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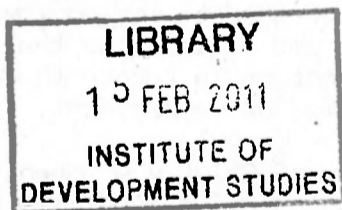
EMPLOYMENT AND EMPLOYMENT CREATION  
IN RURAL KENYA.

By

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Abstract

This paper outlines a study being carried out into un/under employment in Kenya. The aims of the study are to throw light on some of the problems of employment creation in rural areas, and to indicate how some of the main employment generation policies in operation can be made more effective. The paper discusses the methodology being used and the limitations of the data.

- a) The major part of the study will make use of Farm Enterprise Cost Survey Data collected by the Ministry of Finance and Economic Planning, to build linear programming models of farms selected from Nyeri and Embu. The programmes will be designed to measure the effects of changes in the input: output coefficients and constraints including credit availability, and wages, on the level of incomes and employment on the farms being studied and to indicate the different types of policies that could remove these constraints and increase incomes and employment.
- b) A small survey of Primary - School leavers. The objective is to gauge how agriculture has, and can be made to absorb these leavers at a level of remuneration consistent with wages elsewhere.
- c) An economic assessment of two settlement schemes with the object of establishing the effect on project selection of the use of different economic and financial criteria.

The field work for the study commenced in April 1972 and the authors will be returning to the agrarian Development Unit at Uye College; London University to carry out the programming phase of the study, so no results appear in this paper. These will be available by January, 1974.

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EMPLOYMENT AND EMPLOYMENT CREATION IN RURAL KENYA:

Unemployment and low incomes are accepted by a large body of opinion as being typical features of less developed countries and as being casually linked<sup>26</sup> It has been shown that the per annum increase in industrial output necessary to absorb the increase in numbers seeking employment in Kenya would have to be in the order of 15%<sup>37</sup> and it is believed by some authors that the capital/employee ratio is increasing as employers elect to buy their way out of 'high' wages and labour management problems with relatively cheap foreign machinery and technology<sup>40, 41.</sup> So the chances of the urban sector as a whole generating enough employment to absorb the expected increase in the number of job-seekers are negligible.

In Kenya agriculture supports about 90% of the population<sup>28</sup> so a small percentage increase in its rate of labour absorption will be sufficient to provide a large number of jobs. This is why this sector has been chosen as the "main chance" by the Kenya Government and to the I.L.O. Employment Mission. It is not sufficient however, simply to provide job places in agriculture. The rising aspirations of youth in addition to the desire of rural population to improve its standard of living means that it may prove essential to raise rural incomes, firstly to make agricultural employment attractive to labour relative to urban employment and secondly to provide the potential employer with a financial incentive to employ labour. Employment cannot be increased unless the money to pay wages is made available, either by increasing output or by # increasing output or by transferring existing income from farmers to farm labourers. The latter method is not considered to be as important as the former.

Whilst the latest Development Plan (1970-74) stresses the importance of alleviating unemployment, and claims to be designed with this objective in mind, there is no quantitative assessment of the effect of the policies outlined on either rural incomes or employment levels. In fact to the authors knowledge very little in the way of quantitative measurement of un, or under-employment has been done though many guesstimates have been made.

### Objectives

The overall objective of this part of the study is to investigate the potential of small farms in Kenya to absorb labour, whilst providing satisfactory incomes for those engaged in the industry. It involves the use of linear programming to highlight and analyse the factors restricting such absorption, and the policies required to remove these.

### METHODOLOGY.

Before measuring the efficiency of efforts to improve the prosperity of the farms in the study or the increase in employment it is necessary to have a measure of the existing level of these two factors. The data collected on incomes, by the Farm Enterprise Cost Survey, will be used to supplement general information on prices of crops and input costs to get a realistic indication of the prosperity of the farms. In order to gain some idea of the number of people usefully employed on the farm, the hours equipped in the peak month, according to the FECS data and assuming a sixty hour week will be taken to be the number usefully employed. This figure will be compared with the number of adult equivalents available to the farmer, and will give the percentage of unemployment on that farm.

It is also necessary to estimate the extent of underemployment in the sample of farms. This is a thorny problem and can only be solved by making assumptions. In the studies being described these are as follows:

A person is fully employed if:

- (1) His work cannot be physically done by another person (based on the number of hours in the peak month) with the assumed (in this case existing) technology.
- (2) His total output is higher than his income.
- (3) His income is equal to his EXPECTED average income in the modern sector.<sup>20</sup>

Thus if he (or she) expects an income of shs.300 a month in the modern sector but could only expect to be employed for 50% of the time his rural income would need to be shs.150 a month (assuming

his rural job is guaranteed). An income of shs,75 a month would therefore be described as 50% under-employed, if conditions (1) and (2) are fulfilled.

Thus if a change on the constraints of the L.P. models leads to jobs being created, fulfilling conditions (1) and (2) and provides increased output sufficient to pay the wages (3) and induce the employer to implement the changes (i.e., an increase in the employer's income, taking into account his views of the risk involved) that number of jobs will be said to have been created.

If condition (1) is not fulfilled the employer (farmer) will himself carry out the work, whilst if (2) is not achieved, no economic benefit accrues which could not be carried out by some form of tax. If (3) is not fulfilled then in real terms no jobs have been supplied as the people involved will prefer to look for work in the modern sector.<sup>21</sup>

This is a dynamic situation; the lower agricultural wages the more aspirants there are to urban jobs, and the lower the chances of employment and, therefore, of the rural wage necessary to appear attractive.

Once the level of unemployment on the farms selected (by our definition) has been assessed under existing circumstances, it is intended first to run L.P. models representing the existing technology and structure of agriculture. The effect of optimising output, subject to subsistence and credit restrictions and of optimising job opportunities at EXISTING rural wages, and at the "minimum acceptable" rural wage (3), subject to given net farm incomes (related to optimum income found above) will be tested; using parametric programming for the more important and unstable (or potentially unstable) coefficients.

The effect of projected Government policies and structural changes as outlined in the Development Plan will then be similarly assessed, where it is possible to include these in the models. Typical of these model changes will be crop innovations, (such



as hybrid and drought resistant maizes, new cash crops, mexican beans,) improved technologies (fertilizers, sprays) and mechanical soil tillage ( Land masters hiring of ox ploughs etc.) The effects of improved credit is a very important one which will be explored. Another is the effect of relieving labour bottle necks (by using herbicides for instance) on output and employment.

Between October and December the selected farms were visited three times. During these visits information was collected to supplement that already collected by the FECS, relating to matters such division of labour by age and sex, the farm gate prices for different crops, the way in which labour is hired and so on.

It must be said that the wide scope of the studies outlined, and the lack of data on many of the points that would repay investigation, will make it necessary to make use of questionable coefficients in the models.

It is intended to carry out sensitivity analyses more crucial coefficients, which will provide a useful range of results from which to work. The results of these model changes are not predictable, which gives the exercise its value.

If the results of the models run at this point allow the formation of alternative policies, or structural changes (or if major technical changes are indicated, implying new approaches to extension marketing, etc.) the models will be rerun to test the effect of these coefficient changes.

It is hoped to make use of the experience in Heyer's work in Machakos<sup>22, 23.</sup> in the detailed construction of the models. Of special note are the levels of management included in the models (five levels were assumed) and the variations in cultivation practices. In the author's study several alternative policies for planting and weeding will be allowed where it is possible to produce the data to represent these. Maize crop mixtures will be treated as a single crop, it being argued that the lack of data makes any other approach impracticable, even if differences do exist.

Unlike Heyer it is intended to use several models based on real farms selected to represent the areas being studied, rather than using model values to represent a typical farm. The L.P. package being used, in London, allows parametric programming to be carried out automatically, and most of the changes made, will be the same in all the matrices.

Heyer<sup>22</sup> concludes on her study that ....

"it is not true that there is a labour shortage in any economic sense. Rather there is a problem of finding remunerative occupations for labour already around."

Her work does not, however, go on to examine the possibilities of increasing employment, it is felt this is now an important and potentially useful area. She made a study of the effect of maize price changes on the cropping pattern. It is felt that it is a worthwhile study to repeat, especially for the drier areas of Embu. It is expected that more stable maize prices will be found to be more efficient economically, as it was by Heyer.

Heyers somewhat elitist views on the innate superiority of the already successful (and therefore rich) farmer, and the small effect of credit availability which follows from this assumption are felt not to be valid in the areas being studied. It is felt that the ability of farmers may be greatly affected by credit, especially where risk taking may result in shortage of food.

Research carried out by Gwyer /14 to 19/ on employment in Kenya is in many ways similar to this study. However Gwyer's study is on a national scale and therefore omitted of background detail. The present study will complement and augment Gwyer's work by concentrating on a two small areas. Based on FECS data his figures highlight one of the problems in building L.P. models of farms in Kenya. For example, in Nyeri the average total labour input for maize ('69-'70) was 48.4 mandays (from 61 farms) whilst in the following year ('70-'71) the figure was 66.4 mandays per acre. (from 101 farms). The figures for Tea are 187.3 mandays and 258.5 mandays, respectively.

Though other crops are less variable, both sets of data were collected by the same enumerators and from the same farms, making selection of appropriate coefficients problem, best solved by carrying out L.P. sensitivity tests and by taking special care over critical values, (e.g., peak month labour inputs), making use of the knowledge of the Ministry of Agriculture.

A recent working paper by Hunt <sup>24</sup> sets out a proposal which appears to be complementary to this study, and is to be carried out in one of the same areas (Mbere). Hunt intends to collect her own data for the study and use it to build L.P. models to test the advantages of various innovations on two groups of farms, one in dry lowland (Ishara) and the other in a more productive, higher area, (Siakago).

The use of more complete, and possibly more accurate, data should yield valuable results. The study, however, makes no direct reference to unemployment problems, being designed to investigate ways of increasing Gross Output and farmer's incomes. The timing of the study makes direct use of the data or results of Hunt's work for this study unlikely.

Cowen <sup>9</sup> working in one location in Nyeri District is working on the structure of the rural labour force, has collected some data on farms hiring labour (over 7 acres) and on the labour input of labourers on the farms, and consumption and production on their own land. It is hoped to make use of this data while it is being processed, and to provide Cowen with data on the intermediate size of farms. The study seems to be involved in describing the history of the structure of the labour force, not only on the potential for providing employment.

One of the few studies on Embu is an economic anthropological study by Jane Mills. Her study on the place of women in peasant farm firms and the preliminary results provide some very useful details on the importance of women with regards to availability of labour, decision making and the adoption of innovations with the social relationships in mind she was able to specify the types of models most appropriate to the analysis of the farm firms she considered. If the final results of this study are available before January 1974 it is hoped to supplement other Embu data with this very detailed information.

The Models.

Using data for the selected farms, acquired from the FECS and other sources such as the produce boards, Moyers work in Machakos, 21.23. the 1964 Nyeri Report and Odero Orwel's work on Nyeri<sup>35</sup> linear programming models will be built to represent the agricultural situation in the areas being studied. These models will be of three types, though in each case the situations will be parameterised, different assumptions as to input and output coefficients being made to test the areas of possible improvement in the level of rural incomes and employment. Special interest will be taken in the effects of credit availability, labour bottleneck breaking practices, wage rates and so on, on the results of the models.

The first of the three types of models will be of the standard income maximising linear programming form /incorporating existing subsistence requirements/ to produce a realistic assessment of the situation that exists and its potential, within the bounds of the data available. The parameterising process will give an indication of the stability of existing farming systems in the face of changing world crop and factor prices.

With the knowledge gained from these models, (which cover a wide range of farm situations - 20 farms in Nyeri and 18 in Embu are being modeled) the impact of creating systems designed to maximise employment will be explored. This will be achieved by building the models with employment as the objective function to be maximised. The model has already been tried out, and works satisfactorily and the data used to test it gave the result that the increase in employment created by successive reductions in the farmers income is small, though it must be emphasised that the data used were not to be relied upon.

From the results obtained it will be possible to give some indication of the cost if any of achieving increases in employment on the farms being studied, and the modifications in the present structure of agriculture (e.g., price changes) which would be necessary to induce these changes.

These indicated policy changes will provide possible alternatives to direct taxation for achieving equity, and may point out areas which would repay further investigation.

Finally the data will be used to construct models in dynamic linear programming model format, with different farms in the matrix. Thus a large farm with a labour shortage will be linked to a smaller farm with unemployed labour, and there will be provision for labour transfer from the smaller to the larger farm. This will provide insight into the potential for increasing the total income of the two farms under study, and simultaneously making fuller use of the labour available. The model has been tested and yielded, again with unreliable data, some interesting results. At current wage rates there was a tendency for the smaller farmer to sell his labour to the larger farm, resulting in an increase in total income, but a loss of income for the smaller farmer. This inequitable situation would not, of course, be tolerated in practice, so the models will also be run (if it proves necessary with the data being used) with the small farmers income held at a level at least equal to the maximum he can achieve on his own.

The results obtained from these three forms of the model will give a composite picture of the situation from it should be possible to draw firm conclusions as to the results and cost of the employment and income generation policies tested.

#### A Brief Description of the scope and Limitations of the FECS Data.

The basic sources of the data for the study is the Farm Enterprise Cost Survey collected by the Farm Management Unit of the Ministry of Finance and Economic Planning. This is the most extensive survey ever carried out on small scale farming in Kenya. The survey started in 1968/9 but the data for that year has not been released by the Ministry. In this study the data collected in the three years 1969-1972 will be used. In 1969/70 60 farms were covered in Embu District ( Upper Embu alone ) and 116 in Nyeri. Since then the numbers have been increased to include 118 farms in Embu. The FECS data will be interpreted in the light of knowledge gained by the authors during visits to the farms, and in the light

of the opinions of the expert bodies and individuals involved in the enterprises to be included in the study.

The Farm Management Survey Data was chosen because it covers a large number of farms and the information collected is detailed.\*

The practical difficulties that arise from the use of the data are:

- a) the excessive reliance on the farmers' memories during data collection - this is especially acute in cases such as maize yield where the produce is consumed green and the actual harvest is a proportion of that produced.
- b) the material inputs and sales receipts of the 'minor crops' are aggregated and yields are not recorded. In places such as Mbere where most of the crops grown are 'minor' cash crops a great deal of detail about the farming system is lost.
- c) inputs are undifferentiated as far as activities are concerned. For example a figure of 20 mandays spent on cotton in September may include both harvesting and planting.
- d) where a significant proportion of casual labour is paid piece rates (e.g., coffee picking and tea) information relating to mandays worked is misleading.
- e) Due to the random selection of the sample of farms some farming systems are over represented whilst others are omitted altogether.
- f) many of the sublocations do not correspond to administrative or ecological boundaries. This means that reclassification according to either of these two criteria is a tedious task.

#### Accuracy of the data

During July and August the authors visited about 150 farms to get a working knowledge of the area and to gauge the accuracy of the data.

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\* Data are collected on size of enterprises, labour and material inputs to crops and livestock, yields, livestock numbers, on farm and off farm income and occupations, disposal of produce, resource capital and tools and chemicals.

Reflections on the latter are:

- 1) There was a tendency for the enumerators to get information from the most cooperative person on the farm and quite often the person in question did not spend a great deal of time on the farm nor do any work on the crops (e.g., those with off farm jobs). In the circumstances the information gathered is likely to be quite erroneous. No attempt is made to measure the size of the farm. The enumerator usually asks the farmer or uses a farm plan where available. The only test available was to compare the recorded acreage with the Small Farm Census Figures which came from measurements made by temporary enumerators. In Embu the acreages agreed exactly in 39 out of 60 cases. For the other 15 the difference was within an acre or so but for 3 the difference was anything up to 40 acres.
- 2) Enterprise acreages for the major enterprises were accurate, but the enumerators estimated the acreages of minor crops by eye so great accuracy cannot be attached to them especially as some are grown in mixed stands and others scattered around the farm in small plots.
- 3) Interplanting was usually recorded in Upper Embu but often omitted in lower Embu and Nyeri.
- 4) Yields were only recorded for the major crops, so for 'minor' crops there is no information. In both Embu and Nyeri although labour was allocated to maize for both seasons only the yield for the long rain harvest was recorded by the enumerators.
- 5) In Embu the enumerators cautioned the author that labour inputs were sometimes overestimated because farmers were very unwilling to admit that they had not worked on their shambas for any significant amount of time. This was borne out during the visits. A farmer, for example, would claim that he was on the farm all the time, but we often had to make two or three visits to the farm to find him in. It is possible that some farmers either in spite of or because they cannot remember the time they spent on a particular crop give an estimate of how long they think they ought to spend.

- 6) Livestock numbers may be underestimated because farmers are afraid that the information will be used for GPT.
- 7) The number of people resident on the farm seemed to fluctuate erratically during and (especially) between years.
- 8) Although no one refused to cooperate with the enumerators a few had to be coaxed into parting with the information. This usually meant spending some time chatting about general things; sometimes it meant a drink. When a farmer gives information under pressure it is difficult to tell whether he is a bit secretive or whether he had no information to give in the first place. Pressure on farmers of the latter category may have meant that the farmer made up the figures on the spur of the moment. On the other hand there were a few instances in Embu where the farmer kept a record of the family's labour input to the main crops, for the enumerator. If this could be encouraged among other farmers it would enhance the accuracy and, possibly, the detail that could be obtained from the survey.

#### The Selection of the Farms.

From the farms visited a total of 38 were selected from the two Districts. These were chosen as being representative of the ecological zones, cropping patterns, farm size distribution, family size and livestock numbers. Farms with poor management (reflected in exceptionally low yields, and/or the absence of certain enterprises) have been omitted because the solution for such farms lies in extension work, not farm planning. The best a farm resource use study can do in this context is to identify where, and how much of this type of help is needed.

#### SOME DETAILS FROM THE DATA.

It may be agreed that a major factor in Kenya's development is the creation of more employment and greater rural prosperity



by raising the output of traditional farms. This can be achieved by:

1. Increasing the size of the farm
2. Introducing high level yielding crops.
3. Introducing new high return cash crops.
4. Raising the level of inputs, including labour, on existing cash crops.
5. Improving management.

In Nyeri there is no land for farms to increase in size, if the number of farmers is to remain stable.

There is however, a tendency for the richer farmers to buy out their neighbours, and increase the size of their own holdings in this way, (about 14% of the F.M.S. sample for Nyeri (1969) are thought to have done this, and this is a low estimate, as all the farms were not visited.) The effect of this problematical, of course increases the number of landless labourers in the country (presumably mostly in their home areas).

Nyeri has only 30% of farms larger than 10 acres yet has a large number of employees, many of whom are to be found on the smaller farms. It is thought that this is due to the number of farmers who have more than one occupation, (either another farm or a job in town) which is 59% in Nyeri using the FECS data for 1969. This includes 22% who have homes away from their farms in the survey. Very often such farms are run using hired labour, controlled, usually by the farmers wife.

It is unfortunate that the more successful farmer is often not directly involved in his farms, having at least one other job; the income from which, in turn removes the risk elements as a critical factor in his planning, and allows him to develop his farm more profitably, than his subsistence dependent neighbour. This fact is sufficient indication of the lack of opportunity provided by small scale farming in Kenya, and also gives the impression that there is if anything, a surplus of "Management Ability", which provides an optimistic prognosis for any attempt to raise agricultural output.

It is possible that the results of the models will raise the question of increasing employment at the expense of output. This trade - off has been attacked by Rakowski<sup>38</sup> who argues that such

a policy in practice represents a movement off the efficiency curve. This paper is a useful one in reminding us of the dangers of increasing employment merely at the expense of efficient production. Three points are relevant here. First, in making an output analysis it may be necessary to include employment as a positive output in a profit equation. Tied to this is the concept of creating "artificial" employment as a method of income redistribution, this may be a cheaper and less easily abused measure than direct taxation of incomes. Thirdly the input of labour at a high level into a project should result in the saving of other inputs, such as expensive capital imports.

APPENDIX II.

THE PLACE OF THE PRIMARY LEAVERS.

This year about 180,000 pupils will be taking the CPE exams in Kenya. It has been estimated<sup>40</sup> that only about 21,000 of these pupils will get places in government secondary school. Even when those repeating, training and going on to Harambee school are taken into account gainful employment will have to be found for over 100,000 leavers. Although most of these come from rural areas they tend to look for wage employment as a first choice.<sup>2, 5.</sup> Their prospects in this search have long been admitted to be bleak. The National Christian Council of Kenya<sup>34</sup> pointed out that very little is known about what happens to these primary school leavers who fail to get regular wage employment. There is however, no shortage of speculation and fanciful comment about the contribution they make or fail to make to agriculture.

The N.C.C.K. suggested that most of the leavers remain unemployed because of

- a) a gap in skills - between C.P.E. and training
- b) a gap of years - due to the youth of the leavers. This was expected to be less important in the rural than in the urban areas.
- c) Many others have argued that there is another gap, that between aspirations and realities<sup>7, 40, 20, 15.</sup> caused by the academic bias of the educational system. Whilst this argument has some validity it is nevertheless simplistic. Anderson has pointed out that to a large degree the problem of unemployment is economic and social, as opposed to educational "... for with loss or even without education, it seems likely that many of the same individuals would still be seeking wage employment"<sup>1, 2.</sup> so although the educational system may raise aspirations we must look to urban-rural wage differentials for fostering the gap<sup>20, 21</sup>

The aim of this study is to throw some light on the school leavers and agriculture. An attempt will be made to ascertain

exactly that has happened to these youths since 1959 - the jobs held and reasons for leaving, duration of unemployment, attitudes different types of farm employment, and job expectations. Special attention will be paid to the manner in which agriculture has and can be made to absorb those leavers at a level of remuneration consistent with wages elsewhere.

Six schools have been chosen in Embu District, in different ecological zones and it is hoped to interview the leavers from these schools who have not gone on to further education or regular employment.

Very briefly these leavers may enter the agricultural labour force in one or more of the following ways:-

- a) as regular or casual wage labourers
- b) as extra hands on the family farm
- c) as farmers on their own account
- d) as managers
- e) as providers of capital alone or capital and some management.

'd' and 'e' can be ruled out as far as most school leavers are concerned. A youth is unlikely to get the opportunity to manage a farm unless his or her parents are infirm or dead. Many farms are managed by wives whose husbands have off farm jobs - and supply money for labourers' wages and material inputs. So for girls entry via 'd' will have to wait at least until marriage. Entry via 'e' usually has to wait until the youth has a full-time job. This tendency for those with off farm employment to provide capital for the farm illustrates the oversimplification involved in arguing that investment in education robs the farming system of capital and labour (in the form of educated youth).<sup>12</sup> This is true even of those continue their education "... research shows that secondary school students already on their way to posts in the modern sector, have a great interest in land and farming, especially where cash crops are concerned. Most say they intend to buy land, but they see their role a part-time managers and providers of working capital in their wages". In addition in Embu the growth of cash crops was itself undertaken in many cases to pay for school fees.

Two factors ~~which~~ ~~prevent~~ ~~school~~ ~~leavers~~ ~~from~~ ~~up~~ ~~their~~ ~~own~~ ~~segment~~. Late marriage and shortage of land means that many men do not take up serious full time farming until early middle age.<sup>33</sup> Secondly, "unless agriculture can demonstrate powers to provide more than a subsistence living it cannot compete with regular income jobs, where families are large and land over-committed or unavailable it is a nonstarter."<sup>1</sup> These conditions however, do not apply throughout Embu so it would be of interest to see exactly what differences occur where they do not apply.

This leaves us with 'a' and 'b'. Gwyer<sup>15</sup> has divided those who undertake regular and casual farm labouring into landless realists and landless optimists, respectively. The realists do not hanker after modern sector employment whereas the optimists do and only resort to casual farm labouring when they need money to finance their next trip to town. The optimists live at home but make no contribution to farming there. Apart from the value judgements implied in these ~~descriptions~~ preliminary and unstructured interviews suggest that as far as Embu is concerned the description may be misleading. Although all those seen were resident at home and none of them did any regular paid farm labouring (None of the girls did any paid farm work either regular or otherwise). Brownstein also noted the high proportion of leavers staying at home. It may be due to one or more of three reasons:

- a) they come from high income farms - on which father has outside job or high-income cash crops.
- b) they grow their own crops on part of the family farm and sell the proceeds thus providing themselves with an independent source of income.
- c) The farm is short of labour at given times of the year and these youth can supply the necessary labour without the problems associated with hiring casual labour.

But from the point of view of the youth, staying at home and undertaking casual employment provides them with a base from which to pick up informally acquired skills and acquaintances. The latter are very important as far as securing employment in the informal sector is concerned<sup>5, 48</sup> and probably explain the reluctance to take up full time 'low' income jobs. The opportunity cost to the youth may be very high. Most of them have to help with jobs on the farm whilst they are at home and the boys undertake all kinds of casual jobs.

From the interviews it is hoped to get an indication of the wage required to make this opportunity cost of full-time farm labouring acceptable to the leavers. If the contention is correct. With the help of the Linear Programming we can gauge which farming systems or policy innovations (if any) will enable farmers to employ leavers at that wage.

AN ECON. ASSESSMENT OF TWO SETTLEMENT SCHEMES.

This part of the study focuses on the demand side of the small farm labour market. Its aim is to gauge the effect on project selection of the use of different employment, and financial criteria. The projects to be used for the exercise are a high density and a low density scheme.

A number of authors<sup>26, 27, 31.</sup> have expressed concern over the prevailing unemployment levels in the poorer countries, in the face of relatively rapid GDP growth. As a solution explicit policies to increase employment have been urged on the relevant governments if the problems associated with growing income disparities are to be avoided. Although the latest Kenya Development Plan<sup>28</sup> accepted this and stressed that the policies therein should be viewed in the context of maximum employment there was no attempt to estimate the employment contribution of the various projects proposed. As far as the authors can tell the criteria for selecting projects, when made explicit at all, is still the commercial investment criterion namely the Internal Rate of Return.

The use of this criterion can be criticized on several grounds. First of all, since it only looks at one aspect of the Government's professed Social Welfare function it may well conflict with others such as<sup>10, 13, 39.</sup> equity and employment. Thus, the use of a minimum expected rate of return to select projects, in the face of market imperfections and immobility, will increase the gap more and less fortunate areas; unless the minimum rate required to justify investment in a project is lower for lower potential areas. Clayton<sup>3</sup> in discussing the likely effects of the agricultural policies outlined in the plan concluded that, "... most of these policies are only indirectly employment creating in so far as they are income generating. No attempt appears to have been made to rank policies and projects in terms of their employment generating impact.

Had, this been done, then 'provision of maximum employment opportunities may well have resulted in a different "policy mix", a different allocation of development funds and a higher employment generating package. If employment creation is really to enter the planning process, then it is highly desirable that employment impact as well as income and other criteria should be used in the selection of agricultural policies and projects for the next Development Plan period."

In theory the most multi-objective allocative criterion is the technique of Cost/Benefit Analysis.<sup>30, 36</sup> Strictly speaking the Cost Benefit ratio and the Internal Rate of Return should yield the same results,<sup>3, 11.</sup> if they are computed on similar assumptions Cost/Benefit assumes an arbitrary discount rate and derives the benefit/Cost ratio; whereas the internal rate of return assumes a benefit/cost ratio of one and derives the rate of return that produces it. Although they are both tools of allocative efficiency cost benefit treats efficiency in a wider sense than IROR; it allows the inclusion of externalities if they can be valued.<sup>38</sup> Externalities are valued in terms of efficiency in conventional CBA however, so employment is commonly treated exclusively as a cost and a positive cost at that. But Constable<sup>7</sup> citing Tinbergen and Kahn to support him has argued that employment should be treated as a benefit. So even if shadow wages were used in the CBA calculation they would have to be negative to be acceptable. The common use of shadow wages between zero and the actual wage implies that employment is only desirable in terms of the extra production it allows, as employment is valued solely with reference to its marginal productivity. He contended, like many others, that the calculation of negative shadow wages is difficult at best and erroneous and misleading at worst<sup>7, 13, 32.</sup> Constable therefore favoured a system of weighting the benefit ratio with a factor for equity and employment.

It can be argued however that his proposed weighting factor is as difficult to calculate as any negative shadow wage especially as the data it requires is not readily available.

The different criteria will be used to rank a high density scheme (Mweiga in Nyeri) and a low density scheme (Kinangop). The Criteria to be used are the internal rate of return, the employment investment ratio, and the Cost benefit ratio. The latter will be calculated with and without shadow wages<sup>44</sup> and the ratio will be weighted separately for employment and equity. If the data allows, the above approaches will be contrasted with the results obtained in the linear programming exercise. We should then be in a position to review the implications of the different approaches and highlight the trade-offs between different objectives.



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