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LABOUR FORCE UTILIZATION IN TRADITIONAL AGRICULTURE: ESTIMATES OF SURPLUS LABOUR IN A VILLAGE IN THE CENTRAL HIGHLANDS OF ETHIOPIA

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ABSTRACT. The question of surplus labour in traditional agriculture has been one of the key issues in development economics. This article first surveys the controversies surrounding the subject in the context of the Ethiopian conditions. Alternative version of the labour availability approach were developed and used to estimate the surplus labour for a set of private farms and for a collective farm located in a case study village. The strength of the estimates was then assessed in the light of data generated by a time allocation study which allowed the researcher to closely examine how leisure time was distributed between different demographic groups. The study suggests the existence of surplus labour of varying magnitudes. The estimates vary, depending on the definition of surplus labour and on the assumptions made about the factors which can determine levels of surplus labour.

1. INTRODUCTION

The importance of labour in traditional agriculture cannot be overemphasized in a country, such as Ethiopia, where modern farm inputs play a limited role in agricultural production. A crucial economic question concerning resource use in peasant agriculture is the problem of suboptimal allocation of the household labour. If labour is significantly and permanently underutilized, it may mean that scope exist in peasant agriculture for improving farm productivity by reorganizing the existing labour use pattern.

It is well-known that, in Ethiopia peasants have in recent years been being reorganized into collective farms which are, among other things, expected to be instrumental in reorganizing the labour process in a more rational way.[1]

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Therefore, of the relevant issues concerning rural labour use, the following deserve more attention in the Ethiopian context: (1) How does the household allocate[2] its labour time? (2) Does rural labour force underutilization exist on a substantial scale, and if so, what is the degree of underutilization? and (3) To what extent do private and collective farms differ in their use of the available labour time? A related point is the issue of the appropriateness of existing approaches to these questions and the need for developing alternative ones.

The objective of this study is to make a comparative analysis of the patterns of allocation of rural labour in the private and the socialist subsectors. Particular emphasis is given to the determination of the existence of surplus labour and to the estimation of the magnitude of underutilization by focusing on the methodological problems of estimating surplus labour in traditional agriculture.

The organization of this paper is as follows. The first three sections present review of the literature. The fifth section discusses the approach used in this study. The sixth ssection deals with the data basis of the study. Results of the study are presented in the seventh section. The final section contains conclusions.

2. CONCEPTUALIZATION PROBLEMS AND THE THEORETICAL FRAMEWORK OF UNDERUTILIZATION

The conceptualization of rural labour use has been characterized by difficulties arising from the discrepancies between the demand for (which is seasonal) and supply of household labour (which is more or less constant throughout the year). Difficulties also arise from the fact that labour allocations are partially determined by cultural norms and by the practice of work and income-sharing and leisure-rationing within the household. Thus, it was noted by an ILO study that "there can be few subjects in the field of economic development, which has been the subject of as much theorizing and discussion as the concept and measurement of labour force underutilization in less developed countries [23].

According to Wellisz [57], three versions of disguised unemployment can be distinguished. First, a situation of cyclical transfer of persons from the more productive to less productive jobs during depression resulting from deficiencies in effective demand [48], which is known as "Keynesian" disguised unemployment. This version of labour underutilization has little relevance to traditional agriculture.

A second type of disguised unemployment exists where "a number of people are working on farms or small peasant plots, contributing virtually nothing to output, but living on a share of their family's net income. In technical terms, the marginal productivity of labour over a wide range is zero" [44, p. 35]. This version of disguised unemployment was first developed by Paul Rosenstein Rodan [50] and is known as the "structuralist version" of the notion of underutilization. It was with reference to this version that A.K. Sen noted that "much blood has been shed on crusades about disguised unemployment viewed from the production point of view" [53, p. 32].

The focal point of the controversy surrounding the structuralist version of disguised unemployment is the notion of withdrawal of redundant workers from agriculture to the modern sector where the wage-rate is higher than the subsistence wage. This controversy was originally developed in the 1950s [43, 32]. Obviously, such a notion of underemployment may be devoid of any practical value for policy-makers and planners in countries as such Ethiopia, where unskilled labour creates no bottleneck to industrial expansion. The burning question in the LDCs, therefore, is not the transfer of unskilled labour to the modern sector but the creation of employment opportunities in the rural areas [61, p. 205].

According to the third version, disguised unemployment is a situation where "the average product per person falls below the physical level of subsistence" [44]. This version is known as the "Malthusian Version".

Whichever version we employ, "disguised unemployment" must be considered in relation to such concepts as "unemployment", "underutilization" and "surplus labour". The hallmark of disguised unemployment

(underemployment) appears to be short working hours and unduly low earnings or low productivity [23].[3] The term "unemployment" stands for complete absence of productive work. Together the two concepts, disguised unemployment and unemployment, constitute the "waste of labour resources in less developed countries, which can be conveniently referred to by the portmanteau phrase "labour force underutilization" [23, p. 35].

Some economists try to stress the distinction between "surplus labour" (the whole) and "disguised unemployment" (the part, which is subjected to seasonality of agricultural activities) [17, pp. 15-16]. "Surplus labour" includes "all types of open and hidden unemployment and underemployment" [17, p. 61].

"Disguised unemployment", the aspect of underutilization that is the core of this study, has been explained in different ways. Some economists try to explain it in terms of the creation of unproductive work, so as to absorb the redundant workers. They thus imply an instance of irrationality in the peasant system of production. The other hypothesis is the notion of "work-sharing" or "work-stretching" which results from low work-efficiency (itself resulting from low calorie and protein intake) and which implies low average productivity of farm operators [17, pp. 25-27]. It has also been contended that "in a situation of disguised unemployment the preference will be for a more leisurely pace of work rather than for completely idle time ... In disguised unemployment people may all be occupied and no one considers himself idle" [17, p. 52].

A discussion of the concept of labour force underutilization would not be complete without a brief consideration of the term "leisure" in the context of traditional societies.

According to conventional economic theory leisure is simply equated to absence of work and nothing else.[4] However, in traditional societies leisure may not merely signify absence of work. It is possible that, during slack seasons or holidays (or after work), peasants engage themselves in socially productive activities, although they may be

economically unproductive.[5] That is, "the individual farmer's utility function will accord a high marginal utility to at least a substantial portion of leisure time" [11].[6]

Moreover, the magnitude of the leisure time may be large or small depending on the meaning we attach to "work". If "work" is simply limited to income-generating activities (e.g. agricultural work) in which women participate to a lesser degree than men, the magnitude of the leisure time for women (hence underutilization) may be large. On the other hand, if we consider "household maintenance" as "work", then the leisure time may be smaller.

3. METHODOLOGICAL PROBLEMS

Existing literature has concentrated on the measurement of surplus labour through two approaches, viz. the labour utilization and labour productivity methods (for survey of the literature, see Kao, Anschell and Eicher [27], Islam [26], Martina [33], Wellisz [57], Robinson [49]. According to the first method, surplus labour is constituted by the difference between the available household labour and the labour required for agricultural operations. The second method directly utilizes a neoclassical production function (like the Cobb-Douglas production function) to estimate surplus labour.

We consider first this latter approach. Statistical estimation of the marginal product of labour, generated by this method, though apparently satisfactory, suffers from important shortcomings including unreliability of statistics, indeterminacy of certain solutions, and the use of unrealistic assumptions [17, pp. 62-64]. Other shortcomings of the marginal productivity approach are: (1) that it is not clear whether the marginal product of labour can actually fall to zero (Viner [56] as quoted in Sen [53, p. 33], Schultz [52]); (2) that the notion of marginal productivity disregards the marginal disutility (the drudgery) of work (Myrdal [41], Chayanov [2]); (3) that it does not reflect the overall dimension of underutilization; what is sought is an "either" - "or" test (ILO [23, p. 86], Sen [53, p. 36]); (4) in practice a migrant worker is paid a positive wage-rate and not a zero wage rate (meaning that the opportunity cost of

labour is not zero); and (5) "it is not easy to find an actual case of a withdrawal of part of the labour with other things remaining the same" (Sen [53, p. 35]). Thus, it has been noted that this approach is in "some ways inherently conceptually and empirically unsound" (ILO [23, p. 34]).

The labour utilization approach has different variants depending on the definition of labour requirements (Yotopoulos and Nugent [61, p. 213]), of which the labour required to cultivate a hectare of land with a specific crop has been the most frequently used one (e.g. Pepelasis and Yotopoulos [45]; Yotopoulos [59] Chapter 6, Rosenstein-Rodan [51], Mathur [35], Cho [3]).

However, the labour utilization approach, though apparently more useful than the marginal productivity approach, "measures physical underemployment and nothing else" [17, p. 23]. Therefore, it can be argued that this method must be supplemented by other approaches in order to capture the essential dimensions of underutilization. One such apprroach is the time allocation study[7] which reveals details of patterns of the division of labour by sex and age and of cross-cultural trends and variations. It also allows the study of the flow of labour rather than the stock of workers at one point of time. Time allocation (time use) studies have the additional advantages of generating information on labour demand in different types of farming systems. They also generate information on seasonal patterns of over and under-employment of rural households [9, p. 35].

Time allocation studies are both difficult and costly and are normally limited to only those households who are willing to co-operate with the researcher. Ideally, farmers should be studied by the participant-observation method. But the problem with this method is not only that the sample size is often limited, but also the researcher may not be able to observe the normal behaviour of the respondent in rural areas such as that of Ethiopia where the peasant is often suspicious of people coming from the urban area.[8]

The participant-observation method can be replaced by the "record-keeping" approach in which the respondent himself (herself) keeps a

daily record of his (her) activities. However, such a method is unthinkable in rural Ethiopia where few peasants have experience in keeping records and in writing figures (except perhaps in literacy classes). Moreover it is extremely difficult to find a household willing to cooperate with the researcher and be able to continue recording daily activities without becoming bored after a few days of trial.

Another way of estimating a household's time allocation is the "recall" method. In this method the respondent is asked to remember everything he or she did from the moment of waking up to the moment of going to bed. All activities are recorded with an estimate of the time required to undertake each and every one of them. But the problem with this method, though the sample size can increase, is that the respondent may either forget certain activities or may give a wrong estimate of the duration of an activity [9]. Although this method seems to be the most common one, it has been suggested that "the use of recall periods longer than 24 hours does not yield reliable results" [21, p. 20].

4. EMPIRICAL EVIDENCE

Existing empirical evidence concerning the magnitude of surplus labour has been very shaky, as can be illustrated with reference to the Indian case which is relatively well-researched. Theodore Schultz's [52] attempt to reject the hypothesis of surplus labour, on the basis of an ex post facto analysis of the production effects of the influenza epidemic that hit India at the end of the First World War, has already been subjected to severe critisims (e.g. [37], [53]. His critics have pointed out that the data he used to test his hypothesis were weak.

Mehra [37], on the basis of the stock definition of labour (the labour utilization approach), estimated surplus labour in Indian agriculture to be about 17 percent of the total agricultural labour force. However, another researcher, Deepack Lal [29], on the basis of the supply price of labour, put the estimate at only 0.63 percent of the total agricultural labour force in India.

Therefore, we may not be far from the truth if we still subscribe to what Kao, Anschell and Eicher [27] noted in the concluding part of their famous review of the literature about a quarter of a century back: "The existence of disguised unemployment is largely a matter of definition and the assumption about the institutional forces involved."

In the Ethiopian case estimates of *labour force* underutilization are virtually non-existent.[10] The existing literature deal either with the proportion of the available *time* that is underutilized [14, 7, 58][11] or with labour use patterns in general [38, 30, 46, 19, 55, 10, 54].[12]

5. APPROACHES OF THE STUDY

The case study approach was adopted in view of the wide diversity of the rural economy in Ethiopia and in view of cost considerations. Accordingly, we selected a peasant association (PA) in Ada *woreda*, named Oudie, on the basis of the co-existence of a collective farm (Oudie Agricultural Producers' Co-operative) side by side with private peasant farms. The type of technology used by the two production systems is similar. Moreover, the study area is representative of much of the surrounding areas.[13]

From the preceding revieww of the literature, the researcher concluded that (1) no single method can generate realistic estimates of the surplus labour, and that (2) underutilization of labour can best be appreciated if considered in conjunction with an investigation of the overall household labour use patterns by using methods such as the labour allocation study. The literature review has also convinced the researcher that the conventional analytical methods need to be modified in the light of the concrete circumstances of the study area or the country.

Accordingly, the labour utilization approach has been further developed by the author in an attempt to generate more realistic estimates of surplus labour. The strengths of these estimates were then further investigated, using the results of time allocation study which

allowed the writer to view labour underutilization within the content of the overall household labour use patterns.

The basic model of the labour utilization approach can be represented as follows:

$$S_t = A_t - R_t \quad \ldots\ldots (1)$$

Where:

S: surplus labour force in man-days equivalent
A: available labour for crop farming[14]
R: labour requirement for agricultural activities
t: one agricultural year (1987)

Underutilization exists if $S > O$, and the degree of underutilization is given by S_t/A_t.

We define the available labour force at time t, A_t, as follows:[15]

$$A_t = P_t + H_t - (F_t + L_t + M_t + D_t) \quad \ldots\ldots (2)$$

Where:

P: the household labour potential
H: hired labour
F: off-farm occupation
L: inclement weather
M: days of sickness
D: student members of the household

The household labour potential is composed of the labour of four demographic groups, viz. (1) adult male (2) adult female, (3) children (7 to 15 years), and (4) old people (over 60 years).[16]

Aggregation problems are often encountered in determining a realistic estimate of the available labour, because the household labour potential is composed of labour of different qualities. This problem has often been addressed by using a conversion factor based on comparative

wage rate and assumptions about the productivities of different types of labour. Thus, a conversion factor of 0.5 is often used to convert the labour of women and children into man-days equivalent.[17] However, this method is not universally accepted because "experience throughout the world has shown that it is a fallacy to assume that a woman's effective output is always less than a man's" [1, p. 52].

Therefore, in this study, the writer has avoided the use of a conversion factor for women's labour, although he weighted that of children and old people by 0.5 in order to arrive at a homogeneous man-day equivalent.

However, differences may still exist between labour of different demographic groups with respect to the length of the working hour in the field and these differences could perhaps result in an overestimation of the surplus time.[18] To avoid this the writer has deflated labour of women and children by using the proportions of their day light time allocated to fieldwork as weights.[19]

Despite the incorporation of these modifications, it was possible still that the surplus labour could be overestimated. This was because attention was beeing focused on the labour required for agricultural activities, disregarding an important task -- animal care. However, it proved extremely difficult[20] to estimate the labour requirement for animal care. The writer, therefore, developed an indirect approach to this problem. This involved the substraction of the labour of all those individual whose main activity was herding (as per the results of the household survey), from the household labour potential.[21]

Finally, the author developed an additional method for estimating surplus labour for the socialist subsector of peasant agriculture (collective farm). The difference between the institutionally available labour and the actually utilized gross labour time, per agricultural year, was taken as a proxy for surplus labour for the collective farm.[22]

By way of a summary, it should be recalled that, so far, we employed four methods (three of which were different versions of the same basic model) to estimate the surplus labour. These were: (1) the labour

utilization approach (LUA) as conventionally being used, (2) the LUA with adjustment for the degree of participation in fieldwork, (3) the LUA with adjustment for animal care, and (4) the difference between the institutionally available labour time and the actually utilized labour time in the collective farm. Our underlying assumption was that we can generate increasingly realistic estimates as we make further modifications in the basic model.

So far we have focused on the estimation of the surplus labour with respect to agricultural activities (and animal care to a limited extent).[23] However, a number of questions remain unanswered. For example, how do households spend the rest of their time? To what extent is the writer's estimate of the work-days (per year) realistic? Do holidays signify underutilized time? How does underutilization affect different demographic groups within different production systems? These and similar questions were addressed by employing a time allocation study, an approach that can convey a detailed and complete view of the flows of household labour use patterns.

6. THE DATA BASIS AND METHODS OF ANALYSIS OF THE RESULTS OF THE TIME ALLOCATION STUDY[24]

6.1 Background of the Study Area

The Oudie Peasant Association, which has a population of 1,006 persons and a land area of 680 hectares, is located some 60 kms to the East of Addis Ababa. Of the total crop land of 490 hectares, 49 percent belonged to the Oudie Agricultural Producers' Co-operative which accounted for only 38 percent of the total number of households registered as PA members. Both the collective farm and the adjoining private farms employ mainly traditional technology. However, it should be noted that a very high proportion of the Oudie farmers use chemical fertilizer,[25] while some occasionally hire tractors. *Teff*, followed by wheat, are the major crops grown in the area.

Of the major constraints to production in the private sector, relative shortage of land (1.6 ha. per household vs 3.3 ha. per household in the

collective farm) and, to a lesser extent shortage of oxen, can be mentioned.[26]

The livestock population of the area, is considerable, despite the extreme shortage of grazing land. An interesting feature of the pattern of ownership of livestock in the area is that individual members of the collective farm keep a relatively large population of cattle, other than oxen, as private property.[27]

The members of the collective farm, though very young as compared to those of the private sector (average age of the household head was 37 years vs. 51 for the private sector), appear to have enjoyed higher standards of living, in terms of ownership of consumer durables and livestock and in terms of schooling of their children.[28]

Labour use and the resulting income distribution systems in the collective farm are subject to the official 1979 guidelines and to those subsequently as set by the Ministry of Agriculture. Accordingly the production process is organized on the basis of a fixed 8 hours working day. At the end of the agricultural year, output is distributed among the members on the basis of the total work points (gross time as expressed in hours) they have accumulated throughout the year.

6.2 Data Collection Techniques

The basic data used in this study are of two types. First, the data required for the estimation of the available labour force was generated through a household survey covering the whole population of Oudie Peasant Association. The total number of households was 195, including 74 households from the collective farm. Second, the data required for an indepth study of the various dimensions of labour use was generated through a time allocation study. Regarding the latter, the results of the household survey were employed in order to identify sample households, for an intensive study lasting for seven consecutive days in the middle of August, during which the local people were busy planting and weeding crops.[29] Households from both the private farms and the collective farm were proportionately represented in the time allocation study. The sample households (5%, n = 195) were selected from different economic

and demographic background (such as size of holding, ownership of assets, household size, etc.). However, since some households were not always prepared to be continuously observed by others, the sampling procedure was considerably influenced by the extent of their willingness to co-operate with the researcher.

The study covered all the members of the sample households, aged 7 years and over. All activities undertaken by the subjects, right from the time of waking up to the time of going to bed, were recorded to the last detail by carefully selected and trained students working under the close supervision of the principal investigator.[30]

The background information (see section 6.1) was assessed through a series of interviews with officials of the *woreda* office of the Ministry of Agriculture (MOA), the local extension agent, elders, and with peasant leaders. Data on the labour-land coefficient (labour requirement) was obtained by taking the average of coefficients generated for the Mojo and Debre Zeit areas [22, 24].[31] Area under different crops was obtained from the household survey and from the documents of the Oudie Agricultural Producers' Co-operative.

6.3 Method of Analysis of the Time Allocation Study

In this study, it was possible to record, contemporaneously, the time spent on 73 more or less distinct activities, which were undertaken by 50 members of the 12 sample households (5% of the population of the PA).

While attempting to analyze the data, the researcher encountered problems of aggregating the numerous activities (some of which were overlapping) into manageable and conceptually useful categories. The conventional method of aggregation, such as the one used by the Central Statistical Office (CSO), has been of little use since it was based on concepts which were more appropriate to industrial employment rather than to rural conditions. Therefore, precautions were taken to avoid the use of simplistic and inappropriate concepts which may lead to the underestimation of the contributions of women and children, and to the overestimation of the leisure time. Accordingly, a review of the

literature concerning time allocation studies [9, 21] and an assessment of the concrete conditions in the study area have suggested that the following method of classification can best serve our stated objectives.

First, the recorded activities were aggregated into 20, more ~~or less,~~ distinct categories ranging from prayers to agricultural activities. Second, the 20 activities were classified into two broad categories: (1) work time and (2) non-work time. (The sum of these categories, when deducted from 24 hours gives the duration of night sleeping per day). Third, "work-time" was reclassified into two sub-categories (1) "directly productive activities" [42, pp. 254-255] or "market activities" [60, pp. 87-105], and (2) "household maintenance" [42, pp. 254-255] or "Z-good production."[32]

Then, the data were cross-tabulated by institutional affiliation (private vs. socialist sector) and by demographic groups, so to focus on the variations in the patterns of labour deployment between the two production systems and within the sample households.

Of the seven consecutive days covered by the time allocation study,two were holidays (St. Michael's day and a Sunday) the data of which we separately tabulated and compared with those of the normal days (the remaining five days) in an attempt to capture variations in labour allocation patterns between holidays and normal days.

7. RESULTS

7.1 Statistical Results

The statistical results (Table 1) suggest the existence of surplus labour (with respect to labour requirements for crop farming) of varying degrees depending on the assumptions underlying the specific method employed to generate the estimates for the study area.

Using the basic model, the degree of labour underutilization is estimated at 78 percent per year for private farms and 66 percent for the co-operative farm. The basic model with an adjustment for the degree of participation by different demographic groups in field work (method B in Table 1) estimates labour underutilization at 71 and 55 percent per year for the private farms and the co-operative farm, respectively. The estimates were further reduced to 65 and 54.5 percent, respectively, for the private farms and the co-operative farm when an adjustment was made in the basic model by excluding shepherds from the available labour force (see method C in Table 1). Using a basically different method (see method C Table 1), the degree of labour underutilization in the co-operative farm is estimated at only 17.6 percent of the available labour force.[33] Similarly, the number of redundant workers per year (in man-equivalent) was also found to vary as between the sectors, ranging from 260 (to 139) and from 123 (to 77) for the private and co-operative farm sectors, respectively, depending on the method of estimation (see Table 1). Moreover, the number of redundant workers *per household* per year was also found to vary as between the sectors, ranging from 2.1 man-equivalent to 1.2 in the private sector and from 1.7 to 1 in the co-operative farm depending on the method of estimation used.

The results indicate that the degree of labour underutilization is apparently lower on the collective farm than on the private farms. However, the causes of the differences should not be attributed to differences in the method of organization of the labour processes.[34] The differences can rather be attributed to differences in of access to productive resources (e.g. high land-man ratio in the collectives farm) and to differences in the demographic structure of the two production systems.[35]

Table 1

Estimates of Surplus Labour for the Peasant Association

Method	Surplus Labour in man - days		Number of Redundant Workers per Year in Man-equivalent		Degree of under-utilization (%)	
	Private	Collective	Private	Collective	Private	Collective
A	54,157.2	31,836.0	260.0	123.0	78.0	66.0
B	36,123	20,174.4	174.0	78.0	71.0	55.0
C	29,051.6	19,839	139.0	77.0	65.0	54.5
D	n.a	3,498	n.a	13.0	n.a	17.6

n.a = not applicable.

Notes:

1. The estimates were generated by employing the following methods:

   A: The basic model without making adjustments for differences in the degree of participation in agricultural work by different demographic groups and without considering animal care.

   B: The basic model with adjustment made for differences in the degree of participation in agricultural work by using length of working hours as weights.

   C: The basic model with adjustment for animal care by excluding shepherds.

   D: Difference between the institutionally available labour time used in the collective farm in one agricultural year (1987).

2. The number of redundant workers was estimated by dividing the surplus labour (in man-days) by the net work-days per year (208 for the private sector and 258 days for the collective farm).

Our estimates, which were generated on the basis of labour requirements for crop production (and animal care to a limited extent), may still suffer from problems of over-estimation, arising from the fact that other activities were disregarded in determining labour requirements.[36] Therefore, in the following section, we will go beyond the confines of the conventional approaches and try to explore possibilities for investigating underutilization within the wider meaning of "work" by making use of data generated by the time allocation study.

7.2 Results of the Time Allocation Study

The relative importance of the various activities undertaken by the sample household members (N=50, 5%) during the study period is indicated in Table 2. Agricultural work, the only task conventionally considered for estimating surplus labour, accounted for 57.8 percent of directly productive labour time,[37] most of the rest being accounted for by animal care (37.4%).

Household maintenance, a domestic labour activity which "reproduce, daily generationally or biologically, the household unit [31, p. 15], is dominated by food preparation, an activity that is solely undertaken by women assisted by children (see Table 2 and 3). Household maintenance consistes of numerous and often overlapping daily routine activities of short duration but of high frequency per unit of time.[38]

Of the non-work time, which was dominated by visiting, some activities may be either socially useful (e.g. mourning and funerals) or physiologically necessary (e.g. eating meals) rather than involving a pure leisure time (Table 2).

Regarding time spent on each activity category by different demographic groups, the survey revealed that the average time spent on the directly productive activities by adult males amounted to 6.86 hours (private) and 6.5 hours (collective) thus implying short working time (on the basis of an 8 hour-working-day). The survey results for adult males indicate the presence of disguised unemployment on both the private and collective farms[39] (Table 3).

The survey revealed that the non-work time (which does not necessarily signify pure leisure), as percent of the available time was relatively high for adult males (private = 40%, collective = 43%), lower for females (private = 35%, collective = 28%), and extremely low for children in the private sector (18%).[40] By contrast the share of non-work time for the children among collective farmers was very high (47%) Table 3). Thus, the foregoing suggests that (1) women and children (private) seem to have less leisure time than men and that (2) the pressure on child labour in the collective farm is reduced.

The study has also revealed that holidays in general, do not necessarily signify undderutilized time. According to local elders and peasant leaders, the tasks forbidden during holidays are limited either to certain directly productive activities, such as ploughing, molding and weeding or certain types of post-harvest processing activities, such as grinding and pounding grain. Other directly productive activities, such as animal care and the gathering of already harvested crops are not forbidden. The time allocation study has revealed that certain activities, such as animal care, visits, mourning, conversation, and rest are more common during holidays as compared to the working days. On holidays the time allocated to animal care by adult males on the collective farm increased by 200 percent, on private farms it rose by 65 percent.[41] Members of the collective farm (both male and female), in particular paid more attention to social engagements during holidays. For example, the time devoted to mourning and funeral by adults (collective farm) during holidays was observed to be about twenty-folds of the time devoted to these activities during working days.

The time allocation study, therefore, suggests that the estimates of surplus labour as presented above could further be reduced if labour requirements for household maintenance and social engagements are incorporated into the labour utilization model.[42] In that case, holidays should not be deducted from the potential working days of the year since most of the non-crop-farming activities are evidently undertaken during this time. Such a procedure can thus bring into light the role of women and children in rural development.

Table 2

Ranking of Activities Within Each Broad category According to Percent of the Time Allotted to Different Tasks by the Sample Household Members

WORK TIME						NON-WORK TIME		
Directly Productive Activities			Household Maintenance					
Rank	Activities	%	Rank	Activities	%	Rank	Activities	%
1	Agricultural work	57.8	1	Household food preparation	33.3	1	Visiting	23.2
2	Animal care	37.4	2	Other household maintenance	22.3	2	Eating meals	15.8
3	Handicraft	3.2	3	Child care	20.6	3	Conversation	15.7
4	Off-farm occupation	1.6	4	Gathering fuel	8.7	4	Rest	12.4
			5	Going to mill	8.0	5	Mourning and Funerals	11.4
			6	Fetching water	7.1	6	Personal hygiene	8.4
						7	Drinking coffee	4.7
						8	Miscellaneous	4.5
						9	Sickness	3.6
						10	Prayers & going to church	9.7
	Total	100		Total	100		Total	100

Table 3

Average Time Spent by Members of the Sample Household on Work and Non-work Activities and Non-work Time As Percent of the Available Time

Demographic Groups	WORK TIME (hrs./day)							
	Directly Productive Activities		Household Maintenance		Non-work Time (hrs./day)		Non-work Time as of the Available Time*	
	1		2		3		3 - (1+2+3) x 100	
	Private	Collective	Private	Collective	Private	Collective	Private	Collective
Adult Male	6.86	6.5	1.0	0.8	5.2	5.5	40.0	43.0
Adult Female	2.50	4.5	6.0	4.8	4.6	3.6	35.0	28.0
Children	8.30	2.6	2.0	3.5	2.3	5.6	18.0	47.0

*"The available time" is equal to 24 hours less night sleeping.

8. CONCLUSIONS

This study has suggested the existence of surplus labour of varying magnitude depending on the underlying of definitions and assumptions about the factors involved in its estimation in line with observations made long ago by Kao, Anscell, and Eicher [27]. The size of the surplus labour (with respect to crop farming), as percent of the total labour force in the study area, ranged from 65.9 to 78 per year in the private sector, and from 54.5 to 66 percent for the collective farm depending on the extent of adjustments made in the labour availability approach. The estimate for the collective farm dropped to 17 percent on the basis of a somewhat different method. Moreover, the number of redundant workers per household per year was also found to vary as between the sectors, ranging from 2.1 man-equivalent to 1.2 in the private sector and from 1.7 to 1 in the collective farm depending on the method of estimation used.

The differences in the degree of underutilization between the private and the socialist sector could, perhaps, be explained to a large extent, by differences in the degree of access to resources and by variations in the demographic structure of the two systems of production.

The labour availability approach, as has been suggested by the study, could further be developed by supplementing it by the time allocation study and by constructing the conversion factor on the basis of differences between different demographic groups in the degree of participation in field work (in addition to differences in labour productivity).

The time allocation study has suggested that the estimates could further be reduced by adopting a broader definition of "work" and, thus, by circumscribing the magnitude and instances of the pure leisure time as contrasted to the socially, physiologically, and biologically useful time.

Although it was beyond the scope of this study to investigate instances of a leisurely pace of work, no strong evidence was produced to support the existence of chronic idleness throughout the year. Even holidays were found to be a special time during which the sample

households reallocate their available time in such as a way that the required balance was maintained between different activities (including directly income-generating ones and the leisure time itself). Therefore, we may subscribe to Elliot's contention that: "Any discussion of labour abundant economies must be heavily qualified by the awareness that the labour abundance is in some ways more apparent than real" [11].

The distribution of the leisure time across household members and across activities was largely associated with sex, age and the household status (private vs. collective farm members). The study suggests like other studies, that women have less leisure time than men [46, 54, 55].

Moreover, it appears that child labour in the private sector was overutilized, at least during the study period, as was indicated by the relatively long working hours spent on herding of animals. In the collective farm, where the school enrollment ratio was considerably high, the contribution of children to the household income was found to be limited. Perhaps, further research is required to investigate the existence of possible trade-off between schooling and the demand for children as herders.

Further, there existed considerable substitutability between women's and children's time in household maintenance thus reinforcing the need to investigate the tenability of the hypothesis that "the women in the agricultural households must have a pronatalist incentive" [60, p. 95].[43]

Finally, it should be noted that the existence of the surplus labour, however limited it is, entails the need for explaining factors behind it and for articulating the necessary measures to be taken in order to mobilize[44] it for non-farm activities as well as for farm activities.

NOTES

1. Marxism holds that labour force underutilization can be avoided when small farms are replaced by large ones as a result of the collectivization movement: "... if we apply this idea (co-operative) to a region of small holdings, we shall find that if these are pooled and the aggregate area cultivated on a large-scale, part of the labour power employed hitherto is rendered superfluous. It is precisely this saving of labour that represents one of the main advantages of large-scale farming" [34]. Accordingly, the 1979 guidelines for establishing producers co-operatives in Ethiopia pointed out that wastage of labour could be avoided by replacing small farms by large ones [47]. Moreover, according to Ajit Kumar Ghose: "In Ethiopian conditions co-operative farming can be regarded as superior to peasant farming, not because the former is larger than the latter, but because the former provides a more effective framework for mobilizing labour for capital construction in agriculture than the latter" [16].

2. We can distinguish between four types of allocation of the household labour in rural areas: allocations between (1) work and leisure, (2) one enterprise and the other (3) on-farm and off-farm activities and between (4) the present (consumption) and the future (investment, e.g. making farm tools). Moreover, the questions of allocation of the household labour involves problems of division of labour by sex and age.

3. The "low earning" or "productivity" criterion has now been losing favour among economists, as being of little practical value [23, pp. 54-62]. One problem with this criterion is the difficulties encountered in establishing production norms in traditional agriculture.

4. The concept of "leisure" in the literature has been very vague. In the conventional economic text-book it is simply mentioned in passing in connection with the discussion of the trade-off with "work", a concept which is restricted to income-generating activities alone. According to Webester Dictionary, "leisure" is almost equated to the idle time: "freedom from occupation or business; idle time; time free from employment during which a person may indulge in rest, recreation, etc.".

5. C.M. Elliott, for example; noted that: "Detailed studies of how farmers actually spend their time particularly in seasons, in which demand for agricultural labour is lower, reveal that although they may be then economically unproductive they are socially at their most productive, maintaining social bonds, giving and receiving status gifts, transacting legal proceedings, and generally serving the intricate fabric of their society" [11].

6. In addition, the limit to which the leisure time can be reduced is dictated by a certain minimum level of subsistence wage as noted by Clark and Haswell:". The strange fact... is that, throughout all places and times for which we have information the rural labourer, however poor, will not do a day's work for less than 3 kg. of grain equivalent gives us an approximate but interesting measure of the value which the very poor put on leisure [4, p. 139].

7. Time allocation, which is said to be the most accurate measure "involves a day to day accounting of each task that a member of the household participates in" [31, p. 116]. Discussion of the nature and uses of time allocation studies are given in [9 Ch. 2], [21], [6].

8. The problem of obtrusiveness can best be illustrated by an incident told by Benjam White, an authority on time allocation study: in a study of the economic activities of children in Javanese rural households he soon learned that any attempt to follow children and record their activities resulted in the researcher's being followed and observed by large numbers of curious children [21, p. 19].

9. "Labour force underutilization" is different from "time" underutilization. The latter does not give indications as to the magnitude of the redundant workers.

10. However, it appears that the existence and magnitude of the surplus labour in rural Ethiopia is often taken for granted. For example, the authors of *Socialism from the Grass Roots,* after admitting that "there is little statistical evidence on the degree of underemployment in rural areas", did not hesitate to assert that "the rate of underemployment... could be any-where between 25 and 40 percent" without producing any statistical evidences [25, p. 93].

11. Some twelve years back Fassil Gebre Kiros [14] made a serious attempt to, *interalia,* instigate further research into this area by estimating the proportion of the potential work-year allocated to socio-cultural observances in rural Ethiopia on the basis of data generated by a survey conducted in thirteen *woredas* (sub-districts) in 1975/76. Among other things, he concluded that "in the survey area, on average, about 23 percent of the work-year is devoted to religious holidays and to observances of social functions. In addition, there appears to exist underutilization of labour-time to the extent of approximately 14% of the work-year" [14, p. 24]. However, a more detailed study is required to investigate how peasants actually allocate their time during holidays. The Central Statistical Office (CSO), in a major rural labour survey, has estimated that the mean number of days worked per week averaged 3.9 days, ranging from 3.2 in Gojam to 5.5 days in the Hararghe region. However, the CSO survey has been inherently defective in the sense that it was based on the conceptual and measurement framework directly borrowed from the industrial sector thus resulting in an under-estimation of the contributions of women and children and in over-estimation of the leisure time. The CSO itself, in recognition of this fact, has

recommended the time use studies for future surveys [77]. In a recent study it was estimated that only 25 to 66 percent (average 42.5) of the available labour time was actually allocated to agricultural activities in a village in the Hararghe region [58, p. 94]. However, woman and child labour was excluded in the study.

12. These studies, most of which were limited to the comprehensive package project areas of Arsi region, have neither dealt with disguised unemployment nor with the recent institutional development (such as the collective farms, with the exception of Solomon Ayalew [54]) although they were able to bring into light important aspects of rural labour use such as the gender division of labour and seasonal distribution of the labour time.

13. The required information was provided by the Ada *woreda* Office of Ministry of Agriculture.

14. Following the conventional method "surplus labour" is here conceived only in relative terms; it exists only with respect to crop farming as contrasted to animal care, houseworks and social engagements.

15. In practice we considered only student members of the households. Hired labour (the use of which was forbidden by the land reform proclamation of 1975) existed in the study area, in the form of child labour, required for herding animals. However, since these children lived under the same roof as the employer and shared food with the latter, we considered them as members of the household (see U.N.'s definition of "the household" in [36, p. 70]). We dropped estimates of "off-farm occupation", after finding that it was insignificant. Regarding "inclement weather" we found to difficult to generate the required data. It has also been found it be difficult to generate data on days of restricted activities due to sickness in the study area although it is true that in rural Ethiopia the potential household labour supply is depressed by health problems. For example, the 1982/83 Rural Health Survey of the CSO had it that about a quarter of all sample persons reported 7 to 14 days of restricted activities due to illness during the reference period. On the other hand, the potential household labour supply may be augmented by students working during their spare times. Therefore, it can be contended that the error margin may not be significant if we assume that these two opposing forces (that is restriction of activities due to illness and student participation during spare times) tend to cancel each other off.

16. The writer's household survey and time use study both indicate that children over 7 participate in different activities. In addition, such an assumption is common in the literature [e.g. see Yotopoulos and Mergos 60].

17. For a synoptic review of the issue see Maxwell L. Brown [1, pp. 52-54].

18. Women and children, on average, work for shorter hours in the field (CSO 1985). That is, the degree of participation in field work varies between different demographic groups. The results of the time allocation has confirmed this point with reference to even a peak season.

19. The length of the working hours was generated by a time allocation study undertaken during a peak season.

20. Using the results of the time allocation study, the researcher considered several approaches to the problem of estimating the time needed to look after an animal. However, none of them was found helpful.

21. It is possible that the "net" available labour can be partially used for the purpose of animal care during a portion of work-day, as was indicated in the time allocation study. Another point to note is that in the collective farm almost all oxen are taken care of collectively.

22. The "institutionally available labour time", in man-days, is arrived at by multiplying the total number of the individual working-members (household heads) of the collective farm by the net-working days (258 days). The latter was estimated by deducting the total number of holidays from 365. It is thus, obvious that we may arrive at a realistic estimate since the available labour force consists of only those who are institutionally available (i.e. women and children are excluded to a large extent) for agricultural work. By the "actually utilized labour time" we mean the total work points (hours) accumulated by members (and divided by 8 hrs. to convert to man-days) per agricultural year as indicated in the records of the collective farm. Here it should be noted that the work points were recorded not for purely agricultural activities. That is, such tasks as administrative work and feeding of oxen were included.

23. This is in fact all that is required if we are to stick to the conventional method.

24. The method of analysis we consider here is restricted to the time allocation study.

25. More than 90 percent of the farmers in the area, as is the case in Ada *woreda,* use chemical fertilizers (national average = 14%).

26. In fact, ownership of oxen by the private sector in the area compares favourably with the national average. Percent of farmers without oxen corresponding to the latter is 29 percent against 19 percent in the former case (the average for Shoa region = 27 percent) [40].

27. The number of cattle other than oxen (mostly cows) per household for the collective farm and the private farms, respectively, is 1.9 and 1.5. It appears that members of the collective farms are in favour of keeping cows for two major purposes (in addition to the normal uses): (1) as, perhaps, the only investment outlet, i.e. an asset under the given circumstance, and (2) as a means for absorbing the excess labour time that could possibly be created resulting from the reorganization of the labour process in the collective farm.

28. According to the household survey, of the total number of the members of the collective farm, 32 percent own radio sets (private = 23%), 54 percent live in corrugated iron-sheet houses (private = 45%) and 32 percent wear wrist watches (private = 10%). The student enrollment ratio for the collective farm and the private sector, respectively, was 38 and 33 percent. Here it should be noted that the collective farm secures state assistance in different ways, including free access to the best type of land, large holding per household, favourable product and factor prices, and tax concessions.

29. During a peak season, underutilization is expected to be at its minimum. Permanent transfer of redundant workers is possible only if the surplus exists throughout the year.

30. The method adopted by the researcher can be designated as midway between the participant-observation and the time recall methods. This method has allowed us to increase the sample size considerably, avoid obtrusiveness by the researcher, and to secure indirect access to the inner lives of selected rural households. Moreover, it was possible to record a sequence of activities without creating too many recall problems. The use of students as enumerators, in general, has the additional advantage of working with motivation as noted by Connel and Lipton [6]: "It may be better to attract the top decile (in terms of ability and motivation) of failed matriculates' than the bottom decile of M.A.s". The use of observation-by-proxy was also suggested by Ruth Doxon Muller [9]: "... certain household members may be asked to report on others". Therefore, although students may not bee as accurate as the researcher himself, we believe that "when the purpose of research is to achieve a roughly useable picture of proportional rather than absolute labour allocation between different activities" [9], the use of carefully selected and trained students would not lead to drastic errors in our conclusion. Here it should be noted that the use of students was facilitated by the coincidence of the long vacation period with the peak season.

31. The coefficients for barley and sorghum refer to that estimated for the Shoa region as whole as per personal communication with Ato Mulugeta Mekuria of the Institute of Agricultural Research (see also [39]).

32. "Z-good production activities are defined as home production activities in peak season, home production activities in slack season, and gardening. ... home production activities include time spend on marketing, fetching water, cooking, cleaning houses, washing clothes, ironing clothes, caring for young children, running errands" [60, p. 91]. Here it should be noted that in our classification, marketing, instead being separately treated, is placed under "other household maintenance".

33. Interestingly enough, we arrived at almost the same figure by using a somewhat different method: when the required labour (as discussed above) was deducted from the institutionally available labour, the degree of underutilization came to 16.7% of the available labour force.

34. Although it is true that the production process in the collective farm has been subjected to a fixed time table and to annual plans, labour use patterns have still remained basically the same as in the private sector in terms of absence of a functional division of labour, the continuation of the traditional division of labour by sex and age, and in terms of observances of existing cultural norms (e.g. the same number of local patron - saints days are observed in both sectors). However, it should be noted that the collective farm is, at present, planning to make a transition to a higher level of organization of the production process.

35. The average age of the household heads of the members of the collective farm was 37 years (private = 51 years). As a result, labour availability was limited by the smaller number of children above 7 years and by relatively large number of single adults. On the other hand, the labour requirement of the collective farm was relatively high due to its higher land/man ratio.

36. Other activities include housework, social engagements, eating meals, etc.

37. The time spent on directly productive activities for different demographic groups during the study period, as a percent of total time (24 hrs.) was as follows: Adult male (private): 28%, adult male (collective): 27%, adult female (private): 10%, adult female (collective): 12%, children (private): 34% and children (collective): 26%. (Note that the percent for urban dwellers is 33% on the basis of 8 hrs. working day).

38. Such income-generating activities as gardening and marketing are included under "other household maintenance" in order to avoid complications in the classification system.

39. However, it should be noted that, short working hours be dictated by such factors as the need to meet social obligations, malnutrition, lack of incentives, etc.

40. The labour of children (private) is, perhaps, *overutilized* due to long hours spent on animal care. Moreover, the extent of overutilization of child labour was determined by estimating the labour share of children, which was found to be greater than their population share within the sample household members (for the methodology, see [60]). However, it should be noted that animal care is relatively light work.

41. It appears that, during holidays, adults take charge of animal husbandry in order to pay more attention to the problems of careful feeding of animals; activities, such as taking animals to distant grazing land may be beyond the capacity of children. The higher ratio (200%) for the collective farm members can be explained by the possibility that holidays provide farmers the spare time during which they pay more attention to their private farms.

42. However, it is extremely difficult to determine the standard time (the norm) for housework and social engagements.

43. The relationship between the proposition that children may be the most effective way available to rural women for reducing the backbreaking arduousness of household maintenance and the fertility question may be expressed by Elisa Boulding's aphorism: "the wheel-barrow is the best contraceptive' (quoted in [60, p. 95]). However, it is doubtful whether rural women can decide on fertility questions.

44. However, the question of providing the farmer with economic incentives should be stressed as once noted by an authority on peasant economics: "The programmer who seeks to induce the subsistence cultivator to work much longer hours than he does now must offer him a high marginal return per hour in exchange" [4, p. 139].

CITED REFERENCES

[1] Brown, Maxwell L. *Farm Budgets: From Farm Income Analysis to Agricultural Project Analysis.* (Baltimore: The John Hopkins University Press, 1979).

[2] Chayanov, Alexander V. *The Theory of Peasant Economy* eds., Daniel Thorner, et al. (Homewood III, Published for the American Economic Association by R.O. Irwin, 1966).

[3] Cho, Y.S. *Disguised Unemployment in Underdeveloped Areas, With Special Reference to South Korean Agriculture*, (Berkeley and Los Angeles: University of California Press, 1963).

[4] Clark, Colin and Haswell, Margaret. *The Economics of Subsistence Agriculture,* 4th ed. (MacMillan St. Martin's Press, 1970).

[5] Cleave, J.A. *African Farmers: Labour Use in the Development of Small-holder agriculture,* (New York: Prager Publishers, 1974).

[6] Connell, John and Lipton, Michael. *Assessing Village Labour Situations in Developing Countries,* (Delhi: Oxford University Press, 1977).

[7] Central Statistical Office, *Rural Labour Force Survey April 1981 - April 1982,* (Addis Ababa: Statistical Bulletin No. 511, 1985).

[8] Dejene Aredo, "Some Aspects of Agrarian Population and Land Use in Ethiopia", *Proceedings of the Third Annual Seminar of the Department of History,* (Addis Ababa University, 1986).

[9] Dixon-Mueller Ruth, *Women's Work in Third World Agriculture,* (ILO, Women, Work and Development No. 9, 1978).

[10] Donham, D.L. *Production in Malle Community Southern Ethiopia, 1974 - 75,* (Ph.D. Dissertation, Stanford University, 1978).

[11] Elliot, C.M. "Agriculture and Economic Development in Africa: Theory and Experience 1880 - 1914", in *Agrarian Change and Economic Development: The Historical Problems,* Jones and Woolf, ed. (Methuen & Co. Ltd., 1969).

[12] FAO, *Preparation of Baseline Studies of Women in Rural Households,* (Economics and Social Programmes Service (Rome, 1981)).

[13] FAO, *Population and the Labour Force in Rural Economics,* (FAO Economic and Social Development Paper No. 59, Rome, 1986)).

[14] Fassil Gebre-Kiros, "An Estimation of the Proportion of the Potential Work-Year Allocated to Socio-Cultural Observances in Rural Ethiopia:, *Ethiopian Journal of Development Research Studies,* Vol. 2, No. 2, (1976), pp. 15-28.

[15] Fassil Gebre-Kiros, "Agricultural Land Fragmentation - A Problem of Land Distribution Observed in Some Ethiopian Peasant Associations" *Ethiopian Journal of Development Research,* Vol. 4, No. 2, (October 1980).

[16] Ghose, A.K. "Transforming Feudal Agriculture: Agrarian Change in Ethiopia Since 1974". *The Journal of Development Studies,* Vol. 22, No. 1, (October, 1985).

[17] Ghosh, B.N. *Disguised Unemployment in Underdeveloped Countries (With Special Reference to India),* (New Delhi: Heritage Publishers, 1977).

[18] Gronau, Reuben "The Intra-family Allocation of Time: The Value of the Housewives' time", in *American Economic Review,* Vol. 63, No. 14, (1977), pp. 634-651.

[19] Hanna Kebede, *Attitudinal Case Study of Farm Families in Robe, Gobessa and Lemu,* (Assela: ARDU Publication No. 2, 1976).

[20] Howard, Louise E. *Labour in Agriculture: An International Survey,* (London: Oxford University Press, 1935).

[21] IDS (Sussex), *Research on Rural Women: Feminist Methodological Questions,* Bulletin Vol. 15, No. 1, (January, 1984).

[22] International Livestock Center for Africa, *Research on Farm and Livestock Productivity in the Central Ethiopian Highlands: Initial Results* (Mimeo.).

[23] ILO, *Concepts of Labour Force Underutilization,* (Geneva: Employment Research Papers, 1971).

[24] Institute of Agricultural Research, *Initial Farm Management Survey 1972-73,* (Mimeo.).

[25] ILO, *Socialism from the Grass Roots Accumulation, Employment and Equity in Ethiopia,* Vol. I, (September, 1982).

[26] Islam, N. "Concepts and Measurement of Unemployment and Underemployment in Developing Economics". *International Labour Review,* 89 (March, 1964), 240-256.

[27] Kao, Anscell, and Eicher. "Disguised Unemployment in Agriculture: A Survey," in eicher and Witt eds., *Agriculture in Economic Development,* (New York: McGraw Hill, 1964).

[28] Koutsoyiannis, A. *Modern Micro-economics* (ELBS), English Language Book Society/MacMillan, 1979).

[29] Lal, Deepack, "Supply Price and Surplus Labour: Some Indian Evidences" *World Development,* Vol. 4, No. 10/11 (1976), pp. 889-905.

[30] Leander, Lars, *A Case Study of Peasant Farming in Degelu and Yeloma Areas Chilalo Awraja, Ethiopia (CADU)* Publication No. 22, 1969).

[31] Leon, Magdalena, "Measuring Women's Work: Methodological and Conceptual Issues in Latin American", *Research on Rural Women - Feminist Methodological Questions* - IDS, Sussex, Bulletin, Vol. 15, No. 1, (January, 1984).

[32] Lewis, W. Arthur, "Economic Development With Unlimited Supplies of Labour", *Manchester School of Economics and Social Studies,* (1954), pp. 139-192.

[33] Martina A. "A Discussion of the Concept of Disguised Unemployment in Traditional Agriculture With Specific Emphasis to Africa South of the Sahara". *The South African Journal of Economics,* 34 (December, 1966), pp. 305-321.

[34] Marx, Karl and F. Engels. *Selected Works,* Vol. 3, (Moscow), p. 470.

[35] Mathur, A. "The Anatomy of Disguised Unemployment: *O.E.P.,* 16, (July, 1964).

[36] Mburugu, Edward K, "The African Household in Socio-Economic Change: A Conceptual Problem in *Research Methods in the Social Sciences,* ed. Fadlalla and Kiros (OSSREA, 1986).

[37] Mehra, S. "Surplus Labour in Indian Agriculture", *Indian Economic Review,* (April, 1966).

[38] Messing, S.D. *The Highland-Plateau Amhara of Ethiopia,* (A Dissertation in Anthropology, University of Pennsylvania, 1957).

[39] Ministry of Agriculture, *Farm Models and Budgeting for the Main Farming Systems in the Central Zone* (Mimeo).

[40] Ministry of Agriculture. *General Agricultural Sample Survey: Preliminary Report,* 1983/84, Vol. II, (1984).

[41] Myrdal, G. *Asian Drama,* (New York: Pantheon, 1968).

[42] Nag, Moni, White, Benjamin N.F., Peet, R. Creighton "An Anthropological Approach to the Study of the Economic Value of Children in Java and Nepal," in Hans P. Binswanger et al. (eds.); *Rural Household Studies in Asia.* (Singapore, Singapore University Press, 1980).

[43] Nurkse Ragnar *Problems of Capital Formation in Underdeveloped Countries,* (Oxford University Press, 1980).

[44] Nurkse, Ragnar, "Excess Population and Capital Construction", *Malayan Economic Review,* as Reprinted in G.M. Meier's *Leading Issues in Development Economics,* (Oxford: 1957).

[45] Pepelases, A.A. and P.A. Yotopoulos. *Surplus Labour in Greek Agriculture* 19533 - 1960,*(Athens: Center of Planning and Economic Research (1962), 83, 203, 212.*

[46] Poluha, Eva, *A Social Anthropological Study of 5 Peasant Families in Munessa Village, Arussie, Minor Research Task* (CADU Publication, 1975).

[47] Provisional Ministry Administrative Council of Socialist Ethiopia, *Guidelines for Establishing Agricultural Procedures' Co-operatives,* (1979), (Amharic).

[48] Robinson, Joan, "Disguised Unemployment", *Economic Journal,* Vol. 46, (June, 1936).

[49] Robinson, W.C. "Types of Disguised Unemployment and Some Policy Implications" *O.E.P.,* 21 (November, 1969), 373-386.

[50] Rodan, P.N. Rosenstein "Problems of Industrialization in Eastern and South-Eastern Europe", *Economic Journal,* Vol. 53 (1943).

[51] Rodan, P.N. Rosenstein, "Disguised Unemployment and Underemployment in Agriculture:, *Monthly Bulletin of Agricultural Economics and Statistics,* FAO, 6 (August, 1957), pp. 1-10.

[52] Schultz, T.W. *Transforming Traditional Agriculture,* (New Haven: Yale University Press, 1964).

[53] Sen, A.K. *Employment, Technology and Development,* (Oxford: Clarendon Press, 1975).

[54] Solomon Ayalew, *The Problem of Labour Supply in Agriculture: A Strategy for Development*, (Paper Presented at the National Workshop on Food Strategies for Ethiopia, December 8-13, 1986, Alemaya University of Agriculture).

[55] Tiruneh Zena, *Economic Characteristics of Peasants Families in the Assessa Area, Chilalo Awraja, (Assela: ARDU Publication No. 3).*

[56] Viner, J. "Some Reflections on the Concept of Disguised Unemployment" Contributes a Analise do Desenvolvimento Economico, (1957).

[57] Wellisz, S. (1968), "Dual Economics, Disguised Unemployment and the Unlimited Supply of Labour", *Economica 35* (February), 22-51.

[58] Wibaux, Herve *Agriculture in the Highlands of Hararghe, Kombolcha Area: A Study of Six Farms,* (Alemaya University of Agriculture, 1986).

[59] Yotopoulos, P.A. *Allocative Efficiency in Economic Development: A Cross Section Analysis of Epirus Farming,* (Athens: Center of Planning and Economic Research, 1967).

[60] Yotopoulos, Pan A. and Mergos, George J. "Family Labour Allocation in the Agricultural Household", *Food Research Institute Studies,* Vol. XX, No. 1 (1986), pp. 87-105.

[61] Yotopoulos, Pan A. and Nugent, Jeffrey B. *Economics of Development: Empirical Investigations,* (New York Harper & Row, Publishers, 1976).