Differential Socio-economic Impact of Food Shortages and Household Coping Strategies: A Case Study of Wolaita District in Southern Ethiopia

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Résumé: *Cette étude porte sur l'examen de l'articulation entre les stratégies des ménages pour faire face aux pénuries alimentaires périodiques suite aux catastrophes et à la différenciation socio-économique. Elle est axée sur les pénuries alimentaires des années 1980 et du début des années 1990 mises en relation avec leurs causes et en analyse les implications pour la politique agro-alimentaire. L'article s'appuie sur une enquête menée en 1990-91 sur les ménages. Il s'agit d'un échantillon de 534 ménages de 65 villages situés dans différentes zones agro-écologiques du district de Wolaita au sud de l'Ethiopie. Les résultats obtenus mettent en exergue les causes de la différenciation économique qui intervient au niveau des ménages ruraux et leurs effets socio-économiques, le lien existant entre les différents types de stratégie utilisés en périodes de soudure et les niveaux de revenus des paysans; les sources d'activités lucratives; et les avoirs de chaque ménage en fonction de leur niveau de revenus.*

Introduction

The primary objective of this paper is to investigate, (a) the impact of disaster-induced food shortages on rural households and (b) the coping strategies of different income groups located in Wolaita District (Awraja). Awraja is one of the most densely populated, famine-stricken and disaster-prone areas in the southern region of Ethiopia. The paper attempts to explore the causes, consequences and differential impact of food shortages faced by rural households as a result of recurrent harvest failures in the 'bad years' of the 1980s and early 1990s.

The principal source of data for this paper has been that of a sample survey (research)[1] undertaken by the author in 1990-91 involving 534

Africa Development Vol. XX, No. 1, 1995, pp89-124

1 The 1990-91 micro-level survey in the former Wolaita District took about 12 months to complete. The actual rural household-level data was collected with the assistance of six well trained data collectors for a period of seven months. Policy-related data (including secondary data) collection which was undertaken by the researcher/author himself took another five months to complete.

sample households in 65 villages and 16 Peasant Associations (PAs). The primary objective of the 1990-91 research was to investigate, in detail, the impact of seasonal and disaster-induced food shortages on rural households and the crisis coping strategies of different income groups in Wolaita Awraja. It has concentrated mainly on the impact of disaster-induced food shortages and associated household coping strategies and responses during the 1980s and early 1990s. The secondary objective of the study was to examine the causal factors for the differential impacts of seasonal and disaster-induced food shortages at a household and community-level of the same periods. This household-level study has also attempted to explore the extent to which the choice of households' coping strategy is a function of income, income sources and assets ownership in relation to its implications for food and agricultural policy.

This paper presents a summary of the main research findings at household and community levels stratified by agro-ecoloy and income group following the research objectives indicated above. Seasonal vs disaster-induced food scarcity is distinguished and policy implications are drawn. This paper intends specifically to explore the extent to which the choice of household coping strategy is a function of income and asset ownership.

In order to meet the 1990-91 research objectives, the use of a combination of different socio-economic surveying techniques and procedures, which are fairly deep and equally wide have been adopted. Important questionnaires with sufficient number of sample population have been used to give it some breadth rather than more localised or personalised approach that may have been possible. The survey was stratified in such a manner as to reveal important variations in the household production base, income/food supply, consumption patterns or responses in relation to their causal factors. Although a more intimate personalised set of interviews might have generated interesting information, it has a large-scale data base that is lacking in other studies. For a study to have a sound policy implications, it should be based upon more appropriate household and village-level data that can capture a fair measure of diversity. Additionally, regional and local policy initiatives need data on the extent of a specific problem, not just its existence, and so a wider coverage was sought. Here, it can be argued that, in order to gather data for policy purposes, particularly for regional and local development policy, such stratified/disaggregated research approach (see Table 1)[2] with wider coverage adopted for the 1990-91 survey in Wolaita would be more valuable. The alternative approach would have been to look at a particular aspect very thoroughly in

2 A summary of the research methods and procedures adopted by the author during the 1990-91 survey period are shown in Table 1.

Table 1: Methods of Data Collection Applied by Stages

Methods of Data Collection	Source of Data	Types of Data Collected
Stage 1 Primary Surveying	1. Appropriate government and non-government organisations at the head-quarter level (Addis Ababa); 2. Regional and Awraja-level officials (including PA offices); 3. Local PA offices; 4. Various annual reports and records from Awraja to head-quarter levels.	1. Interview based policy information and documents (mostly unpublished); including for preliminary surveying activity; 2. Completing policy questionnaires: policy implementors, experts and extension agents; 3. Food production and supply problems by Woredas/PAs, history of disasterrelated famines by Woredas/PAs, lists of total PAs and households and other necessary background data.
Stage 2 Group Interview	1. National to Awraja and Woredo level government and non-government officials (managers), experts and extension agents; 2. PA leaders at different levels (local to regional).	1. Awraja, Woreda and PA-level history of recurrent disaster-related food production and supply constraints, serious food shortages/famines; 2. Causes and impact of various degree of food shortages; household coping strategies; 3. Economic activities; development constraints, all other questionnaire-based information.
Stage 3 Household-level Data Collection	Actual sample households	Various intensive and non-intensive interview-based information on food production and income levels; problem of food shortages, causes and its socio-economic impact and household coping strategies with food shortages.
Stage 4 Direct Observation and Inventory Method	Actual sample households	Information based on direct observation and inventory of productive assets of households by income grops.
Stage 5 Use of Oral Historiana	Purposively selected oral historians with local visdoa	1. Long and intensive interview-based information on the history of disaster-related food shortages in sample areas at community, Woreda or Awraja.-levels; 2. Causes and impact of food shortages, household coping strategies, etc.

Source: Compiled by author.

the area we have chosen as an anthropological study; this would have been fair enough, but for a different purpose.

Given the marked variations in income status and asset ownership between rural households in the study area, we were able to stratify them into three broad economic strata based on household perceptions and literature. That is, the existence of three broad income groups among peasant households (i.e., poor, middle and rich) has been established. This stratified approach has enabled the researcher to undertake a more detailed investigation at household levels and collect better quality data that could offset variations that could arise during data collection processes. In particular, this differentiated approach has facilitated the analysis of: (a) the causes and impact of differential asset ownership; (b) the causes and impact of differential food shortages; and (c) the impact of differential asset ownership on household coping strategies in times of food crises. This disaggregated approach has enabled the researcher to show the relationship between the type of coping strategies used in periods of food crisis and (a) the level of income; (b) sources of income earning activities; and (c) asset position of individual households in different income strata (Dagnew 1993).

An Overview of Existing Literature

Many commentators in the literature reviewed (Low 1986; Bernstein 1979 and 1990; Patnaik 1987) agree that the peasantry in general is not a homogeneous economic group. There are marked differences in income between peasant households, which vary from one place to another in the type and number of households that have become rich, middle-ranking and poor. Internal economic differentiation within a peasant society is commonly held to arise from: differences in the ownership of key productive resources; differential accumulation of wealth; use of better farm technology; household size and composition in terms of productive family labour; differential access to sources of irrigation and transport; and individual household vulnerability to various disaster-induced tragedies. Many writers, notably the authors cited above, have attempted to establish the existence of distinct economic strata within peasant society. Other writers (Arnold 1988) nonetheless maintain that differences in peasant economic status are rarely well-defined and clear-cut. This indicated that the precise form of peasant differentiation remains a subject of some debate.

Available literature (Chambers R, *et al* 1981; Raikes 1988) indicates that rural households living in a harsh and hazardous socio-economic, political and natural environment are gradually driven into abject poverty and destitution. The key factor in any terminal decline is the distress sale of productive assets, though asset erosion can occur even in normal years. Peasant households in such reduced circumstances are often the first victims of sudden disaster-induced food crisis. Many writers argue that the root

causes of peasant vulnerability to famine are man-made rather than natural. Natural causes are considered as merely precipitating factors. There is a consensus that drought and land degradation are the most important triggers of the severe food crises experienced by many developing countries in recent decades.

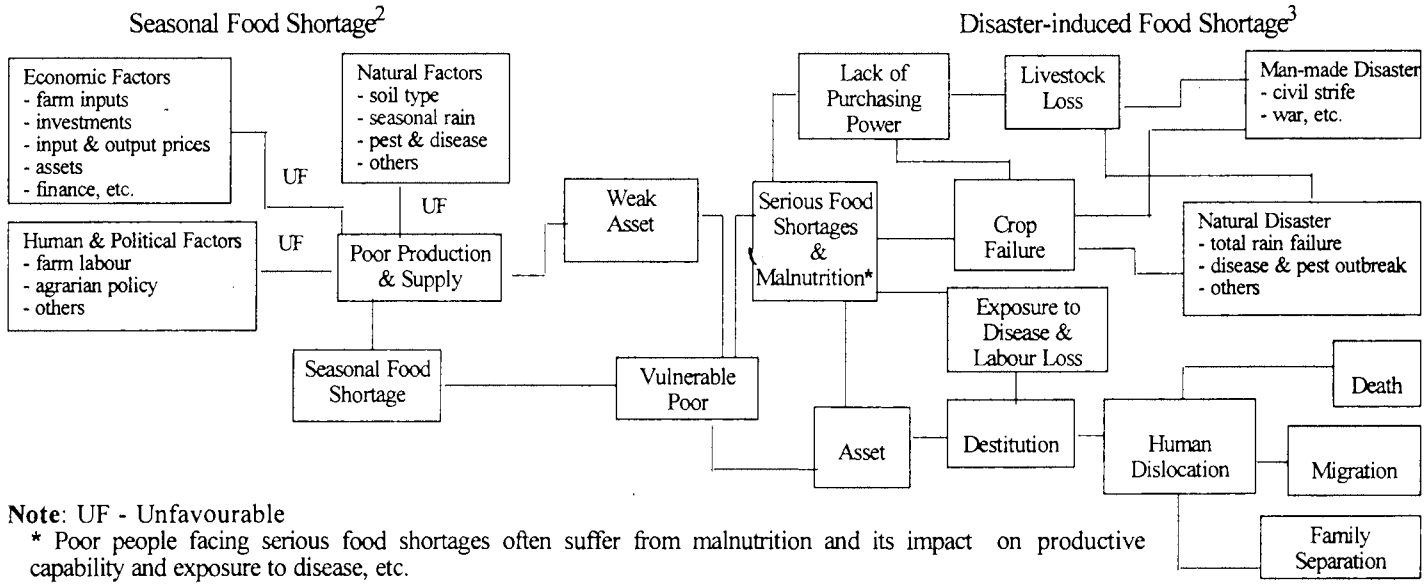
The respective analysis of the authors and the macro and micro-level studies reviewed indicate that not all societies and their component households have historically shown an equal vulnerability to food shortages and famine. The rich and powerful are obviously least at risk. The uneven experience of food shortages is due to variation in climatic conditions and geographical locations, and differential resource endowments of both societies as a whole and their individual household constituents as well as human and political factors. Even amongst households in the same broad income group, there are significant differences in the options available; the strategies adopted by each household may vary accordingly.

The reviewed literature explains how periods of seasonal stress can lead to permanent changes in income and status; the poor often become poorer and are more vulnerable to subsequent crisis. Major and irreversible changes in the economic status of poor households take place as a result of the gradual disposal of key productive assets during periods of seasonal stress. On the other hand, these stress periods are often considered as the occasion for some relatively rich rural households to become even richer. When crises become really severe as a result of harvest failures, it is only the really substantial owners of resources and stocks who can manage to survive and improve their positions; while members of the poorest income groups would be the most vulnerable, suffering the most from seasonal and disaster-induced stress.

The model outlined in Figure 1 was developed to capture the causal relationships between seasonal and disaster-induced food shortages. It aims to illustrate in schematic form the root causes and major impacts of poverty, destitution, serious food shortages and malnutrition. This model suggests that the vulnerability of rural households to food crises is the result of a gradual process of recurring seasonal food shortages and asset erosion. The rural poor who face serious food shortages often suffer from malnutrition and its impact on productive capability and exposure to disease.

African case studies (Wattes 1983; Corbett 1988; Rahmato 1987. De Waal 1986 and 1989; Mortimore 1989) allow one to summarise the commonly observed coping strategies adopted by households in widely differing circumstances as follows: change of cropping and grazing practices; reduction of food consumption; temporary migration in search of employment; asking kin and friends for support, borrowing grain and money; increased pursuit of secondary occupations; collection and eating of wild foods; rationing current food consumption; sale of productive assets;

Figure 1: Interaction Model[1], Showing the Relationships Between Seasonal and Disaster-induced Food Shortages in Relation to their Casual Factors



Note: UF - Unfavourable

* Poor people facing serious food shortages often suffer from malnutrition and its impact on productive capability and exposure to disease, etc.

1. This interaction model shows that vulnerability is the result of the gradual process of recurringseasonal food shortages; and vulnerable poor often become the direct victims of sudden disaster-induced food shortages leading to tragic family or human dislocations.
2. Seasonal food shortages are the results of unfavourable factors, such as problem of rainfall variation, shortages of farm inputs, productive assets, inadequate or unfavourable policy measures, labour shortages, disease and pest problems on both crops and animals, etc.
3. Disaster-induced food shortage are the results of total rain failure (leading to crop and livestock losses), disease and pest outbreaks on crop and animals, human disease outbreak, civil strife or war, other policy-induced distabilisations, etc

Source: Compiled by author.

dependence on relief food; sale of household possessions; and finally, distress migration. These case studies confirm that the risks associated with peasant production and food supply are often anticipated by rural households. The methods of coping with such adversity are carefully planned, and not undertaken on a 'haphazard' or 'random' basis. Analysis of the ci-wd studies confirms how, once rural households are aware of the imminent danger of severe crop failure or fall in output, they prepare to save available resources and use them economically through reducing current consumption to last over twelve months.

A number of studies (Corbett 1988; Mortimore 1989) on famine and food shortages have suggested that people who live in a hazardous environment (e.g., farmers living in disaster-prone areas) develop self-insurance strategies' to minimise risks to their family food supply and livelihood. Such strategies may involve: accumulating assets during better harvest seasons that can be disposed of in periods of food shortages; temporary migration to seek employment in distant labour markets; and development of systems of 'reciprocal obligation' between households which result in flows of food supply and other basic necessities during crisis periods.

Previous case studies (Corbett 1988) also suggest that there may come a stage when household responses shift and a critical decision to dispose of key productive assets is finally forced on the household. The terminal phase in the sequential coping strategy is when households are virtually destitute. It is clear (Watts 1983; Rahmato 1987; De Waal 1986 and 1989) that in these circumstances rural households' ability to generate both the current and future income is severely diminished. African case studies suggest that distress migration of the whole family in search of relief may be the only option; survival itself is in doubt. By the time households reach this critical stage, it is only the bringing of effective relief that can secure the survival of the family members.

On the basis of existing work therefore, it can be concluded that households confronted with disaster-induced food supply failure will plan how to cope with it on the basis of their differential resource endowments. Households plan not only how they are going to cope with food shortages, but also how to manage the process in distinct sequential stages. At all times, households try to protect assets at the expense of current family consumption.

What is Missing in the Literature? Why Does it Matter?

Rural people in Ethiopia face a multitude of complex food production and supply problems caused by both natural and human-induced disasters. There is a lack, however, of detailed micro (household)-level research into the actual causes and impact of recurrent food shortages. Detailed empirical

studies of food production and supply problems and the coping methods of rural households are rare. If appropriate policy interventions are to be undertaken, there is a crucial need for in-depth and dependable household and community-level studies. Households must be classified according to economic activities and income group in relation to the resource endowments of different agro-ecological zones of food-deficit regions. Detailed empirical studies conducted in representative locations of different agro-ecologies by regions are urgently required if policies are to be properly tailored to specific needs of rural societies. Such studies must be based on adequate sample population sizes from different socio-economic strata of the respective study areas.

Those few household-level empirical studies done in Ethiopia (Wolde-Mariam 1986; Rahmato 1987; Dejene 1990; McCann 1987; Webb*et al* 1989 and 1992) primarily focus on the socio-economic impact of drought-related famines of the recent decades. Most of them also concentrate on the northern, drought-prone regions (e.g., Wollo). Moreover, these studies generally have been largely based upon very limited sampling procedures which reduces the extent to which they can be accepted as a basis for policy decisions. In most of these studies, variations in coping mechanisms during distress periods in relation to household income and asset ownership between and within existing distinct economic strata do not appear to be given adequate attention. Despite the valuable information provided by these studies, the following important issues remain to be examined:

(a) disaggregation of study areas by agro-ecological zones;
(b) examination of households by their socio-economic activities and strata;
(c) an inventory of development resource potentials and their current utilisation;
(d) studies of the impact of disasters in relation to seasonal food shortages;
(e) examination of problems experienced in severe stress periods compared with those faced in normal seasonal cycles; and
(f) undertaking comparative studies in food deficit and/or disaster areas in relation to adjacent, better agro-ecologies.

The author (Dagnew 1993) attempts to tackle some of these issues through a specific case study of Wolaita by concentrating upon: (a) the primary causes and differential impact of food shortages on rural households; and (b) the coping strategies of different income groups during periods of food crisis in the 1980s. The fieldwork in Wolaita was designed to yield reliable empirical evidence of what has been experienced at the micro-level.

Food Shortages and their Differential Socio-economic Impact and Household Coping Strategies in Wolaita Awraja

This section of the paper discusses the findings of the fieldwork in Wolaita. The survey data is analysed in terms of: (i) sources of household income and food supply; (ii) cases of household economic differentiation; (iii) food shortages, their causes and socio-economic consequences; and (iv) the effects of economic differentiation and household coping strategies in the face of food crises in the 1980s.

Sources of Household Income and Food Supply

The results of the 1990-91 fieldwork in rural Wolaita indicate that the dominant source of employment for 99 percent of rural households is agriculture (crop and livestock farming). Rural household food security is particularly dependent on cropping activities. The other important sources of income is petty trading. The majority of peasant households from almost all income groups depend on trading both during farming seasons and slack periods. Casual hire of their labour and other off-farm formal and informal activities may also provide income, particularly for poorer households. There are a number of other subsidiary activities that farm households undertake either all the year round or seasonally with the object of supplementing income from primary sources (crop and livestock farming).

The findings of this study suggest that there is no marked difference in the sources of household farm labour either in terms of income group or agro-ecological zone. Over 94 percent of the households from all income groups depend on their own family labour for their seasonal farming.

Causes of Household Economic Differentiation

Analysis of fieldwork data points to the existence of broadly defined economic strata among peasant households. Three major income groups of peasant households: 'poor', 'middle' and 'rich' (see Table 2), may be distinguished, though the boundaries between these strata are somewhat fluid. Household income is a function of productive assets, labour, family size, sources of employment and agro-ecological zone.

The average family size of sample households from the 16 PAs by income groups was examined. The results indicate that the average family size of all income groups is 10.3. The highest average family sizes are observed in the rich income group (13.6 family members/household). This figure is 21 and 36 percent higher than the average family size of the middle and poor income groups respectively. The difference in the mean family size between income groups is statistically significant. Moreover, correlation analysis (Dagnew 1993) shows that there is a positive and significant relationship in the average distribution of family size and the economic status of peasant households.

Table 2: Characteristics of Sample Households by Sex, Marital and Educational Status, Income Groupe, Main Occupations and by Climatic Zones in Wolaita

Background	Number of Household Heads	Percent
(a) Income Groups:		
Poor	252	48.3
Middle	170	32.2
Rich	100	19.2
Total	522	100.0
(b) Main Occupations:		
Agriculture	518	99.2
Petty Trading	2	0.4
Handicrafting	1	0.2
Other	1	0.2
Total	522	100.0
(c) Climatic Zone:		
Highland	43	8.2
Medium Altitude	211	40.4
Lowland	168	51.3
Total	522	100.0
(d) Sex:		
Male	460	88.1
Female	62	11.9
Total	522	100.0
(e) Marital Status:		
Married	459	87.9
Unmarried	16	3.1
Divorced	15	2.9
Widowed	29	5.9
Widowed	3	0.6
Total	522	100.0
(f) Educational Status:		
Illiterate	416	79.7
Can read	6	1.1
Read and write	71	13.6
Elementary and High School Level	29	5.6
Total	522	100.0

Source: Compiled by author.

Analysis of the effect of each selected key productive factors (including household labour) on family annual income shows a positive and significant relationship. The key productive assets that influence households' seasonal or annual incomes (in order of importance) are: (a) draught oxen and breeding cattle; (b) area and quality of farmland, (c) farm implements such as plough-points, sickles, and digging hoes; (d) small animals (e.g., goats, sheep, etc.); and (e) transport animals (i.e., donkeys, horses and mules). The

existence of a marked difference in the distribution of ownership of all these productive assets between the poor, middle and rich income groups is quite apparent. Table 3 shows a summary of mean asset ownership per household and per capita by income group in Wolaita. The evidence of this study suggests that the existing high variation in the ownership of productive assets (in particular, variation in the ownership of draught oxen, breeding cattle and farmland) between different income groups is the primary cause of the prevailing disparities in annual income and overall economic differentiation between peasant households. Among other factors, family size and the sources and division of labour within a household are important and limiting factors that markedly influence seasonal economic activities and the asset of peasant households. However, this study reveals that there is marked variation in the contribution each factor exerts on seasonal and annual household income.

Statistical analysis demonstrates that there is a high positive correlation between levels of ownership of key productive assets and income derived therefrom. Most of all, the results show that ownership of oxen, followed by breeding cattle, are positively and significantly correlated with economic status at a household and per capita level (see Table 4, and Figure 2 and 3). This finding corroborates the views of many observers who argue that draught oxen are the most important and limiting productive asset for rural household farm production and periodic income in Wolaita and the country at large.

Our research findings show that many farmers (mainly the poor) are not able to reap the production benefits in favourable agricultural seasons due to the inadequacies of post-disaster economic relief and rehabilitative support packages after the disasters of the 1990s. This suggests the need for appropriate targeted policy intervention.

Analysis of the fieldwork in Wolaita reveals that many members of relatively high income groups as observed in the 1984-85 famine had lost this status by 1990-91. For example, from a total of 522 sample households interviewed, 175 (34%) respondents indicated that by 1990-91 they had lost their pre-1984-85 economic status as a result of the 1984-85, 1987-88 and 1990-91 disasters. Households in our sample whose economic position has drastically declined since the mid-1980s include those who have fallen from:

(a) rich to middle income status — 32 households (6.1%)

(b) rich to poor income status — 47 households (9.0%) and

(c) middle income to poor and complete destitution — 96 households (18.4%). Such decline in income was triggered by the recurrent disasters (mainly drought) of the period. These disasters left the poor more and more vulnerable and markedly reduced the wealth and status of even the rich peasants.

Table 3: Summary of Mean Asset Ownership Per Household and Per Capita by Income Groups (Wolaita)

Type of Asset Ownership	Poor (n_1 = 252)		Middle (n_2 = 170)		Rich (n_3 = 100)		Total Cases (N = 522)	
	Per HH	Per Capita	Per HH	Per Capita	Per HH	Per Capita	Per HH	Per Capita
1. Farmland (in hectares)	1.32	0.15	1.52	0.14	2.39	0.18	1.59	0.15
2. Livestock: (in number)								
Oxen	0.09	0.01	0.88	0.08	1.92	0.14	0.70	0.07
Breeding	0.82	0.10	2.18	0.20	6.60	0.49	2.37	0.23
Small animals	0.37	0.04	0.84	0.08	2.30	0.17	0.89	0.09
Transport animal	0.04	0.01	0.21	0.02	0.88	0.07	0.26	0.03
3. Farm Implement: (in number)								
Plough-point	0.49	0.06	0.97	0.09	1.26	0.09	0.79	0.08
Sickle	1.71	0.20	2.51	0.23	4.07	0.30	2.10	0.20
Digging hoe	1.17	0.13	1.74	0.16	2.88	0.21	1.68	0.11
Axe	1.18	0.14	1.75	0.16	2.68	0.20	1.65	0.16
Matchet	0.11	0.01	0.21	0.02	0.34	0.03	0.19	0.02

Note: N = Total sample population; n_1, n_2 and n_3 are sub-sample populations. HH = Household statistical test results of the survey data (using Kendall's Tau-b approach) suggest that there is positive and significant relationships between productive asset ownership and the economic status (income groups) of sample peasants at a household and per capita levels.

Source: Compiled by author.

Table 4: Analyses of the Relationships of Selected Key Productive Asset Ownership and the Economic Status of Sample Peasants at a Household and Per Capita Levels

Description of the Relationships of Variables	Statistical Test Results (N = 522)		
	Correlation Value r	T-Value	Approximate Significance (P)
1. Farmland Ownership by Income Groups:			
- Farmland ownership/hh by IGs	0.23	6.49	0.00001
- Farmland ownership/capita by IGs	0.09	2.69	0.00732
2. Livestock Ownership by Income Groups:			
- Oxen ownership/hh by IGs	0.81	35.14	0.00001
- Oxen ownership/capita by IGs	0.68	27.59	0.00001
- Breeding cattle ownership/hh by IGs	0.61	21.77	0.00001
- Breeding cattle ownership/capita by IGs	0.45	14.97	0.00001
- Small animals ownership/hh by IGs	0.38	10.56	0.00001
- Small animals ownership/capita by IGs	0.32	9.13	0.00001
- Transport animals ownership/hh by IGs	0.47	13.36	0.00001
- Transport animals ownership/capita by IGs	0.45	13.03	0.00001
3. Farm Implements Ownership by Income Groups:			
- Plough-point ownership/hh by IGs	0.47	13.30	0.00001
- Plough-point ownership/capita by IGs	0.27	7.85	0.00001
- Sickle ownership/hh by IGs	0.44	13.01	0.00001
- Sickle ownership/capita by IGs	0.19	5.53	0.00001
- Digging hoe ownership/hh by IGs	0.29	8.17	0.00001
- Digging hoe ownership/capita by IGs	0.14	3.92	0.00010

Note: The statistical analysis is made using Kendall's Tau-b approach. All the results of the analysis in this table show that, there is a significant relationship between the productive assets and the economic status (income groups) of sample peasants at a household and per capita levels. Of all, the test suggests that, there is a strong positive and significant relationship between oxen and breeding cattle ownership (in order of importance) and the economic status of households including at per capita level.

N = total sample population; hh = household; IGs = income groups;
P = Probability, and r = correlation value.

Source: Compiled by author.

Figure 2: Relationship of Draught Oxen Ownership and Annual Income (1989-90

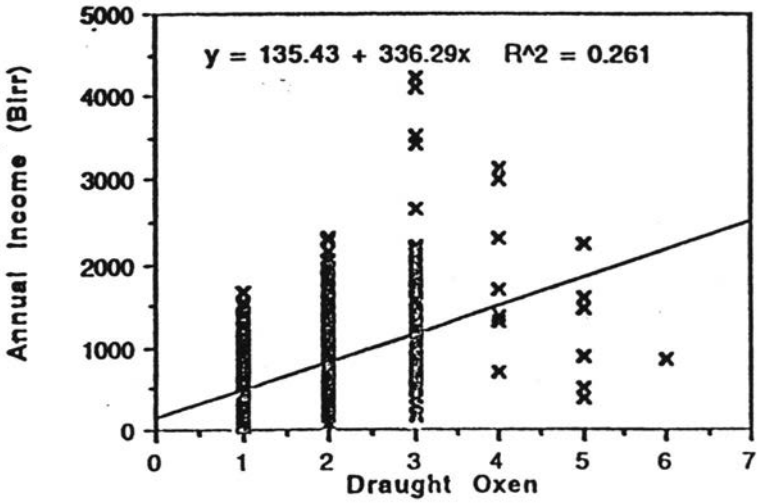


Figure 2a: Relationship of Draught Oxen Ownership and Annual Income (1990-91

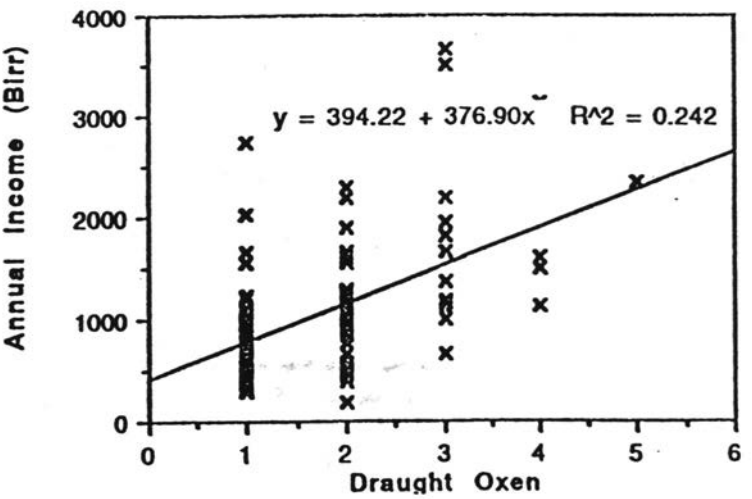


Figure 3: Relationship of Breeding Cattle Ownership and Annual Income (1989-90

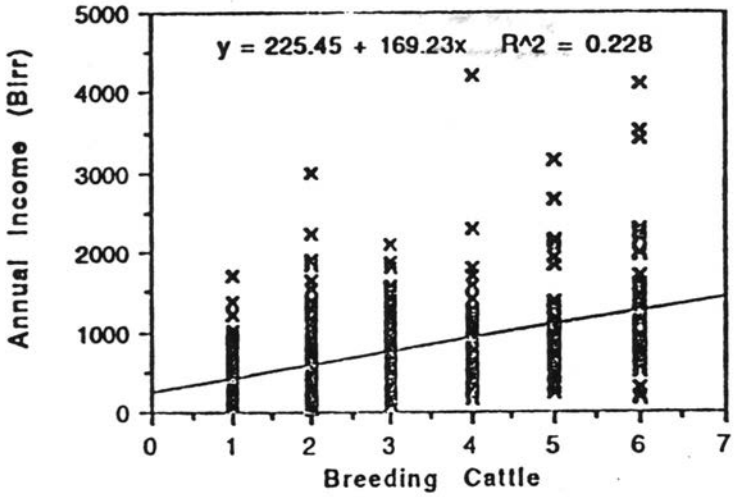
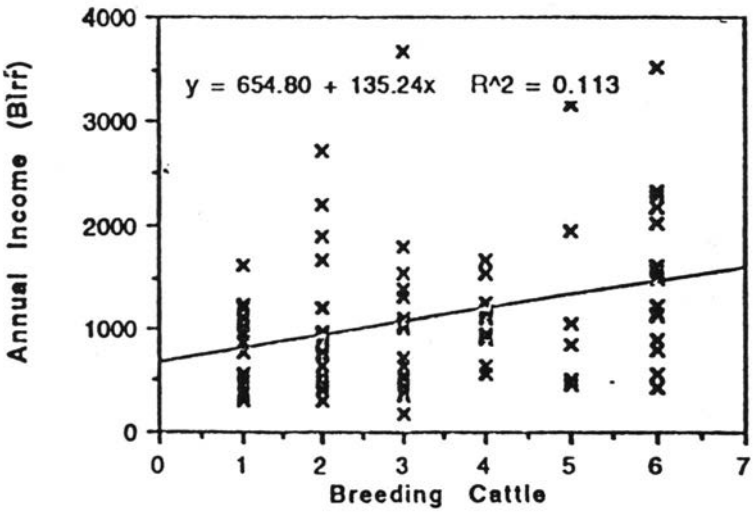


Figure 3a: Relationship of Breeding Cattle Ownership and Annual Income (1990-91



The results of the analysis of variance — ANOVA (see Table 5) of mean annual incomes in disaster years indicate that there is a high variation of income between the three major income group (i.e. poor, middle and rich). The ANOVA test results suggest that there is a highly significant level of income differentiation between income groups both at the household and per capita levels in the sample areas of Wolaita. Moreover, the study indicates that income variation between income groups increase between recurring disasters. However, the results reveal that average income variability between income groups in a better year is much higher than the average income variability in disaster years as a result of depressed product prices and post-famine recovery problems. The empirical evidence shows that, in general, there was in proportional terms no distinct change or growth in income distribution per unit across all income groups in the years since the 1984-85 severe disaster-induced famine.

The findings of the fieldwork in Wolaita suggest that those households with higher family sizes are more likely to have a greater wealth and income than smaller households. Households with larger family sizes are presumably in a better position in terms of possessing more active family members able to participate in household economic activities. This confirms the ideas of Chayanov (1986) on the effects of demographic differentiation on household income and consumer-worker relationships as family size grows. The results of this study in general suggest that household income and food supply are functions of the size and type of productive asset ownership and the availability of active family labour.

Food Shortages: Their Causes and Socio-Economic Impact (1984-85/ 1990-91)

Although Wolaita has traditionally been one of the many food-deficit Districts in Ethiopia, particularly serious food crises occurred in the 1980s. In this district, as is recognised by the peasants themselves, the key factors responsible for the seasonal shortfall of rural food production and supply (in order of importance) are seasonal rainfall variations; lack of draught oxen; inadequate farm size; and shortage of basic farm inputs and implements. Of all these constraints, lack of draught oxen in all agro-ecologies and farmland scarcity particularly in medium and highland agro-ecologies are the most important underlying causes of seasonal food shortages, severely limiting the seasonal performance of farm operations in Wolaita. The negative impact of seasonal food shortages is also the gradual asset erosion (asset sales) leading to an abject poverty and vulnerability.

As noted from the response of peasants themselves, people in Wolaita faced severe food crises especially in 1984-85, 1987-88 and 1990-91. The findings of the fieldwork reveal that the major causes of the calamities (acute food shortages) of these years were, in order of their importance: rain failure at critical times in the cropping cycle; human and animal disease;

Table 5: Analysis of Variance of Annual Incomes Between Households of the Three Income Groups of Wolaita Awraja by Disaster and Non-disaster Years

Disaster Years	Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	ANOVA** P Ratio	P Probability *	Degree of Income Variation Between Groups
1984-85	Between Groups	2	22084542.0	11042271.0	13.12	0.0001	Highly
	Within Groups	89	74900630.0	841580.0			Significant
	Total	91	96985173.0	(15.03)		(0.0001)	
1987-88	Between Groups	2	12594152.0	6297076.0	16.33	0.0001	Highly
	Within Groups	89	34327441.0	385702.0			Significant
	Total	91	46921592.0	(19.07)		(0.0001)	
1989-90	Between Groups	2	60983187.0	30491593.0	148.37	0.0001	Highly
	Within Groups	519	106657099.0	205505.0			Significant
(Better Year)	Total	521	167640286.0	(135.05)		(0.0001)	
1990-91	Between Groups	2	16038415.0	8019208.0	26.08	0.0001	Highly
	Within Groups	90	27677851.0	307532.0			Significant
	Total	92	43716267.0		(25.34)	(0.0001)	

Note: * P Probability = Approximate Significance; ** ANOVA = Analysis of Variance.

The ANOVA test was modified by using log transformed income data analysis (i.e., the income data was transformed and analysed using logarithms) in order to verify the actual mean income variations between and within income groups against the standard ANOVA results. The log transformed income data analysis results (see figures in brackets) have confirmed that there exists a highly significant income variation between the three income groups of sample households. Analysis of this table shows a higher income variation between income groups in a better year when compared with the income variations in the disaster years for reasons in the main test. A log transform was required as the data values were heavily skewed. All income values are in Ethiopian Birr (US$ 1.0 =2.07).

Source: Compiled by author.

crop, pest and other disease outbreaks; forced villagisation, and hailstorms leading to a serious harvest failure. Grain price increases, lack of purchasing power, low livestock price, food scarcity in local markets, and lack of demand for labour during times of crisis are also identified as factors that aggravate exceptional food shortages. Of all these factors, climatic changes (i.e., recurring rain failure at critical times of the agricultural cycle) and grain price increases are the most precipitating causes of food shortages.

The recurrent famines of the 1980s have left behind a long-lasting and possibly irreversible breakdown of the traditional socio-economic order, with high levels of assetless poor, increased peasant vulnerability to sudden disaster, endemic insecurity of food supplies, family disintegration and other ills in most strata of the Awraja. These factors, together with the presence of what is still a fast-growing population, place enormous stress on the already limited resources for agricultural development. Furthermore, the farm productive capacity of many peasant has been severely affected by shortages of family labour and key productive inputs as a result of the impact of the three famine years. The loss of human lives and assets, production losses, the psychological traumas and the damage to the traditional moral framework of society undergone by rural Wolaitans in the major famine periods of the 1980s are impossible to quantify (see Table 6 for some indications of the socio-economic effects of disasters of the same period). Moreover, the gradual erosion of economic status and impoverishment of the majority of peasants has resulted in the weakening of the traditional social network support system between and within different income groups in Wolaita.

The fieldwork in Wolaita revealed that the Kolla (lowland) peasants are particularly vulnerable to recurring disaster-induced food shortages and famines. This is because of the highly erratic nature of seasonal rainfall and recurring drought; this often leads to total or partial crop loss and poor grazing pastures for their animals. Households living in the Kolla area are subject to a high incidence of human, livestock and crop disease; pest outbreaks; serious land degradation; and other environmental hazards. Moreover, peasants in this area have less opportunity to practice crop diversification (such as combining cereals and different horticultural crops) than peasants living in intermediate (Woina-Dega) and highland (Dega) agro-ecologies.

Peasant respondents from Wolaita revealed that the 1984-85 drought-induced crisis was the most serious and widespread of all, resulting in massive loss of life, starvation and serious disease and pest outbreaks striking both crops and animals in most areas of Wolaita. The Kolla agro-ecology was noted to be the hardest hit by the 1990-91 famine.

Table 6: Responses of Sample Households on Socio-economic Consequences of Serious Disaster-related food Shortages in the Years of 1984-85, 1987-88 and 1990-91 (in order of importance)

Socio-economic Effects	Household Responses (%)			Total Cases N = 518
	Poor $n_1 = 252$	Middle $n_2 = 170$	Rich (d) $n_3 = 96$	
Hunger	98	77	40	82
Human disease	83	76	55	78
Total cattle loss (a)	51	37	22	42
Human death	50	36	22	41
Partial cattle loss (a)	30	65	84	53
Family separation	13	8	-	9
Sales of production assets (b)	6	5	6	6
Temporary migration	5	6	-	5
Begging and eating wild food (c)	7	3	-	5
Labour shortage	3	4	6	3
Permanent migration	5	1	-	3
Shortage of farm inputs	2	.2	2	2
Sale Labour (mainly for payment in kind)	4	2	-	3
Sale grass and wood	2	0.6	-	1
School drop-out	2	2	-	1
Theft and robbery	0.4	-	-	0.2
Others	18	6	5	13

Note: Each sample household has given more than two answers, and because of this response figures do not directly add up to vertical totals. All figures are percentages, and they are calculated directly from the respective sub-sample populations (i.e., it is not summed up directly both vertically and horizontally).
N = total sample population; n_1, n_2 and n_3 are sub-sample populations from the poor, middle and rich income groups respectively.

(a) This includes livestock lossess due to sale as a means of coping strategies and deaths caused by disasters.

(b) This mainly refers to the sales of plough oxen, farm implements and breeding cattle during stress periods.

(c) Eating wild food includes consumption of wild plants (leaves, roots, stems, grasses) and wild animals (including some insects) which are not eaten in normal years.

(d) Four sample households from the rich income group (not affected by disaster) are not included.

Source: Compiled by author.

All the sources consulted indicated that the disaster-induced famine years experienced in the 1980s were primarily triggered by the sudden rain failures. According to sample respondents and oral historians, the problem of rain failure was critical either at the seed germination or crop-growing periods, which resulted in partial or complete crop (harvest) failure. Drought also explains the decline of livestock feed (pasture or forage) and losses of thousands of animals. Although there is some variations between the responses of highlanders and lowlanders, most groups in the 16 PAs agree that all of the recent famines were triggered by the recurring drought. This study revealed that in all areas, those groups without productive assets (the poor) are extremely vulnerable. Above all, children under five years old were the most vulnerable to these recurring famines, and most susceptible to malnutrition and disease. Women and children between the ages of 5 and 14 were the next most vulnerable groups.

Impact of Economic Differentiation and Household Coping Strategies With Food Shortages in the 1980s

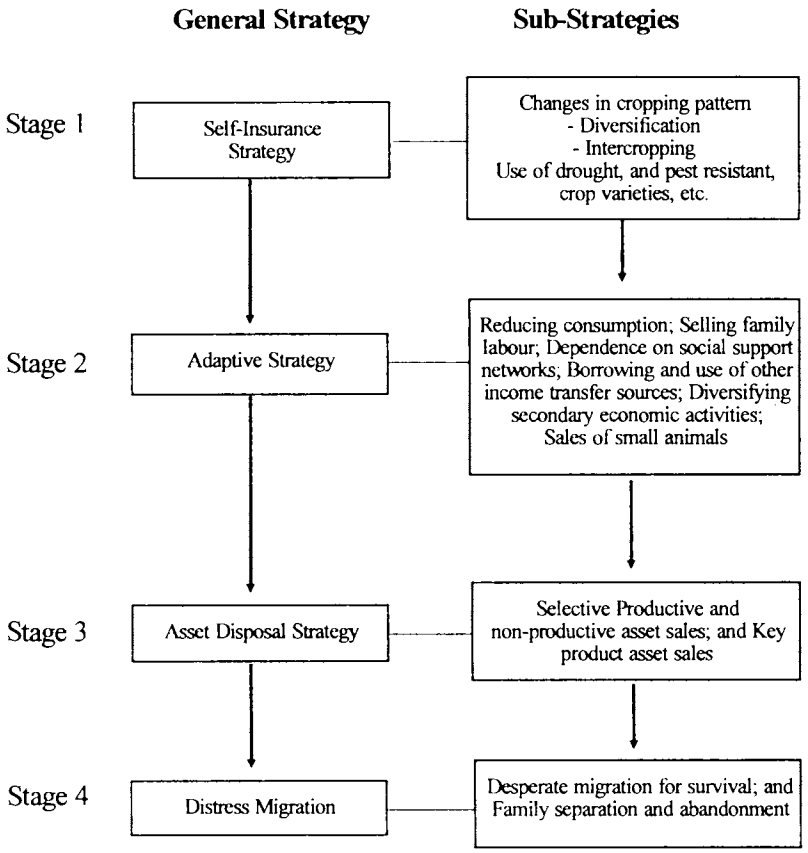
The primary focus of this section is on the coping behaviour of households in the face of the three major periods of disaster-related food shortages or famines of 1984-85, 1987-88 and 1990-91.

The conceptual model (Figure 4) aims to contribute to an improved theoretical understanding of the general categorisation and sequencing of household coping strategies and responses to deepening food crisis based on the results of the fieldwork from Wolaita. This analytical model divides observed household responses to food shortages into four sequential categories, namely: (a) self-insurance (risk-minimising) strategy; (b) adaptive (income stabilisation) strategy; (c) asset disposal strategy; and (d) distress migration and family separation (Dagnew 1993).

Household response to food shortages can be examined as: (a) production-based responses; (b) market-based responses; and (c) non-market-based responses (such as depending on the use of different institutional and societal income transfer systems).

Traditionally, subsistence producers or peasants derive most of their family consumption requirements from domestic food production, largely from agricultural production activities. Most often, failure to achieve self-sufficiency in food production forces peasants to get involved in the market-based economic activities (e.g., petty trading). Failure to achieve self-sufficiency does not merely drive households to depend on market based food supply sources and social support networks, but also forces dependence on non-marketed food supply sources (e.g., collection and eating of wild foods). Much depends on the economic status of the households and the severity of food scarcity.

Figure 4: A Model Illustrating the Categorisation of Generally Sequential Household Coping Strategies with Food Shortages by Stages



Note: Slight reduction in food consumption and local-based family labour selling starts in stage 1 in this model. This model does not show the same strategies that are undertaken in varying intensities in the different stages of deepening crisis until they are exhausted (e.g., reducing food consumption, selling family labour, diversifying secondary economic activities, etc.).

Source: Dagnew, 1993 — based on the fieldwork results from Wolaita (Ethiopia). This is a modified approach from the previous studies (Jodha, 1975; De Waal, 1986; Rahmato, 1987; Corbett, 1988; Mortimore, 1989).

The findings of the fieldwork in Wolaita (Dagnew 1993) show that as the severity of a food shortage deepens seasonally, affected households with the least purchasing power are often forced to sell their productive assets (which are their future means of livelihood) to ensure current family food security and to pay their accumulated debts. Although the process involves gradual and selective 'divestment' measures as their plight worsens, poor households reach an irreversible stage of vulnerability, when their asset and income status can never be restored without outside intervention. In the event of disaster-induced harvest failures, it is the vulnerable or assetless poor that become the first and least resilient victims of food supply shortfalls.

Rural households adopt coping strategies in a generally sequential pattern as the severity of food shortages increases. These strategies by category include: (a) a self-insurance strategy which involves changing production patterns; (b) income stabilisation strategy including reducing consumption, diversifying secondary economic activities, depending on kin and friends' support, borrowing, sales of small animals, selling family labour (including temporary migration in search of employment), rationing food consumption, eating wild foods, sales and handicrafts/wood/grass/leaves and/or wild foods, depending on relief food, and begging; (c) asset disposal, both productive and non-productive; and (d) distress migration and family separation. However, not all households adopted the same strategies and responses in the same sequence or with the same intensity. In some instances, observed responses were adopted simultaneously rather than sequentially. The rich and the middle income strata generally have more options than the poor and destitute.[3] Table 7 shows the percentage distribution of household responses by income groups on the coping methods with serious food shortages.

One key feature revealed by the study was that the choice of strategy showed some distinct variation according to income group (see Table 8). In particular the following strategies were used largely by the poor:

(a) temporary migration in search of wage-labour as an income stabilisation measure (including dependence on local-based family labour sales);
(b) high dependence on income from secondary and marginal economic activities;
(c) begging and intensifying dependence on collection and eating wild foods;
(d) sales of household possessions (including dwelling houses); and
(e) distress migration, family separation and abandonment.

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3 In this context, the term 'destitute' refers to assetless households or the more vulnerable sub-group of the poor income group.

Table 7: Frequency Distribution of Sample Household Responses by Income Group on their Coping Methods in the Face of Serious Food Shortages in the Disaster Periods of 1984-85, 1987-88 and 1990-91 (N = 522)

Coping Methods	Household Responses - 1984-85				Household Responses - 1987-88				Household Responses - 1990-91			
	Poor $n_1 = 252$	Middle $n_2 = 170$	Rich $n_3 = 100$	Total Cases	Poor $n_1 = 252$	Middle $n_2 = 170$	Rich $n_3 = 100$	Total Cases	Poor $n_1 = 252$	Middle $n_2 = 170$	Rich $n_3 = 100$	Total Cases
1. Change cropping patterns	101 (40)	81 (48)	57 (58)	239 (46)	125 (50)	94 (56)	60 (63)	279 (54)	82 (33)	66 (39)	39 (40)	187 (38)
2. Reduce consumption	198 (79)	143 (85)	84 (85)	425 (82)	205 (81)	147 (87)	86 (90)	438 (85)	187 (74)	134 (79)	82 (85)	403 (78)
3. Purchase food & reduce consumption	230 (91)	15 (92)	90 (91)	476 (92)	227 (90)	150 (89)	81 (84)	458 (87)	235 (93)	157 (92)	85 (88)	477 (92)
4. Intensify secondary occupations (a)	174 (69)	94 (58)	48 (48)	316 (61)	168 (67)	94 (56)	44 (46)	306 (59)	172 (68)	98 (58)	41 (42)	311 (80)
5. Support of kin & friends	84 (33)	58 (33)	12 (12)	152 (29)	61 (24)	34 (20)	4 (4)	99 (19)	46 (18)	20 (12)	3 (3)	69 (13)
6. Borrow grain & money	96 (38)	70 (41)	27 (27)	193 (37)	65 (20)	46 (27)	17 (18)	128 (25)	75 (30)	48 (28)	17 (18)	140 (27)
7. Sale of small animals	32 (13)	42 (25)	32 (32)	106 (20)	29 (12)	33 (20)	34 (35)	98 (19)	25 (10)	29 (17)	32 (34)	86 (17)
8. Temporary migration to seek employment	31 (12)	13 (6)	- -	44 (9)	30 (12)	6 (4)	- -	36 (7)	16 (6)	5 (3)	- -	21 (4)
9. Ration consumptions (c)	177 (70)	103 (61)	54 (55)	334 (64)	173 (69)	106 (63)	50 (52)	329 (64)	142 (56)	102 (60)	49 (51)	293 (57)
10. Eat wild food	171 (68)	98 (58)	33 (33)	302 (58)	107 (43)	59 (35)	18 (19)	184 (36)	83 (33)	31 (18)	10 (10)	124 (24)
11. Sale of wood, grass, leaves & handicrafts (d)	127 (50)	47 (20)	- -	174 (33)	117 (46)	45 (27)	- -	162 (31)	133 (53)	46 (28)	- -	179 (35)
12. Depend on relief food	202 (80)	118 (70)	67 (68)	387 (74)	153 (60)	105 (62)	55 (57)	313 (61)	76 (30)	37 (21)	27 (28)	140 (27)
13. Sale of productive assets	120 (48)	104 (62)	52 (53)	276 (53)	56 (22)	59 (35)	33 (34)	148 (29)	45 (18)	50 (29)	32 (33)	127 (25)
14. Begging	19 (8)	3 (2)	- -	22 (4)	18 (7)	3 (2)	- -	21 (4)	20 (8)	4 (2)	- -	24 (5)
15. Sale of household possessions (b)	64 (25)	27 (18)	- -	91 (18)	17 (7)	4 (2)	- -	21 (4)	13 (5)	4 (2)	- -	17 (3)
16. Distress migration & family separation (e)	69 (27)	21 (12)	10 (10)	100 (19)	22 (9)	7 (4)	3 (3)	32 (6)	20 (8)	3 (2)	2 (2)	25 (5)
17. Others (f)	6 (2)	8 (5)	3 (3)	17 (3)	7 (3)	9 (5)	3 (3)	19 (4)	7 (3)	9 (5)	3 (3)	19 (4)

Note:

(a) Intensifying secondary occupation includes petty trading, family labour hire and renting of animals within the community by both sexes, basket making from wild plants and spinning cotton. Brewing local alcoholic drink is performed by women for sale as the crisis deepens as a major household task.

(b) This refers to key non-productive asset sales (including dwelling house, bed, etc.) adopted by famine victims as a pre-migration survival strategy. Disposal of other less important non-productive asset takes place before the disposal of key productive asset takes place.

(c) Handicraft work (including the making of branches and household utensils by men and pottery by women) provides a source of family income. Collecting wood and grass from the forest for male by family members is mostly a sign of destitution in the study area.

(d) Rationing consumption involved distributing whatever food is available among the members of the household as food crisis deepens (before and after 'divestment').

(e) This includes destitution and family dislocation faced by the poor, and death of family members faced by all groups.

(f) Others, include collection of wild food and coffee leaves, carrying water, making grinding stonemills for male and asset mortgaging and leasing, etc. Both household response figures including percentages do not add up vertically and horizontally. This is because each respondent by income grup has given more than one answer. All figures in brackets are percentages. N = total sample population,; n_1, n_2 and n_3 are sub-sample populations by income groups.

Source: Survey data, 1990-91.

Table 8: Differential Household Coping Strategies with Serious Food Shortages Adopted During the 1984-85, 1987-88 and 1990-91 Crises Years in Wolaita Awraja (N=522)

Coping Method	Household Responses			Ranking Distinctive Differentiation in Adoption
	Poor $n_1 = 252$	Middle $n_2 = 170$	Rich $n_3 = 100$	
Changing cropping pattern	LA	A	VOP	Distinct
Reduce Consumption	VOP	A	A	Very distinct
Purchase and reduce consumption	VOP	A	A	Very distinct
Diversify secondary occupation	VOP	A	LA	Distinct
Ask kin and friends support	A	A	LA	Less distinct
Borrow grain and money	A	A	LA	Distinct
Sale of small animals	A	A	A	Distinct
Temporary migration in search of employment	A	LA	NA	Most distinct
Rationing concumption	VOP	A	LA	Very distinct
Eating wild food	VOA	A	LA	Distinct
Sale of wood, grass, leaves wild foods, handicrafts, etc.	VOP	LA	NA	Distinct
Depend on relief food	VOA	A	A	Less distinct
Sale of less productive and non-productive assets	A	LA	NA	Distinct
Sale of key productive assets	A	A	LA	Distinct
Sale of key household possessions (e.g., bed and dwelling house)	A	NA	NA	Most distinct
Begging	A	RA	NA	Most distinct
Distress migration and family separation	A	LA	NA	Most distinct

Note: The ranking column shows the distinctive differences in the level of adoption (adoption differentials) of each type of coping strategy used during the crises years of the 1980s by households from different income groups.

N = total sample population; n_1, n_2 and n_3 are sub-sample populations by income groups.

A = Adopted, LA = Less adopted, NA = Not adopted, RA = Rarely adopted, VOA = Very often adopted, and VOP = Very often practised.

Source: Compiled by author.

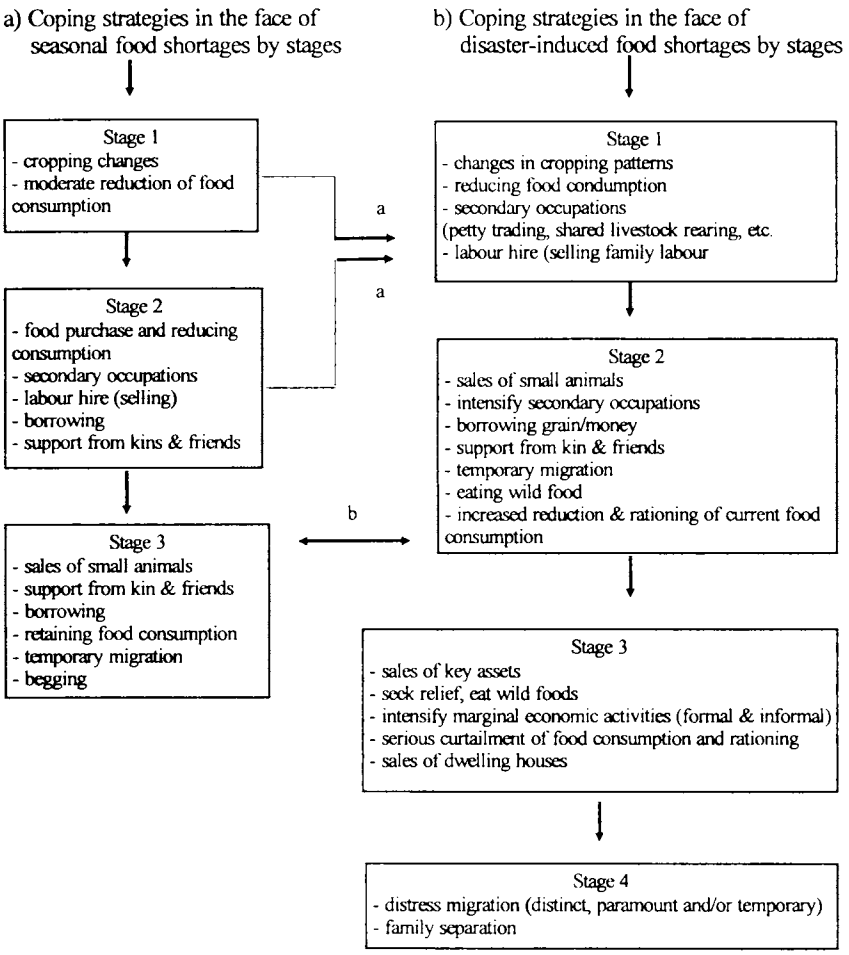
The rich did not use these strategies during the particular crises years of the 1980s. Significant differences also exist in the other coping strategies (e.g., reducing consumption, changing cropping pattern, etc.) in terms of differences in the number, type, intensity and frequency of adoption of each coping techniques; which in turn primarily depends on the level of asset ownership, income status, level of food reserve of each household, family labour availability, and on the magnitude of the crisis situation.

Peasant households make every effort to sacrifice many of their current consumption requirements not only for family survival, but also to preserve their key productive assets. This is because the quantity and type of assets owned by households plays a crucial role in determining both their current and future income and consumption. As might be expected, the disposal of assets is itself sequentially organised beginning with the less significant assets (i.e., small livestock) and only as a final resort releasing key assets like draught oxen, breeding cattle, etc. Most often, households try to protect their key assets either through postponement of sales or mortgaging of assets until a very late stage of a deepening crisis. Rural households consider assets as stores of value, productive investment or input and as sources of present and future income and food supply.

In addition, using a model (Figure 5), we have made an attempt to illuminate the differences and similarities between seasonal and disaster-induced household responses. Analysis of the results of this study indicate household responses and that some overlap in coping strategies exists in the initial stages of both types of food shortages. For example: (a) seasonal coping strategies in stage 1 and 2 overlap with stage 1 strategy during periods of disaster-induced food shortages; and (b) likewise, seasonal strategies in stage 3 overlap with strategies indicated in stage 2, adopted during disaster-induced food crisis.

Official sources and fieldwork information indicate that over 80 percent of the peasants in Wolaita have undertaken secondary activities in one form or the other since the 1970s in order to survive. These include (in order of importance): (a) petty trading; (b) selling of their labour; and (c) other secondary economic activities. Traditionally, these secondary forms of economic activities are mainly undertaken by the low income groups while, in some cases, the rich are able to accumulate more wealth in addition to covering small shortfalls to sustain their family needs. Analysis of the fieldwork reveals that secondary activities in general, and petty trading in particular, play an important role in household survival and asset protection in periods of food scarcity. Petty trading activity was shown to be one of the vital sources of income and food supply when practised as a secondary occupation in both normal seasons and crisis situation. It is particularly important in Wolaita.

Figure 6: A Model Illustrating the Relationships Between Household Coping Strategies in the Face of Seasonal and Disaster-Induced Food Shortages



Note: 'a' and 'b' show the relationships (differences and overlapping activities) in coping strategies and responses by stages. Specifically, 'a' shows the relationships and linkages coping between and during the first two stages of seasonal and the first stage of disaster-induced food shortages. 'b' shows the relationships and linkages in strategies between stages 3 and 2 of seasonal and disaster-induced food shortages respectively. Not all of the coping strategies adopted in stages 3 and 4 in periods of disaster-induced food shortages are adopted during periods of seasonal food shortages. This is due to the marked differences in the degree of food scarcity of the two types of food shortages, which suggests that household coping strategies vary with the degree of seriousness of food shortages.

Source: Compiled by author.

Analysis of the survey data suggests that as the level of asset ownership declines, family income and food supply decline proportionally. The gradual or sudden decline in the level of asset ownership leads to a serious collapse in the resilience and coping mechanisms of households during crisis periods. This cause-effect relationship clearly indicates that periodic family income and food supply flow, and hence the choice of household coping strategies, are depending on the possession of adequate key productive resources listed earlier and permanent income-generating activities.

This study also revealed that, as vulnerability of the poor increases, their coping strategies tend to be further diversified. Primarily secondary or marginal economic activities are diversified in times of worsening crisis to secure family food security, but some strategies get weakened or exhausted in the process. Several respondents in almost all agro-ecologies have indicated that many of the strategies they used to cope in the 1984-85 and 1987-88 famines had been reduced or abandoned by the 1990-91 food crisis. For example, borrowing grain and/or money from relatives, friends, neighbours and patrons, and the use of a reciprocal social support system such as gift exchanges were significantly reduced or even absent in many sample areas. The new strategies adopted in the deepening crisis periods largely tend to be more sequential in nature. This refers to the secondary and marginal (formal and informal) economic strategies adopted as a means of coping in a stage of worsening crisis. Generally, as the crisis deepens, families shift from one activity to another in a sequence as they struggle to survive. This finding suggests that coping strategies adopted in one particular crisis period and area by a particular social group will gradually change in form, intensity and sequence with time and events.

In general, the poor have fewest or no assets and reserves; and when famine occurs, it is often households from this social group who fall below the threshold of collapse much faster than other income groups. It is often the poor who are first forced to engage in short-term and marginal economic activities like the collection and sales of grass/wood/leaves, and wild food, begging, reliance on wild foods and relief distribution for consumption during the peak crisis periods. They are first, too, to lose their credit-worthiness and are forced to reduce drastically their food intake. In the end, desperately, they sell their assets. In periods of crisis, households from the poor income group do not have the same options open to them for coping with serious food shortages as those who are rich or better off. The rich and many of the middle income groups have been able to cope with the recent crises periods by drawing upon their reserves and gradual selective asset sales.

When we look at the social support network in Wolaita, the fieldwork reveals that it assumes several complex forms. The network's contribution in strengthening the morale and economic position of households at individual

and community levels in time of crisis is very significant. The support system involves: (a) reciprocity between kin and friends; and (b) support through village welfare and financial associations (e.g., Edir), work teams, etc.

Demonstrating the exact effects of the multiple responses used by households in the process of coping with serious food shortages is a difficult task. This is because household coping strategy is a function of multiple factors, and heavily affected by their interactions. However, it was possible to show the general pattern of the interrelationships of these factors using the method of 'canonical correlation'.[4] analysis. Therefore, 'canonical correlation' has been used to determine the degrees of interrelationship between various factors that affected household coping strategies in one of the serious famine years of the recent decade (e.g., 1990-91). One of the many important results of this analysis suggest that those households who live in disaster-prone lowlands are the most vulnerable groups to the recurrent food crises. They often suffer family dislocation in time of famine, more than those living in medium and highland agro-ecologies.

On the basis of these findings, it can be argued that the greater the level of key productive asset and productive family labour a household enjoys, the greater its seasonal income to provide for the family food supply. The more access households have to key productive assets and permanent income earning activities, the more self-sufficient they become in food, they are in a better position to cope with disaster-induced food crisis. The more households are deprived of the key productive assets and the minor regular income-earning sources, the more they are vulnerable to disaster-induced food crisis which can be catastrophic. As the severity of a food crisis deepens, the affected assetless households' temporary informal economic activities diversify as they struggle to survive. Clearly, their very survival is extremely precarious.

Based on the results of this analysis, it can be concluded that there is a relationship between the types of coping strategy adopted in periods of food crisis and the level of income, asset ownership, and income earning (employment) sources of individual households.

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4 'Canonical correlation' analysis refers to a statistical method used to determine the degrees of interrelationships between various factors that affect household coping strategies in the face of food crises periods/years. Davis (1986:607) describes 'canonical correlation' as a multivariate technique that has the same computational basis as factor analysis, but which in its concept and objectives is closely related to multiple regression...'.

Conclusions and Policy Implications

Conclusions

Peasants in Wolaita can be categorised into three income groups; and the key source of income differentiation among the households lies in variations in asset ownership and family labour availability. This leads to the general conclusion that economic differentiation among rural households is a function of differential access to the key productive assets (e.g., draught oxen, land and breeding cattle) and the availability of active family labour.

This study has shown that the precipitating cause of serious food shortages/famines in Wolaita in the recent decade has been sudden harvest failures as a result of recurrent rain failures and/or other disaster agents. On the basis of the results from this study, the root cause of household-level food shortages and famine can be ascribed to an 'entitlement failure' (Sen 1981) resulting mainly from a collapse in the ownership of key productive assets and purchasing power among poor rural households. Although sudden (short-term) food crisis is often primarily triggered by natural factors such as drought and/or disease outbreaks, this paper argues that the root causes of peasant vulnerability to famine are unfavourable seasonal production environments (structural problems).[5] Natural causes have precipitated the tragedies of recent years, but are not the fundamental cause. Unfavourable seasonal production environments often lead peasants to inadequate food production and food supply (seasonal shortfall) which in turn lead to weak asset ownership or poverty and vulnerability through gradual asset sales. In the event of unforeseen disasters, the vulnerable poor (with little or no assets) become the direct victims. Seasonal and disaster-induced food shortages often interact at the time of exceptional harvest failures and/or livestock loss seriously affecting the vulnerable social group. Poor people facing serious food shortages often suffer from malnutrition and its impact on productive capability and exposure to disease, labour loss, destitution and family dislocation (Dagnew 1993).

The regular seasonal food shortages have a more serious impact on the economic status of the poor and some middle income groups than the 'rich'. The gradual erosive effect of seasonal food shortages often leads households to be more and more vulnerable to any abnormally severe disaster. This study suggests that there is a relationship between the effects of seasonal food shortages and the initial stages of unfolding disaster situations. It can

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5 This argument is based on the findings of the fieldwork undertaken in Wolaita District by the author (1990-91).

also be concluded that those households who live in disaster-prone lowlands are the most vulnerable groups to the recurrent food crises.

This study shows that the more households are deprived of key productive assets and the lesser regular income-earning sources, the more they are vulnerable to seasonal food shortages. Periods of disaster-induced crisis exacerbate existing problems. As the severity of a food crisis deepens, assetless households' range of temporary, informal or marginal economic activities diversify. The findings of this study lead us to conclude that the household coping strategy in times of food crisis is a function of assets, income, and income-earning (employment) sources.

Generally, the livelihood of rural people is dependent on the ownership of key productive factors including (in order of importance) draught animals, breeding cattle, farmland, family labour, farm implements (e.g., sickles, digging hoes) and small animals. The level of ownership of particular productive assets such as draught oxen, breeding cattle and farm land determines the seasonal or annual production and income (and thus food security) of rural households. This level also broadly determines the coping abilities of households in periods of food crises. Of all the productive assets indicated, the ownership or otherwise of draught oxen most markedly determines annual household income flow and economic differentiation among rural households.

Consequently, the major findings of this study with respect to differential household coping strategies include the following:

1. There is a distinctive differentiation in household coping strategies among different income groups as a result of their different asset ownership, income status and family labour availability.
2. There is a relationship between the type (s) of adopted coping strategies and the level of asset ownership, income position and the type of employment or income sources.
3. There are overlapping similarities and differences between the coping strategies in seasonal and initial stages of disaster-induced food shortages.
4. As vulnerability of the poor increases, secondary and marginal economic activities tend to be further diversified as a family survival strategy.
5. Although household coping strategies adopted in the deepening crisis situations appear to be generally sequential in nature, there are many strategies undertaken simultaneously (i.e., parallel coping strategies exist).

On the basis of the results from this study, we can draw the following specific conclusions:

(I) The levels of annual income and economic differentiation among rural households in the study area are determined by the level of key productive asset ownership;

(ii) The type of household coping strategy adopted in times of serious food shortages is a function of the level of annual income, income earning

activities (employment), and the key productive asset position of individual households in different income strata.

In general, it can be concluded that in times of food shortages household coping strategy is a function of the following factors : natural (e.g., seasonal rainfall); economic (ownership of productive assets, sustainable income, etc.); social; government policy; availability of family labour; employment opportunities; regulated markets; credit facilities; and price policy, etc.).

Policy Implications

On the basis of the policy documents reviewed (ONCCP 1984, 1987 and 1989; RRC 1985, Webb 1989),[6] there does not appear to have been any attempt to develop effective policies that address the problem of the poverty-stricken, direct victims of disaster-induced crisis through an effective programme of poverty alleviation and famine prevention measures. Past institutional efforts to alleviate Ethiopia's worsening socio-economic problems have not been encouraging.

The author's past work experience and the reviewed literature indicate that a general area-targeting approach which simply focuses on the provision of services and aid distribution (see Table 9), regardless of the individual economic position of the people living in any given locality or community, is not an effective approach. Such an approach fails to meet the particular needs and desperate plight of the poor and has led to an inappropriate use of national scarce resources (including the distribution of famine relief items, rehabilitative and other productive inputs, farm credit and other forms of investment). Our evidence from the fieldwork (see Table 9) shows the government failure to address the priority needs of the poor. The table clearly shows that government relief and rehabilitation support in the 1980s was not based on a proper assessment of the relative needs and income of rural people. Our rural extension and development work experience has shown that the relatively rich farmers appears to benefit disproportionately from such a policy approach.

This paper suggests prime importance must be given to selective targeting policy approaches for both emergency and development planning and programming processes. The micro-level results of this study are not only generalisable to other areas in Wolaita, but also to areas in the country with similar socio-economic and representative nature. For micro results to be generalisable and capable of supporting policy implications, they must be based on representative household and village-level surveys. This empirical study has aimed to fulfil this need.

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6 ONCCP — Office of National Committee for Central Planning — RRC — Relief and Rehabilitation Commission of the Ethiopian Government.

Table 9: Household Responses by Income Groups on Government Supports Provided during Crises and Post Crises Periods of 1984-85, 1987-88 and 1990-91

Types of Support	Household Responses			Total Cases N = 522
	Poor $n_1 = 252$	Middle $n_2 = 170$	Rich $n_3 = 100$	
1. Relief food support	144 (57)	86 (51)	50 (50)	280 (54)
2. Health care	113 (46)	83 (53)	50 (50)	246 (50)
3. Seed and farm implements	66 (27)	42 (27)	32 (32)	140 (28)
4. Restocking	2 (.8)	1 (.6)	1 (1)	4 (1)
5. Plough oxen	8 (3)	8 (5)	3 (3)	19 (4)
6. Food for work	24 (10)	14 (9)	7 (7)	45 (9)
7. Others	4 (2)	4 (3)	1 (1)	9 (2)

Note: All figures in brackets are percentages. Figures (including percentages) do not add up vertically. This is because each respondent gave more than one answer.

N = total sample population; n_1, n_2 and n_3 are sub-sample populations.

Source: Compiled by author.

On the basis of the findings of the fieldwork from Wolaita, this paper emphasises the following key policy suggestions to be given priority (in order of importance): (i) a selective area and population group-based targeted approach. This must embrace a strategy for protecting key productive assets from distress sales during emergency periods and appropriate research and technology dissemination; (ii) an agro-ecology (area)-based targeting approach; (iii) a systematic and well-planned food and nutrition strategy; (iv) population control in the form of improved family planning measures and voluntary settlement in less populated areas with agricultural potential; and (v) land tenure reform allied to a conservation-based development approach. Above all, the first two key policy implications directly drawn from the findings of the fieldwork, require a more urgent attention.

In sum, policy makers must recognise and devise appropriate intervention measures in order of priority to strengthen peasant households' existing coping mechanisms in the face of a hostile environment and to

promote the development of new adaptive strategies. This raises policy issues which involve short and long-term alternative intervention measures, which will help increase household production-based incomes and decrease household vulnerability to crisis situations.

Above all, development strategies must be targeted at the poor and the needy households because their plight is the most desperate.

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