

THE LEVEL AND DETERMINANTS OF RURAL SAVING  
AMONG SMALL-SCALE FARMERS - THE CASE OF  
MUMIAS SUGAR-CANE OUTGROWERS

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ABSTRACT

This study aimed at estimating the saving residual capacities among the Mumias sugar-cane farmers. The study also focused on the possible determinants of the saving residual of these farmers. The possible determinants of saving residual considered in the study are cash income per year, level of wealth assets held, and household size. The other determinants considered are number of children in the household attending school, age of the household head and education level of the household head. A total of forty five farmers (households) were interviewed. A questionnaire was used for the collection of the data.

Saving residual was estimated by deducting the total of all the possible expenditure outlets from the total cash or disposable income. The relationships and the causal relationships between the saving residual and the possible determinants of saving residual were analysed using the correlation analysis and the regression analysis respectively. The correlation analysis and the regression analysis were carried out by use of the XDS 3 computer package.

The results arrived at in the study indicate that saving residual are substantial among the small-scale sugar-cane farmers in Mumias area. The substantial saving residual are as a result of relatively high incomes from sugar-cane growing. Only cash income and household size were found to be significant determinants of the saving residual.

The paper ends by giving some recommendations on how the substantial saving residual could be mobilised or utilized so that its effects in economic growth of Mumias area and even of the country as a whole could be felt.

1.

INTRODUCTION AND PROBLEM FORMULATION

Growth in capital stock or capital formation has been rightly regarded as one of the most important elements of economic development. It is this increase in capital stock along with its efficiency that directly influence the productive capacity of the economy for increasing the total output or income. However, this growth in capital is in turn directly dependent on that part of additional income or output which is not immediately consumed but is saved. This saved income is then made available for investment or increase in capital stock. In other words, it is the growth in savings which is crucial both for capital formation and the rate of economic growth. This assumes all the greater importance in the context of under-developed countries like Kenya. In under-developed countries, basically the level of capital stock not only lies at the root of under-development but also provides a basic solution to the problem of economic development.

The importance of savings for economic development in Kenya needs no emphasis. It has, however, certain ramifications and implications. For instance, one of the main objectives of planned development in Kenya is to raise the income and consumption standards particularly of the poorer sections of the society. The needs of economic growth in terms of increased savings necessitates in the initial stages a rigorous restraint on the increase in consumption itself. Similarly, there are structural deficiencies and low capital stock particularly in the basic industries and infrastructure facilities. These require large amounts of capital investments especially in the high capital intensity areas. They also require a considerable discipline in regard to the increase in the production of consumer goods. It is this choice

between immediate and future increase in consumption that poses a serious problem for increasing savings and growth in Kenya.

Agriculture still remains the backbone of the Kenyan economy. For instance, from 1975 to 1978 agriculture accounted for an average of 31.1 per cent of Gross Domestic Product (GDP) per year at constant 1972 prices. The corresponding figures for the manufacturing sector was 14.5 per cent and for the Government sector 17.8 per cent (31, 16). The contributions in 1979 were 34.4 per cent from agriculture, 12.6 per cent from manufacturing sector and 14.7 per cent from the Government sector (32, 29). Since agriculture produces about a third of the domestic income in Kenya, an increase of farmers' savings is much desired whether it be invested in farm improvement or in off-farm activities.

Farmers need to improve their efficiency and innovation so as to increase their productivity. In order to do this, farmers need to build up capital stock on their farms from their own savings. This is because, not all farmers can get agricultural loans or credit from the lending institutions. This is even more so with respect to small-scale farmers.

Savings in rural areas can be divided into savings in kind (farm investments), savings deposits in financial institutions and cash hoarding. Savings in kind (investment) involves, among others, the purchase of assets such as livestock, land, farming equipments and planting of tree crops. Cash hoarding is very prominent with rural households of small-holdings. However, it is not easy to come up with

a figure of cash hoarding. It is not easy for one to say how much money he is hoarding in his house. Therefore, with rural households it can be expected that savings are greater than investment. The only way to come up with a saving figure is to derive savings as a residual after deducting all the expenditures from income. In this study, one of the major aims is to get the figure for the cash surplus available among the Mumias small-scale sugar-cane farmers. It is this cash surplus which is referred to as savings or saving residual. Consequently, savings in kind (farm investments) are considered as part of total expenditures. This means that savings estimated in this study may be lower than actual savings in the area.

In order to increase savings, we need to know the determinants of saving. The determinants of savings may not be the same in urban as in rural areas. Interest rate is one factor used by the Government to attract savings mainly in urban areas. But as may be shown later in the study, interest rate does not seem to be a major determinant of saving in the rural areas among small-scale farmers. Consequently, if rural savings is to be increased, other determinants of savings must be considered. Some of these determinants considered in the study are the household income, the household size and the level of wealth assets held.

The Integrated Rural Survey (IRS) 1974/75 (34) gave the total household cash income for Western Province as being KSh.1,625/= per year. The total household cash consumption expenditure for the same province was given as KSh.1,912/=. This gives a negative saving of KSh.294/= per year per average household. However, the Mumias sugar-cane

scheme became operational in 1973. But as may probably be shown later in the study, the household incomes in Western Province have gone up substantially since 1975. Odada (53) for instance, estimated the earnings from sugar-cane alone as KSh.11,600/= per year for two hectares (5 acres) sugar-cane farm over the entire five year crop-cycle. And since it takes time to adjust consumption expenditure to income changes, current savings in Western Province could possibly be positive and substantial. This should be more so in Mumias area which is virtually a sugar-cane area.

Also, as will probably be shown later, the value of wealth assets per household in Western Province has increased substantially since 1975. The IRS (34) 1974/75 gave the mean value of household assets, excluding domestic assets, as being KSh.4,471/= for the entire Western Province. In this study both domestic and non-domestic household assets are added together and make one of the determinants of savings.

The IRS (34) 1974/75 gave a mean household size of 7.4 persons for Western Province. Since Kenya's rate of population growth is 3.9% per year, the mean household size in the province may probably be higher than 7.4 persons.

The other possible factors of savings considered in the study are age of the household head, education level of the household head, number of children (members of the household) attending school and the level of interest rate. It is of interest for this study to find out how these variables relate to the saving residual of the Mumias sugar-cane farmers. -

1.1 OBJECTIVES OF THE STUDY

The overall objective of this study is to try and estimate the savings capacity that exists among the Mumias small-scale sugar-cane farmers and to study the possible determinants of savings in the area.

Specifically, the study is meant to achieve the following working objectives.

- a) to determine whether the sugar-cane farmers in Mumias area have surplus income which in this case is being referred to as the saving or the saving residual.
- b) to determine the saving residual as a percentage of the disposable income, i.e. to determine the saving rate.
- c) to determine the marginal propensities to save with respect to the three possible determinants of saving considered in the regression function, i.e. with respect to changes in the disposable income, wealth holding and household size.
- d) to analyse the relationships existing between the saving residual and the interest rates, age of the household head, education level of the household head, and the number of children (members of the household) attending school; and
- e) to determine which are the most important determinants of the saving residual among the sugar-cane farmers in Mumias area.

1.2

HYPOTHESIS TO BE TESTED

Generally speaking, the hypothesis of a study are a means by which the questions raised in the study are answered and the objectives of the study are realised. The following working hypothesis are to be tested in this study so that the objectives set up in the study are realised.

- a) The first hypothesis is that the sugar-cane farmers in Mumias have surplus income as a result of growing sugar-cane. This hypothesis will be tested by deducting total consumption expenditure from total disposable income.
  
- b) The second hypothesis is that the saving rate (saving-income ratio) of these sugar-cane farmers is low, i.e. it is between 4 or 5 to 12 per cent as propounded by Lewis (44, 216). Lewis argued that what restrains investment in less developed countries is not lack of demand but simply lack of saving to finance investment. He stated that people in these countries are willing to save only 4 or 5 per cent of their incomes while they are capable of investing about 12 per cent of their annual income.

This hypothesis will be tested by comparing the calculated rate with the rates propounded by Lewis. The calculated rate will also be compared with the national household saving rates and with the aggregate domestic saving rates.

- c) The third hypothesis states that the marginal propensity to save

with respect to changes in disposable income for the sugar-cane farmers in Mumias is high. The estimated marginal propensity to save will be compared to the other propensities cited in the study.

- d) The fourth hypothesis states that there is no significant relationship between the interest rates offered by the saving institutions and the saving residual of the Mumias sugar-cane farmers. The number of farmers who have savings accounts in financial institutions will be recorded. Again the number of farmers who have savings accounts in such institutions for the purpose of the interest rate offered will also be arrived at. The latter will be calculated as a percentage of the former and the resultant figure will be used as the basis for testing the hypothesis.
- e) The fifth hypothesis states that aggregative behaviour of small-scale sugar-cane farmers in Mumias is in conformity with the theoretical framework of the conventional economic relations. The conventional economic relations referred to here concerns the savings function specified in section 5.1. The rationale behind this hypothesis is that the decision on how much to save by small scale farmers who have been absorbed into the market system should be influenced by the conventional determinants of saving considered in this study. In otherwords, by regressing saving on income, wealth assets and household size, these variables should manifest statistically significant economic relations.



1.3

DOMESTIC SAVINGS IN KENYA

The general picture of savings in Kenya may be stated as follows. The saving-income ratio was around 18 - 20 per cent from 1965 to 1970. Table I below shows the gross domestic savings of Kenya and other developing countries for comparison purposes. For Kenya, this was a creditable savings performance in comparison with the other countries shown. For example, South Korea, whose success in economic growth is generally regarded as very satisfactory did not have a higher saving rate than Kenya. In Africa, the Ivory Coast which has sustained a high rate of growth in Gross National Income (GNI) (7.5 per cent per annum over 1960-70) (35, 355) achieved a saving rate significantly higher than Kenya. This may be partly because expatriate community plays a more important role in the Ivory Coast than in Kenya economy. If allowance is made for factor incomes and transfers, Kenya's performance is comparable to that of Ivory Coast.

TABLE I

GROSS NATIONAL SAVINGS (GNS) AND GROSS DOMESTIC SAVINGS (GDS) AS PERCENTAGES OF GROSS DOMESTIC INCOMES (GDI)<sup>(1)</sup> - ALL SECTORS

YEAR	KENYA		TANZANIA		ETHIOPIA		IVORY COAST		SOUTH KOREA	
	GNS	GDS	GNS	GDS	GNS	GDS	GNS	GDS	GNS	GDS
1965	17.8	18.6	15.6	17.1	10.6	10.1			15.1	10.1
1966	16.3	18.3	16.0	17.4	11.1	10.7	16.3	20.8	16.8	12.1
1967	16.4	18.5	16.7	17.6	11.8	11.6	16.2	21.1	18.7	14.4
1968	17.0	18.4	17.6	17.5	12.3	12.2	17.7	22.2	20.4	16.4
1969	18.5	19.1	17.9	17.3	12.2	12.1	18.7	22.7	20.9	17.8
1970	19.0	19.5	19.2	18.7	12.0	12.0			19.9	17.8

Source: World Bank Atlas and other World Bank Estimates, 1975  
Ref. (35, 374).

(1) Note:

- a) Gross Domestic Savings (GDS) = Savings by the residents of the country without taking into account international income transfers.
- b) Gross National Savings (GNS) = Savings by the nationals of the country. It is equal to GDS plus net international income transfers.
- c) Gross Domestic Income (GDI) = The total of factor earnings by the residents of the country without taking into account international income transfers.
- d) Gross National Income (GNI) = The total of factor earnings by the nationals of the country. It is equal to GDI plus net international income transfers.

The saving rate in Kenya has been fluctuating since 1971. The recent figures as given in Table II below show that the lowest saving figure was 11.0 per cent in 1975. The highest saving figure was 24.0 per cent in 1977. The average saving-income ratio over ten years (1970-79) is about 18.0 per cent. This creditable savings performance over the last ten years is mainly due to the high growth rates of incomes since the commercial interest rate remained at 5 per cent as fixed in 1974 (35, 358). The high incomes from coffee in 1977 was of great importance in raising the savings level in both the private and public sectors of the economy.

The investment in Kenya has been largely financed from domestic savings. For instance, for the last ten years, the proportion financed domestically averaged 74.5 per cent while 25.5 per cent was

covered by external loans and grants. There was only one exceptional year in 1977. In this year, as already indicated earlier, because of the coffee boom incomes rose so rapidly that the recipients could not spend the normal proportions on consumption. As shown in Table II domestic savings in 1977 were sufficient to cover the country's total investment expenditure.

TABLE II

TOTAL INVESTMENTS AND DOMESTIC SAVINGS AS PERCENTAGES OF GROSS DOMESTIC INCOME IN KENYA - ALL SECTORS.

Year	GDI at Market Price	Total Investments	Investments as % of GDI	Domestic Savings	Savings as % of GDI
	K£ million	K£ million		K£ million	
1970	576.0	126.1	21.9	116.1	20.0
1971	644.0	162.2	25.2	120.4	19.0
1972	703.0	159.6	22.7	143.5	20.0
1973	787.0	226.7	28.8	179.2	23.0
1974	962.0	273.1	28.4	157.1	16.0
1975	1199.0	217.1	18.2	136.5	11.0
1976	1457.0	294.4	20.2	252.3	17.0
1977	1862.0	441.2	24.0	441.2	24.0
1978	2056.0	610.6	29.7	330.7	16.0
1979	2261.0	506.4	22.4	306.7	14.0

Source: Economic Survey 1980.

Data on sources of domestic savings for the immediate past years are available only for 1976 (32, 33). As shown in Table II above, savings in this year amounted to K£ 252.3 million. A rough breakdown of this total by source of origin is given in Table III.

TABLE III

SAVINGS IN KENYA BY SOURCE OF ORIGIN IN 1976 - ALL SECTORS

<u>Source</u>	<u>Saving (K£ million)</u>	<u>% of total saving</u>
Household	79.0	31.3
Enterprises	108.3	42.9
Government	65.0	25.8
<u>Total</u>	<u>252.3</u>	<u>100.0</u>

Source: Economic Survey 1980.

The table above shows that business enterprises were the major source of savings in 1976. This is expected since they need to make allowance for replacement of capital equipment as well as setting aside sums for expansion. According to the guess made in the Economic Survey of 1980, one third of the household savings in 1976 probably originated in households on small farms (32, 33). This is about 10.4 per cent of the total domestic savings during the year.

2.

REVIEW OF THE LITERATURE

It is a general proposition that savings in the rural areas of less developed countries is generally low. Arthur Lewis (43) for example, stated that "the problem in many developing nations is the low level of savings and investment, especially so with the rural population". In the case of Kenya, Von Pischke (51) has stated that "many observers believe that small farmers are incapable of saving, and that most of the statistics show that the small farmers do not have enough income at their disposal to warrant any savings". However, there is a surprising amount of evidence that suggests the rural population are capable of saving substantial amounts. Ruozi R. (57) in his study of saving behaviour in rural Sudan stated that "despite widely held assumptions to the contrary, indirect evidence suggests that many rural people in Africa have relatively high savings propensities". Ruozi argues that the problem is poor mobilization of the voluntary savings in the rural areas.

For instance, De Wilde (14, 198) noted that in West Africa, the expansion of such tree crops as robusta coffee and cocoa had not been significantly assisted by credit. De Wilde goes on to argue that in Sukumaland, Tanzania, very few of the thousands of ploughs which were instrumental in expanding cotton cultivation in that country appeared to have been bought on credit. In the case of Kenya, De Wilde cites three examples which show that African farmers' disposition to save has often been underestimated. First, that coffee plantings in Nyeri by small-scale farmers were virtually all self financed, and that coffee profits had in turn financed development in dairying. Second,

that in Elgeyo-Marakwet farmers who had first earned some money from growing potatoes, had used this to start the cultivation of pyrethrum. The same farmers had finally purchased dairy cattle with their pyrethrum profits. Third, that cash had been quickly mobilized by African farmers to buy rather large European-owned farms in the former "white highlands" without any credit facilities. These experiences in both East and West Africa show that small-scale farmers are capable of generating savings and that the savings can be used for other investments on the farm.

The other evidences cited to support the above argument concerns the experiences of saving institutions whenever they open new branches in the rural areas. For instance, Von Pischke (61) cited the findings of a survey conducted by the Post Office Savings Bank to determine the account turnover for several classes of branches in 1970/71. In this survey, sixteen branches were studied: Six in provincial and large district centres, six in rural areas well served by commercial banks, and four in remote areas. The outcome showed that the excess of deposits over withdrawals was 7%, 35% and 50% of total deposits respectively. This data in itself may have been inconclusive evidence of substantial rural savings capacity, but it did suggest that there was a wide scope for tapping savings in the rural areas, especially in the remote parts.

Various saving institutions experience different successes in attracting savings in the rural areas. In his other work, Von Pischke (62) cited the experiences of Kenya's Co-operative Savings Scheme as a saving programme for coffee small-holders in Central Province.

Within two years (1972-73) of its operation, the scheme had its balances increased from two to about thirty-seven million shillings and the number of depositors exceeded one hundred and ten thousand. Similarly, De Wilde (14, 200) reported that a thrift society licensed only in March 1964 at the Mwea-Tebera irrigation scheme, already had about one hundred and sixty thousand shillings in deposits by July of the same year. These two examples, though not conclusive, suggest that considerable savings capacity exists among small-scale cash crop farmers and that this capacity is not being fully tapped by financial institutions other than the co-operatives. It is argued that the co-operatives are more successful in attracting deposits from small-scale farmers because of the lower minimum loan size and lower minimum savings account balance offered to the farmers. However, it could also be argued that the success of co-operatives is also largely due to their being very close to farmers. This later argument follows from the assertion that when saving institutions are brought near to the farmers, the farmers tend to increase their savings.

Most of the saving studies carried out in developing countries single out the level of income as being the most important determinant of the saving rate. Most of these studies, however, do not give quantitative evidence to support their findings. Choong Young Ahn (10) for example, in his study of saving behaviour of rural household in South Korea argued that increases in household incomes have been a major factor causing more saving. While still, Binhammer H.H. (5) indicated that the amount of savings possible by individuals depends upon the current income and also to a lesser extent upon the wealth

assets. He states the role of financial institutions as being that of providing financial assets that satisfy the tastes and preferences of potential savers. Again, Bottomley (6) noted that interest rates for rural money markets in Third World countries have not been extensively studied. He argues that savings will be more a function of changes in rural incomes than variations in the rate of interest. Bottomley goes on to argue that when the saver is himself the investing farmer, savings and investment increase rapidly with the appearance of high income crops. He cites the example of Indian farmers who paid for purchases of new, high yielding wheat variety out of their own resources.

Gunther Hubner (23, 148) in his survey of private savings in Uganda found out that most African farmers put money in the banks for security and safety purposes. He observes that farmers do not put money in banks for the purpose of obtaining additional income in the form of a return (interest rate). In Kenya, Dr. Rukandema and Dr. Mwangi of the Department of Agricultural Economics, University of Nairobi, observed that small-scale farmers are not familiar with the interest rate concept.<sup>1</sup> They argue that even if small-scale farmers save, they may not do it in relation to the level of interest rates, but in relation to other variables like the disposable income.

From the foregoing literature, rural saving offers a field which still merits a great deal of elucidation, especially in Kenya. This is more so in those rural areas in Kenya with high income yielding crops like coffee, tea and sugar-cane. For example, it is the general concern among some Ministry of Agriculture officials that sugar-cane

<sup>1</sup> Private discussion, October 1978.



growers in Mumias get quite substantial sums of money.<sup>2</sup> These officials argue that surplus income thus exists among those farmers who grow the sugar-cane and that this surplus income could be mobilized as savings. The savings thus mobilized could be used for investments on the farms and on non-farm activities.

According to economic theory, people tend to maintain more or less the same consumption habits in the short-run even with increases in their incomes. Denburg and McDougall (13, 116) for example stated that "it takes time to adjust consumption expenditures to income changes". This is particularly more so with agricultural or rural population since demonstration effects are much lower as compared to urban population. We should then expect the rural people to have a more sudden increase in their saving rate in the short-run with a sudden rise in their incomes. The sugar-cane farmers in Mumias are therefore expected to have a higher saving rate with the sudden increase in their incomes as a result of growing sugar-cane.

2. Private discussions with Dr. Feldman and Dr. Swanburg of the Planning Division in the Ministry of Agriculture, Kenya, September 1978.

3. STUDY AREA AND DATA COLLECTION

Mumias area was originally an area of subsistence farming. There were no cash crops like coffee and tea which yield relatively high incomes to farmers in other rural areas of Kenya. There was no processing factory like the current Mumias sugar factory. The roads in the area were poor and almost impassable during rainy seasons.

The Mumias Sugar Company has brought about a number of desirable changes in the area. The area is now virtually a cash crop area in sugar-cane. Employment opportunities have been created both on sugar-cane farms and in the sugar factory. The Mumias Sugar Company has opened up new roads and has improved the old ones, thus making possible road communication throughout the year. These and other developments in Mumias have affected the lives of the people in the area. It is therefore, fitting that economic and other social studies should be carried out in the area to try and find out the effects of these developments on the lives of the people. More studies in rural areas of Kenya have been carried out mainly in Central Province because of coffee farming. Sugar-cane growing in Mumias offers an opportunity for studies in Western Province. Mumias sugar scheme is always referred to as the most successful of all the sugar schemes in Kenya. This in itself creates an interest for studies in the area.

3.1 BACKGROUND OF THE AREA

Location. The Mumias sugar project took its name from Mumias Trading Centre which is the largest town situated within the project area. Mumias is the headquarter of the Mumias Administrative Division.

Mumias Division is within the Kakamega District in the Western Province of Kenya. Mumias Trading Centre is situated  $0^{\circ} 20'$  North,  $34^{\circ} 29'$  East (60). Kisumu is some thirty-five miles south-east by road. Kakamega town lies some seventeen miles due east of Mumias.

Mumias is well served by main roads, being on the second main Kisumu-Busia-Jinja road. It is connected through Bungoma with the Kisumu-Kakamega-Tororo road. The road connecting Mumias to Bungoma is tarmaced. The nearest airfield is at Kisumu, but unused airstrips exist at Kakamega and Bungoma. Figure I in the appendix shows the location of Mumias area.

Climate. The mean rainfall in the area is about 76 inches (1948.7 mm) per annum (60). This rainfall is fairly distributed throughout the year. Sugar-cane cultivation requires rainfall of about 60 inches (1538.5 mm) in a year.

High temperatures are a common phenomena in Mumias area. The mean monthly maximum temperature are about  $30^{\circ}\text{C}$  especially during the months of December to February. The mean minimum temperatures are about  $13^{\circ}\text{C}$ . The mean maximum range is  $17^{\circ}\text{C}$  while the mean minimum range is  $13^{\circ}\text{C}$ . These high temperatures in the area are partly dependent on high sunshine hours which averages about 2835 hours per year (60). The low minimum temperatures of about  $13^{\circ}\text{C}$  and the high sunshine hours ensure a high juice purity in the cane throughout the year.

Another aspect of climate in Mumias area is the frequent occurrence of hailstones. This presents a lot of problems to the farmers.

The People. The tribal group in Mumias area is the Abaluhya and the clan is the Abawanga. As such, the nature of the population structure is homogenous and the customary procedures are uniform.

However, the entire outgrowers area include parts of Marama, Butso, Bunyala, Marachi and Bukhayo locations as well. The first three are clan locations bordering the Mumias Division in Kakamega District. The last two are clan locations in Busia District. Parts of Bungoma District are also included in the outgrowers area. The study covers only the three clan locations of Mumias Division i.e. North Wanga, East Wanga and South Wanga.

Topography and Ecology. The general formation of the area around Mumias is an ancient peneplain cut by the valleys of the river Nzoia and its distributaries, notably the Lusumu river. The peneplain topography offers a suitable environment for agricultural development, especially for cane cultivation which requires heavy mechanization. The peneplain too offers an environment suitable for road construction which plays a very important role in cane cultivation and transportation to the sugar factory.

Broadly speaking, the area is covered with savana vegetation and an association of low fire-resistant trees with tall bunch grasses. Both the topography and vegetation lend themselves with comparative ease to the necessary drainage and cultivation requirements. In addition, there is extensive and conveniently distributed soil suitable for the production of sugar-cane. The Nzoia river provides a permanent supply of water to the sugar factory all the year round. Lastly, the sugar from the factory is easily transported to Bungoma using the

tarmac road, and finally to Nairobi by rail.

### 3.2 AGRICULTURAL AND OTHER ECONOMIC ACTIVITIES

Agricultural development in Mumias area had been mainly in terms of subsistence farming. The most important food crops were cassava, sorghum and fingermillet. Maize was the main cash earning crop. However, of late, maize has taken over as the major food crop as well as the second cash crop to sugar-cane.

Cane was grown even before the sugar factory at Mumias, but this was in small quantities to be supplied to the jaggery factories in the area. Some of these jaggery factories still operate. The sugar factory at Mumias has brought about some drastic changes in the agricultural activities. Sugar-cane is now grown in large quantities and most farmers put much of their land under sugar-cane cultivation. For instance, the average size per holding for the sample of forty-five farmers in this study is 5.4 acres while the average size of cane farms for the same sample is 3.1 acres. This cane farm size is expanding, especially when new cane is planted. This has resulted in the reduction of the cultivation of maize, cassava, sorghum and finger-millet. The farmers thus have to purchase much of their food using the earnings from sugar-cane. This has resulted into increased volume of trade activities in the area. Maize as the major food crop has to be purchased from the markets, especially during the months before the harvest. Much of the maize on the markets is from the nearby areas of Rift Valley Province.

With reference to livestock, cattle, goats, sheep and poultry

are reared, but not for commercial purposes. However, the number of livestock heads, especially cattle, goats and sheep has been falling. The farmers complain that now because of sugar-cane cultivation, they do not have enough extra land for grazing their animals. Hence, they have to reduce the number of heads per livestock.

Many local young men have found wage employment either in the sugar factory or on the sugar-cane farms. This, plus the cash earnings from cane cultivation have resulted in more money being in circulation in Mumias Division. This in turn has led to increased prices of some food items in the division. For example, during field work, the author found out that the price of a cup of tea in Mumias hotels was eighty cents. This was more than twice the price in adjacent areas of Busia District where the effect of sugar-cane growing has not yet been felt much.

### 3.3 SAMPLING AND COLLECTION OF DATA

Sample Selection. Sugar-cane growing in Mumias area is mostly concentrated in the three administrative locations of Mumias division. These are the North Wanga location, East Wanga location and the South Wanga location. Thus the cane supplied to the Mumias sugar factory comes mainly from the Abawanga people. Consequently, the research or data collection was done in the three administrative locations of Mumias divisions only. A sample of forty-five<sup>3</sup> farmers from a population of eighty-one was selected as described below.

In each location, one sub-location was selected by random means. This was done so as to give each sub-location in a given location an

3. Due to time and financial constraints, the total population size of eighty-one farmers (households) could not be interviewed.

equal chance of being selected to the sample. This gave three sub-locations as shown in Table IV below. The three sub-locations arrived at were Koyonzo in North Wanga, Lureko in South Wanga and Eluche in East Wanga. The three sub-locations are indicated in Figure II in the appendix.

TABLE IV

THE SAMPLE SELECTION RESULTS

Location	Sub-Location	Field Blocks	Selected Plots (farmers)	Total Plots (Farmers)
North-Wanga	Koyonzo	2	15	27
East-Wanga	Eluche	2	15	28
South-Wanga	Lureko	2	15	26
Total	3	6	45	81

Source: Author's Survey Design.

In each of the three sub-locations a random sample of two field blocks was selected from those fields that had their cane harvested in 1978. Field block numbers and the farmers (plots) within each field block were obtained from the records provided by the field officers of the Munias Sugar Company. Each field block had plots less than fifteen, hence two field blocks per sub-location so as to get fifteen plots per sub-location. Finally, a random sample of the fifteen plots (farmers) was selected from the two field blocks in each sub-location. Thus in all a sample of forty-five farmers was arrived at and consequently interviewed.

Prior to interviewing the sample of forty-five farmers, five

farmers were randomly selected and interviewed in Matungu sub-location in North Wanga for the purpose of testing the questionnaire.

Collection of Data. Field collection of the data started in January 1979 and continued for about ten weeks. Those selected farmers within one administrative sub-location were interviewed all before proceeding to another sub-location. Again, selected farmers in a given field block were interviewed all before proceeding to the next field block in the same sub-location.

The interviews were conducted using a structured questionnaire given in the appendix. Most of the respondents were co-operative and willing to answer all the questions put to them. The only exceptions were the questions concerning the other sources of income apart from sugar-cane income, and the food expenditures. In the first case, the answers were not easily and freely coming. While in the second case, it was the absence of any records kept by the farmers and the consequent difficulties of recall that contributed to the problem. Consequently, the interviewer (author) sometimes had to resort to probing questions. It was, however, surprising to note that income from sugar-cane growing was not a secret matter. Almost the entire population of grown-ups in a given field block seemed to know what each farmer in the block got from his/her sugar-cane harvest.

#### 3.4

#### DATA COLLECTED

Because the study was intended to determine the level and to assess the determinants of rural saving, the type of data collected centred mainly on two items i.e. household disposable income and house-



hold consumption expenditure in a year. Savings is then derived as a residual of income after deducting the total of the several expenditure outlets. Informations concerning the other possible determinants of saving were also collected. These included household size, wealth assets held, age and education level of the household heads. Following are specifications of the areas of data collected.

Household Disposable Income. The household disposable income is the amount of income that households actually receive and thus have available for spending. In normal cases it is equal to household factor earnings plus distributed profits paid to households that own the firm minus any income taxes on these earnings. Household disposable income in the rural areas where it only accrues from small-scale farm activities is not taxed. Hence in rural farm households, disposable income is equal to cash earnings. It can be either spent on consumption and/or saved.

Income in the rural areas accrues from farm activities as well as from non-farm or off-farm activities. The farm income includes the revenues from the sell of crops, livestock and livestock products. The off-farm income is mainly made up of salaries and/or wages, income from business undertaking and financial assistance (remittances) from urban and non-urban relatives who have wage employments.

Household Expenditure. All the amount of money spent on both durable and non-durable goods are recorded as expenditures for the year 1978. This includes expenses in 1978 on wealth assets such as the purchase of bicycles, radios, etc. Specifically, household consumption expenditure includes expenses on food, clothing, light and fuel, education, medical treatment, bridewealth and expenses on social

functions and ceremonies. Debts paid during the year were also added to total consumption expenditure.

Household Savings. Saving conceived as a "non-consumption intentionally brought about by voluntary abstention from consumption of parts of personal or disposable income. However, it should take place for the purpose of an ultimate or temporary formation of assets. Among forms of saving are deposits on savings accounts, payments to building societies, premium payments to insurance companies and acquisition of newly-issued securities.

Savings in this study is required in money terms, i.e. the residual part of the cash income after deducting all the expenditures. As such, the purchase of durable assets and/or securities are not considered as part of savings. Savings as a residual (surplus) income is that sum of money which if possible could be found in saving institutions as deposits on saving accounts or in homes as hoarding.

Other Data Collected. Data concerning the specifics of a household was also recorded. This included household size, number of those in the household attending school, the age and education level of the household head. In defining and identifying a household unit, the IRS (34, 30) definition was used. A household comprised a person or persons normally living together under one roof or several roofs within the same compound or homestead area. The persons had to be sharing a community of life by their dependence on a common holding as a source of income and food. Lastly, the food normally but not necessarily involved eating from a "common pot".

As already noted, the level of wealth<sup>4</sup> assets held was also recorded. The valuation of assets was one of the most difficult aspects of the enumeration work. A fairly high degree of subjectivity judgement on the part of the enumerator (author) was involved in computing wealth assets. Land was valued on the basis of the average price per acre prevalent within the area, multiplied by the total holding area. The holding here referred to a farm land being managed as a single economic unit under the overall control and direction of the household head who was referred to as the holder. Buildings, farm equipment, transport equipment and domestic furniture were valued on the basis of the discussion with the respondents. The general condition of the later assets and their current prices when new were taken into account. Livestock was valued on the basis of the current local market price.

4. Wealth referred to tangible properties owned by a household. Hence level of wealth assets included the total value of both domestic and non-domestic household assets.

4. LEVEL OF INCOME, EXPENDITURE, SAVINGS AND OTHER VARIABLES

4.1 INCOME

In explaining household saving, interest focuses on the income patterns in the sample studied. This is because household income is regarded under economic theory to be one of the major determinants of household saving. This has also been found in empirical studies as given before in Chapter 2. The structured questionnaire in Appendix 5 shows in part how disposable income was arrived at. The compiled raw data of income thus collected is given in Appendix 1.

The lowest disposable income collected was KSh.3,105.10 while the highest was KSh.49,700.80 per annum for 1978. This gives an income range of KSh.46,595.70. This is quite a big range and it signifies a large difference in one year's incomes within the area. Income from sugar-cane ranged from KSh.2,686.00 to KSh.48,900.80, while income from other sources ranged from nil to KSh.26,400.00. Therefore, the large difference in yearly incomes within the sample may largely be due to the big range in incomes from sugar-cane. The median income was KSh.1,752.50. This is lower than the mean income which was KSh.21,770.00. The mean income is higher than the median income because there are extremely high incomes pulling the mean up. The standard deviation of the income figures is KSh.4,311. This is fairly large and it shows that the incomes are scattered widely about the mean income. These variations in income figures are presented in Table V below.

TABLE V

INCOME VARIATIONS OF FOURTY-FIVE SUGAR-CANE FARMERS IN MUMIAS IN 1978

INCOME ITEMS	HIGHEST	LOWEST	RANGE	MEAN
SHILLINGS				
Aggregate Disposable Income	49,700.80	3,105.10	46,595.70	21,770.00
Income from Sugar-cane	48,900.80	2,686.00	46,214.80	16,294.10
Income from Other sources	26,400.00	0.00	26,400.00	5,476.00

Source: Author's finding.

Table VI below gives the frequency distribution of the sample farmers according to seven income brackets. The table shows that over half (about 24) the sample farmers had yearly disposable incomes less than the mean income. The highest model class had incomes ranging from KSh.3,105.00 to KSh.9,805.00. The highest model income is given as being KSh.6,455.00. Figure III below shows the distribution of the farmers according to income. The distribution is skewed to the right (i.e. positively skewed). The distribution gradually tapers off into a trimodal distribution as incomes become higher.

TABLE VI

THE DISTRIBUTION OF FOURTY-FIVE FARMERS BY INCOME BRACKETS 1978

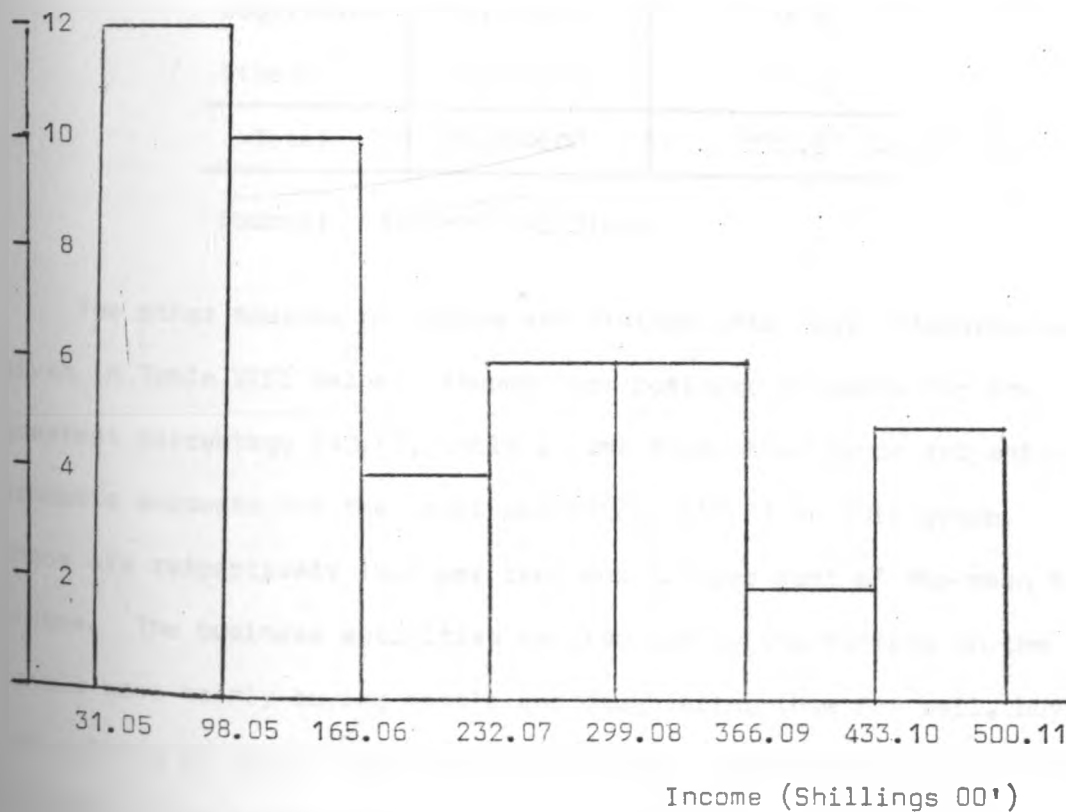
Income Class Intervals	Class Mid-Points	Frequency
3,105.00 - 9,805.00	6,455.00	12
9,806.00 - 16,506.00	13,156.00	10
16,506.00 - 23,207.00	19,857.00	4
23,208.00 - 29,908.00	26,558.00	6
29,909.00 - 36,609.00	33,259.00	6
36,610.00 - 43,310.00	39,960.00	2
43,311.00 - 50,011.00	46,661.00	5

Source: Survey data of the study.

FIGURE III

DISTRIBUTION OF THE FARMERS ACCORDING TO INCOMES - 1978

Number of  
Farmers



Source: Survey data of the study.

As already stated above, the mean total income for the sample was KShs.21,770.00. Table VII below shows the contribution of incomes from sugar-cane growing and of incomes from other sources. Income from sugar-cane growing is 74.8 per cent of the total annual income, while income from other sources is only 25.2 per cent. This clearly shows the importance of sugar-cane growing as a major source of income in Mumias area.

TABLE VII

INCOMES OF AN AVERAGE HOUSEHOLD IN MUMIAS DIVISION IN 1978

Source	K Shs.	Proportion of total Income (%)
Sugar-cane	16,294.00	74.8
Others	5,476.00	25.2
Total	21,770.00	100.0

Source: Author's finding.

The other sources of income are divided into four categories as given in Table VIII below. Income from business accounts for the greatest percentage (40.8), while income from other crops and animal products accounts for the least percentage (10.2) in this group. These are respectively 10.2 per cent and 2.6 per cent of the mean total income. The business activities carried out by the farmers in the sample were mainly buying cattle and slaughtering them for sell, buying and selling of fish, local brewing of liquor and operating small kiosks or shops.. The large contribution of income from business probably indicates that there is much money in circulation in Mumias area. The

later makes it possible for more buying and selling of commodities in the area. The small contribution of other crops and animal products is an indication of the fact that most other crops (apart from sugar-cane) are grown mainly for subsistence purposes. This may also be due to the fact that the number of heads per livestock is decreasing.

Employment was mainly the wage or salaried employment within the area and not in urban centres outside the area. Employment in this case referred only to that of the household head. The good contribution of income from employment (30.1%) in this group in Table VIII is an evidence of the increased employment opportunities within the Mumias area. The types of employment identified were mainly teaching, civil service and employment in the sugar company.

TABLE VIII

INCOMES FROM OTHER SOURCES OF AN AVERAGE HOUSEHOLD IN MUMIAS DIVISION  
IN 1978

Source	KGs.	Proportion of total income in this category	Proportion of Total Income
		%	%
Other crops and animal products	558.15	10.2	2.6
Remittance	1,036.45	18.9	4.8
Business	2,231.40	40.8	10.2
Employment	1,650.00	30.1	7.6
Total	5,476.00	100.0	25.2

Source: Author's finding.



Remittances were mainly from family members (sons and daughters) with wage employment either within the area or in the urban centres in the country. The contribution of remittances to total income shows that inspite of the high earnings from sugar-cane growing in Mumias area, a sizeable amount of money is still being transferred from urban areas into Mumias area. However, the Mumias Sugar Factory and the sugar-cane farms provide some local employment for the young members of the households who remit part of their earning to the household heads (parents).

Previous studies and findings show that in rural areas with few cash crops, the agricultural sector's income is less than the non-agricultural sector's income. In otherwords, the off-farm income is often higher than the farm-income. For example, Ochoro, (52) found that off-farm income accounted for 57 per cent of the total income in the rural areas of Bungoma, Kisumu and Siaya districts. The IRS 1974/75 (34) also showed that off-farm incomes accounted for 52.5 per cent of the total household income in Western Province. The corresponding figures for Central and Coast Provinces were 50 per cent and over 70 per cent respectively. However, from Tables VII and VIII farm income contributed for a higher percentage (77.4) of total household income for this sample of sugar-cane farmers in Mumias. This outcome for Mumias area is mainly due to high contribution of income from sugar-cane growing. Consequently, the importance of non-agricultural sector as a source of income has changed in favour of the agricultural sector for the sugar-cane growers in Mumias area.

4.2

EXPENDITURES

As already stated earlier in Section 3.4.2, all the amount of money spent on both durable and non-durable goods were recorded as expenditures. It also included debts paid during the year. This was done so as to get the residual amount after deducting the total of all the expenditure items from the year's total disposable income.

The mean total expenditure for 1978 was found to be KSh.17,555.80 as given in Table IX below. The proportions of the various expenditure items show that food occupied a sizeable (highest) amount of the total expenditure. The amount occupied by food alone is 48.6 per cent of the total expenditure. The corresponding figures given in the IRS (34) 1974/75 is 63.4 per cent for the entire Western Province, and the findings of Massel's (48) study was 56.9 per cent for Central Province. It may therefore be said that the highest expenditure item for the rural people is food. This tends to reinforce the popular assertion that poverty still exists in the rural areas of most developing countries. The people in the rural areas of these countries still strive to meet their subsistence (basic needs) requirements.

The second item of importance in the expenditure outlets is the purchase of durable goods. This accounted for 16.9 per cent of the total expenditure. The durable goods purchased were mainly beds and mattresses, bicycles, the construction of mabati (iron sheets) houses, radios and music instruments.

Expenses on education occupied 10.0 per cent of the total expenditure. Most of the farmers in Mumias area tend to keep school

age children at home to help with the work on sugar-cane farms, especially for weeding. For example, out of the mean household size of 7.5 persons, there is a mean size of school age persons of about 5 and only about 3 of these attend school. Still, those who attend school are not regular attendants. During the season of heavy farm work, those who attend school could be found at home with an excuse of no school fees. Some of the big boys in the household have preferred to work on the cane farms for weekly or monthly wages rather than go to school. The education expenses identified included school fees (tuition fees) as well as money paid for construction and activities in schools.

Expenses on clothes and dresses accounted for 7.7 per cent of the total expenditure. It is a general understanding in Mumias area that it is during the sugar-cane harvest and payment that members of the household expect gifts from the household head. Normally these gifts are in terms of clothes and dresses to the wives and children of the household unit. The expenses on clothes and dresses would most probably be lower than 7.7 per cent of the total expenditure during the years of no sugar-cane harvest in the household.

Expenditure on ceremonies occupied 5.8 per cent of the total expenditure. This is a clear indication of customary obligations that still exist in this part of the country. Quite often the clan elders approach a farmer who has just cut his cane and inform him of the customary activities he has not performed. Failure to carry out these customary activities is normally excused on the fact that there was no money. But when cane is harvested the clan elders know that

there will be money and so the possibilities of being able to perform the customary obligations one has. These customary functions were identified to include mainly honouring a dead person and carrying out circumcision exercises on the young male members of the household.

Bridewealth (dowry) payment was 3.6 per cent of the total expenditure. This was mainly the dowry payments on behalf of the sons of the household when they married. It was however, surprising to note that even household heads of over sixty years of age married additional wives when they received their sugar-cane payments.

Medical payments occupied 3.4 per cent of the total expenditure. This medical payments included direct medical treatment fees and travelling expenses to and from hospitals. The 3.4 proportion occupied by medical expenses shows that inspite of the free medical treatment offered by the Government, the people of Mumias still spend a sizeable amount of money on this item. This may be partly because, the nearest Government hospitals for the people of Mumias are at Bungoma and Kakamega towns which are about twenty miles away. This tends to increase the total medical expenditure due to the transport fares charged to and from the hospistals. However, the Bungoma and Kakamega hospitals serve a whole district each. As such, they are normally full of patients. Consequently, most Mumias people tend to attend a mission hospital wihin Mumias division which charges fees for treatment. This mission hospital is situated near Mumias township and patients from far off sub-locations within the Mumias division have to pay for transport fares to and from the hospital. This mission hospital is widely reputed in Mumias division and the adjoining areas to provide

good medical facilities and treatment. This results into the people being attracted more to the mission hospital than to the Government free hospitals.

The last two major items of expenditure were labour wages and harambee (fund raising) contributions. Labour wages occupied 2.9 per cent of the total expenditure. The labour wages were paid mainly for weeding on the cane farms. Only those household heads with monthly salaries (e.g. teachers) tended to have casual labourers for other work in addition to cane weeding. The harambee contributions accounted for the least percentage (1.1) of the total expenditure. Included together with harambee contributions were gifts to relatives outside the household unit and the payment of debts.

TABLE IX

EXPENDITURES OF AN AVERAGE HOUSEHOLD IN MUMIAS DIVISION IN 1978

Outlets	KShs.	Proportion of total Expenditure (%)
Food	8,534.30	48.6
Durable Goods	2,966.50	16.9
School Fees	1,755.80	10.0
Clothes and Dresses	1,351.00	7.7
Ceremonies	1,025.55	5.8
Bridewealth	624.00	3.6
Medical Treatment	598.45	3.4
Labour Wages	508.60	2.9
Harambee Contributions and others	191.60	1.1
<b>Total</b>	<b>17,555.80</b>	<b>100.0</b>

Source: Author's finding.

## 4.3

SAVING RESIDUAL

From the mean cash income and the mean total cash expenditure of KSh.21,770.00 and KSh.17,555.80 respectively, a mean saving residual of KSh.4,214.20 is arrived at. This figure of the saving residual would therefore include both financial hoarding at homes and probable saving deposits in financial institutions. The saving residual figure is an estimate of the cash surplus that the Mumias sugar-cane outgrowers in the sample experienced as a result or during the year of their cane harvest. This figure of the saving residual is most likely to be much lower for the sample during the year when their cane crop is not harvested. This should be expected since sugar-cane income alone accounted for over seventy per cent of the total cash income as given in Table VIII above. A reduction of about seventy per cent in the annual total cash income would result in a much lower figure for the saving residual. This would be so even if total expenditures were to fall. This is because it takes time to adjust expenditure patterns, and households would most likely borrow to try to maintain their expenditure patterns. As such, their total expenditure cannot fall proportionately as income.

The saving residual figure for this sample of Mumias sugar-cane growers is 19.4 per cent of the total cash income. However, there is some reason to expect that cross-section data may exaggerate the saving residual and/or the saving-income ratio. This is because lower income households, for example, may include many whose incomes are depressed by temporary factors. These households therefore, dissave more than they would if they expected their current incomes

to be longer lasting. Likewise, higher income households may include those who are temporarily rich and who save more than would be normal for that income level. A tabular presentation of the derivation of the saving residual is given in Table X below.

TABLE X

SAVINGS RESIDUAL OF AN AVERAGE HOUSEHOLD IN MUMIAS DIVISION IN 1978

	KShs.	Proportion of total income
		%
Total Income	21,770.00	100.0
Total Expenditure	17,555.80	80.6
Saving Residual	4,214.20	19.4

Source: Author's finding.

The least saving figure was KShs. 2,435.85 while the highest was KShs. 16,743.00 for this sample of sugar-cane farmers in Mumias. The range in the saving figures is therefore KShs. 19,178.85. The standard deviation for the saving figures is 5,068 which is higher than the mean saving figure of KShs. 4,214.20. This shows that the saving figures are widely distributed around the mean figure. Table XI below shows saving figures grouped into seven saving brackets. About half (25 farmers) the sample size of forty-five farmers had savings less than the mean value. The substantial mean saving figure of KShs. 4,214.20 must have been brought about by the few extreme positive figures for savings as shown in the table below.

TABLE XI

DISTRIBUTION OF FOURTY-FIVE FARMERS BY SAVING BRACKETS 1978

Saving Class Interval	Class Mid-Points	Frequency
KSh.		
-2,435.00 - 315.00	- 1,060.00	14
316.00 - 3,066.00	1,691.00	8
3,067.00 - 5,817.00	4,442.00	6
5,818.00 - 8,568.00	7,193.00	8
8,569.00 - 11,319.00	9,944.00	5
11,320.00 - 14,070.00	12,695.00	3
14,071.00 - 16,821.00	15,446.00	1

Source: Survey data of the study.

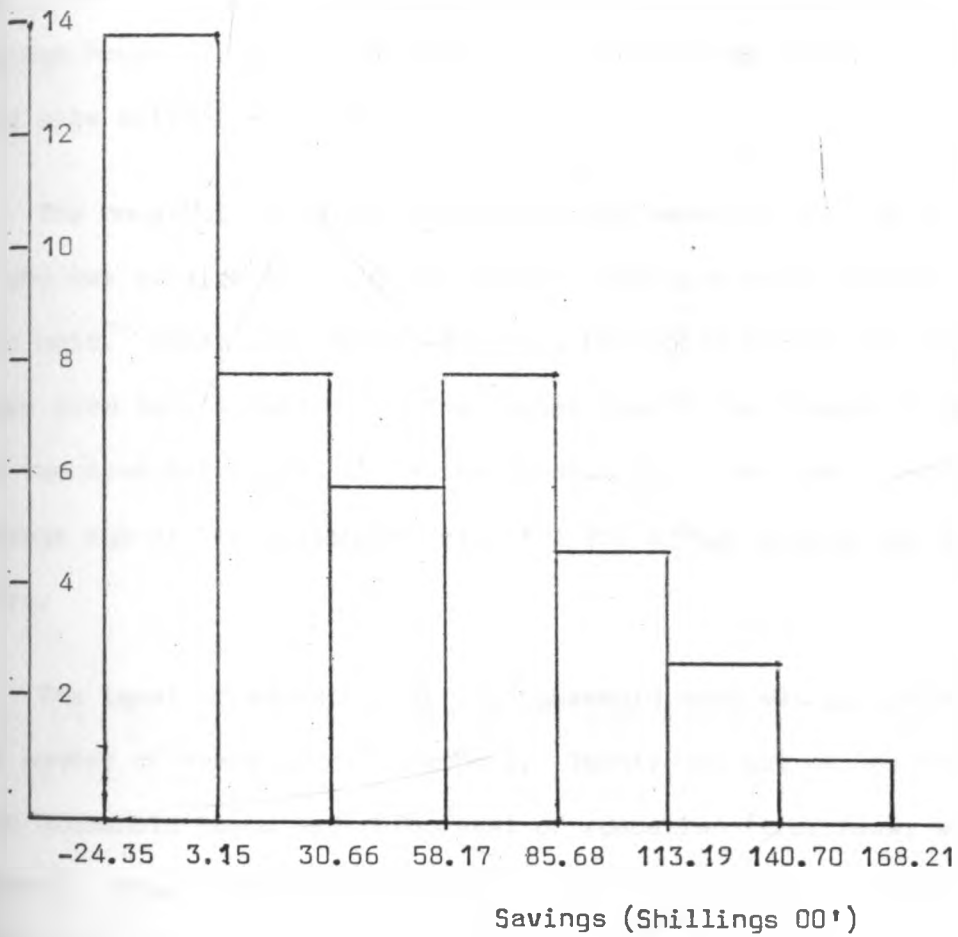
Like the distribution of the income figures, the saving figures also have a positively skewed distribution. However, the saving figures exhibit bimodal distribution unlike the income figures which showed a trimodal distribution. The bimodal distribution of the saving figures is clearly depicted in the figure IV below. The modal saving figure is negative (i.e. KSh. -1,060.00) and the modal saving class is from Sh. -2,435.00 to KSh. 315.00. This may indicate that most sugar-cane farmers in Mumias area experience negative savings, and that only a few of the farmers experience large positive savings. The later tends to override the former and so a positive figure for saving as estimated in this sample is arrived at.



FIGURE IV

DISTRIBUTION OF FARMERS ACCORDING TO SAVINGS - 1978

Number of  
Farmers



Source: Survey data of the study.

4.4 DATA ON OTHER VARIABLES

As already said earlier, information on the other possible determinants of saving was collected. This included information on the household size, education level and age of the household head and wealth assets.

The smallest household size recorded was three persons. The largest household size was thirteen persons. The average household size estimated was 7.5 persons per household. The standard deviation of the household sizes in the sample was about 2.5. This shows that the household sizes in the sample were closely scattered about the average household size. An average of about three persons in a household were attending school.

The household head was the registered owner of the holding. He or she was considered to be the supreme decision maker in the household unit. There were forty-two male household heads, the other three were female (widows). The lowest age of the household head was twenty-eight years, while the highest was seventy-six years. The average age of the household heads for the entire sample was 49.6 years.

The level of education of the household head was approximated to the number of years spent in school. Twenty-one out of the forty-five household heads had zero level of education (i.e. never went to school). Only three household heads attended school up to form-four (i.e. eleven years of school). There was no household head with more than eleven years of school. The average level of education among the household heads was estimated to be 2.7 years of school.

The minimum value of household assets recorded in the sample was KSh.7,297.00 and the maximum value was KSh.46,180.00. The mean value of wealth assets was KSh.19,952.00 for the entire sample. Prominent among the non domestic assets were the iron-sheets roofed houses, livestock, land and bicycles. Farmers complained that they were

reducing the number of livestock heads due to increasing shortage of grazing land. More and more land is being brought under sugar-cane cultivation thus reducing the area available for other crops and for livestock grazing. Iron-sheets roofed houses are increasing in number. It is a tendency among sugar-cane growers in Mumias to construct iron-sheets roofed houses when they get paid for their sugar-cane. One reason to this may be that as more and more land is used for sugar-cane cultivation, less and less grass is available for house roofing. Hence the purchase of iron-sheets for roofing houses. Land is becoming more and more scarce in Mumias sugar-cane area. Due to sugar-cane growing, every landowner would like to keep his land. As such, there is very little land available for sell in Mumias area. This has led to a sharp increase in the price of land per acre in the area. For example, price per acre in the area is about KSh.1,000.00 while it is about KSh.500.00 in adjacent areas with no sugar-cane cultivation. Consequently, it is not easy for farmers in Mumias area to increase their land holding size. The price of land is likely to increase further, thus tending to increase the value of land holding. Bicycles are increasing in number in Mumias area due to sugar-cane cultivation. Bicycles are very convenient for communication in rural areas with small paths. Hence the increase in number of bicycles in Mumias area as farmers incomes increase, making possible the purchase of more bicycles.

The most prominent domestic assets were radios, musical instruments, lamps, beds, mattresses, chairs, stools, tables and cupboards.

One of the common relations in macroeconomic analysis is that in equilibrium savings is equal to or identical to investment. It was not one of the aims of this study to establish and/or analyse the amount of investment by the farmers in the sample of Mumias sugar-cane outgrowers. However, as it was pointed out in Chapter One, it is most likely that in rural areas, savings may be greater than investment. It is because of the greater element of cash hoarding in homes that makes rural savings be higher than investment.

In rural areas, investments can be on farm and/or on non-farm activities. In this study, investments on the farm and on non-farm activities during the years prior to the year of study were recorded as part of wealth assets. Investments or the purchase of investment assets during the year of study were recorded as part of the year's total expenditure. As it was stated before, this was done so as to get the year's cash surplus as savings.

5. SAVINGS AND DETERMINANTS5.1 THE MODEL

Savings as indicated by cash surplus is given as a function of the annual cash income, the level of wealth assets held and the size of the household. An assumption is hereby made that the functional relationship is linear. Hence a multiple linear function with natural numbers is used.

The version of the savings function used is that relating to the Keynesian Absolute Income hypothesis. Assuming one explanatory variable, income ( $Y$ ), the function can be presented thus:

$$\text{i.e. } C_o + S_o = Y$$

$$C_o = a_o + b_o Y$$

$$S_o = Y - C_o$$

$$\text{Hence } S_o = Y - (a_o + b_o Y) = -a_o + (1 - b_o) Y$$

Where  $C_o$  = Consumption:

$S_o$  = Savings:

$Y$  = Income:

$a_o$  = Autonomous consumption and is equal to autonomous saving (dissaving) when its sign changes:

$b_o$  = Marginal propensity to consume, and is positive but less than unit:

$(1 - b_o)$  = Marginal propensity to save with respect to changes in income:

The model relates consumption and savings to the absolute income earned by a household in the income array of the relevant sample. The last

equation in the model is the formal rationalization for the view that savings are a residual.

The function to be used in this study will be similar to the last equation in the above model but will consist of three explanatory variables. This function may be summarised as following:

$$S = b_0 + b_1Y + b_2W + b_3H + e$$

Where  $S$  = the savings residual as shown by cash surplus;

$Y$  = the total cash (disposable) income for one year;

$W$  = the level of wealth assets held by the household at the beginning of the year;

$H$  = the household size i.e. the household head plus his or her dependants during the year;

$b_0$  = the constant term;

$b_1$  = the income coefficient;

$b_2$  = the wealth assets coefficient;

$b_3$  = the household size coefficient; and

$e$  = the error term.

The theoretically anticipated sign of the constant term ( $b_0$ ) is negative. This is an indication of the household being in debt. The size of  $b_0$  shows the amount of money borrowed to facilitate the household's consumption expenditure when the explanatory variables ( $Y, W, H$ ) remain constant. The coefficient  $b_1$  has a theoretical positive sign. This is because the increase in disposable income, other variables remaining constant, should result in an increase in the saving residual and vice versa.

An important conceptual issue that arises in measuring savings and investment relates to the treatment of consumer durables and other wealth assets. These are sometimes treated as capital expenditure and hence as saving and investment. They are sometimes also treated as current expenditure and hence as consumption items. There exists some differences among economists on the appropriate treatment of consumer durables in saving studies. Friend I. and Lieberman C. (20) using data on household surveys collected by the Federal Reserve Board of the United States in 1962 and 1963 estimated saving functions with changing signs of the wealth asset coefficient depending on the form of the regression function used. Professor Weber of the Department of Agricultural Economics, University of Nairobi is of the view that wealth assets should have a positive effect on saving.<sup>5</sup> While according to Juster F. T. and Taylor L. D. (27), the stock of wealth assets should have the same (qualitative) effect on saving that the stock of automobiles, say, has on the sale of new cars. A large stock of automobiles has a negative effect on the sale of new cars. Therefore, a large stock of wealth assets should also have a negative effect on saving. Similarly, Friend J. and Taubman P. (21) noted that when wealth assets are allowed for in the regression, they seem to have a negative effect on saving. One assumption here is that the wealth asset items can easily be converted into cash. Consequently the anticipated sign of  $b_2$  cannot be ascertained.

Finally, an increase in the household size leads to an increase in consumption and other expenditures, thus reducing the size of the saving residual and vice versa. Therefore,  $b_3$  is expected to have a negative sign. The error term ( $e$ ) includes all the possible errors

5. Private discussion, January 1980.

150  
60  
90  
28

that are made in predicting saving in the regression function.

A second function where saving is given as a function of income from sugar-cane and income from all other sources as the two other regressors will also be estimated. This should indicate the importance of sugar-cane income in determining the saving residual.

5.2 THE CORRELATION RESULTS

The correlation analysis was first carried out as a pre-check mechanism to enable the identification of the type of relationships existing among the variables. This also helped to confirm which variables to include in the regression analysis. The computed correlation matrix is as shown in Table XII below.

TABLE XII

THE CORRELATION MATRIX OF THE VARIABLES SPECIFIED BELOW<sup>(1)</sup>

	S	Y	W	H	N	G	D
S	1						
Y	.95	1					
W	.19	.22	1				
H	.05	.13	.28	1			
N	.10	.16	.26	.70	1		
G	-.05	-.05	-.08	-.08	-.07	1	
D	.22	.25	-.07	-.29	-.12	-.63	1

Source: Survey data of the study.



- (1) Note. S = Saving residual (cash surplus);  
Y = Total cash income per annum;  
W = Wealth assets held;  
H = Household size;  
N = Number of children in the household attending  
school;  
G = Age of the household head; and  
D = Education level of the household head.

The coefficients of simple correlation given in Table XII above indicate:

- a) That the strongest relationship is between income and the saving residual, and that the two move closely in the same direction;
- b) That there is a strong correlation between the household size and the number of children in the household attending school, and that this correlation is positive;
- c) That the age of the household head is more correlated with the education level of the household head than with the other variables. The two move in the opposite direction.

The table of correlation above shows that of the possible determinants of the saving residual, only income has a significant relationship with the saving residual. The relationship between the two is significant at both one per cent and five per cent levels with degrees of freedom equal to forty-five. The other determinants have no significant relationships with the saving residual at either

of the two levels. It can therefore, be concluded that although there is some relationship between the saving residual and the other determinants, these relationships are not significant for the sample studied. Moreover, the relationships between the saving residual and the wealth assets held and between the saving residual and the household size are positive. In the later case the theory stipulates a negative relationship.

As already stated above, there is a relatively strong correlation between the household size and the number of children in the household attending school. There is also a relatively strong but negative relationship between the age and education level of the household head. There is likely to be problems of multicollinearity if both the two variables in each case are included in the regression model as some of the explanatory variables. To avoid this problem in the first case, and for simplicity of the whole function, only household size will be included in the regression model as one of the regressors.

Table XIII below presents the relationships between the saving residual, income from sugar-cane and income from other sources. In the Table  $Y_c$  refers to income from sugar-cane growing,  $Y_o$  refers to income from all other sources while  $S$  is the saving residual. It was shown in Table VIII that the other sources of income included other crops and livestock products, remittances from relatives, business undertakings and wage or salaried employment. The computed correlation matrix for the three variables is as follows:

TABLE XIII

CORRELATION MATRIX OF THE SAVING RESIDUAL, SUGAR-CANE INCOME AND INCOME FROM OTHER SOURCES.

	Saving Residual (S)	Income from sugar-cane (Yc)	Income from other sources (Yo)
Saving Residual (S)	1		
Income from Sugar-cane (Yc)	.81	1	
Income from other sources (Yo)	.55	.07	1

Source: Survey data of the study.

The table above shows that there is a stonger relationship between the saving residual and the income from sugar-cane growing. The correlation coefficient between the two variables is positive, indicating that they both move in the same direction. The relationship between the saving residual and income from other sources is not equally strong. The later relationship is also positive. Both relationships are however, significant at one per cent and five per cent levels with degrees of freedom equal to fourty-five. Finally, there is a very weak relationship between the income from sugar-cane and the income from other sources. There is therefore, no serious problem of multicollinearity if the two variables are both included in the regression model as some of the independent variables.

The reason for splitting the income variable follows from the information presented in Table VII on Page 30 where sugar-cane

income alone accounted for over seventy per cent of the total income. It would therefore, be of interest to observe the relationship between the income from sugar-cane alone and the saving residual. It would also be of interest to observe the causal relationship between the two variables as will be presented in the regression analysis below.

### 5.3 REGRESSION RESULTS

The regression analysis was carried out with respect to the following assumptions.

- a) That the annual amount of the saving residual is determined or influenced by among other things, yearly disposable income, household size and the level of wealth assets held by the household. In otherwords, the variations in the saving residual are explained by changes in the three variables among others.
- b) That there is a causal linear relationship between the saving residual as the dependent variable and the disposable income, household size and wealth assets variables as the regressors. This assumption follows from the correlation results of the previous chapter. It was seen in the previous chapter that there is some relationship between the saving residual and each of the three regressors. In this regression analysis, the relationship in each case is assumed to be causal and also linear.
- c) That there is no problem of multicollinearity between the three regression variables. This assumption also follows from the correlation results of the previous chapter. It was observed in

the chapter that there is no strong correlation coefficient between any two of the three regressors.

The results of the regression analysis may be summarised as given in equation (i) and in Table XIV.

Equation (i)  $S = -2422.860 + 0.355Y + 0.002W - 151.541H.$

TABLE XIV

REGRESSION RESULTS OF THE SAVING RESIDUAL ON DISPOSABLE INCOME, WEALTH ASSETS AND HOUSEHOLD SIZE <sup>(1)</sup> - 1978

DEPENDENT VARIABLE	NUMBER OF OBSERVATIONS	DEGREES OF FREEDOM	INTERCEPT	EXPLANATORY VARIABLES			COMMON COEFFICIENTS
				DISPOSABLE INCOME	WEALTH ASSETS	HOUSEHOLD SIZE	
				REGRESSION COEFFICIENTS, STANDARD ERRORS AND T-RATIOS			
Saving Residual	45	41	-2422.860 ( 851.588) 2.85***	0.355 (0.018) 19.82***	0.002 (0.022) 0.09*	-151.541 (102.183) 1.48**	S=1660.25 R <sup>2</sup> = 0.901 R <sup>2</sup> = 0.894

Source: Survey data of the study.

- (1) Notes: a) Standard errors of the estimated coefficients are in brackets.  
 b) T-statistic figures are starred  
 i) \* Not significant at one, five and ten per cent levels.  
 ii) \*\*Significant at only ten per cent level  
 iii) \*\*\*Significant at one, five and ten per cent levels.  
 c) The equation is linear and in natural numbers not transformed to logarithms.  
 d) R<sup>2</sup> is the coefficient of determination not adjusted for degrees of freedom.  
 e) R<sup>2</sup> is the coefficient of determination adjusted for degrees of freedom.

The negative constant term conforms to theoretical expectation. It is the autonomous saving (dissaving) and is equal to autonomous consumption when its sign changes (becomes positive). The constant term in the regression result is highly negative (i.e. -2422.85).

The positive income coefficient also confirms the theoretical expectation. The income coefficient of 0.36 is the marginal propensity to save with respect to disposable income. Thus the marginal propensity to save of the households in the sample is thirty-six per cent. This shows that a change in disposable income of one shilling would result in a change of 0.36 shilling in the saving residual, keeping the other variables ( $W$  and  $H$ ) constant. The income coefficient is highly significant at one per cent, five per cent and ten per cent levels.

The coefficient of the wealth assets variable came out to be positive. There was no theoretically ascertained sign of the coefficient of the wealth assets variable. The estimated wealth assets coefficient is very small (i.e. 0.002). The coefficient is also highly insignificant at one per cent, five per cent and ten per cent levels.

The negative coefficient of the household size is as expected by theory. The household size coefficient shows that if the household size changes by one unit, saving residual changes by about 151 shillings. Specifically, if the household size increases by one more person, saving residual decreases by about 151 shillings. This household size coefficient is only significant at ten per cent level.

The  $R^2$  (th coefficient of determination) shows the goodness of fit of the regression function estimated. The coefficient of determination not adjusted for degrees of freedom is 0.901 while that adjusted for degrees of freedom is 0.894. This shows that the three variables (Y, W, H) explain about ninety per cent of the changes in the saving residual. However, looking at the contribution of each variable, the wealth assets variable had a zero contribution as shown in Table XV below.

TABLE XV

THE MULTIPLE CORRELATION WHEN EACH VARIABLE IS EXCLUDED FROM THE REGRESSION FUNCTION - 1978

VARIABLE NAME	MULTIPLE CORRELATION (R)
Disposable Income (Y)	0.190
Wealth Assets (W)	0.949
Household Size (H)	0.946

Source: Survey data of the study.

The table above shows that when disposable income is excluded from the regression function, the  $R^2$  would be 0.036 (i.e.  $0.190^2$ ), while  $\bar{R}^2$  would be about zero. If wealth assets variable is excluded from the regression function, the  $R^2$  would be 0.901 (i.e.  $0.949^2$ ), while  $\bar{R}^2$  would be 0.894. The later figures were the estimated coefficients of determination in the regression function. Therefore, the wealth assets variable would have been excluded from the regression function without any adverse effects on the coefficient of determination.

The household size when excluded from the function, the  $R^2$  would be 0.895 (i.e.  $0.946^2$ ), while the  $\bar{R}^2$  would be 0.887. Therefore, the exclusion of either disposable income or household size variables would have adverse effects on the coefficient of determination. The exclusion of disposable income would have a more adverse effect than the exclusion of the household size.

The Table XVI below shows what would be the effect on the estimated function if number of children attending school, age of the household head and education level of the household head were included in the function. The table shows that when these three variables were included in the function, they would have positive, negative and negative effects respectively on the saving residual. This is as shown by their partial correlation coefficients with the saving residual. The coefficients of the three variables would not be statistically significant at one per cent, five per cent and even at ten per cent levels. Lastly, each of these variables' contribution to the coefficient of determination would almost be nil.



TABLE XVI

POSSIBLE EFFECTS ON THE FUNCTION IF NUMBER OF CHILDREN ATTENDING SCHOOL, AGE AND EDUCATION LEVEL OF HOUSEHOLD HEAD WERE INCLUDED IN THE REGRESSION. SET - 1978.

DEPENDENT VARIABLE	ADDITIONAL REGRESSORS <sup>(1)</sup>		
	N	G	D
	T-Ratios, Partial correlation and multiple correlation		
Saving	0.14	0.03	0.94
Residual	0.02	-0.01	-0.15
	0.949	0.949	0.950

Source: Survey of the study.

(1) Note: a) N stands for the number of children in the household attending school.

b) G stands for the age of the household head.

c) D stands for the education level of the household head.

d) Figures in the first row refer to the t-statistic for the corresponding variable in the column.

e) Figures in the second row refer to the partial correlation between the variable in the column and the saving residual.

P) Figures in the third row refer to the multiple correlation for the estimated function when the corresponding variable in the column was to be included in the regression set.

The table above shows that the inclusion of either N or G variables in the regression set would still give the same coefficient of determination (i.e.  $0.949^2$ ) as in Table XIV before. In other words, the inclusion of these variables would add nothing to the amount of changes in the saving residual already explained by the three regressors in the estimated function. The inclusion of D variable in the regression set would, however, result into some increase in the coefficient of determination (i.e.  $0.950^2$ ). This would give  $R^2$  of 0.903 and  $\bar{R}^2$  of 0.896, which is an improvement over the  $R^2$  of 0.901 and  $\bar{R}^2$  of 0.894 obtained in the estimated function. These results show that the education level of the household head should have been included in the regression set. At the same time, as observed in Table XV, the wealth assets variable should have been excluded from the regression set. However, from the theoretical grounds cited in the literature review and in the model specification, the wealth assets was retained in the regression set. The education level of the household head was still left out of the regression set since there was no strong theoretical reasons for it to be included. Also, for simplicity purposes on the part of the estimated function, the number of regressor variables was limited to only three.

Saving residual was also regressed upon cash income from sugar-

cane, cash income from all other sources, wealth assets and household size as the explanatory variables. Thus the number of regressors increased to four. This was necessary so as to be able to observe the causal relationship of income from sugar-cane on the saving residual. This also made it possible to examine the effects of income from all other sources on the saving residual. The outcome of this regression analysis is summarised in the following estimated function where,  $Y_c$  is income from sugar-cane and  $Y_o$  is income from other sources.

Equation (ii)

$$S = -2428.216 + 0.349Y_c + 0.350Y_o + 0.029W - 205.653H.$$

The estimated equation and the other outcomes of this second regression analysis are presented in Table XVII below.

TABLE XVII

REGRESSION OF SAVING RESIDUAL ON INCOME FROM SUGAR-CANE, INCOME FROM OTHER SOURCES, WEALTH ASSETS AND HOUSEHOLD SIZE (1) - 1978

DEPENDENT VARIABLE	NUMBER OF OBSERVATIONS	DEGREES OF FREEDOM	INTERCEPT	EXPLANATORY VARIABLES				COMMON COEFFICIENTS
				INCOME FROM SUGAR-CANE	INCOME FROM OTHER SOURCES	WEALTH ASSETS	HOUSEHOLD SIZE	
				REGRESSION COEFFICIENTS, STANDARD ERRORS AND T-RATIOS				
Saving Residual	45	40	-2428.216 ( 877.280) 2.77***	0.349 (0.023) 15.40***	0.350 (0.040) 8.71***	0.029 (0.034) 0.86*	-205.653 (109.034) 1.89**	S=1650.15 R <sup>2</sup> = 0.90. R <sup>2</sup> = 0.89.

Source: Survey data of the study.

(1) Note: a) Standard errors of the estimated coefficients are in brackets.

b) T-statistics figures are starred:

i) \* Not significant at one per cent, five per cent and ten per cent levels.

ii) \*\* Significant at five per cent and ten per cent levels.

iii) \*\*\* Significant at one per cent, five per cent and ten per cent levels.

c) The equation is linear and in natural numbers not transformed to logarithms.

d) R<sup>2</sup> is coefficient of determination not adjusted for degrees of freedom.

e) R<sup>2</sup> is coefficient of determination adjusted for degrees of freedom.

This regression result show that the marginal propensity to save with respect to either of the two cash incomes is about the same (i.e. 35 per cent). The coefficients of the two income variables are both significant at one per cent, five per cent and ten per cent levels. The household size coefficient is now significant at both five per cent and ten per cent levels as compared to only ten per cent level before. The wealth assets variable is again not significant at any level as before. There is a small increase in the  $R^2$ , while  $\bar{R}^2$  remained the same as before. There are small decreases in the coefficient of the household size and the intercept term as compared to the first estimated equation. Lastly, the intercepts in both equations are significant at one per cent, five per cent and ten per cent levels.

The table below shows that when N, G and D variables were included in the second regression set, they would again have positive, negative and negative effects on the saving residual as before. The coefficients of these variables would again not be significant at one per cent, five per cent and even at ten per cent levels. However, as shown by their multiple correlations, the inclusion of either G or D would improve slightly the coefficient of determination ( $R^2$ ) from 0.904 to 0.906.

TABLE XVIII

POSSIBLE EFFECTS ON THE SECOND FUNCTION IF NUMBER OF CHILDREN ATTENDING SCHOOL, AGE AND EDUCATION LEVEL OF HOUSEHOLD HEAD WERE INCLUDED IN THE REGRESSION SET

DEPENDENT VARIABLE	ADDITIONAL REGRESSORS <sup>(1)</sup>		
	N	G	D
	0.05	1.15	1.10
Saving Residual	0.01	-0.18	-0.17
	0.951	0.952	0.952

Source: Survey data of the study.

- (1) Note: a) N stands for the number of children in the household attending school.
- b) G stands for the age of the household head.
- c) D stands for the education level of the household head.
- d) Figures in the first row refer to the t-statistic for the corresponding variable in the column.
- e) Figures in the second row refer to the partial correlation between the variable in the column and the saving residual.
- f) Figures in the third row refer to the multiple correlation for the estimated function when the corresponding variable in the column was to be included in the regression set.

6. DETERMINANTS, THEIR FUTURE DEVELOPMENT AND TESTING OF THE  
HYPOTHESIS

This chapter concentrates on testing the hypothesis formulated earlier in the paper and discussing the possible changes in the determinants in the near future.

6.1 DETERMINANTS AND THEIR FUTURE DEVELOPMENTS

It was found from the last chapter that income had the strongest relationship with the saving residual. It was also realised that income was the most significant (important) determinant of the saving residual. These two results may be explained by the fact that saving was derived as a residual of income after deducting the total of the various expenditures.

It was also found that income from sugar-cane growing had a stronger relationship with the saving residual than the income from other sources. Income from sugar-cane was also the more significant determinant of the saving residual as compared to income from all other sources. This result may be explained by the fact that income from sugar-cane accounted for a much higher percentage (i.e. 74.8%) of the total income. The corresponding contribution of income from other sources was only 25.2 per cent. However, income from other sources was also a significant determinant of the saving residual.

Household size was a lesser significant determinant of the saving residual. The level of wealth assets held was found to be an insignificant determinant of the saving residual. Number of children

in the household attending school, age and education level of the household head were not included in the regression set. However, it was found that these three variables would be insignificant determinants of the saving residual if they had been included in the regression set.

#### 6.1.1 Disposable Income

These regression results indicate that an increase in the saving residual will be brought about more by an increase in income and a reduction in the household size. A significant change in the amount of sugar-cane income in any direction will result into a large change in the total cash income. This will consequently cause a significantly large change in the saving residual. It is therefore, vital that sugar-cane income is maintained since there is no other single crop in the Mumias area which may earn the farmers that much income. The sugar-cane income could even be increased if proper precautions are undertaken in the cultivation and handling of the cane crop. The sugar-cane yield depends, among other things, on the right number of weeding times. The yield would be poor if the crop is not weeded enough. During the field survey, it was found that some sugar-cane farms had weeds as tall as the cane plants. The yields in such farms were so low that the Mumias Sugar Company was forced to abandon them after the last ratoon crop. Normally, the company is supposed to plough the farm and provide new cane seedlings and fertilizer for the next crop after the last ratoon of the previous crop.

Farmers whose cane farms were abandoned after the previous crop

complained bitterly, saying that they did not have any other source of cash income. This in itself shows the importance the farmers attach to the cultivation of sugar-cane as a source of cash income. However, it is important that farmers take good care of their sugar-cane farms. This will mean higher yields and consequently higher incomes. It will also mean that such farms will not be dropped by the company during the next cultivation of the crop. This way, the Mumias Sugar Company will be able to recover all its costs in the sugar-cane cultivation. At the same time, sugar-cane incomes to the farmers will be maintained, and even increased.

There also seems to be a lot of wastage in the handling of the cane harvest. Sometimes, the cane harvest takes about two to three days in the field after being cut and before it is transported to the factory for weighing. This results in the loss of water content in the harvest and so weighs less than otherwise. In addition, a lot of cane drops from the trucks when being transported from the fields to the factory. This reduces the weight even further. This has an effect of reducing the earnings from a given plot of sugar-cane crop. It would be to the advantage of the farmers if the cane is weighed just after cutting and while still in the fields. This would indicate the actual yields and consequently the correct receipts the farmers should get after the company's deductions.

The sugar-cane farmers also complained that sometimes weighers record less tonnage than actual deliveries to the factory. The farmers' harvests are weighed without them being present. The farmers would prefer a representation at the weighing so that they



are convinced and satisfied with the weights recorded.

The farmers also complained of the delay in cane cutting. The Mumias Sugar Company is responsible for cutting and transporting of the cane to the factory. The delay in cane cutting results in weight losses in the cane crop. This delay in cane cutting is part of the problem which results from the inability of the factory to cope with the cane that is mature enough for harvest.

The above observations are important for ensuring that increased income from sugar-cane growing is forthcoming. However, income from all other sources was also found to be a significant determinant of the saving residual. It is therefore important also that major sources of income in this category are improved. Cash income from business undertaking accounted for about ten per cent (2nd highest) of the total income. This is likely to increase as the total sugar-cane outgrower area is expanded. However, this will depend on other factors as well. Such factors include the improvement in infrastructure and Government regulations. As already stated earlier, the Mumias Sugar Company is helping in the improvement of the infrastructure. The company is doing this by opening up new feeder roads and improving on the old ones. This has resulted into easier and quicker communication from one trading centre to another. On the other hand, the banning of beer halls for the traditional alcohol had some adverse effects on income from business undertaking. Some farmers had the brewing and selling of the traditional alcohol as the only business enterprise. Such farmers now have little or no income from business. However, such farmers could easily turn to the buying and selling of fish for

example or any other small scale trade.

The other source of income to consider is the wage or salaried employment. It is hoped that employment opportunities in the area will continue to increase. The expansion of outgrower area and the sugar factory will result into increased employment opportunities in the sugar farms and the sugar factory respectively. The Government is also increasing its expenditure in the rural areas (Mumias area included). This will tend to increase employment opportunities in the Government institutions in the area. These will tend to increase the incomes earned from wage or salaried employment.

#### 6.1.2 Household Size

The household size was found to have a negative but significant effect on the saving residual. This shows that an increase in the household size would result into a reduction in the saving residual, other determinants remaining constant. Similarly, a reduced household size would result into an increase in the saving residual.

The size of the household determines the total expenditure of that household. A bigger household size results into higher total expenditure and vice-versa. The total cash income minus total expenditure gives the saving residual. Therefore, for an increase in the saving residual, total expenditure must fall or increase less than proportionately. The household size (consuming unit) has to be reduced or increase less than proportionately if the total expenditure is to be reduced or rise slowly.

The expenditures on food, school fees, durable goods, clothes and dresses, and medical treatment all depend on the household size among other factors. These expenditure items altogether contributed to over eighty per cent of the total expenditure. The bigger the household size, the more will be the tendency for the expenditures on these items to rise and vice versa. The spread of family planning campaign in the Mumias area may result into the people adopting family planning techniques thus tending to reduce the household size. This is most likely to lead to decreased total expenditure and consequently increased saving residual.

It is important to note that the survey (collection of data) for this study was done before the Presidential directive banning all kinds of school fees from standard (class) one to six. The payment of school fees accounted for ten per cent of the total expenditure. This figure is most likely to be reduced after the Presidential directive. The total expenditure may consequently be reduced.

### 6.1.3 Level Of Wealth Assets

The level of wealth assets held was found to be an insignificant determinant of the saving residual. The relationship between the two was found to be a weak positive suggesting that the saving residual increases as the wealth assets increase and vice versa. This could be explained by the fact that purchases of durable goods in the year of study were recorded as part of total expenditure. The more wealth assets a household had, the less the household would spend on durable goods. This tended to reduce the total expenditure, thus resulting

into increased saving residual. Similarly, the less wealth assets a household had, the more the household would spend on durable goods, thus increasing total expenditure. The latter resulting into reduced saving residual.

Secondly, there is a positive correlation between total income and the wealth assets held. This should be expected. More wealth assets (especially investment assets) should result into increased income. Since wealth assets affect positively total income, and since total income affects positively saving residual, it follows that wealth assets should also affect saving residual positively.

These two reasoning therefore explain the positive and not negative relationship between the level of wealth assets held and the saving residual. The above reasoning also explains the positive and not negative effects of the wealth assets on the saving residual as indicated in the estimated function. It is therefore, important that farmers in Mumias area increase their stock of wealth assets held. This will not only reduce total expenditure in the near future but will also tend to increase total income, thus increasing further the saving residual. It was shown earlier that expenditure on durable goods accounted for about seventeen per cent of the total expenditure (see Table X). This was the second highest expenditure item to food.

#### 6.1.4 Number of Children in a Household attending School

Lastly, the number of children attending school, age and education level of the household head would have positive, negative

and negative effects respectively on the saving residual if they were in the regression set. The positive effect of the number of children in the household attending school on the saving residual shows that households spare some money for school fees for the coming year. This shows that an increase in the number of children attending school would result into an increase in the saving residual. This will be done so as to make possible the payment of the increased total fees for schooling. The number of children in the household attending school is most likely to increase as household heads continue to realise the importance of schooling for their children. But school fees for primary education in Kenya have been abolished. This will tend to reduce the amount of money households keep for school fees in the coming year. However, the school fees paid in secondary schools have increased and are most likely to increase even further. This latter case will lead to increases in the amount of money spared for school fees in secondary school. The amount of money spared for school fees is even going to increase further as households realise the importance of secondary school and higher education. This is because, the number of children in a household attending secondary and higher schools is going to increase.

#### 6.1.5 Age of Household Head

The negative effect of the age of the household head on the saving residual shows that the older the household head, the lower will be the saving residual. The older household heads are more concerned with maintaining their present expenditure patterns rather than save for

the future. In other words the older household heads have a low time preference for the saving residual. The negative causal relationship between age of the household head and the saving residual also shows that the younger household heads tend to have higher saving residual. The younger household heads thus have a higher time preference for the saving residual than the older household heads. This is as it should be expected. The younger household heads tend to have more school age children and also, they are still expecting to support more children. Consequently, they have to save more-so as to be able to cater for the present and anticipated large number of dependants.

#### 6.1.6 Education Level of Household Head

Finally, the negative effect of the education level of the household head on the saving residual shows that more educated household heads tend to have lower saving residual. Less educated household heads on the other hand tend to have more saving residual. More educated household heads are also more enlightened on modern life than the less educated ones. The more educated household heads thus tend to spend more on items like clothes and dresses and also on durable items such as radios and iron-sheets roofed houses. This would suggest that there tend to be a higher demonstration effects among the more educated household heads than among the less educated ones.

It should be remembered however, that all these last three variables (N. G. D) would have insignificant influences on the saving residual if they were included in the regression set.

6.2

HYPOTHESIS TESTING

6.2.1

Surplus Income (Saving Residual)

The first hypothesis stated that sugar-cane farmers in Mumias have surplus income which in this study is being referred to as the saving residual. In the last but one chapter total annual expenditure was deducted from total annual cash income and the result was a positive surplus of KSh.4,214.20. This first hypothesis is therefore, accepted. There is surplus income amongst sugar-cane farmers in Mumias area.

However, it should be borne in mind that sugar-cane income accrued for a period of about two years. This is because the cane maturity period ranges from about twenty-two to twenty-four months for plant crops and eighteen to twenty-two months for ratoon crops. In this study, the sugar-cane earnings were assumed to accrue during the year of the cane harvest. This resulted into rather higher figures for incomes from sugar-cane growing. Consequently, the figure for the surplus income (saving residual) might appear rather high. But due to the difficulties involved in estimating exactly what portion of the sugar-cane income accrued during each year of the cane plant, the total harvest receipts were taken as indicating sugar-cane income in the year of study. However, during the survey, the respondents were asked to state the amount of money paid out as debts over the whole year. Most of the debts were acquired with the expectation of being paid back after the cane harvest.

Therefore, it still remains that sugar-cane farmers in Mumias area have surplus income during the year in which their cane is harvested. The size of this surplus depends mainly on sugar-cane earnings. This is because, as already shown earlier, sugar-cane income alone accounted for over seventy per cent of the total income.

#### 6.2.2 Saving Rate

The second hypothesis stated that the saving rate of the sugar-cane farmers in Mumias is low, i.e. it is between four or five to twelve of the total annual cash income. In the last-but-one chapter, a saving rate of 19.4 per cent was arrived at. This hypothesis is therefore rejected as far as Lewis saving rate figures are concerned.

The household saving rate for Kenya fluctuated around ten per cent from 1964 to 1972, with the highest being 14.5 per cent in 1969 (35, 357). As already stated earlier in the paper, recent national household saving rates are only available for the year 1976. In 1976, the household saving rate was about seven per cent (36). The saving rate of 19.4 per cent estimated in this study is higher than any of the national household saving rates from 1964 to 1972 and also for 1976. The hypothesis is still rejected when we consider national household saving rates for the years given above. However, it may not seem logical comparing a regional household saving rate based on forty-five households with the national household saving rates. This may even be more so when the rates that are being compared occur in different years. But, there being no similar figures available



for other regions and for the same years, one is left with no other option.

Therefore, we may still conclude that the saving rate for this sample of Mumias sugar-cane farmers is not low. It should be noted here also that it is the high contribution of the sugar-cane income to the total cash income that resulted into such a remarkable saving rate for this sample of Mumias farmers.

### 6.2.3 Marginal Propensity to Save

The third hypothesis stated that the marginal propensity to save with respect to income for the Mumias sugar-cane farmers is high. This hypothesis is tested by comparing the estimated marginal propensity to save with the marginal propensity to save of twenty per cent estimated by Scott (58, 172) for Central Province, mainly coffee farmers. Scott used figures obtained by the Central Province Survey (33) which covered a period of one year from March 1963 to February 1964. The survey involved recording data on household receipts and disbursements. Scott using the data thus collected, estimated a function which may be summarised as in the equation III below.

$$\text{Equation III} \quad S = -299. + 0.198Y$$

where S = saving residual, and

Y = total cash earnings

The Central Province Survey was carried out more than ten years ago.

The survey data may therefore be out of date. There must have occurred

quite some economic changes in the rural areas of Central Province since 1964. These economic changes must have resulted into different amounts of receipts and disbursements as compared to those of 1963/64 survey. The author is however, not aware of any other similar survey carried out in Central Province and other rural parts of the country in the recent years.

The estimated marginal propensity to save with respect to changes in income for the Central Province survey is about twenty per cent as shown in the above Equation III. The corresponding figure for the sample of Mumias sugar-cane farmers is about thirty-six per cent as given in the regression results of Table XV in the last chapter. The hypothesis is therefore accepted. The marginal propensity to save with respect to changes in income for sugar-cane farmers in Mumias area is high. The marginal propensity to save of the sugar-cane farmers in Mumias is most likely to be even higher when the saving residual is regressed upon income as the only explanatory variable.

#### 6.2.4 Commercial Rates of Interest and Saving Residual

The fourth hypothesis stated that there is no significant relationship between the commercial rates of interest and the saving residual of the Mumias sugar-cane farmers. This hypothesis is tested by first estimating the number of the sample households who had saving accounts in saving institutions. Second, the percentage of those who had saving accounts for the purpose of their accounts multiplying due to the interest rates offered is estimated. If this percentage is more

than fifty per cent of the total households who had saving accounts in the saving institutions, the hypothesis is falsified.

In the survey, the respondents were asked to state whether they had saving accounts and if not, whether they were willing to start saving accounts. Those who were willing, were asked to state where they would prefer to have saving accounts. The respondents who had saving accounts were asked to give reasons as to why they had saving accounts in saving institutions. The respondents who had no saving accounts but were willing to start some, were also asked to give the reasons as to why they would like to have saving accounts. The answers to these questions are summarised in the following two tables.

TABLE XIX (a)

DISTRIBUTION OF THE SAMPLE HOUSEHOLDS INTO THOSE WITH AND WITHOUT SAVING ACCOUNTS IN SAVING INSTITUTIONS.

CATEGORY OF RESPONDENTS	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL RESPONDENTS
Respondents with saving Accounts	21	46.67
Respondents without saving Accounts and willing to start some	20	44.44
Respondents without saving Accounts and not willing to start some	4	8.89
Total	45	100.00

Source: Author's finding.

TABLE XIX(b)

CATEGORIZATION OF THE RESPONDENTS WITH SAVING ACCOUNTS

REASON FOR HAVING SAVING ACCOUNTS	NUMBER OF RESPONDENTS	PERCENTAGE OF TOTAL RESPONDENTS WITH SAVING ACCOUNTS
For Security	16	76.19
For Interest Rate	5	23.81
Total	21	100.00

Source: Author's finding.

There were twenty-one out of the forty-five respondents who had saving accounts in saving institutions. Fifteen respondents had saving accounts with the Post Office Savings Bank while six had savings with commercial banks. None of the forty-five respondents had and or was willing to have saving accounts in any other saving institutions such as the co-operatives. Most of the respondents argued that there are problems of financial mismanagement within co-operatives and so, they cannot deposit their money with the co-operatives. Most respondents were also of the opinion that co-operatives were run by the local people and they could not trust the local people with their money.

There were only five respondents who had saving accounts for the purpose of their money multiplying as a result of the interest rates offered. This is about twenty-four per cent of the twenty-one

respondents who had saving accounts in the saving institutions. The remaining sixteen (about seventy-six per cent) out of the twenty-one respondents had saving accounts mainly for security purposes. The hypothesis is therefore accepted. There is no significant relationship between the commercial rate of interest and the saving residual of the sugar-cane farmers in Mumias. Furthermore, twenty out of the twenty-four respondents who had no saving accounts were willing to start some saving accounts for safety purposes only.

The Kenya Commercial Bank has opened up a branch office at Mumias trading centre. The branch was meant to cater mainly for the sugar-cane farmers. The author was informed that henceforth, the sugar-cane farmers around Mumias will be paid for their produce through the Kenya Commercial Bank branch. In addition, the farmers will not be allowed to withdraw all their cane payments at once. In other words, the farmers will be forced to leave or keep some of their cane earnings with the bank branch. In this way, there will occur a form of forced saving among the sugar-cane farmers in Mumias area. The farmers will not be leaving their money with the bank branch willingly for the purpose of their money multiplying. The main reason for having the farmers leave some of their cane earnings in the bank branch was given as being the security of the cane earnings and the safety of the farmers. Initially, farmers were given all their receipts at once in cash. Some of the farmers were robbed of their earnings on their way home. Some farmers were even attached in their homes at night because cane earnings were normally hoarded in large sums of money in homes. Hence the necessity for safe-

guarding the farmers' earnings from robbers and also avoiding injuries or even loss of life on the part of the farmers.

#### 6.2.5 Aggregative Saving Behaviour

The fifth hypothesis stated that aggregative behaviour of small scale farmers who have been absorbed into the market system is in conformity with the theoretical framework of conventional economic relations. That is, the determinants of saving residual considered in the study should be able to explain at least sixty per cent of the changes in the saving residual. If by regressing the saving residual on income, wealth assets and household size and we fail to get statistically significant results and the coefficient of determination ( $\bar{R}^2$ ) is small (i.e. less than 0.6) the hypothesis is falsified. If on the other hand we get statistically significant results and the coefficient of determination is big (i.e. more than 0.6), the hypothesis is accepted.

In the last chapter, saving residual was regressed upon income, wealth assets and household size. It was found out that income and household size were significant determinants of the saving residual (see tables XIV and XVII). Only wealth assets was not a significant determinant of the saving residual. The three regressors explained about ninety per cent of the changes in the saving residual. The hypothesis is therefore accepted. The regression results show that by using the data collected on household income, expenditure, wealth assets, household size and generating the saving residual for the sample of sugar-cane farmers in Mumias, these variables successfully manifest statistically significant economic relations.

7.

CONCLUSION

The results of the study show that farm incomes in Mumias sugar-cane area exceeded off-farm incomes. This is largely due to the incomes from sugar-cane growing. Without sugar-cane incomes, off-farm incomes would have exceeded farm incomes (see Table VIII). The most important sources of incomes, other than sugar-cane growing, were found to be business undertakings, remittances from relatives, and wage or salaried employment of the household heads.

Food dominates in the expenditure patterns of the sample studied. The purchase of food items alone occupied 48.6 per cent of the total expenditure. This is comparable with the findings of the studies carried out in other parts of the country and cited in this study. This is as should be expected of low income categories of people. The other outlets of importance in the expenditure pattern were, the purchase of durable goods, the payment of school fees, expenses on traditional ceremonies and expenses on medical treatment.

From the study, the conclusion is that saving residual are substantial in the Mumias among sugar-cane farmers. The saving residual figure was found to be 19.4 per cent of the annual total cash income.

The annual cash income, among the possible determinants of the saving residual, was the only variable which had a strong (significant) relationship (correlation) with the saving residual. The relationship between the saving residual and the other possible determinants considered in the study were not significant. The relationship

between the saving residual and the sugar-cane income was stronger (more significant) than the relationship between the saving residual and the total of the incomes from all other sources.

The significant determinants of the saving residual were income and the household size. Income from sugar-cane growing and the total of incomes from all other sources were of equal significance as some of the determinants of the saving residual. All the other possible determinants of the saving residual considered in the study were not significant. The latter included, the level of wealth assets held, the number of those in the household attending school, the age and the education level of the household head.

Finally, there was no significant relationship between the saving residual and the commercial rates of interest offered by the saving insititutions. Consequently, the rate of interest was found not to be a significant determinant of the saving residual in the Mumias area.



8.

RECOMMENDATIONS

The findings of this study have been that there exist substantial saving capacities among the small-scale cash crop farmers, such as the Mumias sugar-cane outgrowers. However, it is important that this substantial saving residual is mobilized and/or utilized in such a way that its usefulness in growth is felt. If not, a greater part of it may end up being used in luxurious and consumer durables expenditures.

There are three broad alternatives about the use and allocation of farm saving residual. The saving residual can be used on:

- a) own farm where it is generated,
- b) on others farms by an intra-farm transfer, and
- c) on non-farm by net inter-sectoral transfers.

The rationale for relative allocations of farm saving residuals among its competitive uses would depend on the social and economic objectives of our planned development. The current five year (1979-83) national development plan of the Kenyan economy lays much emphasis on the alleviation of poverty. The law of equi-marginal utility of the saving residual in competitive forms of investments should guide, at least in theory, the nature and volume of transfer of the saving residual. At the same time, this should help in the attainment of the national development objective. However, the saving residual has to be mobilized or made available before it can be put into its various uses.

## 8.1 MOBILIZATION OF RURAL SAVING RESIDUAL

The mobilization of the saving residual in the rural areas could take several forms. These may be in terms of higher land tax, imposition of income tax, procurement of farm produce at lower than market prices and higher pricing of public services and farm inputs such as fertilizers. These methods of mobilization could effectively be carried out by use of Government machinery. The financial institutions such as the commercial banks could also be used effectively to mobilize the saving residual in the rural areas. This could be in the form of voluntary saving deposits by the farmers in such institutions.

### 8.1.1 GOVERNMENT

It is generally held that the agricultural sector is not only under-taxed but is being subsidised in the context of a considerable increase in incomes and savings potentials, corroborated by this study as well. Further, it is quite conceivable that profitable opportunities of fresh investments are likely to dry up, unless a new stream of technological innovations is continuously available. This is even so at precisely those farms where the savings are being generated. There is a fear therefore, that in the absence of adequate means of mobilization of such saving residuals, these may increasingly be used for consumer durables and less essential consumption. It might perhaps be socially more desirable to mobilize such saving residuals even though this may, at the margin, be at the cost of increased non-farm investment.

However, the form and method of mobilization of the saving residual by the Government has to be such that it is both equitable and non-inflationary, and at the same time is not counter-productive. In this context, the following possible forms of mobilization through Government machinery are discussed.

Higher Land Tax: Land tax has not yet been introduced in Kenya with respect to small-scale holdings in the rural areas. Land tax was introduced in other countries, Brazil for example, not for mobilizing rural savings but as a means of forcing farmers to make full use of their holdings<sup>6</sup>. It would therefore, be unsound for this tax to be introduced for the first time in Kenya among sugar-cane farmers in Mumias only and for the purpose of mobilizing the farmers' saving residual. This is because, not all households in Mumias area have their holdings under sugar-cane. Also, households in Mumias area do not have equal holding size. This would mean that for the tax to be equitable, it would have to be per acre of holding so that the bigger the holding size the more tax a household pays. But a bigger holding may not necessarily mean higher cash earnings from sugar-cane growing and consequently high saving residual. Therefore, higher land tax may not only be socially unsound but also it may not serve effectively as a means of mobilizing saving residual in Mumias area.

6. In the Economist No. 1-7 of November 1980 Page 86 it is stated in part ..... a scheme to tax farms with poor production increasingly heavily each year until their owners farm them properly or sell or rent them to somebody who will, .....

Imposition of Income Tax: It is not very easy to come up with actual yearly incomes of each household in the rural areas. The costs and time spent for such an exercise may not be justified for the purpose of income tax alone. However, for the case of cash crop farmers, like the sugar-cane farmers in Mumias, cash earnings from the cash crops may likely account for a higher percentage of yearly total incomes. Consequently, imposition of tax on cash earnings from the cultivation of the cash crops would be more appropriate. Thus a form of mobilization of the saving residual in Mumias area among sugar-cane farmers would be to impose a tax on the cash earned from sugar-cane growing.

As corroborated in this study, there appears to be quite substantial saving residual among the sugar-cane farmers in Mumias area. This substantial saving residual is as a result of high cash earnings from sugar-cane growing. If a tax is imposed on the cash earned from sugar-cane, this would tend to reduce the total cash income with a resultant reduction in the saving residual. In other words, part of the saving residual would have been absorbed by the tax. The revenue realised from the tax would be made available for use in other development activities in the area. In this case, the local authority in Mumias area (the Kakamega County Council) would be the collector and the beneficiary of the tax. The revenue realised from the tax could also be made available for use in development activities in other needy parts of the country. In this latter case, the tax would be administered by the Central Government. Thus, part of the saving residual of the sugar-cane farmers in Mumias would be mobilized through fiscal means by imposition of tax on the

cash earned from the cultivation of sugar-cane.

However, great care should be taken in mobilizing rural savings through taxation of farm earnings. This form of mobilization may appear unacceptable both politically and socially. This is partly because, already the sugar-cane farmers are demanding an increase in the price per ton of sugar-cane and so a reduction of their cash earnings by tax would be met with a lot of resentment. Hence, one way of carrying out this form of mobilization may be to fix a lower limit on the cash earnings from sugar-cane that could be taxed. Only cash earnings from sugar-cane over and above a given lower level could be liable for taxation. In this way, only those farmers with higher cash earnings from sugar-cane would have their earnings taxed more, especially if the tax system is progressive. The farmers with cash earnings from sugar-cane equal to or less than the lower limit will not have their cash earnings taxed.

This scheme of mobilization of saving residual in Mumias area would therefore be both equitable and non-inflationary. But the scheme may appear to be counter-productive on the part of the more successful sugar-cane farmers. However, such farmers would normally have other economies and cushions to bear the marginal burden of taxation thus making the scheme unlikely to be counter-productive. The scheme would also meet the objective of diverting saving residual away from luxurious and consumer durables expenditures on the part of the more successful farmers.

One problem however, is that this scheme would be discriminatory against the sugar-cane farmers. Some households grow other crops,

maize for example, as cash crops in addition to or without sugar-cane. Imposition of tax on cash earnings from sugar-cane alone would result into farmers moving out of growing sugar-cane and instead grow maize. This would be so unless a similar tax is imposed on cash earnings from maize and other cash crops grown in the area. Furthermore, as already said, imposition of tax on cash earnings from sugar-cane and other cash crops in the area vis-a-vis other areas would be politically unacceptable. No such tax has been imposed on cash earnings from cash crops in other parts of the country.

Procurement of sugar-cane at lower than market price: It is the aim of the Kenya Government to encourage and assist farmers all over the country to increase their farm output. Among other things, the Government does this by offering favourable prices to farmers for their produce. In some cases, the Government may even pay higher than market prices so as to encourage farmers to produce more.

The sugar-cane farmers in Mumias, as already said earlier, are complaining that the price offered per ton of sugar-cane is low. The farmers would like the price to be raised. This and the first argument above would tend to defeat the case for mobilization of the saving residual by procuring sugar-cane at a lower price than it is now even if this price was more than or equal to the market price.

Higher Pricing of Farm Inputs: One other way in which the Government encourages and assists farmers all over the country is by offering them farm inputs, such as fertilizers at reasonably lower prices. For instance, the importation of fertilizers into the country is free from import tariff. This in itself shows that the Government

is very much interested in seeing that farmers increase their output by using more and more fertilizers. Hence the mobilization of the saving residual of sugar-cane farmers in Mumias area by pricing of farm inputs higher would only tend to contradict the Government's efforts in assisting and encouraging the small-scale sugar-cane farmers.

However, this form of mobilization may appear easier to implement than the one above. This is because the degree of resentment here may be lower than in the above case since some farmers may not be using some of the inputs in question. But lack of using any of the recommended inputs is most likely to result into lower yields. Also, it would be difficult and unfavourable to device different input prices for different parts of the country for the purpose of mobilizing the saving residual.

Formation of Sugar-cane Outgrowers Co-operative Society: The formation of farmers co-operative societies through the relevant Government machinery offers a promising form of mobilization of the farmers saving residuals. It was pointed out in Chapter 2 of this study that the Co-operative Societies in other parts of the country have been more successful in mobilizing saving residual of the farmers than other saving institutions. The co-operative societies, it is argued, provide terms and conditions that are more suited to the farmers. It may also be expected that the saving residual in Mumias area could be mobilized more successfully by establishing a sugar-cane farmers co-operative society in the area. All sugar-cane farmers in Mumias area could be convinced to become members of the co-operative

society. The farmers' dues to the co-operative society could be made by deductions from the sugar-cane earnings. The co-operative society in turn could be able to advance loans or credit to farmers (members) for farm developments.

During the data collection exercise for this study, it was found out that none of the respondents had and/or was willing to have saving accounts with co-operative societies. The respondents argued that there are problems of financial mismanagement and political interference within the co-operative societies. This was in relation to the collapse of the once existing society for marketing cane to the jaggery mills that existed in the area. The collapse of this society was recent and well remembered by the respondents.

However, the Government has increased its efforts in the supervision and financial auditing of the co-operative societies activities. This will greatly reduce the degree of financial mismanagement within the co-operative societies. Mumias sugar-cane farmers should therefore be informed by Government officers that there will be no problem of financial mismanagement within the co-operative society and that the Government will ensure this does not happen. The Mumias sugar-cane farmers should also be educated fully and convinced of the benefits of having savings with the co-operative society. In this way the sugar-cane farmers will not resent the idea of being members of a co-operative society formed solely for their own benefits.

Presently, there is a new company (Mumias Outgrowers Company) formed under the company laws of Kenya. The initial capital of the company was a grant from the Kenya Government and a loan from overseas.



The functions of this company are mainly financial. The company will relieve the Mumias Sugar Company of the burden of extending credit to the outgrowers. The Mumias Outgrowers Company was formed because it was thought that the farmers would resent being forced to become members of a co-operative society similar in a way to the marketing society that had just collapsed. This would affect the smooth supply of sugar-cane to the factory. However, it is clear, in retrospect, that the co-operative model was never given a thorough testing in Mumias area after the establishment of the Mumias Sugar Company. The farmers probable hostility was taken at face value with no attempt on the part of Mumias Sugar Company or the Government to identify means and methods of persuading the sugar-cane farmers to form a co-operative society instead of the Outgrowers Company. Moreover, the Outgrowers Company is not intended for mass mobilization in the area.

Buying of Shares by the Sugar-cane Farmers in Companies: One way in which the Outgrowers Company will help in the mobilization of the farmers saving residual is by allowing the sugar-cane farmers to buy shares in the company. It is stipulated that the sugar-cane outgrowers will be allowed to buy shares in the company so that the company will eventually become wholly owned by the outgrowers. But some or most of the sugar-cane farmers in Mumias area may not be aware of the benefits that would accrue from owning shares in the company. Consequently, the farmers should be made aware and also convinced of the benefits from owning shares in the company. If not, the farmers may not buy the shares and the mobilization of their saving residual in this way may therefore not be realised.

The buying of shares by the sugar-cane farmers as a means of mobilizing saving residual should not be limited to the Outgrowers Company only. Other avenues should also be studied and introduced by the Government. For instance, some small-scale white sugar companies (factories) could be established in the area through Government aid with eventual ownership by the farmers through buying of shares. Currently, farmers complain of their cane being over-mature, showing that the present sugar factory alone is not enough to absorb all the sugar-cane that is ready for crushing. Some of the ready sugar-cane could be taken to the small-scale white sugar factories. Therefore, the problem of lack of enough cane for both the current factory and the proposed factories may not arise.

The Government could, as an alternative to the above, encourage and assist in the re-introduction of the jaggery mills that once existed in the area. The new jaggery mills to be supervised by Government officers. The sugar-cane farmers could then be allowed to buy shares in the jaggery mills. This latter and the former schemes would have double advantage to the farmers namely, a bigger market for their sugar-cane and a means of saving through buying of shares which in a way is a form of investment as well.

Finally, the Government could also establish small factories that could make use of some of the by-products of the sugar factory as raw materials. For instance, a small molasses plant could be established in Mumias area and the sugar-cane farmers could be allowed to buy shares in the plant.

However, the small white sugar factories, jaggeries and molasses are most likely to suffer from lack of qualified personnel to run them. Such factories, however small, require specialised skills for proper management. If continuous proper management is not forthcoming, the factories are most likely to collapse. Proper training followed with a long period of practical experience would have to be acquired by those to be appointed to manage the factories. Only then would it be appropriate for the Government to hand over the factories to the farmers through buying of shares. This then makes this scheme of mobilization of saving residual to be of long term consideration.

The other problem here would concern the lack of finance for such projects (factories). These projects, though small, require large amounts of capital to start with. Also, most of the machinery for such factories will have to be imported. The Government, and the country as a whole, is experiencing shortages of foreign exchange due to increasing balance of payment deficits. As such, it may not be possible for the Government to embark on such ventures in view of other pressing responsibilities.

#### 8.1.2

#### SAVING INSTITUTIONS

Even with the above forms of mobilization households may still end up with substantial cash surpluses that require depositing in commercial banks or any other saving institutions. Consequently, a scheme of mopping up voluntary savings would be much desired as well in Mumias area.

Households are most likely to increase their voluntary savings

when the saving institutions are brought near to them than if the nearest saving institutions are some distance away. This should apply to both farming households and non-farming households. The Mumias sugar-cane farmers are therefore expected to increase their voluntary savings with the opening up of the Kenya Commercial Bank branch at Mumias trading centre.

This should not be left to the commercial banks alone. Other saving institutions such as the Housing Finance, Building Societies, insurance firms, etc. should also be encouraged to open up branches in the rural areas of Mumias. In this way, varying tastes of the households regarding different saving institutions will be catered for. The Building Societies for example, would in return offer loan and credit facilities for the farmers who are customers to help in the construction of permanent houses for residential purposes.

However, the success of these financial institutions in attracting voluntary saving in Mumias area will depend on the knowledge the farmers have regarding the economic importance of such institutions. Farmers should therefore be educated and/or informed of the economic and financial benefits derived from having accounts in such financial institutions. The small-scale sugar-cane farmer in Mumias needs to be convinced of the gains from depositing money in commercial banks and other saving institutions before he can be willing to have his financial savings in such institutions.

The saving institutions also need to have their operations favourable to the farmers' conditions so that the farmers can make

full use of the facilities provided in the institutions. For example, the minimum account balance and the minimum loan possible should be such that the farmers in question can easily manage.

To sum up, a scheme of mopping up of household saving residual in Mumias sugar-cane area should be guided by the law of equi-marginal returns. If it is rational to transfer saving residual elsewhere, such a mobilization would still need to be non-inflationary, besides helping to increase farm production. As the economy is still not out of the woods as far as sugar-cane growing is concerned, the form of mobilization has to be such as not to affect productive investments in sugar-cane farming adversely. Some of the schemes discussed above could meet the twin objectives of diverting saving residual away from conspicuous consumption and retaining the incentive to produce more.

However, one shortcoming of the study is that it covered only one year. The recommendations presented are therefore based on only one year's information. This may be quite misleading since one year may be quite unique from other years. The recommendations seem to be quite comprehensive as far as mobilization of rural savings is concerned. However, these recommendations could be quite appropriate if they were based on findings from a number of years and not one year only. In this way, a time series data would have been most suitable since the findings and hence the recommendations would be based on a trend happening. But there being no data for the years prior to 1978 a time series data analysis could not be carried out. Maybe similar studies in the area could be done annually for a number of years so as to arrive at more valid and appropriate conclusions and hence recommendations.

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Appendix 1 (a)

THE SURVEY RAW DATA - INCOME AND

WEALTH ASSETS

	Other Crops and Animal Products	Wages	Remi- ttance	Business	Total of Income From These Other Sources	Sugar- cane	Total Income	Wealth Assets Held
1	4800.00	14400.00	-	7200.00	26400.00	22700.00	49100.00	46180.00
2	720.00	-	8000.00	2480.00	11200.00	10734.00	21934.00	27086.00
3	-	-	6000.00	16510.00	22510.00	21000.00	43510.00	44900.00
4	-	4800.00	-	-	4800.00	9248.60	14048.60	15065.00
5	2880.00	-	1200.00	4920.00	9000.00	35080.00	44080.00	15450.00
6	270.00	-	1000.00	-	1270.00	30600.30	31870.30	28708.00
7	880.00	14400.00	-	-	15280.00	20250.70	35530.70	30205.00
8	-	-	6000.00	-	6000.00	16655.30	22655.30	18630.00
9	1400.00	-	-	-	1400.00	34275.35	35675.35	19845.00
10	2420.00	-	3980.00	600.00	7000.00	3300.00	10300.00	20750.00
11	400.00	-	400.00	-	800.00	48900.75	49700.75	20800.00
12	-	450.00	-	-	5400.00	35525.50	40920.50	33760.00
13	-	14400.00	-	-	14400.00	12050.15	26450.15	13000.00
14	600.00	-	-	6600.00	7200.00	22185.15	29385.15	11080.00
15	-	10200.00	-	-	10200.00	22075.85	32275.85	10730.00
16	800.00	-	-	-	800.00	44255.50	45055.50	22005.00
17	55.00	-	200.00	-	255.00	8756.50	9011.50	18480.00
18	800.00	-	2000.00	-	2800.00	31481.35	34281.35	30961.00
19	-	-	-	6000.00	6000.00	5482.55	11482.55	19005.00
20	-	15600.00	8400.00	-	24000.00	15067.00	39067.00	14886.00
21	90.00	-	-	2510.00	2600.00	4000.00	6600.00	28239.00

Appendix 1 (a) Cont'd

	Other Crops and Animal Products	Wages	Remi- ttance	Business	Total of Income From These Other Sources	Sugar- cane	Total Income	Wealth Assets Held
22	-	-	400.00	-	400.00	9000.00	9400.00	35315.00
23	-	-	-	-	-	13700.50	13700.50	26517.00
24	-	-	-	-	-	6975.20	6975.20	20000.00
25	400.00	-	-	3600.00	4000.00	5021.60	9021.60	20865.00
26	600.00	-	-	1200.00	1800.00	11996.00	13796.00	16080.00
27	-	-	-	-	-	10256.75	10256.75	17500.00
28	800.00	-	1200.00	-	2000.00	9856.15	11856.15	15740.00
29	-	-	-	-	-	3105.10	3105.10	19630.00
30	1444.00	-	800.00	15756.00	18000.00	7799.60	25799.60	18397.00
31	600.00	-	-	3600.00	4200.00	2685.60	6885.60	19897.00
32	-	-	-	-	-	6329.10	6329.10	13544.00
33	-	-	2400.00	-	2400.00	2270.55	7070.55	20798.00
34	-	-	-	-	-	7103.45	7103.45	16609.00
35	-	-	-	-	-	7769.90	7769.90	10270.00
36	-	-	1800.00	-	1800.00	26976.45	28776.45	11815.00
37	1892.00	-	-	-	1892.00	23150.00	25042.00	18650.00
38	630.50	-	-	3822.00	4452.50	13000.00	17452.50	8772.00
39	-	-	-	-	-	14975.80	14975.80	7297.00
40	-	-	-	1095.00	1095.00	20000.00	21095.00	12350.00
41	-	-	-	-	-	9420.35	9420.35	10404.00
42	425.00	-	-	3320.00	3745.00	10000.00	13745.00	11926.00

Appendix 1 (a) Cont'd

	Other Crops and Animal Products	Wages	Remi- ttance	Business	Total of Income From These Other Sources	Sugar- cane	Total Income	Wealth Assets Held
43	-	-	-	10000.00	10000.00	26000.00	36000.00	25682.00
44	-	-	120.00	-	120.00	14200.00	14320.00	16219.00
45	-	-	-	11200.00	11200.00	15017.35	26217.35	13958.00



			Medical	Clothes	Labour	School		Durable	Other	Total	Saving
	Dowry	Ceremonies	Treatment	and Dresses	Wages	Fees	Food	Goods	Expenditures	Expenditure	Residual
1	-	6000.00	600.00	2300.00	1200.00	3950.00	15186.70	1500.00	1620.30	32357.00	16743.00
2	-	2800.00	100.00	2000.00	1640.00	340.00	9558.80	3133.00	1425.00	19996.80	1937.20
3	3300.00	-	2000.00	2800.00	3400.00	3077.00	10669.30	4000.00	1323.30	30569.60	12944.40
4	400.00	500.00	100.00	1250.00	-	360.00	9379.05	1425.00	1000.00	14414.05	-865.45
5	-	2000.00	1000.00	2000.00	-	3620.00	9353.70	15000.00	1500.00	34473.70	9606.30
6	-	1500.00	400.00	3000.00	-	4500.00	10043.20	2500.00	500.00	21443.20	10427.10
7	2000.00	-	1600.00	2000.00	1200.00	120.00	10629.35	7000.00	1800.00	26349.35	9181.35
8	1200.00	-	1000.00	1050.00	-	2500.00	10761.05	2100.00	600.00	19211.05	3444.25
9	-	2600.00	200.00	900.00	-	4130.00	9250.60	8615.00	970.00	27665.60	8009.75
10	-	-	200.00	1500.00	-	300.00	5872.45	300.00	430.00	8602.45	1697.55
11	-	4000.00	1500.00	3500.00	-	6295.00	12177.35	8000.00	700.00	36172.35	13528.40
12	-	-	2000.00	2500.00	1200.00	2620.00	10228.90	10535.00	950.00	30033.90	10891.60
13	3000.00	-	500.00	1000.00	-	-	8741.00	5094.00	1100.00	19435.05	7015.10
14	-	1000.00	550.00	2500.00	600.00	3040.00	9225.15	7145.00	200.00	24260.15	5125.10
15	2000.00	-	100.00	1500.00	1200.00	60.00	10502.00	7000.00	1000.00	23362.00	8913.80
16	4000.00	3500.00	900.00	2000.00	1000.00	3930.00	12834.20	12130.00	1500.00	31794.20	13261.30
17	-	-	70.00	1000.00	-	1800.00	7477.00	470.00	100.00	10917.00	-1905.50
18	-	600.00	500.00	2500.00	468.00	4600.00	8991.80	8200.00	500.00	25759.80	8521.50

	Dowry	Ceremonies	Medical Treatment	Clothes and Dresses	Labour Wages	School Fees	Food	Durable Goods	Other Expenditures	Total Expenditure	Saving Residual
19	-	-	100.00	1000.00	-	2620.00	7377.20	1440.00	150.00	12687.20	-1204.65
20	-	1500.00	2000.00	3000.00	1200.00	1800.00	10388.20	10000.00	1200.00	31088.20	7978.80
21	-	2500.00	-	500.00	-	220.00	3156.80	232.00	250.00	6858.80	- 258.80
22	-	1100.00	100.00	500.00	-	-	8103.70	500.00	340.00	10643.70	-1243.70
23	-	700.00	20.00	1000.00	900.00	1500.00	8364.85	460.00	650.00	13594.85	105.65
24	-	500.00	50.00	500.00	-	1865.00	5565.70	391.00	300.00	9171.70	-2196.50
25	-	150.00	-	600.00	-	322.00	5915.10	60.00	320.00	7367.10	1654.50
26	-	200.00	-	200.00	-	-	10672.85	-	300.00	11372.85	2423.15
27	-	500.00	50.00	1000.00	-	4042.00	5882.10	300.00	500.00	12274.10	-2017.35
28	-	-	100.00	1000.00	-	2116.00	5398.60	2150.00	250.000	11013.60	842.55
29	-	-	-	300.00	-	1800.00	3235.95	55.00	150.00	5540.95	-2435.85
30	-	1000.00	-	1500.00	630.00	3550.00	9960.00	550.00	300.00	17490.00	8309.60
31	-	200.00	70.00	400.00	-	1970.00	4624.40	350.00	100.00	7714.40	- 828.80
32	-	-	50.00	200.00	-	2230.00	2148.10	1410.00	160.00	6198.10	131.00
33	-	500.00	120.00	600.00	-	236.00	7455.55	380.00	300.00	9591.55	-1921.00
34	-	-	-	1000.00	-	1990.00	3493.65	130.00	250.00	6863.65	239.80
35	-	-	-	450.00	-	295.00	6034.10	120.00	277.00	7176.10	593.80
36	3000.00	4500.00	-	1000.00	-	-	11775.45	1370.00	400.00	22045.45	6731,15

	Dowry	Ceremonies	Medical Treatment	Clothes and Dresses	Labour Wages	School Fees	Food	Durable Goods	Other Expenditures	Total Expenditure	Saving Residual
37	2500.00	-	200.00	2000.00	1000.00	-	12660.55	280.00	600.00	19240.55	5801.45
38	700.00	-	160.00	2380.00	-	180.00	8402.45	2061.00	250.00	14133.45	3319.05
39	-	700.00	400.00	500.00	750.00	-	7451.45	458.00	300.00	10559.45	4416.35
40	-	-	2500.00	200.00	400.00	-	10061.00	280.00	300.00	13741.00	7354.00
41	1400.00	-	-	1000.00	900.00	510.00	5196.75	1405.00	150.00	10561.75	-1141.40
42	500.00	800.00	100.00	800.00	-	-	9140.65	725.00	600.00	12665.65	1079.35
43	2150.00	2000.00	-	1500.00	2800.00	4650.00	13877.00	2788.00	850.00	30615.00	5385.00
44	1000.00	2200.00	200.00	1500.00	600.00	92.00	6686.35	210.00	250.00	12738.35	1581.65
45	800.00	2600.00	150.00	1000.00	1800.00	1780.00	10132.20	1241.00	250.00	19753.20	6464.15

Appendix 1 (c) THE SURVEY RAW DATA - HOUSEHOLD CHARACTERISTICS

Household Size	Number of Children attend- ing School	Age of House- hold Head	Educa- tion Level of House- hold Head	Households				
				Households with Saving Accounts		Willing to Start Saving Accounts		
				Security	Interest Rate	Security	Interest Rate	
1	13	6	42	4	-	X	-	-
2	5	2	68	-	X	-	-	-
3	8	3	38	6	X	-	-	-
4	5	3	33	7	-	X	-	-
5	7	2	47	4	X	-	-	-
6	9	10	55	-	X	-	-	-
7	5	1	30	11	-	X	-	-
8	7	3	66	3	X	-	-	-
9	6	2	50	-	-	-	X	-
10	6	1	74	2	-	-	-	-
11	8	2	64	-	-	-	X	-
12	7	4	49	8	X	-	-	-
13	4	-	28	4	-	-	X	-
14	11	6	40	-	-	-	X	-
15	5	1	35	11	-	X	-	-
16	9	3	40	4	X	-	-	-
17	11	5	42	4	-	-	X	-
18	13	8	55	-	X	-	-	-
19	7	4	42	4	-	-	-	-
20	5	2	39	11	-	X	-	-
21	6	2	46	-	-	-	X	-

Appendix 1 (c) Cont'd

	House- hold Size	Number of Children attend- ing School	Age of House- hold Head	Educa- tion Level of House- hold Head	Households			
					Households with Saving Accounts		Willing to Start Saving Accounts	
					Security	Interest Rate	Security	Interest Rate
22	8	3	60	-	-	X	-	
23	8	2	55	-	X	-	-	
24	10	4	45	-	-	-	-	
25	5	1	36	4	-	X	-	
26	7	1	70	-	-	X	-	
27	12	3	50	-	-	X	-	
28	5	-	60	2	-	-	-	
29	8	2	45	4	-	X	-	
30	9	3	55	-	X	-	-	
31	6	1	50	-	-	X	-	
32	5	1	40	4	X	-	-	
33	13	5	42	4	X	-	-	
34	7	4	46	-	-	X	-	
35	7	2	45	-	-	X	-	
36	8	-	55	-	-	X	-	
37	7	-	76	-	-	X	-	
38	8	2	43	3	X	-	-	
39	4	-	50	3	-	X	-	
40	3	-	60	-	-	X	-	
41	9	5	53	4	-	X	-	
42	7	2	34	8	X	-	-	

Appendix 1 (c) Cont'd

House- hold Size	Number of Children attend- ing School	Age of House- hold Head	Educa- tion Level of House- hold Head	Households			
				Households with Saving Accounts		Willing to Start Saving Accounts	
				Interest Security	Rate	Interest Security	Rate
43	11	4	64	-	X	-	-
44	7	3	64	-	-	X	-
45	5	1	48	4	X	-	-



KEY

SCALE 1:12500



NUCLEUS ESTATE

ROADS \*-\*



STUDY AREA

RIVERS ~~~~~



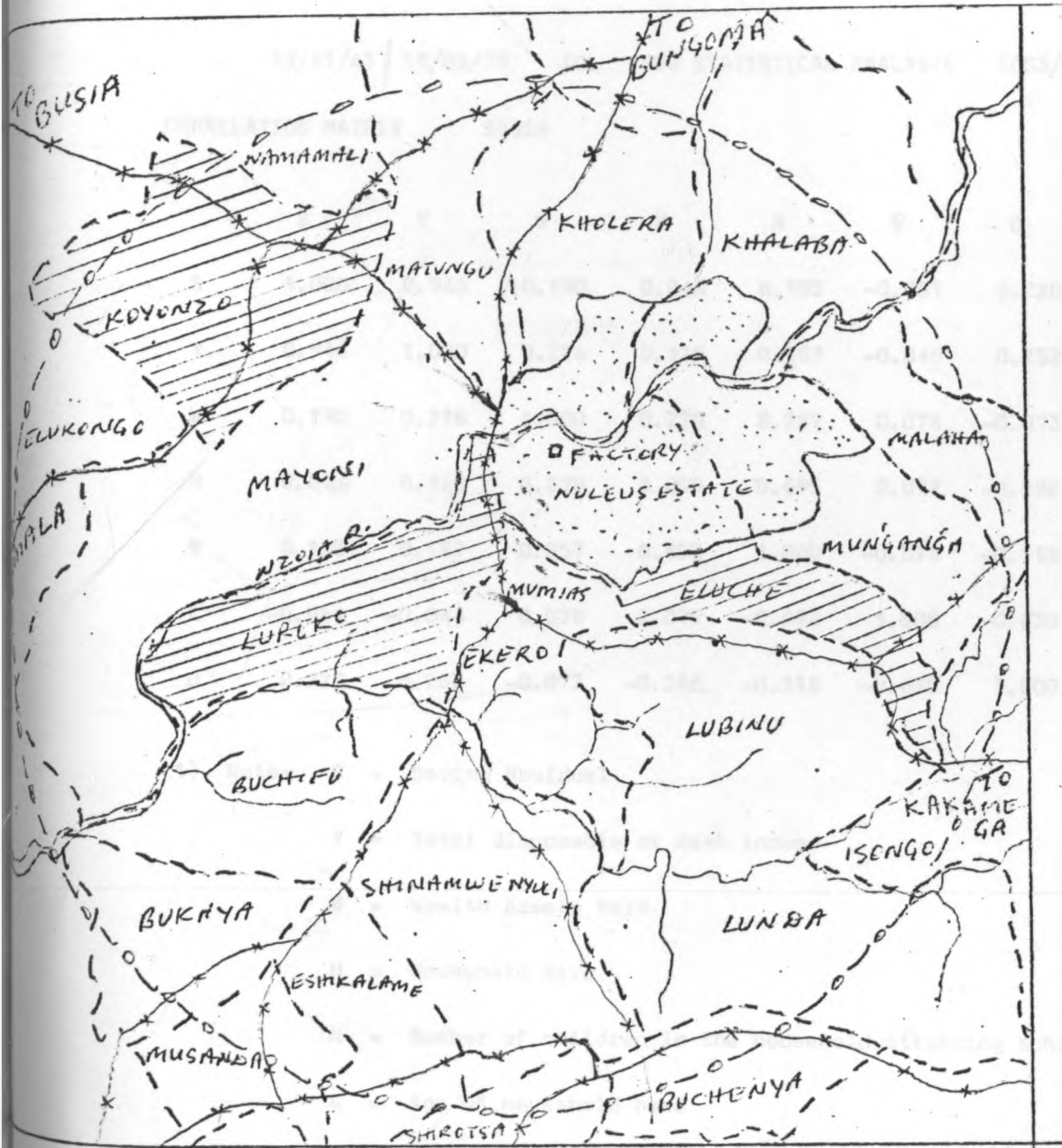
NATIONAL BOUNDARY

RAILWAYS —+—+—+—

SQUARE: MUMIAS SUGAR CO. LTD.  
WESTERN PROVINCE, 1976

FIGURE II

THE SAMPLE STUDY AREA



KEY

--- Sub-Location Boundaries

X Main Roads

~ Rivers



The Sample Sub-Locations



Outgrowers Area

Scale: 1 : 2000,000

Source: Mumias Sugar Co. Ltd.

Mumias, Kakamega District, 1976



Appendix 3      COMPUTOR OUTPUT OF THE CORRELATION COEFFICIENTS BETWEEN  
ANY TWO VARIABLES OF ALL THE VARIABLES IN THE STUDY<sup>(1)</sup>.

13/41/43    15/05/79    ICL    1900 STATISTICAL ANALYSIS    XDS3/24

CORRELATION MATRIX      SAVIN

	S	Y	W	H	N	G	D
S	1.000	0.946	0.190	0.046	0.103	-0.051	0.220
Y	0.946	1.000	0.216	0.126	0.157	-0.046	0.252
W	0.190	0.216	1.000	0.275	0.257	0.078	-0.073
H	0.046	0.126	0.275	1.000	0.695	0.077	-0.286
N	0.103	0.157	0.257	0.695	1.000	-0.074	-0.118
G	-0.051	-0.046	0.078	0.077	-0.074	1.000	-0.630
D	0.220	0.252	-0.073	-0.286	-0.118	-0.630	1.000

- 1) Note:    S = Saving Residual  
             Y = Total disposable or cash income  
             W = Wealth Assets held  
             H = Household Size  
             N = Number of children in the household attending school.  
             G = Age of household head  
             D = Education level of the household head.

13/41/46

15/05/79

ICL 1900 STATISTICAL ANALYSIS

XDS3/24

REGRESSION ANALYSIS      CRUS      SAVIN      CUT OFF PARAMETER ,100000E- 5

DEPENDENT VARIABLE      S      DEGREES OF FREEDOM      41

INDEPENDENT VARIABLES AT SIGNIFICANT LEVEL      99,00 %

CONST   Y      W      H

VARIABLES      IN THE REGRESSION SET

VAR NAME	REGRESSION COEFF	STANDARD ERROR	CONFIDENCE INTERVAL	T STAT	PART CORR	MULTIPLE CORRELATION	E S S
CONST	- 2422.8599555	,851588E 3		2.85	-0.41	0.964 0.938	,135327E 9
Y	0.3548331	,188529E- 1		18.82	0.95	0.660 0.190	,108944E 10
W	0.0019211	,219322E- 1		0.09	0.01	0.970 0.949	,113035E 9
H	- 151.5412876	,102183E 3		1.48	-0.23	0.969 0.946	,119077E 9

VARIABLES NOT IN THE REGRESSION SET

VAR NAME	T STAT	PART CORR	MULTIPLE CORRELATION	E S S
N	0.14	0.02	0.970 0.949	,112962E 9
G	0.03	-0.01	0.970 0.949	,113011E 9
D	0.94	-0.15	0.971 0.950	,110592E 9
E.S.S.				,113014E 9
RESIDUAL ERROR				,166025E 4
MULT CORR		0.970	0.949	

16/51/56

30/05/79

TCL 1900 STATISTICAL ANALYSIS

XDS3/24

REGRESSION ANALYSIS CRUS SAVIN CUT OFF PARAMETER .100000E- 5

DEPENDENT VARIABLE S DEGREES OF FREEDOM 40

INDEPENDENT VARIABLES AT SIGNIFICANT LEVEL 99.00 %

CONST YC YO W H

VARIABLES IN THE REGRESSION SET

VAR NAME	REGRESSION COEFF	STANDARD ERROR	CONFIDENCE INTERVAL	T STAT	PART CORR	MULTIPLE CORRELATION	E S S
CONST	- 2423.2156848	.877289E 3		2.77	-0.40	0.966 0.941	.129781E 9
YC	0.3485317	.226365E- 1		15.40	0.93	0.780 0.577	.754453E 9
YO	0.3502847	.402077E- 1		8.71	0.81	0.915 0.849	.315587E 9
W	0.0293334	.542427E- 1		0.86	0.13	0.971 0.950	.110919E 9
H	- 205.6533398	.109034E 3		1.89	-0.29	0.969 0.946	.118607E 9

VARIABLES NOT IN THE REGRESSION SET

VAR NAME	T STAT	PART CORR	MULTIPLE CORRELATION	E S S
N	0.05	0.01	0.971 0.951	.108912E 9
G	1.15	-0.18	0.972 0.952	.105326E 9
D	1.10	+0.17	0.972 0.952	.105633E 9

E.S.S. .103920E 9

RESIDUAL ERROR .165015E 4

MULT CORR 0.971

0.951

THE QUESTIONNAIRE USED FOR DATA COLLECTION

UNIVERSITY OF NAIROBI  
RURAL SAVINGS SURVEY FOR SUGAR CANE  
SMALL-SCALE FARMERS AT MUMIAS

NAME .....

AGE .....

OCCUPATION .....

MARRIED .....

If Yes:

How many wives? .....

How many children? .....

How many children in primary school? .....

How many children in secondary school? .....

How many of your children have wage  
earning employment? .....

What is your level of education? .....

HOUSEHOLD INCOME

How many acres of sugar-cane did you plant? .....

How many tons of cane did you harvest?.....

How much money did you get from sugar-cane? .....

WHAT OTHER CROPS DO YOU GROW ON YOUR LAND?

CROP	ACREAGE	HARVESTED (BAGS OR POUNDS)	AMOUNT MARKETED	PRICE PER UNIT
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....

If some children are wage employees do you get any financial assistance from them? .....

If yes, how often?

- (i) Every month.....
- (ii) Once in three months.....
- (iii) Once in six months .....
- (iv) Once in a year .....

On average how much is the assistance in terms of shillings?

.....

Do you do some business?

If yes, what type .....

What is your normal stock per month? .....

How much do you get from selling the stock? .....

What expenses do you incur? .....

(a) Transport .....

(b) Rent .....

(c) Licence .....

(d) Others .....

If wage employee

What type of employment? .....

What is your cash wage per month? .....

Is your wife employed? .....

If yes, what type of employment? .....

What is her wage per month? .....

Do you have any relatives (Brothers, Sisters, etc) who are wage employees?.....

Do you get any financial assistance from them?

.....

How much per year? .....

What else do you do for a living? .....

EXPENDITURE

FOOD ITEM	NO. OF TIMES IN A WEEK	QUANTITY/NUMBER PURCHASED	VALUE
MAIZE	.....	.....	.....
RICE	.....	.....	.....
FISH	.....	.....	.....
MEAT	.....	.....	.....
VEGETABLES	.....	.....	.....
SUGAR	.....	.....	.....
TEA LEAVES	.....	.....	.....
AMABERE	.....	.....	.....
CASSAVA	.....	.....	.....
EGGS	.....	.....	.....
COOKING OIL	.....	.....	.....
PARAFFIN	.....	.....	.....
CHARCOAL	.....	.....	.....
CHICKEN	.....	.....	.....
BATHING AND WASHING SOAP	.....	.....	.....
MATCHBOX	.....	.....	.....
SALT	.....	.....	.....

EXPENDITURE - Cont'd

FOOD ITEM	NO. OF TIMES IN A WEEK	QUANTITY/NUMBER PURCHASED	VALUE
TOMATOES	.....	.....	.....
ONIONS	.....	.....	.....
BEANS	.....	.....	.....
MILK	.....	.....	.....

How much do you pay per child in primary school?

CHILD	CLASS	YEARLY FEE
1	.....	.....
2	.....	.....
3	.....	.....
4	.....	.....
5	.....	.....

How much do you pay per child in secondary school?

CHILD	FORM	YEARLY FEE
1	.....	.....
2	.....	.....



CHILD	FORM	YEARLY FEE
3	.....	.....
4	.....	.....
5	.....	.....

On average how much do you spend on clothings and dresses on the family per year? .....

Do you have some permanent employees working for you?

.....

If yes, how many? .....

How much do you pay per worker per month? .....

How many casual labourers do you employ and for how much per day?

.....

How much money did you spend on family sickness last year?

.....

Did Company officials visit your sugar-cane farm last year?

.....

If yes, did you entertain them with the following:-

Beer .....

Tea with bread .....

Ugali with meat .....

How much money did you give freely (gifts) this year? .....

How much did you contribute to harambee projects in the year?

.....

How much do you spend on alcohol per week? .....

How much do you spend on cigarettes per week? .....

Do you own the following?

Possession	When purchased		No	Quantity	Value
	Yes	or acquired			
Land	.....	.....	....	.....	.....
House	.....	.....	....	.....	.....
Business	.....	.....	....	.....	.....
Livestock	.....	.....	....	.....	.....
Radios	.....	.....	....	.....	.....
Clocks	.....	.....	....	.....	.....
Watches	.....	.....	....	.....	.....
Sewing machine	.....	.....	....	.....	.....
Paraffin Stoves	.....	.....	....	.....	.....
Iron	.....	.....	....	.....	.....
Paraffin Lamps	.....	.....	....	.....	.....
Torches	.....	.....	....	.....	.....
Stools	.....	.....	....	.....	.....
Chairs	.....	.....	....	.....	.....

Possession	When purchased			Number Quantity	Value
	Yes	or acquired	No		
Tables	.....	.....	....	.....	.....
Sofas	.....	.....	....	.....	.....
Beds	.....	.....	....	.....	.....
Mattresses	.....	.....	....	.....	.....
Wardrobes	.....	.....	....	.....	.....
Cupboards	.....	.....	....	.....	.....
Ox-plough	.....	.....	....	.....	.....
8 Car	.....	.....	....	.....	.....
Bicycle	.....	.....	....	.....	.....
Record Player	.....	.....	....	.....	.....
Radio Cassette	.....	.....	....	.....	.....
Cassette Recorder	.....	.....	....	.....	.....

How much money did you spend on dowry last year?

(i) For your wife .....

(ii) For your sons' wives .....

Did you have any ceremonies last year? .....

If yes, what type? .....

.....

How much did you spend on the ceremonies?

- (i) Funeral .....
- (ii) Circumcision .....
- (iii) Any other .....

Did you have any loan/credit from any institution? .....

If yes, how much did you pay back last year? .....

How much did you pay to cover up other debts you might have had? .....

SAVINGS

Do you have any financial savings with any of the following institutions?

- (i) In outgrowers society .....
- (ii) In a commercial bank .....
- (iii) In a Post Office Savings bank .....
- (iv) In any Co-operative society .....
- (v) In the house .....

If yes, give reasons why you have financial savings .....

.....

If not, where would you prefer to have savings (financial)?

- (i) In outgrowers society .....
- (ii) In a commercial bank .....
- (iii) In a Post Office Savings bank .....
- (iv) In any Co-operative society .....
- (v) In the house .....

Give two reasons why you would prefer to have savings in the institutions you have chosen.

(i) .....  
.....

(ii) .....  
.....