
Percentage Share of Food in Total Imports	1965	6	20	16	15
	1985	29	10	11	18
Percentage Share of Machinery and Transport Equipment in Total Imports	1965	37	31	30	30
	1985	29	27	30	32
Percentage Share of Fuels in Total Imports	1965	6	5	7	6
	1985	15	11	17	13
Percentage Share of Other Manufacturing in Total Impots	1965	44	35	36	45
	1985	23	40	34	34
Debt Service as % of GNP	1970	1.2	1.2	1.5	1.2
	1985	1.2	1.0	4.3	4.8

TABLE 2.1 Cont'd

		Ethiopia	Low Income Economies	Developing Economies	Sub-Saharan Africa
Debt Service as % of Exports	1970	11.4	12.4	11.2	5.3
	1985	10.9	7.9	19.7	21.5
Overall Fiscal Surplus/ Deficit as % of GNP	1972	-1.4	-	-2.9	-3.1
	1985	-	-	-4.3	-3.3
Percentage Share of Defence in Total Government Expenditure	1972	14.3	-	15.1	20.2
	1985	-	-	12.1	11.2
Percentage Share of Education Expenditure in Total Expenditure	1972	14.4	-	13.8	13.2
	1985	-	-	10.4	14.3
Percentage Share of Health Expenditure in Total Government Expenditure	1972	5.7	-	6.6	5.1
	1985	-	-	4.2	5.7
Percentage Share of Social Services in Total Expendiure	1972	4.4	-	18.2	3.1
	1985	-	-	14.6	5.0
Percentage Share of Economic Services in Total Expenditure	1972	22.9	-	21.7	21.2
	1985	-	-	34.7	24.9
Average Annual Growth Rate of Population %	1965-80	2.7	2.3	2.3	2.7
	1980-85	2.5	1.9	2.0	3.3
	1985-2000	2.9	1.0	1.9	3.3

TBLE 2.1 Cont'd

		Ethiopia	Low Income Economies	Developing Economies	Sub-Saharan Africa
Life Expectancy at Birth	1985	45	60	61	50
Life Expectancy Rates per 1000 (aged under 1)	1965	165	127	118	167
	1985	168	72	71	104
Poulation per Physician	1965	70,190	8,390	9,310	36,570
	1981	88,120	5,770	5,560	26,760
Population per Nursing Persson	1965	5,970	4,380	4,320	5,340
	1985	5,000	3,880	3,300	2,570
Daily Calorie Supply per Capita	1965	1,832	2,046	2,150	2,094
	1985	1,681	2,339	2,470	2,024
Primary Enrolment as % of Age Group	1965	11	74	78	41
	1984	32	97	99	77
Secondary Enrollment as % of Age Group	1965	2	21	22	2
	1984	12	32	38	21
Urban Population as % of Total Population	1965	8	17	24	13
	1985	15	22	31	25
Growth Rate of Urban Population (%)	1965-80	6.6	3.6	3.9	6.2
	1980-85	3.7	4.0	3.8	5.7

Source: World Development Report, 1987.

accessible and much of them is covered by rain forest. Valuable potash deposits have been proven to exist in the Dallol Depression. Although the exploitation of these awaits the development of economic and social infrastructure in this desolate region, they represent potential exports.

Some traces of oil and natural gas have been discovered offshore from Massawa; and a promising has been reported to exist between the rivers of Web and Web-Shebelli in the Bale Administrative region. These reports, however, are nothing more than tentative.

It is believed that Ethiopia has considerable hydro-electric and geothermal power potential. Estimates are now being made of the geothermal power potential in the Afar Plain. With its high rainfall and precipitous relief, Ethiopia is well-endowed with hydroelectric potential, which is estimated to be over 60 billion Kilo Watt Hour (KWH) per year. A number of power plants are already in operation along the course of the Awash River, South of Addis Ababa. The Blue Nile River Basin has been extensively studied and a large number of sites identified at which power production could be coupled with irrigation schemes. The overall usable hydroelectric power potential has been estimated at 143 billion kilowatt-hours - the basin of the Blue Nile alone having a utilizable potential estimated at about 15 billion kilowatt- hours in a year of normal rainfall. At present the installed hydroelectric generating capacity

is 206,196 kilowatts [4].

The country has unique topographic features, rare wild life, a mild and pleasant climate throughout the year, and historical relics. These features could provide a basis for a flourishing tourist industry. But due to the country's limited transportation network and a relative lack of hotel accommodation and other related tourist facilities, the income earned from this resource is very small.

There are about 90,000 square kilo meters of potential fishing ground with an estimated annual production potential of 66,000 tons of fish. In addition, the Rift Valley Lakes are estimated to have a potential output of over 26,000 tons of fish a year. However, the annual fish catch of the country ranges from 600 to 12,000 tons, indicating again the inability of the country to exploit its resources due to technological backwardness. Ethiopia's agricultural land is, however, its principal resource. About 65 per cent of the total land area is considered to be suitable for cultivation. Presently, only less than 20 per cent or about 16.7 million hectares of total arable land of 80 million hectares is cultivated. The country's agriculture is almost entirely rain-fed. Irrigated land accounts for less than 0.5 per cent of the total agricultural land. It is also reported that only 4 per cent of the irrigable land is under irrigation at present.

Ethiopia is generally considered to be potentially richer agriculturally than many African counties. Ironically enough, however, it is economically far behind most of them. If the potential agricultural wealth of the country can be effectively exploited, the growth rate of per capita income can, needless to say, be accelerated. This is important in view of the fact that low incomes have many inter-related economic and social consequences in that poor people generally save and invest little, cannot afford to acquire much education or to command comprehensive health services, tend to die young, and often depend for their livelihood on the application of boute labour to unimproved soils.

Table 2.1 shows Ethiopia with saving and investment rates that are not only low but also lower than the corresponding rates in other low income economies. It is, therefore no surprise that the average growth rate is lower for Ethiopia than for most of the countries in the low income category. Between 1965 and 1985, Ethiopia's GNP grew at the rate of 0.2 per cent per annum. This contrasts sharply with the 2.9 per cent average for low income countries, and the 3 per cent average for countries in the Sub-Saharan region, of which Ethiopia is one.

Ethiopia's poor record of economic growth is reflected in a range of factors often used as indicators of poverty. Thus, for instance, life expectancy at birth was 45 years in Ethiopia in 1985 as against the 60 year

average applying to low income economies. (Refer to Table 2.1 for further clarification.)

In 1965, there were, on average 70,190 people per doctor in Ethiopia. In the same year, the average for the least developed country group was 8,390. Moreover, by 1981, the number of people per doctor had increased to 88,120 in the case of Ethiopia, indicating a deterioration of the ratio, while the average for low income economies fell to 5,770, indicating an improvement in the ratio.

Infant mortality at around 170 per thousand in 1985 is extremely high compared with the average of 75 per thousand for low income economies in general. In 1965, the daily calorie supply per capita was 1,832 for Ethiopia. This was well below the average figure of 2,046 for low income economies. In 1985, the average calorie supply per capita had risen to 2,339 for low income countries, showing improvement, while for Ethiopia, it fell to 1,681 showing deterioration. In 1965, primary enrolment was 11 per cent of the age group for Ethiopia as against the average of 74 per cent for countries in the low income group. In 1984, the enrolment rate for Ethiopia had increased to 32 per cent. This is a pitifully low proportion compared with the 97 per cent average for low income economies.

As already noted, agriculture still remains the dominant sector in terms of its contribution to both GDP and employment of the growing labour force. It accounted for 85 per cent of GDP in 1965 and 44 per cent in 1985.

Industry's share of GDP was 14 per cent in 1965 and 16 per cent in 1985. Agriculture employed 86 per cent of the labour force in 1965, and 80 per cent in 1980; and industry, 5 per cent in 1965 and 8 per cent in 1980. Economic growth has historically been associated with major changes in sectoral structures, with agriculture assuming a steadily declining role as the source of both GDP and employment, thereby giving place to industry, in general, and the manufacturing sector, in particular [5].

But, it must be noted that sectoral changes do not explain growth. Rather, they simply record consequences. There is, however, some link as a growing economy would be expected to show evident changes in structure. As income grows, the industrial sector led by the manufacturing sub-sector is expected to grow more rapidly than the rest of the economy. Agricultural productivity, of course, would also rise. And if historical precedents were to apply the consequences would be that agricultural labour force would fall absolutely and relatively. Agricultural incomes would also rise so that manufacturing and other activities could expand. That Ethiopia's economic structure has changed as little as it has may be seen as confirming that these changes have yet to take place.

That Ethiopia is poor means that the most challenging question is: how may it best and most quickly be developed? On the face of it, the answer to this question is widely-agreed to lie in agriculture.

Thus the development plans of the Empire, and the most recent 10-Year Plan agree that agriculture should have priority [6]. As translated from their Amharic version, they state: "Agriculture has been given priority in development plan because it is basic for the country's economy." Appearances may, however, be deceptive. The priority given to agriculture has, up to and including the present, been more apparent than real. The superficial evidence for this is to be found in such things as statistics on the proposed distribution of investible funds. Thus the Second-Five Year Plan had its budget for agriculture and industry as 242 million birr and 425.9 million birr respectively; and the Ten-Year Plan has budgeted 1,089.7 million birr (which is 311.6 million birr in 1971 E.C. and raised to 778.1 million birr in 1975 E.C.) and 4,258.5 million birr for agriculture and industry respectively.

The more profound reason for calling in question the sincerity of claims to favour agriculture, is that hitherto this sector has not formed the leading element in any well-developed strategy. Yet, it is arguable that the way forward in Ethiopia lies through the early and substantial development of peasant agriculture.

It is agreed that at present peasant agriculture is primitive and production from this sector has had difficulty in keeping pace with population increase and the growing demands of the urban areas. Nevertheless it is likely that every modest increases in the use and

efficiency of use of draught animals, in the technical efficiency of farm implements, and in the use even of natural fertiliser would pay substantial dividends. In more technical language, the incremental capital-output ratio must be favourable, more so than in other sectors of the economy [8]. The capital-output ratio is, of course, a relatively primitive investment criterion. Nevertheless in Ethiopian conditions it is much better than nothing, so that comparison of sectoral capital coefficients could usefully inform development strategies.

In this regard, as Mellor has noted [8], agriculture can perform two key, related functions. First, because foodgrains make up the bulk of marginal expenditures among the poor classes, agriculture is able to provide the physical goods to support increased employment and higher wage earnings, and so be a crucial source of wage goods.

Second, success in agriculture can bring about much of the needed increase in employment directly through raising agricultural production, indirectly through the stimulus of increased income to the cultivators and the demand effects of their consequent expenditure. Increased agricultural production has, of course, to be based on cost-decreasing technological change. This achieved, however, there can be large net additions to national income. Given its origins much of the increase can be placed in the hands of the peasants.

Thus, the picture is, higher agricultural production results in an increase in the marketable surplus of foodstuffs (and other produce) and so raises the real income of the farmers. This, in turn, induces inter alia a boost to the demand for new agricultural goods, which may be met in substantial part through the growth of agriculture-based consumer good industries. These are likely to be labour-intensive, so that employment is also likely to be boosted. Thus some - perhaps many - who would otherwise be unemployed would be gainfully occupied. And their increased purchasing power fuels still further the demand for foodstuffs. In this way a benign circle could be created that would provide substantial stimulus to economic development in Ethiopia.

The picture drawn thus far is more of a sketch, of course, than a finished work. Designing and executing a strategy of agriculture-led growth for Ethiopia would be no easy task. Here, however, the modest purpose has been to demonstrate possibilities in this regard. Enough, however, has been said to identify a central requirement of such a strategy, viz: the increase in foodstuff production. In Ethiopia, this largely means an increase in the supply of foodgrains.

This is the point of departure of the present thesis. Foodgrains constitute a major part of agricultural output. This supply, however, has failed in recent years to keep pace with the needs of a fast-growing population, including that in the urban areas. As is well-known, the

country has been afflicted by something approaching chronic drought in this decade, so that food imports, including food aid, have been a prominent feature of Ethiopia's international transactions. Since - given suitable weather - Ethiopia has traditionally been self-sufficient, this has created an understandable policy ambition to restore the situation in which Ethiopia can feed itself directly.

Whether this is wise is, of course, a question of comparative advantage. Here the least that can be said is that Ethiopia is not - as of now - well-placed to do other than develop agriculture. It has no large proven reserves of marketable minerals; its level of development gives it little competitive advantage in manufacturing; and its service sector is more comprised of domestic help and public administration than of dynamic financial activities. In the short- to medium-term Ethiopia has little serious option but to get the most it can from its farmers. Given this, the assumption that Ethiopia should be self-sufficient in foodgrains is at least a plausible one. It consequently is allowed to stand for purposes of the thesis.

Within the still broad area of agricultural production, the focus of the thesis is on the marketing of Ethiopian foodgrains. The development of peasant agriculture requires, no doubt more than efficient marketing arrangement. If the sector's potential is to be fully realised, then considerable - and well-directed-

investment is needed. So is an efficient extension service that would place the results of well-organized agricultural research at the disposal of the peasants.

It would, nevertheless, be wrong to underestimate the importance of marketing. Peasants are economically rational. They will embrace technical progress and so increase output if it is profitable to do so. Profitability is, of course, the net outcome of the relationship between production costs and sales revenues. Thus the price at which the farmer can dispose of his produce is an important element in the incentive structure. In this regard, however, care is necessary. The farmer's selling price may be high or low in relation to actual production costs as policy interference makes it so.

Such interference - that primarily takes the form of price control - in developing countries often turns the terms of trade against agriculture. This, it may be argued, weakens the incentive to make the best use of existing resources and to seek ways of improving production techniques. If, however, the incentive to improve and increase production is strong, then - if relative agricultural productivity is rising - the farmer's profitability (and hence income) can be rising, yet the price of agricultural produce can be falling. Such an outcome would clearly benefit the entire economy including, of course, the rural farmer and the urban consumer alike.

The importance of the price at which the farmer can sell his output is the first reason for being concerned with agricultural marketing. It is not, however, the only one. Experience elsewhere has revealed that rapid increases in marketable surpluses can be vitiated by physical constraints on marketing - notably inadequate storage and transportation facilities [9]. More generally, the possibilities of economic progress associated with an agricultural-led growth strategy must depend heavily on the efficiency of marketing arrangement. So more immediately must self-reliant relief from famine.

The importance of expanding and efficient markets in economic development has, of course, been appreciated from at least the time of Adam Smith. In the present instance it seems evident that the more rapidly and the more efficiently the supplies of food can be put in touch with its consumers the better. The price the farmer receives for his output is not, after all, independent of the marketing costs of getting this to the final consumer. Moreover, food grains in Ethiopia are, as earlier noted, wage goods, the price of which is also influenced by the trading margins. Again, so far as peasant agriculture is concerned marketing has to be regarded as a two way street. The incentive for the peasant farmer has to be real. Not merely does the farmer need a selling price that is acceptably high in relation to costs. Also necessary is a marketing

arrangement that will deliver required inputs and appropriate incentive goods. Not all of the increased income is likely to go cheerfully into savings.

In the light of these considerations it is not surprising that agricultural pricing policy and marketing has been attracting much attention in recent years. This has been true in Ethiopia where leading donors - notably the World Bank and the EEC - have been seeking to make "improved" price and marketing arrangements a condition of future lending. This pressure could be seen as reflecting belief in the efficacy of "free markets", and expressing concern at the failure of interventionist policies to deliver results in terms of growth and equity [10]. Unfortunately there are both market and bureaucratic failures, so that the chance of an optimal marketing strategy is not straight forward. Development is a second-best business and, as a result, the guidance that may be had from theory is limited [10]. What is required is a critical examination of, as it were, the facts of the case.

Thus, as has been seen, the central purpose of this thesis is to describe and evaluate the present system of agricultural marketing in Ethiopia with particular reference to foodgrains. Is this efficient in the narrow sense of moving food from the point of production to the point of consumption at something like minimum cost? And is it efficient in the broader and more important sense of facilitating growth and development? Do, that is, the

prices it throws up deliver the "right" signals to producers and consumers? Does it provide incentives that should lead to increased output and to a smoothly growing supply at "reasonable" prices? Are the domestic terms of trade in keeping with opportunity costs, or are they "distorted"? These are among the questions to be asked.

As will be seen, to ask these and other questions largely means examining the workings of the Agricultural Marketing Corporation. These, it may be said at once, are found wanting. Consideration is consequently given to alternatives, including free markets and what may be termed market socialism.

Before turning to agricultural marketing, however, it is convenient first to consider agricultural performance in recent years. This task occupies the remainder of this chapter.

2.3 THE STATE OF ETHIOPIAN AGRICULTURE

In 1985, some 44 per cent of Ethiopian total output came from agriculture. This share was 14 percentage points less than it had been twenty years earlier. From this it may be thought that growth- associated changes in economic structure had taken place, and that the relative decline in agriculture was offset by a corresponding rise in the weight of industry. Unfortunately the share of industrial sector in total

economic activity increased but slightly - from 14 to 16 - per cent over the same period, and the counterpart to agricultural development was to be found in the growth of the service sector, mainly in public administration and defence.

In 1985 weight of agriculture in Ethiopia was, notwithstanding the reduction over the previous twenty years, strikingly high compared to the corresponding ratio elsewhere. Thus the share of agriculture in the GDP was, in the same year, 32 per cent in low-income economies as a whole; 14 per cent in middle-income countries; and a mere 3 per cent in the developed market economies. The statistics on the relative importance of agriculture as an employer of labour tell broadly the same story, with some four-fifths of the labour force in Ethiopia finding work in the agricultural sector. Moreover, in 1985 some 90 per cent of Ethiopia's export was agricultural produce, much of it, of course, being coffee.

The structural changes just noted and the high initial weight of agriculture suggest that over the 20-year period economic performance in general and that of the agricultural sector in particular could not have been too impressive. In fact GDP grew at an average annual rate of 2.2 per cent. Since population increased, however, at a corresponding rate of 2.65 per cent, there was a decline in income per head.

That this disappointing statistic owed much to

agriculture may be seen from some data on food and agriculture for the period 1970-1985. In that time real value added by agriculture declined at an average annual rate of 0.64 per cent, so that per capita output fell by more than 2 per cent. The fall in output and output per head applied also to the food component of agricultural production. As a result there was, in the decade to 1985, a very marked rise in both cereal inputs on commercial terms and food aid. Thus the former grew at an average annual rate of 21.3 per cent to reach 986 thousand metric tons, while the latter recorded annual increases of 32 per cent stand at 869 thousand metric tons. It is some measure of the standing of Ethiopian agriculture to know that between 1970 and 1984 fertiliser consumption increased annually at the rate of 16.7 per cent. It still, however, only stood at 350 grams per hectare of arable land compared, for example, to an average of 657 grams for low-income economies as a whole, and 197 grams for the same economies excluding China and India [12].

The role of agriculture in economic development has been variously perceived. It is, however, widely agreed that the major contribution comes from increasing agricultural productivity. Moreover, as has been seen in the previous chapter, the process of achieving this in Ethiopia could provide the foundation for more general economic development. Central to this transformation would be the production and distribution of foodgrains.

Before coming to this central topic, however, it is appropriate to consider the agricultural sector in more detail and so to place the thesis in context.

In this regard, perhaps the first thing to note is that as of now productivity in agriculture is extremely low. This follows directly from figures already given. If it takes 80 per cent of the labour force to produce 44 per cent of total output, it is clear that productivity in the agricultural sector is but one-fifth that of the rest of the economy. Since Ethiopia is one of the poorest countries in the world it is also clear that the absolute levels of agricultural productivity cannot be much above subsistence. Yet agriculture is characterised by wide climatic and ecological diversity that allows a large variety of crops to be grown. And since, overall, the land/people ratio is still more favourable than elsewhere there certainly is potential for expansion.

The total value of (or value added by) agricultural production in 1984/85 was 73.5 per cent. Of this livestock and meat, fruits and vegetables, spices, salt, sugar, molasses, natural gum and chat accounted for 21.8 per cent. Coffee which is mainly an export crop, accounted for 53.6 per cent [13]. Without detracting from their undoubted importance, livestock and coffee are taken as being outside the scope of the present study.

What is left is absolutely substantial and, it is arguable, relatively of great importance - since well over 90 per cent of what is left is foodgrains. These, as will

be seen, are largely produced by peasant farmers. In turn, these possess a high level of skill in the application of traditional techniques. They generally lack, however, an efficient marketing system, access roads, credit and an institutional framework that would link them to pertinent research - extension and veterinary services, improved seeds and fertiliser, and assured water supplies.

It would seem to follow that the transformation of peasant agriculture would result from the provision of the now missing inputs in the agricultural production function - beginning, be it noted, with improved marketing. Thus an official document noted in 1971 "pack animals" and human shoulders are the main means of transport of agricultural products on the farm and to the market. The real costs of such transport are very high and much time is spent on marketing and related activities. Generally speaking, high transport and high marketing costs impede the widening of the market, and in many regions these costs reduce or even exclude price incentives for farmers to increase production for the market"[14].

Before 1974, grain was produced by small land owners who farmed on their own account and by tenants who worked ground owned by landlords to whom some form of compensation was paid. About 40 per cent of the cultivated area was subject to land tax, and the consequent payments amounted to between 13 and 27 per cent of total agricultural output. In addition, there

were some commercial farms based on wage labour; and the tax on the profits of these represented another form of surplus extraction by the Government.

Food supply, particularly to urban areas, has long been seen to have political importance, raising as it does, sensitive questions concerning the terms of trade between the rural and the urban areas. In Ethiopia, this concern with urban food supply led to the establishment of the Grain Board early in the post-1945 period. It is difficult to find detailed information on the workings of this body. It does not, however, seem to have had much impact on domestic production and distribution. Agricultural markets were substantially free - but within the bounds imposed by the limited integration that characterised the economy.

In the pre-1974 period, peasant agriculture - the dominant form of production - was characterised in terms of "predominantly small farms with scattered plots, archaic agrarian relationships, extreme lack of capital, backward practices and very low productivity of labour, as well as undeveloped institutional infrastructure, shortage of staff and scarce funds" [15]. In these circumstances, it is not surprising that food production should be having difficulty in keeping pace with the increasingly rapid rate of growth of population. For some time after the Second World War Ethiopia had been a net exporter of cereals. By the late 1960s the situation had changed and net imports had emerged - only, however, to

the extent of one per cent of total output [16]. More generally, the agricultural system was clearly fragile and, being almost entirely rain-fed, agricultural performance was much influenced by the weather. Hence,the vulnerability of the Ethiopian agriculture to drought.

Following the political changes of 1974 and the proclamation of land reform in 1975, the modes of agricultural production emerged, viz: individual peasant farms (peasants organised as peasant associations within the framework of service co-operatives); and producers' co-operatives; and state farms. It is convenient to consider these in turn.

(a) Individual Peasant Farms

The 1975 land reform removed all landlords and placed all land in the hands of the State. Peasant Associations were formed and charged, **inter alia**, with the allocation of land in their area for use by individual peasant households. This allocation depended on the amount of land available, the size of the Peasant Association and the number of households in it. It also depended on the household size. The maximum limit on a holding was set at 10 hectares per household.

The farms in this sector are usually quite small - about two hectares per head on average. Yet they account for over 90 per cent of both cultivated land area and

total agricultural production in the country.

Peasant production is largely of subsistence character with little food being left for others. Thus,in 1977/79, for example, only 11.2 per cent of the peasants' output was actually marketed. The low level of output and the relative smallness of the marketable surplus reflect, inter alia, the continuing dominance of traditional techniques and the fact that the peasant farms have almost no capital with which to work. However, they cannot borrow from the Agricultural and Industrial Development Bank (AID Bank) because of a lack of assets that are acceptable as pledges. Again the general lack of working capital precludes the purchase of improved inputs - including fertilisers, the price of which has generally been beyond the reach of the small peasant.

The smallness of the size of farm plots is another factor behind the subsistence character of peasant agriculture culture in Ethiopia. Since the total area available to individual Peasant Association has remained fixed in the face of population growth there has been some tendency for the size of the average holding to diminish. Moreover, holdings are fragmented. According to one estimate, of all holdings, 55.33 per cent was located at distances of 1 km. or less from dwellings, and 3.46 per cent were located at distances exceeding 7 kms. from dwellings, so that more than 40 percent were from 1 to 7 kms. away from households [17].

A sizeable surplus could be extracted from the peasant sector only at the cost of impoverishing the peasantry. Of course,some surplus is currently being extracted to help sustain the urban economy. As has been seen, however, the surplus is not large. It is necessary to increase it, but to attempt to do so without first securing higher production than at present is likely to push the peasantry to destitution.

Again, in the absence of higher output, or at least the prospect of it, interest in accumulation within the peasant sector is likely to be small. A vicious circle is apparent here. If a surplus is neither internally accumulated nor lends itself to extraction by the state, the rate of growth of production cannot be raised. But if the rate of growth of production cannot be raised, the process of accumulation cannot even begin on any appropriable scale.

In this regard, it is worth documenting how narrow the margin of production is in peasant agriculture. As noted, much production is for subsistence and for many, food is the only output. Although somewhat dated,the figures given in Table 2.1 below, are revealing. They serve to point the issue.

Following international standards, the current relief ration in Ethiopia is 500 grams per person per day, or 182.5 kilograms per year. It follows from this that, left to its own devices the Ethiopian peasantry in

recent years has not been able to meet even this low standard. Yet it has been required to provide for others Such provision has not,of course, been impressive in magnitude. Indeed if the surplus available is divided by 182.5, then it amounts to the minimum 'ration' for 235,562 people - or about one-fifth of the population of Addis Ababa.

In the circumstances, it is perhaps understandable that the Government should see the State farms as insurance against famine. Certainly, a contribution to the marketable surplus of foodstuffs is taken as a major part of their **raison d'etre.** These farms are also meant to help expand exports through the efficient production of non-food crops, notably coffee and cotton.

(b) Producers' Co-operatives

Some of the large scale farms owned by private individuals or partnerships were organised as producers' co-operatives during the land reform of 1975. Co-operatives comprise a varying number of peasant households acting in concert to farm an allotted area on a communal basis. These co-operatives are seen as prototypes of collective farms. However, producer co-operatives have been insignificant both in terms of area and of production. Available evidence shows that they account for about 1.4 per cent of both cultivated area and production [18].

TABLE 2.2

MARKETED PRODUCTION AND CONSUMPTION

1. Total foodgrain production in the peasant sector (1)	3,908.2	thousand tons
2. Marketed surplus	429.9	" "
3. Losses	195.4	" "
4. Seed requirements (2)	273.4	" "
5. Rural Consumption	3,009.5	" "
6. Rural population (3)	2,214.2	thousand
7. Production per head of rural population	177	kg.
8. Consumption per head of rural population	136	kg.

Source:

Socialism from the Grass Roots: Accumulation Employment and Equity in Ethiopia, Volume 1, Report, International Labour Office, Jobs and Skills Programme for African (JASPA), Addis Ababa, September 1982-83, p.

(1): Including cooperatives but excluding Eritrea and Tigrai.

(2): The estimates are based on the findings reported in the Ministry of Agriculture, Area Production, Yield, Use of Fertiliser and Marketed Production of Major Crops (Addis Ababa, 1978).

(3): Excluding Eritrea and Tigrai.

Members of producer cooperatives are drawn from the poorest strata of the country's peasant families and constitute only about 0.8 per cent. A minimum of three

households may pool their resources together and form a producers' co-operative. At the 'First Stage', the co-operative, called 'Malba' is collectively cultivated with draught animals and implements hired by the co-operative from its members. These members share the collectively-generated income according to their contribution of labour contribution and other inputs, while also retaining some land for individual cultivation.

At the 'second stage' of the co-operative, called 'Welba' all the implements and a greater proportion of land are held in common and collective income is distributed according to a workpoint system. One study [19] shows that in total there are 837 producers' co-operatives with a membership of 54,423 households. Of these 652 are 'First Stage' co-operatives, and the remaining 185 are 'Second Stage' co-operatives of which only 57 are registered and enjoy full legal status. Compared to the peasant farm sector, producers' co-operatives tend to be larger and use more advanced methods of production. They use more fertilisers per hectare of land; have more draught animal power (30,421 pairs of oxen for their 313,688 hectares); and may even possess a tractor (there are 30 tractors distributed among the 837 producers' co-operatives) [20]. Even so, a national survey by the Ministry of Agriculture in 1983/84 shows that labour and land productivity are lower, marketable surplus smaller, and the rate of accumulation is lower on producers' co-operatives than on the

individual farmers in almost all parts of the country.

The third stage of cooperative development, known as 'Weland', is akin to the Russian Kolkhozy or collective form of the 1930s. While peasants involved in 'Malba' are allowed to keep individual garden plots measuring half or a quarter of a hectare for their own use, no such allowance is made at the 'Weland' stage.

(c) State Farms

The post-1974 reforms have also seen the establishment of State farms. These are large-scale, evidently publicly-owned, enterprises. State farms have, however, been of significance, their main function being supplying food grains to urban areas and state establishments. They are also in a sense, instruments of surplus extraction from the peasant sector. There is evidence that 80 per cent of the state farms are working at a loss [21], notwithstanding the fact that they are highly mechanised and generally highly capitalised in comparison to the peasant sector. This lack of efficiency is thought to reflect a rigid and hierarchical management structure and a scarcity of qualified managers. Certainly the authority given to the farm managers is limited.

In size, the State farm sector is very large, with individual farms often occupying several thousand hectares. On average, it covers approximately 245,000

hectares of which about 14,000 hectares are in coffee and the rest in variety of crops among which grains and cotton are the most important; it also includes fruits and vegetables. Despite its size, the state farm generates relatively little permanent employment. This is because it is highly mechanised. Generally, the permanent workers are skilled and are not drawn from the peasantry.

Almost all the state farms use very extensive methods of cultivation. It is reported that there is one permanent worker for every 30 or 40 hectares for wheat farms in particular. But even after taking the other farms into account, the weighted average number of hectares per worker is 14.28 - quite high per person compared to peasant farms and producers' co-operatives. Besides, the State farms are not allowed to pay more than the legal minimum rate of birr 1.92 per day which is far lower than the going rate of birr 5 per day. Therefore, they could not compete with the other sectors. As a result, they use coercive labour recruitment. The state employs few and pays them very little too.

From the foregoing discussions on the three major forms of agricultural production, it can be seen that the peasant farms and producers' co-operatives are more efficient and their financial returns are better than the state farms. The majority of the state farms operate at a loss as various official reports indicate. As seen, these farms have suffered from over-centralized control,

poor and hasty planning, poor labour practices, managerial weaknesses, and the imposition by the Agricultural Marketing Corporation of low purchasing prices and rigid pricing policy more generally.

NOTES

1. Evlyn Waugh, **Waugh in Abyssinia**, London: Published in Penguin Books, 1984, pp. 31-32.

2. See , for instance, Europa, **Africa South of the Sahara**, 1986, pp. 402-403. See also Harold D. Nelson, and Irving Kaplan, **op.cit.**, p. 170. Reference could also be made to Richard Greenfield, **Ethiopia**, A New Political History, London: Pall Mall Press, 1965, p. 321. Additional reference could be made to World Bank, **Ethiopia**, Recent Economic Developments and Future Prospects, Volume I, Document of the World Bank, May 13, 1984, P. 2. Refer for example to **Ethiopia** A Country Study, 3rd ed., The American University, edited by Harold D. Nelson, and Irving Kaplan, Washington, D.C., United States Government, 1981 p.146. In relation to this, refer also to Europa, 1988, **op. cit.**, p. 433. Refer, also, to Robert L. Hess, **Ethiopia** The Modernization of Autocracy, Cornell University Press, Ithaca and London, 1970, p. vix.

3. Among others, refer to Europa, **Africa South of the Sahara**, 1988, p. 432.

4. For detailed discussion, refer to Harold D. Nelson, and Irving Kaplan, **op.cit.**, p. 170-172.

5. See, for example, the investigative studies of Colin Clark, Simon Kuznets, and H.B. Cherry, among others, on structural changes and patterns of growth. For useful discussion on this issue reference should also be made to John W. Mellor, **The New Economics of Growth**, A Strategy for India and the Developing World, Cornell University Press, Ithaca and London, 1976.

6. See for instance, the **Second 5-Year Plan of 1955-1959 E.C. or 1963-1967 G.C.** and the **Ten-Year Plan of 1977-1986 E.C. or 1985-1994 G.C.**

7. James Pickett, **Development, Technology and Employment in Ethiopia**, No.4 Discussion Paper, David Livingstone Institute, University of Strathclyde, p.4.

8. John W. Mellor, **The New Economics of Growth**, A Strategy for India and the Developing World, Ithaca: Cornell University Press, 1976, p. 13.

9. For Useful, brief discussion see W.P. Falcon, "The Green Revolution: Second-Generation Problems" **American Journal of Agricultural Economics**, Dec. 1970.

10. **Ibid**, December 1970.

11. For the meaning and disadvantages of "distortion" see G. T. Brown "Agricultural Pricing Policies in Developing Countries" in Shults (ed.), **Distribution of**

Agricultural Incentives, Indiana University Press, 1978.

12. Ten-Year Perspective Plan, 1984/85 - 1993/94, Addis Ababa: September 1984.

13. World Development Report, 1987, - World Development Indicators, pp. 43-48.

14. All statistics are from IBRD, World Development Report, 1987, - World Development Indicators, Tables 1, 2, 3, 6, 11, and 32.

15.IEG, Ministry of Agriculture, Prospects of Agricultural Development in Ethiopia, Addis Ababa, February 1971, pp 5-61 17.IEG Op.cit.

16.Ibid. pp. 10-1.

17. See for example,Fassil G. Kiros, Ethiopian Journal of Development Research, "Agricultural Land Fragmentation: A Problem of Land Distribution Observed in Some Ethiopian Peasant Associations", Institute of Development Research, Addis Ababa University, Addis Ababa, 1980. See also Dessalegn Rahmato, Peasants and Comrades: ... In Rural Ethiopia, 1987. Refer also to ILO, Socialism from the Grass Roots: Accumulation, Employment and Equity in Ethiopia, Vol. I, Report, Addis Ababa, 1982.

18. Concerning this topic, see PMAC, September 1984, p. 191.

19. ILO, Socialism from the Grass Roots: Accumulation, Employment and Equity in Ethiopia, Vol. I Report, Addis Ababa, 1982, p. 35. Refer on this topic also to Ibid. p.35-45. See also Dessalegn Rahmato, op.cit.

CHAPTER III

AGRICULTURAL MARKETING IN PRINCIPLE AND IN PRACTICE

3.1 INTRODUCTION

Agricultural development in Ethiopia, as indeed elsewhere, presuppose, **inter alia**, the operation of a system of marketing that is capable of enhancing the competitive efficiency of resource use. In agriculture, as in other sector of economic activity, markets help to bring buyers in contact with sellers by providing the relevant set of information about the supply and demand conditions corresponding to a wide range of tradable items.

In a well-functioning economy, markets are integrated and the set of information on which exchange decisions are based is comprehensive and accurate. This enables producers to decide on what, how, and for whom to produce and maximise their surplus, and households to allocate their income in a way that would best enhance their economic well-being. The marketing function is, however, narrowly circumscribed in economies where 'division of labour' is in a rudimentary state and where, therefore, the bulk of production is destined for subsistence. In a growing economy, marketing facilitates the flow of goods and services from the point of production to the point of consumption. The manner in which marketing agents - namely wholesale and retail

traders, merchants, middlemen, brokers and parastatal marketing organisations - perform their duties defines the market relationship between producers and consumers. Bottlenecks in this relationship create imbalance between supply and demand, and can effectively constrain economic growth if they persist. The aim of this chapter is to highlight the marketing constraint on economic growth with reference to the mechanisms involved in agricultural pricing and marketing procedures in general, and, more particularly, to the contemporary experience of agricultural marketing in developing countries.

3.2 MARKETING AGRICULTURAL PRODUCTS

The marketing activity in general, calls for the mobilisation of transport and storage facilities, skilled handling of products, the provision of adequate credit, and willingness on the part of traders to accept risks and responsibilities. Agricultural products have characteristics which make special demands on marketing systems and organisations. One such characteristic is their 'bulkiness' in relation to their monetary value and especially when compared with many manufactured goods. Not surprisingly, the transport and storage costs of such products tend to be higher in relation to their value. In the case of perishables, special storage facilities (like refrigerator) will have to be provided, and the absence of such facilities would reduce the scope for speculation in the market of these products.

Generally, in agriculture, unlike in industry, production is necessarily seasonal. Production could be organised with possibilities for multiple harvests in a year, but this does not change the fact that the production cycle is longer in agriculture than in industry. The seasonality of production has a significant bearing on the conditions of agricultural marketing. At harvest time, there is actually heavy demand for marketing facilities, such as storage, transport and buyers' credit. At other times of the year, these facilities may be hardly used at all. This applies particularly when agricultural products destined for the market cannot be stored for long without deteriorating in quality.

The indivisible character of the major marketing facilities would make their operation especially by small producers uneconomic and hence inappropriate. The problem could be minimised, however, when the marketing function is handled by a host of specialised competing trading agents buying in bulk at harvest and building up stock to be able to serve demand during the inter-harvest period. Often, though, the marketing function tends to be monopolised by private traders who would buy from the producers at prices lower than what the market would offer and sell to consumers, at prices much higher than what the rule of competitive pricing would determine.

Under competitive conditions, price would correspond to the marginal cost of the suppliers.

Another important feature of agricultural marketing is the variability of agricultural prices. Generally, the prices of agricultural commodities tend to vary more than the price of industrial products. There are at best two reasons for this tendency. In the first place, agricultural markets are sensitive to climatic changes. Favourable climatic changes lead to bumper crops, and all other factors remaining unchanged, prices will fall. With unfavourable climatic changes, and consequent crop failures, shortage will persist in the market and prices will rise to remove the excess of demand and supply. Secondly, the short run responsiveness of supply and demand to changes in prices is usually less in the case of agricultural products than it is in industrial markets.

The short run elasticity of demand for agricultural products is generally recognised to be low because such products are considered to be necessary goods or because of the difficulty of substitution envisaged at least over the short run period. The fact that needs for agricultural products like food grains are limited means a fall in price would only stimulate a less than proportionate increase in quantity demanded. This is, of course, assuming that there is no speculative buying.

Thus, it would take a large reduction in price for demand to increase by a small amount. On the other hand, the absence of substitutable items, at least in the short run, means that even if price increases by a

large amount, quantity demanded will fall less than proportionally. Thus, the inelasticity of demand for agricultural products can be a major cause of price instability characterising such products. The short run elasticity of supply is low in agriculture because adjustment of supply to price change is difficult due to the length and the relative inflexibility of the production period.

Supply could be made less and less inelastic with the application of fertilisers, improved seeds, irrigation, etc., that are capable of increasing productivity and substantially reducing the gestation period in cultivation. For instance, some crops like maize can, given favourable circumstances, yield more than one crop per year. In such cases, high prices induce increased acreage and subsequently increased supply within a relatively short period. This situation, cannot, however, be generalised to apply across the board. In the case of some crops like coffee, for instance, the gestation period is long; and the amount supplied will mainly depend on whether the harvest is good or bad rather than on the price ruling in the pre-planting season. The price of agricultural products are vulnerable to instability because of unplanned variations in supply arising from changes in weather conditions, outbreak of crop diseases, etc., and because of the difficulty of altering this supply in the short run. The difficulty of adjusting supply to demand and the resultant cyclical fluctuation in price is

depicted by the **Cob-web** model illustrated in the diagram below. (Refer to Figure 3.1.) The cob-web analysis allows for a time lag between the decision to produce and the decision to sell.

The degree of price instability is shown for a wide range of agricultural products in the following table.

The figures in Table 3.1 measure the average deviation from the price trend in any particular year. This means that one can, for example, expect the price of coffee for a typical year between 1974 and 1984 to be about 38 per cent above or below the trend value for that year. According to World Bank studies, in contrast to the instability of agricultural products, the instability indices of manufactured commodities are less than 10 per cent in a large number of cases and seldom close to 20 per cent [1].

The price instability characterising agricultural products have temporal and spatial dimensions of particular significance for the marketing of such items. In the event of price instability, traders bent on maximising their margin would be tempted to buy when and/or where the price is low and sell in markets when and/or where the price is high. Hence the practice of arbitrage and speculation in agricultural pricing.

Arbitrage refers to buying in a market where the price is low and selling in another market where the price is high. It is based on a situation where the

prices in the markets are known; and it means that for every product only one price will rule once the game of competition is freely played out. Arbitrage is thus facilitated by the absence or removal of price and non-price trade barriers, and if information regarding prices prevailing in different localities is not all too difficult to obtain. The following set of diagrams illustrate the argument about arbitrage in competitive markets with many buyers and sellers.

The same commodity, 'teff', is sold in two markets A and B. Before arbitrage, the position is represented by the solid lines. In Market A, the price is low at PoA and in Market B, the price is high at P_oB. Traders will notice the price differential and buy in Market A, shifting the demand curve from Do to D_1 and raising the price from P_oA to P_1A. $Q_1A - Q_oA$ amount is purchased and this quantity is then sold on Market B. This shifts the supply curve in Market B from S_o to S_1.

Consequently, the price in Market B falls from P_oB to P_1B. The effect of arbitrage is to reduce - and not necessarily to eliminate - the price differential in the two markets substantially. Price differential between the two markets will remain for as long as the marginal cost of traders in buying and selling goods and in

FIGURE 3.1

THE COB-WEB DIAGRAM
CYCLICAL FLUCTUATION IN PRICE OF
AGRICULTURAL PRODUCTS

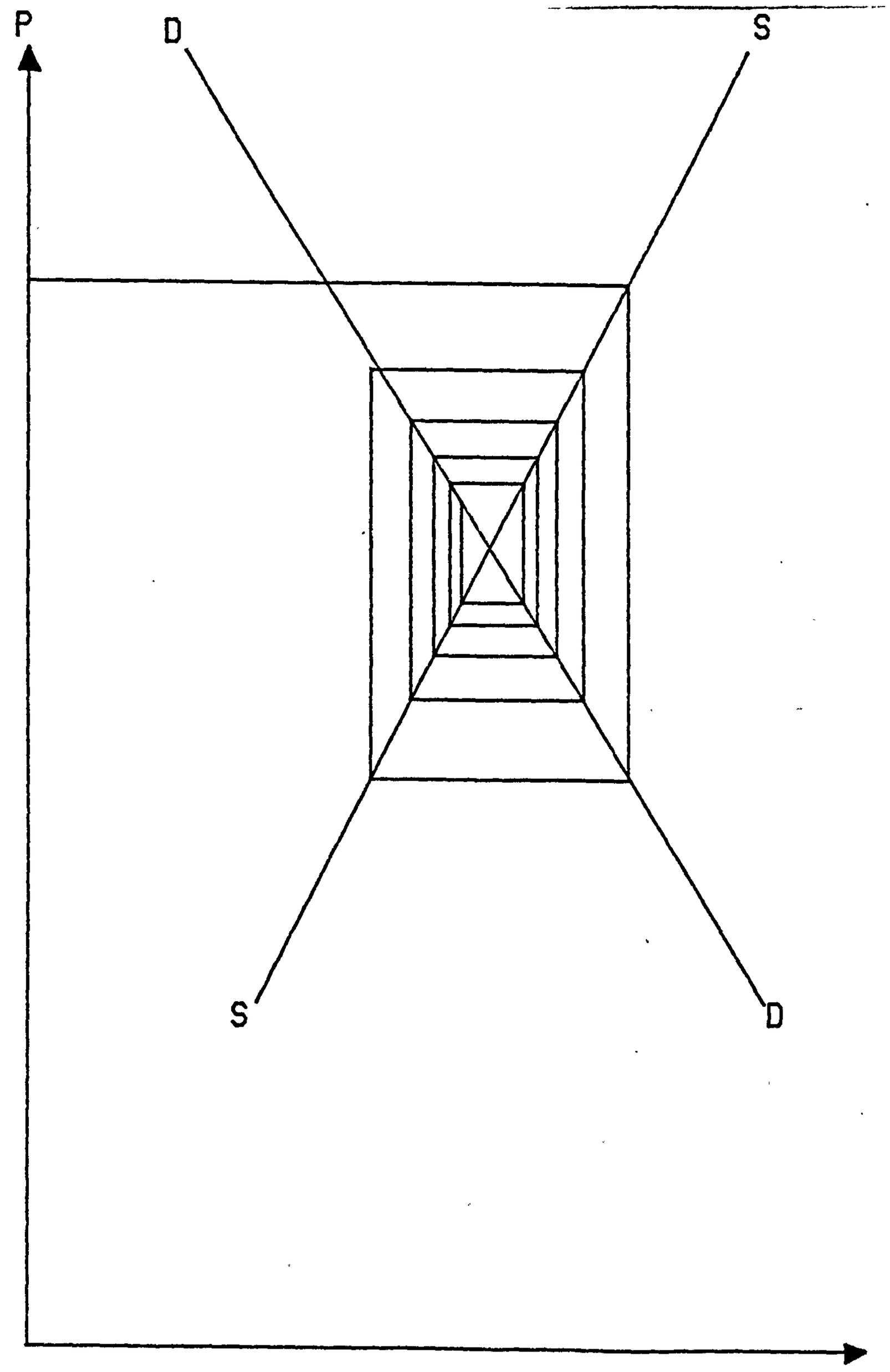


TABLE 3.1

DEGREE OF PRICE INSTABILITY OF
AGRICULTURAL PRODUCTS

Commodity	INDUSTRY INDEX (%) 1964-84	1974-84
Sugar	90.80	51.50
Cocoa	37.30	34.10
Rice	33.00	21.90
Coffee	32.00	37.70
Palm Kernels	27.50	32.50
Wheat	24.30	16.90
Tea	21.70	23.60
Jute	21.20	26.80
Soya Beans	20.80	9.90
Beef	16.70	11.30
Corn	16.60	15.60
Rubber	16.10	14.00
Sorghum	15.60	13.60
Cotton	14.30	10.70

Source: World Bank, World Development Report, 1986, pp. 68-131.

transporting these exceeds the marginal revenue obtained from sales. The idea behind speculation is basically the same as in arbitrage. With speculation, however, the price in one of the markets is unknown. The most common form of speculation is to buy in the present when the price is low and sell in the future when it is hoped that the price will be high. Figure 3.3 illustrates the argument about speculation.

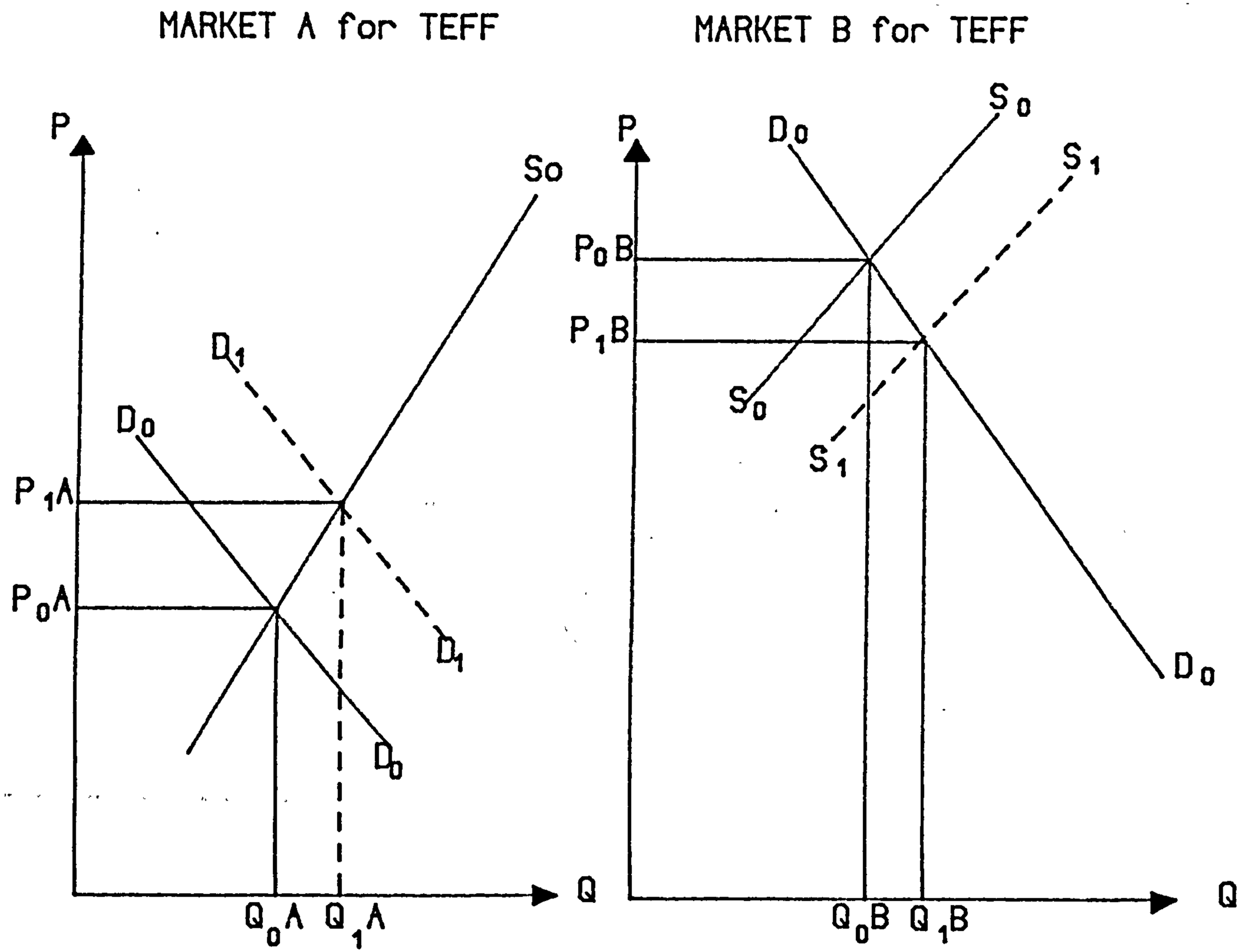
Consider, for example, a general case relating to

the prices of agricultural crops. Price is likely to be low immediately after harvest (H_1) and is likely to increase throughout the season until it reaches its peak just before the next harvest as shown by the lines labelled AA. What the speculator does is, therefore, to buy the crop at the time of the harvest, store it and then sell it later in the year when the price is higher. The result of the speculator's activity is to raise the price over what it would have been just after the harvest and to reduce it below what it would have been just before the next harvest, as shown by the dotted lines labelled BB.

The effect of speculation is to make price more stable. This would make speculation certainly an economically desirable activity. Speculation becomes destabilizing and unhelpful when speculator's price forecasts fall wide of the mark. If a speculator expects the price to rise, he will buy now. But if he is wrong and the price is about to fall, so that the price pattern without speculation is AC instead of AA, the act of speculation would increase the price when the speculator buys, and decreases when the speculator sells. It is clear from this that speculators can only make profits when their activities are stabilising. In Figure 3.4, the stable price pattern BoB, and the unstable price

FIGURE 3.2

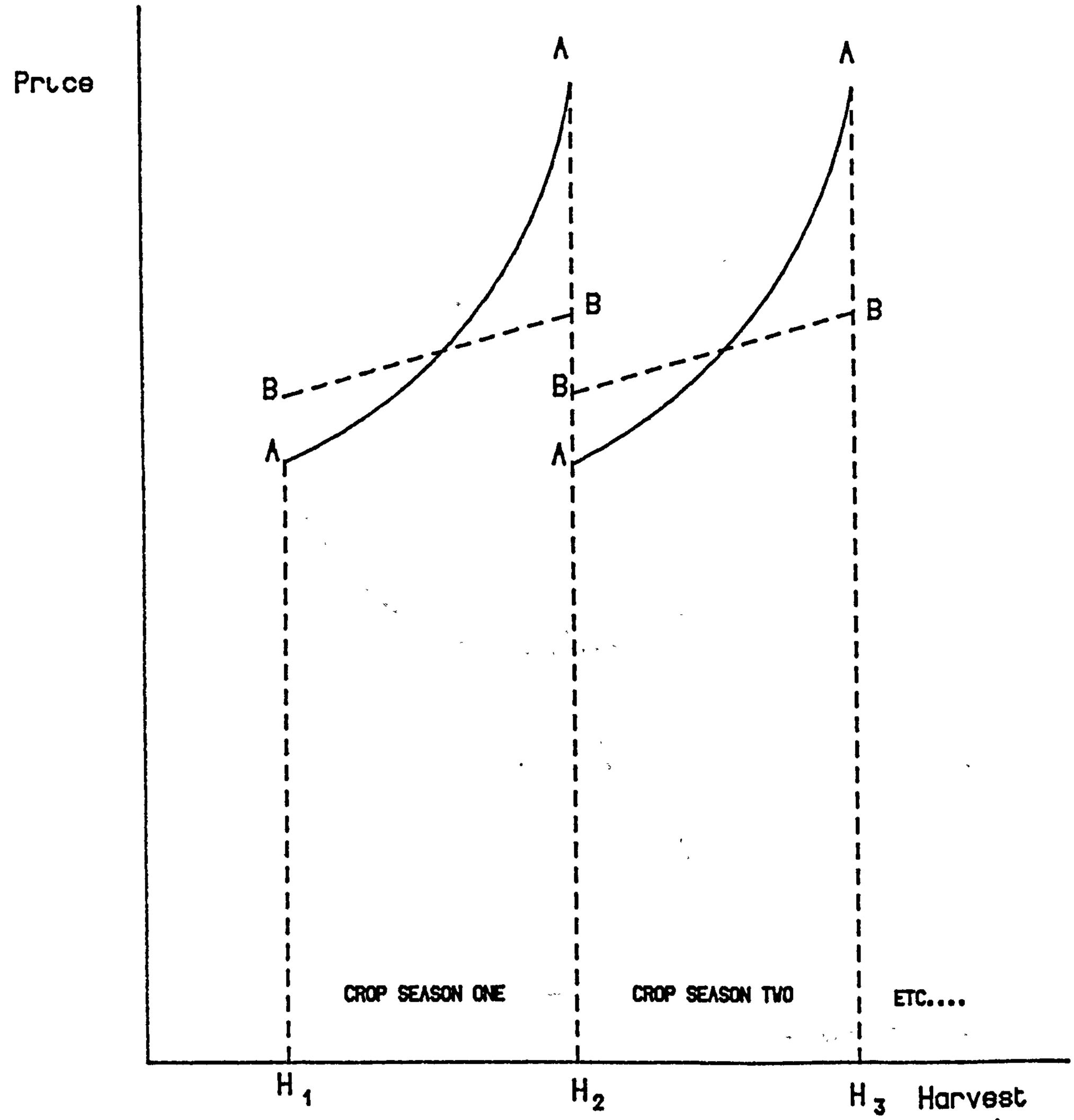
ARBITRAGE IN AGRICULTURAL MARKETS



Arbitrage in Agricultural Markets

FIGURE 3.3

SPECULATION IN AGRICULTURAL MARKETS

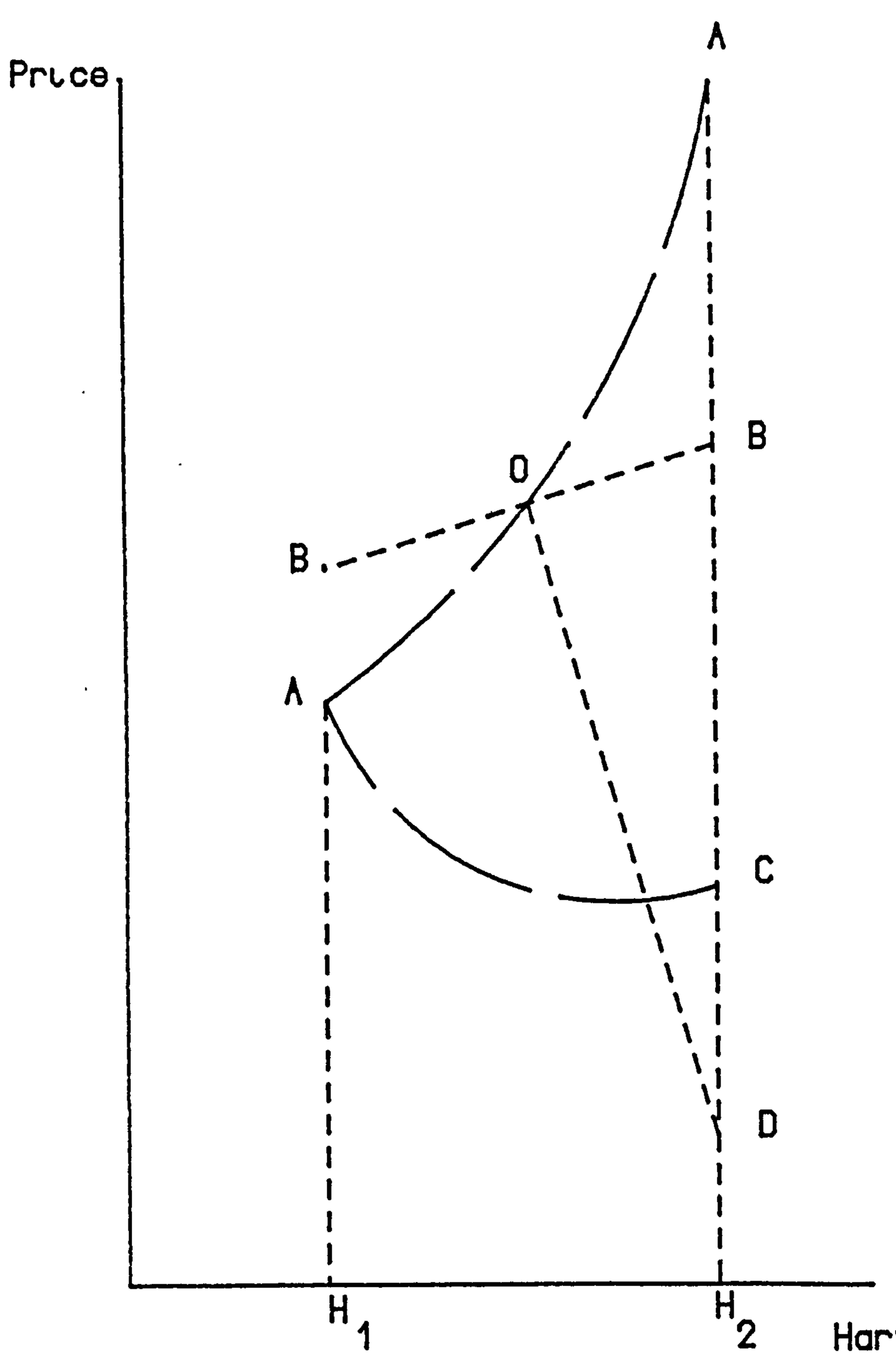


AA = Price pattern without speculation

BB = Price pattern with speculation

FIGURE 3.4

THE DESTABILIZING EFFECT OF SPECULATION BASED ON WRONG PRICE FORECAST



AA and AC = Price pattern without speculation

BOB and BOD = Price pattern with speculation based on right and wrong reading of the market respectively

pattern, B_oD. The unstable price pattern arises following wrongly footed speculation and when the traders cannot hold in store the products they deal with over a long period.

This would be due to lack of storage facilities, the problem of rodents, or the perishability or quality deterioration over time of the products stored. It could also be that traders could be too myopic to be interested in the long run price trend. When traders start selling, there will be glut in the market and price will plummet below the underlying trend as shown in the Figure 3.4.

On the other hand, if there is crop failure at H_2, the downward price trend in the first crop season will be reversed in the second, and if the crop failure recurs at H_3, the underlying price trend will keep on escalating. Much would, however, depend on how much one can draw on the reserve stock to make up for the shortage in supply and neutralise the escalating price trend. If the crop failure is limited to certain localities, arbitraging by traders from elsewhere will lend to a substantial fall in price.

The variability of agricultural commodity prices explains why governments in developing countries often try price stabilisation schemes to protect farmers from large price falls and consumers from large price increases. Since moderate 'risk aversion' is widespread

among farmers, it can be argued that farmers will benefit if price stabilisation schemes actually lead to stable income streams without much of a drop in average income levels.

Farmers are, nonetheless, observed changing their cropping patterns, crop choices, input uses, and the extent of their non-farm activities and their use of capital and non-capital markets to reduce the risks of income fluctuation, so that the effectiveness of price stabilisation schemes promoted on the grounds of risk aversion with respect to specific commodities is not all too clear [2]. This is not, however, an argument against the operation of price regulation schemes by the state. Indeed the operation of such schemes are generally recognised to be of much help to both producers and consumers by preventing monopolistic private traders from exploiting them.

In smallholder economies with variable rainfall and changing market conditions, competitive marketing based on decentralised trading responsibility is constrained, **inter alia**, by relatively high transport and storage costs, limited scope for the provision of adequate credit, and the absence of market information. Under the circumstances, the progressive concentration of the responsibility of agricultural marketing in the hands of few marketing agents is not surprising.

While the efficiency of competitive marketing involving a large number of trading agents cannot be

gainsaid, there is, however, no basis to establish a prior that the operation by the state of agricultural marketing enterprises will necessarily restore competitive pricing and relieve producers and consumers from the exploitative practices of monopolistic private traders. In agricultural markets, it is important, as mentioned above in this section, that trading agents - be they private or public - handled the tasks of price arbitraging and speculation with prudence.

3.4 AGRICULTURAL MARKETING IN PRACTICE

An important objective of agricultural policy in developing countries is to provide the poor with adequate diet and to promote a more productive and efficient agricultural sector. Governments in such countries often justify their involvement in marketing with the argument that the private sector is inefficient and can be monopolised by a small number of traders. Thus, private traders if not ruled out are, for all intents and purposes, subordinated to the operation of public marketing enterprises. Such enterprises, generally referred to as parastatals, include marketing boards and state trading corporations, and operate based on government capital and subject to its policy directives. They have unrealistic and inconsistent mandates to generate government revenue, provide cheap food and create employment.

Various studies, comparing the efficiency of private

and public sector agricultural marketing have, however, found the performance of the latter wanting. For instance, in Kenya, the public sector is known to have changed 15 to 20 per cent more for marketing maize and beans than did the private sector. In Ethiopia, as will be discussed in the next chapter, the marketing agency with official monopoly power pays producer prices that are a small fraction of urban market prices despite severe and chronic grain deficits and the prevalence of very high parallel market price. Similar situation is observed in the case of marketing parastatals in Malawi and Zambia [3]. In the case of Ghana and Nigeria, on the other hand, seasonal price changes are observed to be somewhat close to the cost of storage, and price differences between regions close to the cost of transport. This suggests that private traders in these countries were not able to develop monopoly powers [4].

The record of public marketing agencies suggests agricultural marketing to be a task better performed by private traders, albeit in the context of competitive participation. Certainly, governments in developing countries have an important role to play in agricultural marketing - encouraging efficient markets, but not creating, as they have almost invariably done, public monopolies crowding out private traders.

Parastatals are generally over-manned and bureaucratic. Managers are often chosen for political reasons, and are, for the same reasons, often pressured

into expanding employment. Labour productivity is consequently low; and the margins on which such organisations must operate to breakeven are usually large resulting in a downward pressure on producer prices and an upward pressure on consumer prices. The result has been large and sustained transfer of income from producers and consumers to an inefficiently operating bureaucratic establishment serving a political rather than an economic purpose.

Another important reason for the inefficiency of public marketing agencies is that for such agencies the task of handling the complexity of markets especially in areas dominated by smallholders is virtually unmanageable. The agencies have to buy small amounts of food grains from a very large number of widely dispersed farmers in places where communications are poor and where existing local markets vary from place to place and change quickly. The legal monopoly of marketing parastatals over trade for a wide range of commodities, however, constrains the development of competitive marketing by private traders that are better cut-out for such environments. It is also difficult for marketing prastatals to operate adequately differentiated and flexible pricing policies mainly because of their limited administrative capability. Thus differentiated and flexible pricing policies which are essential elements for promoting efficient trade, are conspicuous for their absence where agricultural marketing is

dominated by parastatals. According to the World Bank [5]:

> Whereas farmers want to sell a bewildering variety of maize or millet of different origins, freshness or fine shading taste and quality, each at a different price, state-organized systems usually offer only one or two prices for each grain. Some offer only one purchase price throughout the year and for all locations.... When an agency offers a single price for all grades of a crop, farmers want to sell to it only their lowest quality grade. When the agency is in charge of exporting the crops, ... the low quality of its supplies discourage foreign buyers.

The difficulty of monitoring the transactions of many different employees within these agencies (as they are typically over-staffed), and the pressures to standardise preclude the price flexibility that is normal response to varying market conditions. It has been indicated that price differences between location, to take account of transport costs, or between seasons, to take account of weather cycles or storage costs, are rarely considered in practice. Though there may be procedural cycle for periodic official price adjustment, it is not unusual for this price to remain fixed for many years despite swings in scarcity or abundance of the commodity involved.

Normally, adjusting official prices may involve background economic work by relevant government agencies, especially on sensitive commodities like grain. Yet it is not uncommon for professional staff

working on the issue to be pre-empted by a surprise presidential announcement [6]. The problem is that the resulting prices are arbitrary and would not "clear" markets, so that shortages or surpluses inevitably remain to haunt the market. This results in spilling over the excess demand or supply into a parallel market where prices depend on the supplies available and the unsatisfied market demand.

In Africa, the official share of the market, albeit the share consumed by the politically powerful groups, is often only 5-10 percent and is seldom above 25 percent [7]. Despite the official rhetoric and regulations, much of the grain is typically traded on the private market.

Grain delivery to the parastatal depends on the relationship between the official and the market price at a particular time and place. If the official price is higher and the weather permits good harvests (as occurred in Kenya in 1978, Zimbawe in 1982, and in a number of African countries in 1986), large numbers of producers and traders, many of whom would not normally do so, seek to sell to the parastatal [8]. Higher harvest, and larger share. If the parastatals fail to buy all the grain offered (for example, occurred in Kenya, and in Cote d'Ivoire, led to the collapse of a marketing agency), farmers will be forced to sell off their grain stock for what they can get, lest they see it deteriorate [9]. Thus, the parallel price may fall

below the official price, and lower still if exports are not permitted. In the case of Kenya, Hopcraft notes, despite an official maize producer price of Ksh 80 per bag, the parallel price fell as low as Ksh 27 per bag in some areas, (even below the export parity price). In fact, it is the larger, more influential,and richer producers, not the poorest ones, who tend to benefit from the higher official prices. For those who cannot sell at the anticipated price, financial loss can seriously impair future production. As was the case in Kenya, [10] a poorly managed surplus can thus lead, in cyclical round of deficits.

Typically official producer and consumer prices are set below market prices resulting in supplies inadequate to meet the demand at that price so that excess demand creates a parallel market at a higher price. In Tanzania, for instance, parallel market prices for maize in Dar-es-Salaam have typically been four to five times, and even up to ten times, the official price [11].

Parastatal markets seldom meet the needs of the poorest people. Patronage systems tend to develop in which favoured and powerful groups and individuals are the prime recipients of the scarce and under-priced supplies. Much of this grain 'leaks' into the high-priced parallel market, generating substantial rents. The poorer and more marginal urban groups must generally buy on this parallel market. The poorest people as they more typically live in rural areas do not benefit at

all from the official systems.

Domestic production declines when grain prices are depressed, as happened in a number of African countries over the 1970s, thus worsening local scarcities and raising the parallel market premium. Producers and traders are even more motivated to avoid the official agency, braving the restrictions and official harassment in search of higher price as parallel prices rise relative to the official price. The more the harassment, inevitably, the higher the parallel price, so that for example, in Addis Ababa the price of teff, the most preferred local grain in Ethiopia, rose to Birr 280 per quintal,while the producers were being paid a net price of Birr 39 per quintal through the official agency [12].

Governments' response to the procurement difficulties to enforce extraction from farmers varied, from banning of farm storage to raids on farms. This was successful only in nutritional deprivation among farmers and in destroying production incentives.

Another official response was preventing unofficial trade and enforcing parastatal monopoly. This had the effect of reducing prices in the producing areas, and raising open market prices in the consumer areas, and crowding out the more efficient and lower-cost traders.

3.5 CONCLUSION

Governments can assist competition and the development of efficient markets, but creating public monopolies through the institution of marketing parastatals to offset the threat of private monopolies does not do this. Generally, the private traders are the basis for the local food distribution system and cannot be done away with without wrecking much havoc to the efficiency of agricultural marketing. Often a complex and arbitrary series of licenses and regulations are used that may specify volume limits, administrative boundaries (within which trade is permitted and across which it is not), who may or may not conduct the trade, and even the type of vehicle that may or may not be used. Peter Hopcraft observes that traders are persistently harassed by the authorities in some countries such as Guinea under Sekou Toure, or Ethiopia at present. As he aptly put it:

> Private traders have approximately the status of illegal narcotics dealers in most countries. Road-blocks and traps are set up for them and they are subject to fines, imprisonment, or worse. ...the enforcers of the regulations frequently become significant beneficiaries of the trade. They may then be reluctant to see it, or the regulations that perpetuate it, come to an end [13].

Marketing effectiveness could be indicated by the provision of products at competitive prices. This obtains where there is a free interplay between supply

and demand.

Since private traders are the basis for local food distribution system, they should be given freedom of trade rather than being crowded out, as appears to be the case where marketing parastatals prevail. Perhaps building on the private market institutions and improving their competitive performance with market information, legal support facilities, and infrastructure would do well for the developing world in general, and for African countries in particular.

NOTES

1. World Bank, **World Development Report**, 1968, Washington, DC: Oxford University Press, 1986, pp. 68-131.

2. For more details regarding this topic refer to World Bank, **World Development Report**,1986, pp. 68-131.

3. John. C. de Wilde, **Agriculture, Marketing, and Pricing in Sub-Saharan Africa**, African Studies Centre and African Studies Association, University of California, Los Angeles, 1984, p. 33.

4. **Op.Cit. World Bank**, p. 85.

5. **Ibid.** p. 86.

6. Peter Hopcraft, "Grain Marketing Policies and Institutions in Africa", **A Quarterly Publication of International Monetary Fund and the World Bank** Vol. 24, No. 1, March 1987, p. 38. See also John C. de Wilde, 1984, p.30-38.

7. **Ibid.** p. 38.

8. **Ibid.** P. 38.

9. **Ibid.** P. 38.

10. **Ibid.** p. 38.

11. **Ibid.** p. 38.

12. **Ibid.** p. 38.

13. **Ibid.** p. 39.

CHAPTER IV

THE STATE OF AGRICULTURAL MARKETING IN ETHIOPIA AND THE EVOLVING ROLE OF THE STATE

4.1 INTRODUCTION

In the preceding chapter, we have discussed the effects of arbitrage and speculation on prices and domestic trade. Arbitrage and speculation are achieved given storage and transport facilities, and their effect on consumption opportunities will depend on how well traders anticipate future price and are aware of prices at other locations. It also depends on the responsiveness of trade and demand to price changes. Arbitrage and speculation are best achieved in the framework of competition rather than outside it.

The way the markets use information in poor agriculture is crucial not only for consumption opportunities but also for agricultural production. Here,too, competition in the sphere of agricultural marketing can give rise to producer prices that are potentially capable of stimulating peasant productivity. Some would, however, disagree with the proposal for more marketing arrangements in developing countries on grounds that markets in such countries operate imperfectly, so that traders would exploit farmers, and that indigenous traders are too few in number for the benefits of competitive pricing to be enjoyed both at the producer

and consumer ends. But it is indicated by recent studies that at least African foodgrain markets are reasonably competitive, that trade profits are rarely 'excessive' and that farmers are usually well protected against 'exploitation' by market information and the availability of alternative points of sale. Even if this were not so, it is argued, governments can more effectively protect farmers by making markets more competitive through the provision of better information, roads and marketing facilities than by acting as substitutes for traders [1].

The aim of this chapter is to examine the conditions of foodgrain marketing in Ethiopia in the periods before and after 1974, and the implication of this for consumption and production opportunities. In particular, the chapter will dwell on the role of the Agricultural Marketing Corporation (AMC) that was set up in 1976 with the declared objective to rectify irregularities in agricultural marketing in Ethiopia.

4.2 AGRICULTURAL MARKETING CONDITIONS IN THE PRE-1974 PERIOD

Prior to 1974, the role of the government in grain marketing and pricing - as indeed in other areas of economic activity - was rather limited. Instead, private traders had a major role in the operation of the various local grain markets in the country. There was, strictly speaking, no national market for grains in

Ethiopia. There were, however, a large number of local markets poorly linked with regional and terminal markets. According to a study based on the survey of 90 market-towns, there were about 12,500 trading intermediaries in local markets, and between 4,000 and 8,000 in regional and terminal markets[2]. In addition, other studies of the pre-1974 marketing conditions show that there was a high degree of competition among intermediaries so that prices at the local market level were somewhat competitively determined [3].

The absence of integration between local, regional and terminal markets was nonetheless reflected by wide variation of prices in regional grain markets. In the case of some local markets closely connected by road networks and with geographical proximity to major market centres, however, the influence of retail market prices in the terminal markets like the ones prevailing in the Addis Ababa grain market, was clearly apparent.

The role of the government in the operation of the grain market was marginal. It should be noted, however, that if the absence of price control by the government enhanced competition in grain marketing, the reluctance,if not inability, of the government to provide better information about market conditions, roads, and marketing facilities limited the benefits arising from competition. The grain market was widely thought to operate mainly to the advantage of merchants - especially the larger ones - who unlike the small farmers were

fairly well informed of price movements in the major centre, and were well equipped with the relevant marketing facilities [4]. Indeed, so lucrative had the grain trade become that whatever entrepreneual initiative there existed was attracted to this activity. Investment in grain trade yielded better returns than investment in crop production. This is because grain merchants were able to increase their profit margins by exercising monopsonistic and monopolistic power, pushing down farm-gate prices below the competitive level and pushing up consumer prices above what the free interplay of supply and demand would warrant [5]. Various studies indicate that producers lost a substantial value of their produce to merchants due to lack of on farm storage facilities and market information and their hasty sales of grain, apparently at prices offered by merchants, to meet their cash needs during the harvesting seasons [6].

The establishment of the Ethiopian Grain Board (EGB) in 1950 [7] marked the first government attempt to make up for the weakness of the grain markets through direct participation. Its functions included grain export licensing, quality control, overseas market intelligence, and the regulation of domestic purchase and export sales prices. The Board, though able to control exported grain prices was unable to stabilise domestic prices mainly because it did not hold stocks. To overcome this shortfall, the Ethiopian Grain Corporation (EGC) was established in 1960 as an adjunct of the Grain Board

[8]. The Corporation was assigned the task of encouraging production through price stabilisation, quality improvement and export promotion; but it lacked the financial and managerial resources and adequate information on market conditions to perform this task with efficiency. In the circumstances, it had little impact on the behaviour of private traders, and its market share remained below 5 per cent of the annually marketed grain surplus until 1975/76 [9]. Moreover, it exercised little regulatory influence on quality control and grading. Overweighing at purchase and underweighing at sale were common; and the absence of a fair price structure hardly encouraged farmers to bring well-graded, clean produce to the market [10].

The grain marketing agencies remained ineffective to redress the weakness of the grain markets. Due to the ineffectiveness of grain marketing agencies, planners gave due consideration to both production and marketing of grain during the Third-Five Year Development Plan (1968-73). Thus, comprehensive agricultural package programmes, such as the Chilalo Agricultural Development Unit (CADU), the Wolamo Agricultural Development Unit (WADU), and the Ada District Development Project (ADDP) were introduced integrating grain marketing with their development programme. The programmes, adopting their own marketing and pricing policies, aimed at protecting the farmers from being taken advantage of by grain merchants. Unfortunately, these programmes were not themselves effective in influencing grain prices as

desired.

4.3 AGRICULTURAL MARKETING IN THE POST-1974 PERIOD

The 'revolution' of 1974 and the sweeping land reform of 1975 were followed, inter alia, by the establishment in 1976 of the Agricultural Marketing Corporation (AMC), [11] abolishing the functions of the former EGB. Its responsibilities include the purchase of agricultural products from domestic and foreign sources; the purchase and sale of agricultural inputs; the domestic and foreign sale of agricultural outputs; and the maintenance of national grain reserve. The Government initially contributed a total of Birr 21.07 million towards AMC's working capital. AMC had also provisions for Bank loans [12]. Attempts were also made to provide the administrative and trained personnel to man the agency with efficiency. In the event, both financial and administrative constraints persisted, haunting the efficiency of AMC's operation.

In 1977, the EGB was organised as the Ethiopian Grain Agency (EGA) [13]. Its tasks were to license grain traders and to administer price controls. The EGA lasted until 1980/81. Meanwhile, wholesale and retail prices were fixed first for central markets with those for subsidiary markets being determined by the addition of transport costs. Grain Purchase Task Force (GPTF) groups were set up in 1977/78 at all levels of the

administrative hierarchy to determine producer and consumer prices. Each GPTF was composed of representatives from the Ministry of Domestic Trade, Ministry of Interior, Ministry of Transport and Communications, and peasant associations, with the regional administrator as the chairman and the AMC representative as the secretary. There was no objective standard criteria for setting consumer and producer prices. So the basis for price determination varied from region to region, and the system necessarily gave rise to considerable price variations across regions. Arbitrariness in price determination gave rise to widespread corruption, and caused surplus grain to flow from low to high price areas on the basis of differences that were not necessarily economic [14].

The determination of grain prices and price control after 1974 evolved through three distinct phases [15]. In the initial phase (1975/76 -1978/79), grain prices were fixed by the EGB and the EGA. In 1975/76, the wholesale and retail prices of central markets like Addis Ababa, Jimma, Gondar, Dessie, Dire Dawa, Mekele, Gimbi and Shashemene, were fixed first, and the prices of subsidiary markets were determined by adding the cost of transport. (A central market is defined to cover a radius of 250 kms., and a subsidiary market, the region beyond this.) Teff price determination was based on its species. Up to 20 species were recognised by their origin of production. Accordingly what is known as "Ada magna teff" was given the first grade and its wholesale price

in Addis Ababa was greater than the "Gojam white teff" by 16.7%. However, such distinctions created discrimination against the species of teff from some regions and discouraged some producers from selling their produce. Moreover, the policy was ineffective because the local markets retail prices remained below the fixed retail prices during the harvest season,so that peasants living far away from central markets had to sell their produce at prices cheaper than what would be the case if the market were free, but purchased industrial goods at higher prices than peasants living closer to central markets.

The EGB revised the price levels in 1976/77, by narrowing down the classification of teff to four types, viz., "Magna", "White", "Sergegna", and "Abolse" or "Red". But, the revision did not help the price control much since the movement of grain was hampered by the increase in the cost of transport resulting from the rise of fuel price. Furthermore, the change in the classification of teff from 20 to 4 types created uncertainty among the peasants.

In 1977/78 policy was geared to fixing grain prices for producers and consumers on the basis of the cost of production (estimated by the Ministry of Agriculture and Settlement in 1975/76) and taking into account the average inflation rates in the major urban centres. This process of price determination involved participation of representatives of mass organisations (like the All-

Ethiopian Trade Unions, the All-Ethiopian Peasant Associations, Supreme Council of Urban Dwellers' Association, etc.) and Government institutions. However, the attempts to implement prices control by the EGA was interrupted during the Ethio-Somali war of 1977/78.

The second phase in the evolution of agricultural pricing came into scene in 1979/80. The discretion to fix producer prices of grains in each administrative region was given to the regional Grain Purchase Task Forces (GPTF) for there was no responsible authority to take the task at central level. Also, the GPTF were assumed to have a better knowledge of the conditions of grain production and consumption in each region. The GPTF based their pricing decisions on their respective local conditions concerning grain production and consumption. But, the system in which each GPTF used its own criteria for determination of producer and consumer prices within its administrative region resulted in wide variations in regional prices. In some regions producer prices were favourable to farmers, whereas in others they were too low to be of any incentive. It may favour AMC helping it to bolster its profit margin by keeping consumer prices low. This variation created management problems of grain marketing by the AMC as well: it has to pay varying levels of producer prices for the same quantity and quality of grains.

The third phase in the development of pricing policy relates to the period after 1980/81 when the regional

pricing system was replaced by a uniform pan-territorial pricing system. This pricing system enforced by the GPTFs, provides peasants throughout the country the same price for the same type and quantity of produce. It must be noted, however, that the purchase prices paid by the AMC to the state farms have been about 20 to 50 per cent higher than that paid to the individual producers. Also the AMC prices paid to service co-operatives, producers' co-operatives and private traders are higher than the prices paid to individual producer prices by 5 birr per quintal for all agricultural products. This is despite the fact that individual peasants contribute on average about 67 per cent to the joint annual purchase of the AMC and the Ethiopian Oil Seeds and Pulses Export Corporation (EOPEC). Almost all AMC and EOPEC purchases of pulses and oil seeds derive from peasant farms [16].

For the Addis Ababa consumers, the retail prices of grains are fixed by adding up the AMC operating costs, and the profit margins for the AMC, the Addis Ababa Basic Corporation shops (which is abolished at present) which serve as AMC sales outlets and the Urban Dwellers' Association (kebele) retail shops.

In 1979/80, the major objective of the AMC were recast placing emphasis on the stabilisation of producer and consumer prices for grains, the encouragement of grain production through incentive prices, and the ensuring of adequate grain supplies for the public

distribution system. It also became the task of the AMC to administer planned purchase and quota delivery; to set fixed and uniform producer prices; and to control private grain trade with a corresponding increase in the role of the public sector.

The determination of planned purchases involved the Central Planning Supreme Council and the AMC. When quota allocation reached regional levels, the regional GPTFs would in turn allocate quotas to the **Awraja** GPTFs, and these in turn to the **Woreda** GPTFs from where requirements were transmitted first to the service cooperatives, then to producers'co-oeratives, and lastly to the peasant associations Consideration of crop prospects, the size of marketable surplus, and sometimes past performance and crop yields influenced quota allocation across **awrajas** in Shoa, Arsi and Gojam. In the allocation of the **wereda** level, cropping pattern, cultivated area, weather and rainfall conditions, type and quality of inputs distributed, population size and food requirements, and consideration of past experience seemed important [17].

Allocation to grain wholesalers was done at the awraja level and was normally based on capital. All grain dealers were required to deliver at least 50 per cent of their purchases to the AMC. Private wholesaling was prohibited from 1982-83 in Gojam, a surplus producing region. Grain traders in Arsi and parts of Shoa were later required to sell all their produce to the AMC.

Traders continued to evade controls, but this had the effect of increasing the costs and risks of getting grain from farmers to consumers much to the disadvantage of both [18].

Woreda GPTFs used crop assessment and the number of peasant associations in Service cooperatives in making demands on the latter. The service cooperatives in turn took account of the number of households in setting the requirements for peasant associations. In each association, the allocation to the individual peasant was the task of a five-member committee; and the allocative criteria at this level showed considerable variation with some requiring identical deliveries from all households, and another discriminating on grounds of income, wealth, size of farm and ownership of oxen.

For peasant associations and private traders the quota levels have changed over time albeit without corresponding changes in the production capability of peasant producers. For instance, a report has it that the minimum grain quota for a peasant association changed from 100 quintals in 1979/80 to 150 in 1980/81 though it had delivered less grain than expected in the previous year. Similarly, all licensed private grain wholesalers had to supply 30% of their annual purchase in 1979/80, 50% of it in 1980/81, and at least 50% of it in 1881/82. But in some regions like Arsi, they are compelled to deliver 100 per cent of their annual purchases. The use of grain quota have increased AMC'

procurement substantially - for instance,from 1.5 million quintals in 1978/79 to 5.7 million quintals in 1982/83 [19].

Experience deriving from thirteen years of operation of the AMC shows a wide gap between the stated objectives of the AMC and what has been achieved to date with respect to stabilisation of consumer and producer prices, encouragement of production and the provision of adequate foodgrains for public distribution. Prices have been potentially unstable and the levels at which they have been administered have only helped to operate as a strong disincentive among producers. Moreover, there have been shortfalls in the supply of foodgrains, giving the lie to the efficiency of the AMC in fulfilling its expressed objectives.

4.4 OPERATIONAL DIFFICULTIES CONSTRAINING AMC's PERFORMANCE

AMC has operational problems at regional and sub-regional levels. These problems are largely a result of the nature of the AMC itself. For instance, the allocation of grain quotas is either under-or over-estimated at local levels because central planners set regional quotas based on rough estimates of grain production. Lack of systematic, reliable and up-to-date data on local production, on-farm consumption and marketing behaviour of peasants at sub-regional level has been the major problem of central planning. Over 80% of the quotas have

been allocated to the major grain producing regions of Shoa, Gojam and Arsi [20]. This may appear a fair allocation at the central level, but in the absence of information on production and consumption at local levels, it would be doubtful if centrally fixed quotas reflect the objective realities in different localities.

A case study in one region, for example, showed that a high quota set for teff failed to tally with the local cropping patterns, mainly because the GPTF at Awraja (sub-region) level allocated quotas to different Weredas (districts) based on the number of peasant associations rather than the production potential of each Wereda [21].

The performance of the AMC in different regions depends on the strength of the regional GPTF that has control over private grain trade. Grain producing regions may be placed into four groups on the basis of the degree of control over private traders and parallel markets. The first is Gojam where private trade was banned as of 1982/83 and where the AMC has monopoly over the grain market. The second group consists of Arsi and partly Shoa where private traders operate but must deliver 100% of their purchases to the AMC at fixed prices. In the third category are, Gondar, Wollo, Wellega and Bale where private traders have to supply at least 50% of their annual purchases to the AMC at prices fixed by the state. In the fourth category are Harerghe and Sidamo where private traders are totally free from compulsory

deliveries to the AMC. These differences in control of grain distribution tend to result in different levels of AMC performance in various regions and may have their impact on grain distribution and production.

For grain purchasing purpose, the AMC is organised into 5 zones, 18 branches, 123 purchase centres and 1768 grain collection centres distributed in eleven regions [22]. But the limited capacity of AMC in terms of management, procurement facilities, storage and transport has not enabled it to handle the tasks assigned to it efficiently. The proliferation of collection centres with variation of grain quotas across regions in the face of shortage of manpower , grain purchase facilities, service cars and trucks, further complicated the operational problems of the AMC. The number of field workers engaged in dispatching sacks, doing delivery surveys, grading, weighing and loading fell far short of the requirements of the large number of collection centres dispersed about 40 to 50 kms apart from each other. The number of service cars could not meet the needs of the large number of collection centres. Moreover, certain service co-operatives and peasant associations do not own sacks and weighing scales, and this definitely hampers efficiency of performance.

In addition, the quantity of grains purchased from some regions exceeded the storage and truck capacities of AMC. For instance, one study [23] indicates that in 1982/83 the ratio of trucks to total quantity purchases

was 1:30,000 quintals and the purchased quantities exceeded the storage capacity by 170,100 quintals in Shoa, by 304,100 quintals in Wellega and by 604,000 quintals in Bale. As a result, in these regions, very large amount of grain had to be kept in the open air until transported to the AMC's central stores, giving rise to wastage and quality deterioration.

AMC's operations are constrained in many places by the lack of all-weather roads and on-farm storage facilities. The AMC has had to take delivery of grains at farm-gates - often difficult to reach by road - as peasants became reluctant to transport grain to local markets after the introduction of grain quotas and the administration of fixed prices. It may be noted in this respect that over two-thirds of the collection centres are found outside major roads. A report [24] showed,for example, the cost of transport from collection centres to the AMC branches rose from 1.42 birr per quintal to 2.01 birr per quintal in 1980/81. As a result, in 1982/83, the AMC spent an additional 2.3 million birr to the 1981/82 cost on the transport of grain from collection centres, thus raising the operation cost. In a way, this situation suggests that the peasants are generally sensitive to the operation of quotas, and that no force can elicit the best effort of an individual.

The movement on rough roads caused truck damages and raised the cost even higher in the form of maintenance

or replacement of trucks. In 1982/83 AMC owned 82 trucks (each with a loading capacity of 60 to 120 quintals) and 56 trucks with trailers (each with a loading capacity of 220 to 250 quintals). But the actual utilisation of the existing trucks on rough roads was probably not more than 50 per cent of the total capacity because trucks with trailers could not reach off road-side farms. The AMC was at times forced to rent smaller trucks at high service charges to overcome this problem [25]. As mentioned earlier, AMC has about 1768 grain collection centres widely scattered throughout the country. Most of these centres are in areas hardly accessible by vehicles. One collection centre is roughly 40 to 50 kms far from the other. Consequently, and not surprisingly, unacceptable standard of fleet utilisation prevails; transport costs are high; trucks fall apart before exhausting their useful economic life.

A further problem arising form AMC's operation is envisaged in the form of undue delays in the payments to peasants of even the low fixed prices for the grains they supply. This has, in many places, resulted in the leakage of grain to private traders who pay cash to peasants on delivery. The delays act naturally as a disincentive to peasants and make peasants suspicious about the operation of the AMC.

The centralisation of the decision-making process by the AMC also has alienating effect on peasants,

undermining their productive effort. Nor can the AMC be effective in the implementation of centrally determined decisions as long as there is shortage of administrative personnel capable of handling the task at regional and sub-regional levels. What is more, peasants feel marginalized by the role of AMC and react to the AMC's decisions and personnel with suspicion and cynicism, far less with co-operation.

There is evidence to show that the market plays a vital role in stimulating production in peasant agriculture. Indeed, it has now become conventional wisdom that peasants, however traditional they may appear, are price sensitive. In the light of this, there is cause for concern about the economic consequences of the prevailing agricultural policy and practice in Ethiopia. Producer prices are fixed low - even lower than the cost of production and are applied uniformly all over the country and not allowed to vary with distance and season. So far a prudent approach to pricing has not been formulated; and there is no evidence to suggest that those in charge of policy making are politically prepared to entertain options turning on the operation of market forces of supply and demand. Yet there is good reason to believe that institutional profitability pursued through the operation of the AMC should not be the only criterion for price determination. For deviation from the competitive interplay of supply and demand is likely to result in mismanagement, corruption

and gross inefficiency of resource use, ultimately undermining the growth prospect of the economy.

As seen from the table above, prices offered to teff producers by AMC ranged between 63 and 72 per cent of corresponding prices that obtained in open local markets. Producers could hardly be expected to offer their produce to the AMC under such circumstances. This is at odds with the intended objective of 'encouraging production through price incentives'. The practice of fixing prices at low levels does not serve AMC's objective of price stabilisation either, considering the scope for hoarding, and the emergence, subsequently, of supply shortages and black markets.

Grain finds its way from producers to the consumers through a series of governmental agents. Such a long chain of passage of limited supply of the marketable surplus is susceptible to hoarding practices and price speculations. The retail prices of grains for the Addis Ababa consumers are, for example, fixed by adding up the AMC operating costs which is very high, and the profit margins of the AMC, the Addis Ababa Basic Commodities (BCSC - presently abolished) and the Urban Dwellers' Association kebeles retail shops. This, of course, will render the price high to the consumers as compared to what they would get had it not been for the long

TABLE 4.1

COMPARISON OF AMC's PURCHASE PRICES
AND AVERAGE LOCAL PRODUCERS' PRICES
OF TEFF - 1980/81

Type of Teff	AMC Price	Average Local Producers' Price	Ratio
White	41	56.18	0.72
Mixed	35	52.66	0.66
Brown	32	50.79	0.63

Source: CSO, Average Producer Prices of Commodities in Rural Area, May 1981 - April 1982, Addis Ababa, May 1985, and Office of the National Committee for Central Planning, Addis Ababa.

channel and thus unduly incurred expenses formed due to the existence of the AMC.

And the capability of service cooperatives in rural areas and **kebele** shops in the urban centres to act as marketing agents is limited by the fact that their operation is constrained by lack of capital, warehouse, and procurement facilities, manpower and trading skill. The efficiency of the **kebeles**, in particular, as marketing agents leaves a lot to be desired. Supply shortages are a characteristic feature of their

operation. Foodgrains are rationed out to kebele dwellers in quantities which fall short of demand. In the circumstances, price control has meant long queues and long waiting time to buy food grains - as indeed other consumer goods - in lieu of inflation. The persistence of long queues and long waiting time has in turn precipitated black market operations and corruption practices.

The divergence between the open-market and official prices shown in Table 4.2 (see also figures, 4.1, 4.2, 4.3,4.4, and 4.5), can be explained by the low level of production and marketable surplus. These in turn are influenced, inter alia, by the unduly low producer prices offered by the AMC. It cannot, however, be concluded that a rise in the price of grains alone would be sufficient to induce the concomitant rise in production of grains. An overall development strategy which would enable the producer to respond to rising market demand would be of paramount importance to achieve this end.

Naturally, the private traders will have to sell their foodgrain after covering their own operating costs and any other expenses incurred to while transporting the AMC's grains as they are required to surrender 50 per cent of their total grain procurement to the AMC in order

TABLE 4.2

COMPARISON BETWEEN AMC's
AND OPEN-MARKET's
SELLING PRICES OF GRAINS
IN ADDIS ABABA

	Type of Grain									
	White Teff		White Wheat		White Barley		White Sorghum		Maize	
Year	AMC	OMK	AMC	OMK	AMC	OMK	AMC	OMK	AMC	OMK
80...:	56	90	43	79	39	58	40	63	28	30
81...:	65	92	55	74	48	59	56	61	47	43
82...:	64	99	56	78	49	72	53	73	44	55
83...:	60	108	56	83	48	82	52	82	44	52
84...:	68	113	56	44	48	75	52	81	44	40
85...:	67	209	55	161	48	142	50	148	44	126
86...:	68	185	56	117	48	113	65	120	43	81

Source: Annual Averages Based on Monthly Data extracted from Agricultural Marketing Corporation Annual Report,pp. 167-173.

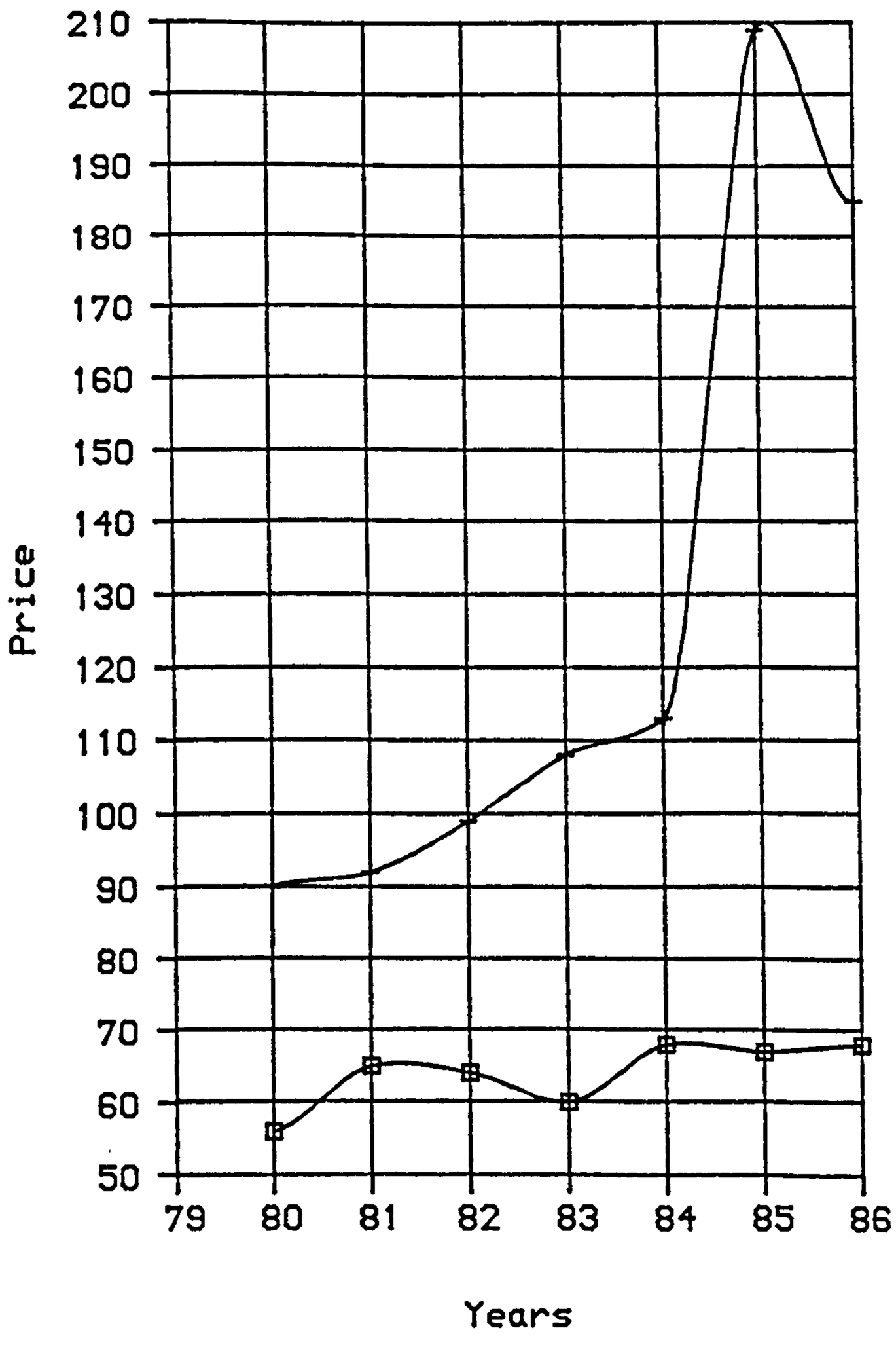
Legend

AMC = Agricultural Marketing Corporation's price; and

OMK = Open market price.

FIGURE 4.1

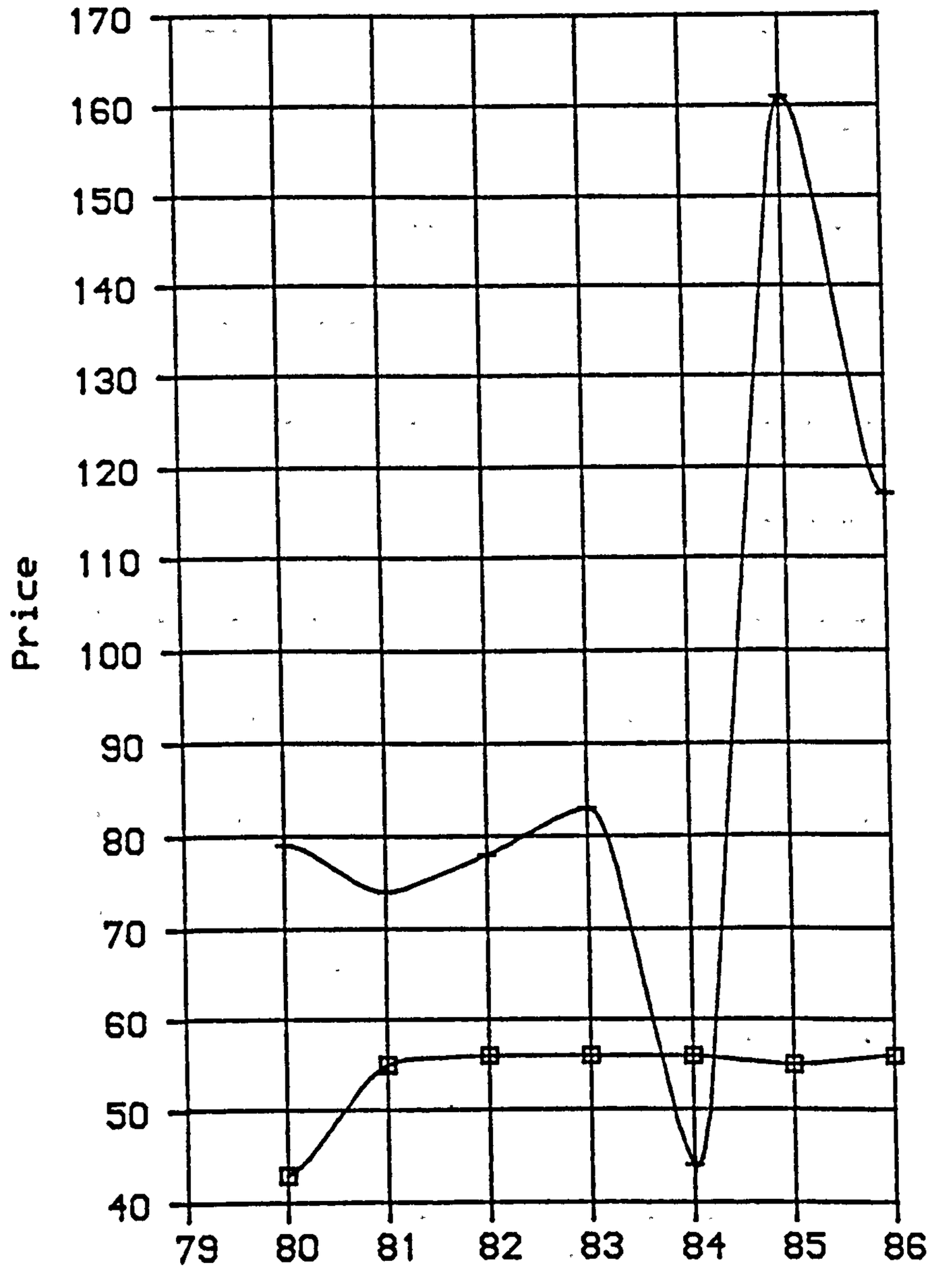
□ ——— □ WT, AMC
+ ——— + WT, Open Market



Comparison between AMC's Selling Price of White Teff with that of Open Market in Addis Ababa, 1979/80 - 1986

FIGURE 4.2

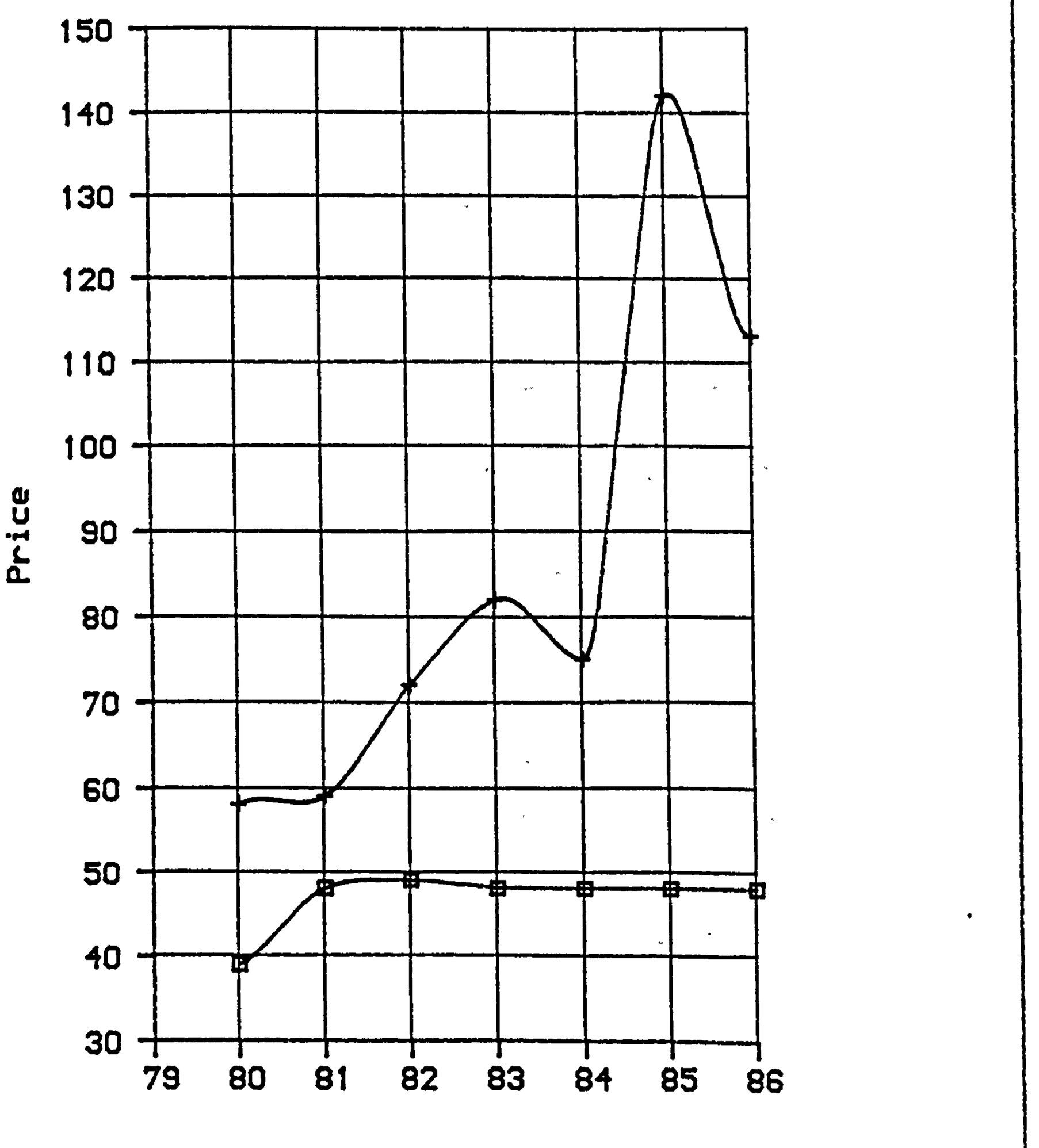
□ ——— □ WW, AMC
+ ——— + WW, Open Market



Comparison between AMC's Selling Price of White Wheat with that of Open Market in Addis Ababa, 1979/80 -1986

FIGURE 4.3

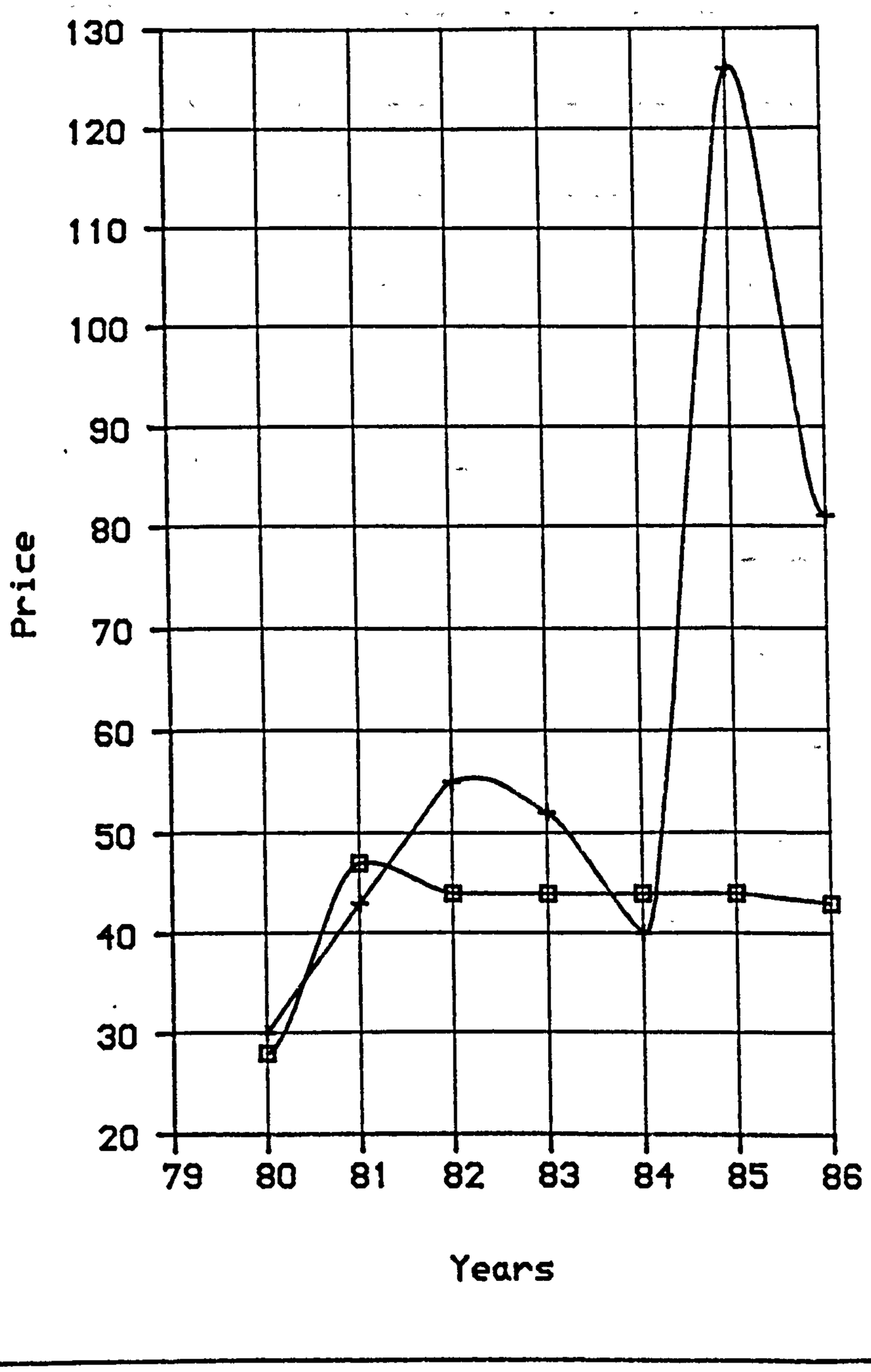
□ ——— □ WB, AMC
+ ——— + WB, Open Market



Comparison between AMC's Selling Price of White Barley with that of Open Market in the City of Addis Ababa, 1979/80 - 1986/87

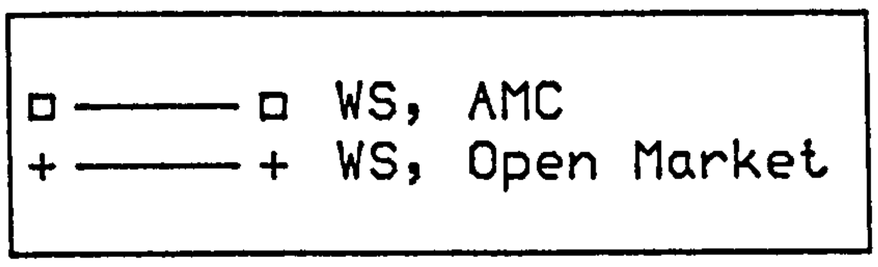
FIGURE 4.4

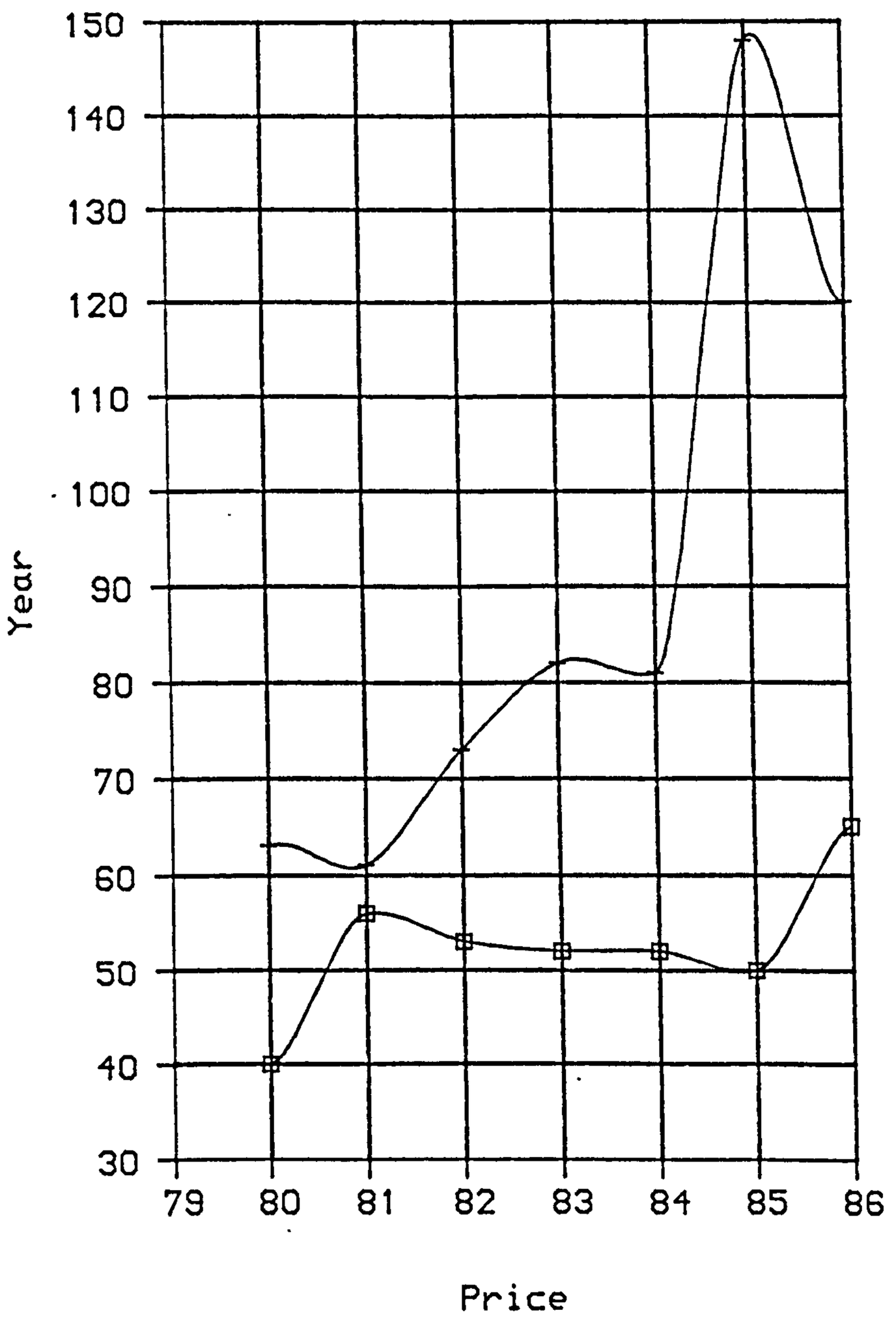
□ ——— □ M, AMC
+ ——— + M, Open Market



Comparison between AMC's Selling Price of Maize with that of Open Market in the City of Addis Ababa, 1979/80 - 1986/87

FIGURE 4.5





Comparison between AMC's Selling Price of White Sorghum with that of Open Market in Addis Ababa, 1979/80 - 1986

to be able to stay in business. To this will also be added the traders' profit margin. In the absence of competition among private traders, the final price falling on consumers could be much higher than what a free market would warrant. This means the existing pricing practices leave both producers and consumers of foodgrains at a disadvantage.

The beneficiaries are thus the AMC and a handful of private traders. The creation of the AMC has displaced a legation of market agents of distribution, hence driving a wedge between the force of supply and demand. AMC has been selling grains to mass organisations, government institutions and flour milling factories. Studies [21] indicate that over 70% of the grain sales were made to government institutions and flour mills while less than 30% was sold to the urban population living in six major towns: Addis Ababa, Asmara, Dire Dawa, Harar, Mekele and Assab. This shows that the majority of the beneficiaries are para-statal organisations, so that the objective of attaining adequate food supply for the public is jeopardised. For example, although there has been occasional excess of certain types of grains like barley, the demand for grain has invariably been higher than the supply by the AMC.

4.5 COST AND EFFICIENCY IMPLICATIONS OF AMC OPERATION

In evaluating the relevance of the command approach and the decentralised approach to decision making to

agricultural marketing system in Ethiopia, it would be appropriate to examine the efficiency of the functioning of the Agricultural Marketing Corporation - the command marketing system presently operating in Ethiopia. Table 3 below shows the government's expenses due to the subsidy offered to the AMC over a period of six years.

TABLE 4.3

GOVERNMENT SUBSIDY
FOR WHEAT PURCHASES BY THE AMC

Year	Amount (in birr)
1979/80	126,983
1980/81	173,205,080
1981/82	241,858,409
1982/83	259,322,392
1983/84	59,145,163
1984/85	66,187,630
Total (1879/80 to 1984/85)	799,845,657
Plus Initial outlay*	21,070,000
Grand Total (1979/80 to 1984/85)	820,915,657

Source: Annual Report - 1984/85, AMC Finance Department, July, 1985, p.20 (Amharic). Negarit Gazetta, No.7, 20th November, 1976, p.97.

Only in the years between 1979/80 to 1984/85,that is, in about six years, the government has incurred an expense of birr 820, 915,657. Data is not available, at present, to specifically show as to what happened since, yet it is evident that there is no improvement in

the functioning of the AMC to alleviate the condition.

TABLE 4.4

AMC SALES OF GRAINS
TO VARIOUS ORGANISATIONS
BY TYPE OF CROP (1977/78 - 1981/82)
(in '000 Quintals)

Type of Grain	1979/80	1980/81	1981/82	1982/83	1983/84
Teff	260.1	782.9	935.0	684.7	710.6
Wheat	227.5	656.4	1,319.0	1,592.4	1,973.4
Barley	260.8	319.0	361.3	420.2	430.2
Sorghum	137.3	518.8	141.7	310.5	324.7
Maize	988.4	1,569.6	790.2	901.2	1,227.7
Pulses	271.5	599.3	624.8	473.3	550.8
Oil seeds	122.7	342.2	328.2	632.8	737.4
Total	2,208.3	4,788.2	4,500.2	5,015.1	5,954.8

Source: (1) Statistical Data on AMC Operations, AMC, Addis Ababa, 1983, p.40.

(2) 1983/84 Annual Report, (Amharic), Ministry of Domestic Trade, Addis Ababa, July 1984, p.20.

Most of the AMC's clients take grains on credit, but fail to pay their debts on time. This resulted in the rise of the interest costs of the organisation; and in two years alone (in 1983/84 and 1984/85), the accumulated debt of the organisation as a whole was well

over 78 million Birr [26]. Table 4.4, above, shows AMC's sales of grains to various organisations by type of crop in the years 1979/80 to 1983/84 illustrating the extent of its sales.

Table 4.5 illustrates that the cost of collecting grains at the cooperatives, transport cost from rural stores to Addis Ababa, and storage cost, and interest charges differ markedly for AMC and private merchants. The costs for operating these activities by private merchants and by AMC are birr 7.20 to 9.70 and birr 14.12 respectively. This shows that AMC's expense exceed that of the merchants by about birr 3 to 7 birr for the same activity. It means that the private merchants have comparative cost advantage over the AMC in getting the foodgrains from the rural to the urban areas. This clearly indicates that letting the market to operate freely would be of advantage to both the merchants and the consumers. To the merchants, because they are paying lower costs, and to the consumers, since they do not have to cover the expenses incurred by the AMC if they buy directly from the private merchants.

Table 4.6 shows the production cost of the major food crops under alternative assumptions about labour, traction, seed, and other costs. In arriving at the labour cost daily wage rates have been assumed at three

TABLE 4.5

SYNTHETIC COST BUILD-UP OF AMC AND PRIVATE MERCHANTS ESTIMATED (in Birr per Quintal)

	Merchant		AMC
	Typical actual cost	Typical actual cost	Without policy effects
Collection of Grain at the cooperatives - actual costs (1 .....:(2.50-5.00)	3.33		2.36
Transport from rural store to Addis Ababa - AMC 273 kilometres Av. distance, weighted cost .....: -	4.59		-
1.68 cents/qt and km - Merchants using 6 ton truck and an average distance of 125 kms (2).....:2.66	-		-
AMC transporting 125 kms(3)..: -	-		1.56
Storage Costs, 4 months.....:0.31	0.85		0.57
Interest on Purchased Products - 4 months at 9.5%, Av. Price Br. 55/qt (5)....:1.74	-		-
- AMC 8 resp. 4 months at 9.5%, av. price Br.37/qt (6) ....: -	2.34		1.17
AMC Overheads .....:	1.05		0.70
AMC Profit and Capital Charge .....: -	1.96		1.32
Merchants Overheads and Profit			
Total .....:(7.20-9.70)	14.12		7.68

Source: Swedfarm, Grain Marketing Study, Final Report, Vol. 2 Appendices, AMC, Addis Ababa, 1985, p. 12.

TABLE 4.6

COST OF PRODUCTION OF
MAJOR FOOD CROPS
(Birr/quintal)

Major Food Crops	Scenarios Based on Alternative Daily Wage Rate Assumptions		
	1	2	3
	(Birr 2.29)	(Birr 1.67)	(Birr 1.50)
Teff.....:	49.00	43.95	39.80
Wheat .....:	34.72	31.80	28.42
Barley .....:	32.57	29.79	26.62
maize .....:	24.09	21.52	17.33
Sorghum .....:	22.65	20.40	17.85
Beans .....:	26.98	25.07	22.90
Chickpeas .....:	39.80	37.11	34.05
Peas .....:	38.36	35.89	33.09
Lentils .....:	40.88	38.14	35.04
Niger Seed ....:	41.55	37.78	33.50
Flax .....:	53.38	49.12	44.28

Source: Agricultural Pricing and Marketing Policy of Ethiopia A Synopsis, (Amharic), 1980, p. 16.

levels: Birr 2.29 on the basis of CSO's (Central Statistics Office's) opinion survey (1986/87) covering 21 awrajas in 9 regions; Birr 1.67, the Government`s minimum wage rate, that is Birr 50 for 26 working days; and a shadow wage rate of Birr 1.50, assuming 50 per cent of the going wage rate in urban areas of Birr 3.00.

TABLE 4.7

PRICE BUILD-UP FOR GRAIN PURCHASED BY THE AMC
FROM FARMERS AND TRADERS
(Birr/quintal)

Cost Element	Niger Seed White Teff	Mixed Teff	White Wheat Red Teff	Mixed Wheat	Black Wheat	White Sorghum	Mixed Sorghum	Red Sorghum
Purchase Price								
Ind. farmers...	45.00	38.00	34.00	30.00	29.00	27.00	23.00	-
Wholesalers and co-ops....	50.00	43.00	39.00	35.00	34.00	31.00	27.00	25.00
Municipality tax	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Transport	7.92	7.92	7.92	7.92	7.92	7.92	7.92	7.92
Labour charge ..	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Store rent	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Fumigation	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Stock insurance..	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Bag replacement..	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Spillage allowance, 1% ..	0.50	0.43	0.39	0.35	0.34	0.31	0.27	0.25
Weight loss, 2%	1.00	0.86	0.78	0.70	0.68	0.62	0.54	0.50
Overhead	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03
Bank interest 9.5% x 4/12...	2.04	1.81	1.37	1.26	1.24	1.16	1.05	1.00
Subtotal.....	66.53	59.09	54.84	50.59	49.53	46.34	42.09	39.97
Profit margin 2.5%	1.66	1.48	1.37	1.26	1.24	1.16	1.05	1.00
Subtotal	68.19	60.57	56.21	51.85	50.77	47.50	43.14	40.97
Sales tax, 2%	1.36	1.21	1.12	1.04	1.02	0.95	0.86	0.82
Selling price...	69.55	61.78	57.33	52.89	51.79	48.45	44.00	41.79

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Table 4.7 Cont'd

Cost Element	Chick peas White	Barley	Horse Beans	Mixed Barley	White Field Peas	Mixed Field peas	Maize	Lentils	Lin Seed
Purchase Price									
Ind. farmers....:	28.00	25.00	26.00	36.00	32.00	20.00	42.00	41.00	
Wholesalers and co-ops ...:	32.00	30.00	30.00	40.00	36.00	24.00	47.00	46.00	
Selling price ...:	49.57	47.34	47.34	58.46	54.01	40.67	66.22	65.12	

Source: Swedfarm, Grain Marketing Study, Final Report, Vol. 2, AMC, Addis Ababa, 1985 and Agricultural Pricing and Marketing Policy of Ethiopia (Amharic) 1987, Appendix 7, column 1.

Table 4.7 shows the farm-gate prices of the major food grains offered to producers, especially the individual peasant farmers. For example, take 'white 'teff' for which they are offered only birr 45 per quintal, while farmers require about birr 49 to produce white teff per quintal (see Table 4.7). Note also the AMC price build-up from the farm gate to the retail outlets in the urban centres, notably Addis Ababa as a result of the long chain in its organisational structure. (Refer to the chart, the Structure of the Foodgrain Market in Ethiopia, on the next page.) The 45 Birr farm-gate producer price of 'white teff' contrasts sharply with the over 69.00 birr consumer price at the

retail stores of the AMC. Not only that. The supply of grains at the retail shops are not enough to feed the community in the respective locale. This means that people usually have to queue for long at the **kebele** shops for the monthly allocation of 1 to 5 kgs. per household depending on the size of the household and grain availability in the shop. Each **kebele** family is issued with ration cards - for grains and pulses, bread and other goods which entitle it to a monthly allocation of the goods concerned at controlled prices.

The controlled prices which at their face value appear favourable to urban households, are however, uneconomic in that they can only be sustained upon the steady provision of subsidy to the AMC on a substantial scale. Moreover, the benefits to consumers of controlled prices are, if anything, illusory since, given supply, artificially low grain prices - lower indeed than free market prices - tend to give rise to shortages and the subsequent development of parallel market prices overshooting the price levels that would obtain under free market conditions. In 1980, for instance, **kebele** prices for grain were about three quarters of the open market price. By the following year, the fraction had dropped to two-thirds, and by the famine year of 1984-85, kebele prices were a third to a quarter of the open market price. The discrepancy was greatly reduced by the good harvest and low grain prices of 1986-87 [27].

Grain prices were controlled in defiance of basic

economic rules of supply and demand, and it is not surprising that **kebele** shops fall far short of satisfying demand at the controlled price levels. In 1981/82, for instance, **kebele** shops were able to supply about two-thirds of household staple grain requirements. By 1955, the proportion had shrunk between a third and a half [28]. What is more, **teff** the most favoured grain, which commands a substantial price premium over the other grains in the open market, hardly appears in the **kebele** shops. The **kebele** shops serve only those grains least favoured by consumers, and even then fail to satisfy the demand. It is important to note, however, that the availability of a wide range of grains, **albeit** at very high prices, in the open market is a direct product of policy defiance of basic economic rules. Consider, for instance, the following policy statement: [29]

> The failure to stop the inhuman deeds committed by those merchants who run for exhorbitant profits by speculating on the basic necessities of the society, and who give priority to their individual interests rather than to the well-being of the country and the people, is absolutely inexcusable and in fact calls for firm political justice. Especially with regard to foodgrain, it is not secret that such merchants consort with some weak elements among the peasantry under cover of darkness at the expense of the people.... Hence the greedy merchants and their collaborators **who are the major sources of the problem**, must realise that they will no more be tolerated and must refrain from their vile activities.

But it should be noted that the major sources of the

problem are not the "greedy merchants" operating in the open market, nor the so-called peasant collaborators, but rather the price controllers at the centre.

4.6 CONCLUSION

In the pre-1974 period, the grain markets were weak. Indeed, there was no national grain market. Post-1974 development did nothing to enhance the efficiency of agricultural marketing in Ethiopia. Rather, the grain marketing policy has been more restrictive than ever, constraining the development of private enterprise, decentralisation of marketing decisions and competitive operation on foodgrain marketing. The AMC has been a burden on peasant production effort and on the welfare of consumers. The maintenance of its operation would lead the nation into debt entanglement, involves uneconomic transport utilisation, and operating inefficiency and high cost due to delays in distribution (marketing) channels. Besides, AMC's authority in licence distribution constrains the normal flow of food grains, and also leads to corruption. It can be seen clearly that marketing is not a passive activity with no consequence to the farmers. As a minimum, farmers could be much influenced by the terms on which they sell their produce. Favourable terms of trade will work as an incentive for farmers to increase production and hence marketable surplus. Increase in marketable surplus will lead to increased income, high rate of savings and

investment and increased production in the peasant sector. And if production efficiency can be enhanced, this would provide the basis for the economic development.

It would be only wise for Ethiopia to encourage agriculture now in order to be able to subsidise the development of industry. Encouraging agricultural sector would start by liberalising the operation of the market and limiting to the minimum the interventionist role of the state. If the experience of Japan, among others, is to go by, this option would leave both producers and consumers better off than what they are at present. Producers will be motivated to produce, and the consumers will have the food grains they need at reasonable prices in the market. For the market to function competitively, regional restrictions should be removed so that foodgrains could move from surplus to deficit regions.

NOTES

1. For further details and relevant cross references, see The World Bank, **Accelerated Development in Sub-Saharan Africa: An Agenda for Action**, Washington D. C., 1981. pp. 64-69.

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3. Manig W., **Marketing of Selected Agricultural Commodities in Bako Area, Ethiopia**, Cornell University, 1973, p. 64. See also K. Eubanks quoted by Wickstorm, Bo., **Increasing Efficiency in the National Grain Marketing System of Ethiopia: A Policy Guidance**, Publication No.
14, EPID, Addis Ababa, 1973, p. 10.

4. J. Pickett, **Notes in Grain Marketing in Ethiopia, unpublished paper**, Abidjan, August 1988.

5. De Young, M., " The Internal Marketing of Agricultural Products and Its Influence on Agricultural Productivity and Income", **Ethiopia Observer**, Vol. XI, No. 1, Addis Ababa, 1967, p. 34.

6. Agri-Service Ethiopia, **Rural Markets and Prices in Wolaita Awraja: Some Features and Prospects**, Paper No. 5, Addis Ababa, 1976, p. 7.

7. Imperial Ethiopian Government, "Ethiopian Grain Board Proclamation", **Negarit Gazetta**, No. 13, 1950.

8. Imperial Ethiopian Government, "Ethiopian Grain Corporation", **Negarit Gazetta**, No. 267, 1960.

9. Fassil G. Kiros and Alemayehu Lirenso, **Op.cit.** p.6. See also **Negarit Gazetta**, Proclamation No. 105, 1976.

10. J. Pickett, **Op. Cit.**

12. Refer, for instance, to Fassil G. Kiros and Alemayehu, Lirenso, **Analysis of Grain Marketing and Pricing Policies in Ethiopia with Particular Reference to the Staple Teff**, unpublished, Institute of Development Research, Addis Ababa University, Addis Ababa, November, 1985, p. 12.

13. **Negarit Gazetta** "Proclamation to Provide for the Establishment of the Ethiopian Grain Agency",

Proclamation No. 112 of 1977. .b .sp1

14. J. Pickett. Op. Cit.

15. Fassil G. Kiros and Alemayehu Lirenso, Op.cit, pp. 8-10.

16. Debela Gutema, Grain Marketing and Distribution Status and Future Directions, (unpublished), Ministry of Domestic Trade, Agricultural Marketing Corporation, Prepared for the National Crop Improvement Conference, Addis Ababa, p.6.

17. Debela Gutema, Op.cit. , p. 7.

18.C. Clapham, Transformation and Continuity in Revolutionary Ethiopia, Cambridge University Press, 1988, p. 169.

19. See for example, Fassil G. Kiros and Alemayehu Lirenso, Op.cit. , p. 14.

20. On this topic see Debela Gutema, Op.cit., p. 8. See also Fassil G. Kiros and Alemayehu Lirenso, Op.cit., p. 15.

21. See for example, Alemayehu Lirenso, State Commerce and Service Co-operatives in Kembata and Hadya: An Economic Geography Analysis, (Unpublished M.A. Thesis, Department of Geography, Addis Ababa University , 1984, pp. 54, 56. See Also Fassil G. Kiros and Alemayehu Lirenso, Op.cit. , p. 15.

22. With this regard, refer to Fassil G. Kiros and Alemayehu Lirenso, Op.cit., p. 18.

23. See for example,Fassil G. Kiros and Alemayehu Lirenso, Op.cit., p. 19.

24. Concerning this, refer to Fassil G. Kiros and Alemayehu Lirenso, Op.cit., p. 20. See also Debela Gutema Op.cit., p 20.

25. See for example, Fassil G. Kiros and Alemayehu Lirenso, Op.cit., pp. 15, 19, 20. See also Debela Gutema, Op.cit., p 8. .b .sp1 26. AMC, Annual Report, 1984/85, Amharic) Finance Department, July 1985, p. 52.

27. C. Clapham, Op.Cit., p. 146.

28. Ibid., P.149.

29. The Ethiopian Herald, May 3, 1985, cited by C. Clapham, OP. Cit., p. 147. Emphasis by underlining in the original.

CHAPTER V

ANALYSIS OF THE SIGNIFICANCE OF AMC FOR PRODUCTION AND MARKETING OPERATIONS IN PEASANT AGRICULTURE WITH REFERENCE TO TWO CASES FROM THE SHOA REGION

5.1 INTRODUCTION:

In the foregoing chapters, the relevance of the market mechanism to developing countries like Ethiopia has been discussed broadly. It was pointed out that in the case of Ethiopia, the AMC, instead of providing incentives to peasant farmers, dampens their supply effort by setting producer prices far below the market level - and, at times, even below the cost of production - and by imposing on farmers grain purchase quotas that are often incommensurate with the quantities they are capable of producing. Reference has also been made to some evidence - however fragmentary - suggesting that the intervention of the AMC in peasant agriculture has been a major factor behind the persistent shortage of foodgrains and the subsequent rise in parallel market prices to extortionate levels (Rahmato, 1985; Lirenso, 1980).

The objective of setting prices right to motivate producers and improve the welfare position of consumers is, at the heart of economic policy reiterated in the Ten Year Perspective Plan. How this objective is to be met is not, however, charted out clearly. It is nonetheless maintained in the fledgeling literature on Ethiopian agriculture that private grain traders would

excel the AMC in marketing foodgrains. Certainly, the AMC is not a super-efficient organisation capable of superseding the role of the 'invisible hand'. Indeed, considering the massive responsibility assigned to it, the AMC is inadequately staffed, and its storage and transport capabilities leave a lot to be desired. But for all this, the proposition that the replacement of the AMC by private traders would ipso facto warrant the advent of competitive prices in the foodgrain market is still a matter of conjecture. More is, therefore, needed by way of empirical evidence.

The aim of this chapter is to investigate, using survey data from two localities in the Shoa region - Dibandiba and Oudie - the effect of AMC's marketing operation on grain production and distribution in the peasant sector. The remainder of the chapter is organised in three parts including the methodology of the investigation, the analysis of the survey data, and the broad policy implications of the results of the analysis.

5.2 METHODOLOGY

a) The Sample Districts

Two separate districts, Dibandiba and Oudie, both in the Shoa Administrative Region, were identified for investigation. These districts were selected for the following reasons:

1. Both districts fall in one of the main agricultural zones of the Shoa Administrative Region;

2. Both localities have farmers that are organised in peasant associations and producers' co-operaives that have service co-operative shops. The producer and service co-operatives in Oudie are organised as a model to be emulated by others. There are 75 members in the peasant associations and 75 members in the producer cooperatives in Oudie. In Dibandiba, there are 87 members in the peasant associations and 87 members in the producers' co-operatives;

3. Both Dibandiba and Oudie are located near big local markets - namely, Nazareth and Debre Zeit respectively. Dibandiba is about four kilometres away from the main local market in Nazareth, and about 90 kilometres from the Addis Ababa Market. Oudie is 8 kilometres away from Debre Zeit and 50 kilometres from Addis Ababa. This nearness to the local and Addis Ababa markets makes both Dibandiba and Oudie ideal locations for investigating peasants' marketing habits and attitudes;

4. The crops grown in both Dibandiba and Oudie - particularly teff, wheat, and barley - are typical produce of peasant agriculture in Ethiopia;

5. Not only have Dibandiba and Oudie broad similarities in terms of agricultural organisation, having peasant associations, producer and service cooperatives, and producing more or less similar crops -

teff, wheat, barley, maize, chickpeas, a little of millet and horse beans, soya beans, and field peas - they also have some contrasting features. One of them, Oudie, is a model and is consequently more favoured by AMC than Dibandiba. In addition, Oudie is nearer to Addis Ababa than is Dibandiba. This proximity to the capital gives Oudie an edge over Dibandiba in that it has a more ready access to the Addis Ababa market, and also to supplies from Addis Ababa than Dibandiba. These features of comparability and contrast make the two locations ideal for investigation; and

6. Both Dibandiba and Oudie were found to be easily accessible for the administration of questionnaires. This was determined in the pilot survey, and consequent upon consultation with the Central Office of Agricultural Development (ketena) for the Shoa Administrative Region.

b) Data Collection and Characteristics of the Sample Population

In the light of the above, a sample survey was designed to cover households from peasant associations and producers' cooperatives in both localities. A total of 110 farm households were randomly sampled - 55 each from Dibandiba and Oudie. Of the 55 farm households surveyed in Dibandiba, 24 were members of peasant associations and 31 belonged to producers' cooperatives. The Oudie sample of 55 households includes 30 members of peasant associations and 25 members of producers'

co-operaives. In each of the 110 cases of the sample, the household heads were contacted and spot interviewed.

These sample figures represent in each case a large proportion of their respective population 32 per cent and 37 per cent in Dibandiba and Oudie respectively. A little more time would have permitted a complete enumeration of the two populations. Unfortunately time was limited and it was thought prudent to limit the numbers interviewed.

The interviews were based on a carefully prepared questionnaire (see Appendix A) eliciting a wide range of information on the production and distribution aspects of peasant agriculture.

In addition to the 110 farm household heads, four officials - one from AMC, another from the Central Office of Agricultural Development (ketena) for the Shoa Administrative Region, the third from the Ministry of Domestic Trade, and the fourth one from the Ministry of Agriculture - were also interviewed. But the questionnaires were administered only to the farmers.

As well as the principal investigator of the project, five other enumerators were deployed to administer questionnaires in Dibandiba and Oudie over a period of eight weeks between October and December 1988. Three of the enumerators were co-opted from senior classes at Addis Ababa University on the basis of their experience in fieldwork surveys. The other two were from each locality.

The enumerators were faced with some problems in the process of eliciting information from the farmers. One such problem related to farmers' inability to recall the exact amount of their produce in the past. Their memories appeared to fail them when it came to the point of retrieving information corresponding to events beyond the last three years. In the circumstances, investigation of data were limited to the last three years. Events that occurred more recently are best remembered than those that took place many years ago. So the more recent the event, the more reliable the information.

Another problem related to the fact that the survey was conducted during the peak season of harvesting. This meant that the enumerators had either to contact the farmers very early in the morning - preferably before 6.00 a. m. - before the farmers started their daily work, or else they had to obtain the permission from peasant association and producers' co-operative leaders to have farmers released from their duties for the interview. The process of interviewing proved cumbersome and time-consuming, particularly when the interviews had to be conducted on the basis of appointment and the farmers and/or their leaders forgot about their appointment for the interview. This problem was felt more in Oudie than in Dibandiba.

Also time consuming and involving was the bureaucratic procedure envisaged while seeking official

permit to conduct the survey. A letter had to be written by the President of Addis Ababa University to Central Office of Agricultural Development (ketena) for the Shoa Administrative Region, which upon approval had to write to the administrators of the relevant districts, who in turn had to write to the relevant peasant associations and producers' co-operatives in both Dibandiba and Oudie. Delays due to bureaucratic red tapes were perhaps unavoidable, but were disappointing in view of the limited time assigned to the fieldwork survey.

Most farmers, particularly in the peasant associations were initially suspicious of the enumerators and the motives of the interview thinking that they were being canvassed by the government agents; and there were a number of farmers who were reluctant to respond to the questionnaire. In view of the problems envisaged in the process of the survey, the data obtained cannot be expected to be highly robust and the results deriving from their analysis conclusive.

Teff, wheat, barley, maize and to a certain extent chick peas are the major food grains produced in Dibandiba and Oudie. Table 5.1 shows the number of farmers in our sample frame producing the various food-grains.

Teff is produced by all farmers in our sample because it is a high value grain. The Oudie region is

particularly well known for teff production. Indeed, teff originating from that region is branded 'Ada'a Teff' and is highly demanded in the market. Sorghum and millet are marginal crops and are hardly produced in Dibandiba and Oudie.

Most of the farmers covered in the sample make use of high yield variety seeds, fertilisers, insecticides and herbicides, and complain of the smallness of their holdings which is seen as the major constraint on the range of crops they can grow. All PC farmers sampled in Dibandiba and 52 per cent of those surveyed in Oudie consider the policy governing their operation to be too restrictive to allow them produce foodgrains of their choice. (See Appendix B.1).

Most of the PA farmers in the sample (92 per cent in Dibandiba and 87 per cent in Oudie) and all PC farmers in the sample derive their income from farming. Source of extra-farm income include engagement in 'food-for-work' programmes, sales of fire-wood and casual employment as coolies and daily labourers. (See Appendix B.3)

Most of the farmers in the sample do not save. Only 4.5 per cent of the total number of farmers in the sample save in cash - most of them in Dibandiba - and 14.5 per

TABLE 5.1

SAMPLE POPULATION OF PA AND PC FARMERS IN DIBANDIBA AND OUDIE PRODUCING DIFFERENT FOODGRAINS

	NUMBER OF FARMERS PRODUCING			
	DIBANDIBA		OUDIE	
	PA	PC	PA	PC
TEFF	24 (100%)	31 (100%)	30 (100%)	25 (100%)
WHEAT	18 (75%)	31 (100%)	30 (100%)	25 (100%)
BARLEY	13 (54.2%)	31 (100%)	20 (66.7%)	25 (100%)
SORGHUM	0 (0.0%)	0 (0.0%)	1 (3.3%)	0 (0.0%)
MILLET	0 (0.0%)	0 (0.0%)	0 (0.0%)	8 (32.0%)
MAIZE	7 (29.2%)	31 (100%)	3 (10%)	25 (100%)
CHICK PEAS	0 (0.0%)	22 (71.0%)	12 (40.0%)	20 (80.0%)
HORSE BEANS	1 (4.2%)	2 (6.5%)	1 (3.3%)	12 (48.0%)
SOYA BEANS	2 (8.3%)	21 (67.7%)	0 (0.0%)	6 (24.0%)
FIELD PEAS	2 (8.3%)	7 (23.0%)	16 (64.0%)	8 (26.7%)

cent in kind - again most of them in Dibandiba. (See Appendix B.4). This lends support to the observation indicated later on in the chapter that the level of farm average income per head in both Dibandiba and Oudie falls below the national average despite the locational advantage enjoyed by the two districts.

Most of the farmers in the sample did not ask for

loans, because of the bureaucratic red-tape and the long waiting time involved in the process of credit administration. The small number of farmers who asked for loans did so to buy oxen, to fatten oxen, to buy seeds and for purposes of consumption and hospitalisation. Four of these have paid back their debts fully. A good number of them are still servicing their debts, and some have either not started paying yet or are threatening to default because they cannot pay. (See Appendix B.5 and B.6)

5.3 ANALYSIS OF THE DATA

The data obtained from the survey are analysed using relevant methods to show:

a. The income effect of AMC operation with respect to farmers organised in peasant associations and producers' cooperatives in Dibandiba and Oudie;

b. Variation in the proportion of marketable surplus to total output across foodgrains and farmers in both districts; and the scope for marketing foodgrains from Dibandiba and Oudie; and

c. AMC's grain purchase quota allocation in Dibandiba and Oudie; and the implications of this for the efficiency and equity objectives of policy.

In what follows each of these will be considered in turn.

A. THE INCOME EFFECT OF AMC OPERATION FOR DIBANDIBA AND OUDIE FARMERS

Our survey data show a fall in production across foodgrains between 1986 and 1988. However, they suggest the ostensible fall in production to have resulted not from adverse weather conditions but from administrative constraints. Farmers were, for instance, reported to be lacking in the motivation to improve their harvesting efficiency, and consequently a substantial proportion of the grains due for harvesting were reportedly left to rot in the fields in many cases.*

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* Interview with an AMC representative for Dibandiba and Nazareth.

It thus appears that the operation of the AMC has for the most part been counter-productive. Farmers claimed that but for the AMC their productivity and the size of the marketable surplus they would produce would have been much higher. There may be a grain of truth in this claim, but the assertion does not give credence to the implicit assumption that all farmers in Oudie and Dibandiba were efficient in the first place. A more realistic assumption would be that the extraction by the AMC is evenly spread across efficient and inefficient farmers.

In both Dibandiba and Oudie, farmers were required to produce to the AMC about 65 per cent of their marketable surplus at prices that were about 50 per cent of what obtained in the parallel markets. As the table below shows, only two per cent of the peasant association farmers sampled in each case sold all their marketable surplus in the parallel market. If farmers do not sell to the AMC, it is not by choice but when for reasons of bureaucratic disorders and inefficiency the AMC fails to administer the quota extraction. Also, when individual output levels are very low, farmers would rather sell what little marketable surplus is at their disposal in the parallel market at high prices with the view to buying when or where prices are low enough to enable them to buy in quantities that would cover their AMC obligation and perhaps leave them some margin for further operation.

The table below shows that in both Oudie and Dibandiba, farmers sold 35 per cent of their marketable surplus in the parallel markets. This accounted for 60 per cent of total sales income in Oudie and 43 per cent of total sales income in Dibandiba. It is clearly apparent from this that farmers in both Dibandiba

TABLE 5.2

THE RELATIVE SIGNIFICANCE FOR FARMERS' INCOME
OF AMC AND THE PARALLEL MARKETS

	Oudie	Dibandiba
Share of AMC in total quantity of sales (%)	65	64.5
Share of parallel markets in total quantity sales (%)	35	35.5
AMC price as a percentage of parallel market price (%)	45	55
Share of AMC in total sales income (%)	40	57
Share of parallel markets in total sales income (%)	60	43
Percentage of farmers in the sample who sold all their marketable surplus to:		
a) the AMC	33	23
b) the Parallel Markets	2	2

Source: Based on Survey Data.

and Oudie would have been better off in terms of income had the control mechanisms baffling the free operation of the grain market were removed. How much better off they would be is an empirical question. Our task in this section is to estimate on the basis of the survey data the likely consequence for farmers' income of removing the quota requirements administered by the AMC. This, however, is more than usually difficult in view of the absence of robust estimate of demand and supply functions corresponding to the range of grains harvested in Oudie and Dibandiba.

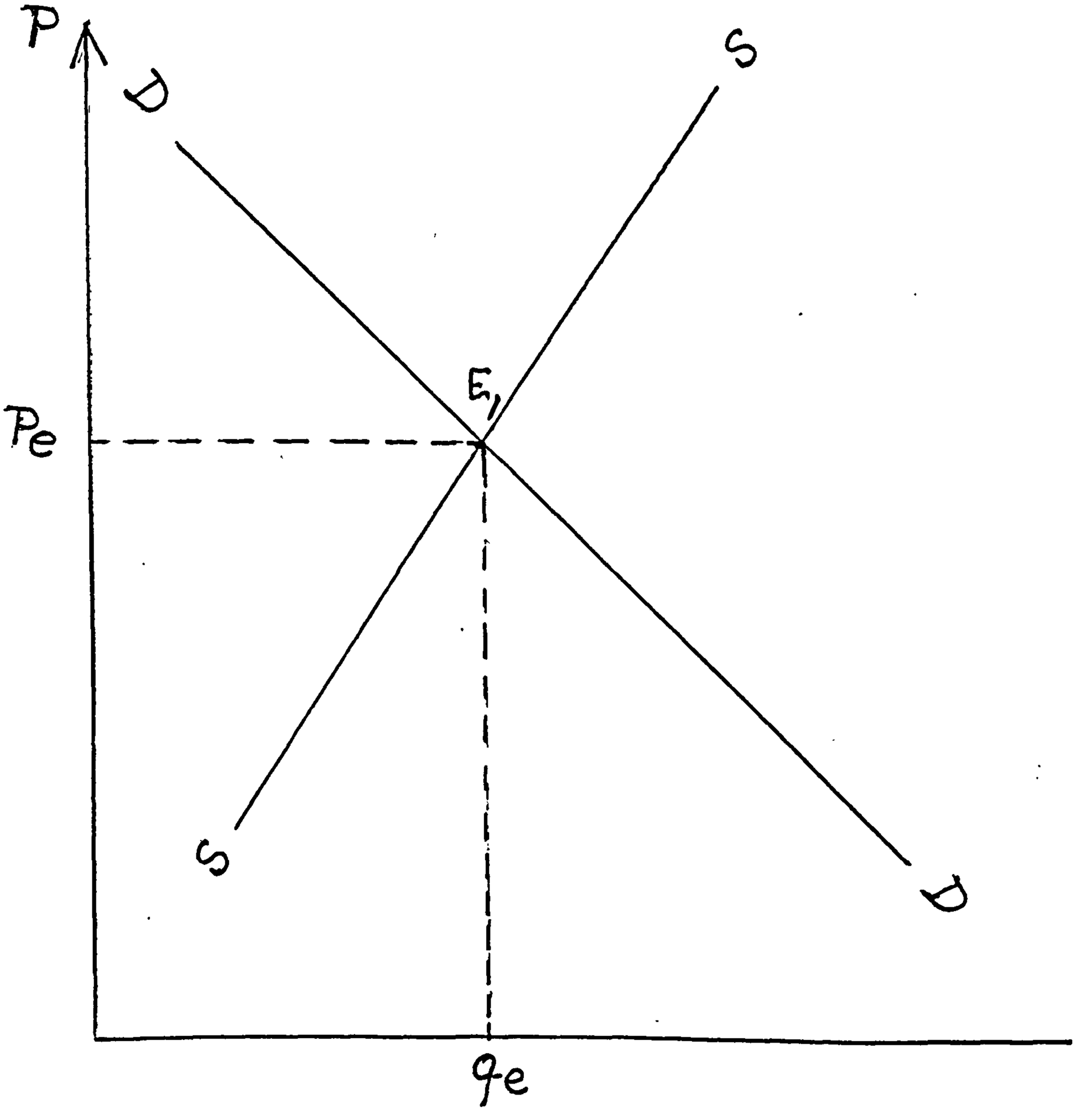
The following simple analytical framework will nonetheless help to set the problem in context.

The diagram *below* relates to the parallel market where about 35 per cent of the marketable surplus in both Oudie and Dibandiba is exchanged. Pe is the equilibrium parallel market price and qe the equilibrium quantity exchanged. In what way would the parallel market be affected by the decision to dispense with the operation of the AMC ?

Removal of the AMC represents a shift to free market regime which is not necessarily the same as the parallel market. In principle, though, the parallel market price

FIGURE 5.1

DEMAND AND SUPPLY FUNCTIONS CORRESPONDING TO THE PARALLEL MARKET

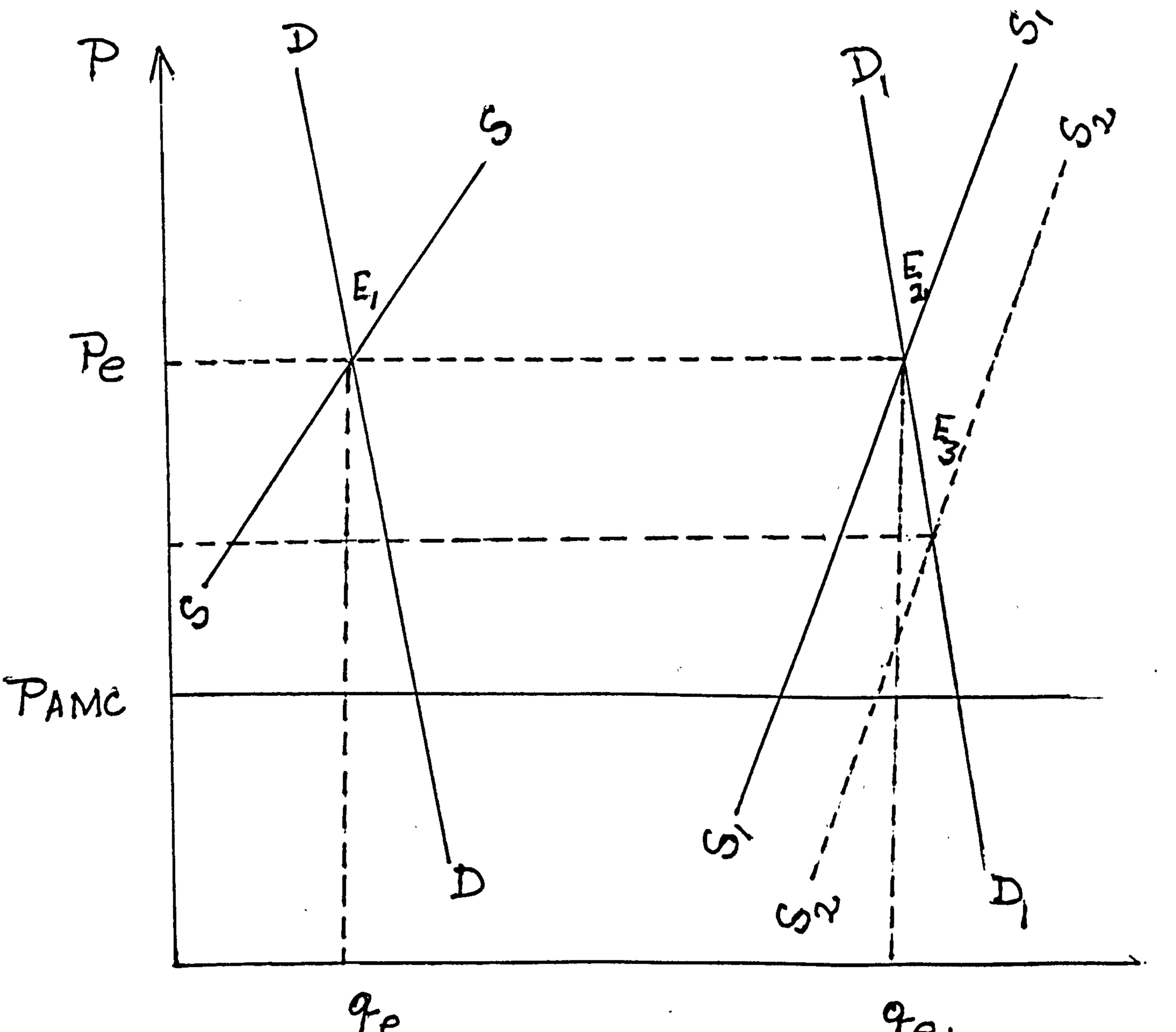


would approximate the free market price if the parallel market accounted for the exchange of a substantial proportion of the total marketable surplus. On the other hand, the higher the share of the AMC in total sales, as happens to be the case in both Oudie and Dibandiba, the lower the free market price would be in relation to the parallel market price. This, however, depends on the size of the gap between the two existing prices. Since the AMC price is on average 45 and 55 per cent of the parallel market price in Oudie and Dibandiba respectively, (TABLE 5.2) this means that free market prices would have sufficient latitude to vary in relation to the parallel market prices in each case. In terms of the diagram below, this would mean that the free market price of the foodgrains in question will be anywhere between P_{AMC} and P_{m}, where P_{AMC} stands for AMC price and P_{m} the equilibrium price in parallel market.

In the event of removal of the AMC, the quantity supply released to the free market would be expected to shift from S S to S_1 S_1. Demand remaining the same, this parallel shift of the supply function will lead to a fall in price. But demand does not remain the same, since demand that was earlier being served by the AMC will now have to be accommodated in the free market. Consequently, the demand curve will shift outwards from D D to D_1 D_1.

FIGURE 5.2

DIAGRAM SHOWING THE STATIC EFFECT OF REMOVING THE AMC ON THE PARALLEL MARKET FOR FOODGRAINS



If we assume production and harvesting not to have been restricted by the AMC, the new supply and demand functions will intersect at E_2, generating a free market equilibrium price which coincides with the previous parallel market equilibrium price.

But this assumption would not be tenable in the light of the experience of massive harvest waste in both Oudie and Dibandiba. It would therefore be necessary to allow for the possibility that but for AMC, quantity supplied would have been much higher. In which case, given demand at D_1 D_1, supply would, upon market liberalisation, shift further to the east (S_2 S_2) placing a downward pressure on price levels. Where exactly the free market equilibrium price level for the individual foodgrains would settle between P_{AMC} and Pe is a matter of speculation. In the analysis below, however, five scenarios are set for investigating the income effect of a shift from the AMC to a free market regime. Based on the diagram above, the free market price is assumed to be equal to the parallel market price at the higher end, and to the AMC price at the lower end. In between these, threc alternative cases are considered, assuming free market price to be equal to 90 per cent, 75 per cent and 65 per cent of the parallel market price.

The survey data show farmers in the same location selling foodgrains in parallel markets at different prices. This in a way, reflects deviation from the normal behaviour of the foodgrains market conduced by the

interference with farmers' decision-making process. Farmers normally sell to the AMC and the parallel market. The distribution between the two may - from an economic standpoint - be unusually random. Much, for example, depends on how AMC quotas are determined and imposed. This, **inter alia**, reduces the control the farmer has over the timing of sales in both markets.

Consequently, the spread of the parallel market prices recorded across farmers may be misleading about the normal behaviour of the foodgrain market in both Dibandiba and Oudie. Some may be forced to sell - to survive or meet obligations to the AMC - when prices are low. Others may be able to sell when they are high. Thus there is a need to standardise the observed behaviour in the parallel market if it is to be a useful guide to future outcomes when the AMC is removed. To this end, weighted average prices for each crop and each location were calculated from the parallel market data. Standard incomes were then calculated for each farmer for 1988 with AMC -cum - parallel market regime and without it (that is, under free market regime).

Here a word of caution is in order. When the free market price is assumed to be equal to the previous parallel market price, there is no change in the quantity exchanged. Prices lower than this are, however, associated with increases in the equilibrium quantity exchanged, depending on the price elasticity of demand. If demand is price elastic, a reduction in price will be

accompanied by a more than proportionate increase in quantity exchanged and consequently expansion in revenue from sales. This means that the farmer's gross income would be higher at lower than at higher prices. When quantity supplied increases cost also increases although, depending on circumstances, this may be qualified by opportunities of economies of scale. Opportunities of economies of scale are not, however,significant in agriculture.

On the other hand, it is widely maintained that demand for foodgrains is generally price inelastic. In this case, a reduction in price will be accompanied by a less than proportionate increase in quantity exchanged; and the more price inelastic the demand, the smaller the increase in quantity exchanged following marginal reductions in the price levels. Moreover, in the event of price inelasticity, lower price will give rise to lower levels of gross income from sales. The analysis below is based on the implicit assumption of near-to-zero price elasticity of demand for foodgrains which, for all intents and purposes, we consider to be realistic. Accordingly,the income farmers would derive under free market regime would vary directly with the price levels, so that it would be higher when free market price is the same as the parallel market price than when it is 90 per cent, 75 per cent and 65 per cent of it etc.

The calculation for gross income and net income of farmers under alternative free market price scenarios

(Tables 5.3, 5.4, 5.5, and 5.6) are under-estimates by the amount of the responsiveness of demand to price changes. But in view of the low elasticity of demand, it can be argued that these estimates are not bad estimates after all. They at least support the point that a farmer who is inefficient under a certain price cannot be efficient at a lower price level.

Tables 5.3 and 5.4 below compare the gross incomes of the farmers in Dibandiba and Oudie respectively under the AMC and free market regimes. Gross income was then diminished by the cost of material inputs used to get the net income or value added for each farmer. A comparison of the net income with and without the AMC for our sample of farmers from Dibandiba and Oudie is shown in Tables 5.5 and 5.6 respectively.

Net income or value added constitutes wages and surplus (or profit). The efficiency of the farmer can, as in the case of any other economic agent, be indicated by the rate of profit; and this depends on the size of the surplus left after imputing the farmer's wage, given capital stock.

In the case of Dibandiba and Oudie the wage bill due to each farmer was imputed on the basis of the shadow wage rate of 1.50 Birr per day and an average of 150 working days per annum. The shadow wage rate used relates to the one adopted by the AMC in its report on Agricultural pricing and Marketing Policy of Ethiopia (1987); and the assumption of the 150 working days is

based on the experience from CADU where it was noted that on average, farmers would be engaged in production related activities for 125 days in a year, and that for marketing their products they would require about 10 per cent of the balance of the year.

A measure of the farmers' efficiency is obtained by diminishing value added by the wage bill. The amount of surplus is calculated for each farmer in Dibandiba and Oudie under AMC and free market regimes; and is shown in Tables 5.7 and 5.8.

It can be seen from the tables that the surplus for the majority of the sample farmers in both Dibandiba and Oudie is negative when they operate under the AMC regime. In the case of Dibandiba, the proportion of farmers with negative surplus would fall from 62.5 per cent to 37.5 per cent on average consequent upon shift from AMC to free market regime. In the case of Oudie, on the other hand, the corresponding fall is from 80 per cent to 62 per cent. This shows, **inter alia**, that the distribution of efficient farmers is more concentrated in Dibandiba than in Oudie. It appears that in Oudie more than in Dibandiba the efficiency of farmers is not sensitive to price improvements. Perhaps it may well be that Oudie, being a model centre, the policy provisions applying to it are too restrictive to allow individual farmers to take full advantage of the facilities and material inputs made available for them. If this were the case, however, removal of the AMC would release productive capacity and

lead to the improvement of efficiency.

In our calculation of the figures in Tables 5.7 and 5.8, we have considered only changes in the price factor under a **ceteris paribus** clause. To that extent, our calculation of the surplus under free market may represent an underestimation of the real situation, and may consequently give the lie to the unqualified assertion that the concentration of efficient farmers is higher in Dibandiba than in Oudie.

A measure of relative efficiency related to the rate of profit is also obtained by calculating for each farmer the number of working days warranted by the net income obtained under the AMC and free market regimes. When the number of working days warranted by the net income calculated for the different market regimes is lower than 150,this means the farmer's work for the balance of the working year is not paid. Of the farmer, it could be said that he is either exploited by the preponderant marketing agent (that is, the AMC),or else, he is inefficient as he has not produced enough surplus to tide him over the year. In either case, he will end up being indebted. On the other hand, when the number of working days warranted by the net income is greater then 150 it means that the farmer has produced surplus over and above the wage bill that would cover the 150 working days. The surplus can be reinvested or can be used for increasing the consumption of leisure. In any case, that it was

produced in the first place is a mark of efficiency.

Based on this, the degree of efficiency can be indicated by the proportion of the number of working days warranted by net income to the standard number of working days in a year which is 150. Efficiency is suggested when this proportion is greater than unity, and inefficient when it is less than unity. Using these proportions as efficiency index, the spread of efficiency under different market regimes can be demonstrated. (See Tables 5.9 and 5.10.)

Table 5.11 shows a summary of the impact of the removal of the AMC on the efficiency of farmers in Dibandiba and Oudie. As noted earlier in this section, in both Oudie and Dibandiba the extraction by the AMC is evenly spread across efficient and inefficient farmers. Thus, under the AMC regime, 20 per cent of the sample population of farmers for Oudie and 37.5 per cent for Dibandiba are shown to be efficient enough to produce surplus over and above the wage bill covering the 150 working days - in spite of the preponderance of productivity constraining circumstances. In the event of the removal of the AMC, the population of efficient farmers would increase in both Oudie and Dibandiba, but there would be more of those in the latter than in the former. Moreover, for the efficiency enhancing role of

TABLE 5.3

GROSS INCOME OF THE SAMPLE PA FARMERS IN DIBANDIBA
UNDER AMC AND FREE MARKET REGIMES
AND COST OF INPUTS
(1988)

FARMER NUMBER	GROSS INCOME UNDER THE AMC REGIME (BIRR)	GROSS INCOME UNDER FREE MARKET REGIME ASSUMING FREE MARKET PRICE TO BE EQUAL TO (BIRR)					COST OF MATERIALS ETC. (BIRR)
		PARALLEL MARKET PRICE (A)	90 % OF A	75 % OF A	65 % OF A	AMC PRICE	
1	490.94	760.70	672.03	560.03	485.36	359.00	215.40
2	280.28	359.27	323.34	269.45	233.52	172.02	113.49
3	386.22	817.67	735.91	613.25	531.49	391.51	145.93
4	222.89	303.31	272.98	227.49	197.15	145.23	73.62
5	415.36	639.75	575.78	479.81	415.84	310.00	204.40
6	468.48	752.89	677.60	564.67	489.38	360.49	146.26
7	356.91	485.96	437.37	364.47	315.87	235.38	135.70
9	503.65	732.70	659.44	549.53	476.25	355.98	137.34
10	369.13	480.98	432.89	360.74	312.64	230.30	261.03
11	943.34	1198.87	1078.98	899.16	779.26	578.89	297.90
12	187.94	304.81	274.33	228.60	198.12	154.51	110.08
13	245.60	384.67	346.20	288.50	250.03	186.02	115.92
14	965.22	1141.03	1026.93	855.77	741.67	578.10	213.50
15	369.79	550.38	495.34	412.79	357.75	265.00	167.32
16	552.09	773.89	696.49	580.42	503.02	373.00	50.73
17	201.62	343.56	309.20	257.67	223.31	164.50	112.00
18	398.82	599.46	539.51	449.60	389.65	288.50	456.00
19	418.09	668.73	601.85	501.55	434.67	324.98	362.45
20	709.80	750.12	675.11	562.59	487.58	368.00	270.40
21	1836.12	2059.43	1853.48	1544.56	1338.62	935.92	527.04
22	392.32	591.80	532.62	443.85	384.67	308.00	436.19
23	146.00	286.82	258.14	214.92	186.44	180.50	138.75
24	357.63	448.93	404.04	336.70	291.80	219.52	428.40

Source: Based on Survey Data

TABLE 5.4

GROSS INCOME OF THE SAMPLE PA FARMERS IN OUDIE
UNDER AMC AND FREE MARKET REGIMES
AND COST OF INPUTS (1988)

FARMER NUMBER	GROSS INCOME UNDER THE AMC REGIME (BIRR)	GROSS INCOME UNDER FREE MARKET REGIME ASSUMING FREE MARKET PRICE TO BE EQUAL TO (BIRR)					MATERIALS ETC. (BIRR)
		PARALLEL MARKET PRICE (A)	90 % OF A	75 % OF A	65 % OF A	AMC PRICE	
1	249.75	399.57	359.62	299.68	259.72	214.80	89.25
2	186.79	272.65	245.37	204.48	177.22	147.48	231.30
3	124.31	185.98	167.38	139.49	120.89	102.15	531.67
4	398.44	429.47	306.54	322.12	279.17	233.01	393.90
5	690.72	815.91	734.32	611.93	530.34	443.55	410.40
6	135.72	195.55	175.99	146.66	127.10	72.90	173.25
7	309.54	434.40	390.96	325.80	262.76	237.96	380.68
8	267.55	403.08	362.77	302.31	262.00	218.94	197.22
9	371.65	494.33	408.03	340.02	294.69	262.50	417.06
10	117.38	154.30	138.88	115.73	100.30	84.00	63.20
11	322.84	387.14	348.42	290.41	251.63	209.25	106.95
12	173.94	214.09	192.81	160.57	139.16	126.15	98.44
13	523.18	644.21	583.70	488.92	423.72	164.33	1213.90
14	305.24	375.64	338.08	281.72	241.10	230.31	129.60
15	547.42	676.96	654.57	545.47	472.74	414.55	235.62
16	130.82	209.50	188.15	157.12	136.17	113.31	105.60
17	224.43	234.07	284.40	236.99	205.39	162.75	143.82
18	201.63	278.25	250.42	208.68	180.86	150.48	137.34
19	469.93	567.98	511.18	425.99	369.19	308.82	202.52
20	279.12	393.27	353.94	294.95	255.62	211.35	99.82
21	474.93	585.31	526.77	438.98	380.45	315.96	196.70
22	363.42	492.70	443.42	369.52	320.26	265.35	167.25
23	259.47	426.32	383.69	319.74	277.11	231.15	387.04
24	143.00	232.23	209.91	147.93	151.60	126.60	86.24
25	601.32	702.76	632.49	527.07	456.80	103.62	197.16
26	219.34	279.93	252.50	209.95	181.95	157.50	120.36
27	169.93	231.46	208.31	173.60	150.44	137.25	79.20
28	295.10	289.50	260.55	217.13	188.18	156.00	114.72
29	376.85	507.13	256.42	380.34	329.64	276.54	157.74
30	529.91	641.82	577.64	481.37	417.19	345.00	108.80

Source: Based on Survey Data.

TABLE 5.5

NET INCOME (VALUE ADDED) OF THE SAMPLE PA FARMERS IN DIBANDIBA UNDER AMC AND FREE MARKET REGIMES (1988)

FARMER NUMBER	VALUE ADDED UNDER AMC REGIME (BIRR)	VALUE ADDED WITHOUT THE AMC ASSUMING FREE MARKET PRICE TO BE EQUAL TO				
		PARALLEL MARKET PRICE (A)	90 % OF A	75 % OF A	65 % OF A	AMC PRICE
1	275.54	531.30	456.63	344.63	269.96	144.00
2	166.79	245.78	209.95	155.96	120.03	58.53
3	240.29	671.74	589.98	467.32	385.56	240.29
4	149.27	229.69	199.36	153.87	123.53	71.61
5	210.96	435.35	371.38	275.41	211.44	105.60
6	322.22	606.63	531.34	418.41	343.12	214.23
7	221.21	350.26	301.67	288.77	180.17	99.68
8	213.76	320.80	282.04	223.93	185.19	131.93
9	366.31	595.36	522.10	412.19	338.91	211.14
10	108.10	219.95	171.86	99.71	51.61	-30.73
11	645.44	900.97	781.08	601.26	481.36	280.99
12	77.86	194.73	164.25	118.52	88.04	44.43
13	129.68	268.75	230.28	172.58	134.11	70.10
14	751.72	927.53	813.43	642.27	528.17	364.60
15	202.47	383.06	328.02	245.47	190.43	97.68
16	501.36	723.16	645.76	529.69	452.29	322.76
17	89.62	231.56	197.20	145.67	111.31	52.50
18	-57.18	143.46	83.51	-6.40	-66.35	-167.50
19	55.64	306.28	239.40	139.40	72.22	-37.47
20	439.40	479.72	404.71	292.19	217.18	98.00
21	1309.08	1532.39	1326.44	1017.42	811.58	478.08
22	-43.87	155.61	96.43	7.66	-51.52	-148.19
23	7.25	148.07	119.39	76.17	47.69	1.75
24	-70.77	20.53	-24.36	-91.70	-136.60	-216.88

Source: Based on Table 5.3

TABLE 5.6

NET INCOME (VALUE ADDED) OF THE SAMPLE PA FARMERS IN OUDIE UNDER AMC AND FREE MARKET REGIMES (1988)

FARMER NUMBER	VALUE ADDED UNDER AMC REGIME (BIRR)	VALUE ADDED WITHOUT THE AMC ASSUMING FREE MARKET PRICE TO BE EQUAL TO				
		PARALLEL MARKET PRICE (A)	90 % OF A	75 % OF A	65 % OF A	AMC PRICE
1	160.50	310.32	270.37	210.43	170.47	125.55
2	-44.51	41.35	26.82	-54.08	-54.08	-83.82
3	-407.36	-345.69	-364.29	-392.18	-410.78	-429.52
4	4.54	35.59	-87.16	-71.78	-114.73	-160.89
5	280.32	405.51	323.92	201.53	119.94	33.15
6	-37.53	22.30	2.74	-26.59	-46.15	-68.35
7	-71.14	53.72	10.28	-54.88	-117.92	-144.97
8	70.33	205.86	165.55	105.09	64.78	21.72
9	-45.41	77.27	-9.03	-77.04	-122.37	-148.56
10	54.18	91.10	75.68	52.53	37.10	26.80
11	216.59	280.19	241.92	183.46	144.68	102.30
12	75.50	115.65	94.37	62.13	40.72	27.71
13	-690.72	-569.69	-630.20	-724.98	-790.18	-836.89
14	175.64	246.04	208.48	152.12	111.50	100.71
15	311.80	441.34	418.95	309.85	237.12	138.93
16	25.22	103.90	82.55	51.52	30.57	7.71
17	80.61	90.25	140.58	93.17	61.57	35.34
18	64.29	140.91	113.08	71.34	43.02	-34.38
19	267.41	365.46	308.66	233.47	166.67	106.30
20	179.30	293.45	254.12	195.13	155.80	119.18
21	278.23	388.61	87.79	242.28	183.75	163.30
22	196.17	325.45	276.17	202.27	153.01	98.10
23	-127.57	39.28	-3.35	-67.30	-109.93	-155.89
24	56.26	145.99	123.67	61.69	65.36	40.36
25	404.16	505.60	435.33	329.91	259.64	184.11
26	98.98	159.57	132.04	89.59	61.59	37.14
27	90.73	152.26	129.11	94.40	71.24	46.80
28	180.38	289.50	260.55	217.13	188.18	41.28
29	219.11	349.39	98.68	222.60	171.90	-16.20
30	421.11	533.02	468.84	372.57	308.39	236.20

Source: Based on Table 5.4

TABLE 5.7

SURPLUS OF THE SAMPLE PA FARMERS
IN DIBANDIBA UNDER AMC
AND FREE MARKET REGIMES
(1988)

FARMER NUMBER	AMOUNT OF SURPLUS UNDER AMC (BIRR)	AMOUNT OF SURPLUS UNDER FREE MARKET REGIME ASSUMING FREE MARKET PRICE TO BE EQUAL TO				
		PARALLEL MARKET PRICE (A)	90 % OF A	75 % OF A	65 % OF A	AMC PRICE
1	50.00	306.30	231.63	119.63	44.96	-81.00
2	-58.21	20.78	-15.15	-69.04	-104.97	-166.47
3	15.29	446.74	364.98	242.32	160.56	15.29
4	-75.73	4.69	-25.64	-71.13	-101.47	-153.39
5	-14.04	210.35	146.38	50.41	-13.56	-119.40
6	97.22	381.63	306.34	193.41	118.12	-10.77
7	-3.79	125.26	76.67	63.77	-44.83	-125.32
8	-11.74	95.80	87.04	-1.07	-39.81	-93.07
9	141.31	370.36	297.10	187.19	113.91	-13.86
10	-116.90	-5.05	-53.14	-125.29	-173.39	-255.73
11	420.44	675.97	556.08	376.26	256.36	55.99
12	-147.14	-30.27	-60.75	-106.48	-136.96	-180.57
13	-95.32	43.75	5.28	-52.42	-90.89	-154.90
14	526.72	702.53	588.43	417.27	303.17	139.60
15	-22.53	158.06	103.02	20.47	-34.57	-127.32
16	276.36	498.16	240.76	304.69	227.29	97.76
17	-135.38	6.56	-27.80	-79.33	-113.69	-172.50
18	-282.18	-81.54	-141.49	-231.40	-291.35	-392.50
19	-169.36	81.28	14.40	-85.60	-152.78	-262.47
20	214.40	254.72	179.71	67.19	-7.82	-127.00
21	1084.08	1307.39	1101.44	392.52	586.58	253.08
22	-268.87	-69.39	-128.57	-217.34	-276.52	-373.19
23	-217.75	-76.93	-106.00	-149.00	-177.31	-223.25
24	-295.77	-204.47	-249.36	-316.70	-361.60	-441.88

Source: Based on Table 5.5

TABLE 5.8

SURPLUS OF THE SAMPLE PA FARMERS
IN OUDIE UNDER AMC AND
FREE MARKET REGIMES
(1988)

FARMER NUMBER	AMOUNT OF SURPLUS UNDER AMC REGIME (BIRR)	AMOUNT OF SURPLUS UNDER FREE MARKET REGIME ASSUMING FREE MARKET PRICE TO BE EQUAL TO				
		PARALLEL MARKET PRICE (A)	90 % OF A	75 % OF A	65 % OF A	AMC PRICE
1	-64.50	85.32	45.37	-14.53	-54.53	-99.45
2	-269.51	-103.65	-198.18	-279.08	-279.08	-308.82
3	-632.36	-570.59	-589.29	-617.18	-635.78	-654.52
4	-220.46	-189.41	-312.16	-296.78	-339.73	-385.89
5	255.32	180.51	98.92	-23.47	-105.06	-191.85
6	-262.53	-202.70	-222.26	-251.59	-271.15	-293.35
7	-296.14	-171.28	-214.72	-279.88	-342.92	-367.97
8	-154.67	-19.14	-59.45	-119.91	-160.22	-203.28
9	-270.41	-147.73	-234.03	-302.04	-347.37	-373.56
10	-170.82	-133.90	-149.32	-277.53	-187.90	-198.20
11	-8.41	55.19	16.92	-41.54	-80.32	-122.70
12	-150.04	-109.35	-130.63	-162.87	-184.28	-197.29
13	-915.72	-794.69	-855.20	-949.00	-105.18	-1061.89
14	-94.36	21.04	-16.52	-72.88	-113.50	-124.29
15	86.80	216.84	193.95	84.85	12.12	-86.07
16	-199.78	-121.10	-142.45	-173.48	-194.43	-217.29
17	-144.39	-134.75	-84.42	-131.83	-163.43	-189.66
18	-160.71	-84.09	-111.92	-153.66	-181.98	-259.58
19	42.91	-159.54	83.66	-1.53	-58.33	-118.70
20	-45.70	68.45	29.12	-29.87	-69.20	-105.82
21	53.23	163.61	-137.21	17.28	-41.25	-61.70
22	-28.83	100.45	51.17	-22.73	-71.99	-126.90
23	-97.43	185.72	-228.35	-29.23	-334.93	-380.89
24	-168.24	-79.01	-101.33	-163.31	-159.64	-184.64
25	179.16	280.60	210.33	104.91	34.64	-40.89
26	-126.02	-65.43	-122.96	-135.41	-163.41	-187.86
27	-134.27	-72.74	-95.89	-130.60	-153.76	-178.20
28	-44.62	64.50	35.55	-7.70	-36.82	-183.72
29	-5.89	124.39	-126.32	-2.40	-53.10	-241.20
30	126.11	308.02	243.04	147.52	83.39	11.20

Source: Based on Table 5.6

TABLE 5.9

'EFFICENCY INDEX' OF PA FARMERS IN
DIBANDIBA UNDER AMC AND
FREE MARKET REGIMES
(1988)

FARMER NUMBER	INDEX OF EFFICIENCY UNDER AMC REGIME	INDEX OF FARMER EFFICIENCY UNDER FREE MARKET REGIME ASSUMING FREE MARKET PRICE TO BE EQUAL TO				
	PRICE (A)	PARALLEL MARKET	90 % OF A	75 % OF A	65 % OF A	AMC PRICE
1	1.23	2.36	2.36	2.03	1.53	0.64
2	0.74	1.09	0.93	0.69	0.53	0.26
3	1.07	2.99	2.62	2.08	1.71	1.07
4	0.67	1.02	0.88	0.68	0.55	0.32
5	0.94	1.93	1.65	1.22	0.94	0.47
6	1.43	2.70	2.36	1.86	1.52	0.95
7	0.98	1.56	1.34	1.28	0.80	0.44
8	0.95	1.43	1.25	0.99	0.82	0.59
9	1.63	2.65	2.32	1.83	1.51	0.94
10	0.48	0.98	0.76	0.44	0.25	-0.14
11	2.87	4.00	3.47	2.67	2.14	1.25
12	0.35	0.87	0.73	0.53	0.39	0.20
13	0.57	1.19	1.02	0.77	0.60	0.31
14	3.34	4.12	3.62	2.85	2.35	1.62
15	0.90	1.70	1.46	1.09	0.85	0.43
16	2.23	3.21	2.87	2.35	2.01	1.43
17	0.40	1.03	0.88	0.65	0.49	0.23
18	-0.74	0.64	0.37	-0.03	-0.29	-0.74
19	0.25	1.36	1.06	0.62	0.32	-0.14
20	1.95	2.13	1.80	1.30	0.97	0.43
21	5.82	6.81	5.89	2.74	3.61	2.13
22	-0.23	0.69	0.43	0.03	-0.34	-0.66
23	0.03	0.66	0.53	0.34	0.21	0.01
24	-0.31	0.09	-0.11	-0.41	-0.61	-0.96

Source: Based on Table 5.5, and on the assumption of a shadow daily wage rate of 1.50 Birr and a total working days in an average year, E = (V / 1.5) . (1 / 150), here E = the efficiency index, V = Value added. The expression (V / 1.5) gives the number of paid working days warranted in the net income obtained.

TABLE 5.10

'EFFICIENCY INDEX' OF PA FARMERS FROM OUDIE UNDER AMC AND FREE MARKET REGIMES (1988)

FARMER NUMBER	INDEX OF EFFICIENCY UNDER AMC REGIME	INDEX OF EFFICIENCY UNDER FREE MARKET REGIME ASSUMING FREE MARKET PRICE TO BE EQUAL TO				
		PARALLEL MARKET PRICE (A)	90 % OF A	75 % OF A	65 % OF A	AMC PRICE
1	0.71	1.38	1.20	0.94	0.76	0.56
2	-0.20	0.19	0.12	-0.24	-0.37	-0.13
3	-2.00	-2.00	-2.00	-2.00	-2.00	-2.00
4	0.02	0.16	-0.39	-0.32	-0.51	-0.71
5	1.25	1.80	1.44	0.89	0.53	0.15
6	-0.17	0.10	0.01	-0.12	-0.21	-0.30
7	-0.32	0.24	0.05	-0.24	-0.52	-0.64
8	0.31	0.91	0.73	0.47	0.29	0.10
9	-0.20	0.35	-0.04	-0.34	-0.54	-0.66
10	0.24	0.41	0.33	0.23	0.17	0.12
11	0.96	1.24	1.07	0.81	0.64	0.45
12	0.33	0.51	0.42	0.28	0.18	0.12
13	-3.00	-3.00	-3.00	-3.00	-3.00	-3.00
14	0.78	1.09	0.93	0.67	0.49	0.45
15	1.39	1.96	1.86	1.38	1.05	0.62
16	0.11	0.46	0.37	0.23	0.13	0.03
17	0.36	0.40	0.63	0.41	0.27	0.16
18	0.29	0.63	0.50	0.32	0.19	-0.18
19	1.19	1.62	1.37	0.99	0.74	0.47
20	0.80	1.30	1.13	0.87	0.69	0.53
21	1.24	1.73	0.39	1.08	0.82	0.73
22	0.87	1.45	1.23	0.90	0.68	0.44
23	-0.57	0.17	-0.01	-0.30	-0.49	-0.69
24	0.25	0.65	0.55	0.27	0.29	0.18
25	1.20	2.46	1.19	1.47	1.15	0.82
26	0.44	0.59	0.59	0.40	0.27	0.17
27	0.40	0.57	0.57	0.42	0.32	0.21
28	0.80	1.16	1.16	0.97	0.84	0.18
29	0.97	0.44	0.44	0.99	0.76	-0.07
30	1.87	2.08	2.08	1.66	1.37	1.05

Source: Based on Table 5.6, and on the assumption of shadow wage rate of 1.5 Birr per day, and a total of 150 working days in an average year, E = (V /1.5), (1 / 150), where E = The efficiency index, and V = Value added. The expression (V / 1.5) gives the number of working days warranted by net income obtained.

the free market to obtain, prices can vary only over a narrow range in the case of Oudie and over a wider range in Dibandiba. It should be noted also that 21 per cent of the farmers in Dibandiba and 3 per cent of those in Oudie would be efficient when free market price is equal to the AMC price levels. These, in fact, represent the core group of efficient farmers in the two locations. High prices would tend to increase the population of farmers with favourable 'efficiency index' in both Oudie and Dibandiba, but more so in the latter than in the former.

TABLE 5.11

DISTRIBUTION OF EFFICIENT FARMERS IN OUDIE AND DIBANDIBA ACROSS PRICE/MARKETING REGIMES

LOCATION	NUMBER OF EFFICIENT FARMERS AND % OF TOTAL					
	UNDER THE AMC REGIME	UNDER THE MARKET REGIME				
		A	B	C	D	E
OUDIE	6 (20 %)	12 (40 %)	10 (33 %)	4 (13 %)	3 (10 %)	1 (3 %)
DIBANDIBA	9 (36 %)	18 (75 %)	15 (63 %)	12 (50 %)	8 (33 %)	5 (2 %)

Source: Tables 5.9 and 5.10

A: When free market price is assumed to be equal to previous parallel market price
B: When free market price is assumed to be equal to 90 per cent of parallel market price
C: When free market price is assumed to be equal to 75 per cent of parallel market price
D: When free market price is assumed to be equal to 65 per cent of parallel market price
E: When free market price is assumed to be equal to AMC price.

TABLE 5.12

FREQUENCY DISTRIBUTION OF
DIBANDIBA FARMERS ACCORDING TO NET
INCOME
(1988)

INCOME GROUP	NUMBER OF PA FARMERS AND PERCENTAGE OF TOTAL					
	WITH AMC	UNDER FREE MARKET REGIME				
		A	B	C	D	E
Less than 0	3 (12.5 %)	0 (0 %)	1 (4.2 %)	2 (8.3 %)	3 (12.5 %)	5 (20.8 %)
0 - 100	4 (16.7 %)	1 (4.2 %)	2 (8.3 %)	3 (12.5 %)	4 (16.7 %)	9 (37.5 %)
101 - 200	4 (16.7 %)	4 (16.7 %)	5 (20.8 %)	6 (25.0 %)	7 (29.2 %)	3 (12.5 %)
201 - 300	6 (25.0 %)	5 (20.8 5%)	4 (16.7 %)	5 (20.8 %)	3 (12.5 %)	4 (16.7 %)
301 - 400	2 (8.3 %)	4 (16.7 %)	3 (12.5 %)	1 (4.2 %)	3 (12.5 %)	2 (8.3 %)
401 - 500	1 (4.2 %)	2 (8.3 %)	2 (8.3 %)	3 (12.5 %)	2 (8.3 %)	1 (4.2 %)
501 - 600	1 (4.2 %)	2 (8.3 %)	3 (12.5 %)	1 (4.2 %)	1 (4.2 %)	0 (0.0 %)
601 - 700	1 (4.2 %)	2 (8.3 %)	1 (4.2 %)	2 (8.3 %)	0 (0.0 %)	0 (0.0 %)
701 - 800	1 (4.2 %)	1 (4.2 %)	1 (4.2 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
801 - 900	0 (0.0 %)	1 (4.2 %)	1 (4.2 %)	0 (0.0 %)	1 (4.2 %)	0 (0.0 %)
901 - 1000	0 (0.0 %)	1 (4.2 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
1000 +	1 (4.2 %)	1 (4.2 %)	1 (4.2 %)	1 (4.2 %)	0 (0.0 %)	0 (0.0 %)
Total	24 (100 %)	24 (100 %)	24 (100 %)	24 (100 %)	24 (100 %)	24 (100 %)

Source: Table 5.5

A: When free market price is assumed to be equal to parallel market price
B: When free market price is assumed to be equal to 90 % of parallel market price
C: When free market price is assumed to be equal to 75 % of parallel market price
D: When free market price is assumed to be equal to 65 % of parallel market price
E: When free market price is equal to AMC price.

TABLE 5.13

FREQUENCY DISTRIBUTION OF OUDIE FARMERS
ACCORDING TO NET INCOME
(1988)

INCOME GROUP (BIRR)	NUMBER OF PA FARMERS AND PERCENTAGE OF TOTAL					
	WITH AMC	UNDER FREE MARKET REGIME				
		A	B	C	D	E
Less than 0	7 (23.3 %)	2 (6.7 %)	5 (16.7 %)	9 (30.0 %)	9 (30.0 %)	10 (33.3 %)
0 - 100	10 (33.3 %)	8 (26.7 %)	8 (26.7 %)	7 (23.3 %)	8 (26.7 %)	12 (40.0 %)
101 - 200	5 (16.7 %)	6 (20.0 %)	6 (20.0 %)	4 (13.3 %)	10 (33.3 %)	7 (23.3 %)
201 - 300	5 (16.7 %)	5 (16.7 %)	6 (20.0 %)	7 (23.3 %)	2 (6.7 %)	1 (3.3 %)
301 - 400	1 (3.3 %)	5 (16.7 %)	2 (6.7 %)	3 (10.0 %)	1 (3.3 %)	0 (0.0 %)
401 - 500	2 (6.7 %)	2 (6.7 %)	3 (10.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
501 - 600	0 (0.0 %)	2 (6.7 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
601 - 700	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
700 - 800	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
801 - 900	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
901 - 1000	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
1000 +	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)

Source: Table 5.6

A: When free market price is assumed to be equal to parallel market price
B: When free market price is assumed to be 90 per cent of parallel market price
C: When free market price is assumed to be 75 per cent of parallel market price
D: When free market price is assumed to be 65 per cent of parallel market price
E: When free market price is assumed to be equal to AMC price.

B. MARKETABLE SURPLUS AND THE SCOPE FOR MARKETING ACTIVITIES

In terms of our accounting of the farmer's income, marketable surplus with respect to a given foodgrain constitutes the residue of total output after having made allowance for consumption by the farmers themselves, savings for seeds and debt servicing. The residue, if not marketed, is hoarded for the 'rainy days' or for speculative purposes. The extent of hoarding is difficult, if not impossible, to observe in a survey since farmers are understandably reluctant to admit that they are used to the practice in the first place. It should be noted, however, that hoarding on a substantial scale requires the provision of warehouse facilities. Not many farmers in Ethiopia have ready access to such facilities. Moreover, there is a legal constraint to hoarding, as hoarding can lead to prosecution and the possible forfeiture of ones use right of land. In the circumstances, hoarding, if it ever occurs, is either marginal or occasional. In such cases, the rate of marketable surplus can be efficiently approximated by the ratio of total sales to the total value of output, as we have done in Table 5.14.

Table 5.14 shows the average rate of marketable surplus for six foodgrains produced by PA farmers in

TABLE 5.14

FREQUENCY DISTRIBUTION OF PA FARMERS ACROSS MARKETABLE SURPLUS CATEGORIES FOR DIFFERENT FOODGRAINS PRODUCED IN DIBANDIBA AND OUDIE

NUMBER OF PA FARMERS WITH RATES OF MARKETABLE SURPLUS

		(%)											
DISTRICTS	GRAINS	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	TOTAL NUMBER OF FARMERS	WEIGHTED AVERAGE OF MARKETABLE SURPLUS RATES (%)
DIBANDIBA	TEFF	5	10	0	9	0	0	0	0	0	0	24	20
	WHEAT	7	11	6	0	0	0	0	0	0	0	24	15
	BARLEY	6	0	7	0	11	0	0	0	0	0	24	29
	MAIZE	7	0	0	0	0	0	0	17	0	0	24	55
	HORSE BEANS	1	0	0	0	0	0	0	0	0	0	1	5
	FIELD PEAS	2	0	0	0	0	0	0	0	0	0	2	5
OUDIE	TEFF	5	4	0	21	0	0	0	0	0	0	30	27
	WHEAT	4	6	9	11	0	0	0	0	0	0	30	24
	BARLEY	7	0	0	23	0	0	0	0	0	0	30	28
	MAIZE	3	0	0	0	0	0	0	0	27	0	30	77
	HORSE BEANS	5	0	7	0	0	18	0	0	0	0	30	40
	FIELD PEAS	4	4	0	0	0	0	0	0	0	0	8	10

Source: Appendix C

Dibandiba and Oudie. In both Dibandiba and Oudie, the rates of marketable surplus corresponding to most of the foodgrains produced are substantial - indeed, well above the national average of 15 per cent. This does not, however, appear to sit well with the observation made earlier that most of the farmers in Dibandiba and Oudie

are inefficient despite the proximity of the two districts to Addis Ababa. The way in which the produce of the farmers in Dibandiba and Oudie are marketed and, in particular, the preponderant role of the AMC does as will be seen later, a lot to account for this paradox.

In both Dibandiba and Oudie, a substantial portion of the maize output is marketed - 55 per cent in the former and 77 per cent in the latter. Barley, teff and wheat are also shown with high rates of marketable surplus in both districts. Horse beans are hardly produced in Dibandiba but are shown to have a high rate of marketable surplus in the case of Oudie. Field peas are marginal cash crops in both Dibandiba and Oudie.

But is there any correlation between the rate of marketable surplus and the scope for marketing food-grains? Normally one would expect the magnitude of the marketable surplus for a certain foodgrain to be high where the scope for marketing is wide. In practice, however, this correspondence may not be complete. The existence of a wide scope for marketing foodgrains does not necessarily imply high rate of marketable surplus particularly when production and/or marketing constraints are operating, limiting the responsiveness of farmers to price incentives.

TABLE 5.15

THE BASIS FOR ARBITRAGE AND MARKETING ACTIVITIES BETWEEN
NAZARETH, DEBRE ZEIT AND ADDIS ABABA
WITH RESPECT TO DIFFERENT GRAINS

GRAINS	AVERAGE PRICE / QUINTAL, 1985 (BIRR)			DIFFERENTIALS IN PRICE / QUINTAL BETWEEN		
	1* NAZARETH	2* DEBRE ZEIT	3** ADDIS ABABA	4 1 AND 2	5 1 AND 3	6 2 AND 3
TEFF	97.90	102.06	204.33	4.16	144.43	140.27
WHEAT	55.72	71.04	182.00	15.32	126.28	110.96
BARLEY	39.97	35.28	172.50	4.19	133.03	137.22
MAIZE	38.04	31.50	165.00	6.54	126.96	133.50
SORGHUM	N.A	50.00	193.50	-	-	143.50
CHICK PEAS	50.00	52.21	200.00	2.21	150.00	147.79
HORSE BEANS	N.A	90.00	164.00	-	-	74.00
SOYA BEANS	60.00	N.A	206.00	-	140.00	-
FIELD PEAS	60.00	73.22	206.50	13.22	146.50	133.28

Source: *Based on Survey Data.

** AMC, Study of Foodgrain Estimates (Improved), (Amharic version), Addis Ababa: October 1986/87, p.117.

Legend

N.A = Data Not Available

Table 5.15 shows the basis for marketing foodgrains originating from Dibandiba and Oudie. Farmers in Dibandiba can dispose their produce in the nearest local market, Nazareth, or in Debre Zeit which is about 45 kilometres away, or else 85 kilometres away in Addis Ababa. Similarly farmers in Oudie can have their market outlets in the nearest local market, Debre Zeit, or about 42 kilometres away in Addis Ababa, or in Nazareth, depending on circumstances relating to foodgrain prices and the cost of handling and transport of foodgrains between the points of production and sales.

The differentials in price per quintal of foodgrains between Nazareth and Debre Zeit, Nazareth and Addis Ababa, and Debre Zeit and Addis Ababa are given in Table 5.15. Table 5.16 shows the handling and transport cost of foodgrains per quintal between Nazareth and Debre Zeit, Nazareth and Addis Ababa and Debre Zeit and Addis Ababa.

Now, for foodgrains from Dibandiba to be traded in Debre Zeit, the respective grain prices in Debre Zeit must be higher than in Nazareth, and, what is more, the price differential per quintal between the two markets must be greater than the transport and handling cost per quintal. The same principle would apply for marketing foodgrains from Nazareth and Debre Zeit in Addis Ababa, as discussed in Chapter Three.

Farmers in Dibandiba and Oudie might find it profitable to sell their produce in the local markets -

TABLE 5.16

TRANSPORT AND HANDLING COST OF FOODGRAINS PER QUINTAL, 1985 (BIRR)

FROM	TO	ADDIS ABABA	DEBRE ZEIT	NAZARETH
ADDIS ABABA		0	10.50	21.25
DEBRE ZEIT		10.50	0	10.75
NAZARETH		21.25	10.75	0

Source: Based on information obtained from fieldwork.

Nazareth and Debre Zeit. But traders buying from the Nazareth and Debre Zeit grain markets could also expect to make gains by selling beyond the confines of the local markets. From Table 5.17, it can be seen that there is hardly any scope for trade in foodgrains between Nazareth and Debre Zeit.

The major market for foodgrains from Nazareth and Debre Zeit is Addis Ababa. Traders from Nazareth and

TABLE 5.17

THE SCOPE FOR MARKETING FOODGRAINS FROM DIBANDIBA AND OUDIE

	NET GAIN PER QUINTAL (BIRR) OF MARKETING FOODGRAINS FROM			INDEX OF THE SCOPE OF MARKETING FOODGRAINS (%) BETWEEN*		
	NAZ TO DEBRE Z	NAZ TO AA	DEBRE Z TO AA	NAZ TO DEBRE Z	NAZ TO AA	DEBRE Z TO AA
TEFF	-6.59	123.18	129.77	-	60.3%	63.5%
WHEAT	4.57	105.46	100.46	6.4%	57.7%	55.2%
BARLEY	-6.56	111.78	126.72	-	64.8%	73.5%
MAIZE	-4.21	105.71	123.00	-	64.1%	74.5%
SORGHUM	-	-	133.00	-	-	68.7%
CHICK PEAS	-8.54	128.75	137.29	-	64.4%	68.6%
HORSE BEANS	-	-	63.50	-	-	38.7%
SOYA BEANS	-	124.75	-	-	60.6%	-
FIELD PEAS	2.47	125.25	122.78	3.4%	60.7%	59.5%

Source: Tables 5.15 and 5.16.

*The index of the scope for marketing a certain food grain from locality i is obtained by dividing the net gain per quintal from marketing the grain in locality x by the locality x price for the grain (in this case, from marketing the grain in Addis Ababa by the Addis Ababa price for the grain).

LEGEND

NAZ = NAZARETH
DEBRE Z = DEBRE ZEIT
AA = ADDIS ABABA

Debre Zeit would register substantial gains per quintal if they sold in the Addis Ababa market. This opportunity is not, however, open to the farmers in Dibandiba and Oudie. Not only are farmers required to produce their AMC quota, collected at the service co-operatives, also they are not licensed like the grain traders to sell beyond their local markets. There are nonetheless, cases of individual farmers who somehow manage to pass through the various check points to exploit better market opportunities elsewhere without being discovered. Often though, this would involve bribery or taking the very high risk of being exposed, dispossessed, imprisoned and fined.

So, in effect, it is the traders in Nazareth and Debre Zeit and not the farmers in Dibandiba and Oudie who stand to gain directly from the proximity to the Addis Ababa market. Hence the earlier observation that the net farm incomes per head for both Dibandiba and Oudie are lower than the national average.

But this point has to be checked against evidence of any spin-off from traders' activities to the farmers in Dibandiba and Oudie. Comparing Tables 5.13 and 5.16, it can be seen that in the case of both Dibandiba and Oudie, there is a direct correspondence between the rate of marketable surplus and the index of net marketing gains across the foodgrains traded. Thus, the lower the rate of marketable surplus the lower the index of marketing gains. This suggests that farmers in Dibandiba and Oudie

would respond to incentives that grain traders would offer, the major exceptions to this being growers of field peas in Dibandiba and horse bean growers in Oudie.

The responsiveness of farmers to changes in local grain prices can be further examined with the help of Table 5.19 Only the PA farmers in both districts are considered for this purpose. It is difficult to determine the supply response of the individual PC members to price changes because they produce in group collectively.

The supply response coefficient (ϵ) for each PA farmer is given by the ratio of the percentage change in the quantity produced (Q) of foodgrain i by PA farmer j to the percentage change in the price (P) of foodgrain i over the period of observation, 1985 - 1987.

That is:

$$\epsilon_{i,j} = [\ \%\Delta Q_{i,j} \ / \ \%\Delta P_i\ ]$$

where,

$$\%\Delta Q_{i,j} = \{\ [\ (Q_{i,j})_{1987} - (Q_{i,j})_{1985}\ ]\ /\ (Q_{i,j})_{1985}\ \}\ 100$$

$$\text{and } \%\Delta P_i = \{\ [\ (P_i)_{1987} - (P_i)_{1985}\ ]\ /\ (P_i)_{1985}\ \}\ 100$$

TABLE 5.18

RELATIONSHIP BETWEEN FARMERS' RATE OF MARKETABLE SURPLUS AND TRADERS' INDEX OF NET MARKETING GAINS

DISTRICT	GRAINS	FARMERS' RATE OF MARKETABLE SURPLUS (%)	TRADERS' INDEX OF NET MARKETING GAINS (%)
DIBANDIBA			
	MAIZE	55	64.1
	BARLEY	29	64.8
	TEFF	20	60.3
	WHEAT	15	57.7
	FIELD PEAS	5	60.7
	HORSE BEANS	5	-
OUDIE			
	MAIZE	77	74.5
	HORSE BEANS	40	38.7
	BARLEY	28	73.5
	TEFF	27	63.5
	WHEAT	24	55.2
	FIELD PEAS	10	59.5

Source: Tables 5.14 and 5.17

Table 5.19 shows the distribution of PA farmers in Dibandiba and Oudie across the various ranges of supply response coefficients for the major foodgrains. Farmers falling in the $\epsilon < 0$ category are thought to respond inversely to price changes, so that when foodgrain prices increase, the quantity produced decreases. This accounts to the definition of 'perverse' supply functions. But why farmers react so perversely to price changes is a matter of query. It may well be that the benefits of increases in prices do not reach them at all and they are perhaps consciously reacting against being taken advantage of by traders by withdrawing their supply effort and relapsing to the realm of subsistence - a phenomenon variously described as 'Agrarian Involution' (Rahmato, 1985), and 'The Economy of Affection' (Hyden, 1980), and the 'Moral Economy' (Scott, 1976).

Alternatively, it may well be that even if farmers are positively responsive to prices, other constraints (unfavourable weather, pests, land shortage, etc.) may dominate the supply function so that drops in quantity supplied might be observed in the face of price increases - but for reasons beyond the control of the farmers. Such cases of 'perverse' supply function are observed among 25 per cent of Teff growers, 17 per cent of wheat

TABLE 5.19

FREQUENCY OF DISTRIBUTION OF PA FARMERS
IN DIBANDIBA AND OUDIE ACROSS RANGE
OF SUPPLY RESPONSE COEFFICIENTS
FOR SOME FOODGRAINS

DISTRICTS	FOODGRAINS	NUMBER OF PA FARMERS WITH SHORT RUN PRICE ELASTICITY SUPPLY COEFFICIENTS (ϵ)					TOTAL NO. OF FARMERS
		ϵ < 0	ϵ = 0	0 < ϵ > 1	ϵ = 1	ϵ > 1	
DIBANDIBA	TEFF	6 (25%)	2 (8%)	4 (17%)	0 (0%)	12 (50%)	24 (100%)
	WHEAT	4 (17%)	12 (50%)	3 (12%)	0 (0%)	5 (21%)	24 (100%)
	BARLEY	1 (4%)	14 (58%)	5 (21%)	0 (0%)	4 (17%)	24 (100%)
	MAIZE	1 (4%)	20 (84%)	0 (0%)	0 (0%)	3 (12%)	24 (100%)
OUDIE	TEFF	0 (0%)	3 (10%)	1 (3%)	0 (0%)	26 (87%)	30 (100%)
	WHEAT	5 (17%)	5 (17%)	9 (30%)	0 (0%)	11 (36%)	30 (100%)
	BARLEY	2 (7%)	19 (63%)	6 (20%)	0 (0%)	3 (10%)	30 (100%)
	MAIZE	0 (0%)	29 (97%)	0 (0%)	0 (0%)	1 (3%)	30 (100%)

Source: See Appendix E on Elasticity

NOTE: ϵ < 0 = 'Price' supply functions
ϵ = 0 = Price-neutral production behaviour
0 < ϵ > 1 = Supply positively responsive to price changes but less than proportionately - i.e., supply is price inelastic.

ϵ = 1 = Supply positively and proportionately responsive to price changes.

ϵ > 1 = Supply positively and more than responsive to price changes; i.e., supply is price elastic.

growers, 4 per cent of barley growers, and 4 per cent of maize growers in Dibandiba. In Oudie, the corresponding figures are 17 per cent for wheat farmers, and 7 per cent for barley growers. The 'perverse' supply function does not apply to the teff and maize growers in Oudie. This does not, however, mean that response to price changes can be observed in the case of all teff and maize growers in Oudie. Indeed, there is no evidence of supply response to price changes in the case of 10 per cent of the teff farmers and 97 per cent of the maize producers in Oudie.

According to the evidence in Table , the production behaviour of a large proportion of maize and barley farmers in Oudie and, in the case of Dibandiba, maize, barley and wheat farmers, appears to be price neutral. On the other hand, a large proportion of teff growers in both Dibandiba and Oudie (67 per cent and 90 per cent respectively) respond positively to price changes. In the case of Dibandiba, 50 per cent of the teff growers fall in the $\epsilon > 1$ category. In the case of Oudie, the proportion of teff farmers falling in this category is 87 per cent. This piece of evidence shows teff to be the most price sensitive foodgrain. It can also be seen that in both Dibandiba and Oudie maize is the least price sensitive foodgrain with 12 per cent of the maize farmers in the former and only 3 per cent in the latter falling in the $\epsilon > 1$ category.

There are more teff and wheat farmers in Oudie than

in Dibandiba that are positively responsive to price changes. Both teff and wheat are highly demanded by consumers in Addis Ababa. Oudie being much nearer to Addis than Dibandiba, consumers in Addis would find it comparatively easier to deal with farmers in Oudie rather than in Dibandiba. Also, it is comparatively less difficult for farmers from Oudie than from Dibandiba to evade the check points on the way to the Addis Ababa market. This means that farmers in Oudie rather than Dibandiba are better exposed to the benefits of the high grain prices in Addis Ababa.

The supply response of farmers to price changes can, however, be appreciated only with a caveat. This is because prices are not the only factors affecting supply. Other factors such as the supply of land, fertility of the soil, availability of irrigation facilities, the nature of farm equipment, supply of fertilisers and high yield variety seeds, transport and storage facilities, etc., are also crucial for the growth of agricultural productivity. In view of the operation of these constraints, it is, in fact, very difficult to determine the supply response of farmers to price changes without too much 'noise'. Even if farmers are responsive to price changes, this will not be revealed unless the structural supply bottlenecks are removed.

C. AMC's GRAIN QUOTA ALLOCATION AND IMPLICATIONS FOR EFFICIENCY AND EQUITY OBJECTIVES OF POLICY

A major factor defining the extent of marketable surplus is the quota farmers are assigned to produce for purchase by the AMC at prices determined by the AMC itself. The basis for the assignment of quota is not clear as discussed in Chapter Four, but the responsibility of quota determination and execution is delegated to the Grain Purchase Task Force (GPTF) operating in different localities on behalf of the AMC.

The AMC quota burden falling on each farmer can constrain the supply effort even under circumstances of favourable grain prices. So, where quota burdens are unduly high, farmers are unlikely to be positively responsive to price increases. The relative AMC quota burden on individual farmers with respect to the major foodgrains produced in Dibandiba and Oudie is shown in Appendix F.

Table 5.20 summarises Appendix F showing the frequency distribution of growers of different foodgrains in Dibandiba and Oudie across categories of coefficients measuring the quota burden on each farmer in relation to the national average. Where the AMC quota for a certain foodgrain assigned by the GPTF to apply to a particular

TABLE 5.20

FREQUENCY DISTRIBUTION OF FARMERS IN DIBANDIBA AND OUDIE ACROSS THREE CATEGORIES OF THE COEFFICIENT, β*, INDICATING AMC GRAIN QUOTA IN DIBANDIBA AND OUDIE AS A PROPORTION OF THE NATIONAL AVERAGE

GRAINS	DIBANDIBA			OUDIE		
	β > 1	β < 1	β = 1	β > 1	β < 1	β = 1
TEFF	3	20	1	5	25	0
WHEAT	13	11	0	11	19	0
BARLEY	22	2	0	28	2	0
MAIZE	20	4	0	29	1	0
CHICK PEAS	24	0	0	30	0	0
HORSE BEANS	24	0	0	29	1	0
SOYA BEANS	-	-	-	-	-	-
FIELD PEAS	24	0	0	30	0	0

Source: Appendix F

$$*\beta_{ij} = \frac{X_{ij}}{Y_i}, \text{ where}$$

β_{ij} = AMC's quota allocation to farmer j_i with respect to food grain $_i$ a proportion of the national average AMC quota corresponding to grain $_i$.

X_{ij} = Proportion of farmer $_j$'s output of grain $_i$ sold to AMC in Dibandiba and Oudie.

Y_i = Total quantity of foodgrain $_i$ purchased by AMC from all parts of the country as a proportion of total quantity of $_i$ produced in the country.

farmer is higher than the quota corresponding to the national average, the coefficient measuring the relative quota burden (β_{ij}) is greater than unity - i.e., $\beta_{ij} > 1$. This means that the AMC is too demanding on the individual farmer j in Dibandiba or Oudie producing foodgrain i in relation to its treatment of farmers producing the same foodgrain in the rest of the country. Where $\beta_{ij} > 1$, the quota assigned is unfavourable to farmers in Dibandiba and Oudie. A situation where $\beta_{ij} < 1$ suggests that AMC is rather lenient to farmers in Dibandiba and Oudie in relation to how it treats similar farmers elsewhere regarding quota allocation. Hence, AMC's quota is favourable to farmers in Dibandiba and Oudie. Where $\beta_{ij} = 1$, the quota burden falling on farmers in Dibandiba and Oudie is consistent with the national average, and, in this case, AMC can be said to be even-handed in its quota administration across the country as a whole.

Table 5.20 shows that in both Dibandiba and Oudie, most of the farmers growing foodgrains, with the exception of teff and wheat growers, fall in the category of $\beta > 1$, and hardly any in the category of $\beta = 1$. This means that AMC operates with a heavy hand in Dibandiba and Oudie except in the case of teff and wheat production. From Table 5.21 it can be seen that teff and wheat growers in both Dibandiba and Oudie are positively responsive to price changes.

Table 5.21 shows that the responsiveness of teff and wheat growers can be directly attributable to the favourable quota treatment they receive from the AMC. In the case of barley and maize growers, where the supply response is observed to be relatively low in both Dibandiba and Oudie, the AMC quota burden is observed to be rather unfavourable.

The Pearson Coefficient of Rank Correlation is 1 in the case of Oudie and 0.50 in the case of Dibandiba. The perfect correlation in the case of Oudie can be accounted by the fact that Oudie farmers are nearer to Addis Ababa than their counterparts in Dibandiba, and can therefore take advantage of every opportunity that may arise to benefit from favourable grain prices prevailing in the Addis Ababa market. Where access to the Addis Ababa market is complicated, favourable quota allocations may not necessarily translate into increased supply effort. There is good reason to believe that the more far flung farmers are from the Addis Ababa market, the narrower the scope for direct access to the Addis Ababa market, and hence, the more reluctant farmers will be to increasing their marketable supplies.

From the analysis above, it can be concluded that prospects for the expansion of marketable surplus, and hence for increased marketing activities in foodgrains

TABLE 5.21

CORRELATION BETWEEN THE DISTRIBUTIONS OF SUPPLY RESPONSE AND AMC QUOTA BURDEN AMONG FARMERS IN DIBANDIBA AND OUDIE

DISTRICT	FOODGRAIN	PERCENTAGE OF FARMERS WITH POSITIVE SUPPLY RESPONSE TO PRICE CHANGES	PERCENTAGE OF FARMERS WITH FAVOURABLE AMC QUOTA ALLOCATION	PEARSON COEFFICIENT OF RANK CORRELATION
DIBANDIBA	TEFF	67	83	0.50
	WHEAT	33	49	
	BARLEY	38	8	
	MAIZE	12	17	
OUDIE	TEFF	90	83	1.00
	WHEAT	66	63	
	BARLEY	30	7	
	MAIZE	3	3	

Source: Tables and 5.19 and 5.20

would be enhanced if the provision for AMC purchase quota imposed on farmers were to be removed. But the case for the administration of purchase quota by the AMC, it is argued, is built on equity objectives. Is there, however, any evidence suggesting this to be the case?

In an attempt to answer this question, the proportion of farmers ($j = 1 \ldots n$) sales of

foodgrain $_i$ to AMC and the total quantity of the grain they produce (Y_{ij}) is separately regressed first on the gross income of the farmers deriving from the production of foodgrain $_i$ (X_{ij}), and then on net income (Z_{ij}).

Thus:

$$Y_{ij} = \alpha + \beta X_{ij} + \mu \quad \ldots\ldots\ldots \text{(alternative 1)}$$

$$\text{and} \quad Y_{ij} = \alpha + \beta Z_{ij} + \mu \quad \ldots\ldots\ldots \text{(alternative 2)}$$

where α is the constant,

β is the coefficient to X_{ij} and Z_{ij} to be estimated; and μ is the error term.

The null hypothesis is that $\beta = 0$, indicating that there is no relationship between Y_{ij} and X_{ij} or Z_{ij}. This will be tested against the alternative hypothesis (H_1) that $\beta \neq 0$.

That is:

$$H_0 : \beta = 0$$

$$H_1 : \beta \neq 0$$

The aim of this exercise is to investigate whether there is any discernible pattern in the setting of AMC quota of whether the operation the Grain Purchase Task Force (GPTF) is random and arbitrary. If the quota per head increases as income (net or gross) decreases, this will defeat the very objective of equity which the AMC was established to pursue in the first place. If the

quota per head increases as income increases, the operation of the AMC can be said to be consistent with its objective of equity. Evidence of equity does not, however, preclude the problem of arbitrariness in quota determination. If there is no relationship between quota levels and the level of income of farmers, then AMC operation can be said to be random rather than arbitrary.

From Table 5.22, showing the regression results for the different foodgrains, it can be seen that in the case of all the foodgrains, the t-ratios for β coefficients are not significant even at the 10 per cent level. This means that there is not enough evidence for us to reject the null hypothesis that $\beta = 0$. It can, therefore, be duly concluded that on the basis of existing evidence, the AMC practice of quota allocation is for the most part random. This is further confirmed by the R^2 measure of the goodness of the regression fit between $Y_{i,j}$ and $X_{i,j}$ or $Z_{i,j}$, which in all the cases considered is less than 0.1 if not zero.

It can, therefore, be maintained that the operation of AMC, at least in the case of Dibandiba and Oudie, serves neither the efficiency nor the equity objective of agricultural development policy.

TABLE 5.22

RESULTS OF THE REGRESSION ANALYSES TESTING EVIDENCE OF RANDOMNESS AND ARBITRARINESS OF AMC OPERATION WITH RESPECT TO THE TASK OF GRAIN QUOTA ALLOCATION

CROPS	REGRESSION ALTERNATIVES	α	β	R^2	NO. OF OBSERVATIONS N
TEFF	ALTERNATIVE 1	0.341	-0.000028 (-2.26)	0.071	48
	ALTERNATIVE 2	0.318	-0.000025 (-1.79)	0.039	
WHEAT	ALTERNATIVE 1	0.320	-0.000092 (2.30)	0.083	
	ALTERNATIVE 2	0.282	-0.000067 (-1.93)	0.055	
BARLEY	ALTERNATIVE 1	0.0211	0.000097 (1.00)	0.000	33
	ALTERNATIVE 2	0.0462	-0.000057 (-1.13)	0.008	
MAIZE	ALTERNATIVE 1	0.263	-0.000368 (-0.50)	0.000	11
	ALTERNATIVE 2	0.22777	-0.0006694 (-1.01)	0.001	
HORSE BEANS	ALTERNATIVE 1	0.01524	0.000001 (0.01)	0.000	13
	ALTERNATIVE 2	0.0151	0.00001 (0.07)	0.000	
SOYA BEANS	ALTERNATIVE 1	0.0015	0.000048 (0.67)	0.000	22
	ALTERNATIVE 2	0.0015	0.000048 (0.68)	0.000	
FIELD PEAS	ALTERNATIVE 1	0.113	-0.000188 (-0.55)	0.00	10
	ALTERNATIVE 2	0.0896	-0.000177 (-0.50)	0.00	

Source: See Appendix F

KEY TO TABLE 5.22

ALTERNATIVE 1: $C_1 = a + bC_2$

ALTERNATIVE 2: $C_1 = a + bC_3$

where C_1 is proportion of sales to AMC to total quantity produced.

C_2 is Gross Income of farmers.

C_3 is Net Income of farmers.

a = constant coefficient.

b = coefficient to C_2 and C_3 in ALTERNATIVE 1 and ALTERNATIVE 2 respectively.

5. 4 CONCLUSION

From the experience of farmers in Dibandiba and Oudie, discussed in this chapter, it can be seen that as a marketing agent, the AMC acts not so much as a catalyst of productivity growth in peasant agriculture as a constraint on it. Its operation has given rise to serious distortions in foodgrain markets. The AMC-controlled purchase prices grossly understate market prices while, on the other hand, parallel market price overstate market prices. But the parallel market prices are a direct consequence of the operation of the AMC.

It was shown that many farmers in both Dibandiba and Oudie would stand to gain in terms of net income if the operation of the AMC were to be discontinued giving way to a free market rule.

It is also observed (Appendix B.4) that the vast majority of the farmers in the sample do not save either in cash or in kind. This may sound startling given the locational advantage of the two districts in terms of their proximity to the Addis Ababa market; but it suggests that proximity to the Addis Ababa and hence to the centre of the machinery of control, would only make farmers more vulnerable to the application of restrictive policy measures. Vulnerability is not, however, reflected by the magnitude of marketable surplus, which, by comparison to the national average for

the major foodgrains, is substantial in both Dibandiba and Oudie - indeed more so in the latter than in the former.

Proximity to Addis Ababa gives farmers ready access to fertilisers, selected seed varieties, etc. that can help them boost output. Moreover, it is shown that most of the farmers in Dibandiba and Oudie are highly responsive to price changes. The beneficiaries of the substantial margins of marketable surplus are not, however, the farmers in Dibandiba and Oudie, but the AMC and possibly those licensed grain traders in Nazareth and Debre Zeit who would ensure the regular flow of grain supply by transferring only a fraction of their marketing gains to the farmers, and the continuation of their marketing rights by surrendering 50 per cent of their grain purchase to AMC at AMC-controlled prices.

The operation of the AMC has given rise to gross irregularities; and serves neither the efficiency nor the equity objective of policy. The evidence from Dibandiba and Oudie clearly indicates that peasants would be better off in terms of income and efficiency without than with the AMC. The unleashing of market forces may concentrate the distribution of income, but then, it can also generate growth from which the majority of the participants in peasant agriculture would stand to gain.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Bringing together the major strands running through the preceding chapters of this study, it can be concluded that the enhancement of the machinery of agricultural marketing will substantially improve the economic prospect of peasant agriculture in Ethiopia. Historically, a major factor behind the persistence of subsistence agriculture in Ethiopia has been the weak farm-to-market link. With road networks poorly provided - and the geography of the country making the task of infrastructural development formidable - most of the small producers constituting the bulk of the agricultural population have had their farms about 10 kilometres away from the nearest local markets. In consequence, the production of marketable surplus in the peasant sector has generally been limited to a narrow margin. Moreover, the weak farm-to-market link narrowly circumscribed the scope for competition in marketing foodgrains. Distortions in the marketing of foodgrains have a major cause for the absolute and relative shortage of foodgrains making the rural population vulnerable to droughts and famines, as was the case in 1973/74 and 1984/85, and the urban population to extortionate foodgrain prices.

Prior to the establishment of the AMC in 1976,

private traders, acting as middlemen between farmers and consumers, were the active agents of marketing foodgrains. Entry into the business of middlemanship was, however, circumscribed by minimum capital requirements of storage and transport facilities; and insofar as capital was not easily obtainable, those already in the business enjoyed a quasi-monopoly position, making substantial profits by buying foodgrains at very low prices from the farmers and selling them at very high prices to consumers in the major grain markets.

The establishment of the AMC did nothing to improve the marketing situation. Indeed, the weight of evidence borne by this study suggests that it succeeded only in making matters worse. Producer prices remained as low as ever; and what is worse, the problem of shortages of foodgrains in the market has been more widespread than ever. The marketing problem has been exacerbated by the promulgation of policies restricting the movement of grains from surplus to deficit regions through the agency of private traders, and by the inefficiency with which the AMC has been playing its role as a marketing agent.

The case of Dibandiba and Oudie farmers examined in this study shows that the counter-productive influence of the AMC can be so overwhelming as to constrain the full advantages of nearness to big markets from forthcoming. Thus, farmers in Dibandiba and Oudie are observed to have net incomes which in most cases fall far short of covering the wage bills for 150 working days in an

average year despite the fact of their proximity to the Addis Ababa market. It is also observed that the farmers surveyed in Dibandiba and Oudie are responsive to price incentives, and, accordingly, the rate of marketable surplus produced in these districts is much higher than the national average. The high rate of marketable surplus does not, however, translate into increased farmers' incomes, as the existing marketing arrangements reduces the farmers' role to that of a price taker. In the event, the benefits of increased surplus are appropriated by the AMC and to a certain extent by foodgrain traders who themselves operate under the control of the AMC. But the AMC, as clearly shown in the case study, serves neither the efficiency nor the equity objectives of economic policy.

The major findings of this study lend support to the appeals by the World Bank, the EEC, and other aid donor agencies for the Ethiopian Government to reorient agricultural policy making way for the free operation of the market. Without appearing overly pessimistic, there is, however, some doubt whether changes, especially those formulated to encourage agricultural marketing systems, will be readily forthcoming. This is particularly true as the proposed argument for encouraging more competitive markets does not disguise the push in favour of laissez faire. The latter, however, has often been invoked as an apology for government intervention. But subsequent interventionist policies, promoted in the name of both equity and efficiency, have been effective only in

stifling the initiative of the small farmers and traders.

Advocating the encouragement of more freely operating markets in Ethiopia is essentially a plea for fundamental structural changes aimed at improving agricultural efficiency and growth, and at redistributing the benefits accruing from more freely operating markets. Eliminating the panoply of government policies restricting the operation of the domestic markets seem to be the first step towards alleviating the problem of foodgrain supply in Ethiopia. Most foodgrains continue to be produced and consumed within national borders. Government policies should help remove hurdles restricting the operation of the market. For instance, the government can assist grain production and marketing by setting up specialised agricultural and co-operative banks capable of appraising agricultural production and marketing risks and supervising loans. It is high time that AMC's pricing policy were reviewed, with the aim to stimulate farmers - particularly those in peasant associations - to improve their production by making efficient use of the resources at their disposal. A spirit of co-operative idealism or political crusading may inspire enterprise among farmers for a time. In the longer term, however, the most effective incentive is the economic one.

This would amount, **inter alia**, to the removal of restrictions on the marketing of foodgrains. The

liberalisation of the foodgrain market would result in the integration of markets, permitting prices to reflect widely agreed perception of quality differences, current and future scarcity, and the costs of transport and storage.

Another area of policy reform is the removal of marketing subsidies provided to the AMC and through it to state farms and producer and service co-operatives. Subsidies can become a major budgetary burdens - often dwarfing more productive expenditures in agriculture - particularly when acting as a prop to inefficient parastatal agencies.

A P P E N D I C E S

APPENDIX A

PAGE NUMBERING AS ORIGINAL

QUESTIONNAIRE

1. Annual Production, Consumption and Sales - 1985/86-1987/88.

1.1 What is your Production, Consumption, Sales and Savings for Seeds (in quintals) in the years 1985/86-1987/88?

	1985			1986			1987		
	Production	Consumption	Saved for Seed	Production	Consumption	Saved for Seed	Prodc-	Consump-	Saved for
Teff	-----	-----	-----	-----	-----	-----	-----	-----	-----
Wheat	-----	-----	-----	-----	-----	-----	-----	-----	-----
Barley	-----	-----	-----	-----	-----	-----	-----	-----	-----
Maize	-----	-----	-----	-----	-----	-----	-----	-----	-----
Chick Peas	----	-----	-----	-----	-----	-----	-----	-----	-----
Horse Beans	----	-----	-----	-----	-----	-----	-----	-----	-----
Soya Beans	----	-----	-----	-----	-----	-----	-----	-----	-----
Field Peas	----	-----	-----	-----	-----	-----	-----	-----	-----

1.2 Sales per quintal in Birr of grains to AMC and to open market for the years 1985/86-1987/88.

	1985		1986		1987	
GRAIN	TO AMC	TO OPEN MARKET	TO AMC	TO OPEN MARKET	TO AMC	TO OPEN MARKET
TEFF	-----	-----	-----	-----	-----	-----
WHEAT	-----	-----	-----	-----	-----	-----
BARLEY	-----	-----	-----	-----	-----	-----
SOGHUM	-----	-----	-----	-----	-----	-----
MILLET	-----	-----	-----	-----	-----	-----
MAIZE	-----	-----	-----	-----	-----	-----
CHICK PEAS	-----	-----	-----	-----	-----	-----
HORSE BEANS	-----	-----	-----	-----	-----	-----
SOYA BEANS	-----	-----	-----	-----	-----	-----
FIELD PEAS	-----	-----	-----	-----	-----	-----

1.2 What are your production items?

Teff

Wheat

Barley

Maize

chick peas

Horse beans

Soya beans

Field peas

Others, please specify

1.5 What is (are) the major reason(s) for limited range of crop production?

Soil unsuitability

Policy restrictions (plan)

Easy to weed

No need for multiple ploughing

Shortage of plots

Crop profitability

Short gestation period

No reason

Other, please specity

---

2. Do you have income other than farming?

Yes

No

3. If yes to question number 2, what is the sources of income?

1. Sales of fire-wood and cow dung
2. Sale of earthenware and pottery items
3. Blacksmithing
4. Handicraft (woodworks)
5. food for work
6. Day labour
7. Question does not apply

4. What are your major expenditures?

Edible oil

Salt

Cloths

Soap

Sugar

Kerosine oil

Chilli pepper

Others, please specity

_____

5. Do you have any savings in cash or in kind?

Yes

No

6. If yes to question number 5, How much?

_____ or,

How many? _____

7. What is the distance from your location to the nearest market in kilo metres?

8. What agricultural inputs do you use?

High yield variety seed

Fertilizers

Insecticides

Herbicides

9. What is your source of inputs?

Service cooperatives

Ministry of Agriculture

Other, please specify

_____

10. Have you ever asked for loans? (In Birr or in kind)

Yes

No

11. If yes to question number 10, how much (in Birr)?_____ or,

How many (in kind)?_____

12. If yes to question number 10, when?

_____

13. What was the reason for asking the loan?

To buy draught oxen

To fattern oxen

To buy seeds

To buy fertilizer

To buy herbicides

To buy farm equipment

To pay debt

For consumption

For hospitalization

Others, please Specify

_____

14. What is the state of your debt payment?

Fully paid back

Still paying

Have not started paying

Question does not apply

Other, please specify

_____

15. If you did not get loans, what was the reason for not getting it?

Considered credit riesk and ineligible

Long waiting time (bureaucracy and red tape)

Other, please specify

_____

APPENDIX B

APPENDIX B.1

FACTORS AFFECTING RANGE OF CROPS

NUMBER OF FARMERS FACTORS DETERRING RANGE OF CROPS GROWN	DIBANDIBA		DUDIE		
	PA	PC	PA	PC	
SOILD UNSUITABILITY	2 (8.3%)	0 (0.0%)	3 (10.0%)	6 (24.0%)	THE REST DIDN'T ANSWER
SHORTAGE OF PLOTS	19 (79.2%)		22 (73.3%)		
CROP PROFITABILITY	3 (12.5%)		5 (16.7%)		
PLANNED		31 (100%)		13 (52.0%)	

APPENDIX B.2

USE OF AGRICULTURAL INPUTS

TYPE OF AGRICULTURAL INPUTS USED	NUMBER OF FARMERS USING INPUTS			
	DIBANDIBA		DUDIE	
	PA	PC	PA	PC
HIGH YIELDING VARIETY SEEDS (HYVs)	18 (75%)	31 (100%)	18 (60%)	25 (100%)
FERTILIZERS	24 (100%)	31 (100%)	29 (96.7%)	25 (100%)
INSECTICIDES	15 (62.5%)	31 (100%)	18 (60.0%)	25 (100%)
HERBICIDES	10 (41.7%)	18* (58.1%)	4 (13.3%)	25 (100%)

*the rest didn't respond to this question

APPENDIX B.3

SOURCE OF INCOME OTHER THAN FARMING

SOURCE OF INCOME OTHER THAN FARMING	NUMBER OF FARMERS			
	DIBANDIBA		OUDIE	
	PA	PC	PA	PC
FOOD FOR WORK	1 (4.2%)	NONE	2 (6.7%)	NONE
SALES OF FIRE WOOD	0	"	2 (6.7%)	"
CASUAL EMPLOYMENT	1 (4.2%)	"	0	"

APPENDIX B.4

MODE OF PEASANT SAVINGS

MODE OF SAVINGS	NUMBER OF FARMERS			
	DIBANDIBA		OUDIE	
	PA	PC	PA	PC
IN CASH	1 (4.2%)	3 (9.6%)	0	1 (4.0%)
IN KIND	10 (41.7%)	2 (6.5%)	4 (13.3%)	0

APPENDIX B.5

REASONS FOR ASKING LOANS

REASONS FOR ASKING LOANS	NUMBER OF FARMERS ASKING LOANS			
	DIBANDIBA		OUDIE	
	PA	PC	PA	PC
TO BUY OXEN	8 (33.3%)	0	0	1 (4.0%)
TO FATTEN OXEN	4 (16.7%)	1 (3.2%)	2 (6.7%)	2 (8.0%)
TO BUY SEEDS	1 (4.2%)	0	2 (6.7%)	0
TO BUY FERTILIZER	1 (4.2%)	0	0	0
FOR CONSUMPTION	1 (4.2%)	10 (32.3%)	0	2 (8.0%)
TO BUY GRAIN	0	1 (3.2%)	0	0
FOR HOME PROBLEM	0	3 (9.68%)	0	0
TO PAY DEBT	0	0	0	1 (4.0%)
FOR HOSPITALIZATION	0	2 (6.5%)	0	2 (8.0%)

APPENDIX B.6

STATE OF DEBT SERVICING

STATE OF DEBT REPAYMENT	NUMBER OF FARMERS REPAYING DEBTS	
	DIBANDIBA	OUDIE
	PA	PC
PA		
PC		
FULLY PAID BACK	2 (8.3%)	3 (9.7%)
STILL PAYING	9 (37.5%)	8 (25.8%)
5 (16.7%)	5 (20.0%)	
HAVE'NT STARTED PAYING	1 (4.0%)	
CAN'T PAY	1 (4.2%)	

APPENDIX C.1

APPENDIX C.1.1

DIBANDIBA PA FARMERS' RATIO OF MARKETABLE SURPLUS FOR TEFF

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
10 - 20	2	8.3
20 - 30	2	8.3
30 - 40	1	4.2
40 - 50	9	37.5
50 - 60	5	20.8
60 - 70	5	20.8
TOTAL	24	100.0

APPENDIX C1.2

RATIO OF MARKETABLE SURPLUS FOR WHEAT

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
0	2	8.3
10 - 20	1	4.2
20 - 30	2	8.3
30 - 40	4	16.7
40 - 50	4	16.7
50 - 60	3	12.5
60 - 70	1	4.2
70 - 80	1	4.2
	6*	25.0
TOTAL	24	100.0

* Did not produce wheat

APPENDIX C.1.3

RATIO OF MARKETABLE SURPLUS FOR BARLEY

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
0	7	29.2
0 - 10	1	4.2
10 - 20	1	4.2
20 - 30	1	4.2
30 - 40	1	4.2
40 - 50	2	8.3
	11*	45.8

* Did not produce barley

APPENDIX C.1.4

RATIO OF MARKETABLE SURPLUS FOR MAIZE

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
20 - 30	1	4.2
40 - 50	1	4.2
.		
.		
70 - 80	2	8.3
80 - 90	1	4.2
	2	8.3
	17*	70.8

*Did not produce maize

APPENDIX C.1.5

RATIO OF MARKETABLE SURPLUS FOR FIELD PEAS

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
0	1	4.2
.		
.		
70 - 80	1	4.2
.		
.		
91 - 100	22*	91.7

*Did not produce field peas

APPENDIX C.2

APPENDIX C.2.1

OUDIE PA FARMERS'
RATIO OF MARKETABLE SURPLUS FOR TEFF

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
30 - 40	4	13.3
40 - 50	10	33.3
50 - 60	11	36.7
60 - 70	3	10.0
70 - 80	1	3.3
80 - 90	1	3.3
TOTAL	30	100.0

APPENDIX C.2.2

RATIO OF MARKETABLE SURPLUS FOR WHEAT

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
10 - 20	2	6.7
20 - 30	6	20.0
30 - 40	11	36.7
40 - 50	9	30.0
50 - 60	1	3.3
60 - 70	1	3.3
TOTAL	30	100.0

APPENDIX C.2.3

RATIO OF MARKETABLE SURPLUS FOR BARLEY

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
0	13	43.3
0 - 10	1	3.3
10 - 20	2	6.7
20 - 30	2	6.7
30 - 40	2	6.7
	10*	33.3

*Did not produce barley

APPENDIX C.2.4

RATIO OF MARKETABLE SURPLUS FOR SORGHUM

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
0	1	3.3
	29*	96.7
TOTAL	30	100.0

*Did not produce sorghum

APPENDIX C.2.5

RATIO OF MARKETABLE SURPLUS FOR MAIZE

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
0	1	3.3
.		
.		
.		
60 - 70	1	3.3
	1	3.3
	27*	90.0

*Did not produce maize

APPENDIX C.2.6

RATIO OF MARKETABLE SURPLUS FOR CHICK PEAS

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
0	1	3.3
	29*	96.7
TOTAL	30	100.0

*Did not produce chick peas

APPENDIX C.2.7

RATIO OF MARKETABLE SURPLUS FOR HORSE BEANS

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
0	7	23.3
0 - 10	1	3.3
.		
30 - 40	1	3.3
40 - 50	1	3.3
.		
60 - 70	1	3.3
	18*	60.0
TOTAL	30	100.0

*Did not produce horse beans

APPENDIX C.2.8

RATIO OF MARKETABLE SURPLUS FOR FIELD PEAS

CLASSIFICATION OF MARKETABLE SURPLUS IN %	NUMBER OF FARMERS	PERCENT
0	4	13.3
0 - 10	2	6.7
10 - 20	2	6.7
	22*	73.3
TOTAL	30	100.0

*Did not produce field peas

APPENDIX D

APPENDIX D.1

ESTIMATION OF SHORT RUN PRICE ELASTICITY OF SUPPLY RESPONSIVENESS OF DIBANDIBA PA FARMERS

FARMER NUMBER	FARM AREA SIZE	PRICE 1	PRICE 2	QUANTITY 1	QUANTITY 2	CHANGE IN PRICE	CHANGE IN QUANTITY	ELASTICITY
1	1.75	118	98	15	9	-16.9	-40.00	2.36
2	1.50	118	98	6	5	-16.9	-16.67	0.98
3	1.50	118	98	12	12	-16.9	0.00	0.00
4	1.75	118	98	8	7	-16.9	-12.50	0.74
5	2.00	118	98	10	9	-16.9	-10.90	0.59
6	2.00	118	98	12	9	-16.9	-25.00	1.47
7	2.00	118	98	10	6	-16.9	-40.00	2.36
8	1.50	118	98	4	4	-16.9	-12.50	0.74
9	1.50	118	98	11	7	-16.9	-33.64	1.98
10	1.50	118	98	10	11	-16.9	10.00	-0.59
11	1.75	118	98	23	26	-16.9	13.16	-0.77
12	2.00	118	98	10	7	-16.9	-30.00	1.77
13	2.00	118	98	7	5	-16.9	-28.57	1.68
14	2.00	118	98	25	14	-16.9	-44.00	2.59
15	2.00	118	98	8	9	-16.9	12.50	-0.74
16	2.00	118	98	5	14	-16.9	180.00	-10.60
17	1.20	118	98	7	8	-16.9	23.08	-1.36
18	1.20	118	98	22	8	-16.9	-63.64	3.75
19	1.20	118	98	25	10	-16.9	-60.00	3.53
20	1.20	118	98	7	12	-16.9	84.62	-4.98
21	1.20	118	98	27	20	-16.9	-25.93	1.53
22	1.20	118	98	10	8	-16.9	-20.00	1.18
23	1.20	118	98	9	7	-16.9	-17.65	1.04
24	1.20	118	98	8	8	-16.9	0.00	0.00

APPENDIX D.2

ESTIMATION OFSHORT RUN ESLASTICITY OF SUPPLY RESPONSIVENESS OF OUDIE PA FARMERS

FARMER NUMBER	FARM AREA SIZE	PRICE 1	PRICE 2	QUANTITY 1	QUANTITY 2	CHANGE IN PRICE	CHANGE IN QUANTITY	ELASTICITY
1	1.00	118	95	7	3	-19.0	-57.14	3.00
2	2.00	118	95	6	5	-19.0	-16.67	0.87
3	1.00	118	95	7	3	-19.0	-57.14	3.00
4	2.00	118	95	6	3	-19.0	-50.00	2.62
5	1.00	118	95	17	9	-19.0	-47.06	2.47
6	2.00	118	95	3	1	-19.0	-71.67	3.76
7	1.00	118	95	8	5	-19.0	-37.50	1.97
8	2.00	118	95	6	3	-19.0	-50.00	2.62
9	1.00	118	95	9	5	-19.0	-44.44	2.33
10	2.50	118	95	0	3	-19.0	0.00	0.00
11	1.25	118	95	5	1	-19.0	-80.00	4.20
12	1.75	118	95	3	2	-19.0	-33.33	1.75
13	1.50	118	95	11	7	-19.0	-36.36	1.91
14	1.75	118	95	7	5	-19.0	-23.08	1.21
15	2.00	118	95	15	3	-19.0	-80.00	4.20
16	1.50	118	95	5	2	-19.0	-60.00	3.15
17	1.50	118	95	5	4	-19.0	-20.00	1.05
18	1.50	118	95	4	1	-19.0	-75.00	3.94
19	2.00	118	95	12	5	-19.0	-58.33	3.94
20	2.00	118	95	5	3	-19.0	-40.00	2.10
21	2.00	118	95	10	5	-19.0	-50.00	2.62
22	2.00	118	95	6	3	-19.0	-50.00	2.62
23	2.00	118	95	5	3	-19.0	-40.00	2.10
24	1.75	118	95	3	3	-19.0	0.00	0.00
25	2.00	118	95	12	6	-19.0	-54.17	2.84
26	2.25	118	95	4	1	-19.0	-75.00	3.94
27	1.50	118	95	0	4	-19.0	0.00	0.00
28	1.25	118	95	6	3	-19.0	-50.00	2.62
29	2.00	118	95	15	5	-19.0	-70.00	3.67
30	2.00	118	95	6	0	-19.0	-100.00	5.25

APPENDIX E

APPENDIX E

AMC's QUOTA TOWARDS DIBANDIBA AND OUDIE PA FFARMERS IN RELATION TO ITS QUOTA ELSEWHERE IN THE COUNTRY

TEFF

DISTR	FTYPE	FNUMB	IPAMC	TQAMC	TQE	F4	F5
1	1	1	.33	810612.00	9687000.14	.08	3.98
1	1	2	.30	810612.00	9687000.14	.08	3.59
1	1	3	.58	810612.00	9687000.14	.08	6.97
1	1	4	.29	810612.00	9687000.14	.08	3.41
1	1	5	.33	810612.00	9687000.14	.08	3.98
1	1	6	.56	810612.00	9687000.14	.08	6.64
1	1	7	.33	810612.00	9687000.14	.08	3.98
1	1	8	.29	810612.00	9687000.14	.08	3.41
1	1	9	.27	810612.00	9687000.14	.08	3.27
1	1	10	.20	810612.00	9687000.14	.08	2.39
1	1	11	.23	810612.00	9687000.14	.08	2.78
1	1	12	.29	810612.00	9687000.14	.08	3.41
1	1	13	.60	810612.00	9687000.14	.08	7.17
1	1	14	.07	810612.00	9687000.14	.08	.85
1	1	15	.28	810612.00	9687000.14	.08	3.32
1	1	16	.36	810612.00	9687000.14	.08	4.27
1	1	17	.50	810612.00	9687000.14	.08	5.98
1	1	18	.50	810612.00	9687000.14	.08	5.98
1	1	19	.35	810612.00	9687000.14	.08	4.18
1	1	20	.08	810612.00	9687000.14	.08	1.00
1	1	21	.05	810612.00	9687000.14	.08	.65
1	1	22	.00	810612.00	9687000.14	.08	.00
1	1	23	.14	810612.00	9687000.14	.08	1.71
1	1	24	.13	810612.00	9687000.14	.08	1.49
1	2	1	.00	810612.00	9687000.14	.08	.00
1	2	2	.00	810612.00	9687000.14	.08	.00
1	2	3	.00	810612.00	9687000.14	.08	.00
1	2	4	.00	810612.00	9687000.14	.08	.00
1	2	5	.00	810612.00	9687000.14	.08	.00
1	2	6	.00	810612.00	9687000.14	.08	.00
1	2	7	.00	810612.00	9687000.14	.08	.00
1	2	8	.00	810612.00	9687000.14	.08	.00
1	2	9	.00	810612.00	9687000.14	.08	.00
1	2	10	.00	810612.00	9687000.14	.08	.00
1	2	11	.00	810612.00	9687000.14	.08	.00
1	2	12	.00	810612.00	9687000.14	.08	.00
1	2	13	.00	810612.00	9687000.14	.08	.00
1	2	14	.00	810612.00	9687000.14	.08	.00
1	2	15	.00	810612.00	9687000.14	.08	.00
1	2	16	.00	810612.00	9687000.14	.08	.00
1	2	17	.00	810612.00	9687000.14	.08	.00
1	2	18	.00	810612.00	9687000.14	.08	.00
1	2	19	.00	810612.00	9687000.14	.08	.00

1	2	20	.00	810612.00	9687000.14	.08	.00
1	2	21	.00	810612.00	9687000.14	.08	.00
1	2	22	.00	810612.00	9687000.14	.08	.00
1	2	23	.00	810612.00	9687000.14	.08	.00
1	2	24	.00	810612.00	9687000.14	.08	.00
1	2	25	.00	810612.00	9687000.14	.08	.00
1	2	26	.00	810612.00	9687000.14	.08	.00
1	2	27	.00	810612.00	9687000.14	.08	.00
1	2	28	.00	810612.00	9687000.14	.08	.00
1	2	29	.00	810612.00	9687000.14	.08	.00
1	2	30	.00	810612.00	9687000.14	.08	.00
1	2	31	.00	810612.00	9687000.14	.08	.00
2	1	1	.33	810612.00	9687000.14	.08	3.98
2	1	2	.20	810612.00	9687000.14	.08	2.39
2	1	3	.00	810612.00	9687000.14	.08	.00
2	1	4	.30	810612.00	9687000.14	.08	3.62
2	1	5	.22	810612.00	9687000.14	.08	2.66
2	1	6	1.00	810612.00	9687000.14	.08	11.95
2	1	7	.40	810612.00	9687000.14	.08	4.78
2	1	8	.50	810612.00	9687000.14	.08	5.98
2	1	9	.00	810612.00	9687000.14	.08	.00
2	1	10	.33	810612.00	9687000.14	.08	3.98
2	1	11	.00	810612.00	9687000.14	.08	.00
2	1	12	.25	810612.00	9687000.14	.08	2.99
2	1	13	.21	810612.00	9687000.14	.08	2.56
2	1	14	.10	810612.00	9687000.14	.08	1.20
2	1	15	.50	810612.00	9687000.14	.08	5.98
2	1	16	.25	810612.00	9687000.14	.08	2.99
2	1	17	.15	810612.00	9687000.14	.08	1.79
2	1	18	.40	810612.00	9687000.14	.08	4.78
2	1	19	.40	810612.00	9687000.14	.08	4.78
2	1	20	.50	810612.00	9687000.14	.08	5.98
2	1	21	.40	810612.00	9687000.14	.08	4.78
2	1	22	.83	810612.00	9687000.14	.08	9.96
2	1	23	1.00	810612.00	9687000.14	.08	11.95
2	1	24	.33	810612.00	9687000.14	.08	3.98
2	1	25	.36	810612.00	9687000.14	.08	4.35
2	1	26	.00	810612.00	9687000.14	.08	.00
2	1	27	.25	810612.00	9687000.14	.08	2.99
2	1	28	.17	810612.00	9687000.14	.08	1.99
2	1	29	.33	810612.00	9687000.14	.08	3.98
2	1	30	.00	810612.00	9687000.14	.08	.00
2	2	1	.00	810612.00	9687000.14	.08	.00
2	2	2	.00	810612.00	9687000.14	.08	.00
2	2	3	.00	810612.00	9687000.14	.08	.00
2	2	4	.00	810612.00	9687000.14	.08	.00
2	2	5	.00	810612.00	9687000.14	.08	.00
2	2	6	.00	810612.00	9687000.14	.08	.00
2	2	7	.00	810612.00	9687000.14	.08	.00
2	2	8	.00	810612.00	9687000.14	.08	.00
2	2	9	.00	810612.00	9687000.14	.08	.00
2	2	10	.00	810612.00	9687000.14	.08	.00
2	2	11	.00	810612.00	9687000.14	.08	.00
2	2	12	.00	810612.00	9687000.14	.08	.00
2	2	13	.00	810612.00	9687000.14	.08	.00
2	2	14	.00	810612.00	9687000.14	.08	.00
2	2	15	.00	810612.00	9687000.14	.08	.00
2	2	16	.00	810612.00	9687000.14	.08	.00

2	2	17	.00	810612.00	9687000.14	.08	.00
2	2	18	.00	810612.00	9687000.14	.08	.00
2	2	19	.00	810612.00	9687000.14	.08	.00
2	2	20	.00	810612.00	9687000.14	.08	.00
2	2	21	.00	810612.00	9687000.14	.08	.00
2	2	22	.00	810612.00	9687000.14	.08	.00
2	2	23	.00	810612.00	9687000.14	.08	.00
2	2	24	.00	810612.00	9687000.14	.08	.00
2	2	25	.00	810612.00	9687000.14	.08	.00

WHEAT

DISTR	FTYPE	FNUMB	IPMAC	TQMAC	TQE	F4	F5
1	1	1	.251	620956.00	7744000.07	.21	1.19
1	1	2	.001	620956.00	7744000.07	.21	.00
1	1	3	.001	620956.00	7744000.07	.21	.00
1	1	4	.001	620956.00	7744000.07	.21	.00
1	1	5	.631	620956.00	7744000.07	.21	2.99
1	1	6	.001	620956.00	7744000.07	.21	.00
1	1	7	.331	620956.00	7744000.07	.21	1.59
1	1	8	.501	620956.00	7744000.07	.21	2.39
1	1	9	.331	620956.00	7744000.07	.21	1.59
1	1	10	.001	620956.00	7744000.07	.21	.00
1	1	11	.461	620956.00	7744000.07	.21	2.20
1	1	12	.001	620956.00	7744000.07	.21	.00
1	1	13	.501	620956.00	7744000.07	.21	2.39
1	1	14	.381	620956.00	7744000.07	.21	1.79
1	1	15	.251	620956.00	7744000.07	.21	1.19
1	1	16	.001	620956.00	7744000.07	.21	.00
1	1	17	.001	620956.00	7744000.07	.21	.00
1	1	18	.001	620956.00	7744000.07	.21	.00
1	1	19	.001	620956.00	7744000.07	.21	.00
1	1	20	.211	620956.00	7744000.07	.21	1.01
1	1	21	.211	620956.00	7744000.07	.21	.99
1	1	22	.501	620956.00	7744000.07	.21	2.39
1	1	23	.001	620956.00	7744000.07	.21	.00
1	1	24	.001	620956.00	7744000.07	.21	.00
1	2	1	.001	620956.00	7744000.07	.21	.00
1	2	2	.001	620956.00	7744000.07	.21	.00
1	2	3	.001	620956.00	7744000.07	.21	.00
1	2	4	.001	620956.00	7744000.07	.21	.00
1	2	5	.001	620956.00	7744000.07	.21	.00
1	2	6	.001	620956.00	7744000.07	.21	.00
1	2	7	.001	620956.00	7744000.07	.21	.00
1	2	8	.001	620956.00	7744000.07	.21	.00
1	2	9	.001	620956.00	7744000.07	.21	.00
1	2	10	.001	620956.00	7744000.07	.21	.00
1	2	11	.001	620956.00	7744000.07	.21	.00
1	2	12	.001	620956.00	7744000.07	.21	.00
1	2	13	.001	620956.00	7744000.07	.21	.00
1	2	14	.001	620956.00	7744000.07	.21	.00
1	2	15	.001	620956.00	7744000.07	.21	.00
1	2	16	.001	620956.00	7744000.07	.21	.00
1	2	17	.001	620956.00	7744000.07	.21	.00
1	2	18	.001	620956.00	7744000.07	.21	.00
1	2	19	.001	620956.00	7744000.07	.21	.00
1	2	20	.001	620956.00	7744000.07	.21	.00

1	2	21	.001	620956.00	7744000.07	.21	.00
1	2	22	.001	620956.00	7744000.07	.21	.00
1	2	23	.001	620956.00	7744000.07	.21	.00
1	2	24	.001	620956.00	7744000.07	.21	.00
1	2	25	.001	620956.00	7744000.07	.21	.00
1	2	26	.001	620956.00	7744000.07	.21	.00
1	2	27	.001	620956.00	7744000.07	.21	.00
1	2	28	.001	620956.00	7744000.07	.21	.00
1	2	29	.001	620956.00	7744000.07	.21	.00
1	2	30	.001	620956.00	7744000.07	.21	.00
1	2	31	.001	620956.00	7744000.07	.21	.00
2	1	1	.171	620956.00	7744000.07	.21	.80
2	1	2	.381	620956.00	7744000.07	.21	1.79
2	1	3	.291	620956.00	7744000.07	.21	1.36
2	1	4	.001	620956.00	7744000.07	.21	.00
2	1	5	.251	620956.00	7744000.07	.21	1.19
2	1	6	.301	620956.00	7744000.07	.21	1.43
2	1	7	.331	620956.00	7744000.07	.21	1.59
2	1	8	.421	620956.00	7744000.07	.21	1.99
2	1	9	.001	620956.00	7744000.07	.21	.00
2	1	10	.251	620956.00	7744000.07	.21	1.19
2	1	11	.631	620956.00	7744000.07	.21	2.99
2	1	12	.171	620956.00	7744000.07	.21	.80
2	1	13	.331	620956.00	7744000.07	.21	1.59
2	1	14	.431	620956.00	7744000.07	.21	2.05
2	1	15	.501	620956.00	7744000.07	.21	2.39
2	1	16	.501	620956.00	7744000.07	.21	2.39
2	1	17	.001	620956.00	7744000.07	.21	.00
2	1	18	.671	620956.00	7744000.07	.21	3.18
2	1	19	.201	620956.00	7744000.07	.21	.96
2	1	20	.301	620956.00	7744000.07	.21	1.43
2	1	21	.251	620956.00	7744000.07	.21	1.19
2	1	22	.001	620956.00	7744000.07	.21	.00
2	1	23	.671	620956.00	7744000.07	.21	3.18
2	1	24	.501	620956.00	7744000.07	.21	2.39
2	1	25	.191	620956.00	7744000.07	.21	.90
2	1	26	.131	620956.00	7744000.07	.21	.60
2	1	27	.251	620956.00	7744000.07	.21	1.19
2	1	28	.131	620956.00	7744000.07	.21	.60
2	1	29	.601	620956.00	7744000.07	.21	2.87
2	1	30	.001	620956.00	7744000.07	.21	.00
2	2	1	.001	620956.00	7744000.07	.21	.00
2	2	2	.001	620956.00	7744000.07	.21	.00
2	2	3	.001	620956.00	7744000.07	.21	.00
2	2	4	.001	620956.00	7744000.07	.21	.00
2	2	5	.001	620956.00	7744000.07	.21	.00
2	2	6	.001	620956.00	7744000.07	.21	.00
2	2	7	.001	620956.00	7744000.07	.21	.00
2	2	8	.001	620956.00	7744000.07	.21	.00
2	2	9	.001	620956.00	7744000.07	.21	.00
2	2	10	.001	620956.00	7744000.07	.21	.00
2	2	11	.001	620956.00	7744000.07	.21	.00
2	2	12	.001	620956.00	7744000.07	.21	.00
2	2	13	.001	620956.00	7744000.07	.21	.00
2	2	14	.001	620956.00	7744000.07	.21	.00
2	2	15	.001	620956.00	7744000.07	.21	.00
2	2	16	.001	620956.00	7744000.07	.21	.00
2	2	17	.001	620956.00	7744000.07	.21	.00

2	2	18	.001	620956.00	7744000.07	.21	.00
2	2	19	.001	620956.00	7744000.07	.21	.00
2	2	20	.001	620956.00	7744000.07	.21	.00
2	2	21	.001	620956.00	7744000.07	.21	.00
2	2	22	.001	620956.00	7744000.07	.21	.00
2	2	23	.001	620956.00	7744000.07	.21	.00
2	2	24	.001	620956.00	7744000.07	.21	.00
2	2	25	.001	620956.00	7744000.07	.21	.00

BARLEY

DISTR	FTYPE	FNUMB	IPMAC	TQMAC	TQE	F4	F5
1	1	1	.00	272510.00	9138000.59	.03	.00
1	1	2	.00	272510.00	9138000.59	.03	.00
1	1	3	.00	272510.00	9138000.59	.03	.00
1	1	4	.00	272510.00	9138000.59	.03	.00
1	1	5	.00	272510.00	9138000.59	.03	.00
1	1	6	.00	272510.00	9138000.59	.03	.00
1	1	7	.00	272510.00	9138000.59	.03	.00
1	1	8	.50	272510.00	9138000.59	.03	16.77
1	1	9	.00	272510.00	9138000.59	.03	.00
1	1	10	.00	272510.00	9138000.59	.03	.00
1	1	11	.00	272510.00	9138000.59	.03	.00
1	1	12	.00	272510.00	9138000.59	.03	.00
1	1	13	.00	272510.00	9138000.59	.03	.00
1	1	14	.17	272510.00	9138000.59	.03	5.59
1	1	15	.00	272510.00	9138000.59	.03	.00
1	1	16	.00	272510.00	9138000.59	.03	.00
1	1	17	.00	272510.00	9138000.59	.03	.00
1	1	18	.00	272510.00	9138000.59	.03	.00
1	1	19	.00	272510.00	9138000.59	.03	.00
1	1	20	.00	272510.00	9138000.59	.03	.00
1	1	21	.00	272510.00	9138000.59	.03	.00
1	1	22	.00	272510.00	9138000.59	.03	.00
1	1	23	.00	272510.00	9138000.59	.03	.00
1	1	24	.00	272510.00	9138000.59	.03	.00
1	2	1	.00	272510.00	9138000.59	.03	.00
1	2	2	.00	272510.00	9138000.59	.03	.00
1	2	3	.00	272510.00	9138000.59	.03	.00
1	2	4	.00	272510.00	9138000.59	.03	.00
1	2	5	.00	272510.00	9138000.59	.03	.00
1	2	6	.00	272510.00	9138000.59	.03	.00
1	2	7	.00	272510.00	9138000.59	.03	.00
1	2	8	.00	272510.00	9138000.59	.03	.00
1	2	9	.00	272510.00	9138000.59	.03	.00
1	2	10	.00	272510.00	9138000.59	.03	.00
1	2	11	.00	272510.00	9138000.59	.03	.00
1	2	12	.00	272510.00	9138000.59	.03	.00
1	2	13	.00	272510.00	9138000.59	.03	.00
1	2	14	.00	272510.00	9138000.59	.03	.00
1	2	15	.00	272510.00	9138000.59	.03	.00
1	2	16	.00	272510.00	9138000.59	.03	.00
1	2	17	.00	272510.00	9138000.59	.03	.00
1	2	18	.00	272510.00	9138000.59	.03	.00
1	2	19	.00	272510.00	9138000.59	.03	.00
1	2	20	.00	272510.00	9138000.59	.03	.00
1	2	21	.00	272510.00	9138000.59	.03	.00

1	2	22	.00	272510.00	9138000.59	.03	.00
1	2	23	.00	272510.00	9138000.59	.03	.00
1	2	24	.00	272510.00	9138000.59	.03	.00
1	2	25	.00	272510.00	9138000.59	.03	.00
1	2	26	.00	272510.00	9138000.59	.03	.00
1	2	27	.00	272510.00	9138000.59	.03	.00
1	2	28	.00	272510.00	9138000.59	.03	.00
1	2	29	.00	272510.00	9138000.59	.03	.00
1	2	30	.00	272510.00	9138000.59	.03	.00
1	2	31	.00	272510.00	9138000.59	.03	.00
2	1	1	.00	272510.00	9138000.59	.03	.00
2	1	2	.00	272510.00	9138000.59	.03	.00
2	1	3	.00	272510.00	9138000.59	.03	.00
2	1	4	.00	272510.00	9138000.59	.03	.00
2	1	5	.00	272510.00	9138000.59	.03	.00
2	1	6	.00	272510.00	9138000.59	.03	.00
2	1	7	.00	272510.00	9138000.59	.03	.00
2	1	8	.00	272510.00	9138000.59	.03	.00
2	1	9	.00	272510.00	9138000.59	.03	.00
2	1	10	.00	272510.00	9138000.59	.03	.00
2	1	11	.00	272510.00	9138000.59	.03	.00
2	1	12	.00	272510.00	9138000.59	.03	.00
2	1	13	.33	272510.00	9138000.59	.03	11.18
2	1	14	.33	272510.00	9138000.59	.03	11.18
2	1	15	.00	272510.00	9138000.59	.03	.00
2	1	16	.00	272510.00	9138000.59	.03	.00
2	1	17	.00	272510.00	9138000.59	.03	.00
2	1	18	.00	272510.00	9138000.59	.03	.00
2	1	19	.00	272510.00	9138000.59	.03	.00
2	1	20	.00	272510.00	9138000.59	.03	.00
2	1	21	.00	272510.00	9138000.59	.03	.00
2	1	22	.00	272510.00	9138000.59	.03	.00
2	1	23	.00	272510.00	9138000.59	.03	.00
2	1	24	.00	272510.00	9138000.59	.03	.00
2	1	25	.00	272510.00	9138000.59	.03	.00
2	1	26	.00	272510.00	9138000.59	.03	.00
2	1	27	.00	272510.00	9138000.59	.03	.00
2	1	28	.00	272510.00	9138000.59	.03	.00
2	1	29	.00	272510.00	9138000.59	.03	.00
2	1	30	.00	272510.00	9138000.59	.03	.00
2	2	1	.00	272510.00	9138000.59	.03	.00
2	2	2	.00	272510.00	9138000.59	.03	.00
2	2	3	.00	272510.00	9138000.59	.03	.00
2	2	4	.00	272510.00	9138000.59	.03	.00
2	2	5	.00	272510.00	9138000.59	.03	.00
2	2	6	.00	272510.00	9138000.59	.03	.00
2	2	7	.00	272510.00	9138000.59	.03	.00
2	2	8	.00	272510.00	9138000.59	.03	.00
2	2	9	.00	272510.00	9138000.59	.03	.00
2	2	10	.00	272510.00	9138000.59	.03	.00
2	2	11	.00	272510.00	9138000.59	.03	.00
2	2	12	.00	272510.00	9138000.59	.03	.00
2	2	13	.00	272510.00	9138000.59	.03	.00
2	2	14	.00	272510.00	9138000.59	.03	.00
2	2	15	.00	272510.00	9138000.59	.03	.00
2	2	16	.00	272510.00	9138000.59	.03	.00
2	2	17	.00	272510.00	9138000.59	.03	.00
2	2	18	.00	272510.00	9138000.59	.03	.00

2	2	19	.00	272510.00	9138000.59	.03	.00
2	2	20	.00	272510.00	9138000.59	.03	.00
2	2	21	.00	272510.00	9138000.59	.03	.00
2	2	22	.00	272510.00	9138000.59	.03	.00
2	2	23	.00	272510.00	9138000.59	.03	.00
2	2	24	.00	272510.00	9138000.59	.03	.00
2	2	25	.00	272510.00	9138000.59	.03	.00

SORGHUM

DISTR	FTYPE	FNUMB	IPAC	TQMAC	TQE	F4	F5
1	1	1	.00	287080.00	9045000.48	.03	.00
1	1	2	.00	287080.00	9045000.48	.03	.00
1	1	3	.00	287080.00	9045000.48	.03	.00
1	1	4	.00	287080.00	9045000.48	.03	.00
1	1	5	.00	287080.00	9045000.48	.03	.00
1	1	6	.00	287080.00	9045000.48	.03	.00
1	1	7	.00	287080.00	9045000.48	.03	.00
1	1	8	.00	287080.00	9045000.48	.03	.00
1	1	9	.00	287080.00	9045000.48	.03	.00
1	1	10	.00	287080.00	9045000.48	.03	.00
1	1	11	.00	287080.00	9045000.48	.03	.00
1	1	12	.00	287080.00	9045000.48	.03	.00
1	1	13	.00	287080.00	9045000.48	.03	.00
1	1	14	.00	287080.00	9045000.48	.03	.00
1	1	15	.00	287080.00	9045000.48	.03	.00
1	1	16	.00	287080.00	9045000.48	.03	.00
1	1	17	.00	287080.00	9045000.48	.03	.00
1	1	18	.00	287080.00	9045000.48	.03	.00
1	1	19	.00	287080.00	9045000.48	.03	.00
1	1	20	.00	287080.00	9045000.48	.03	.00
1	1	21	.00	287080.00	9045000.48	.03	.00
1	1	22	.00	287080.00	9045000.48	.03	.00
1	1	23	.00	287080.00	9045000.48	.03	.00
1	1	24	.00	287080.00	9045000.48	.03	.00
1	2	1	.00	287080.00	9045000.48	.03	.00
1	2	2	.00	287080.00	9045000.48	.03	.00
1	2	3	.00	287080.00	9045000.48	.03	.00
1	2	4	.00	287080.00	9045000.48	.03	.00
1	2	5	.00	287080.00	9045000.48	.03	.00
1	2	6	.00	287080.00	9045000.48	.03	.00
1	2	7	.00	287080.00	9045000.48	.03	.00
1	2	8	.00	287080.00	9045000.48	.03	.00
1	2	9	.00	287080.00	9045000.48	.03	.00
1	2	10	.00	287080.00	9045000.48	.03	.00
1	2	11	.00	287080.00	9045000.48	.03	.00
1	2	12	.00	287080.00	9045000.48	.03	.00
1	2	13	.00	287080.00	9045000.48	.03	.00
1	2	14	.00	287080.00	9045000.48	.03	.00
1	2	15	.00	287080.00	9045000.48	.03	.00
1	2	16	.00	287080.00	9045000.48	.03	.00
1	2	17	.00	287080.00	9045000.48	.03	.00
1	2	18	.00	287080.00	9045000.48	.03	.00
1	2	19	.00	287080.00	9045000.48	.03	.00
1	2	20	.00	287080.00	9045000.48	.03	.00
1	2	21	.00	287080.00	9045000.48	.03	.00
1	2	22	.00	287080.00	9045000.48	.03	.00

1	2	23	.00	287080.00	9045000.48	.03	.00
1	2	24	.00	287080.00	9045000.48	.03	.00
1	2	25	.00	287080.00	9045000.48	.03	.00
1	2	26	.00	287080.00	9045000.48	.03	.00
1	2	27	.00	287080.00	9045000.48	.03	.00
1	2	28	.00	287080.00	9045000.48	.03	.00
1	2	29	.00	287080.00	9045000.48	.03	.00
1	2	30	.00	287080.00	9045000.48	.03	.00
1	2	31	.00	287080.00	9045000.48	.03	.00
2	1	1	.00	287080.00	9045000.48	.03	.00
2	1	2	.00	287080.00	9045000.48	.03	.00
2	1	3	.00	287080.00	9045000.48	.03	.00
2	1	4	.00	287080.00	9045000.48	.03	.00
2	1	5	.00	287080.00	9045000.48	.03	.00
2	1	6	.00	287080.00	9045000.48	.03	.00
2	1	7	.00	287080.00	9045000.48	.03	.00
2	1	8	.00	287080.00	9045000.48	.03	.00
2	1	9	.00	287080.00	9045000.48	.03	.00
2	1	10	.00	287080.00	9045000.48	.03	.00
2	1	11	.00	287080.00	9045000.48	.03	.00
2	1	12	.00	287080.00	9045000.48	.03	.00
2	1	13	.00	287080.00	9045000.48	.03	.00
2	1	14	.00	287080.00	9045000.48	.03	.00
2	1	15	.00	287080.00	9045000.48	.03	.00
2	1	16	.00	287080.00	9045000.48	.03	.00
2	1	17	.00	287080.00	9045000.48	.03	.00
2	1	18	.00	287080.00	9045000.48	.03	.00
2	1	19	.00	287080.00	9045000.48	.03	.00
2	1	20	.00	287080.00	9045000.48	.03	.00
2	1	21	.00	287080.00	9045000.48	.03	.00
2	1	22	.00	287080.00	9045000.48	.03	.00
2	1	23	.00	287080.00	9045000.48	.03	.00
2	1	24	.00	287080.00	9045000.48	.03	.00
2	1	25	.00	287080.00	9045000.48	.03	.00
2	1	26	.00	287080.00	9045000.48	.03	.00
2	1	27	.00	287080.00	9045000.48	.03	.00
2	1	28	.00	287080.00	9045000.48	.03	.00
2	1	29	.00	287080.00	9045000.48	.03	.00
2	1	30	.00	287080.00	9045000.48	.03	.00
2	2	1	.00	287080.00	9045000.48	.03	.00
2	2	2	.00	287080.00	9045000.48	.03	.00
2	2	3	.00	287080.00	9045000.48	.03	.00
2	2	4	.00	287080.00	9045000.48	.03	.00
2	2	5	.00	287080.00	9045000.48	.03	.00
2	2	6	.00	287080.00	9045000.48	.03	.00
2	2	7	.00	287080.00	9045000.48	.03	.00
2	2	8	.00	287080.00	9045000.48	.03	.00
2	2	9	.00	287080.00	9045000.48	.03	.00
2	2	10	.00	287080.00	9045000.48	.03	.00
2	2	11	.00	287080.00	9045000.48	.03	.00
2	2	12	.00	287080.00	9045000.48	.03	.00
2	2	13	.00	287080.00	9045000.48	.03	.00
2	2	14	.00	287080.00	9045000.48	.03	.00
2	2	16	.00	287080.00	9045000.48	.03	.00
2	2	17	.00	287080.00	9045000.48	.03	.00
2	2	18	.00	287080.00	9045000.48	.03	.00
2	2	19	.00	287080.00	9045000.48	.03	.00
2	2	20	.00	287080.00	9045000.48	.03	.00

2	2	21	.00	287080.00	9045000.48	.03	.00
2	2	22	.00	287080.00	9045000.48	.03	.00
2	2	23	.00	287080.00	9045000.48	.03	.00
2	2	24	.00	287080.00	9045000.48	.03	.00
2	2	25	.00	287080.00	9045000.48	.03	.00

MILLET

DISTR	FTYPE	FNUMB	IPMAC	TQMAC	TQE	F4	F5
1	1	1	.00	.00	1898000.92	.00	.
1	1	2	.00	.00	1898000.92	.00	.
1	1	3	.00	.00	1898000.92	.00	.
1	1	4	.00	.00	1898000.92	.00	.
1	1	5	.00	.00	1898000.92	.00	.
1	1	6	.00	.00	1898000.92	.00	.
1	1	7	.00	.00	1898000.92	.00	.
1	1	8	.00	.00	1898000.92	.00	.
1	1	9	.00	.00	1898000.92	.00	.
1	1	10	.00	.00	1898000.92	.00	.
1	1	11	.00	.00	1898000.92	.00	.
1	1	12	.00	.00	1898000.92	.00	.
1	1	13	.00	.00	1898000.92	.00	.
1	1	14	.00	.00	1898000.92	.00	.
1	1	15	.00	.00	1898000.92	.00	.
1	1	16	.00	.00	1898000.92	.00	.
1	1	17	.00	.00	1898000.92	.00	.
1	1	18	.00	.00	1898000.92	.00	.
1	1	19	.00	.00	1898000.92	.00	.
1	1	20	.00	.00	1898000.92	.00	.
1	1	21	.00	.00	1898000.92	.00	.
1	1	22	.00	.00	1898000.92	.00	.
1	1	23	.00	.00	1898000.92	.00	.
1	1	24	.00	.00	1898000.92	.00	.
1	2	1	.00	.00	1898000.92	.00	.
1	2	2	.00	.00	1898000.92	.00	.
1	2	3	.00	.00	1898000.92	.00	.
1	2	4	.00	.00	1898000.92	.00	.
1	2	5	.00	.00	1898000.92	.00	.
1	2	6	.00	.00	1898000.92	.00	.
1	2	7	.00	.00	1898000.92	.00	.
1	2	8	.00	.00	1898000.92	.00	.
1	2	9	.00	.00	1898000.92	.00	.
1	2	10	.00	.00	1898000.92	.00	.
1	2	11	.00	.00	1898000.92	.00	.
1	2	12	.00	.00	1898000.92	.00	.
1	2	13	.00	.00	1898000.92	.00	.
1	2	14	.00	.00	1898000.92	.00	.
1	2	15	.00	.00	1898000.92	.00	.
1	2	16	.00	.00	1898000.92	.00	.
1	2	17	.00	.00	1898000.92	.00	.
1	2	18	.00	.00	1898000.92	.00	.
1	2	19	.00	.00	1898000.92	.00	.
1	2	20	.00	.00	1898000.92	.00	.
1	2	21	.00	.00	1898000.92	.00	.
1	2	22	.00	.00	1898000.92	.00	.
1	2	23	.00	.00	1898000.92	.00	.
1	2	24	.00	.00	1898000.92	.00	.

1	2	25	.00	.00	1898000.92	.00	.
1	2	26	.00	.00	1898000.92	.00	.
1	2	27	.00	.00	1898000.92	.00	.
1	2	28	.00	.00	1898000.92	.00	.
1	2	29	.00	.00	1898000.92	.00	.
1	2	30	.00	.00	1898000.92	.00	.
1	2	31	.00	.00	1898000.92	.00	.
2	1	1	.00	.00	1898000.92	.00	.
2	1	2	.00	.00	1898000.92	.00	.
2	1	3	.00	.00	1898000.92	.00	.
2	1	4	.00	.00	1898000.92	.00	.
2	1	5	.00	.00	1898000.92	.00	.
2	1	6	.00	.00	1898000.92	.00	.
2	1	7	.00	.00	1898000.92	.00	.
2	1	8	.00	.00	1898000.92	.00	.
2	1	9	.00	.00	1898000.92	.00	.
2	1	10	.00	.00	1898000.92	.00	.
2	1	11	.00	.00	1898000.92	.00	.
2	1	12	.00	.00	1898000.92	.00	.
2	1	13	.00	.00	1898000.92	.00	.
2	1	14	.00	.00	1898000.92	.00	.
2	1	15	.00	.00	1898000.92	.00	.
2	1	16	.00	.00	1898000.92	.00	.
2	1	17	.00	.00	1898000.92	.00	.
2	1	18	.00	.00	1898000.92	.00	.
2	1	19	.00	.00	1898000.92	.00	.
2	1	20	.00	.00	1898000.92	.00	.
2	1	21	.00	.00	1898000.92	.00	.
2	1	22	.00	.00	1898000.92	.00	.
2	1	23	.00	.00	1898000.92	.00	.
2	1	24	.00	.00	1898000.92	.00	.
2	1	25	.00	.00	1898000.92	.00	.
2	1	26	.00	.00	1898000.92	.00	.
2	1	27	.00	.00	1898000.92	.00	.
2	1	28	.00	.00	1898000.92	.00	.
2	1	29	.00	.00	1898000.92	.00	.
2	1	30	.00	.00	1898000.92	.00	.
2	2	1	.00	.00	1898000.92	.00	.
2	2	2	.00	.00	1898000.92	.00	.
2	2	3	.00	.00	1898000.92	.00	.
2	2	4	.00	.00	1898000.92	.00	.
2	2	5	.00	.00	1898000.92	.00	.
2	2	6	.00	.00	1898000.92	.00	.
2	2	7	.00	.00	1898000.92	.00	.
2	2	8	.00	.00	1898000.92	.00	.
2	2	9	.00	.00	1898000.92	.00	.
2	2	10	.00	.00	1898000.92	.00	.
2	2	11	.00	.00	1898000.92	.00	.
2	2	12	.00	.00	1898000.92	.00	.
2	2	13	.00	.00	1898000.92	.00	.
2	2	14	.00	.00	1898000.92	.00	.
2	2	15	.00	.00	1898000.92	.00	.
2	2	16	.00	.00	1898000.92	.00	.
2	2	17	.00	.00	1898000.92	.00	.
2	2	18	.00	.00	1898000.92	.00	.
2	2	19	.00	.00	1898000.92	.00	.
2	2	20	.00	.00	1898000.92	.00	.
2	2	21	.00	.00	1898000.92	.00	.

2	2	22	.00	.00	1898000.92	.00	.
2	2	23	.00	.00	1898000.92	.00	.
2	2	24	.00	.00	1898000.92	.00	.
2	2	25	.00	.00	1898000.92	.00	.

MAIZE

DISTR	FTYPE	FNUMB	IPMAC	TQMAC	TQE	F4	F5
1	1	1	.00	752271.00	10370000.7	.07	.00
1	1	2	.00	752271.00	10370000.7	.07	.00
1	1	3	.00	752271.00	10370000.7	.07	.00
1	1	4	.00	752271.00	10370000.7	.07	.00
1	1	5	.00	752271.00	10370000.7	.07	.00
1	1	6	.00	752271.00	10370000.7	.07	.00
1	1	7	.00	752271.00	10370000.7	.07	.00
1	1	8	.00	752271.00	10370000.7	.07	.00
1	1	9	.00	752271.00	10370000.7	.07	.00
1	1	10	.00	752271.00	10370000.7	.07	.00
1	1	11	.00	752271.00	10370000.7	.07	.00
1	1	12	.00	752271.00	10370000.7	.07	.00
1	1	13	.00	752271.00	10370000.7	.07	.00
1	1	14	.40	752271.00	10370000.7	.07	5.51
1	1	15	.40	752271.00	10370000.7	.07	5.51
1	1	16	.00	752271.00	10370000.7	.07	.00
1	1	17	.00	752271.00	10370000.7	.07	.00
1	1	18	.00	752271.00	10370000.7	.07	.00
1	1	19	.00	752271.00	10370000.7	.07	.00
1	1	20	.00	752271.00	10370000.7	.07	.00
1	1	21	.00	752271.00	10370000.7	.07	.00
1	1	22	.40	752271.00	10370000.7	.07	5.51
1	1	23	.40	752271.00	10370000.7	.07	5.51
1	1	24	.00	752271.00	10370000.7	.07	.00
1	2	1	.00	752271.00	10370000.7	.07	.00
1	2	2	.00	752271.00	10370000.7	.07	.00
1	2	3	.00	752271.00	10370000.7	.07	.00
1	2	4	.00	752271.00	10370000.7	.07	.00
1	2	5	.00	752271.00	10370000.7	.07	.00
1	2	6	.00	752271.00	10370000.7	.07	.00
1	2	7	.00	752271.00	10370000.7	.07	.00
1	2	8	.00	752271.00	10370000.7	.07	.00
1	2	9	.00	752271.00	10370000.7	.07	.00
1	2	10	.00	752271.00	10370000.7	.07	.00
1	2	11	.00	752271.00	10370000.7	.07	.00
1	2	12	.00	752271.00	10370000.7	.07	.00
1	2	13	.00	752271.00	10370000.7	.07	.00
1	2	14	.00	752271.00	10370000.7	.07	.00
1	2	15	.00	752271.00	10370000.7	.07	.00
1	2	16	.00	752271.00	10370000.7	.07	.00
1	2	17	.00	752271.00	10370000.7	.07	.00
1	2	18	.00	752271.00	10370000.7	.07	.00
1	2	19	.00	752271.00	10370000.7	.07	.00
1	2	20	.00	752271.00	10370000.7	.07	.00
1	2	21	.00	752271.00	10370000.7	.07	.00
1	2	22	.00	752271.00	10370000.7	.07	.00
1	2	23	.00	752271.00	10370000.7	.07	.00
1	2	24	.00	752271.00	10370000.7	.07	.00
1	2	25	.00	752271.00	10370000.7	.07	.00

1	2	26	.00	752271.00	10370000.7	.07	.00
1	2	27	.00	752271.00	10370000.7	.07	.00
1	2	28	.00	752271.00	10370000.7	.07	.00
1	2	29	.00	752271.00	10370000.7	.07	.00
1	2	30	.00	752271.00	10370000.7	.07	.00
1	2	31	.00	752271.00	10370000.7	.07	.00
2	1	1	.00	752271.00	10370000.7	.07	.00
2	1	2	.00	752271.00	10370000.7	.07	.00
2	1	3	.00	752271.00	10370000.7	.07	.00
2	1	4	.00	752271.00	10370000.7	.07	.00
2	1	5	.00	752271.00	10370000.7	.07	.00
2	1	6	.00	752271.00	10370000.7	.07	.00
2	1	7	.00	752271.00	10370000.7	.07	.00
2	1	8	.00	752271.00	10370000.7	.07	.00
2	1	9	.00	752271.00	10370000.7	.07	.00
2	1	10	.00	752271.00	10370000.7	.07	.00
2	1	11	.00	752271.00	10370000.7	.07	.00
2	1	12	.00	752271.00	10370000.7	.07	.00
2	1	13	.00	752271.00	10370000.7	.07	.00
2	1	14	.00	752271.00	10370000.7	.07	.00
2	1	15	.00	752271.00	10370000.7	.07	.00
2	1	16	.00	752271.00	10370000.7	.07	.00
2	1	17	.00	752271.00	10370000.7	.07	.00
2	1	18	.00	752271.00	10370000.7	.07	.00
2	1	19	.50	752271.00	10370000.7	.07	6.89
2	1	20	.00	752271.00	10370000.7	.07	.00
2	1	21	.00	752271.00	10370000.7	.07	.00
2	1	22	.00	752271.00	10370000.7	.07	.00
2	1	23	.00	752271.00	10370000.7	.07	.00
2	1	24	.00	752271.00	10370000.7	.07	.00
2	1	25	.00	752271.00	10370000.7	.07	.00
2	1	26	.00	752271.00	10370000.7	.07	.00
2	1	27	.00	752271.00	10370000.7	.07	.00
2	1	28	.00	752271.00	10370000.7	.07	.00
2	1	29	.00	752271.00	10370000.7	.07	.00
2	1	30	.00	752271.00	10370000.7	.07	.00
2	2	1	.00	752271.00	10370000.7	.07	.00
2	2	2	.00	752271.00	10370000.7	.07	.00
2	2	3	.00	752271.00	10370000.7	.07	.00
2	2	4	.00	752271.00	10370000.7	.07	.00
2	2	5	.00	752271.00	10370000.7	.07	.00
2	2	6	.00	752271.00	10370000.7	.07	.00
2	2	7	.00	752271.00	10370000.7	.07	.00
2	2	8	.00	752271.00	10370000.7	.07	.00
2	2	9	.00	752271.00	10370000.7	.07	.00
2	2	10	.00	752271.00	10370000.7	.07	.00
2	2	11	.00	752271.00	10370000.7	.07	.00
2	2	12	.00	752271.00	10370000.7	.07	.00
2	2	13	.00	752271.00	10370000.7	.07	.00
2	2	14	.00	752271.00	10370000.7	.07	.00
2	2	15	.00	752271.00	10370000.7	.07	.00
2	2	16	.00	752271.00	10370000.7	.07	.00
2	2	17	.00	752271.00	10370000.7	.07	.00
2	2	18	.00	752271.00	10370000.7	.07	.00
2	2	19	.00	752271.00	10370000.7	.07	.00
2	2	20	.00	752271.00	10370000.7	.07	.00
2	2	21	.00	752271.00	10370000.7	.07	.00
2	2	22	.00	752271.00	10370000.7	.07	.00

2	2	23	.00	752271.00	10370000.7	.07	.00
2	2	24	.00	752271.00	10370000.7	.07	.00
2	2	25	.00	752271.00	10370000.7	.07	.00

CHICKPEAS

DISTR	FTYPE	FNUMB	IPMAC	TQMAC	TQE	F4	F5
1	1	1	.00	68532.00	884000.02	.08	.00
1	1	2	.00	68532.00	884000.02	.08	.00
1	1	3	.00	68532.00	884000.02	.08	.00
1	1	4	.00	68532.00	884000.02	.08	.00
1	1	5	.00	68532.00	884000.02	.08	.00
1	1	6	.00	68532.00	884000.02	.08	.00
1	1	7	.00	68532.00	884000.02	.08	.00
1	1	8	.00	68532.00	884000.02	.08	.00
1	1	9	.00	68532.00	884000.02	.08	.00
1	1	10	.00	68532.00	884000.02	.08	.00
1	1	11	.00	68532.00	884000.02	.08	.00
1	1	12	.00	68532.00	884000.02	.08	.00
1	1	13	.00	68532.00	884000.02	.08	.00
1	1	14	.00	68532.00	884000.02	.08	.00
1	1	15	.00	68532.00	884000.02	.08	.00
1	1	16	.00	68532.00	884000.02	.08	.00
1	1	17	.00	68532.00	884000.02	.08	.00
1	1	18	.00	68532.00	884000.02	.08	.00
1	1	19	.00	68532.00	884000.02	.08	.00
1	1	20	.00	68532.00	884000.02	.08	.00
1	1	21	.00	68532.00	884000.02	.08	.00
1	1	22	.00	68532.00	884000.02	.08	.00
1	1	23	.00	68532.00	884000.02	.08	.00
1	1	24	.00	68532.00	884000.02	.08	.00
1	2	1	.00	68532.00	884000.02	.08	.00
1	2	2	.00	68532.00	884000.02	.08	.00
1	2	3	.00	68532.00	884000.02	.08	.00
1	2	4	.00	68532.00	884000.02	.08	.00
1	2	5	.00	68532.00	884000.02	.08	.00
1	2	6	.00	68532.00	884000.02	.08	.00
1	2	7	.00	68532.00	884000.02	.08	.00
1	2	8	.00	68532.00	884000.02	.08	.00
1	2	9	.00	68532.00	884000.02	.08	.00
1	2	10	.00	68532.00	884000.02	.08	.00
1	2	11	.00	68532.00	884000.02	.08	.00
1	2	12	.00	68532.00	884000.02	.08	.00
1	2	13	.00	68532.00	884000.02	.08	.00
1	2	14	.00	68532.00	884000.02	.08	.00
1	2	15	.00	68532.00	884000.02	.08	.00
1	2	16	.00	68532.00	884000.02	.08	.00
1	2	17	.00	68532.00	884000.02	.08	.00
1	2	18	.00	68532.00	884000.02	.08	.00
1	2	19	.00	68532.00	884000.02	.08	.00
1	2	20	.00	68532.00	884000.02	.08	.00
1	2	21	.00	68532.00	884000.02	.08	.00
1	2	22	.00	68532.00	884000.02	.08	.00
1	2	23	.00	68532.00	884000.02	.08	.00
1	2	24	.00	68532.00	884000.02	.08	.00
1	2	25	.00	68532.00	884000.02	.08	.00
1	2	26	.00	68532.00	884000.02	.08	.00

1	2	27	.00	68532.00	884000.02	.08	.00
1	2	28	.00	68532.00	884000.02	.08	.00
1	2	29	.00	68532.00	884000.02	.08	.00
1	2	30	.00	68532.00	884000.02	.08	.00
1	2	31	.00	68532.00	884000.02	.08	.00
2	1	1	.00	68532.00	884000.02	.08	.00
2	1	2	.00	68532.00	884000.02	.08	.00
2	1	3	.00	68532.00	884000.02	.08	.00
2	1	4	.00	68532.00	884000.02	.08	.00
2	1	5	.00	68532.00	884000.02	.08	.00
2	1	6	.00	68532.00	884000.02	.08	.00
2	1	7	.00	68532.00	884000.02	.08	.00
2	1	8	.00	68532.00	884000.02	.08	.00
2	1	9	.00	68532.00	884000.02	.08	.00
2	1	10	.00	68532.00	884000.02	.08	.00
2	1	11	.00	68532.00	884000.02	.08	.00
2	1	12	.00	68532.00	884000.02	.08	.00
2	1	13	.00	68532.00	884000.02	.08	.00
2	1	14	.00	68532.00	884000.02	.08	.00
2	1	15	.00	68532.00	884000.02	.08	.00
2	1	16	.00	68532.00	884000.02	.08	.00
2	1	17	.00	68532.00	884000.02	.08	.00
2	1	18	.00	68532.00	884000.02	.08	.00
2	1	19	.00	68532.00	884000.02	.08	.00
2	1	20	.00	68532.00	884000.02	.08	.00
2	1	21	.00	68532.00	884000.02	.08	.00
2	1	22	.00	68532.00	884000.02	.08	.00
2	1	23	.00	68532.00	884000.02	.08	.00
2	1	24	.00	68532.00	884000.02	.08	.00
2	1	25	.00	68532.00	884000.02	.08	.00
2	1	26	.00	68532.00	884000.02	.08	.00
2	1	27	.00	68532.00	884000.02	.08	.00
2	1	28	.00	68532.00	884000.02	.08	.00
2	1	29	.00	68532.00	884000.02	.08	.00
2	1	30	.00	68532.00	884000.02	.08	.00
2	2	1	.00	68532.00	884000.02	.08	.00
2	2	2	.00	68532.00	884000.02	.08	.00
2	2	3	.00	68532.00	884000.02	.08	.00
2	2	4	.00	68532.00	884000.02	.08	.00
2	2	5	.00	68532.00	884000.02	.08	.00
2	2	6	.00	68532.00	884000.02	.08	.00
2	2	7	.00	68532.00	884000.02	.08	.00
2	2	8	.00	68532.00	884000.02	.08	.00
2	2	9	.00	68532.00	884000.02	.08	.00
2	2	10	.00	68532.00	884000.02	.08	.00
2	2	11	.00	68532.00	884000.02	.08	.00
2	2	12	.00	68532.00	884000.02	.08	.00
2	2	13	.00	68532.00	884000.02	.08	.00
2	2	14	.00	68532.00	884000.02	.08	.00
2	2	15	.00	68532.00	884000.02	.08	.00
2	2	16	.00	68532.00	884000.02	.08	.00
2	2	17	.00	68532.00	884000.02	.08	.00
2	2	18	.00	68532.00	884000.02	.08	.00
2	2	19	.00	68532.00	884000.02	.08	.00
2	2	20	.00	68532.00	884000.02	.08	.00
2	2	21	.00	68532.00	884000.02	.08	.00
2	2	22	.00	68532.00	884000.02	.08	.00
2	2	23	.00	68532.00	884000.02	.08	.00

2	2	24	.00	68532.00	884000.02	.08	.00
2	2	25	.00	68532.00	884000.02	.08	.00

HORSE BEANS

DISTR	FTYPE	FNUMB	IPMAC	TQMAC	TQE	F4	F5
1	1	1	.00	118444.00	2333000.25	.05	.00
1	1	2	.00	118444.00	2333000.25	.05	.00
1	1	3	.00	118444.00	2333000.25	.05	.00
1	1	4	.00	118444.00	2333000.25	.05	.00
1	1	5	.00	118444.00	2333000.25	.05	.00
1	1	6	.00	118444.00	2333000.25	.05	.00
1	1	7	.00	118444.00	2333000.25	.05	.00
1	1	8	.00	118444.00	2333000.25	.05	.00
1	1	9	.00	118444.00	2333000.25	.05	.00
1	1	10	.00	118444.00	2333000.25	.05	.00
1	1	11	.00	118444.00	2333000.25	.05	.00
1	1	12	.00	118444.00	2333000.25	.05	.00
1	1	13	.00	118444.00	2333000.25	.05	.00
1	1	14	.00	118444.00	2333000.25	.05	.00
1	1	15	.00	118444.00	2333000.25	.05	.00
1	1	16	.00	118444.00	2333000.25	.05	.00
1	1	17	.00	118444.00	2333000.25	.05	.00
1	1	18	.00	118444.00	2333000.25	.05	.00
1	1	19	.00	118444.00	2333000.25	.05	.00
1	1	20	.00	118444.00	2333000.25	.05	.00
1	1	21	.00	118444.00	2333000.25	.05	.00
1	1	22	.00	118444.00	2333000.25	.05	.00
1	1	23	.00	118444.00	2333000.25	.05	.00
1	1	24	.00	118444.00	2333000.25	.05	.00
1	2	1	.00	118444.00	2333000.25	.05	.00
1	2	2	.00	118444.00	2333000.25	.05	.00
1	2	3	.00	118444.00	2333000.25	.05	.00
1	2	4	.00	118444.00	2333000.25	.05	.00
1	2	5	.00	118444.00	2333000.25	.05	.00
1	2	6	.00	118444.00	2333000.25	.05	.00
1	2	7	.00	118444.00	2333000.25	.05	.00
1	2	8	.00	118444.00	2333000.25	.05	.00
1	2	9	.00	118444.00	2333000.25	.05	.00
1	2	10	.00	118444.00	2333000.25	.05	.00
1	2	11	.00	118444.00	2333000.25	.05	.00
1	2	12	.00	118444.00	2333000.25	.05	.00
1	2	13	.00	118444.00	2333000.25	.05	.00
1	2	14	.00	118444.00	2333000.25	.05	.00
1	2	15	.00	118444.00	2333000.25	.05	.00
1	2	16	.00	118444.00	2333000.25	.05	.00
1	2	17	.00	118444.00	2333000.25	.05	.00
1	2	18	.00	118444.00	2333000.25	.05	.00
1	2	19	.00	118444.00	2333000.25	.05	.00
1	2	20	.00	118444.00	2333000.25	.05	.00
1	2	21	.00	118444.00	2333000.25	.05	.00
1	2	22	.00	118444.00	2333000.25	.05	.00
1	2	23	.00	118444.00	2333000.25	.05	.00
1	2	24	.00	118444.00	2333000.25	.05	.00
1	2	25	.00	118444.00	2333000.25	.05	.00
1	2	26	.00	118444.00	2333000.25	.05	.00
1	2	27	.00	118444.00	2333000.25	.05	.00

1	2	28	.00	118444.00	2333000.25	.05	.00
1	2	29	.00	118444.00	2333000.25	.05	.00
1	2	30	.00	118444.00	2333000.25	.05	.00
1	2	31	.00	118444.00	2333000.25	.05	.00
2	1	1	.00	118444.00	2333000.25	.05	.00
2	1	2	.00	118444.00	2333000.25	.05	.00
2	1	3	.00	118444.00	2333000.25	.05	.00
2	1	4	.00	118444.00	2333000.25	.05	.00
2	1	5	.00	118444.00	2333000.25	.05	.00
2	1	6	.00	118444.00	2333000.25	.05	.00
2	1	7	.00	118444.00	2333000.25	.05	.00
2	1	8	.00	118444.00	2333000.25	.05	.00
2	1	9	.00	118444.00	2333000.25	.05	.00
2	1	10	.00	118444.00	2333000.25	.05	.00
2	1	11	.00	118444.00	2333000.25	.05	.00
2	1	12	.00	118444.00	2333000.25	.05	.00
2	1	13	.00	118444.00	2333000.25	.05	.00
2	1	14	.00	118444.00	2333000.25	.05	.00
2	1	15	.00	118444.00	2333000.25	.05	.00
2	1	16	.00	118444.00	2333000.25	.05	.00
2	1	17	.00	118444.00	2333000.25	.05	.00
2	1	18	.00	118444.00	2333000.25	.05	.00
2	1	19	.00	118444.00	2333000.25	.05	.00
2	1	20	.00	118444.00	2333000.25	.05	.00
2	1	21	.00	118444.00	2333000.25	.05	.00
2	1	22	.00	118444.00	2333000.25	.05	.00
2	1	23	.00	118444.00	2333000.25	.05	.00
2	1	24	.00	118444.00	2333000.25	.05	.00
2	1	25	.00	118444.00	2333000.25	.05	.00
2	1	26	.00	118444.00	2333000.25	.05	.00
2	1	27	.00	118444.00	2333000.25	.05	.00
2	1	28	.20	118444.00	2333000.25	.05	3.94
2	1	29	.00	118444.00	2333000.25	.05	.00
2	1	30	.00	118444.00	2333000.25	.05	.00
2	2	1	.00	118444.00	2333000.25	.05	.00
2	2	2	.00	118444.00	2333000.25	.05	.00
2	2	3	.00	118444.00	2333000.25	.05	.00
2	2	4	.00	118444.00	2333000.25	.05	.00
2	2	5	.00	118444.00	2333000.25	.05	.00
2	2	6	.00	118444.00	2333000.25	.05	.00
2	2	7	.00	118444.00	2333000.25	.05	.00
2	2	8	.00	118444.00	2333000.25	.05	.00
2	2	9	.00	118444.00	2333000.25	.05	.00
2	2	10	.00	118444.00	2333000.25	.05	.00
2	2	11	.00	118444.00	2333000.25	.05	.00
2	2	12	.00	118444.00	2333000.25	.05	.00
2	2	13	.00	118444.00	2333000.25	.05	.00
2	2	14	.00	118444.00	2333000.25	.05	.00
2	2	15	.00	118444.00	2333000.25	.05	.00
2	2	16	.00	118444.00	2333000.25	.05	.00
2	2	17	.00	118444.00	2333000.25	.05	.00
2	2	18	.00	118444.00	2333000.25	.05	.00
2	2	19	.00	118444.00	2333000.25	.05	.00
2	2	20	.00	118444.00	2333000.25	.05	.00
2	2	21	.00	118444.00	2333000.25	.05	.00
2	2	22	.00	118444.00	2333000.25	.05	.00
2	2	23	.00	118444.00	2333000.25	.05	.00
2	2	24	.00	118444.00	2333000.25	.05	.00

2	2	25	.00	118444.00	2333000.25	.05	.00

SOYA BEANS

DISTR	FTYPE	FNUMB	IPMAC	TQMAC	TQE	F4	F5
1	1	1	.00	.00	233000.38	.00	.
1	1	2	.00	.00	233000.38	.00	.
1	1	3	.00	.00	233000.38	.00	.
1	1	4	.00	.00	233000.38	.00	.
1	1	5	.00	.00	233000.38	.00	.
1	1	6	.00	.00	233000.38	.00	.
1	1	7	.00	.00	233000.38	.00	.
1	1	8	.00	.00	233000.38	.00	.
1	1	9	.00	.00	233000.38	.00	.
1	1	10	.00	.00	233000.38	.00	.
1	1	11	.00	.00	233000.38	.00	.
1	1	12	.00	.00	233000.38	.00	.
1	1	13	.00	.00	233000.38	.00	.
1	1	14	.00	.00	233000.38	.00	.
1	1	15	.00	.00	233000.38	.00	.
1	1	16	.00	.00	233000.38	.00	.
1	1	17	.00	.00	233000.38	.00	.
1	1	18	.00	.00	233000.38	.00	.
1	1	19	.00	.00	233000.38	.00	.
1	1	20	.00	.00	233000.38	.00	.
1	1	21	.00	.00	233000.38	.00	.
1	1	22	.00	.00	233000.38	.00	.
1	1	23	.00	.00	233000.38	.00	.
1	1	24	.00	.00	233000.38	.00	.
1	2	1	.00	.00	233000.38	.00	.
1	2	2	.00	.00	233000.38	.00	.
1	2	3	.00	.00	233000.38	.00	.
1	2	4	.00	.00	233000.38	.00	.
1	2	5	.00	.00	233000.38	.00	.
1	2	6	.00	.00	233000.38	.00	.
1	2	7	.00	.00	233000.38	.00	.
1	2	8	.00	.00	233000.38	.00	.
1	2	9	.00	.00	233000.38	.00	.
1	2	10	.00	.00	233000.38	.00	.
1	2	11	.00	.00	233000.38	.00	.
1	2	12	.00	.00	233000.38	.00	.
1	2	13	.00	.00	233000.38	.00	.
1	2	14	.00	.00	233000.38	.00	.
1	2	15	.00	.00	233000.38	.00	.
1	2	16	.00	.00	233000.38	.00	.
1	2	17	.00	.00	233000.38	.00	.
1	2	18	.00	.00	233000.38	.00	.
1	2	19	.00	.00	233000.38	.00	.
1	2	20	.00	.00	233000.38	.00	.
1	2	21	.00	.00	233000.38	.00	.
1	2	22	.00	.00	233000.38	.00	.
1	2	23	.00	.00	233000.38	.00	.
1	2	24	.00	.00	233000.38	.00	.
1	2	25	.00	.00	233000.38	.00	.
1	2	26	.00	.00	233000.38	.00	.
1	2	27	.00	.00	233000.38	.00	.
1	2	28	.00	.00	233000.38	.00	.

1	2	29	.00	.00	233000.38	.00	.
1	2	30	.00	.00	233000.38	.00	.
1	2	31	.00	.00	233000.38	.00	.
2	1	1	.00	.00	233000.38	.00	.
2	1	2	.00	.00	233000.38	.00	.
2	1	3	.00	.00	233000.38	.00	.
2	1	4	.00	.00	233000.38	.00	.
2	1	5	.00	.00	233000.38	.00	.
2	1	6	.00	.00	233000.38	.00	.
2	1	7	.00	.00	233000.38	.00	.
2	1	8	.00	.00	233000.38	.00	.
2	1	9	.00	.00	233000.38	.00	.
2	1	10	.00	.00	233000.38	.00	.
2	1	11	.00	.00	233000.38	.00	.
2	1	12	.00	.00	233000.38	.00	.
2	1	13	.00	.00	233000.38	.00	.
2	1	14	.00	.00	233000.38	.00	.
2	1	15	.00	.00	233000.38	.00	.
2	1	16	.00	.00	233000.38	.00	.
2	1	17	.00	.00	233000.38	.00	.
2	1	18	.00	.00	233000.38	.00	.
2	1	19	.00	.00	233000.38	.00	.
2	1	20	.00	.00	233000.38	.00	.
2	1	21	.00	.00	233000.38	.00	.
2	1	22	.00	.00	233000.38	.00	.
2	1	23	.00	.00	233000.38	.00	.
2	1	24	.00	.00	233000.38	.00	.
2	1	25	.00	.00	233000.38	.00	.
2	1	26	.00	.00	233000.38	.00	.
2	1	27	.00	.00	233000.38	.00	.
2	1	28	.00	.00	233000.38	.00	.
2	1	29	.00	.00	233000.38	.00	.
2	1	30	.00	.00	233000.38	.00	.
2	2	1	.00	.00	233000.38	.00	.
2	2	2	.00	.00	233000.38	.00	.
2	2	3	.00	.00	233000.38	.00	.
2	2	4	.00	.00	233000.38	.00	.
2	2	5	.00	.00	233000.38	.00	.
2	2	6	.00	.00	233000.38	.00	.
2	2	7	.00	.00	233000.38	.00	.
2	2	8	.00	.00	233000.38	.00	.
2	2	9	.00	.00	233000.38	.00	.
2	2	10	.00	.00	233000.38	.00	.
2	2	11	.00	.00	233000.38	.00	.
2	2	12	.00	.00	233000.38	.00	.
2	2	13	.00	.00	233000.38	.00	.
2	2	14	.00	.00	233000.38	.00	.
2	2	15	.00	.00	233000.38	.00	.
2	2	16	.00	.00	233000.38	.00	.
2	2	17	.00	.00	233000.38	.00	.
2	2	18	.00	.00	233000.38	.00	.
2	2	19	.00	.00	233000.38	.00	.
2	2	20	.00	.00	233000.38	.00	.
2	2	21	.00	.00	233000.38	.00	.
2	2	22	.00	.00	233000.38	.00	.
2	2	23	.00	.00	233000.38	.00	.
2	2	24	.00	.00	233000.38	.00	.
2	2	25	.00	.00	233000.38	.00	.

FIELD PEAS

DISTR	FTYPE	FNUMB	IPMAC	TQMAC	TQE	F4	F5
1	1	1	.00	20895.00	692000.59	.03	.00
1	1	2	.00	20895.00	692000.59	.03	.00
1	1	3	.00	20895.00	692000.59	.03	.00
1	1	4	.00	20895.00	692000.59	.03	.00
1	1	5	.00	20895.00	692000.59	.03	.00
1	1	6	.00	20895.00	692000.59	.03	.00
1	1	7	.00	20895.00	692000.59	.03	.00
1	1	8	.00	20895.00	692000.59	.03	.00
1	1	9	.00	20895.00	692000.59	.03	.00
1	1	10	.00	20895.00	692000.59	.03	.00
1	1	11	.00	20895.00	692000.59	.03	.00
1	1	12	.00	20895.00	692000.59	.03	.00
1	1	13	.00	20895.00	692000.59	.03	.00
1	1	14	.00	20895.00	692000.59	.03	.00
1	1	15	.00	20895.00	692000.59	.03	.00
1	1	16	.00	20895.00	692000.59	.03	.00
1	1	17	.00	20895.00	692000.59	.03	.00
1	1	18	.00	20895.00	692000.59	.03	.00
1	1	19	.00	20895.00	692000.59	.03	.00
1	1	20	.00	20895.00	692000.59	.03	.00
1	1	21	.00	20895.00	692000.59	.03	.00
1	1	22	.00	20895.00	692000.59	.03	.00
1	1	23	.00	20895.00	692000.59	.03	.00
1	1	24	.00	20895.00	692000.59	.03	.00
1	2	1	.00	20895.00	692000.59	.03	.00
1	2	2	.00	20895.00	692000.59	.03	.00
1	2	3	.00	20895.00	692000.59	.03	.00
1	2	4	.00	20895.00	692000.59	.03	.00
1	2	5	.00	20895.00	692000.59	.03	.00
1	2	6	.00	20895.00	692000.59	.03	.00
1	2	7	.00	20895.00	692000.59	.03	.00
1	2	8	.00	20895.00	692000.59	.03	.00
1	2	9	.00	20895.00	692000.59	.03	.00
1	2	10	.00	20895.00	692000.59	.03	.00
1	2	11	.00	20895.00	692000.59	.03	.00
1	2	12	.00	20895.00	692000.59	.03	.00
1	2	13	.00	20895.00	692000.59	.03	.00
1	2	14	.00	20895.00	692000.59	.03	.00
1	2	15	.00	20895.00	692000.59	.03	.00
1	2	16	.00	20895.00	692000.59	.03	.00
1	2	17	.00	20895.00	692000.59	.03	.00
1	2	18	.00	20895.00	692000.59	.03	.00
1	2	19	.00	20895.00	692000.59	.03	.00
1	2	20	.00	20895.00	692000.59	.03	.00
1	2	21	.00	20895.00	692000.59	.03	.00
1	2	22	.00	20895.00	692000.59	.03	.00
1	2	23	.00	20895.00	692000.59	.03	.00
1	2	24	.00	20895.00	692000.59	.03	.00
1	2	25	.00	20895.00	692000.59	.03	.00
1	2	26	.00	20895.00	692000.59	.03	.00
1	2	27	.00	20895.00	692000.59	.03	.00
1	2	28	.00	20895.00	692000.59	.03	.00
1	2	29	.00	20895.00	692000.59	.03	.00

1	2	30	.00	20895.00	692000.59	.03	.00
1	2	31	.00	20895.00	692000.59	.03	.00
2	1	1	.00	20895.00	692000.59	.03	.00
2	1	2	.00	20895.00	692000.59	.03	.00
2	1	3	.00	20895.00	692000.59	.03	.00
2	1	4	.00	20895.00	692000.59	.03	.00
2	1	5	.00	20895.00	692000.59	.03	.00
2	1	6	.00	20895.00	692000.59	.03	.00
2	1	7	.00	20895.00	692000.59	.03	.00
2	1	8	.00	20895.00	692000.59	.03	.00
2	1	9	.00	20895.00	692000.59	.03	.00
2	1	10	.00	20895.00	692000.59	.03	.00
2	1	11	.00	20895.00	692000.59	.03	.00
2	1	12	.00	20895.00	692000.59	.03	.00
2	1	13	.00	20895.00	692000.59	.03	.00
2	1	14	.00	20895.00	692000.59	.03	.00
2	1	15	.00	20895.00	692000.59	.03	.00
2	1	16	.00	20895.00	692000.59	.03	.00
2	1	17	.00	20895.00	692000.59	.03	.00
2	1	18	.00	20895.00	692000.59	.03	.00
2	1	19	.00	20895.00	692000.59	.03	.00
2	1	20	.00	20895.00	692000.59	.03	.00
2	1	21	.00	20895.00	692000.59	.03	.00
2	1	22	.00	20895.00	692000.59	.03	.00
2	1	23	.00	20895.00	692000.59	.03	.00
2	1	24	.00	20895.00	692000.59	.03	.00
2	1	25	.00	20895.00	692000.59	.03	.00
2	1	26	.00	20895.00	692000.59	.03	.00
2	1	27	.00	20895.00	692000.59	.03	.00
2	1	28	.00	20895.00	692000.59	.03	.00
2	1	29	.00	20895.00	692000.59	.03	.00
2	1	30	.00	20895.00	692000.59	.03	.00
2	2	1	.00	20895.00	692000.59	.03	.00
2	2	2	.00	20895.00	692000.59	.03	.00
2	2	3	.00	20895.00	692000.59	.03	.00
2	2	4	.00	20895.00	692000.59	.03	.00
2	2	5	.00	20895.00	692000.59	.03	.00
2	2	6	.00	20895.00	692000.59	.03	.00
2	2	7	.00	20895.00	692000.59	.03	.00
2	2	8	.00	20895.00	692000.59	.03	.00
2	2	9	.00	20895.00	692000.59	.03	.00
2	2	10	.00	20895.00	692000.59	.03	.00
2	2	11	.00	20895.00	692000.59	.03	.00
2	2	12	.00	20895.00	692000.59	.03	.00
2	2	13	.00	20895.00	692000.59	.03	.00
2	2	14	.00	20895.00	692000.59	.03	.00
2	2	15	.00	20895.00	692000.59	.03	.00
2	2	16	.00	20895.00	692000.59	.03	.00
2	2	17	.00	20895.00	692000.59	.03	.00
2	2	18	.00	20895.00	692000.59	.03	.00
2	2	19	.00	20895.00	692000.59	.03	.00
2	2	20	.00	20895.00	692000.59	.03	.00
2	2	21	.00	20895.00	692000.59	.03	.00
2	2	22	.00	20895.00	692000.59	.03	.00
2	2	23	.00	20895.00	692000.59	.03	.00
2	2	24	.00	20895.00	692000.59	.03	.00
2	2	25	.00	20895.00	692000.59	.03	.00

LEGEND

AMC = AGRICULTURAL MARKETING CORPORATION

PA = PEASANT ASSOCIATION

DISTR = DISTRICT (1 = DIBANDIBA, AND 2 = QUDIE)

TYPE = FARMER ORGANIZATION TYPE : 1 = Peasant Association (PA)
2 = Producer Co-operatives (PC)

NUMB = FARMER NUMBER

I (i) = INDIVIDUAL OUTPUT

IPAMC = INDIVIDUAL PROPORTION OF OUTPUT SOLD TO AMC

TQAMC = TOTAL QUANTITY OF i (i = 1 . . . n) PURCHASED BY AMC
FROM ALL PARTS OF THE COUNTRY

TQE = TOTAL QUANTITY OF i PRODUCED IN THE COUNTRY

F4 = TOTAL QUANTITY OF i PURCHASED BY AMC FROM ALL PARTS OF THE
COUNTRY AS PROPORTION OF TOTAL QUANTITY OF i PRODUCED IN
THE COUNTRY

F5 = INDIVIDUAL PROPORTION OF OUTPUT SOLD TO AMC AS PROPORTION
OF F4

APPENDIX F

APPENDIX F

RRELATIONSHIP BETWEEN FARMERS' INCOME (VALUE OF OUTPUT) OF DIBANDIBA AND OUDIE FARMERS AND AMC QUOTA

TEFF

DISTR	FTYPE	FNUMB	TQP	TQSAMC	PROP	GROSS	NET
1	1	1	36	13	.36	3115.00	2186.00
1	1	2	18	6	.31	1107.50	701.00
1	1	3	42	19	.45	3155.00	2524.00
1	1	4	20	5	.25	1105.00	671.50
1	1	5	27	9	.31	1677.50	1026.00
1	1	6	35	17	.49	2916.00	2287.00
1	1	7	22	7	.30	1875.00	1438.50
1	1	8	13	3	.24	511.00	373.00
1	1	9	32	10	.29	2786.00	1863.50
1	1	10	34	7	.20	3051.60	1348.90
1	1	11	70	11	.16	6448.00	4895.00
1	1	12	24	7	.29	2136.00	1589.00
1	1	13	17	7	.41	1336.00	1054.00
1	1	14	59	7	.12	5536.00	4889.00
1	1	15	24	10	.40	2436.00	1917.50
1	1	16	29	12	.41	2970.00	2768.00
1	1	17	22	8	.37	936.00	473.00
1	1	18	39	11	.27	2315.00	1392.50
1	1	19	53	11	.21	2528.00	1010.00
1	1	20	25	3	.12	1750.00	679.00
1	1	21	78	6	.07	8567.84	6678.26
1	1	22	26	2	.08	1156.00	-200.00
1	1	23	26	3	.12	1316.00	792.00
1	1	24	26	4	.16	2284.50	913.50
1	2	1	0	0	.00	1480.00	1473.00
1	2	2	0	0	.00	2379.30	2379.30
1	2	3	0	0	.00	2040.00	2033.00
1	2	4	0	0	.00	495.00	493.00
1	2	5	0	0	.00	2100.00	2088.00
1	2	6	0	0	.00	2790.00	2768.00
1	2	7	0	0	.00	3256.00	3240.00
1	2	8	0	0	.00	2040.00	2031.00
1	2	9	0	0	.00	3100.00	3086.00
1	2	10	0	0	.00	2250.00	2232.00
1	2	11	0	0	.00	1540.00	1524.80
1	2	12	0	0	.00	1700.00	1684.00
1	2	13	0	0	.00	1560.00	1546.00
1	2	14	0	0	.00	1890.00	1872.00
1	2	15	0	0	.00	1450.00	1444.00
1	2	16	0	0	.00	1440.00	1430.00
1	2	17	0	0	.00	1260.00	1246.00
1	2	18	0	0	.00	1250.00	1242.00
1	2	19	0	0	.00	1400.00	1382.00
1	2	20	0	0	.00	1320.00	1306.00
1	2	21	0	0	.00	1600.00	1588.00
1	2	22	0	0	.00	1800.00	1790.00

1	2	23	0	0	.00	1600.00	1582.00
1	2	24	0	0	.00	1560.00	1546.00
1	2	25	0	0	.00	2040.00	2032.00
1	2	26	0	0	.00	1572.00	1568.80
1	2	27	0	0	.00	2210.00	2204.00
1	2	28	0	0	.00	1050.00	1042.00
1	2	29	0	0	.00	2600.00	2582.00
1	2	30	0	0	.00	1290.00	1286.00
1	2	31	0	0	.00	2450.00	2432.00
2	1	1	16	5	.28	1697.50	1353.00
2	1	2	16	4	.22	1157.50	248.00
2	1	3	19	4	.22	456.00	-871.60
2	1	4	17	7	.40	1637.96	572.15
2	1	5	42	6	.14	3878.25	2621.40
2	1	6	8	5	.62	578.25	63.40
2	1	7	21	8	.36	1957.50	1038.00
2	1	8	17	7	.38	1377.50	997.50
2	1	9	20	3	.15	1275.00	-546.00
2	1	10	3	1	.33	205.00	-99.00
2	1	11	10	4	.40	660.00	354.00
2	1	12	8	2	.27	585.00	221.00
2	1	13	28	7	.25	2215.00	211.00
2	1	14	18	5	.26	1452.50	1081.00
2	1	15	33	8	.24	2631.00	2249.00
2	1	16	13	3	.19	1150.00	840.00
2	1	17	12	4	.36	875.25	563.10
2	1	18	10	2	.21	737.00	423.80
2	1	19	27	6	.22	2388.00	2002.00
2	1	20	13	8	.58	1202.50	891.00
2	1	21	24	6	.23	2208.50	1738.00
2	1	22	14	7	.50	1015.00	682.00
2	1	23	12	10	.79	700.00	-510.50
2	1	24	10	4	.40	780.00	623.00
2	1	25	32	5	.16	2625.00	2116.00
2	1	26	6	2	.25	525.00	296.50
2	1	27	9	3	.28	905.00	598.50
2	1	28	14	3	.18	1377.50	1004.50
2	1	29	32	5	.16	2990.00	2574.00
2	1	30	12	5	.38	787.50	567.75
2	2	1	2	0	.00	.00	-132.00
2	2	2	0	0	.00	2700.00	2672.00
2	2	3	0	0	.00	990.00	980.00
2	2	4	0	0	.00	900.00	896.00
2	2	5	0	0	.00	1600.00	1586.00
2	2	6	0	0	.00	807.50	798.50
2	2	7	0	0	.00	660.00	657.00
2	2	8	0	0	.00	715.00	715.00
2	2	9	0	0	.00	1100.00	1091.00
2	2	10	0	0	.00	2320.00	2296.00
2	2	11	0	0	.00	900.00	891.00
2	2	12	0	0	.00	2400.00	2374.00
2	2	13	0	0	.00	1980.00	1962.00
2	2	14	0	0	.00	1600.00	1593.00
2	2	15	0	0	.00	1080.00	1073.00
2	2	16	0	0	.00	1200.00	1195.00
2	2	17	0	0	.00	810.00	810.00
2	2	18	0	0	.00	360.00	360.00
2	2	19	0	0	.00	1305.00	1302.00

2	2	20	0	0	.00	1440.00	1432.00
2	2	21	0	0	.00	1125.00	1119.00
2	2	22	0	0	.00	950.00	945.00
2	2	23	0	0	.00	1485.00	1482.00
2	2	24	0	0	.00	1035.00	1029.00
2	2	25	0	0	.00	1540.00	1532.60

WHEAT

DISTR	FTYPE	FNUMB	TQP	TQSAMC	PROP	GROSS	NET
1	1	1	9	3	.33	390.00	291.00
1	1	2	0	0	.00	.00	.00
1	1	3	0	0	.00	.00	.00
1	1	4	1	0	.00	70.00	-26.00
1	1	5	13	3	.19	735.00	552.50
1	1	6	0	0	.00	.00	.00
1	1	7	10	3	.25	400.00	153.50
1	1	8	7	3	.43	270.00	166.50
1	1	9	10	2	.20	464.00	-143.00
1	1	10	0	0	.00	.00	.00
1	1	11	17	7	.42	794.00	487.00
1	1	12	3	0	.00	245.00	5.00
1	1	13	4	2	.43	165.00	42.50
1	1	14	19	6	.32	960.00	713.00
1	1	15	8	2	.25	544.00	272.00
1	1	16	6	2	.33	250.00	203.00
1	1	17	0	0	.00	.00	.00
1	1	18	2	1	.50	85.00	-306.00
1	1	19	10	5	.47	435.95	-20.55
1	1	20	29	6	.21	1435.50	955.50
1	1	21	30	5	.17	1309.70	830.40
1	1	22	10	4	.40	320.00	-179.00
1	1	23	4	1	.25	145.50	-374.50
1	1	24	0	0	.00	.00	.00
1	2	1	0	0	.00	1024.80	1016.60
1	2	2	0	0	.00	1647.10	1647.10
1	2	3	0	0	.00	1015.00	1015.00
1	2	4	0	0	.00	700.00	698.00
1	2	5	0	0	.00	1380.00	1370.00
1	2	6	0	0	.00	2240.00	2222.00
1	2	7	0	0	.00	2282.00	2260.00
1	2	8	0	0	.00	1120.00	1113.00
1	2	9	0	0	.00	1920.00	1908.00
1	2	10	0	0	.00	1575.00	1557.00
1	2	11	0	0	.00	858.00	846.80
1	2	12	0	0	.00	960.00	948.00
1	2	13	0	0	.00	910.00	896.00
1	2	14	0	0	.00	1410.00	1384.00
1	2	15	0	0	.00	990.00	982.00
1	2	16	0	0	.00	1250.00	1238.00
1	2	17	0	0	.00	1200.00	1184.00
1	2	18	0	0	.00	1216.00	1192.00
1	2	19	0	0	.00	1080.00	1060.00
1	2	20	0	0	.00	1440.00	1426.00
1	2	21	0	0	.00	935.00	923.00
1	2	22	0	0	.00	980.00	966.00
1	2	23	0	0	.00	1260.00	1238.00
1	2	24	0	0	.00	1260.00	1244.00

1	2	25	0	0	.00	1260.00	1254.00
1	2	26	0	0	.00	910.00	906.00
1	2	27	0	0	.00	1330.00	1314.00
1	2	28	0	0	.00	660.00	651.00
1	2	29	0	0	.00	1820.00	1800.00
1	2	30	0	0	.00	650.00	636.00
1	2	31	0	0	.00	1620.00	1602.00
2	1	1	17	3	.19	1386.82	1208.59
2	1	2	12	4	.35	570.00	111.00
2	1	3	4	1	.29	69.00	-1252.00
2	1	4	8	1	.13	424.00	-31.00
2	1	5	22	4	.18	1580.60	966.20
2	1	6	11	3	.27	656.00	263.00
2	1	7	12	4	.29	802.50	344.50
2	1	8	14	2	.16	839.25	565.50
2	1	9	9	2	.22	550.00	447.00
2	1	10	2	1	.25	121.50	-29.50
2	1	11	9	4	.41	426.00	271.50
2	1	12	7	2	.21	406.00	252.50
2	1	13	13	3	.25	966.40	-1022.80
2	1	14	14	3	.24	1004.00	758.25
2	1	15	12	3	.25	827.50	582.50
2	1	16	6	2	.33	330.00	145.00
2	1	17	8	1	.07	507.50	261.00
2	1	18	10	5	.53	425.00	172.00
2	1	19	25	3	.11	1447.50	1257.75
2	1	20	11	3	.27	668.00	424.00
2	1	21	22	5	.23	1455.00	1078.00
2	1	22	8	2	.19	571.00	325.50
2	1	23	12	2	.17	660.00	562.00
2	1	24	4	2	.50	190.00	92.00
2	1	25	23	5	.22	1470.00	1147.40
2	1	26	9	2	.17	390.00	161.50
2	1	27	5	2	.30	401.00	219.50
2	1	28	13	3	.19	930.00	677.00
2	1	29	14	4	.30	690.00	476.00
2	1	30	19	2	.11	1088.00	894.00
2	2	1	0	0	.00	210.00	210.00
2	2	2	0	0	.00	910.00	900.00
2	2	3	0	0	.00	630.00	624.00
2	2	4	0	0	.00	420.00	415.00
2	2	5	0	0	.00	1040.00	1032.00
2	2	6	0	0	.00	770.00	770.00
2	2	7	0	0	.00	490.00	490.00
2	2	8	0	0	.00	180.00	180.00
2	2	9	0	0	.00	540.00	535.00
2	2	10	0	0	.00	780.00	774.00
2	2	11	0	0	.00	552.00	548.00
2	2	12	0	0	.00	960.00	946.00
2	2	13	0	0	.00	780.00	764.00
2	2	14	0	0	.00	600.00	600.00
2	2	15	0	0	.00	960.00	952.00
2	2	16	0	0	.00	600.00	594.00
2	2	17	0	0	.00	175.00	175.00
2	2	18	0	0	.00	455.00	455.00
2	2	19	0	0	.00	630.00	630.00
2	2	20	0	0	.00	525.00	520.50
2	2	21	0	0	.00	875.00	869.00

2	2	22	0	0	.00	570.00	566.00
2	2	23	0	0	.00	413.00	413.00
2	2	24	0	0	.00	910.00	905.00
2	2	25	0	0	.00	840.00	834.00

BBARLEY

DISTR	FTYPE	FNUMB	TQP	TQSAMC	PROP	GROSS	NET
1	1	1	14	0	.00	490.00	445.00
1	1	2	0	0	.00	.00	.00
1	1	3	0	0	.00	.00	.00
1	1	4	2	0	.00	70.00	40.00
1	1	5	12	0	.00	420.00	270.00
1	1	6	0	0	.00	.00	.00
1	1	7	0	0	.00	.00	.00
1	1	8	8	2	.19	265.00	169.50
1	1	9	0	0	.00	.00	.00
1	1	10	0	0	.00	.00	.00
1	1	11	3	0	.10	85.00	-5.25
1	1	12	11	0	.00	600.00	357.00
1	1	13	8	0	.00	262.50	172.50
1	1	14	16	4	.23	618.00	428.50
1	1	15	9	0	.00	315.00	75.00
1	1	16	0	0	.00	.00	.00
1	1	17	0	0	.00	.00	.00
1	1	18	3	0	.00	68.00	-232.00
1	1	19	0	0	.00	.00	.00
1	1	20	0	0	.00	.00	.00
1	1	21	12	1	.09	508.75	201.75
1	1	22	13	0	.00	367.50	67.50
1	1	23	0	0	.00	.00	.00
1	1	24	6	2	.27	206.00	-335.60
1	2	1	0	0	.00	30.80	30.80
1	2	2	0	0	.00	409.50	409.50
1	2	3	0	0	.00	59.50	59.50
1	2	4	0	0	.00	52.50	52.50
1	2	5	0	0	.00	144.00	143.00
1	2	6	0	0	.00	94.50	94.50
1	2	7	0	0	.00	74.75	74.75
1	2	8	0	0	.00	60.00	60.00
1	2	9	0	0	.00	59.50	59.50
1	2	10	0	0	.00	68.00	68.00
1	2	11	0	0	.00	288.75	288.75
1	2	12	0	0	.00	60.00	60.00
1	2	13	0	0	.00	136.00	135.20
1	2	14	0	0	.00	130.00	129.00
1	2	15	0	1	.00	117.50	117.00
1	2	16	0	0	.00	110.00	110.00
1	2	17	0	0	.00	105.00	105.00
1	2	18	0	0	.00	50.00	50.00
1	2	19	0	0	.00	40.00	39.00
1	2	20	0	0	.00	77.00	77.00
1	2	21	0	0	.00	99.75	99.75
1	2	22	0	0	.00	70.00	70.00
1	2	23	0	0	.00	113.75	113.75
1	2	24	0	0	.00	52.50	52.50
1	2	25	0	0	.00	63.00	63.00

1	2	26	0	0	.00	77.00	77.00
1	2	27	0	0	.00	43.75	43.75
1	2	28	0	0	.00	82.50	82.50
1	2	29	0	0	.00	105.00	105.00
1	2	30	0	0	.00	35.00	35.00
1	2	31	0	0	.00	385.00	380.00
2	1	1	0	0	.00	.00	.00
2	1	2	6	0	.00	210.00	120.00
2	1	3	2	0	.00	70.00	-20.00
2	1	4	0	0	.00	.00	.00
2	1	5	10	0	.00	350.00	50.00
2	1	6	0	0	.00	.00	.00
2	1	7	3	0	.00	105.00	-195.00
2	1	8	10	0	.00	350.00	170.00
2	1	9	2	0	.00	70.00	-20.00
2	1	10	0	0	.00	.00	.00
2	1	11	0	0	.00	.00	.00
2	1	12	6	2	.36	120.00	-2.00
2	1	13	13	2	.15	470.00	-1518.00
2	1	14	11	1	.09	380.00	196.00
2	1	15	8	0	.00	280.00	69.00
2	1	16	0	0	.00	.00	.00
2	1	17	3	0	.00	125.00	-57.10
2	1	18	2	0	.00	45.00	-45.00
2	1	19	8	0	.00	280.00	100.00
2	1	20	7	0	.00	227.50	135.50
2	1	21	0	0	.00	.00	.00
2	1	22	3	0	.00	105.00	15.00
2	1	23	1	0	.00	35.00	-55.00
2	1	24	2	0	.00	52.50	-37.50
2	1	25	0	0	.00	.00	.00
2	1	26	5	0	.00	175.00	83.00
2	1	27	0	0	.00	.00	.00
2	1	28	0	0	.00	.00	.00
2	1	29	6	0	.00	245.00	155.00
2	1	30	3	0	.00	105.00	15.00
2	2	1	0	0	.00	17.50	17.50
2	2	2	0	0	.00	35.00	35.00
2	2	3	0	0	.00	26.25	26.25
2	2	4	0	0	.00	35.00	35.00
2	2	5	0	0	.00	160.00	159.00
2	2	6	0	0	.00	52.50	52.50
2	2	7	0	0	.00	70.00	70.00
2	2	8	0	0	.00	35.00	35.00
2	2	9	0	0	.00	40.00	40.00
2	2	10	0	0	.00	180.00	180.00
2	2	11	0	0	.00	40.00	40.00
2	2	12	0	0	.00	300.00	300.00
2	2	13	0	0	.00	100.00	100.00
2	2	14	0	0	.00	100.00	100.00
2	2	15	0	0	.00	200.00	200.00
2	2	16	0	0	.00	80.00	80.00
2	2	17	0	0	.00	40.00	40.00
2	2	18	0	0	.00	36.00	36.00
2	2	19	0	0	.00	24.00	24.00
2	2	20	0	0	.00	100.00	99.00
2	2	21	0	0	.00	150.00	148.50
2	2	22	0	0	.00	36.00	36.00

2	2	23	0	0	.00	.00	.00
2	2	24	0	0	.00	230.00	229.50
2	2	25	0	0	.00	76.00	76.00

SORGHUM

DISTR	FTYPE	FNUMB	TQP	TQSAMC	PROP	GROSS	NET
1	1	1	0	0	.00	.00	.00
1	1	2	0	0	.00	.00	.00
1	1	3	0	0	.00	.00	.00
1	1	4	0	0	.00	.00	.00
1	1	5	0	0	.00	.00	.00
1	1	6	0	0	.00	.00	.00
1	1	7	0	0	.00	.00	.00
1	1	8	0	0	.00	.00	.00
1	1	9	0	0	.00	.00	.00
1	1	10	0	0	.00	.00	.00
1	1	11	0	0	.00	.00	.00
1	1	12	0	0	.00	.00	.00
1	1	13	0	0	.00	.00	.00
1	1	14	0	0	.00	.00	.00
1	1	15	0	0	.00	.00	.00
1	1	16	0	0	.00	.00	.00
1	1	17	0	0	.00	.00	.00
1	1	18	0	0	.00	.00	.00
1	1	19	0	0	.00	.00	.00
1	1	20	0	0	.00	.00	.00
1	1	21	0	0	.00	.00	.00
1	1	22	0	0	.00	.00	.00
1	1	23	0	0	.00	.00	.00
1	1	24	0	0	.00	.00	.00
1	2	1	0	0	.00	.00	.00
1	2	2	0	0	.00	.00	.00
1	2	3	0	0	.00	.00	.00
1	2	4	0	0	.00	.00	.00
1	2	5	0	0	.00	.00	.00
1	2	6	0	0	.00	.00	.00
1	2	7	0	0	.00	.00	.00
1	2	8	0	0	.00	.00	.00
1	2	9	0	0	.00	.00	.00
1	2	10	0	0	.00	.00	.00
1	2	11	0	0	.00	.00	.00
1	2	12	0	0	.00	.00	.00
1	2	13	0	0	.00	.00	.00
1	2	14	0	0	.00	.00	.00
1	2	15	0	0	.00	.00	.00
1	2	16	0	0	.00	.00	.00
1	2	17	0	0	.00	.00	.00
1	2	18	0	0	.00	.00	.00
1	2	19	0	0	.00	.00	.00
1	2	20	0	0	.00	.00	.00
1	2	21	0	0	.00	.00	.00
1	2	22	0	0	.00	.00	.00
1	2	23	0	0	.00	.00	.00
1	2	24	0	0	.00	.00	.00
1	2	25	0	0	.00	.00	.00
1	2	26	0	0	.00	.00	.00

1	2	27	0	0	.00	.00	.00
1	2	28	0	0	.00	.00	.00
1	2	29	0	0	.00	.00	.00
1	2	30	0	0	.00	.00	.00
1	2	31	0	0	.00	.00	.00
2	1	1	0	0	.00	.00	.00
2	1	2	0	0	.00	.00	.00
2	1	3	0	0	.00	.00	.00
2	1	4	0	0	.00	.00	.00
2	1	5	0	0	.00	.00	.00
2	1	6	0	0	.00	.00	.00
2	1	7	0	0	.00	.00	.00
2	1	8	3	0	.00	.00	-60.00
2	1	9	0	0	.00	.00	.00
2	1	10	0	0	.00	.00	.00
2	1	11	0	0	.00	.00	.00
2	1	12	0	0	.00	.00	.00
2	1	13	0	0	.00	.00	.00
2	1	14	0	0	.00	.00	.00
2	1	15	0	0	.00	.00	.00
2	1	16	0	0	.00	.00	.00
2	1	17	0	0	.00	.00	.00
2	1	18	0	0	.00	.00	.00
2	1	19	0	0	.00	.00	.00
2	1	20	0	0	.00	.00	.00
2	1	21	0	0	.00	.00	.00
2	1	22	0	0	.00	.00	.00
2	1	23	0	0	.00	.00	.00
2	1	24	0	0	.00	.00	.00
2	1	25	0	0	.00	.00	.00
2	1	26	0	0	.00	.00	.00
2	1	27	0	0	.00	.00	.00
2	1	28	0	0	.00	.00	.00
2	1	29	0	0	.00	.00	.00
2	1	30	0	0	.00	.00	.00
2	2	1	0	0	.00	.00	.00
2	2	2	0	0	.00	.00	.00
2	2	3	0	0	.00	.00	.00
2	2	4	0	0	.00	.00	.00
2	2	5	0	0	.00	.00	.00
2	2	6	0	0	.00	.00	.00
2	2	7	0	0	.00	.00	.00
2	2	8	0	0	.00	.00	.00
2	2	9	0	0	.00	.00	.00
2	2	10	0	0	.00	.00	.00
2	2	11	0	0	.00	.00	.00
2	2	12	0	0	.00	.00	.00
2	2	13	0	0	.00	.00	.00
2	2	14	0	0	.00	.00	.00
2	2	15	0	0	.00	.00	.00
2	2	16	0	0	.00	.00	.00
2	2	17	0	0	.00	.00	.00
2	2	18	0	0	.00	.00	.00
2	2	19	0	0	.00	.00	.00
2	2	20	0	0	.00	.00	.00
2	2	21	0	0	.00	.00	.00
2	2	22	0	0	.00	.00	.00
2	2	23	0	0	.00	.00	.00

2	2	24	0	0	.00	.00	.00
2	2	25	0	0	.00	.00	.00

MMILLET

DISTR	FTYPE	FNUMB	TQP	TQSAMC	PROP	GROSS	NET
1	1	1	0	0	.	.00	.00
1	1	2	0	0	.	.00	.00
1	1	3	0	0	.	.00	.00
1	1	4	0	0	.	.00	.00
1	1	5	0	0	.	.00	.00
1	1	6	0	0	.	.00	.00
1	1	7	0	0	.	.00	.00
1	1	8	0	0	.	.00	.00
1	1	9	0	0	.	.00	.00
1	1	10	0	0	.	.00	.00
1	1	11	0	0	.	.00	.00
1	1	12	0	0	.	.00	.00
1	1	13	0	0	.	.00	.00
1	1	14	0	0	.	.00	.00
1	1	15	0	0	.	.00	.00
1	1	16	0	0	.	.00	.00
1	1	17	0	0	.	.00	.00
1	1	18	0	0	.	.00	.00
1	1	19	0	0	.	.00	.00
1	1	20	0	0	.	.00	.00
1	1	21	0	0	.	.00	.00
1	1	22	0	0	.	.00	.00
1	1	23	0	0	.	.00	.00
1	1	24	0	0	.	.00	.00
1	2	1	0	0	.	.00	.00
1	2	2	0	0	.	.00	.00
1	2	3	0	0	.	.00	.00
1	2	4	0	0	.	.00	.00
1	2	5	0	0	.	.00	.00
1	2	6	0	0	.	.00	.00
1	2	7	0	0	.	.00	.00
1	2	8	0	0	.	.00	.00
1	2	9	0	0	.	.00	.00
1	2	10	0	0	.	.00	.00
1	2	11	0	0	.	.00	.00
1	2	12	0	0	.	.00	.00
1	2	13	0	0	.	.00	.00
1	2	14	0	0	.	.00	.00
1	2	15	0	0	.	.00	.00
1	2	16	0	0	.	.00	.00
1	2	17	0	0	.	.00	.00
1	2	18	0	0	.	.00	.00
1	2	19	0	0	.	.00	.00
1	2	20	0	0	.	.00	.00
1	2	21	0	0	.	.00	.00
1	2	22	0	0	.	.00	.00
1	2	23	0	0	.	.00	.00
1	2	24	0	0	.	.00	.00
1	2	25	0	0	.	.00	.00
1	2	26	0	0	.	.00	.00
1	2	27	0	0	.	.00	.00

1	2	28	0	0	.	.00	.00
1	2	29	0	0	.	.00	.00
1	2	30	0	0	.	.00	.00
1	2	31	0	0	.	.00	.00
2	1	1	0	0	.	.00	.00
2	1	2	0	0	.	.00	.00
2	1	3	0	0	.	.00	.00
2	1	4	0	0	.	.00	.00
2	1	5	0	0	.	.00	.00
2	1	6	0	0	.	.00	.00
2	1	7	0	0	.	.00	.00
2	1	8	0	0	.	.00	.00
2	1	9	0	0	.	.00	.00
2	1	10	0	0	.	.00	.00
2	1	11	0	0	.	.00	.00
2	1	12	0	0	.	.00	.00
2	1	13	0	0	.	.00	.00
2	1	14	0	0	.	.00	.00
2	1	15	0	0	.	.00	.00
2	1	16	0	0	.	.00	.00
2	1	17	0	0	.	.00	.00
2	1	18	0	0	.	.00	.00
2	1	19	0	0	.	.00	.00
2	1	20	0	0	.	.00	.00
2	1	21	0	0	.	.00	.00
2	1	22	0	0	.	.00	.00
2	1	23	0	0	.	.00	.00
2	1	24	0	0	.	.00	.00
2	1	25	0	0	.	.00	.00
2	1	26	0	0	.	.00	.00
2	1	27	0	0	.	.00	.00
2	1	28	0	0	.	.00	.00
2	1	29	0	0	.	.00	.00
2	1	30	0	0	.	.00	.00
2	2	1	0	0	.	.00	.00
2	2	2	0	0	.	87.50	87.50
2	2	3	0	0	.	87.50	87.50
2	2	4	0	0	.	75.00	75.00
2	2	5	0	0	.	300.00	296.00
2	2	6	0	0	.	70.00	70.00
2	2	7	0	0	.	.00	.00
2	2	8	0	0	.	70.00	70.00
2	2	9	0	0	.	.00	.00
2	2	10	0	0	.	.00	.00
2	2	11	0	0	.	.00	.00
2	2	12	0	0	.	70.00	70.00
2	2	13	0	0	.	140.00	140.00
2	2	14	0	0	.	105.00	105.00
2	2	15	0	0	.	.00	.00
2	2	16	0	0	.	140.00	140.00
2	2	17	0	0	.	.00	.00
2	2	18	0	0	.	.00	.00
2	2	19	0	0	.	.00	.00
2	2	20	0	0	.	.00	.00
2	2	21	0	0	.	.00	.00
2	2	22	0	0	.	.00	.00
2	2	23	0	0	.	.00	.00
2	2	24	0	0	.	.00	.00

2	2	25	0	0	.	.00	.00

PEARSON CORRELATION COEFFICIENTS

	VVT	NT
PROPT	-.0436	-.2606
	(110)	(110)
	P= .326	P= .003

(1 - TAILED SIG.)

	VVW	NW
PROPW	-.2977	-.4891
	(110)	(110)
	P= .001	P= .000

	VVB	NB
PROPB	.3203	-.2190
	(110)	(110)
	P= .000	P= .011

	VVSOR	NSOR
PROPSOR	.	.
	(110)	(110)
	P= .	P= .

	VVML	NML
PROPML	.	.
	(0)	(0)
	P= .	P= .

	VVMA	NMA
PROPMA	-.0046	-.2443
	(110)	(110)

	P= .481	P= .005

	VVCH	NCH
PROPCH	.	.
	(110)	(110)
	P= .	P= .

	VVHB	NHB
PROPHB	.0801	.0085
	(110)	(110)
	P= .203	P= .465

	VVSOY	NSOY
PROPSOY	.2186	.2207
	(110)	(110)
	P= .011	P= .010

	VVFP	NFP
PROPFP	.0454	-.0695
	(110)	(110)
	P= .319	P= .235

MAIZE

DISTR	FTYPE	FNUMB	TOP	TOSAMC	PROP	GROSS	NET
1	1	1	0	0	.00	.00	.00
1	1	2	0	0	.00	.00	.00
1	1	3	0	0	.00	.00	.00
1	1	4	0	0	.00	.00	.00
1	1	5	7	2	.29	190.00	98.00
1	1	6	0	0	.00	.00	.00
1	1	7	0	0	.00	.00	.00
1	1	8	2	0	.00	80.00	16.50
1	1	9	0	0	.00	.00	.00
1	1	10	0	0	.00	.00	.00
1	1	11	0	0	.00	.00	.00
1	1	12	0	0	.00	.00	.00

1	1	13	0	0	.00	.00	.00
1	1	14	3	1	.40	60.00	-4.00
1	1	15	3	1	.40	60.00	-4.00
1	1	16	0	0	.00	.00	.00
1	1	17	0	0	.00	.00	.00
1	1	18	0	0	.00	.00	.00
1	1	19	0	0	.00	.00	.00
1	1	20	0	0	.00	.00	.00
1	1	21	8	1	.14	263.00	21.85
1	1	22	5	2	.40	120.00	-182.00
1	1	23	7	2	.29	200.00	135.00
1	1	24	0	0	.00	.00	.00
1	2	1	0	0	.00	56.40	56.40
1	2	2	2	0	.00	212.40	149.40
1	2	3	0	0	.00	150.00	150.00
1	2	4	0	0	.00	150.00	150.00
1	2	5	0	0	.00	330.00	325.00
1	2	6	0	0	.00	340.00	335.00
1	2	7	0	0	.00	162.40	162.40
1	2	8	0	0	.00	202.00	200.20
1	2	9	0	0	.00	192.00	190.00
1	2	10	0	0	.00	308.00	301.60
1	2	11	0	0	.00	204.00	194.30
1	2	12	0	0	.00	136.00	136.00
1	2	13	0	0	.00	140.00	140.00
1	2	14	0	0	.00	110.00	107.00
1	2	15	0	0	.00	100.00	100.00
1	2	16	0	0	.00	220.00	220.00
1	2	17	0	0	.00	280.00	276.00
1	2	18	0	0	.00	202.50	194.50
1	2	19	0	0	.00	300.00	292.00
1	2	20	0	0	.00	136.00	133.60
1	2	21	0	0	.00	200.00	200.00
1	2	22	0	0	.00	120.00	120.00
1	2	23	0	0	.00	200.00	200.00
1	2	24	0	0	.00	232.00	232.00
1	2	25	0	0	.00	180.00	178.00
1	2	26	0	0	.00	96.00	95.00
1	2	27	0	0	.00	175.00	171.50
1	2	28	0	0	.00	70.00	70.00
1	2	29	0	0	.00	200.00	200.00
1	2	30	0	0	.00	250.00	246.00
1	2	31	0	0	.00	310.00	300.00
2	1	1	0	0	.00	.00	.00
2	1	2	0	0	.00	.00	.00
2	1	3	0	0	.00	.00	.00
2	1	4	0	0	.00	.00	.00
2	1	5	0	0	.00	.00	.00
2	1	6	0	0	.00	.00	.00
2	1	7	0	0	.00	.00	.00
2	1	8	0	0	.00	.00	.00
2	1	9	0	0	.00	.00	.00
2	1	10	0	0	.00	.00	.00
2	1	11	0	0	.00	.00	.00
2	1	12	0	0	.00	.00	.00
2	1	13	0	0	.00	.00	.00
2	1	14	0	0	.00	.00	.00
2	1	15	0	0	.00	.00	.00

2	1	16	2	0	.00	52.50	-10.50
2	1	17	0	0	.00	.00	.00
2	1	18	0	0	.00	.00	.00
2	1	19	1	1	.50	11.00	-49.50
2	1	20	0	0	.00	.00	.00
2	1	21	0	0	.00	.00	.00
2	1	22	0	0	.00	.00	.00
2	1	23	0	0	.00	.00	.00
2	1	24	0	0	.00	.00	.00
2	1	25	0	0	.00	.00	.00
2	1	26	1	0	.00	20.00	-43.00
2	1	27	0	0	.00	.00	.00
2	1	28	0	0	.00	.00	.00
2	1	29	0	0	.00	.00	.00
2	1	30	0	0	.00	.00	.00
2	2	1	0	0	.00	40.00	40.00
2	2	2	0	0	.00	120.00	120.00
2	2	3	0	0	.00	140.00	138.00
2	2	4	0	0	.00	140.00	138.00
2	2	5	0	0	.00	200.00	194.00
2	2	6	0	0	.00	140.00	137.00
2	2	7	0	0	.00	120.00	118.00
2	2	8	0	0	.00	80.00	80.00
2	2	9	0	0	.00	150.00	146.00
2	2	10	0	0	.00	195.00	191.00
2	2	11	0	0	.00	150.00	148.00
2	2	12	0	0	.00	175.00	170.00
2	2	13	0	0	.00	240.00	236.00
2	2	14	0	0	.00	245.00	244.00
2	2	15	0	0	.00	240.00	240.00
2	2	16	0	0	.00	280.00	274.00
2	2	17	0	0	.00	160.00	160.00
2	2	18	0	0	.00	176.00	176.00
2	2	19	0	0	.00	120.00	120.00
2	2	20	0	0	.00	220.00	218.00
2	2	21	0	0	.00	300.00	296.50
2	2	22	0	0	.00	240.00	237.00
2	2	23	0	0	.00	120.00	120.00
2	2	24	0	0	.00	280.00	280.00
2	2	25	0	0	.00	324.00	319.60

CCHICKPEAS

DISTR	FTYPE	FNUMB	TQP	TQSAMC	PROP	GROSS	NET
1	1	1	0	0	.00	.00	.00
1	1	2	0	0	.00	.00	.00
1	1	3	0	0	.00	.00	.00
1	1	4	0	0	.00	.00	.00
1	1	5	0	0	.00	.00	.00
1	1	6	0	0	.00	.00	.00
1	1	7	0	0	.00	.00	.00
1	1	8	0	0	.00	.00	.00
1	1	9	0	0	.00	.00	.00
1	1	10	0	0	.00	.00	.00
1	1	11	0	0	.00	.00	.00
1	1	12	0	0	.00	.00	.00
1	1	13	0	0	.00	.00	.00

1	1	14	0	0	.00	.00	.00
1	1	15	0	0	.00	.00	.00
1	1	16	0	0	.00	.00	.00
1	1	17	0	0	.00	.00	.00
1	1	18	0	0	.00	.00	.00
1	1	19	0	0	.00	.00	.00
1	1	20	0	0	.00	.00	.00
1	1	21	0	0	.00	.00	.00
1	1	22	0	0	.00	.00	.00
1	1	23	0	0	.00	.00	.00
1	1	24	0	0	.00	.00	.00
1	2	1	0	0	.00	.00	.00
1	2	2	0	0	.00	298.80	298.80
1	2	3	0	0	.00	105.00	105.00
1	2	4	0	0	.00	112.50	112.50
1	2	5	0	0	.00	.00	.00
1	2	6	0	0	.00	.00	.00
1	2	7	0	0	.00	.00	.00
1	2	8	0	0	.00	.00	.00
1	2	9	0	0	.00	.00	.00
1	2	10	0	0	.00	130.50	130.10
1	2	11	0	0	.00	.00	.00
1	2	12	0	0	.00	90.00	90.00
1	2	13	0	0	.00	.00	.00
1	2	14	0	0	.00	315.00	312.00
1	2	15	0	0	.00	180.00	180.00
1	2	16	0	0	.00	202.50	202.50
1	2	17	0	0	.00	135.00	135.00
1	2	18	0	0	.00	315.00	311.00
1	2	19	0	0	.00	123.20	121.48
1	2	20	0	0	.00	216.00	216.00
1	2	21	0	0	.00	174.60	174.60
1	2	22	0	0	.00	162.00	162.00
1	2	23	0	0	.00	195.00	192.00
1	2	24	0	0	.00	243.00	243.00
1	2	25	0	0	.00	252.00	250.00
1	2	26	0	0	.00	162.00	160.00
1	2	27	0	0	.00	117.00	114.40
1	2	28	0	0	.00	192.50	191.00
1	2	29	0	0	.00	270.00	270.00
1	2	30	0	0	.00	135.00	132.50
1	2	31	0	0	.00	225.00	223.00
2	1	1	0	0	.00	.00	.00
2	1	2	0	0	.00	.00	.00
2	1	3	0	0	.00	.00	.00
2	1	4	0	0	.00	.00	.00
2	1	5	0	0	.00	.00	.00
2	1	6	0	0	.00	.00	.00
2	1	7	0	0	.00	.00	.00
2	1	8	0	0	.00	.00	.00
2	1	9	0	0	.00	.00	.00
2	1	10	0	0	.00	.00	.00
2	1	11	0	0	.00	.00	.00
2	1	12	0	0	.00	.00	.00
2	1	13	0	0	.00	.00	.00
2	1	14	0	0	.00	.00	.00
2	1	15	0	0	.00	.00	.00
2	1	16	0	0	.00	.00	.00

2	1	17	0	0	.00	.00	.00
2	1	18	0	0	.00	.00	.00
2	1	19	0	0	.00	.00	.00
2	1	20	0	0	.00	.00	.00
2	1	21	0	0	.00	.00	.00
2	1	22	0	0	.00	.00	.00
2	1	23	0	0	.00	.00	.00
2	1	24	2	0	.00	147.00	36.00
2	1	25	0	0	.00	.00	.00
2	1	26	0	0	.00	.00	.00
2	1	27	0	0	.00	.00	.00
2	1	28	0	0	.00	.00	.00
2	1	29	0	0	.00	.00	.00
2	1	30	0	0	.00	.00	.00
2	2	1	0	0	.00	45.00	45.00
2	2	2	0	0	.00	292.50	289.50
2	2	3	0	0	.00	225.00	223.00
2	2	4	0	0	.00	225.00	222.00
2	2	5	0	0	.00	520.00	516.00
2	2	6	0	0	.00	83.00	83.00
2	2	7	0	0	.00	90.00	90.00
2	2	8	0	0	.00	90.00	90.00
2	2	9	0	0	.00	135.00	133.50
2	2	10	0	0	.00	585.00	580.00
2	2	11	0	0	.00	135.00	133.50
2	2	12	0	0	.00	315.00	312.00
2	2	13	0	0	.00	630.00	626.00
2	2	14	0	0	.00	720.00	716.00
2	2	15	0	0	.00	135.00	134.00
2	2	16	0	0	.00	70.00	69.00
2	2	17	0	0	.00	140.00	140.00
2	2	18	0	0	.00	90.00	90.00
2	2	19	0	0	.00	225.00	225.00
2	2	20	0	0	.00	.00	.00
2	2	21	0	0	.00	.00	.00
2	2	22	0	0	.00	.00	.00
2	2	23	0	0	.00	.00	.00
2	2	24	0	0	.00	.00	.00
2	2	25	0	0	.00	67.50	67.50

HORSE BEANS

DISTR	FTYPE	FNUMB	TQP	TQSAMC	PROP	GROSS	NET
1	1	1	0	0	.00	.00	.00
1	1	2	0	0	.00	.00	.00
1	1	3	0	0	.00	.00	.00
1	1	4	0	0	.00	.00	.00
1	1	5	2	0	.00	100.00	25.00
1	1	6	0	0	.00	.00	.00
1	1	7	0	0	.00	.00	.00
1	1	8	0	0	.00	.00	.00
1	1	9	0	0	.00	.00	.00
1	1	10	0	0	.00	.00	.00
1	1	11	0	0	.00	.00	.00
1	1	12	0	0	.00	.00	.00
1	1	13	0	0	.00	.00	.00
1	1	14	0	0	.00	.00	.00

1	1	15	0	0	.00	.00	.00
1	1	16	0	0	.00	.00	.00
1	1	17	0	0	.00	.00	.00
1	1	18	0	0	.00	.00	.00
1	1	19	0	0	.00	.00	.00
1	1	20	0	0	.00	.00	.00
1	1	21	0	0	.00	.00	.00
1	1	22	0	0	.00	.00	.00
1	1	23	0	0	.00	.00	.00
1	1	24	0	0	.00	.00	.00
1	2	1	0	0	.00	.00	.00
1	2	2	0	0	.00	.00	.00
1	2	3	0	0	.00	.00	.00
1	2	4	0	0	.00	.00	.00
1	2	5	0	0	.00	225.00	223.00
1	2	6	0	0	.00	.00	.00
1	2	7	0	0	.00	.00	.00
1	2	8	0	0	.00	.00	.00
1	2	9	0	0	.00	.00	.00
1	2	10	0	0	.00	.00	.00
1	2	11	0	0	.00	.00	.00
1	2	12	0	0	.00	.00	.00
1	2	13	0	0	.00	.00	.00
1	2	14	0	0	.00	.00	.00
1	2	15	0	0	.00	.00	.00
1	2	16	0	0	.00	62.50	62.50
1	2	17	0	0	.00	.00	.00
1	2	18	0	0	.00	.00	.00
1	2	19	0	0	.00	.00	.00
1	2	20	0	0	.00	.00	.00
1	2	21	0	0	.00	.00	.00
1	2	22	0	0	.00	.00	.00
1	2	23	0	0	.00	.00	.00
1	2	24	0	0	.00	.00	.00
1	2	25	0	0	.00	.00	.00
1	2	26	0	0	.00	.00	.00
1	2	27	0	0	.00	.00	.00
1	2	28	0	0	.00	.00	.00
1	2	29	0	0	.00	.00	.00
1	2	30	0	0	.00	.00	.00
1	2	31	0	0	.00	.00	.00
2	1	1	0	0	.00	.00	.00
2	1	2	1	0	.00	30.00	-45.00
2	1	3	1	0	.00	7.50	-67.50
2	1	4	0	0	.00	.00	.00
2	1	5	0	0	.00	.00	.00
2	1	6	0	0	.00	.00	.00
2	1	7	6	0	.00	360.00	207.00
2	1	8	0	0	.00	10.00	-125.00
2	1	9	0	0	.00	.00	.00
2	1	10	0	0	.00	.00	.00
2	1	11	0	0	.00	.00	.00
2	1	12	0	0	.00	.00	.00
2	1	13	0	0	.00	.00	.00
2	1	14	1	0	.00	55.00	-21.00
2	1	15	8	0	.00	400.00	320.00
2	1	16	0	0	.00	.00	.00
2	1	17	1	0	.00	25.00	-50.00

2	1	18	1	0	.00	50.00	-25.00
2	1	19	5	0	.00	225.00	149.50
2	1	20	0	0	.00	.00	.00
2	1	21	0	0	.00	.00	.00
2	1	22	0	0	.00	.00	.00
2	1	23	0	0	.00	.00	.00
2	1	24	0	0	.00	.00	.00
2	1	25	0	0	.00	.00	.00
2	1	26	2	0	.00	75.00	.00
2	1	27	0	0	.00	.00	.00
2	1	28	3	1	.20	114.00	35.50
2	1	29	0	0	.00	12.50	-62.50
2	1	30	0	0	.00	.00	.00
2	2	1	0	0	.00	.00	.00
2	2	2	0	0	.00	500.00	497.00
2	2	3	0	0	.00	.00	.00
2	2	4	0	0	.00	100.00	98.00
2	2	5	0	0	.00	180.00	178.00
2	2	6	0	0	.00	100.00	99.00
2	2	7	0	0	.00	100.00	98.00
2	2	8	0	0	.00	.00	.00
2	2	9	0	0	.00	75.00	73.50
2	2	10	0	0	.00	200.00	200.00
2	2	11	0	0	.00	150.00	147.00
2	2	12	0	0	.00	225.00	221.00
2	2	13	0	0	.00	300.00	297.00
2	2	14	0	0	.00	250.00	250.00
2	2	15	0	0	.00	175.00	173.00
2	2	16	0	0	.00	125.00	125.00
2	2	17	0	0	.00	.00	.00
2	2	18	0	0	.00	.00	.00
2	2	19	0	0	.00	.00	.00
2	2	20	0	0	.00	.00	.00
2	2	21	0	0	.00	.00	.00
2	2	22	0	0	.00	.00	.00
2	2	23	0	0	.00	.00	.00
2	2	24	0	0	.00	.00	.00
2	2	25	0	0	.00	.00	.00

SSOYA BEANS

DISTR	FTYPE	FNUMB	TQP	TQSAMC	PROP	GROSS	NET
1	1	1	0	0	.00	.00	.00
1	1	2	0	0	.00	180.00	165.00
1	1	3	0	0	.00	.00	.00
1	1	4	0	0	.00	.00	.00
1	1	5	0	0	.00	.00	.00
1	1	6	0	0	.00	.00	.00
1	1	7	0	0	.00	.00	.00
1	1	8	0	0	.00	.00	.00
1	1	9	0	0	.00	.00	.00
1	1	10	0	0	.00	.00	.00
1	1	11	0	0	.00	.00	.00
1	1	12	0	0	.00	.00	.00
1	1	13	0	0	.00	.00	.00
1	1	14	0	0	.00	60.00	-49.00
1	1	15	0	0	.00	.00	.00

1	1	16	0	0	.00	.00	.00
1	1	17	0	0	.00	.00	.00
1	1	18	0	0	.00	.00	.00
1	1	19	0	0	.00	.00	.00
1	1	20	0	0	.00	.00	.00
1	1	21	0	0	.00	.00	.00
1	1	22	0	0	.00	.00	.00
1	1	23	0	0	.00	.00	.00
1	1	24	0	0	.00	.00	.00
1	2	1	0	0	.00	.00	.00
1	2	2	3	0	.00	202.80	202.80
1	2	3	2	0	.00	96.00	96.00
1	2	4	2	0	.00	108.00	108.00
1	2	5	0	0	.00	.00	.00
1	2	6	0	0	.00	.00	.00
1	2	7	0	0	.00	.00	.00
1	2	8	0	0	.00	.00	.00
1	2	9	0	0	.00	.00	.00
1	2	10	1	0	.00	54.00	53.20
1	2	11	0	0	.00	.00	.00
1	2	12	0	0	.00	.00	.00
1	2	13	0	0	.00	.00	.00
1	2	14	1	0	.00	30.00	30.00
1	2	15	1	0	.00	60.00	60.00
1	2	16	2	0	.00	90.00	90.00
1	2	17	1	0	.00	90.00	89.00
1	2	18	1	0	.00	120.00	117.00
1	2	19	0	0	.00	144.00	140.40
1	2	20	0	0	.00	96.00	92.80
1	2	21	0	0	.00	93.50	89.76
1	2	22	2	0	.00	102.00	102.00
1	2	23	1	0	.00	75.00	73.50
1	2	24	1	0	.00	72.00	72.00
1	2	25	1	0	.00	90.00	88.00
1	2	26	0	0	.00	120.00	116.00
1	2	27	0	0	.00	75.00	73.00
1	2	28	1	0	.00	87.50	85.00
1	2	29	0	0	.00	195.00	188.50
1	2	30	0	0	.00	62.50	60.00
1	2	31	0	0	.00	157.50	154.00
2	1	1	0	0	.00	.00	.00
2	1	2	0	0	.00	.00	.00
2	1	3	0	0	.00	.00	.00
2	1	4	0	0	.00	.00	.00
2	1	5	0	0	.00	.00	.00
2	1	6	0	0	.00	.00	.00
2	1	7	0	0	.00	.00	.00
2	1	8	0	0	.00	.00	.00
2	1	9	0	0	.00	.00	.00
2	1	10	0	0	.00	.00	.00
2	1	11	0	0	.00	.00	.00
2	1	12	0	0	.00	.00	.00
2	1	13	0	0	.00	.00	.00
2	1	14	0	0	.00	.00	.00
2	1	15	0	0	.00	.00	.00
2	1	16	0	0	.00	.00	.00
2	1	17	0	0	.00	.00	.00
2	1	18	0	0	.00	.00	.00

2	1	19	0	0	.00	.00	.00
2	1	20	0	0	.00	.00	.00
2	1	21	0	0	.00	.00	.00
2	1	22	0	0	.00	.00	.00
2	1	23	0	0	.00	.00	.00
2	1	24	0	0	.00	.00	.00
2	1	25	0	0	.00	.00	.00
2	1	26	0	0	.00	.00	.00
2	1	27	0	0	.00	.00	.00
2	1	28	0	0	.00	.00	.00
2	1	29	0	0	.00	.00	.00
2	1	30	0	0	.00	.00	.00
2	2	1	0	0	.00	.00	.00
2	2	2	0	0	.00	.00	.00
2	2	3	0	0	.00	.00	.00
2	2	4	0	0	.00	.00	.00
2	2	5	0	0	.00	.00	.00
2	2	6	0	0	.00	.00	.00
2	2	7	0	0	.00	.00	.00
2	2	8	0	0	.00	.00	.00
2	2	9	0	0	.00	.00	.00
2	2	10	0	0	.00	.00	.00
2	2	11	0	0	.00	.00	.00
2	2	12	0	0	.00	.00	.00
2	2	13	0	0	.00	.00	.00
2	2	14	0	0	.00	.00	.00
2	2	15	0	0	.00	.00	.00
2	2	16	0	0	.00	.00	.00
2	2	17	1	0	.00	60.00	60.00
2	2	18	0	0	.00	.00	.00
2	2	19	0	0	.00	.00	.00
2	2	20	5	1	.20	247.00	246.05
2	2	21	5	0	.00	455.00	451.00
2	2	22	4	0	.00	240.00	239.00
2	2	23	5	0	.00	300.00	299.00
2	2	24	8	0	.00	500.00	496.00
2	2	25	6	0	.00	337.50	336.00

FIELD PEAS

DISTR	FTYPE	FNUMB	TQP	TQSAMC	PROP	GROSS	NET
1	1	1	0	0	.00	.00	.00
1	1	2	0	0	.00	.00	.00
1	1	3	0	0	.00	.00	.00
1	1	4	0	0	.00	.00	.00
1	1	5	2	2	.75	75.00	-34.50
1	1	6	0	0	.00	.00	.00
1	1	7	0	0	.00	.00	.00
1	1	8	0	0	.00	.00	.00
1	1	9	0	0	.00	.00	.00
1	1	10	0	0	.00	.00	.00
1	1	11	0	0	.00	.00	.00
1	1	12	0	0	.00	.00	.00
1	1	13	0	0	.00	.00	.00
1	1	14	0	0	.00	.00	.00
1	1	15	2	0	.00	120.00	12.00
1	1	16	0	0	.00	.00	.00

1	1	17	0	0	.00	.00	.00
1	1	18	0	0	.00	.00	.00
1	1	19	0	0	.00	.00	.00
1	1	20	0	0	.00	.00	.00
1	1	21	0	0	.00	.00	.00
1	1	22	0	0	.00	.00	.00
1	1	23	0	0	.00	.00	.00
1	1	24	0	0	.00	.00	.00
1	2	1	0	0	.00	.00	.00
1	2	2	0	0	.00	.00	.00
1	2	3	0	0	.00	.00	.00
1	2	4	0	0	.00	.00	.00
1	2	5	0	0	.00	.00	.00
1	2	6	0	0	.00	.00	.00
1	2	7	0	0	.00	.00	.00
1	2	8	0	0	.00	.00	.00
1	2	9	0	0	.00	.00	.00
1	2	10	0	0	.00	87.00	86.60
1	2	11	0	0	.00	.00	.00
1	2	12	0	0	.00	60.00	60.00
1	2	13	0	0	.00	30.00	30.00
1	2	14	0	0	.00	.00	.00
1	2	15	0	0	.00	45.00	45.00
1	2	16	0	0	.00	15.00	15.00
1	2	17	0	0	.00	90.00	90.00
1	2	18	0	0	.00	.00	.00
1	2	19	0	0	.00	.00	.00
1	2	20	0	0	.00	.00	.00
1	2	21	0	0	.00	.00	.00
1	2	22	0	0	.00	.00	.00
1	2	23	0	0	.00	34.80	34.80
1	2	24	0	0	.00	.00	.00
1	2	25	0	0	.00	.00	.00
1	2	26	0	0	.00	66.00	66.00
1	2	27	0	0	.00	.00	.00
1	2	28	0	0	.00	.00	.00
1	2	29	0	0	.00	.00	.00
1	2	30	0	0	.00	.00	.00
1	2	31	0	0	.00	.00	.00
2	1	1	0	0	.00	.00	.00
2	1	2	1	0	.00	57.00	-51.00
2	1	3	1	0	.00	.00	-108.00
2	1	4	0	0	.00	.00	.00
2	1	5	0	0	.00	.00	.00
2	1	6	4	0	.00	339.00	98.25
2	1	7	0	0	.00	.00	.00
2	1	8	0	0	.00	.00	.00
2	1	9	0	0	.00	.00	.00
2	1	10	0	0	.00	.00	.00
2	1	11	0	0	.00	.00	.00
2	1	12	0	0	.00	.00	.00
2	1	13	0	0	.00	.00	.00
2	1	14	0	0	.00	9.00	-99.00
2	1	15	8	0	.00	800.00	691.20
2	1	16	0	0	.00	.00	.00
2	1	17	2	0	.00	120.00	12.00
2	1	18	0	0	.00	.00	.00
2	1	19	5	0	.00	315.00	205.50

2	1	20	0	0	.00	.00	.00
2	1	21	0	0	.00	.00	.00
2	1	22	0	0	.00	.00	.00
2	1	23	0	0	.00	.00	.00
2	1	24	0	0	.00	.00	.00
2	1	25	4	0	.00	210.00	100.00
2	1	26	0	0	.00	.00	.00
2	1	27	0	0	.00	.00	.00
2	1	28	0	0	.00	.00	.00
2	1	29	0	0	.00	.00	.00
2	1	30	0	0	.00	.00	.00
2	2	1	0	0	.00	30.00	30.00
2	2	2	0	0	.00	90.00	89.00
2	2	3	0	0	.00	60.00	60.00
2	2	4	0	0	.00	.00	.00
2	2	5	0	0	.00	.00	.00
2	2	6	0	0	.00	90.00	89.00
2	2	7	0	0	.00	30.00	30.00
2	2	8	0	0	.00	100.00	100.00
2	2	9	0	0	.00	90.00	88.50
2	2	10	0	0	.00	90.00	89.00
2	2	11	0	0	.00	30.00	30.00
2	2	12	0	0	.00	120.00	120.00
2	2	13	0	0	.00	30.00	30.00
2	2	14	0	0	.00	60.00	60.00
2	2	15	0	0	.00	90.00	89.00
2	2	16	0	0	.00	30.00	30.00
2	2	17	0	0	.00	30.00	30.00
2	2	18	0	0	.00	.00	.00
2	2	19	0	0	.00	.00	.00
2	2	20	0	0	.00	.00	.00
2	2	21	0	0	.00	.00	.00
2	2	22	0	0	.00	.00	.00
2	2	23	0	0	.00	.00	.00
2	2	24	0	0	.00	.00	.00
2	2	25	0	0	.00	.00	.00

LEGEND

TQP = Total quantity produced of crop i (i = 1 . . . n)

SAMC = Quantity sold to AMC

PROP = Quantity Sold to AMC as a Proportion of Quantity Produced

PROPT = Quantity of Teff Sold to AMC as a Proportion of Quantity of Teff Produced

PROPW = Quantity of Wheat Sold to AMC as a Proportion of Quantity of Wheat Produced

PROPB = Quantity of Barley Sold to AMC as a Proportion of
Quantity of Barley Produced

PROPSOR = Quantity of Sorghum Sold to AMC as a Proportion of
Quantity of Sorghum Produced

PROPML = Quantity of Millet Sold to AMC as a Proportion of
Quantity of Millet Produced

PROPMA = Quantity of Maize Sold to AMC as a Proportion of
Quantity of Maize Produced

PROPCH = Quantity of Chickpeas Sold to AMC as a Proportion
of Quantity of Chickpeas Produced

PROPHB = Quantity of Horsebeans Sold to AMC as a Proportion
of Quantity of Horsebeans Produced

PROPSOY = Quantity of Soyabeans Sold to AMC as a Proportion
of Quantity of Soyabeans Produced

PROPFP = Quantity of Fieldpeas Sold to AMC as a Proportion
of Quantity of Fieldpeas Produced

Y = Gross Income of Farmers

N = Net Income of Farmers

VVT =Gross Income from Teff

NT = Net Income from Teff

VVW = Gross Income from Wheat

NW = Net Income from Wheat

VVB = Gross Income from Barley

NB = Net Income from Barley

VVSORG = Gross Income from Sorghum

NSORG = Net Income from Sorghum

VVML =Gross Income from Millet

NML = Net Income from Millet

VVMA =Gross Income from Maize

NMA = Net Income from Maize

VVCH = Gross Income from Chickpeas

NCH = Net Income from Chick Peas

VVHB = Gross Income from Horse Beans

NHB= Net Income from Horse Beans

VVSOY = Gross Income from Soya Beans

NSOY = Net Income from Soya Beans

VVFP = Gross Income from Peas

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