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Household Resilience, Food Security and Recurrent Exogenous Shocks: A study from the semi-arid Communal Areas of Zimbabwe.

Michael Alderson

Abstract

This research examines the ability to recover from recurrent food shocks at the household level. Households pursue diverse strategies to secure access to food. the nature and scale of which may alter during periods of scarcity. Where food shocks recur with regularity the resilience or the ability of households to recover may be impaired. In general, resilience refers to the ability to persist under fluctuating conditions.

The empirical focus of this research is two semi-arid Communal Areas in Zimbabwe. Households attempt to secure sufficient food through a range of activities both on and off-farm. The main sources of exogenous influence considered are the effects of droughts and those macroeconomic reforms initiated through structural adjustment programmes. Successive shocks have adversely affected different entitlements to food and the extent to which these have undermined household food security is investigated. This was undertaken through a household survey which collected data on the status of a number of key variables. The results were stratified by survey area and gender. The purpose was to identify the characteristics of the more durable strategies which were instrumental in securing access to food during periods of scarcity.

The value of the resilience approach to the study of food security is argued to derive from the attention it draws to household strengths in securing access to food. Moreover, such an approach will be more able to contribute to the formulation of those policies that actively support households during the recovery period. Based on current predictions, the extent of food insecurity in sub-Saharan Africa is expected to increase over the next twenty years. This research concludes by emphasising that a food policy that explicitly recognises more robust strategies will offer more constructive support to households and, consequently, break the circular process between recurrent shocks, asset depletion and the erosion of household resilience.

Household Resilience, Food Security and Recurrent Exogenous Shocks: A study from the semi-arid Communal Areas of Zimbabwe.

Michael Alderson

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This thesis is submitted in partial fulfilment for the degree of Doctor of Philosophy, Department of Geography, University of Durham

February 2001

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- 8 MAR 2002

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Abbreviations

AIDS	Acquired Immunity Deficiency Syndrome
AGRITEX	Department of Agricultural, Technical and Extension Services
AMA	Agricultural Marketing Authority
BSAC	British South Africa Company
CDM	Cold Dressed Mass
CLA	Communal Land Act
CLLCA	Customary Law and Local Courts Act
CMB	Cotton Marketing Board
CPR	Common Property Resource
CSC	Cold Storage Commission (later Company)
CSO	Central Statistical Office
CZI	Confederation of Zimbabwe Industry
ESAP	Economic Structural Adjustment Programme
FAD	Food Availability Decline
FAO	Food and Agriculture Organisation
FED	Food Entitlement Decline
GLS	Grain Loan Scheme
GDP	Gross Domestic Product
GMB	Grain Marketing Board
GNP	Gross National Product
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
ITCZ	Inter-Tropical Convergence Zone
LAA	Land Apportionment Act
LTA	Land Tenure Act
LW	Live Weight
MCB	Maize Control Board
MDC	Movement for Democratic Change
NER	Nominal Exchange Rate
NGO	Non-Governmental Organisation

NLHA	Native Land Husbandry Act
ODA	Official Development Assistance
PPP	Purchasing Power Parity
RER	Real Exchange Rate
RPI	Retail Price Index
SADC	Southern African Development Council
SAL	Structural Adjustment Loan
SDF	Social Development Fund
TTL	Tribal Trust Land
TTLA	Tribal Trust Land act
UDI	Unilateral Declaration of Independence
UN	United Nations
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Authority for International Development
VIDCO	Village Development Committee
WADCO	Ward Development Committee
WPI	Wholesale Price Index
WFS	World Food Summit
ZANU-PF	Zimbabwe African National Union - Patriotic Front
ZIMACE	Zimbabwe Marketing and Agricultural Commodity Exchange
ZJCE	Zimbabwe Junior Certificate in Education

Chapter One

The Vulnerable Continent

1.1 Introduction

The incidence of hunger and malnourishment around the world is most likely to be located in those areas where environmental, economic and other factors increase the vulnerability of people to the effects of food insecurity. However, the specific factors that determine vulnerability will vary between different locations. This chapter describes the extent of food insecurity in sub-Saharan Africa and the nature of vulnerability in the latter half of the twentieth century. The chapter also examines the prospects for reducing the extent of hunger in sub-Saharan Africa in the light of the global commitment to halve the number of food insecure people by 2015.

In recent years, food insecurity has been a recurrent event across the continent induced in part by frequent droughts and structural reforms at the macroeconomic level. With regard to the latter, the role of market-based reforms has been stressed as a means of accelerating economic growth. Economic growth that results in increased opportunities for waged employment will contribute to food security by improving access to food. However, the extent to which such policies have improved access remains debatable. Different indicators of human welfare in sub-Saharan Africa are examined in this chapter to assess the main trends in economic and social development.

Although much interest has been focussed on vulnerability to food shocks, the ability of households and individual regions to recover after a period of shortage has received less

attention. This research aims to address this through a focus on resilience at the household level. The concept of resilience is introduced in this chapter but receives a more detailed treatment in chapter two. This chapter considers the implications of exposure to successive food shocks for the formulation of those strategies that aim to contribute to the recovery of a position of food security at the household level. It concentrates on the structural nature of food insecurity and concludes by relating the significance of this research, which was conducted in two semi-arid areas of Zimbabwe, for the continent as a whole.

1.2 The Context of Food Insecurity in Sub-Saharan Africa

The problem of food insecurity is distributed across eighty-eight countries the majority of which are located in Asia and the Pacific. Sub-Saharan Africa, which accounts for approximately one quarter of the world's hungry people, has acute food insecurity in Central, East and Southern Africa. About 44 per cent of the 340 million people living in the 26 countries of these sub-regions are classified as under-nourished (FAO, 1999). Global estimates for 1995/97 indicate that about 790 million people in the developing world have an insufficient intake of food for a healthy and active life. The extent of world insecurity was underscored at the World Food Summit held in Rome in 1996 and led to a bold commitment by 186 countries to halve the number of people who are food insecure by 2015.

Recent interest in food security has been motivated by the African famine of 1984-85 and concern over the impacts of structural adjustment programmes on the more vulnerable groups in implementing countries. Significant improvements in food security across the region have been rare and the situation has deteriorated in many countries over the last

thirty years. A report produced in 1977 (IFPRI, 1977) warned that the rate of population increase had exceeded the growth in food output in twenty-eight sub-Saharan countries over the period 1965-75. Further, if the expansion in the size of population continued then the report predicted that the food deficit would increase. The expansion did continue and the food deficit did increase. The shortfall in consumption over the production of basic food staples[1] in sub-Saharan Africa was estimated at 7.6 million metric tonnes during the period 1979-83 (von Braun & Paulino, 1990).

Current projections are equally bleak. It is expected that child malnutrition will decrease in all major developing regions except sub-Saharan Africa where the number of malnourished children could rise by 45 per cent to 40 million by 2020 (Pinstrup-Andersen *et al.*, 1997). Malnutrition refers to a physiological condition which results from an inadequacy or imbalance in food intake or from poor absorption of food consumed. If the prognosis for 2020 proves accurate then research must focus on the structural basis of insecurity on this scale, particularly the dynamics of irregular access to food. Essentially, what are the factors responsible for perpetuating this food insecurity, and what strategies are emerging as a cumulative response to recurrent periods of shortage?

The food security literature has expanded and developed substantially over the past twenty years. Most notably, the work of Sen (1981) succeeded in popularising the notion that access to, rather than the availability of food is a more important determinant of food security. This dichotomy translates broadly into issues of production, as defined in terms of the level and reliability of aggregate food supplies, and consumption, which emphasises access, vulnerability and entitlement. The relative importance of different types of

---

[1] Basic food staples includes cereals, roots, tubers, pulses, groundnuts, bananas and plantains.

entitlement relations in achieving a position of food security is a dominant theme in this research. These ideas are explored and applied throughout this research and receive greater attention in subsequent chapters.

The links between poverty and food insecurity have long been recognised. Although positive rates of economic growth are not a guarantee that poverty and hence food insecurity will be reduced, rising levels of employment that increase waged opportunities for the poor will improve access to food. Indeed the World Bank (World Bank, 1990) emphasises the role of policies that harness market forces, social and political institutions and technology, and complemented by basic social services in raising the productivity of the poor's greatest asset - their labour. Raising the incomes of the poorest groups coupled with adequate and regular supplies of food is an important way by which food security may be ameliorated.

Over the past two decades, much emphasis has been placed on structural adjustment programmes in creating conditions favourable for accelerated economic growth. This is particularly true in sub-Saharan Africa where most countries embarked upon an adjustment programme during the 1980s. The results of these programmes have been mixed but a common criticism has been their negative impacts on the poor through a range of linkages (Demery and Addison, 1987a; Mellor, 1988). These issues are explored in greater detail in later chapters. For present purposes, a review of the economic and social development in sub-Saharan Africa at the close of the twentieth century is presented. This macroeconomic overview will provide the contextual background from which the issues of individual food security may be examined.

1.3 A Vulnerable Continent

Measured against a range of economic and social indicators the performance of sub-Saharan Africa during the second half of the last century was poor. The Berg Report (World Bank, 1980) was commissioned to examine the problems of development in sub-Saharan Africa and to prepare a programme of economic reform. The report reflects on the performance of the region during the 1960s and 70s and highlights the slow economic growth, low growth of agricultural output, rapid population growth and balance of payments and fiscal crises of the period as indicators of the deteriorating situation. The report states:

> Between 1960 and 1979, per capita income in 19 countries grew by less than 1 percent per year, while during the last decade, 15 countries recorded a negative growth rate of income per capita.
>
> Export production stagnated over the past two decades. A 20 percent increase in production registered during the 1960s was wiped out by a decline of similar proportions in the 1970s.
>
> Total food production rose by 1.5 percent per year in the 1970s down from 2 percent in the previous decade. But since population was rising rapidly - by an annual average of 2.5 percent in the 1960s and 2.7 percent in the 1970s - food production per person was stagnant in the first decade and actually declined in the next. Imports of food grains (wheat, rice and maize) soared - by 9 percent per year since the early 1960s - reinforcing food dependency. Food aid also increased substantially. Since 70 to 90 percent of the population earns its income from agriculture, the drop in production of this sector spelled a real income loss for many of the poorest.
> (World Bank, 1980 pp2-3).

The picture is one of a continent that was neither producing the food it required nor was able to acquire sufficient supplies through trade. Undoubtedly, historical factors such as the underdevelopment of human resources, the political fragility of many of the newly independent states and the institutional legacies of the colonial period hindered development. External shocks also played their part. The oil price rises of the early 1970s adversely effected the vast majority of sub-Saharan countries as net oil importers. However, equally insidious were the indirect effects of the oil price rise as the recession

in the industrialised countries restricted the growth of demand for primary products, aggravating the external trading positions in much of sub-Saharan Africa (Table 1.1). Despite the substantial real increase in official development assistance (ODA)[2] governments were still forced to increase their commercial borrowing and deplete reserves in order to finance the rising current account deficits.

Table 1.1
Current Account Deficit and Financing - Oil Importing African Countries 1970-78
(billions of dollars, 1978)

ITEM	1970	1973	1975	1978	1980
Current Account Balance$_a$	-1.5	-1.9	-6.4	-6.6	-8.0
FINANCING:					
ODA	1.6	2.1	3.2	3.2	4.3
Private Direct Investment	0.4	0.4	0.4	0.3	0.3
Commercial Loans	0.8	1.1	1.9	1.0	2.1
Change in Reserves and Short-term Borrowing$_b$	-1.4	-1.7	1.0	1.1	1.3
Current Account Deficit as a Percentage of GDP	2.4	3.6	9.5	8.8	9.2
ODA as a Percentage of GDP	2.7	3.9	4.7	4.4	5.0

a Excluding from current accounts net official transfers which are included in capital flows.
b A minus sign indicates an increase in reserves.
Source: World Bank (1980)

Some twenty years later the situation remains depressingly consistent. Over the period 1980-98, the population of the region grew at between 3-5per cent per annum, increasing the number of people from 380.7 million to 628.3 million (World Bank, 1999). While most economies experienced positive rates of growth of GDP, the continuing expansion of the population resulted in further declines in GNP per capita in the region of -0.7 per

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2 ODA is the net disbursement of medium and long-term official loans and grants. Technical assistance is excluded.

cent between 1987-97 (World Bank, 1998a). The labour force almost doubled from 133 million in 1970 to 263 million by 1996 but the distribution of workers between sectors and by gender altered only marginally (table 1.2). The observed decline in the proportion of the labour force engaged in agriculture has been offset almost entirely by a growth in employment in the tertiary sector. Proportionally, employment in the secondary sector, where the potential for investment to raise the productivity of the labour force is perhaps the greatest, remained low and constant over the period 1970-90. As a confirmation of the stagnant state of development, the disappointing growth of these sectors and industry in particular, is summarised in table 1.3.

Table 1.2
Employment Structures - sub-Saharan Africa 1970-1990

Percentage of:	1970	1980	1990
labour force in agriculture	79	72	68
female labour force in agriculture		80	75
male labour force in agriculture		66	62
labour force in industry	8	9	8
female labour force in industry		4	4
male labour force in industry		12	12
labour force in services	14	19	24
female labour force in services		17	21
male labour force in services		22	26

Source: Adapted from World Bank (1998a)

Table 1.3
Average Annual Percentage Growth in Value Added - sub-Saharan Africa 1975-97

	1975-84	1985-89	1990-97
Agriculture	0.6	3.4	4.0
Industry	2.5	1.8	1.1
Services	3.7	3.0	2.0

Source: Adapted from World Bank (1998a)

Agriculture continues to be the principal sector in sub-Saharan Africa as the producer of food and the earner of foreign exchange. Although the sector's contribution to GDP declined from around 39 per cent in 1980 to 34 per cent in 1998, the level of agricultural output remains the major determinant of economic growth (World Bank, 1999). Food production, including livestock continues to form the basis of livelihoods for the majority of the population. For many countries agricultural commodities are the largest earner of foreign exchange, providing funds for imports and investment. Indeed, the potential for agricultural development to contribute to sustained improvements in regional food security has been stressed (Van Rooyen and Sigwele, 1998; Abalu and Hassan, 1998). Given the high resource dependency of agricultural systems in sub-Saharan Africa it is suggested that this may be achieved by increasing the efficiency of resource use by encouraging the intensification of production within a framework of increased co-operation between countries that exploits national comparative advantage.

The performance of the agricultural sector in food and non-food production is summarised in table 1.4. While the region as a whole secured increases in food production, this growth rate was exceeded by that of the human population perpetuating the decline in per capita food production established in the 1970s. The pattern of agricultural exports between 1975-97 exhibits a high degree of variability. Sub-Saharan Africa is dependent on a narrow range of exports making the region particularly susceptible to changes in either the quantities or prices of the commodities exported. More importantly, the prices of most agricultural commodities are exogenously determined on the world market. Where the movement in prices or volumes is adverse and/or variable the implications for income at both the macro and sector levels are clear. The resultant change in income will be exaggerated through multiplier effects causing swings in GDP with implications for the

levels of employment, investment and consumption in other sectors of the economy. Where such movements are perceived to increase the risk associated with production then this may have some significance for the choice of production technology including cropping patterns. The investment required to establish more capital intensive and hence more productive technologies is unlikely to be encouraged under conditions of higher risk.

Table 1.4
Average Annual Percentage Growth Rates for Production and Trade - sub-Saharan Africa 1975-97

	1975-84	1985-89	1990-97
PRODUCTION			
Food	1.0	3.9	2.7
Food per capita	-1.4	0.4	-1.0
Non-food	2.5	1.1	1.0
EXPORTS			
Cocoa	0.4	5.3	2.6
Coffee	-2.4	-0.2	-1.5
Cotton	1.6	6.7	-0.3
Sisal	-9.6	-8.7	-3.4
Tea	3.8	4.9	4.7
Sugar	-0.4	2.8	-2.5
Tobacco	3.0	0.4	10.5
Groundnuts	-8.9	15.8	-6.3
Oil Palm	-12.3	9.6	-0.4
IMPORTS			
Food	22.1	-8.3	3.2
Non-food consumer goods	28.2	20.3	1.5
Primary intermediate goods	11.8	11.8	-0.5
Manufactured goods	22.3	3.5	3.1
Capital goods	11.0	8.9	2.6
TERMS OF TRADE	1.2	-3.3	-0.1

Source: Adapted from World Bank (1998a)

Generally, the growth of imports in all major categories of goods accelerated between 1975-97. The low rate of growth for capital and primary intermediate goods is of concern since this will be of significance for the structure of the economy. This also reinforces the picture of stagnant development outlined above. The growth of imports relative to exports during the 1980's would have contributed to the unfavourable movements in the terms of trade presented in table 1.4. Deaton and Miller (1996) have suggested that in Africa there may be strong short-term effects on the level of output as a consequence of such movements in the terms of trade. Specifically, they estimated that a terms of trade shock equal to one percentage point of GDP has a direct effect on GDP of about 0.6 per cent.

The external position of sub-Saharan Africa has continued to deteriorate as its share of world trade has declined to negligible proportions (table 1.5). Its economies have become more inward looking at a time of unprecedented growth in the world economy as other countries have become more integrated through trade. As a continent, sub-Saharan Africa is less open to trade as a consequence of widespread restrictive trade policies and natural barriers (Collier, 1997). An index of trade policy ranked the continent as the highest for trade restrictions (Dollar, 1992). The gap in the index between sub-Saharan Africa and the next most restrictive region, the Middle East, was wider than that between the Middle East and the most liberalised region, the Far East. Moreover, no region has been able to sustain rapid growth in isolation from the world economy.

Table 1.5
Regional Percentage Shares of World Merchandise Trade 1983-98

Region		1983	1988	1993	1998
Value World Merchandise Exports US$ millions		1,757,216	2,627,026	3,701,466	5,414,844
Sub-Saharan Africa	**Exports**	2.8	1.1	1.7	1.6
	Imports	3.0	1.2	1.6	1.6
East Asia/Pacific	**Exports**	5.5	6.6	8.3	9.9
	Imports	5.8	6.1	8.8	7.7
Lat America/Carib	**Exports**	5.7	3.9	3.6	5.0
	Imports	4.2	2.9	4.3	6.3
South Asia	**Exports**	0.8	0.8	0.9	0.9
	Imports	1.4	1.3	1.1	1.3

Source: Adapted from World Bank (1990, 1995, 1999)

The current account deficit continues to be financed from official development assistance, borrowing and to a lesser extent from capital grants and the running down of reserves (table 1.6). The development of many countries in sub-Saharan Africa is characterised increasingly by long-term relief. Indeed, in Africa aid is by far the largest component of the external debt. The irony is that while the primary aim of aid is to encourage investment in development, the increasing burden of the aid debt may have the opposite effect due to the implications for future taxation. A study by Boone (1994) failed to establish a relationship between aid and economic growth. A later study, (Boone, 1995) indicated that aid, rather than increasing investment may discourage savings instead. Rodrik (1989) found that in Africa and unlike any other region, there is a negative relationship between the flow of private capital and prior aid flows. This is supported by work by Oshikoya (1994) which established that the lagged effects of debt on private investment are large and negative. Thus, despite the volume and frequency of aid flows to the continent over the

past thirty years there is little basis on which to assume that they have contributed positively to development. On the contrary, the evidence would tend to suggest that, overall and notwithstanding some successes, the huge transfers of aid have been of little significance for economic growth and development in Africa.

Table 1.6
Current Account Deficit and Financing - sub-Saharan Africa 1975-97
(millions of dollars, current prices)

ITEM	1975-84	1985-89	1990-97
Current account balance excluding net capital grants	-8,844	-7,656	-11,173
FINANCING			
Net ODA	5,836	11,868	17,302
Net capital grants	1,051	2,687	4,136
Net foreign direct investment	675	1773	1516
Net long-term borrowing	6,186	5,682	4,001
Other capital flows	2,322	-1,334	3,348
Use of reserves	1,152	-1,147	-2,157
Current account deficit as a percentage of GDP	4.6	3.2	3.9
Net ODA as a percentage of GDP	2.6	4.9	5.8

Source: Adapted from World Bank (1998a)

1.4 Indicators of Social Development

Traditionally, development as a process is evaluated predominantly in economic terms. There continues to be a preoccupation with indicators such as GNP, GNP per capita, rates of economic growth and levels of output and employment as measures of the degree of economic improvement and structural change. GNP is the broadest measure of national income and includes the total value added from domestic and foreign sources. GNP per capita is perhaps the most often quoted indicator of development. Its intention is to facilitate international comparisons of economic development between countries. Furthermore, the figure is used to rank countries in the development league tables included annually in the World Development Report. According to their ranking, countries are classified into low, middle or high income countries. More importantly, league position is a key element in determining the terms and eligibility for borrowing from the World Bank.

International comparisons of GNP may not always convey an accurate picture of a country's relative economic standing where nominal exchange rates have been used to convert figures from domestic currency into US dollars. Nominal exchange rates can fail to capture important differences in relative prices between countries. In an attempt to overcome this problem GNP is sometimes converted at purchasing power parity (PPP). This is GNP converted to US dollars using the purchasing power parity exchange rate at which one dollar has the same purchasing power over domestic GNP that the US dollar has over US GNP. Converting GNP at PPP into international dollars facilitates standard comparisons of real price levels between countries.

To assess the position of sub-Saharan Africa in the global economic league a range of GNP

data are provided in table 1.7. According to all the measures presented, sub-Saharan Africa lingers depressingly at the bottom. The short lead over South Asia in GNP per capita is swiftly removed when converted at PPP. The modest rate of growth of GNP estimated at 2.2 per cent in 1998 becomes negative when distributed across the ever increasing population on the continent. Of greater concern is that all the GNP figures for sub-Saharan Africa are less than the average for all low income countries.

Table 1.7
International Comparisons of GNP - 1998

	GNP		GNP per Capita		GNP at PPP	
	US$ Billion 1998	Av Annual Growth Rate 1997-98	US$ 1998	Av Annual Growth Rate 1997-98	US$ Billion 1998	US$ Per Capita 1998
SSA	304.2	2.2	480	-0.4	900.6	1,430
SA	555.5	5.9	430	3.9	2,100.4	1,610
LI	1843.7	3.8	520	2.1	7,475.1	2,130
MI	4,419.6	-0.4	2,950	-1.5	8,315.8	5,560
HI	22,599.0	1.6	25,510	1.1	20,766.0	23,440

(SSA: sub-Saharan Africa, SA: South Asia, LI: Low Income, MI: Middle Income, HI: High Income)
Source: Adapted from World Bank (1999)

While such data may provide information on the status of key economic variables they offer little insight into the quality of the life enjoyed by populations in different countries. Gauging the comparative level of development between countries is problematic and real difficulties are encountered in attempting to obtain cardinal measures. A fundamental problem lies with how development is defined. One source defines development as a "process of improvement with respect to a set of values" (Colman and Nixson, 1978). The purpose or function of development as a process is extremely general in this definition. What is critical is the set of values by which it is evaluated. Typically the most frequently

selected are usually those which are easily quantifiable such as the economic indicators described above. However, the improvements of most interest with respect to social development are those that relate to the quality of human life. For this, no single indicator is sufficiently robust to capture the complexity that constitutes 'quality of life'. Approximations are possible by considering a range of indicators such as levels of education and health, standards of living and child nutrition, none of which lends itself readily to measurement.

This problem is emphasised in the following definition of development:

> Economic development is defined as a sustainable increase in living standards, that encompass material consumption, education, health, and environmental protection. Development in a broader sense is understood to include other important and related attributes as well, notably more equality of opportunity, political freedom and civil liberties.
> (World Bank 1991a, p31).

While this definition emphasises the economic dimension of development, it does however draw attention to those aspects of development more relevant to the quality of human life, namely education, health, environment, freedom and liberty. Indicators of these variables attempt to capture particular elements that constitute 'quality of life' within and between countries. However, it is doubtful if such indicators, whether examined individually or together are capable of providing more than a superficial impression of *relative* standards of living. A summary of selected social indicators for different regions and classifications of countries is provided in tables 1.8 - 1.10.

Table 1.8
Health Indicators Various Regions - 1997

	Public Expenditure on Health %GDP 1990-97	Life Expectancy at Birth (Years) 1997 Males	Females
SSA	1.7	49	52
SA	0.8	62	63
LI	1.0	62	64
MI	2.4	66	72
HI	6.0	74	81

Source: Adapted from World Bank (1999)

Table 1.9
Mortality Indicators Various Regions - 1980-97

	Total Fertility Rate (Births/woman) 1980	1997	Mortality Rate Infant<1yr (Per 1,000 live births) 1980	1997	Mortality Rate Child<5yr (Per 1000 children) 1980	1997
SSA	6.6	5.5	115	91	189	147
SA	5.3	3.5	119	77	180	100
LI	4.3	3.2	98	69	151	97
MI	3.7	2.5	59	33	n/a	42
HI	1.8	1.7	12	6	15	7

Source: Adapted from World Bank (1999)

The indicators presented provide proxies for quality of life. The data have been selected and grouped to permit comparisons with South Asia and the low, middle and high income country averages. Most African countries fall into the low or lower-middle income categories. It is therefore reasonable to draw comparisons with low and middle income country data. Data from the high income countries are included to represent the frontier in the current levels of indicators of social development.

From birth, both male and female children in sub-Saharan Africa have the lowest life

expectancy of any region (table 1.8). On average they can expect to have a life twelve years shorter than people in South Asia, the next lowest group. Mortality rates for infants under one year and children under five years in sub-Saharan Africa are the highest and are substantially greater than those for South Asia (table 1.9). This is despite health expenditure expressed as a percentage of GNP being over twice that for South Asia and comfortably above the average for low income countries. This has implications for the quality and reach of the health services in sub-Saharan Africa. Clearly, resources are being allocated to health care but systems of provision are not achieving a status of health for children and adults that would permit a length of life comparable to other parts of the world.

Recent research (Filmer and Pritchett, 1997) suggests that the level of public spending on health has little impact on child or infant mortality. According to the research, around 95 per cent of the cross-country variation can be explained by a country's per capita income, the distribution of income, the extent of women's education, the level of ethnic fragmentation and the predominant religion. Other research (Bloom and Lucas, 1999) links the lack of basic health, water and sanitation infrastructure to poor health performance in Africa. The paper acknowledges the general improvements in health status that have been achieved since the 1960s but notes that there has been a slowing down and even reversals in mortality rates in some countries. In this respect, the spread of HIV/AIDS and the resurgence of malaria and tuberculosis are recognised but the importance of effective basic health care is emphasised in reducing mortality. Governments in Africa rather than attempting to increase the funding available for health service should attempt to redirect existing resources to promote the changes required to establish effective health services.

In 1980 sub-Saharan Africa spent a greater amount as a percentage of GNP on education than the middle income country average (table 1.10). By 1996 this had fallen but was still ahead of that for low income countries. Nevertheless, the continent has the largest proportion of children in the age range 10-14 years actively seeking work. These are sensitive data and not easily collected due to child labour being illegal or officially deemed not to exist in many countries. However, it is likely that the data under-report the extent of child labour since children involved in agricultural or household activities with their families are not included.

Table 1.10
Education Indicators Various Regions - 1980-98

	Public Expenditure on Education %GNP		Children 10-14 years % Seeking Work		Adult Illiteracy Rate % People >15 years 1997	
	1980	1996	1980	1998	M	F
SSA	4.1	4.3	35	30	34	50
SA	2.0	3.0	23	16	36	60
LI	3.2	3.9	28	17	22	42
MI	4.0	5.1	10	6	10	16
HI	5.6	5.4	0	0	n/a	n/a

Source: Adapted from World Bank (1999)

Table 1.11
School Gross Enrolment Ratios - sub-Saharan Africa 1980-95

	1980	1990	1993-95
Primary - Total	76	73	75
Primary - Male	87	80	82
Primary - Female	66	65	67
Secondary - Total	14	22	26
Secondary - Male	19	25	27
Secondary - Female	10	20	23

Source: Adapted from World Bank (1998a)

Adult illiteracy rates are comparable with South Asia (table 1.10) with about half of all women in sub-Saharan Africa classified as illiterate. It has long been established that education for females is an effective way of reducing poverty by encouraging smaller, healthier families and raising living standards. Work from Zimbabwe (Mutambirwa *et al.*, 1998) supports the view that the ability to plan family size is a necessary condition to improve the quality of life. The total fertility rate (table 1.9) remains higher in sub-Saharan Africa than in any other region. Between 1980 and 1997 this rate was reduced by about 34 per cent from 5.3 to 3.5 births per woman in South Asia. In sub-Saharan Africa over the same period fertility rates fell by only 17 per cent and from 6.6 to 5.5 births per woman. While not discounting the importance of this decrease the fertility rate for sub-Saharan Africa in 1997 remains ahead of that recorded for South Asia nearly twenty years previously. The causes of persistently high rates are complex but the low level of school enrolment for females relative to that for males (table 1.11) may offer some explanation for the disappointing progress in managing female fertility.

1.5 Research Context

From the evidence presented concerning recent trends in economic and social development in sub-Saharan Africa the objective of halving chronic malnutrition by 2015 would appear somewhat optimistic. Based on past and present performance, that food insecurity will rise in some sub-Saharan Africa countries would appear probable. Vulnerability to food insecurity persists across the continent in terms of the access to, and the availability of food. Although food production has increased in aggregate, the rate of increase has been exceeded by the growth of the human population. The weak external position of the region continues to create problems in sourcing food on the world market. Food imports are

increasingly financed from aid flows which in turn may have negative affects on investment in the wider economy.

Weak economies coupled with rapid population growth have contributed to the low and declining GNP per capita for the continent. Despite the economic reforms initiated across the continent since 1980 incomes in sub-Saharan Africa continue to rank as the lowest in the world. Low and declining real incomes increase vulnerability by reducing access to purchased food. This is the major source of food for the urban poor and those people in rural areas who are predominantly net purchasers of food. Agriculture continues to sustain the majority of the population through the domestic production of food yet many small-scale farmers are food insecure. This insecurity arises from factors such as the quality and quantity of agricultural land, recurrent droughts and the effects of poor physical and economic infrastructures on agricultural productivity.

There is a tendency within the food security literature towards a preoccupation with the current state of food insecurity rather than the adaptations that take place in strategies over time (USAID, 1998). If policy on food security is to reverse or even check trends in sub-Saharan Africa then it needs to be informed as to the nature and durability of the strategies emerging to secure access to food. Food insecurity affects millions of *individuals* every day. In order to survive, these individuals and groups of individuals as households pursue strategies to obtain some level of access to food. The specifics of these strategies will be determined largely by individual circumstances. Adapted strategies are likely to evolve as circumstances alter over time. Induced adaptations may take place following periods of adversity such as drought, inflation or unemployment. The status of household food security in such circumstances will be influenced by the cumulative experience of similar

events. Where successive exposure to adverse events leads to the erosion of those household assets accumulated as buffers, conditions are created under which new or adapted strategies may emerge. Vulnerable households are susceptible to a range of shocks which, by affecting channels of access may lead to subsequent changes in the way food is secured.

In the semi-arid areas of southern Africa traditional food security strategies equipped households to cope with the effects of infrequent food shortages, which occurred approximately one year in five (Iliffe, 1990). The time between periods of deficit was generally sufficient to replenish food stocks and to accumulate new assets. In other words, the strategies in place for securing food were durable so that a position of security was maintained in the long term. An increase in the variability in those systems associated with securing access to food (and outlined above) has undermined this durability. Successive bouts of shortage have reduced the ability of households to maintain a position of food security in the longer term by reducing the time period over which portfolios of strategic assets may be reestablished.

Therefore, the main concern in this research is to assess the extent to which recurrent shocks have affected the ability of households to recover a position of food security. Additionally, it seeks to identify those strategies instrumental in securing access to food during periods of shortage. It also seeks to establish if strategies are being adapted in the face of recurrent shortages in ways that support the resilience of households. Where strategies are being adapted as a consequence of frequent exposure to food shortages then the research needs to ascertain if the ability to adapt strategies is itself a determinant of resilience. Finally, an additional concern is to determine the extent to which strategies for

resilience are differentiated according to gender.

The resilience or ability of households to return to a position of food security after a period of shortage is a fundamental concern of this research. Successive exposure to exogenous shocks will tend to increase the vulnerability of a household and so reduce resilience. Less resilient households will be more prone to frequent bouts of transitory food insecurity. In this respect, the extent to which traditional strategies are breaking down or are being adapted, and the extent to which new strategies are evolving forms a major component of the empirical work presented in later chapters. Some strategies to emerge may be more durable and so provide more reliable access to food. A food policy that explicitly recognises such strategies will be more able to support the efforts of individuals and households in improving their position of food security. An additional purpose of this investigation is to further understanding of the forces involved in shaping food security strategies at the level of the household under recurrent periods of food shortage. It is hoped ultimately, that the results of this research will inform and contribute to policy-making on food security in sub-Saharan Africa.

While a concern of this work is the status of food security in sub-Saharan Africa the country focus of the research is Zimbabwe. Zimbabwe was selected for three main reasons. First the author worked in the country during the early 1980s through which a number of valuable links were established which have facilitated this research. Secondly, the proportion of undernourished people in the population rose from 30 to 39 per cent over the period 1979/81 to 1995/97 (FAO, 1999). The causes of this increase are complex and form a key concern of this work. Finally, an extensive literature exists on Zimbabwe supported by a diverse range of secondary data from government and international sources.

This was drawn upon extensively to underpin the primary research enabling the work to be undertaken with limited resources.

Within Zimbabwe the main preoccupation of this research is with food security in the rural as opposed to urban areas, since, in common with the rest of sub-Saharan Africa agriculture continues to be the main source of livelihood. While food security strategies encompass complex rural-urban linkages a major concern is to delineate those strategies that affect the status of food security in the rural areas. The research is based upon primary data collected from two Communal Areas located in the semi-arid regions of Zimbabwe; the Semukwe Communal Area in the province of Matabeleland South and the Mberengwa Communal Area in the Midlands province. The areas were visited annually between 1994-98 with the main enumeration period taking place during the dry season of 1998. The survey combined a formal questionnaire conducted in fifty households in each Communal Area with semi-structured interviews with key informants such as chiefs, councillors, head teachers and health workers. The methodology employed in the survey receives a more detailed treatment in chapter three.

1.6 Structure of the Thesis

The notion of resilience is central to this research. Chapter two explores resilience, both conceptually and practically, through a review of the literature on the subject. The relationship between exchange entitlements and resilience is considered and the significance for policy-making on food security is noted. The chapter develops a framework for the analysis of resilience which is applied in the main empirical work of this research.

Chapter three provides an introduction to the survey areas in terms of their location and basic demographic characteristics. It outlines how the survey was developed and refined and discusses the methodology employed for the collection of household data. It describes some of the problems that were encountered and how these were overcome.

Chapter four examines the historical context of resilience in Zimbabwe and reviews the circumstances that resulted in changes in the way food has been accessed from the pre-colonial period to the present day. The shifts in the way food has been accessed over time are considered in the context of the development of the colonial economy and its impact upon traditional African society. Particular attention is paid to the creation of the dual system of agriculture that persists in Zimbabwe today. The consequences of this system in terms of the induced changes in the components of household resilience are assessed within the framework of exchange entitlements.

The linkages between macroeconomic reform and the position of food security enjoyed at the household level are identified in chapter five. The context of structural adjustment programmes in sub-Saharan Africa is discussed briefly but a more detailed treatment is devoted to their impact on food prices. In this respect, the relationship between macroeconomic reform, food prices and entitlements is considered in the light of empirical evidence from Zimbabwe and other countries in sub-Saharan Africa.

The critical importance of the timing and distribution of rainfall to the success of agricultural systems in semi-arid areas is emphasised in chapter six. Patterns of rainfall over a period of about one hundred years are analysed for the survey areas. The implications of frequent drought for coping strategies are discussed and provide the context

for the empirical work included in the final chapters.

In chapter seven the empirical work begins with an examination of the age and gender profiles of households in the survey areas. The nature of inter-household links are explored and their significance for food security at the individual and collective levels are described. The role of education in improving household resilience is discussed in relation to recent trends in the charging of user fees and school enrolments in the survey areas.

In chapter eight the contribution made by on-farm activities to household resilience is examined in detail. The integrated nature of agricultural production is emphasised but the individual contributions of arable and livestock enterprises to household food security are evaluated separately. The potential for improved systems of agricultural marketing to support household resilience is stressed in the conclusion.

Where local resources fail to meet the food requirements on-farm the geographical extent over which strategies to improve household food security may increase. Chapter nine examines those activities off-farm that aim to support household resilience. The asymmetric flows of migrant labour and remittances are noted. The composition of household income-earning strategies are analysed and the results are stratified according to survey area. The gender dimension of household resilience is examined and the policy implications of this are suggested.

Chapter ten summarises the main strands of this research and evaluates the consequences of recurrent exogenous shocks in terms of the dominant responses of households. The schematic framework for the analysis of resilience is reintroduced to present the most

significant components identified by the survey. The relationship between irregular access to food, malnutrition and household resilience in the longer term is examined briefly. The analysis of the unitary model encountered in chapter five is revisited to consider the compound effects of drought and devaluation at the household level. From the evidence provided on the components of resilience, the durability and limitations of household strategies are described and their implications for policy are identified. Finally, the limitations of this research and suggestions for further study are noted.

Chapter Two

Food Security and Household Resilience - A Conceptual Review

2.1 Introduction

A central interest in this research is the analysis of the ability of households to recover from a food shock. Under circumstances where these recur with regularity then the ability to recover may become impaired as households attempt to respond to successive shocks. The concept of resilience has its origins in the ecology literature and has been applied in a number of other natural and social sciences. In general, resilience refers to the ability to persist under fluctuating conditions. The application of resilience to the recovery by households of a position of food security is limited and provides much of the rationale for the subject matter of this research. A gap in the literature exists which this work seeks to make some contribution in filling.

Therefore, the purpose of this chapter is to review the literature on food security and to clarify the key concepts and definitions to be used in this research. Food security is discussed in some detail, particularly the management of risk in the access of households to food. The debate concerning availability versus access as causes of food insecurity is considered in terms of their complementarity rather than as competing positions. The role of entitlements in determining access to food is discussed and integrated within a framework for the analysis of resilience. The development of this framework forms a significant proportion of this chapter since this underpins the main empirical work of this research. The relationship between exchange entitlements and resilience is considered and the significance for policy-making on food security is noted.

The resilient household is defined and its relationships with other households and the economic and institutional setting are explored. It is suggested that under conditions of recurrent exogenous shocks, the distinction between resilient and fragile households may become blurred and provides the context for the empirical work presented later in this thesis.

2.2 Global Food Insecurity - Intention versus Prevention

In 1948, the Universal Declaration of Human Rights affirmed that "Everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food" (UN, 1948). This was a timely edict but despite the strong rhetoric progress in eliminating hunger has been depressingly slow . For example, it was another fifteen years before the World Food Programme was established in 1963. The Universal Declaration on the Eradication of Hunger and Malnutrition was made at the World Food Conference of 1974 following a series of devastating food crises during the early 1970s. The crises afflicted Nigeria (1968-70), the Sahel (1969-74), India (1972-73), Ethiopia (1972-75), Somalia (1974-75) and Bangladesh (1974), with an estimated total of 3 million lives lost due to lack of food (Devereux, 2000). In the next decade, attention shifted to the African famine of 1984-85. More recently, concern has focussed on the negative impacts of the structural adjustment programmes, implemented in most sub-Saharan African countries on the nature and extent of food insecurity (Marquette, 1997).

The World Food Summit (WFS) held in Rome in November 1996 reaffirmed the right of every individual to be free from hunger. This statement was made against the backdrop of global food insecurity where an estimated 20 per cent of the world's population suffered

from hunger and, at the extreme, eight hundred million of these endured chronic malnutrition (FAO, 1996). The Rome Declaration made the optimistic pledge of halving chronic under-nutrition by 2015. Ignoring population growth, the achievement of this target would require reductions in the region of 20 million people per year from the numbers of those presently suffering from the effects of food insecurity. Current estimates fall far short of this rate at around 8 million per year (FAO, 1999). If this trend continues, over 600 million people will continue to face food shortages by 2015.

Action to reduce global hunger has consistently been motivated in retrospect by outbreaks of food shortage rather than by the pressing need to develop systems of prevention. It is somewhat ironic that the twentieth century which witnessed tremendous strides in the production of food also saw the greatest number of deaths attributable to famine of any century. It is estimated that between 70 to 80 million people died from famine in the twentieth century compared with 25 million in the nineteenth, 10 million in the eighteenth and 2 million in the seventeenth centuries (Dando, 1980). However, in the latter part of the last century much progress was made in eradicating famine. Many food crises have been averted through the emergence of a demonstrated ability and will on global scale to respond rapidly to humanitarian crises. This development must be encouraged if the twentieth century is to be the last when millions of people died from a lack of access to food.

The latter half of the twentieth century was also the period when food crises became concentrated in sub-Saharan Africa. The main trigger for these events was the interaction between drought and civil war (Devereux, *op. cit.*). Other reasons for the persistence of food insecurity across the continent have been outlined in the previous chapter and would

include declines in per capita food production, stagnant economies which led to a deterioration in the ability to augment domestic supplies through the world market and a failure to create a vibrant non-farm sector. The last thirty years have also witnessed a corresponding growth in the literature on food insecurity and famine as interest in the subject has grown.

2.3 Definitions of Food Security

Food security is an eclectic term which has inspired a cornucopia of definitions. Variations in its use often stem from different levels of analysis, geographical locations, conceptual starting points or programmatic priorities (Maxwell & Frankenberger, 1992). The World Bank (1986) defines food security as "enough food for an active, healthy life". Although this definition stresses sufficiency in consumption it is less forthcoming as to what constitutes an active, healthy life. Smith *et al.* (1992) catalogue over 180 items relating to concepts and definitions on household food security, with 80 per cent produced over the period 1986-91. A selection of these definitions are provided in table 2.1

Table 2.1
Definitions of Food Security 1975-1991

Definition	Source
Availability at all times of adequate world supplies of basic food-stuffs ..... to sustain a steady expansion of food consumption ..... and to offset fluctuations in production and prices.	UN, 1975
The ability to meet target levels of consumption on a yearly basis.	Siamwalla & Valdes, 1980
Ensuring that all people at all times have both physical and economic access to the basic food they need.	FAO, 1983
The stabilisation of access, or of proportionate shortfalls in access, to calories by a population.	Heald & Lipton, 1984
Always having enough to eat.	Zipperer, 1987
Adequate food supplies to all people on a regular basis.	UN, 1988
Access to adequate food by and for households over time.	Eide, 1990
The assurance of food to meet needs throughout every season of the year.	UNICEF, 1990
Access to food, adequate in quantity and quality, to fulfil all nutritional requirements for all household members throughout the year.	Jonsson & Toole, 1991
Enough food available to ensure a minimum necessary intake by all members.	Alamgir & Arora, 1991

Source: Adapted from Smith *et al.* (1992)

All of the definitions in table 2.1 embrace the notion that household food security requires secure access to food at all times. The key elements are therefore sufficiency, access, security and time. Thinking about sufficiency in consumption converges on the basic human requirement for some minimal level of food intake. What constitutes enough food is problematic and will inevitably be prone to value judgements. Nearly all of the definitions cited sidestep the issue of prescribing estimates for the calorific requirements and the cultural acceptability of foods for different groups of people. Assessing how far people fall below the threshold of acceptable levels of consumption presents further problems. Therefore, the process of setting food intake targets must necessarily adopt a location-specific approach. Thus, a useful starting point would seem to be a concentration

on calories within a given cultural context, and concomitantly to raise the profile of human needs from basic survival towards those associated with an active, healthy life.

The definition to be used in this research is that food security is access to food, adequate in quantity and quality, to fulfil all nutritional requirements for all household members throughout the year (Jonsson and Toole *op. cit.*). It is favoured since in addition to the four key elements of food security there is an implicit recognition of the importance of the calorific and nutritional value of food (*all nutritional requirements*). Additionally, its cultural acceptability can be interpreted as the *quantity and quality* of the food. Finally, it includes *all household members* in the unit of consumption so drawing attention to issues relating to the intra-household allocation of food between gender and age groups. Food security at the household level requires that the *individual* requirements of all household members are satisfied.

Although the terms famine and food insecurity are closely related they are not interchangeable. Food insecurity may be conceived as arising from shortfalls in the quantity of food required to meet the nutritional requirements of a household. The severity of food insecurity will be determined by the extent and length of the shortfall which in its most extreme form would lead to famine. Recent thinking has revised the traditional view that famine is a discrete event triggered by food shortage resulting in mass death by starvation (Devereux, 2000). For example, the work of Sen (1981) considers a decline in the availability of food as neither a sufficient, nor indeed necessary condition for the existence of famine. Thus, famine may be more constructively conceived as "a socio-economic process which causes the accelerated destitution of the most vulnerable, marginal and least powerful groups in the community, to the point where they can no longer, as a

group, maintain a sustainable livelihood" (Walker, 1989). Famine is now recognised as embracing a range of complex processes with the creation of food insecurity as the main manifestation.

A distinction needs to be made between chronic and transitory food insecurity in the intertemporal access to food. Chronic food insecurity implies a persistent inability to secure sufficient food whereas transitory refers to a temporary deterioration in access to food. Food insecurity in general may be defined as a low level of food intake (FAO, 1999). Undernourishment is associated with chronic food insecurity where food intake is insufficient to meet basic energy requirements on a continuing basis. Chronic food insecurity may have a range of consequences other than death, including economic destitution, the breakdown of communities, migration and the outbreak of disease. In practice the two types of food insecurity may be closely linked where successive exposures to transitory food insecurity lead to the disposal of assets, exposing the household to the more virulent, chronic form. Thus, although poverty and vulnerability are common to both types of food insecurity, they are differentiated by the nature and extent of undernutrition.

2.4 Food Security - Access and Availability

The 1980s represented a period of progression in the understanding and conceptualisation of food insecurity. This progression is evidenced in the dramatic expansion in the food security literature over the period. There was a growing complexity which grew out of changes in the way the nature of food insecurity was conceived. For example, earlier thinking had considered famine to originate from simple shortfalls in the supply of food or a 'food availability decline' (FAD). These were associated with crop failures.

particularly those caused by extreme events such as droughts or floods. The solution to hunger was therefore to increase the availability of food staples. Hunger rationalised in this way provided the basis for the 'Green Revolution' of the 1950s and 60s, where the main impetus of international efforts on food security was to increase the production of staple crops through improvements in agricultural technology. A preoccupation with increasing the production and availability of food is clearly identifiable in the United Nations (1975) definition of food security provided in table 2.1.

The inherent weakness with the FAD perspective has already been alluded to; that a decline in the availability of food is neither a necessary nor sufficient condition for famine to occur. In circumstances where the domestic production of food is insufficient to meet the requirements of a particular group other sources may be utilised. Food may be purchased from surplus producers either regionally or on the world market. Additionally, transfers of food may be obtained from the national government or from international sources of aid. Thus, for a food availability decline to develop into famine, domestic production, trade and aid must all fail simultaneously. A food production failure can only escalate into a famine where the affected region is isolated either through a lack of local markets or deficiencies in the physical infrastructure, so frustrating access to wider sources of additional supplies.

During the1980s interest switched from the macro concerns of the aggregate availability of food that had dominated earlier periods towards issues of individual and household access to food and its relationship to poverty. A common observation had been that it was usually the poor rather than the rich who suffered most during periods of food insecurity (Devereux, 1988). FAD explanations were unable to account for the unequal distribution

of the deleterious effects of famine between rich and poor groups. It appeared that the rich were able to secure access to food stocks which, for some reason, were not available to the poor.

The seminal work of Sen (*op. cit.*) emphasises the role of entitlements in determining the access of individuals to food. Entitlements correspond to an individual's initial resource endowment which may be transformed in a market economy via production or trade into food or commodities which may be exchanged for food. The set of alternative bundles of commodities that may be obtained through such exchanges are known as *exchange entitlements*. In a market economy these would include:

(a) production-based entitlements where one is entitled to own what one produces by using one's own resources;

(b) trade-based entitlements where one is entitled to own what one obtains by trading something one owns with a willing party;

(c) own-labour entitlements where one is entitled to one's own labour power and thus to trade-based and production-based entitlements related to one's own labour power;

(d) transfer entitlements where one is entitled to own what is given by another party.

Food insecurity arises when, for any particular resource endowment, the exchange entitlement does not contain any bundle with sufficient food. Hunger can occur independently of the level of food production if exchange entitlements are adversely affected. For example, this may be as a consequence of drought in the case of subsistence producers of food, or of rapid rises in the price of food for waged labour. Equally, an

increase in the general availability of food is not a sufficient or necessary condition for a reduction in the extent of hunger. Within this framework, food insecurity is the result of a collapse in food entitlements or a food entitlement decline (FED). A growing acceptance of the FED approach during 1980s is indicated by the increased emphasis on access to food in the later definitions of food security in table 2.1 above.

FAD and FED approaches to the analysis of famine originate from different viewpoints. FAD, provides a largely macro perspective with its focus on food supply at the regional, national or international levels. FED, in contrast is more concerned with the different forms of access to food at the individual or household levels. FAD points to supply failures as the cause of famine whereas FED points to an inability (for various reasons) of certain socio-economic groups to translate need into effective demand. Neither approach is sufficiently robust to offer a universal theory of the causes and effects of food shortages. FAD offers a partial explanation of famines triggered by a production failure, while the strength of FED lies in its ability to identify those groups most likely to be adversely affected by famine. Rather than offering competing positions on the understanding of famine each approach has its merits. In conjunction the two approaches offer a more complete framework for the analysis of famine. Thus, it would appear more pragmatic to adopt a position that combined the individual and distinct strengths of FAD and FED in understanding famine, and perhaps more pertinently, in determining the most appropriate policy response.

2.5 Food Security and Risk

The final dimension of food security is the notion of risk or the potential for variability in access to food. Risks that may jeopardise food entitlements may emanate from different adverse changes or shocks. They may originate in the conditions under which food is produced (climate, pests, drought, natural disasters etc.) and from volatility in those markets (prices, incomes, distribution and employment opportunities) associated with conferring access to food. Increasingly in Africa, conflict and AIDS are common sources of risks to food entitlements. The matrix presented in table 2.2 describes the main relationships between the different types of risk (columns) and the main sources of food entitlements (rows).

A substantial literature exists on the modelling of risk but a detailed discussion of this will not be attempted here. Rather the emphasis will be to define risk as it relates to the interests of this research. The terms risk and uncertainty appear in similar contexts throughout the literature but they are not synonymous for the purposes of economic analysis. The distinction between the two lies in the extent to which a probability can be attached to the occurrence of some event. Risk is restricted to those situations where probabilities can be attached to the likelihood of some event occurring (Ellis, F., 1988). If, in a particular region it is established from meteorological data that drought is likely to occur once in every five years, then the probability or risk of a drought occurring is 0.2 or 20 per cent. Uncertainty, on the other hand, refers to situations where the likelihood of an event occurring is not known and hence it is not possible to attach probabilities.

Implicit in this definition is that risk can be *objectively* determined *a priori* for the purposes of decision-making. Such decision-making is supported by recourse to statistical data or

similar information. However, in the context of food security, the assumption that households make objective decisions regarding the risk of food shortages appears somewhat spurious. The household response to the likelihood of food shortages will be based on the decision-maker's judgment. This judgement will be tempered by the experience of similar events in the past. Thus, household strategies to cope with the likelihood of food insecurity will be formulated on the basis of a *subjective* evaluation of past experiences rather than being objectively determined. Risk still refers to probabilities but these are now subjective probabilities assigned by household decision-makers to the occurrence of particular events. Consequently, the analysis of risk is transformed from a simple preoccupation with probabilities to the more complex processes of household decision-making. In other words, the way in which probabilities are determined is of greater interest than the absolute value that may be attached to the likelihood of a particular event.

Table 2.2
Sources of Risk to Household Food Security

Sources of Entitlement	Type of Risk				
	Natural	**State**	**Market**	**Community**	**Other**
Productive capital (land, machinery, livestock, CPRs etc.)	Drought, fire, flood, land degradation	Land/asset confiscation, redistribution	Changes in maintenance costs	Loss of access to common property resources	Loss of land as a consequence of conflict
Non-productive capital (cash savings, goods, jewellery, granaries etc.)	Pests	Compulsory procurement Wealth tax	Price shocks such as inflation		Loss of assets as consequence of war Theft
Human capital (labour, education, health)	Disease epidemics (AIDS, cholera, malaria), morbidity, disability	Declining public health provision, restrictions on labour migration	Unemployment and declining real wages	Breakdown of reciprocity in work groups	Conscription, forced labour, loss of schools and clinics during war
Income (crops, livestock, off-farm activities)	Pests, drought, flood and other extreme climatic events	Declining extension services, or support Tax increases	Commodity or food price shocks		Marketing channels disrupted by war.
Claims (loans, gifts, social contracts and reciprocity)		Reduction in nutrition programmes	Rises in interest rates	Breakdown of reciprocity	Communities displaced by war

Source: Adapted from Maxwell & Frankenberger (1992).

2.6 The Management of Risk

The notion of risk also draws attention to the time dimension of food security; that households allocate their resources over time to achieve some degree of continuity in access to food[1]. In order to survive, households develop a range of strategies to cope with or manage the effects of living and working in variable environments. Such environments are common throughout Africa. Within such environments households strive not only to maintain secure access to food but also seek to achieve stable livelihoods. Without some degree of food security the basis of economic livelihoods is unlikely to be sustainable. Where households are food insecure then longer term livelihood strategies may be abandoned as the efforts of individual members are concentrated on the more immediate problems of obtaining sufficient food. For example, work on-farm may be suspended or reallocated to less productive members of the household to permit other members to search for work off-farm or to raise cash for food through the disposal of household assets. Food security and livelihood strategies at the household level may therefore conflict due to variations in access to food over time. Thus, food security can be viewed as a pre-requisite in order for sustainable livelihoods to be achieved.

For the purposes of analysis, the management of risk associated with food insecurity can be analysed at two distinct levels; those strategies associated with maintaining household food security during periods of normal availability, and those strategies associated with minimising food insecurity (both short and long term) during periods of scarcity. Thus, the nature and orientation of strategies are differentiated according to the temporal location of the household relative to the occurrence of a food shock (Longhurst, 1986).

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1 For an excellent introduction to the impact of uncertainty and risk on decision making in peasant agriculture see Lipton (1968).

Strategies *ex ante* will concentrate on minimising the vulnerability of the household to food insecurity by developing buffers against risk. Such strategies will emphasise the importance of diversity in food and income sources as key buffers. On-farm diversity may be characterised by a range of complex inter and intra-enterprise relationships such as crop-livestock and livestock-environment interactions, inter-cropping practices and agroforestry (Norman, 1974; Scoones, 1995; Scoones *et al.*, 1996). Achieving a degree of diversity in income sources can spread livelihood flows more evenly across the seasons and facilitate social and economic independence (Chambers, 1997). Additionally, it can improve household labour profiles by allowing individual members to exploit their comparative advantages on and off-farm and over time. This may involve a high degree of specialisation within the household according to gender or age such as the migration in search of paid employment by younger members of the household. Finally, households will attempt to accumulate portfolios of assets which can be drawn down in times of food shortage. The composition of these portfolios will differ widely across and within regions but could include granaries, livestock, jewellery and land.

Once exposed to food insecurity, the nature and motivation of strategies *ex post* alters as a consequence of the potential trade-offs between the short and long term objectives of the household. Households will endeavour to maintain current consumption so long as this is not perceived to undermine the recovery of a position of food security in the longer term. For example, livestock may be sold relatively early by those households with large herds (Kinsey *et al.*, 1998). However, in those households with few livestock the rationing and substituting of food are more likely to occur before distress sales are considered. Decisions which have irreversible consequences for future income generation will be taken with great reluctance, and only when all possible alternatives have been exhausted. Where future

options may be compromised by attempts to maintain current levels of consumption, the household may begin to ration the available food supplies. Thus, hunger induced by an enforced reduction of food intake even when asset portfolios exist may be viewed as rational where the protection of future options is effected. Behrman and Deolalikar (1990) provide evidence from rural south India that such a strategy may be differentiated by gender, with the burden of the nutritional adjustment falling disproportionately on female members . Even amongst a group of households with essentially the same means of livelihood there may be different responses. For example, Watts (1983) identifies substantial differences in coping strategies pursued by households stratified by income in northern Nigeria. Although reducing food consumption may be conceived as a rational and general response to scarcity, how hunger is distributed between and within households is a matter for empirical observation.

In an attempt to identify the sequence of coping strategies, Devereux (1993) categorises possible responses to a food deficit (table 2.3). The main options considered are decisions to ration consumption as well as those to acquire food. Rationing refers not only to absolute reductions in food intake, but also to the strategic switching of consumption to cheaper, and perhaps less preferred alternatives (e.g. switching from maize to sorghum or from meat to beans). The process of rationing may also be differentiated according to age and gender. Economic adjustments to protect consumption through the sale of assets will be made only after an assessment of the long term implications of the loss of these assets. In contrast, rationing is a nutritional adjustment that protects assets and hence options in the longer term. For example, the sale of cattle to provide funds to purchase food will have a range of implications in the future. The loss of the cattle may mean that draught power will need to be hired in future at the beginning of the cultivation periods, putting pressure

on the already scarce financial resources of the household. The need to hire draught power may result in delays in preparing the fields with possible consequences for the quality and quantity of the crop at harvesting. More importantly, the sale of cattle facilitates the purchase of food in the current time period only at the expense of savings and insurance forgone in subsequent periods. Thus, hunger becomes a strategic response to, rather than an inevitable consequence of food shortages.

Table 2.3
Responses to a Food Deficit

Trigger Event	Behavioural Category	Strategy	Response
Grain production deficit	Protect consumption	Purchase grain through market exchanges	- sell non-food crops - use off-farm income - sell assets - obtain credit - reduce non-food spending
		Receive grain through non-market exchanges	- remittances - charity - food aid - community claims - beg
	Modify consumption	Reduce consumption by rationing	- smaller portions - fewer meals per day
		Diversify consumption	- less preferred foods - wild foods - less nutritious food - less expensive food
		Reduce consumers	- children to relatives - male temporary migration

Source: Adapted from Devereux (1993)

Another study (Corbett,1988), stresses the need for a greater understanding of household coping strategies if policy responses to famine are to be ameliorated. In particular, it has been noted that in certain cases transfers of food or cash as a part of famine relief programmes do not always result in the improvements in nutrition anticipated. Households

are again conceived as giving greater priority to long term survival over adequate nutrition in the short term. It is argued that the effectiveness of famine relief programmes may be impaired where the objectives of those affected are not completely understood.

Through a comparison of several case studies of famine in west and east Africa, the paper seeks to identify the sequence of household responses to a food shortage. Corbett suggests that assets may be held for various reasons (savings, pension, insurance, wealth, source of income etc.) and distinguishes between productive and non-productive assets. The term productive refers to the potential of an asset to contribute to the generation of future income streams of a household. Examples of non-productive assets would include jewellery and consumer goods such as radios and televisions. These tend to be accumulated as a form of savings and can be easily converted into food during periods of shortage. Productive assets fulfil a strategic function in the generation of household income and would include cattle, land and productive capital. The disposal of this class of asset has a greater opportunity cost for the household in terms of the options forgone in generating income in the future. Such assets would only be sold when all other possibilities have been exhausted since it reduces the ability of households to recover a position of food security in the longer term.

The paper concludes from the empirical evidence provided by distinguishing between three distinct stages in the sequence of coping strategies (table 2.4).

Table 2.4
Sequencing of Coping Strategies

Stage One -	**Insurance mechanisms**
	changes in cropping and planting practices sale of small stock reduction in current consumption levels collection of wild foods use of interhousehold transfers and loans increased petty commodity production migration in search of employment sale of possessions
Stage Two -	**Disposal of productive assets**
	sale of livestock sale of agricultural tools sale or mortgaging of land credit from merchants or moneylenders reduction of current consumption levels
Stage Three -	**Destitution**
	distress migration

Source: Adapted from Corbett (1998)

From the above chronology, a linear progression in household responses is implied from insurance mechanisms through the disposal of productive assets to destitution. However, it is not clear if the same chronology applies to the range of household responses *within* each stage. This seems unlikely since it appears that these are listed in random order rather than ranked according to the differing degrees of reversibility inherent in the range of responses available to the household. For example, it is unlikely in Stage One that changes in cropping practices or the sale of small stock would precede reductions in consumption levels or the collection of wild foods. Similarly, in Stage Two households are likely to pursue all possible lines of credit, and indeed are more likely to be able to obtain credit, before rather than after, key productive assets have been sold.

A more serious criticism of this work is that it views famine as a discrete rather than a continuous event. It is based on the simplistic notion that households confronted by food shortages face a linear set of possibilities, each leading logically and inextricably to the next once all options within a given stage have been used up. Households affected either become destitute (if the food shortage is protracted and all options become depleted) or are able to recover (if productive assets can be preserved until the period of shortages expires). The model presented does not consider how the sequencing of strategies may alter if the incidence of more extreme events of food scarcity becomes a more frequent occurrence.

Where households are confronted by recurrent shortages, processes of attrition may be initiated that conspire to undermine the ability of households to adapt strategies. Recent experience of food insecurity in Africa has had both FAD (climatic variability) and FED (economic variability) explanations. Consequently, one bout of food insecurity may lead into the next before an individual cycle of coping strategies, as described above, has been completed. Thus, households may not face linear possibilities in their responses but may be required to adapt strategies to the circumstances of each successive food shortage. For example, a drought results in a production decline to which rural households respond with efforts to source additional supplies in the market place. The maintenance of adequate household nutrition has shifted from a dependence on domestic production to market sources of purchased food. Household efforts become focussed on augmenting cash income to purchase food, perhaps through off-farm work or the sale of non-productive assets. Now assume that before the next harvest period there is sharp rise in the general price level, particularly the price of food. Households now face diminishing possibilities to obtain food from both domestic and market sources. Moreover, where the terms of trade

between productive assets and food are adversely affected (e.g. the price of livestock falls as result of similar distress sales) the motivation to liquidate these assets is reduced. Therefore, households may be forced to pursue other strategies (e.g. reduce investment in human capital - education and health) or adapt existing strategies (e.g. increased emphasis on petty enterprises).

Household responses to recurrent shortages of food are likely to be more complex than those suggested by Corbett. The formulation of policy in such circumstances is also likely to be more problematic. It will require a location-specific approach to understand the local environment in which household strategies are formulated. The households most vulnerable to risk will be those with limited options to pursue a range of strategies. Even where options in the form of asset portfolios exist, households may be reluctant to dispose of productive assets, preferring instead to discount current consumption against longer-term objectives of survival. When those strategies important in conferring access to food are heavily exploited as a consequence of recurrent exogenous shocks, it will be the ability of households to adapt strategies that will determine their persistence or resilience over time.

2.7 Resilience

The concept of resilience has its origins in the ecology literature with the seminal work of Holling (1973). His concern was to explain the apparent success of certain ecosystems to thrive under widely fluctuating conditions. A *stable* system is one which is adapted to a regular and predictable environment and is able to tolerate minor disturbances. A system

which returns rapidly to an equilibrium state after some initial perturbation exhibits a high degree of stability. A *resilient* system however, is able to return to a position of equilibrium even after major catastrophic disturbances and to thrive in a variable environment. Resilience is therefore a measure of the inherent persistence of a system and of its ability to absorb change whilst maintaining the same relationships between exogenous variables. From a range of ecological evidence, Holling suggests that instability, in terms of large observed fluctuations, may encourage the development of system resilience as a demonstrated capacity to persist over time. Thus, low stability can be consistent with high resilience.

These ideas have been extended to agricultural ecosystems (Blaikie and Brookfield, 1987) and economy-environment systems (Perrings, 1998). The latter discusses the relationships between resilience, biodiversity and sustainability and that a loss of resilience in ecological systems may increase the susceptibility to exogenous shocks. Fratkin (1986) applies the notions of stability and resilience to the understanding of the impact of environmental constraints on the social organisation of two closely related groups of nomadic pastoralists in eastern Kenya. The superior resilience of one group is understood to derive from the mobility of its labour force and the ability to adapt livestock production in response to changes in the unstable natural environment. The notion of persistence in resilience has been employed to describe the survival of certain aspects of the culture associated with particular ethnic groups in the face of wider cultural change (Elsass, 1992; Morrison, 1983). Healey (1985) refers to the resilience of primitive modes of exchange such as barter despite the increasing penetration of capitalism in New Guinea. He argues that the persistence of barter relates to its social function in preserving and maintaining

relationships based on the exchange of goods within and between tribal groups. Thus, in all of these studies, resilience appears as a measure of the inherent persistence of a system in the face of exogenous changes in its environment. It is a measure of the sensitivity of a system in a given state to exogenous stress or shock. The most resilient systems will be those that are most able to effect adaptations that ensure their persistence in variable environments.

The contribution of resilience to improving the understanding of food security lies in the attention it draws to the ways household strategies evolve in order to maintain access to food. It emphasises the underlying processes involved in smoothing consumption over time. Stability in natural systems may be conceived as being related inversely to vulnerability in socio-economic systems. The less vulnerable a system (the more stable it is) the more able it is to tolerate minor disturbances such as the effects of sporadic drought. Vulnerability at the household level will be determined by the structure of defence strategies that attempt to smooth household consumption during periods of adversity. Such strategies tend to rely heavily on temporary insurances (e.g. the practices of food storage between agricultural cycles or the disposal of non-productive assets) and which may be subject to rapid depletion. As a consequence, the emphasis of strategies in more vulnerable households soon shifts towards the preservation of those systems instrumental in conferring access to food in the longer term. Within this framework, an important element of resilience becomes the extent to which households are able to adapt systems of access or entitlement to food in ways that preserve the ability to recover after a period of crisis. For example, households may opt to defer the sale of productive assets as long as possible, preferring instead to discount current consumption against longer-term objectives of

survival.

The relationship between resilience and vulnerability is complex and a rudimentary treatment is presented in figure 2.1. The diagram describes an inverse linear relationship between resilience and vulnerability. Households that are more vulnerable to food shocks will suffer the effects of food shortages earlier than less vulnerable households. More vulnerable households will be the first to be required to smooth consumption, perhaps by drawing on food reserves or liquidating assets. The longer the period of food scarcity continues then the greater the reliance on defence strategies. This may result in a severe depletion of household reserves or, where households are reluctant to dispose of assets, a prolonged period of hunger. The implication is that attempts to recover after the period of food scarcity has passed will be handicapped in more vulnerable households by the loss of those assets held as reserves (including the physical condition and health of households members). In other words, such households become less resilient in their ability to recover post shock. The process of present and future recovery is impeded by the consequences of defence strategies implemented (e.g. loss of assets) to counter the effects of past events. The process is circular and reinforcing as the diminished range of defence strategies available to the household increases vulnerability to future shocks. Unless households are able to adapt strategies to improve future access to food, induced increases in vulnerability (V1 to V2) may effect a reduction in the robustness of household resilience (R1 to R2).

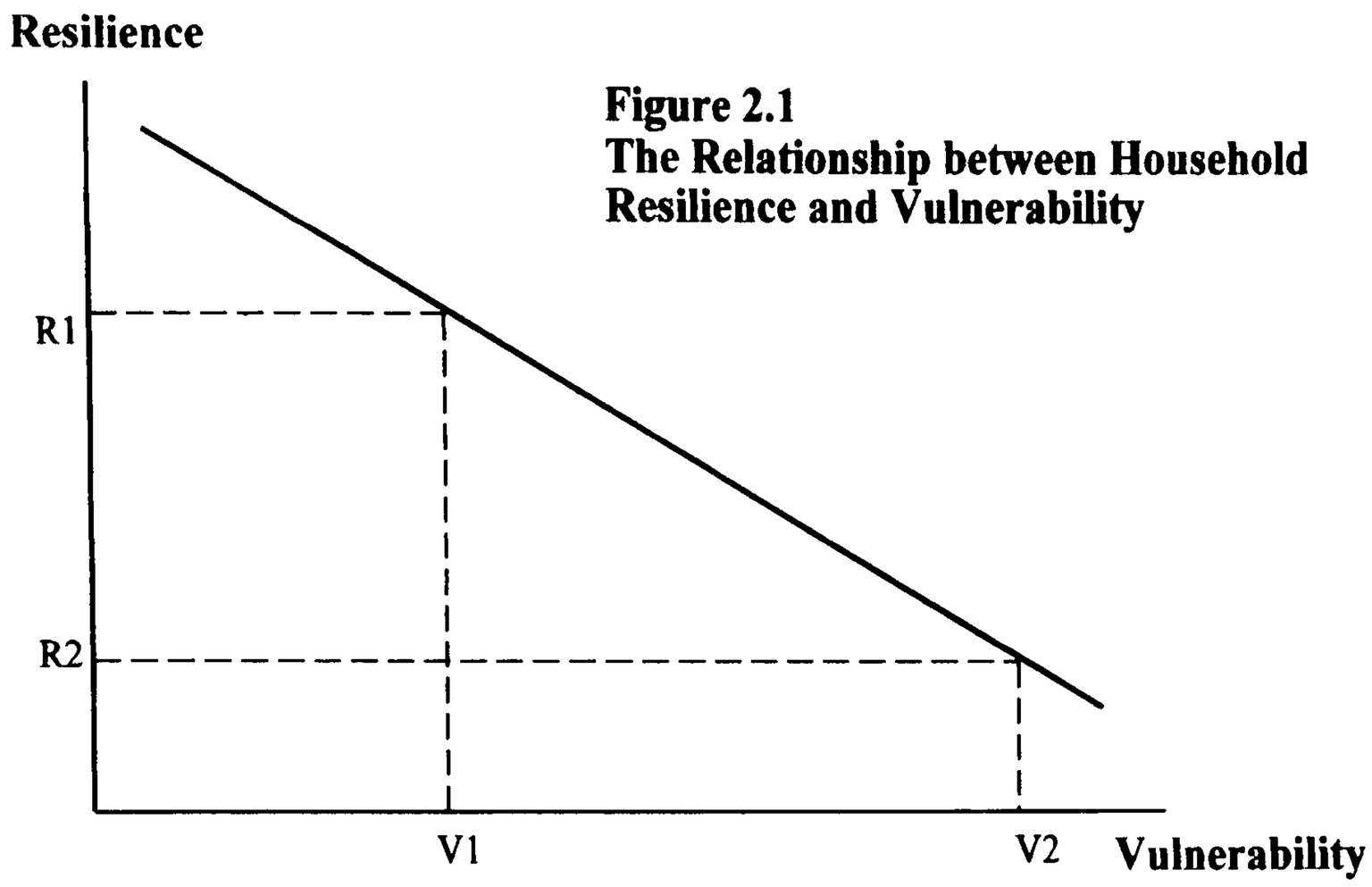


Figure 2.1
The Relationship between Household Resilience and Vulnerability

The structure of household resilience will be necessarily heterogeneous and will vary between rural and urban households. Households in rural and urban areas will link into different networks according to household asset portfolios and resource endowments, local conditions and the comparative advantage enjoyed by the household (both as individuals and collectively) in local and regional product and labour markets. Additionally, the reduction and spreading of risks may be achieved by households maintaining some presence in both rural and urban markets. Since the interest in this research lies with rural households, a conceptual structure for the analysis of household resilience is presented in figure 2.2.

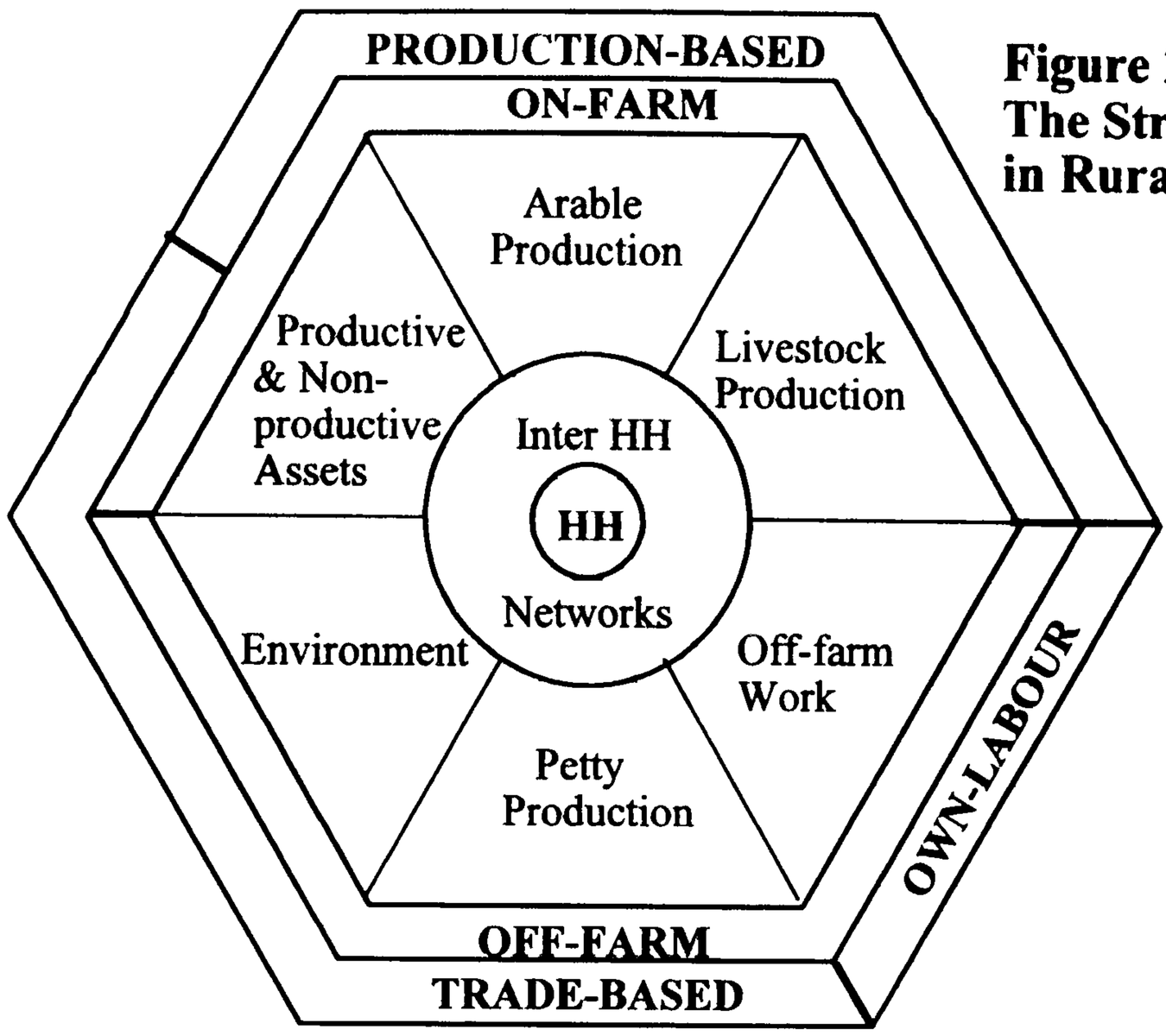


Figure 2.2
The Structure of Resilience in Rural Households

2.7.1 The Household

In figure 2.2 the household (HH) is conceived to be at the core of resilience. The farm household is the basic unit in the analysis of resilience through its dual role as a producer and consumer. With regard to the efforts of the individual members of the household it is also the most convenient aggregate for the analysis of collective activity and decision-making. Therefore, the starting point in this study of resilience and household food security is with the prime actors; the individuals that comprise the household and their collective efforts to secure sufficient food. The terms vulnerability and food insecure are often applied in an abstract sense which can obscure an understanding and appreciation of the actual effects of hunger. Thus, while the causes of food insecurity may be analysed at the macro or sectoral levels, its effects are endured at the level of the household. In this

respect, the demographic characteristics of the household will be an important determinant of the ability to recover after a food shock. The age, gender, health and education profiles within households (of both the individual members and as a collective) will play a key role in determining the nature and adaptations of household recovery strategies.

Fundamental decision-making processes regarding the direction of recovery will be made within the household according to their particular social and economic characteristics. Thus, the various strategies implemented at the household level are likely to be differentiated between households according to these characteristics. However, it is not possible to determine, *a priori,* a specific profile of the more resilient household on the basis of demographic characteristics alone. The cohesiveness of the household structure, and in particular the motivation of the household will be central in determining how the social and economic characteristics are utilised in the recovery effort. Equally, how households are able to manipulate the elements of the main strategy domains indicated in the six portions of the hexagon in figure 2.2 will be important in determining the nature of strategies to emerge.

2.7.2 Interhousehold Networks

The network of interhousehold links which surrounds the individual household in the figure 2.2 emphasises the dimension of local community in household resilience. By definition, resilient households will be those able to survive food crises with sufficient resources to restore a position in which the household is again food secure. The geographic scale over which strategies need to be pursued to support household resilience may increase substantially, and in direct proportion to the threat of food insecurity. When local resources

fail the strategy may shift to the regional level thereby activating wide geographic and political networks of support. In this respect, resilience links the household to the wider socio-economic system through which longer-term strategies are mediated.

The success of a particular community will depend on their collective ability to coordinate their actions through established social and economic networks above the level of the household. These may include the redistribution of food staples from surplus to deficit households through informal loans of grain and other food staples. Surpluses may originate from a temporary improvement in food supply secured through different entitlement relations of a particular household. Scott (1976) suggests from in his research Southeast Asia that the need for a guaranteed minimum is a powerful motive for investing in social relationships. In this sense, village egalitarianism is conservative and not radical in that it claims that all should have a place and a living but not that all should be equal. All families within a community will be assured of a minimal level of subsistence insofar as those resources controlled by the group make this possible. Consequently, households are released from restrictions associated with domestic means of access through the ability to draw on the pooled entitlements of the group. As such, systems of reciprocity facilitated through interhousehold transfers and claims of food represent a key element in the social dimension of household resilience.

The transfer of food in the form of gifts and loans within poor communities is tendered under varying degrees of expected reciprocity, but all involve the implicit recognition of the established rights and responsibilities associated with community membership (Swift, 1989). Households may assume some responsibility for sharing food with those less fortunate and equally may expect reciprocal rights to be extended by the community when

facing shortages. Conceptually, such altruistic arrangements for sharing in times of adversity do not fit easily into the framework of neoclassical economics which emphasises private property and self-interest, but can be rationalised on the basis of risk reduction in the longer term. In Africa, the range of institutions designed to ensure the survival of the group as opposed to the individual is extensive.

These efforts at the level of the community serve to focus the attention of policy-makers in supporting interhousehold strategies during the crisis and recovery phases. Policy-making on household food security should seek to tap the potential of the community organisation through active support in aid programmes. The role of community in contributing to resilience will be most profound when the survival of the individual household is considered as being inextricably linked with that of the group.

2.7.3 Strategy Domains

The schematic treatment of resilience presented in figure 2.2 conceives the household to have six strategy domains. These are described in the individual segments of the resilience hexagon and comprise arable production, livestock production, productive and non-productive assets, off-farm work, petty production and the environment. These domains refer to the broad areas through which household recovery strategies may be expressed. The intention is not to be prescriptive since the range of domains will differ according to local circumstances. Additionally, the domains will be accessed unequally by different members of the household according to gender and generation. The domains listed here are based upon the study of the research survey area and will be applied during the empirical work to be considered in greater depth later.

For the purposes of analysis, the individual strategy domains have been grouped according to different criteria. The most fundamental aggregation in agricultural households is whether strategies are implemented on or off-farm. The strategy domains of arable production, livestock production and productive and non-productive assets are considered to be pursued predominantly on-farm. These are indicated in the three segments in the upper half of the hexagon in figure 2.2. The three segments in the lower half of the hexagon relate to the strategy domains of off-farm work, petty production and the environment which are undertaken predominantly off-farm.

2.7.4 On-farm Strategy Domains

Arable and livestock production systems are integrated in sub-Saharan Africa although the extent of integration is highly variable across the continent (McIntire *et al.*; 1992). For example, animal traction can assist with the timely cultivation of fields and crop residues can provide a useful source of fodder for livestock during the dry season. The importance of crop-livestock interactions in sustainable agriculture is recognised but for the purposes of this analysis arable and livestock production are treated separately.

In the semi-arid areas of sub-Saharan Africa the emphasis of arable production is predominantly to meet the subsistence needs of the household in food staples. Rarely is the harvest sufficient to meet the nutritional requirements of the household for a full year necessitating the acquisition of additional amounts of food staples at some time between crop cycles. Where the household benefits from a cash income this may be used to source supplies through the market place. However, the incomes of rural households can be variable in amount and receipts erratic. Consequently, most households will tend to

maintain a number of livestock as an insurance against the risk of food shortages. Domestic livestock are seldom consumed by the household and are maintained almost exclusively as an economic asset. Thus, livestock may fulfil additional economic functions as a store of wealth and savings to be converted into cash for the purchase of food during periods of scarcity. When rationalised in this way, the separate treatment of these two activities becomes essential for assessing the relative importance of agro-based strategies in household resilience.

Nevertheless, in the rural areas of semi-arid sub-Saharan Africa arable production will tend to be the most amenable option for recovery through attempts to meet household food requirements, albeit partially, on-farm. The natural and physical resources over which the household has most control have a low opportunity cost since they have limited alternative uses. Since land and agricultural capital need to be combined with human resources to be productive, inevitably some household labour will be trapped on-farm in agro-based enterprises. This labour will tend also to be that with a lower relative opportunity cost within the farm household and may be differentiated by age and gender.

The inclusion of arable and livestock production in this category is straightforward, but that of productive and non-productive assets requires more explanation. Productive assets are defined here as those assets that are employed in conjunction with arable and livestock production. They would include ploughs, scotch carts and other agricultural implements. They are considered to contribute to the productivity of on-farm arable and livestock enterprises. Non-productive assets comprise social relationships and those consumer goods and valuables that are accumulated by the household for their use or insurance value or, as a means of savings such as radios, bicycles, jewellery and clothing. The sale or rental of

both categories of asset may be used as a means of augmenting cash reserves for the purchase of food during periods of shortage. However, the sequencing of such sales is likely to be differentiated according to their importance to the longer term acquisition of food.

Non-productive assets may be disposed of relatively early during a period of food scarcity. The loss of such assets will have less of an impact on the ability to produce food on-farm, but will nevertheless reduce the options of the household to *acquire* food in the future. Productive assets which make significant contributions to on-farm productivity are likely to be sold with great reluctance and only when other possibilities have been explored (including the rationing of food). More probable is that the option of renting productive assets (particularly ploughs, yokes and scotch carts) would be attempted before the more irreversible alternative of sale is considered.

2.7.5 Off-farm Strategy Domains

In addition to those on-farm strategies discussed, households may direct some effort off-farm to secure food. Strategies off-farm may be explored concurrently or when on-farm options have become exhausted. More resilient households are likely to adopt a diverse approach that exploits different options simultaneously, so spreading the risk of the failure of individual strategies. The dominant strategies off-farm considered here are off-farm work, petty production and the use of environmental resources.

The experience of engaging in off-farm work is established in much of post-colonial sub-Saharan Africa. Colonial economies required the services of cheap and abundant labour

to develop infrastructure and in primary activities such as commercial agriculture and mining. Remittances from off-farm work can make a significant contribution to reducing vulnerability and improving household food security in rural households. Evidence from Zimbabwe suggests that diversity in income sources is associated with higher living standards, with the poorest groups reliant on a single source of income (Killick *et al.*, 1998). However, off-farm work is used here in its broadest sense and includes in addition to migration, work undertaken on a temporary or permanent basis within the locality, such as casual labour on neighbouring farms.

Petty production includes work undertaken by household members that combines household labour with purchased and non-purchased inputs in the production of goods. The outputs of this activity tend to be distributed through informal markets either in the locality of the household or in urban areas. Activities would include brick-making, fencing, knitting garments, producing pottery and weaving basket work. The production of these tends to coincide with slack periods during the agricultural cycle when the opportunity cost of labour is low. Moreover, the different activities tend to be differentiated according to gender with men specialising in enterprises requiring substantial manual effort and women in those areas requiring specialist skills.

In poor households with limited access to formal markets for food and inputs, environmental resources can make a substantial contribution to household food security. This may be either directly through the opportunity to gather wild foods such as vegetables, fruits and insects or indirectly by supplementing livelihoods through the harvesting of grasses for sale as thatch or wood for sale as fuel. Poorer groups tend to have much shorter time horizons and may discount future options in favour of current household consumption

requirements. The exploitation of environmental resources under such circumstances may shift from harvesting to mining due to the pressing need to satisfy the household requirements of food. Consequently, such activities may be unsustainable and can lead to localised environmental degradation.

2.7.6 Resilience and Entitlements

In order to stress the relationship between household resilience and exchange entitlements (Sen *op. cit.*) the strategy domains have also been grouped corresponding to the three entitlement relations of production-based, trade-based and own-labour. An interest in the relationship between resilience and entitlements forms a main strand of this research. Resilience refers to the ability of households to use existing or refashioned strategies to secure access to food through different entitlement relations. Ranking entitlement relations according to their importance in securing access to food will have significance for policy-making that seeks to support households during recovery phases.

The three entitlement relations and their relationship to the six strategy domains are indicated in the outer hexagon in figure 2.2. Figure 2.2 presents a synthesis of household resilience with the aim contributing to the conceptual understanding of it determinants. Consequently, overlaps between individual strategy domains and entitlements relations may be obscured in the attempt to obtain simplicity of presentation and in the understanding offered. For example, arable production that aims to provide food on-farm is clearly a production-based entitlement although livestock production, for reasons outlined above, may be more complex. Livestock may provide milk for household consumption so representing a production-based entitlement as presented in figure 2.2.

However, the ultimate aim of their husbandry may be to obtain food through trade-based entitlements. Similarly, the environment may provide inputs to produce goods to be traded to obtain food, the gathering of wild foods may be considered as production-based. Productive and non-productive assets can be considered as conferring either production or trade-based entitlements and have been indicated as such in figure 2.2. Those assets that enhance on-farm productivity (e.g. ploughs and scotch carts) may be considered as contributing towards production-based entitlements but the sale of these together with non-productive assets should be counted as a trade-based entitlement.

The value of this schematic presentation of the determinants of household resilience lies in the starting point it provides in thinking about resilience. Figure 2.2 is essentially a graph with six axes on which the importance of the different strategy domains can be plotted. The axes are not calibrated and plotting will be necessarily a subjective procedure. It requires the analyst to think holistically about resilience and to concentrate specifically on the efforts of households during periods of recovery. More importantly, it shifts the focus of the initial analysis from needs to strengths and so may assist in the formulation of policies that recognise and support household efforts. However, it is not the intention in the diagram to suggest that there is a one-to-one correspondence between household strategy domains and level of resilience actually demonstrated. Intuitively however, it is reasonable to assume that there will be a close correlation between the range of strategies available to the household and the rate of recovery of a position of food security post-shock.

Figures 2.3 and 2.4 illustrate two contrasting shapes of households demonstrating different degrees of resilience. Figure 2.3 represents a typically resilient household with a regularly

formed hexagon around the strategy domains. This household benefits from the ability to pursue a diverse range of recovery strategies to reestablish a position of food security. In contrast, figure 2.4 represents a household with impaired resilience after a period of food scarcity. For example, resilience in arable production has been reduced perhaps through a diminished ability to purchase inputs. Similarly, asset portfolios have been reduced by their conversion into cash. Additionally, the option to obtain work off-farm has been limited perhaps by increasing unemployment at the national level. In figure 2.4, strategies for resilience have become concentrated on livestock production and petty production within the household. Both of these activities can be intensive in their use of environmental resources and if other households have been similarly affected then the implications for environmental sustainability need to be considered.

2.8 Resilience and the Economic and Institutional Setting

The discussion to this point has concentrated on the determinants of household resilience. It has attempted to place the efforts of the household during the recovery phase at the centre of the analysis. The household is conceived as an economic unit working within a community of households and managing its resilience through specified strategy domains. In order to simplify the analysis to this point, the economic and institutional setting through which strategies are expressed has not yet been examined. The exact nature of the economic and institutional arrangements will have an important bearing upon which strategies are pursued and in what form.

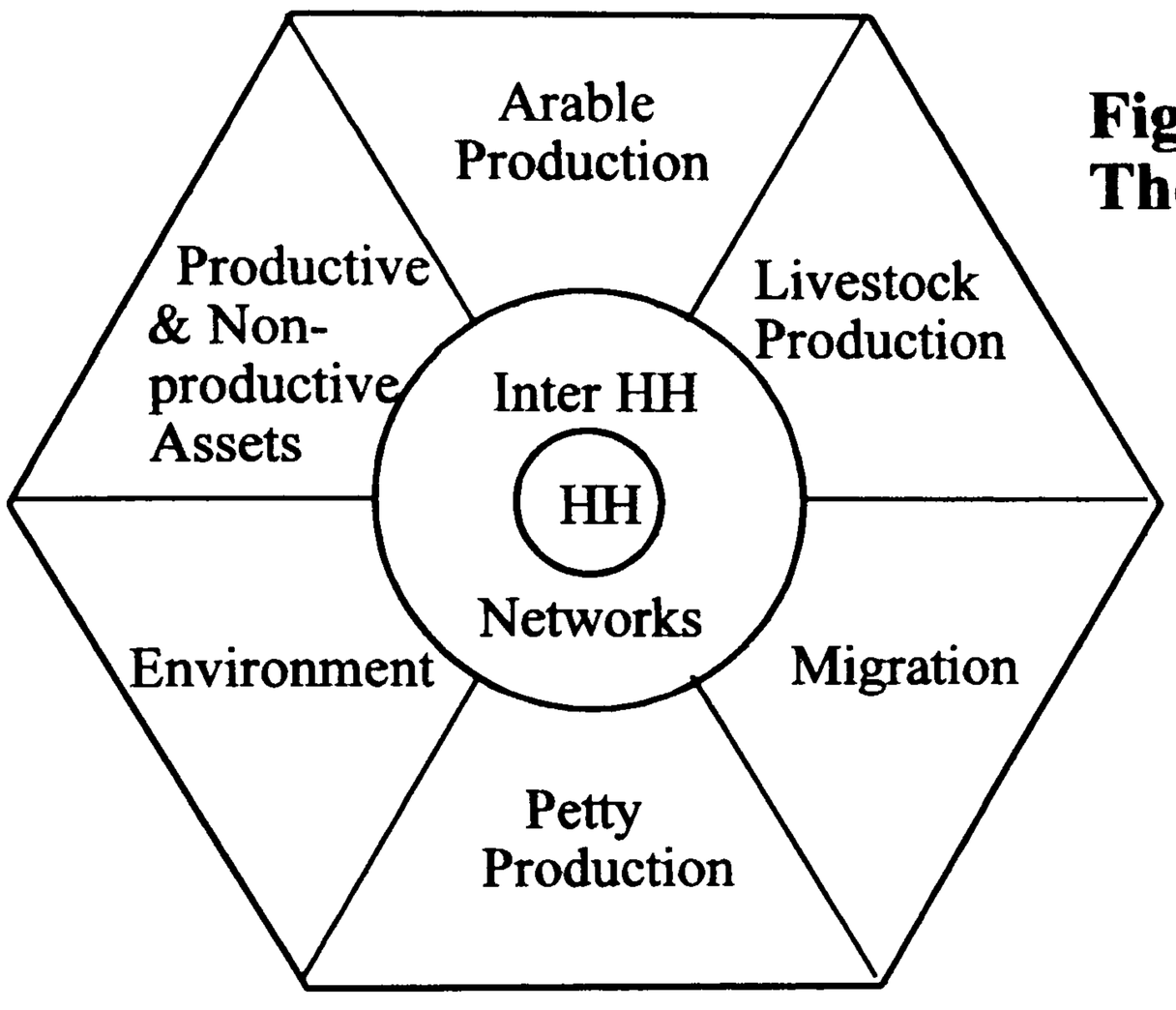


Figure 2.3
The Resilient Household

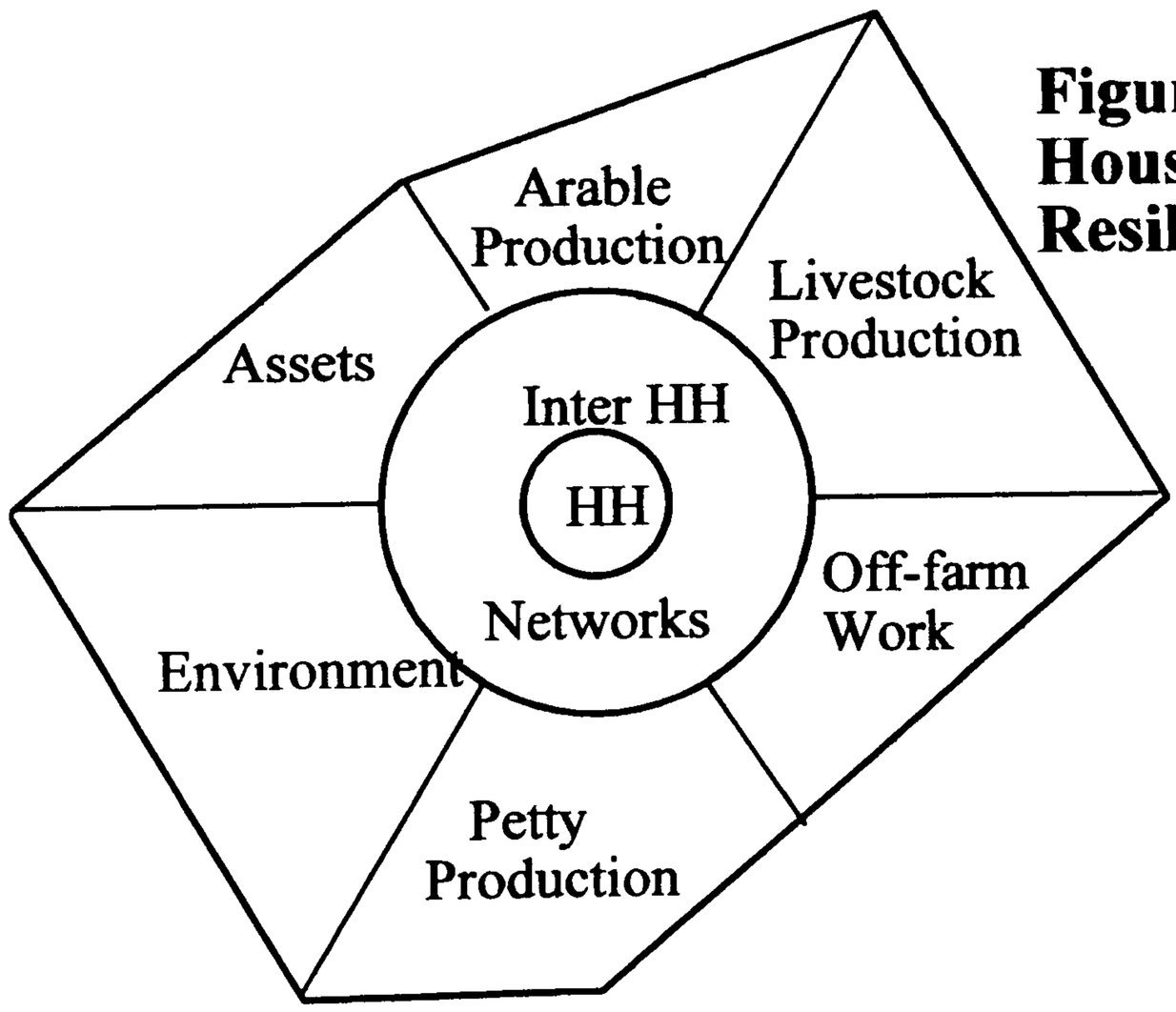


Figure 2.4
Household with Reduced Resilience

The economic setting refers to the types of market to which households have access and the competitive conditions extant in these markets. Equally, the efficiency of marketing networks for the sale of household goods and assets and the purchase of food will determine the terms of trade between household production and consumption possibilities. Where markets are imperfect, for example by a lack of competition, limited access to information or poor physical infrastructure then households will suffer reduced possibilities to obtain food through trade-based entitlements. Consequently, household resilience will be less than under more perfect conditions.

The market conditions under which the price of food staples is determined will have particular significance for household resilience. By definition, poorer households will spend a larger proportion of household income on food. This characteristic exposes poorer households to the negative income effects of increases in the price of food and subsequently, to diminished access to food. In general, food shortages will be associated with rises in the price of food. In households where expenditure on food constitutes the bulk of household income then rises in the price of food can initiate several possible responses. First, the food price rise could induce the household to draw on savings or to cut back expenditures on non-food items in an attempt to maintain levels of consumption. Secondly, consumption could be reduced by rationing food (number of meals, size of portions, by gender etc.) within the household. Finally, the negative income effects of the price rises could be partially or wholly offset through efforts to substitute cheaper and less preferred alternatives into the household diet.

In very poor households the option of switching consumption may be limited and thus reductions in the total food consumption of the household may transpire much more

rapidly. However, in all households that suffer food shortages, the retail price of food, particularly the price of food staples will be a significant consideration in the analysis of household resilience. The price of food will be a major determinant of the extent to which household efforts, effected through the strategy domains, are able to be realised as consumption.

Similarly, the institutional arrangements that locate the household and its efforts within the wider political sphere will have implications for which strategies are the most propitious. A functioning and clearly defined political infrastructure that links the household effectively from the local through district and regional levels to central government is likely to be able to respond more rapidly and constructively to changing circumstances. Thus, prompt recognition of the location and extent of an outbreak of food shortages could lead to swifter distributions of food aid, so limiting the extent of induced reactions by the household, such as the liquidation of assets or the migration of more productive members in search of employment. This would serve the dual purpose of sustaining household food security in the short term while supporting the ability to recover in the longer term. More importantly, the latter benefit would also provide time during which policies to support households could be devised and actioned. This would assist households to confront future food shocks more effectively by limiting the reduction in the range of options available for recovery purposes.

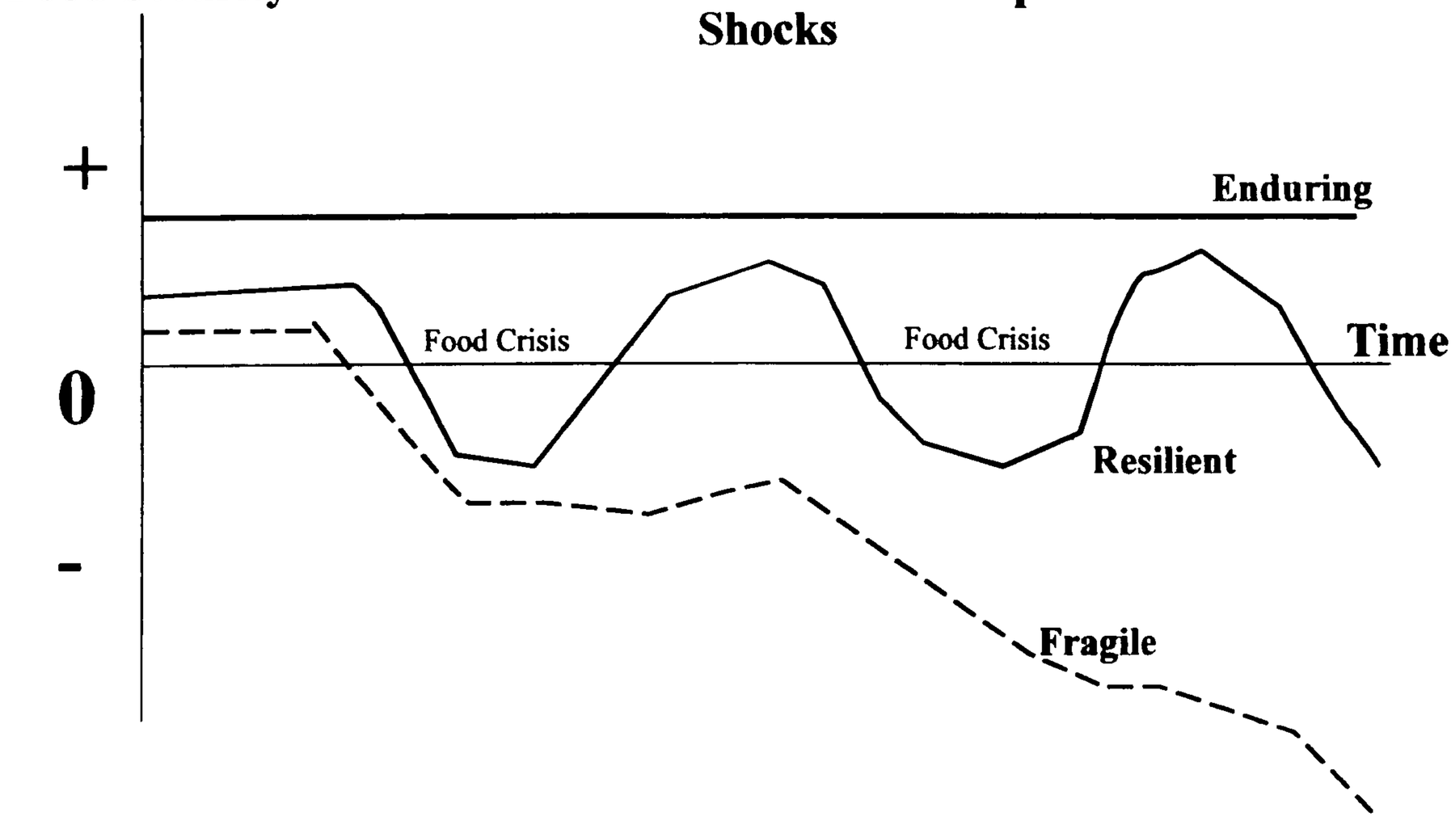
It is therefore essential that recovery strategies which are the embodiment of household resilience are considered within the prevailing economic and institutional setting. Rural households are by their nature remote from markets and centres of influence. Information on recovery options may be inadequate and as a consequence household strategies may be

poorly conceived and directed. The flow of information from markets and institutions is vital to the recovery phase if household attempts to reestablish a position of food security are to be realised. The holistic approach to the analysis of household resilience outlined above, requires that the economic and institutional setting through which recovery strategies are mediated, is given due consideration if policy-making on food security is to be effective.

2.9 Resilience under Recurrent Shocks

Oshaug (1985) identifies three types of household; *enduring households* which maintain household food security on a continuous basis, *resilient households* which suffer shocks but recover quickly, and *fragile households* which become increasingly insecure in response to shocks. These different types of households and the degree of food security enjoyed when subjected to food shocks are represented in figure 2.5. The persistence of resilient households during periods of food insecurity lies in their ability to adapt and exploit a range of strategies to secure access to food. Fragile households on the other hand are unable to restore food security after some exogenous shock and consequently, their trajectory is increasingly towards a chronic position. Resilience therefore refers to the durability and adaptability of those systems and strategies central in securing access to food over time.

Figure 2.5
Households Responses to Food Shocks



However, the distinction made by Oshaug between resilient and fragile households may be less useful when households are subjected to recurrent food shocks. This will be the case, particularly where successive shocks affect different food entitlements simultaneously, thus limiting the range of responses and possible adaptations of strategies. The impact of successive food shocks on resilient and fragile households is illustrated in figure 2.6. Both households are subjected to the same food shocks and the path of fragile households is again towards increasingly chronic food insecurity with each successive shock. In contrast, resilient households succeed in recouping some degree of food security after each crisis, but never to the extent attained pre-shock. Effectively, this bunching of shocks reduces the time available to households to reestablish asset portfolios at pre-crisis levels. Thus, households are obliged to confront the next food shock with fewer assets, some of which again may need to be sold in order to purchase food.

Equally, households may be compelled to make decisions regarding assets which prove to have irreversible and deleterious consequences for future income and production streams. Accordingly, a downward spiral of asset depletion is initiated in response to recurrent shocks as households face deteriorating possibilities in their access to food. Progressively, household resilience is eroded and once asset portfolios reach critical levels, a shift from transitory to chronic food insecurity becomes an increasing inevitability. To use Oshaug's terminology, resilient households become increasingly fragile with the advent of each successive shock. Although, resilient households may be able to regain some element of food security in between crises, a trajectory towards a chronic position is initiated where food shocks recur with regularity.

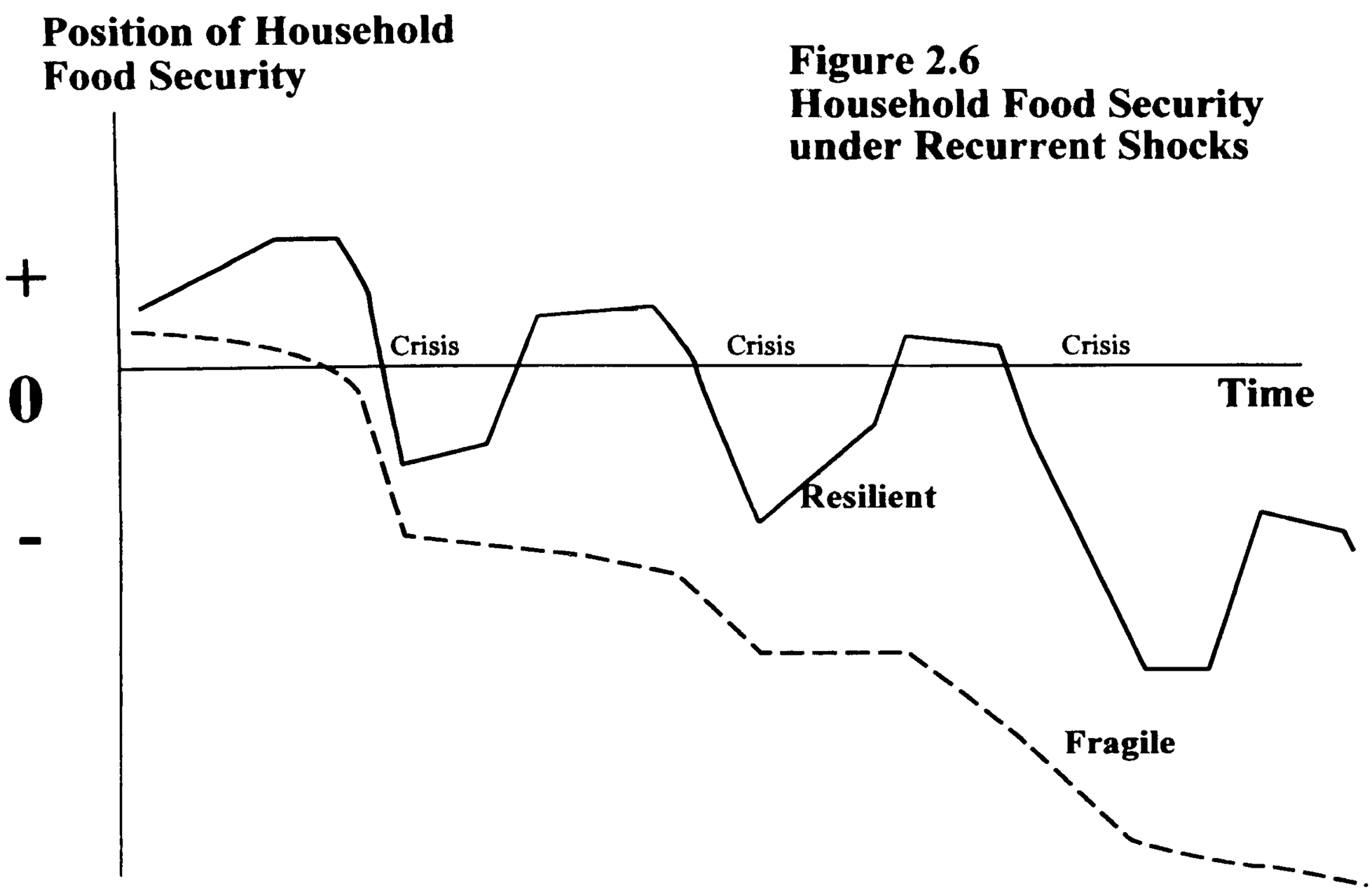


Figure 2.6
Household Food Security under Recurrent Shocks

2.10 Conclusion

This chapter has introduced, defined and explained the key concepts and definitions to be used in this research. The definition of food security selected for the purposes of this research is that "food security is access to food, adequate in quantity and quality, to fulfil all nutritional requirements for all household members throughout the year". The basis of this selection is that the key elements of food security (sufficiency, access, security, time) are explicit in the definition. More importantly, the definition draws attention to issues of intra-household allocation of food which may be differentiated by gender and age.

Food insecurity continues to affect an unacceptable proportion of the world`s population. Although progress has been made in the understanding of the different causes of food

insecurity efforts to deal with food crises are motivated by incidences of scarcity rather than a desire to work towards the eradication of global hunger. Famine, the most extreme form of food insecurity, is now recognised as a complex process and not merely restricted to those instances of food shortage that lead to mass starvation. Much of the progress achieved in thinking about famine is attributed to the work of Sen who emphasises that declines in entitlements to food (FED) can lead to famine independently of declines in food availability (FAD).

At the level of the household, efforts to cope with food insecurity are motivated by the need to manage the risk of food crises. Prior to a food crisis, households tend to concentrate on developing diversity in household food and income sources as a means of protecting established levels of consumption. The occurrence of a food shock leads to a trade-off between the short term objective of maintaining adequate nutrition and the longer term objective of sustaining the economic viability of the household. Within this framework, hunger becomes a defence strategy to protect the productive assets of the household for the recovery phase rather than an inevitable consequence of food shortage.

For the purposes of policy-making, and given that the recent experience of food insecurity in sub-Saharan has been the outcome of the interactions between drought, civil war and macroeconomic change, it may be more enlightening to conceive of food insecurity as a continuous process rather than a discrete event. Conceptualising food insecurity as a continuous process has implications for thinking about vulnerability. Vulnerability tends to be evaluated in terms of its current status, approximated by indicators such as asset portfolios, household income profiles, interhousehold claims and food stocks. Each food crisis is treated as a new event completely unrelated to past shocks or to the expectation of

future catastrophic events. However, from the analysis presented in this chapter vulnerability is clearly a dynamic concept. Its status at any given time will be a function of past, present and expected future catastrophic events. Thus, this chapter has stressed that household strategies to cope with food insecurity need to be understood within a framework that recognises the cumulative nature of vulnerability.

Although the nature of vulnerability will differ between households it will be their resilience that determines the ability to restore a position of food security after a food shock. In this research, resilience refers to the extent to which households are able to adapt systems of access to food in ways that preserve the ability to recover after a period of crisis. In most cases, households will emerge from a food shortage with reduced asset portfolios, and since resilience is partially asset-determined, a period of time will be required to replace assets, and hence, restore household resilience. Where food shocks recur with frequency, household resilience may not be renewed completely. Processes of attrition may be initiated that undermine progressively the components of household resilience. As a consequence, the distinction between resilient and fragile households may become less apparent as both groups face deteriorating possibilities in their access to food.

This chapter has suggested that an holistic approach is adopted in the analysis of resilience. The schematic approach presented in this chapter conceives the household as an economic unit working within a community of households and managing its resilience through specified strategy domains within the resilience hexagon. The value of this approach derives from the shift in analysis provided from household needs to strengths. Such an approach will be more able to contribute to the formulation of policies that actively recognise and support household efforts to recover. Moreover, it requires that the

economic and institutional setting through which recovery strategies are mediated, is given due consideration if policy-making on food security is to be effective.

In order to break the circular process between recurrent shocks, asset depletion and the status of resilience, policy-making needs to understand the objectives and strategies of households during periods of scarcity. Of particular interest are those support mechanisms at the level of the community which are activated during a crisis. Significant in this respect are those collective efforts above the level of the household concerned with interhousehold transfers of food. These are tendered under varying degrees of expected reciprocity, but all involve the implicit recognition of the established rights and responsibilities associated with community membership. The capacity of the community to define and legitimise interhousehold claims is a much neglected area of the food security literature. It has been argued in this chapter that efforts at the level of the community can serve to provide a focus for policy-makers in supporting interhousehold strategies during the crisis and recovery phases.

Chapter Three

Methodology

3.1 Introduction

The aim of this chapter is to describe the methodology employed in this research. The practical issues associated with tracking the status of household resilience are considered and the resolution of some of the problems encountered are discussed. The range of sources consulted and the main research techniques employed in this work are outlined. The importance of collecting sample data of a quality sufficient for the purposes of drawing more general conclusions about the population as a whole is stressed. The ways in which this was achieved are described in some detail. These include the selection of the survey areas, the sampling and interview techniques and the preparation of the collected data for analysis. Finally, the complementary roles of quantitative and qualitative research in providing a more holistic appraisal of the food security situation in the survey areas is emphasised.

3.2 Tracking the Status of Household Resilience

Resilience, as presented in chapter two, is dynamic and its composition will alter over time. Changes in its composition can be induced by shocks that affect the ability of households to obtain their food requirements through established means of access. The shocks of interest in this research are the recurrent droughts and macroeconomic changes that have occurred in Zimbabwe over the period 1980-98. Droughts have affected the ability of households to grow sufficient food through domestic agricultural production and

macroeconomic change, which has increased the real and nominal prices of food, has reduced access to purchased supplies from the market.

A major problem confronted early in this work was to decide how to track the status of household resilience within the time frame available. Essentially, the assessment of how resilience has been affected by recurrent exogenous shocks required information on its status prior to the period selected for the study. To overcome this problem it was necessary to apply a range of techniques in an attempt to obtain an impression of the nature of household resilience in Zimbabwe over time. In this research, resilience refers to the extent to which households are able to adapt systems of access to food in ways that preserve the ability to recover after a period of crisis. Explicit references to resilience in the literature on food security are limited which required the subject to be approached from a different aspect. Since resilience as defined in this work emphasises maintaining access to food, the entitlements framework (Sen, 1981) has been used to understand how household efforts to obtain their food requirements have been mediated through different mechanisms over time. If it is accepted that the different entitlement relationships (as discussed in chapter two) connect the efforts and resources of households to the degree of food security enjoyed, and that these relationships constitute important elements of household resilience, then observing the modifications in the dominant means of access to food over time will provide some insight into temporal dimension of resilience. Additionally, such an analysis must concern itself with both the causes and effects of changes in the way food has been accessed over time if it is to contribute to an understanding of the dynamics of household responses to exogenous shocks.

Thus, the approach selected had necessarily to consider information from a range of

sources. Chapter four considers the evolution of food security strategies in Zimbabwe for which a number of archival sources and selected literature on the history of food security in Zimbabwe and the southern African region were consulted. These provide a broad overview of the changes in the structure of agriculture and the responses of the African population to food scarcity in Zimbabwe from the late nineteenth century onwards. When these changes are considered within the entitlements framework an indication is obtained as to how the dominant means of access to food have altered within the time frame of this study.

Chapters five and six have particular significance for this research since their objective is to describe the main exogenous shocks to be examined. In chapter five the linkages that relate the effects of macroeconomic change to household food security are identified. The main linkage considered is the effect that Zimbabwe's structural adjustment programme has had on food prices, especially the price of maize, the main food staple. This is undertaken through a simple mathematical analysis of the real exchange rate. In order to increase the relevance of this research to the wider context of food insecurity in sub-Saharan Africa this analysis is extended to a selection of implementing countries in the region. The data required for this analysis were obtained from IMF published sources and the Ministry of Agriculture, Zimbabwe.

Chapter six examines the distribution of rainfall in the survey areas to assess the implications of variations in the level of precipitation within and between seasons for household coping strategies. Rainfall data were obtained from the Meteorological Office in Harare and extend from 1920 to the late 1990s. Particular attention is paid to the distribution and severity of droughts during the period 1980-1997. The main purpose is

to understand the impact of recurrent drought on production and trade-based entitlements that are derived through arable and livestock enterprises.

Collectively, chapters four, five and six provide the foundation upon which the focus of the primary research was developed and refined. To conclude this section it may be useful to provide the rationale for the predominantly neo-classical approach adopted in this work. Since household resilience will comprise those economic, social and political relationships that exist within and between households, any study will inevitably cross subject boundaries. The ideal approach should therefore strive to be interdisciplinary and this has been attempted wherever possible. However, the academic background of the author is rooted substantially in the neo-classical school of economics and this bias is reflected in many of the analytical aspects of this work. This has both advantages and disadvantages. The main disadvantage is that the aspiration to produce a truly interdisciplinary study may be only partially achieved. This limitation is acknowledged.

More positively, this study seeks to evaluate in the light of the primary research at the household level, some of the expected consequences of adjustment programmes suggested by the World Bank (1991b). The document was produced as part of the Social Dimensions of Adjustment Program in Africa. In the executive summary it is stated that:

> In considering the social effects of adjustment, it is necessary to establish analytically the links between the macro economy on the one hand and the micro economy of households on the other.
> (World Bank, 1991b, p1)

The document also notes that the range of possible effects of adjustment at the household level are likely to be complex. To trace the possible linkages the World Bank draws heavily on the unitary model of the agricultural household (Barnum and Squire, 1979;

Singh *et al.*, 1986). Despite acknowledging the practical and conceptual limitations of the model, the discussion identifies the economic circumstances under which the adjustment process will result in positive and negative welfare gains to households (World Bank, 1991b pp54-8). It is concluded that:

> Finally, social welfare outcomes at the individual level will be determined by household characteristics that extend beyond the purely economic characteristics that were discussed in the simple framework above. These include the age, race, religion and education levels of the household head and mother (in the case of infant health outcomes), household size and composition, and so on. Tracing the determinants of individual-level social welfare from the macro, through the meso, and down to the household levels is the key to gaining an understanding of how adjustment policies have influenced social welfare both directly and indirectly (through changing economic circumstances).
> (World Bank, 1991b, p58).

In this excerpt, the additional factors that need to be considered for a complete evaluation of the effects of adjustment at the household level are manifold but the list is not exhaustive. In order to comment on the economic consequences of adjustment many critical factors relating to human welfare have been removed from the analysis through the neo-classical assumption of *ceteris paribus*. Essentially, the complexity of the human world is held constant for the purposes of economic analysis. In this research, many of these factors are considered so that an holistic appraisal of the effects of exogenous shocks (of which adjustment is one source) on household resilience may be achieved. In this respect, it is felt that the adoption of a predominantly neo-classical stance will facilitate consistency in approach and, more importantly, a degree of comparability in the conclusions drawn.

3.3 The Survey

The main concern of this work is to assess the extent to which recurrent shocks have affected the ability of households to recover a position of food security. Additionally, it seeks to identify those strategies instrumental in securing access to food during periods of shortage. It also seeks to establish if strategies are being adapted in the face of recurrent shortages in ways that support the resilience of households. Where strategies are being adapted as a consequence of frequent exposure to food shortages then the research needs to ascertain if the ability to adapt strategies is itself a determinant of resilience. Finally, an additional concern is to determine the extent to which strategies for resilience are differentiated according to gender.

The method favoured to obtain data that would contribute towards informing on these concerns was a sample survey. The sample survey provides a flexible method that can be adapted to almost every requirement of data collection (Casley and Lury, 1987). Equally, if the conclusions of this research are to be capable of generalisation then the sample survey is the most appropriate method. The limited but more detailed examination facilitated by the case study does not provide for direct inferences to be made about a population. On the other hand, the sample survey permits inferences to be made where the sample population is randomly selected. The main advantages of the sample survey include (Casely and Lury, *op. cit.*):

- Economy in terms of cost and time since only a segment of the population needs to be examined and analysed.
- Accuracy where the quality of the enumeration can be more closely supervised.

- Adaptable to cover many different topics.

These considerations were particularly important since, due to limited funding, this work had to be carried out largely unassisted. However, this had the advantage that each interview was conducted by the same person enabling a consistent procedure for the collection and recording of the data to be maintained.

The survey instrument favoured was the questionnaire. A main problem confronted in the design of any questionnaire is to establish the type, content and sequencing of the questions to be asked. Annual visits were made to the survey areas over the period 1994-1998. The earlier visits coupled with the preliminary research permitted tentative hypotheses to be formed about the nature of household resilience, especially its elements as they related to the survey areas. The outcome of these visits was the production of a questionnaire which was tested during the first survey visit in August 1997 (Appendix 1). This was conducted on a much smaller scale than the final survey since the objectives were to assess the validity of the questionnaire. This enabled the content and relevance of the questionnaire to be evaluated in the light of the responses of households. More importantly, through an iterative process the questionnaire was refined and calibrated so that the final questionnaire was capable of producing data of a better quality. Questions that were inappropriate were either restructured or, in the extreme, excluded from the final version which was conducted during August and September of 1998 (Appendix 2).

The selection of the survey areas was easier to resolve given the financial constraints and other factors alluded to in chapter one. Zimbabwe was selected since the author had worked there during the 1980s and a significant familiarity with the processes of change

in the country had been obtained. This background had particular relevance for an understanding of the longer term issues that relate to the dynamics of household resilience. More importantly, kinship ties facilitated the access critical to achieving the trust of households in the survey areas. The annual visits served the dual purposes of familiarising the people in the survey areas with the aims of the research in addition to the process of refining the questionnaire outlined above. During the final enumeration period the author was accompanied by his youngest son who at that time was fifteen months old. This provided a useful point of contact and discussion with the local population and, it is believed, contributed to obtaining more candid responses to the sensitive sections of the questionnaire.

3.4 The Survey Areas

The areas selected for the survey were the Semukwe and Mberengwa Communal Areas and their relative locations are presented in map 3.1. A more detailed discussion of the development and significance of the Communal Areas for the African rural population is given in chapter four. Although the main criteria for the selection of the Semukwe and Mberengwa Communal Areas were economy, convenience and the established links that had been developed other important factors contributed towards this choice. If the findings of this research are to be capable of some generalisation at the level of the country and to the region as a whole, the conditions in the survey areas selected needed to be representative of those found elsewhere.

Map 3.1
Zimbabwe and the Location of the Semukwe and Mberengwa Communal Areas



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The Communal farming sector in Zimbabwe provides the means of subsistence for over 70 per cent of the population (Mehretu, 1994). Further, almost three-quarters of the Communal Areas are located in the semi-arid Natural Regions IV and V[1]. The classification of the Natural Regions is based on expected levels of annual rainfall of which IV and V receive the lowest. Therefore, these regions are those most prone to drought. Since drought (as one source of exogenous shock) is a major interest in the work, it is important that the survey areas should be located in these semi-arid Natural Regions. The Semukwe Communal Area is located in Natural Region V and the Mberengwa Communal Area lies on the border of Natural Regions IV and V. In this respect, the climatic conditions in these areas should be reasonably representative of those experienced in the majority of the other Communal Areas in Zimbabwe.

The limitations of this research in providing an output than can be scaled up meaningfully from the provincial level to the country and, ultimately, to the southern Africa region are acknowledged. Inevitably, it is difficult to generalise from household data collected over such a limited area and time period. The basis for the selection of the two survey areas has attempted to overcome some of these constraints. Within the individual survey areas important differences exist in access to resources which result in different strategies being pursued. These are identified through different stratifications of the sample populations. Additionally, differences in the resource base and ethnicity between the two areas provides important contrasts between communities and ecological zones. In Semukwe, the population is comprised predominantly of the Ndebele group but Mberengwa, which lies on the border of Matabeleland South, has a mixed population of Shona (the main ethnic group in Zimbabwe) and to a lesser extent, Ndebeles. Finally, the general social, political

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[1] A more complete explanation of the classification of the Natural Regions in Zimbabwe is provided in chapter four.

and economic conditions in Zimbabwe in recent years have not been unrepresentative of those observed elsewhere in the southern African region. Therefore, it is suggested the results of this research should possess a degree of generalisation that will make the findings of some significance for the problem of food insecurity faced in other parts of southern Africa.

3.5 Sampling Techniques and Survey Interviews

A critical condition for the findings of the survey to be capable of inferences about the population as a whole is that the sample units (i.e. households) must be randomly selected. The population densities in the survey areas are low and are typical of those generally associated with communities living in semi-arid areas. This created logistical problems in selecting a random sample of households that were scattered over a relatively large area. Transportation within each survey area was poor which coupled with the limited time available to conduct the surveys required that a more practical solution was sought. From experience, rapid and convenient access to these communities can only be secured by motor vehicle. Consequently, a car was obtained for the period of the survey which facilitated the gathering of information over a wide area and in a short period of time.

For the results of the survey to possess significance statistically, the sample size had to be reasonably large. However, the size of the sample had to be weighed against the other considerations of economy and time. To compromise between these conflicting objectives a sample size of 50 households in each survey area was chosen. While this number is not ideal it is satisfactory. An *ex post* evaluation of the intrinsic variability of the data confirmed that this sample size was satisfactory for the purposes of this research. Further.

since the data were collected, collated and analysed by the same person stringent control was possible at all stages of the survey. This contributed significantly to the overall quality of the data collected which revealed a pleasing internal consistency at the analysis stage.

The process of randomising the selection of the sample units was achieved by travelling to different villages within each Communal Area during the survey period. The actual selection of the sample units in each village was undertaken on foot by selecting every sixth household. After the basic introductions and explanations had been made, the household head or most senior member of the household was invited to participate in the survey. After obtaining the necessary consent the interview commenced. The experience of conducting interviews gained during the pilot survey conducted in 1997 proved invaluable in contributing to the quality of the data obtained. In particular, this had permitted the identification of the common units of measurement, the main household activities and the specific areas on which respondents were willing comment. Moreover, it enabled the questions included in the survey to be sequenced in order of increasing sensitivity and framed within local cultural norms. The survey began by developing a social profile of the household and then progressed to include details of the arable and livestock enterprises. The questioning then moved to those activities conducted off-farm and concluded with the ranking of household income, expenditure and coping strategies. The period of the survey coincided with the dry season when, in general, more time is available on-farm. More importantly, the harvesting activities of the previous season had just been completed so that recall of the quantities obtained of each crop was good.

To assist with the interpretation of the data semi-structured interviews were conducted with

key informants such as chiefs, councillors, head teachers and health workers. Through a process of triangulation between different information sources it was possible to verify the data which enabled a more complete picture of the food security situation to be created. The contribution made by these interviews was essentially qualitative and assisted in the fleshing out of the bones of the quantitative elements of the research.

3.6 Data Analysis

For the purposes of analysis, the data were entered into the Corel Quattro Pro 8 spreadsheet package. The package is versatile and capable of a range of analyses and graphical interpretations. The number of questionnaires and the various series of data collected meant that this was a time-consuming procedure. The main benefit of this extended exercise was that it required an intimate involvement with the data at the input and cleaning stages of the analysis. This enabled internal inconsistencies to be identified and corrected by cross-referencing with the individual completed questionnaires. Additionally, it permitted a feeling for orders of magnitude and general trends to be appreciated during the early phase of the analysis. The insights gained at this stage proved useful in determining the final content and structure of the thesis.

3.7 Conclusion

This short chapter has described how the development and implementation of the analytical phase of this work were determined. The primary concerns of this research have been restated and how the main conceptual issues were resolved prior to the survey period have been outlined. The relationships of this research to established frameworks for the analysis

of food insecurity and the effects of exogenous change at the household level have been explained. These links are important since the aim ultimately, is to increase the wider relevance of this work by facilitating a degree of comparability in the findings. In this respect, the quality of the data to be analysed is paramount and the efforts to realise this at all stages of the survey process have been discussed. Finally, the significance of the complementarity between the qualitative and quantitative approaches adopted in this research has been emphasised. This was considered essential if a more complete impression of the nature of food insecurity in the survey areas was to be obtained.

Chapter Four

Land Reform and the Evolution of Food Security Strategies

4.1 Introduction

It has been suggested that the status of household resilience at any time will be a function, in part at least, of the cumulative effects of past events. Therefore, a useful starting point to explore the current status of household resilience in the semi-arid Communal Areas of Zimbabwe would be to examine the evolution of food security strategies in the recent past. This chapter provides an historical overview of the main changes that have occurred in the dominant means of access to food for the African population in Zimbabwe from the time immediately before the advent of colonialism to the present day.

Agriculture continues to fulfil key economic and social functions in the Communal Areas through subsistence and market-oriented production, providing sustenance for the majority of the population. The quality of agricultural land and more importantly, access to it, lies at the heart of the debate concerning rural development in Zimbabwe. The experience of the African farming sector cannot be viewed in isolation of the growth of the commercial agricultural sector which took place throughout most of the last century. Hence, the history of land reforms in Zimbabwe forms a significant interest of this chapter. The consequences of the major land reforms of the colonial and independence periods are evaluated in terms of their impact on agricultural production and food security strategies of the African population. These issues are explored in the context of the development of the colonial capitalist economy and the observed changes in the dominant means of access to food are identified.

4.2 Zimbabwe - Physical Characteristics

Zimbabwe is situated in southern Africa between the latitudes 15°30′ and 22°30′ south of the Equator and between the longitudes 25° and 33°10′ east of the Greenwich Meridian. It is a land-locked country with a total land area of approximately 390,759 square kilometres bounded by Mozambique in the east, Zambia in the north, Botswana in the west and South Africa in the south. Geographically, the country is divided into three main regions. The principal physical feature is a high plateau, the *high veld* which runs from the south-west to the north-east across the middle of the country. The plateau is 650 kilometres long, 80 kilometres wide and lies mostly at altitudes between 1200 and 1500 metres above sea level. The *high veld* forms the watershed between the Zambezi, Limpopo and Sabi rivers and forms around 25 per cent of the total land area. Its cool climate and well watered and fertile land first attracted the Ndebele in the late 1830s and the European settlers towards the end of the century (Palmer, 1977).

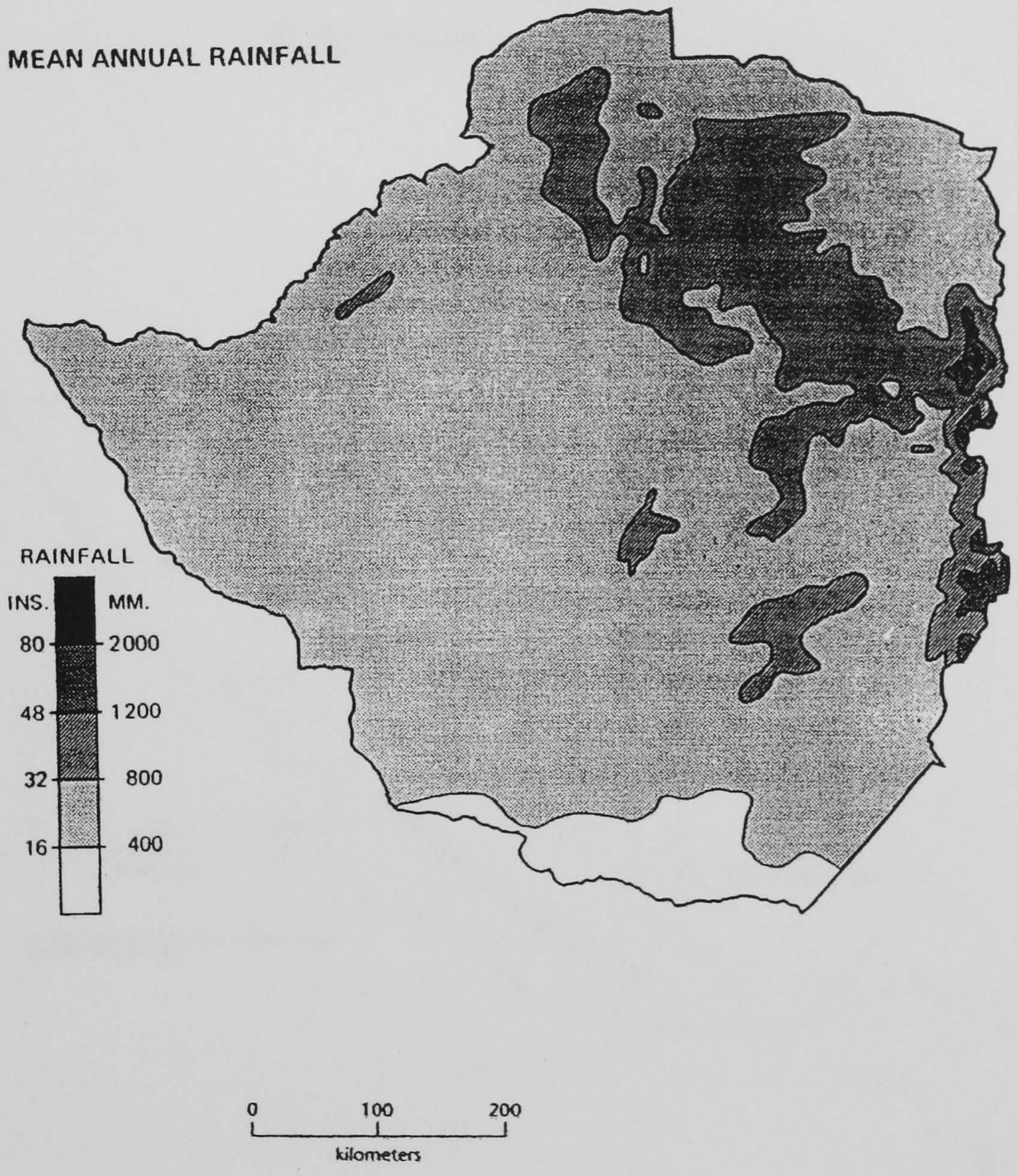
On either side of this central spine sloping down northward to the Zambezi river and southward to the Limpopo river lies a wider plateau, the *middle veld* with an altitude between 600 and 1200 metres. The area is more dissected and undulating than the *high veld* and is where the majority of the Communal Lands are located. Beyond this, and mostly in the south lies the hot and dry *low veld* with an altitude below 600 metres. This comprises the remaining 35 per cent of the country and its inhospitable climate has attracted only sparse populations.

Zimbabwe lies entirely within the Tropics but its relatively high altitude considerably modifies the climate. This is especially the case on the central plateau where temperatures are lower than at sea level for the same latitude. The year is roughly divided into three

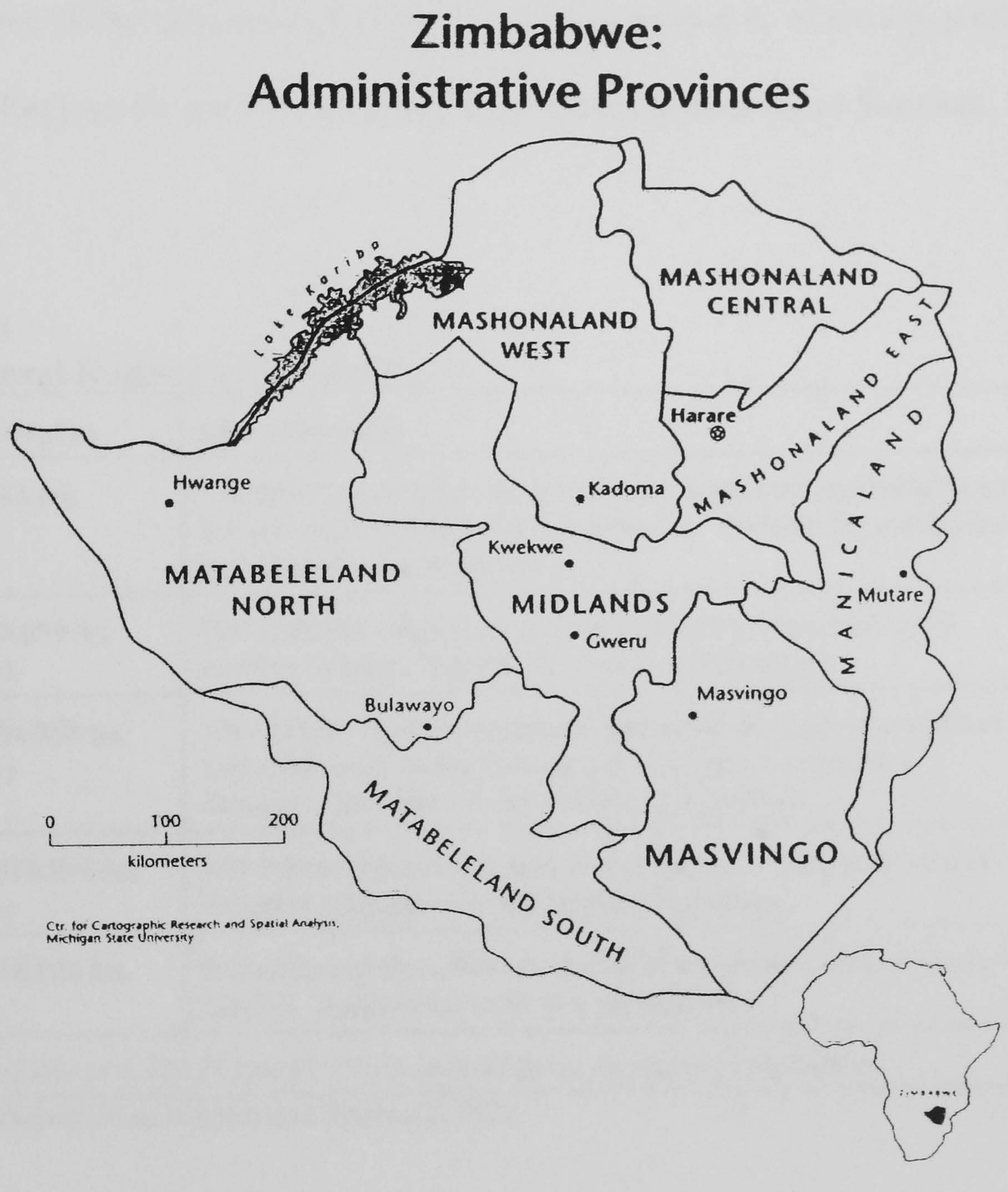
seasons; a dry, cool winter from April to August followed by a hot season to October and a wet season with rains usually falling from mid-November until March. The main rains are associated with the Inter-Tropical Convergence Zone (ITCZ) and as a result the Zimbabwean wet season occurs during the southern summer months. However, rainfall is erratic and highly variable within and between regions, and over time. In general, the average annual levels of rainfall decrease from the north to the south and from the east to the west of the country (Map 4.1). Rainfall tends to come in torrents with falls of 100-120mm in a single storm not uncommon (Floyd, 1961). Consequently, years of high rainfall may not be beneficial for the agricultural sector since as much as 65 per cent may be lost in runoff (Kay, 1970). The country is also prone to frequent drought so that agriculture is a hazardous occupation for all sections of the farming community

Recent estimates of the population of Zimbabwe put the figure in excess of 12 million (CSO, 1996). Approximately 97 per cent of the population is classified as African divided between the two major ethnic groups of the Shona, who form the majority, and the Ndebele. The name Shona was first used by the Ndebele to describe the Rozvi people that inhabited the high plateau and was adopted later by other Shona-speaking groups such as the Kalanga, Karanga and Zezuru to describe themselves (Beach, 1984). Consequently, the Shona is a collective name for the group of related tribes which live predominantly in the north, central and eastern parts of the country. The Ndebele on the other hand are found in the drier south and western regions. The administrative provinces of the country are given in map 4.2 below.

Map 4.1. Zimbabwe - Mean Annual Rainfall



Map 4.2 Zimbabwe - Administrative Provinces



4.3 The Agricultural Sector

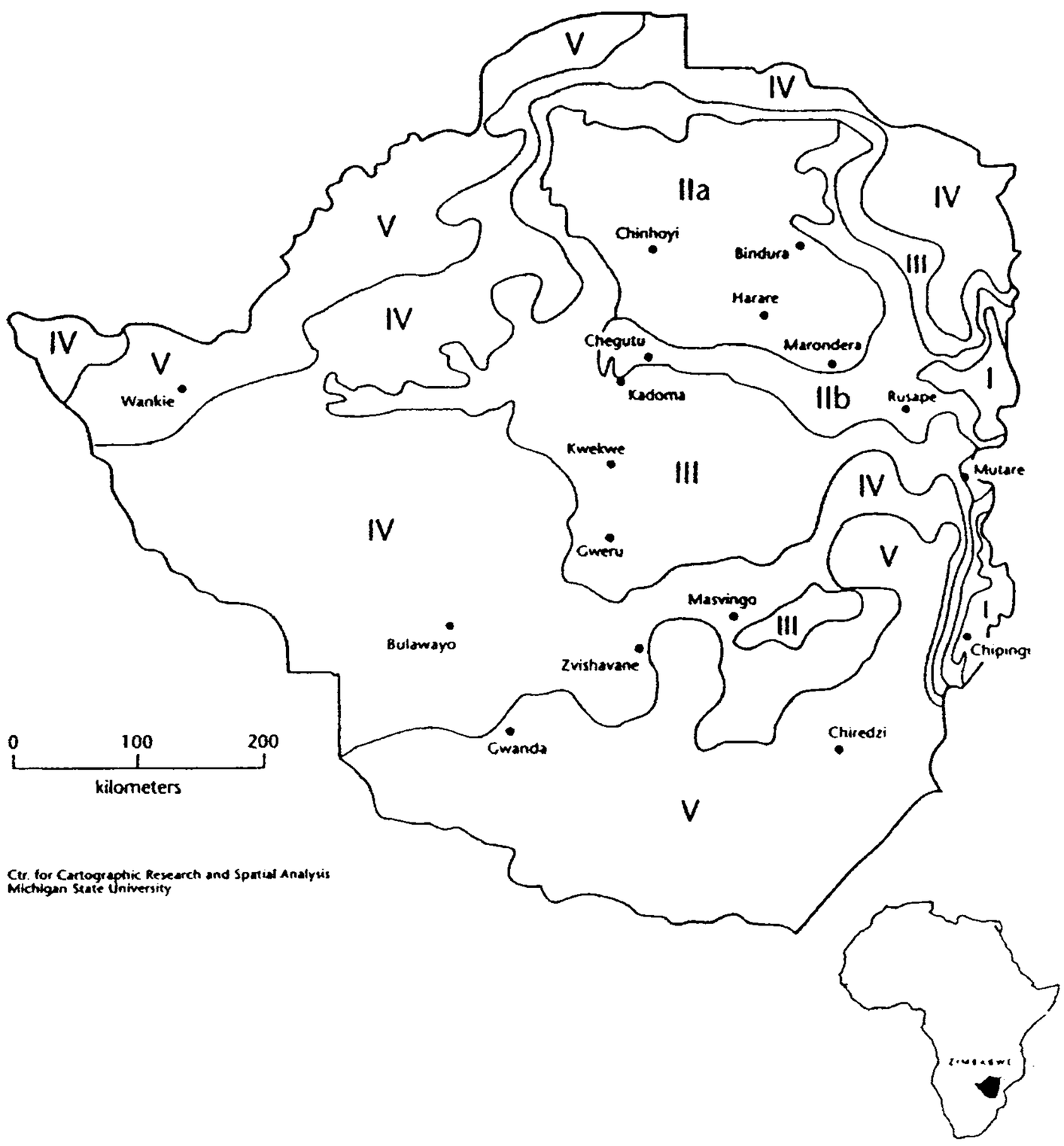
The agro-potential of Zimbabwe has been classified into five Natural Regions or climatic zones which are based on expected levels of annual rainfall. These are described in table 4.1 and their distribution illustrated in map 4.3. This classification reveals that just over 20 per cent of the total land area is suitable for intensive farming (Natural Regions I and II) and that most of this land is concentrated in the north-eastern part of the country. Over 50 per cent of the land area allocated to crop production is extremely prone to failure (Natural Regions IV and V) and is best suited to the production of livestock.

Table 4.1
The Natural Regions of Zimbabwe

Natural Region	Characteristics
I - 613,233 ha. (1.56%)	1,050mm plus rainfall per annum with some rain in all months of the year and relatively low temperatures. Suitable for specialised and diversified agriculture.
II - 7,343,059 ha. (18.68%)	700-1050mm rainfall per annum with rainfall confined to the summer months. Suitable for intensive agriculture.
III - 6,854,958 ha. (17.43%)	500-700mm rainfall per annum with relatively high temperatures and infrequent, heavy falls of rain and subject to seasonal droughts. Suitable for semi-intensive agriculture.
IV - 13,010,036 ha. (33.03%)	450-600mm rainfall per annum and subject to frequent seasonal droughts. Suitable for semi-extensive farming.
V - 10,288,036 ha. (26.2%)	Normally less than 500mm of rainfall per annum with very erratic rainfall. Suitable for extensive agriculture.
The remainder of 1,220,254 ha (3.1%) is unsuitable for any form of agriculture.	

Source: Adapted from Vincent and Thomas (1962).

Map 4.3 The Agro-Potential of Zimbabwe



Unlike many other countries in sub-Saharan Africa, Zimbabwe has a relatively developed economy as can be noted from the distribution of the total output given in table 4.2.

Table 4.2
The Distribution of Gross Domestic Product at Factor Cost - 1994

Agric, Hunting & Forestry	Mining & Quarry	Manufacture	Construction, Electricity & Water	Transport Finance, Trade & Communic	Public Admin, Education & Health	Services
19%	5%	21%	6%	15%	12%	22%

Source: Adapted from CSO (1998a).

Agriculture is the mainstay of the economy and the sector is dualistic in structure being characterised by distinct farming systems. These reflect the historical nature of land allocation and tenure as well as the country's natural resource endowments and technologies. Although agriculture contributes about 14 per cent of GDP, the sector earns an income for almost 75 per cent of the population, provides about 30 per cent of total employment in the formal sector and accounts for over 40 per cent of total national exports (Muir-Leresche, 1994). Total agricultural output is produced by two main groups of farmers; the large-scale commercial and the small-scale communal farming sub-sectors (table 4.3). The commercial sector, formerly the European farming sector, produces about 70 per cent (by value) of agricultural output using relatively capital-intensive techniques on 11 million hectares of privately-owned land. Most farms are owned by companies (61%) or individuals (34.3%) with government, parastatals and cooperatives taking up the remainder (4.7%) (Roth, 1990). The average farm size is 2406 ha. with about 35 per cent of the land found in Natural Regions I and II, and 44 per cent in Regions IV and V.

Table 4.3
Land Distribution in Zimbabwe by Natural Region ('000ha)

Natural Region	CA	LSCF*	RA	National Parks	Forest Area	Total
I	135	416	14	50	90	705
II	1,270	3,890	670	25	2	5,857
III	2,820	2,878	902	545	145	7,290
IV	7,340	3,252	1,048	2,460	670	14,770
V	4,790	3,314	456	1,820	70	10,450
Total	16,355	13,750	3,090	4,900	977	39,072

Source: Adapted from Moyo (1995).
Note: CA = Communal Areas, LCSF = Large-Scale Commercial Farms, RA = Resettlement Areas
* Includes Small-Scale Commercial Farms and State Farms

The communal sector includes about 1 million households on over 16 million hectares of communally-owned land (Rukuni and Eicher, 1994). Moreover, the communal sector provides the means of subsistence for over 70 per cent of the population (Mehretu, 1994).

Most farmers in the Communal Areas practice subsistence agriculture but in recent years the sector has made significant contributions to the national output of certain crops. Communal farmers now dominate the markets for maize (the major staple) and cotton (a major export) output (table 4.4) which were previously the domain of the large scale commercial farms (Cliffe, 1988).

Table 4.4
The Production of Selected Crops Marketed by the Communal Sector in Zimbabwe 1991-95

Crop (tonnes)	1991	1992	1993	1994	1995
Maize	1,034,772 (62%)	118,574 (43%)	1,195,820 (59%)	894,200 (51%)	399,400 (48%)
Groundnuts	87,369 (87%)	28,766 (90%)	45,413 (89%)	54,200 (82%)	41,200 (78%)
Cotton	152,334 (63%)	36,173 (52%)	135,604 (68%)	99,700 (62%)	46,300 (46%)
Sorghum	50,603 (81%)	6,584 (46%)	70,707 (74%)	56,924 (71%)	16,203 (55%)
Tobacco	3,280 (2%)	4,042 (2%)	9,273 (5%)	5,570 (3%)	2,863 (1%)

Source: Adapted from CSO (1995).
Percentage of total national marketed output is given in parentheses.

However, aggregated data of this type can be misleading. Almost three-quarters of the Communal Areas lie in Natural Regions IV and V where low and erratic levels of rainfall can support only semi-extensive and extensive agriculture. That most farms are net food purchasers implies a skew distribution of households with a marketable surplus. Jayne and Rukuni (1993) estimate that in the 1986/87-1991/92 marketing years the top 10 per cent of smallholder farms earned 92 per cent of the total maize income for that sector. Consequently, Zimbabwe's smallholder success has been restricted to those areas of more favourable rainfall (Natural Regions I , II and III). These areas have also been more able to benefit from marketing improvements and technologies developed for the commercial sector, such as fertiliser and hybrid seed.

The semi-arid areas of Zimbabwe (Natural Regions IV and V) are more suited to drought resistant crops such as sorghum, millet and cowpea, and to the production of livestock. The current distribution of land is strongly correlated with the incidence of food insecurity

in Zimbabwe. A study by Christensen and Stack (1992) estimated that between 7-23 per cent of the population located in Natural Regions IV and V can be classified as food insecure. Further, the study suggests that food insecurity at the household level stems from a problem of access to food rather than inadequate food availability. Since the majority of farmers in the Communal Areas rely on subsistence production for their livelihoods the extent of food insecurity at the household level will be influenced by the local agro-ecology and climate.

Food insecurity of this nature corresponds to Sen's notion of inadequate food entitlements. In this respect, the incidence of food insecurity in Zimbabwe is related to the historical distribution of land between the commercial and communal farming sectors, the differences in agro-ecology and the associated systems of agriculture. The cumulative nature of resilience implies that current coping strategies are, in part at least, the outcome of past events. Thus, interpreting the current status of resilience requires an understanding of the ways in which coping strategies have evolved. A dominant force in this evolution will be those changes that have altered the relative importance of the various components of household resilience. In order to provide a framework to evaluate the changes that have affected household resilience an appropriate time-scale needs to be defined. It is suggested for the purposes of this research that the beginning of the colonial era provides the most useful starting point. Many of the current problems of food insecurity in the Communal Areas today have arisen as a direct consequence of land reform and agricultural policy that occurred during this period.

4.4 Agricultural Systems and Food Security in the Pre-colonial Period

The evidence provided in travellers' accounts of East and Central Africa during the nineteenth century describes the region as being agriculturally prosperous (Palmer, *op. cit.*). The traditional diet included staple crops such as finger millet, bulrush millet and sorghum supplemented by a range of vegetables and fruits. The veld provided opportunities to hunt game, to fish and to gather wild fruits and insects. Some households would have specialised in mining, craft or industrial activities (Beach, *op. cit.*) but nevertheless, agriculture was the basic and underlying activity of society. For example, on the plateau the Njanja had an established reputation as producers and traders of hoes over a very wide area. Yet the majority of their time was allocated to agricultural activities. The Shona peoples are documented as excellent agriculturalists (Palmer, *op. cit.*) who had a long association with supplying food to travellers along the ancient trade routes that crossed their country. The Ndebele, who were once thought to have depended almost entirely on pastoralism are now understood to be have been primarily agriculturalists with a strong herding element (Cobbing, 1976). Moreover, through their large cattle herds they participated actively in inter-regional trade networks.

Agricultural practices were characterised by shifting cultivation where virgin land would be cleared and cultivated. After three or four years the land was allowed to revert to fallow for an average of fifteen years so that its fertility could recover. In order that the fallow period was adhered to villages were of a temporary nature moving every six to eight years. This system of agriculture had evolved according to the relative availability of resources such as the abundance of land, the variability of soil fertility and a sparse population. Historically, cattle have played a central role in agricultural systems. Cattle were and continue to be desired for the stream of goods and services that they yield to farm

households and the production of crops and livestock is closely integrated (Barrett, 1992; Scoones, 1992). At the socioeconomic level, herd size can determine social status and can function as a means of savings (e.g. to meet unexpected expenses) or as a store of wealth (e.g. pension).

There appears to be no firm agreement in the literature as to the nature of pre-colonial land tenure and resource management in Zimbabwe. According to Hughes (1974), in 'traditional' societies general rights to land were acquired by virtue of membership of a community and from this flowed more specific rights to natural resources based on what the community considered to be 'reasonable'. Work by Scoones and Wilson (1989) has questioned this view of traditional land tenure as a largely colonial construction useful to policy makers involved in setting up systems of labour reserves. Another source (Government of Zimbabwe, 1994b) defines land rights under traditional land tenure for groups, households and individuals as based on the traditions and customs that had evolved over time. Further, that individual families enjoyed more defined spatial and temporal rights over the use of several parcels of land and their associated natural resources. The notion of ownership was well established in traditional tenure and family rights could be passed on to succeeding generations. Subdivision of land was permitted and residual rights did exist for land under fallow. Zachrisson (1978) documents that under traditional tenure there was no private ownership of land but that land belonged to the community. Additionally, that no member of the community should be without land and that there was security of tenure for individuals. If ownership did exist then it is unlikely that it corresponded to the capitalist concept of private property rights. Rather, individuals would not have owned land but would have secured usufructary rights to the land established through cultivation practices.

Iliffe (1990) documents that although drought and scarcity occurred frequently in pre-colonial Zimbabwe mortality due to famine was rare. The variable rainfall of the region resulted in a drought in approximately one year in five encouraging the development of indigenous strategies to ensure household food security. Principally, insurance against harvest failure was achieved by storing grain and it is probable that stocks were replenished on an annual basis. Exposure to famine would then have occurred only when the rains failed for two successive seasons. During such periods the adverse effects of food insecurity would have been at least partially alleviated through an increased emphasis on gathering activities or on trading for grain through the sale of cattle.

When local resources failed the hungry would venture further afield to search and barter for grain. Arrangements of this nature were common and established practices. For example, the Ndebele on the middle veld would trade with the Shona on the high veld for grain with cattle during drought years (Palmer, *op. cit.*). The Tsonga-speaking Hlengwe of the south-eastern lowlands realised that insufficient rainfall would result in crop failure every three to four years. This led to an increased emphasis on hunting, fishing and gathering activities for their own consumption and to trade for grain with other tribes on the plateau (Beach, *op. cit.*).

These arrangements provide convenient examples of neo-classical comparative advantage where economic specialisation in a particular area is driven by the relative abundance of local resources. Specialisation in turn led to the creation of surpluses which could be traded with groups from other areas where the pattern of relative resource endowments differed. Thus, when the domestic production of grain failed to meet the requirements of the household, the role of petty production and trade assumed a greater importance in

securing entitlements to food. More importantly, the existence of specialisation and trade may also offer some explanation as to why mortality due to famine during this period is documented as an exceptional event.

4.5 Agricultural Opportunity in the Early Colonial Period

Between 1830 and 1840, the Ndebele tribe settled in the south-west of Zimbabwe which today includes the provinces of Matabeleland North and South. The Ndebele originated from the Zulu tribe that came to dominate the Natal region of South Africa under the reign of Tsaka during the early 1800s. The strong pastoral tradition of the Zulus may explain why the Ndebele chose to settle this region. Arguably, the agro-ecology of these parts has perpetuated this tradition amongst the present day Ndebele (Johnson, 1964).

The strategic influence of the Ndebele in the region was appreciated by Cecil Rhodes who had imperialist intentions for the whole continent funded by his successes in the diamond mines of Kimberley. In 1888, the Ndebele King was persuaded to grant Rhodes complete and exclusive charge over all metals and minerals situated and contained in the Ndebele territories (Bates, 1976). The colony of Rhodesia was founded in 1889 and in order to exploit the anticipated mineral wealth the British South Africa Company (BSAC) was formed in 1890. Land appropriation began immediately and with a total disregard for existing African rights. About 16 per cent of the country was seized during the early 1890s. The pace of this process and the fact that most of the land was held by speculators triggered the First Chimurenga war of 1896. The eventual response of the British government was to evoke an Order of Council in 1898 which required the BSAC to create Native Reserves for the African population. These reserves comprised a random

patchwork of some 20 million acres (8 million hectares) outside of the conquest lands, the gold belt and the projected route of the railway (Palmer, *op. cit.*). Effectively, this Order laid the foundations for the dual agrarian structure which still exists in Zimbabwe today.

The first European settlers to arrive in Rhodesia found maize already incorporated into traditional cropping patterns. The variety was a low-yielding, round flinty type particularly suited to shifting cultivation practices (Smith, 1979). Indeed, the first Europeans obtained their seed from local farmers and initially adopted similar cultivation methods of working the land with a hoe and hand broadcasting the maize seed. However, with no knowledge of local conditions and little agricultural experience, this group of pioneer farmers located predominantly near to the main commercial centres of Salisbury and Bulawayo, was barely able to eke out a subsistence existence.

The failure to establish European agriculture during this period enabled African farmers, most notably the Shona, to resume their past entrepreneurial activities of supplying food, in this case to the growing mining communities. More importantly, it enabled this group to retain their independence as farmers and not as waged labour for the Europeans. Many Shona farmers were able to pay the colonial hut tax entirely from their agricultural activities. For example, in 1903, African sales of grain and livestock totalled £350,000 in contrast to £100-150,000 earned in employment (Palmer, *op. cit.*). The relative prosperity of Shona agriculture arose principally from their location on the high veld and their proximity to the main European markets and transport routes. Many Europeans found it more profitable to trade in African produce than to produce themselves. Consequently, for the majority of the Shona, this period represented something of an agricultural revolution. They were able to reduce their vulnerability to food insecurity through surplus food

production and accumulating wealth in the form cash savings.

The Ndebele were not able to benefit from the same fortuitous circumstances and during the crop failures of the early part of the colonial era they continued to rely heavily on traditional strategies. However, the rinderpest outbreak of 1896 which devastated cattle herds across southern Africa, crushed the basis of their economy. By 1902, 48 per cent of the Ndebele able-bodied men worked for at least three months for a European employer, in contrast to only 13 per cent of Shona men (Arrighi, 1970). The outbreak of rinderpest in turn led to legislation by the colonial regime to restrict the movement of livestock. This eroded completely the traditional strategy of exchanging cattle for grain from surplus areas. Perhaps more insidiously, the legislation had the effect of depressing livestock prices by concentrating distress sales into a particular area. Additionally, local traders became reluctant to accept cattle in return for grain during periods of food shortage due to the limited availability of water and suitable grazing. Since the price of grain would have been high in drought areas this would also have effected an unfavourable shift in the terms of trade between cattle and grain, aggravating the extent of the localised food shortages. Unable to secure food through traditional strategies which exploited local trade networks the Ndebele were forced into waged employment much earlier than the Shona. The traditional components of resilience for many Ndebele households, the heterogeneity of the veld and the production and trading of cattle, were replaced by more limited and restrictive opportunities in the emerging labour markets.

Similar legislation initiated by the outbreak of famine and with equally devastating effects is documented elsewhere in the region. For example, in Ovamboland in what is now the northern province of Namibia, the traditional practice of cutting makalani palms

(*Hyphaene peterseana*) was forbidden by legislation introduced by the colonial government during the 1929 famine (Native Report, 1929). When cut in a particular manner the palm produced a wine fermented through natural processes which could be traded for grain. The aim of the legislation was to minimise the potential environmental damage caused by the widespread cutting of the palm trees. In general, the net effect was to exacerbate the localised effects of scarcity by undermining traditional coping strategies and increasing the dependence of the African population on European famine relief.

4.6 The Growth of European Agriculture

The absolute advantage enjoyed by many Shona farmers in the production of maize continued until about the end of the first decade of the twentieth century. When it became clear by about 1907 that expectations of another Rand[1] were not to be realised in Rhodesia, the economic strategy within the colony shifted from mining to agriculture by encouraging the inflow of settlers from the United Kingdom and South Africa to take up farming land (Smith, *op. cit.*). In 1908, the Rhodesian Department of Agriculture was reorganised with the specific objective of promoting European agriculture offering a wide range of extension facilities to new farmers. The Land Bank was established in 1912 to make credit facilities available exclusively to Europeans for the purchase and development of agricultural land. The main activities encouraged were maize, tobacco and ranching, and represented direct competition with the African farming community. Maize production poised an obvious threat. As new varieties were introduced and cultivation practices improved the output of maize from European farmers increased rapidly from 4,260 bags recorded in 1900, to approximately 393,000 bags in 1911, and exceeding 1 million bags

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1 The Rand is the gold belt located in the area surrounding Johannesburg in South Africa.

by 1915 (Smith, *op. cit.*). Tobacco production was initiated on the sandy soils favoured by Shona farmers and ranching was established on the Matabeleland high veld in the areas already occupied by Ndebele cattle. These factors coupled with the increasing relative scarcity of land in the Native Reserves undermined the ability of Africans to compete with European agriculture after this time.

A major principal of colonial famine policy during this period was that relief could only be extended through waged employment (Iliffe, *op. cit.*). This not only undermined traditional coping strategies but more importantly, continued to reinforce the growing dependence of the African population on the European economy. In rural areas this facilitated the building of dams and the establishment of the rural infrastructure vital for the administration of the new colonies. In South Africa for example, the incidence of famine was exploited as means of securing a supply of cheap labour to work in the mines and the developing industrial sector (Native Report, 1923; Cape Argus, 1936).

Essentially, the outbreaks of food shortages provided critical leverage for colonial regimes to accelerate the proletarianisation of the African peasantry in the interests of the emerging European-dominated capitalist economies. Waged employment also facilitated the purchase of grain at highly inflated prices but which had to be repaid from normal agricultural rates of pay. It served the additional function of commercialising the grain trade in the interests of European traders and hawkers who were motivated by high prices to move food to areas of shortage. By 1915 in Rhodesia, maize production occupied about 86 per cent of the land cultivated by Europeans and famine provided an important means by which Europeans accumulated capital from the African population (Iliffe, *op. cit.*; Vaughan, 1987).

4.7 The Formalisation of Agrarian Dualism

Prior to 1915, the European settlers in Rhodesia had little motivation to evict any Africans on their land due to the ability to extract rents, crops and labour services. More importantly, up to this time the African farming sector had played a significant and important role in their contribution to national food security. However, the newly founded European agricultural sector required regular and assured supplies of cheap labour. This supply was ensured by a plethora of charges levied upon the African population aimed at reducing household incomes and necessitating waged employment. Measures included the compulsory dipping of cattle, grazing fees and increased rents.

At the same time there were increasing calls for segregation in the ownership of land as European farmers were anxious to prevent the emergence of a commercial African land-owning class. Over the next forty years land was expropriated from the Shona and Ndebele with the areas benefiting from better soils determining the actual land boundaries (Abel and Blaikie, 1988). Native Reserves were therefore established in the drier and more remote, low-lying parts of the country. This gradual process of encroachment was legalised in the Land Apportionment Act (LAA)[2] of 1930 which separated by law the distribution of land between the indigenous African population and the European settlers. The Act set aside 7.5 million acres (3 million hectares) of land as native purchase areas within which only Africans could buy land. However, the same act also prevented Africans from buying the more productive land located in the European areas. The result was to formalise the dual agrarian structure by creating the conditions for the establishment of large-scale and privately-owned commercial farms.

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2 The Land Apportionment Act of 1930 divided the land into European Area (19.9 mha), Native Reserves (8.7 mha), Native Purchase Areas (3.0 mha), Forest Area (0.24 mha), Unassigned Area (7.2 mha). (mha = millions of hectares).

By the 1920s the twin processes of land alienation and the commercialisation of the grain market gradually eroded traditional food security strategies. The poorer soils in the Native Reserves reduced the extent of grain surpluses and the ability to earn cash from the sale of grain discouraged the holding of large stocks. Further, reductions in the size of open veld areas limited the traditional practice of foraging during lean periods and also conflicted with the necessity to migrate in search of paid employment. Many European farmers exploited the increasingly precarious situation by driving the wages of the individual African worker down towards the subsistence level with a complete disregard for the requirements of his family (Palmer, *op. cit.*). The growing inability of African tenants to pay the rents led to the desired exodus from the European farm areas and into the Native Reserves. Growing human and livestock populations in the Native Reserves coupled with the quality of the limited land available resulted in declines in per capita grain production in these areas after 1930 (table 4.5).

The diversification and associated growth of the capitalist economy provided a growing range of opportunities for the African population to engage in off-farm employment. Traditional strategies were replaced by an increased dependence on the market place and the centralised silos of the Maize Control Board (MCB). The MCB was established in 1931 in response to pressure from European farmers over the collapse in external grain prices (Smith, *op. cit.*). By controlling the movement of grain and offering guaranteed prices for maize delivered to railhead depots the MCB set a lower limit for grain prices within the colony. The main effect was to stabilise internal grain prices at a relatively high level. However, since the Native Reserves were often distant from railheads African farmers were not always able to benefit from high and stable producer prices. Instead they were forced to sell to licenced European traders at lower prices reinforcing their

dependence on waged employment. The breeding of hybrids commenced in 1933 and by 1949 Rhodesia became the second country after the USA to market certified hybrid maize seed. This triggered the maize production revolution on the large-scale commercial farms in the post-war period (Weinmann, 1975).

Table 4.5
Estimates of per Capita Grain Production in the Native Reserves of Rhodesia 1900-62

Year	Per Capita Grain Production (200lb bags - 5 Year Annual Averages)
1900-04	3.26
1909-13	3.11
1912-16	2.89
1914-18	3.01
1919-23	3.59
1924-28	3.32
1929-33	2.87
1934-38	2.68
1938-42	2.44
1943-47	2.69
1948-52	2.18
1953-57	2.96
1958-62	2.38

Source: Mosley (1983).

In the financial year of 1940-1 the fiscal allocation for the development of agriculture in native areas totalled £14,107 which compared miserably with the £208,217 allocated to European agriculture (Palmer, *op. cit.*). During the 1940's the high population densities in the Native Reserves resulted in heavily degraded lands from over-grazing and the cultivation of marginal soils. Concern over the possible consequences of widespread

environmental degradation led in the passing of the Native Land Husbandry Act (NLHA) of 1951. The NLHA attempted to enforce the private ownership of land, the destocking of livestock and to encourage conservation practices amongst African farmers. It also sought to end the ancient and most basic African tradition of entitlement to land for all. Rather than moving traditional tenure towards a freehold tenure system the NLHA fuelled nationalist political sentiments and had subsequently to be abolished in 1961.

Traditional tenure was restored under the Tribal Trust Land Act (TTLA) of 1965 and the designated name of the Native Reserves became the Tribal Trust Lands (TTLs). Tribal authorities were created which reestablished the role of traditional leaders (typically tribal Chiefs) working under District Commissioners in the decision-making process concerning land use and tenure. However, increasing population pressure impaired the ability of the traditional authorities to manage land effectively so that the TTLs became degraded homelands. In an attempt to appease the growing nationalist movement the Land Tenure Act (LTA) of 1969 replaced the LAA of 1930 and divided the total land area of the country equally between the European and African populations. Combined with the TTLA the LTA essentially created Rhodesia's equivalent of apartheid. As a consequence of the various land reforms of the colonial period, very little of pre-colonial food security strategies and systems of land and natural resource management survived.

By the 1960s the economy was no longer able to absorb a labour force swollen by the effects of land alienation (table 4.6). The economy had grown at a rate of about 7 per cent per year between 1954 and 1968 but population increases and rising prices resulted in little growth in real incomes (Sutcliffe, 1971). Although the Unilateral Declaration of Independence (UDI) in 1965 stimulated the economy through the creation of import-

substitution industries, the economy contracted from 1972 until independence. The agricultural sector survived the hostile pressures of the period largely through government price support. Pricing policy aimed to encourage the diversification of agricultural output from a concentration on tobacco towards wheat, soya beans and beef while simultaneously safeguarding the interests of the large-scale farmers (Rukuni, 1994). Agricultural support was administered through the Agricultural Marketing Authority (AMA) which in turn coordinated the major parastatals: Grain Marketing Board (GMB), Cold Storage Commission (CSC), Dairy Marketing Board (DMB), and Cotton Marketing Board (CMB). While the cheap food policy pursued throughout the 1970s was without doubt of greater significance for the short-term welfare of the African population in maintaining their food security, the operating losses of the parastatals carried forward at independence had more negative and longer-term implications.

Table 4.6
African Male Employment in Rhodesia - Selected Years 1910-63

Year	Total Number (,000s)
1910	66.0
1915	81.6
1920	95.1
1925	147.1
1930	156.7
1935	204.6
1940	249.5
1945	298.4
1949	391.8
1951[a]	530.2
1955	579.0
1960	647.0
1961	624.0
1962	613.0
1963	610.0

[a] - From 1950 the recording convention was altered to include all males and not adult males only.
Source: Adapted from Mosley (1983).

4.8 The Land Issue in the Post-independence Period

In 1980, independence was achieved and the Zimbabwe African National Union (ZANU-PF) under the leadership of Robert Mugabe was elected to govern the country, now renamed Zimbabwe. The colonial system of land tenure for the African population inherited at independence remained unchanged until 1982 when the Communal Land Act (CLA) was promulgated as the legal basis for land tenure in the renamed Communal Areas (Cousins, 1992). Again the authority of traditional leaders was arrogated in favour of the newly created Rural District Councils (RDCs). These quasi-political institutions were

administered by the Ministry of Local Government, Rural and Urban Employment. The functions of the RDCs were executed through Village Development Committees (VIDCOs) and their amalgam, Ward Development Committees (WADCOs). Rather than creating a unified and coherent administrative structure for the Communal Areas conflicts over land rights increased as a direct consequence of this reorganisation (Abel and Blaikie, *op. cit.*). It was envisaged initially that Rural District Councils would have regard to customary law in all aspects relating to the use and allocation of land. However, the Rural District Councils believed that they exercised *de jure* exclusive authority over Communal Land in which traditional leaders had no role. Traditional leaders on the other hand claimed that the legitimacy of their powers had been acquired through inherited authority over many generations. Thus, a relationship based on suspicion rather than cooperation developed between the traditional authorities and the elected leadership.

The Customary Law and Local Courts Act (CLLCA) of 1992 aimed to address this almost anarchic situation by restoring civil jurisdiction to traditional leaders on all areas relating to customary law. However, the Commission of Inquiry into Appropriate Agricultural Land Tenure Systems in 1993 reported:

> We believe that the current legal and administrative structures in Communal Areas have collapsed because there is a lack of clarity on roles and functions of various institutions at local levels over issues of land and natural resource management. There is evidence that the dissolution of traditional authority and role in land and natural resource matters at Independence was premature and, currently, there is widespread resistance to VIDCO/WADCO structures as credible authorities over land and natural resources. The VIDCO is widely viewed as an illegitimate structure, with no credibility or respect, nor real effective power and resources to implement the said roles.
> (Government of Zimbabwe, 1994b, p26).

Another central strand of the post-independence reform process has been the efforts to address the constraints placed on development in the Communal Areas by increasing human and livestock populations. The inherited duality of the agrarian economy was maintained and land reform concentrated instead on a policy of resettlement for small-scale farmers. The initial target of resettling 162,000 families between 1982-5 proved overly ambitious. The achievement of the resettlement targets proved beyond the human and financial resources of the public sector in administrating and managing the programme. Disappointingly, success was limited to only 52,000 families resettled on 3.3 million hectares by 1990 (Rukuni, 1994). Kinsey (1999) argues that much criticism of the resettlement programme is premature and has used inappropriate evaluation criteria. From a range of indicators he suggests that households in the Resettlement Areas are more productive agriculturally and depend less on remittances than those in the Communal Areas. Consequently, this group has been able to improve the degree of food security enjoyed through the ability to accumulate larger stocks of grain which has released income to increase the range of purchased food consumed within the household.

Popular pressure for further land reform forced the government to commit itself to resettle a further 100,000 families on 5 million hectares. To expedite this policy the Constitution was amended and coupled with the Land Acquisition Act of 1992 the course of future land reform was explicitly defined. In essence, the government sought to strengthen its hand in acquiring high potential land from the commercial sector (table 4.7) through non-market solutions such as land valuation and limits placed on the numbers of farms owned, farm size and foreign ownership (ODI, 1998).

Table 4.7

Government Purchases of Commercial Farms 1992/93-1995/96

Year	Number of Farms	Area Purchased (ha)	Value (Z$)	$/ha
1992/93	40	43,106	14,954,411	347
1993/94	32	41,849	26,842,685	641
1994/95	27	42,721	25,470,000	596
1995/96	11	28,575	9,885,000	345
Total	110	156,251	77,152,096	*482

Source CFU (1998).

* average price.

Continuing pressures in the Communal Areas and the slow progress of land acquisition led to growing political disenchantment. The situation reached crisis proportions in late 1997 when the government took the dramatic step of announcing the compulsory purchase of 1472 commercial farms (CFU, 1998). Predictions that agricultural output would fall from Z$14 billion to Z$8.8 annually drastically affected investor confidence in the economy. The subsequent rapid depreciation of the exchange rate prompted swift rises in import prices with adverse consequences for the country's external trading position. The impact on domestic prices was swift with the annual rate of inflation rising from 20.1 per cent to 24.2 per cent between December 1997 and January 1998. The effect on food prices was more severe with rises of about 11 per cent over the same period (CSO, 1998b). This highlights the susceptibility of economies in less-developed countries to volatile and unfavourable movements in the exchange rate. Some degree of stability was only restored when the government was forced to hold back on its policy of compulsory purchase. IMF concern for the success of Zimbabwe's structural adjustment programme led to threats to withhold the financial assistance essential to support the ailing exchange rate. This strategy, which is discussed in greater detail in the next chapter, emphasises the influence

enjoyed by the Washington-based institutions over the internal policy-making process in recipient countries through the conditionality attached to structural adjustment loans.

In February 2000 a referendum offered a new constitution to the electorate for approval. Amongst a range of reforms, the revised constitution provided increased powers for the President and permitted the government to seize commercial farms without compensation. The constitution was overwhelmingly rejected which the ruling party ZANU-PF and its leader Robert Mugabe, interpreted as a serious decline in popular support (The Economist, 2000). By the latter half of the 1990s, a new opposition party, the Movement for Democratic Change (MDC) had developed a credible political base across Zimbabwe. The MDC had established its roots in the national trade union movement and so claimed to have popular and democratic support. With general elections due, the question of land redistribution became transformed into a smoke screen that enabled the ruling party to intimidate the opposition. The wholesale occupation of commercial farms was instigated and presented to the world as a popular movement by war veterans to reclaim their birthright. Despite a proclamation from the judiciary that the process was illegal, the President claimed that he was neither willing nor able to restrain the war veterans who had liberated the country to address the imbalances of the colonial era. As a consequence of this tacit approval, brutal killings of key MDC members, both European and African, ensued. In the Communal Areas, the heartland of ZANU-PF support the intimidation of the people was widespread. The land issue in Zimbabwe remains emotive but the way in which it continues to be pursued has little real consideration for the interests of those most affected.

4.9 Conclusion

The strong and independent position enjoyed by the African population in food security during the pre-colonial period was achieved through a combination of agricultural practices that exploited local comparative advantage and inter-regional networks that facilitated the trading of surpluses during periods of shortage. However, the proletarianisation of the peasantry which gathered momentum amongst all indigenous groups with the advent of European agriculture from about 1908, usurped progressively the niches previously exploited by African farmers. By the 1930s, the dominance in agriculture of the Shona and the Ndebele had been surpassed by that of the new European agricultural elite.

The superiority of European agriculture was not achieved through organic growth . Rather it was secured through a discriminative strategy built upon a framework of colonial legislation that sought to appropriate land from Africans with a complete disregard of traditional rights and land tenure. Moreover, the same framework saddled the African population with a fiscal burden disproportionate to their ability to pay. The net result was to create adverse terms under which African agriculture was unable to function and led to the outflow of people from prime lands and into the less fertile and more remote Native Reserves. Households sought to produce what they could from the limited land in the Native Reserves and to supplement their requirements with cash purchases of food from wages earned as low paid labour.

Thus, a central component of household resilience after 1930 was to engage in off-farm employment. The colonial agricultural strategy resulted in an induced shift from production and trade-based entitlements towards an increasing reliance on own-labour entitlements in the access of African households to food. For much of the population.

domestically produced grain, and hence agricultural activities in general, became of secondary importance to that which could be obtained in the market place through waged employment. Effectively, they have been coerced to trade their independence in food security for a growing dependence on the expanding capitalist economy, particularly the maize surpluses of the large-scale European farms.

The nature of land reform in Zimbabwe has undermined gradually the ability of traditional agricultural systems to satisfy domestic food requirements in the Communal Areas. Arguably, the racial basis of land reform which resulted in the dualistic structure of the sector bears much responsibility for the distribution and extent of food security that exists in the Communal Areas today. The effect of successive reforms has been to concentrate the African population on to marginal lands and legislation such as restrictions on the movement of livestock and the sale of maize has constrained the use of traditional coping strategies. More importantly, this has prevented the development of inter-regional trade networks for the movement of food from surplus to deficit areas that would contribute to sustaining rural livelihoods. Increasing population densities and the desire to expand both livestock and arable production within a poorly defined framework of land tenure have released undue pressures on communal land. The problem of food insecurity has been exacerbated as farmers have attempted to adapt farming practices to a hostile economic, and uncertain legislative environment. Low-input/low-output technologies have been reinforced with the most serious negative consequences affecting the environmental stability of the land and the general standards of living in the Communal Areas.

Undoubtedly, the relegation of the fundamental role of agriculture in providing the primary means of access to food arose out of the urban bias of those policies aimed at land

acquisition. Indeed, land reform in Zimbabwe has been driven by the requirements of the macroeconomy and the need to encourage investment in areas of higher potential, typically the commercial sector. Ironically, the bias towards investment in the commercial sector has created an agricultural system characterised by capital-intensive production in a country where cheap and skilled labour is abundant. In contrast, the communal sector has suffered from under-investment which has resulted in the sub-optimal combination of factors in production, particularly capital. The system of land tenure will have a significant influence on patterns of agricultural production and, in this way, links the rights that communities have over their land to the position of food security enjoyed. Where these rights discourage investments that improve the productivity of the soil then the ability of land to support household resilience will be diminished.

Despite the achievement of independence in 1980 under an elected African government, the inequality of land distribution continues in Zimbabwe. The progress of land reform has been erratic and the manner in which it has been conducted has had adverse effects on the economy, particularly the agricultural sector. Moyo (1995) summarises succinctly one popularly held position regarding land reform in Zimbabwe:

> The Zimbabwean peasant households' crisis of social reproduction amidst a social differentiation process which had ensured surplus production amongst a few, as elsewhere, needs to be resolved not through the romanticisation of indigenous and local practices or an over-emphasis on market-led reforms, but through interventions which address the land use and reproduction needs of households. Land reform should address not only the static macroeconomic scope and market outcomes of Zimbabwe's existing land and agrarian structures but also the local and regional land and agrarian problems which affect household reproduction. This way, the national land policy formulation process could examine the wider problems of effective rural demand, which are associated with social and land deprivation, in order to develop an appropriate macroeconomic framework for land reform.
> (Moyo, 1995 pp276-7).

The failure to initiate a process of land reform in Zimbabwe that recognises the local and regional problems affecting household reproduction continues to frustrate development in Zimbabwe's Communal Areas. Due consideration of local socio-economic and socio-political issues has been neglected in favour of an aggregate approach which emphasises the wider concerns of efficiency and competitiveness, in particular the importance of a market-led economic strategy. A process of reform that ignores the complex relationships that link rural communities and their livelihoods to the land is unlikely to provide support for the key components of resilience in agrarian households. The rural population depend substantially upon agriculture, and, by implication, the land and its resources for their livelihoods. Given the central importance of land to the majority of Zimbabwe's population, future reform must place the needs of land users at the heart of any macroeconomic strategy if a basis for the alleviation of food insecurity in the Communal Areas is to be established.

The gradual erosion in the ability to obtain food from domestic production has increased the reliance of rural households on market purchases of food secured through paid employment. The trend towards a growing dependence on own-labour entitlements and away from the traditional combination of production and trade-based entitlements has continued to intensify throughout the twentieth century. This shift in the emphasis of household strategies has exposed rural households to the new risk of price variability in the access to food. The relatively low and stable prices observed throughout the colonial period provided poor preparation to rural households for the macroeconomic changes that were effected after the first decade of independence. A thorough examination of these changes and the links with the general position of food security in Zimbabwe is presented in the next chapter.

Chapter Five

Structural Adjustment, Food Security and Household Response

5.1 Introduction

This chapter seeks to examine in some detail the economic conditions prevalent in Zimbabwe towards the close of the twentieth century. The relevance of such an examination lies in its application to the understanding of the durability of the induced changes in the means of access to food for the African population described in the previous chapter. The performance of the Zimbabwean economy assumes particular importance in determining the general position of food security where food is secured predominantly through own-labour entitlements.

Structural adjustment programmes have been implemented throughout sub-Saharan Africa over the past twenty years with the broad aim of revitalising depressed economies and enabling them to benefit from participation in the global economy. The experience of individual economies has been mixed but there has been a growing concern for the negative effects of adjustment policies on the more vulnerable groups in implementing countries. These issues are explored through an examination of the economic rationale for adjustment programmes and is supported by an analysis of the fundamental mechanisms of adjustment policies and their effects on key economic variables in selected sub-Saharan economies. It is concluded that rather than offering a stable economic climate under which rural livelihoods are able to improve, adjustment programmes have brought to bear another source of adverse exogenous influence on

food security at the household level. Finally, the implications for household resilience are identified.

5.2 The Context of Structural Adjustment in Sub-Saharan Africa

Small-scale farming systems in sub-Saharan Africa are complex. Economic development and a differential access to the means of production both between and within households, has led to partial integrations with the wider cash economy. At the most basic level, food-deficit households have attempted to meet shortfalls through the sale of household assets such as labour or livestock. Similarly, formal markets have enabled surplus output to be converted into cash for the acquisition of assets. It is through these and other linkages that the macroeconomic environment can affect both the nature and magnitude of farm household activity.

A major change in macroeconomic policy-making has been effected in many countries in sub-Saharan Africa during the last two decades of the twentieth century in the form of structural adjustment programmes. Much of the rationale for the structure and content of these policies has been based on a neo-liberal belief in the efficacy of market mechanisms. Adjustment programmes were heralded by their sponsors, the World Bank and the IMF, as a means of reversing the observed long-term decline in sub-Saharan Africa by revitalising the economies in implementing countries. Agriculture was to play a key role and since rural livelihoods were perceived to be linked to the condition of this sector, the poorest groups were expected to be the main beneficiaries of structural reform. It was held that by releasing market mechanisms which had been

frustrated and subdued during the interventionist period of the 1960s and 1970s, economically rational individuals would be free to respond to market determined incentives. A strong emphasis was placed on encouraging exports in contrast to the policy of import substitution which had been pursued by many African governments in the immediate post colonial period. A growth in exports, particularly those of the agricultural sector were viewed as a means of encouraging the efficiency of markets and increasing the participation of the region in international trade.

Progress to date in achieving the stated objectives of structural adjustment programmes has been disappointing. In developing countries the poor and vulnerable are found in both urban and rural areas. In middle-income economies the poor tend to be located in urban areas whereas in most low-income countries (as is the case for much of sub-Saharan Africa) these groups are located predominantly in the rural areas (Mukherjee, 1994). These would include small-scale farmers and landless agricultural labourers collectively called the structurally poor (Zuckerman, 1988). The extent to which these groups are net food purchasers provides some indication of their vulnerability to the negative effects of adjustment programmes. Rather than providing economic incentives to which controllers of resources may respond rationally adjustment programmes have led in many circumstances to exaggerated movements in prices. For example, many implementing countries in sub-Saharan Africa have experienced sharp rises in food prices (World Bank, 1988). Further, attempts by poor and vulnerable groups to increase their production of cash crops have been frustrated where public expenditure on agricultural support services and rural infrastructure have been reduced as part of an adjustment programme.

Until the advent of adjustment programmes issues of food security and agricultural development were pursued predominantly at the sectoral level. Individual sectors were viewed in isolation of events taking place at the national and international levels. The external value of a nation's currency, largely ignored in the past, has become the key economic variable in the formulation of development policies. The implications of changes in the exchange rate for national comparative advantage have become the focus of much of contemporary agricultural development policy. In particular, are the related trends of the internationalisation of the policy-making process on one hand, and the standardisation of macroeconomic policy on the other.

5.3 Europeans Suffer Africans Perish - The Rationale for ESAP in Zimbabwe

In 1990, the Economic Structural Adjustment Programme (ESAP) underwritten by the IMF and the World Bank was launched officially in Zimbabwe. The programme aimed to counter the economic stagnation (table 5.1) that had prevailed during the previous decade and to revitalise the economy through a process of restructuring. The financing of the ambitious social projects of the 1980s had resulted in Zimbabwe levying some of the highest direct taxation rates in the world (Government of Zimbabwe, 1993). Annual growth rates had been erratic, averaging 3.2 per cent over the period and were barely above the population growth of 2.9 percent (Chidzero, 1994). Growth in per capita incomes measured in 1980 prices had remained sluggish rising from Z$438 in 1980 to Z$470 by 1989. Investment levels fell from 15.55 per cent to 10.7 per cent of GDP in real terms with gross investment trailing depreciation requirements resulting in excess capacity in many industries. The formal sector had been able to create about

10,000 new jobs each year against an estimated 200,000 school leavers entering the labour market annually. Exports grew by 6.2 per cent over the decade which required stringent import controls to maintain the balance of payments in a satisfactory position. The consequent drip-feeding of essential raw materials and other inputs to industry led to widespread shortages of basic commodities on the domestic market. High losses by the parastatals and a burgeoning government bureaucracy from 62,035 in 1980 to 181,402 in 1989 could only be sustained through increases in the budget deficit, which remained in excess of 10 per cent of GDP for most of the decade.

Table 5.1
Macroeconomic Performance Indicators for Zimbabwe 1980-89

Year	Real GDP at Factor Cost (1980 Prices) Z$m	% Change	Real GDP per Capita (1980 Prices) Z$	% Change	Annual Rate of Inflation	Balance of Payments - Overall Bal. US$m*	Budget Deficit as % of GDP
1980	3224	10.7	438	7.5	5.4	-86	-8.2
1981	3537	9.7	484	6.6	13.1	-8	-7.5
1982	3589	1.5	477	-1.4	10.7	-22	-9.4
1983	3461	-3.6	448	-6.2	23.1	-174	-11.3
1984	3540	2.3	445	-0.5	20.2	-46	-12.2
1985	3798	7.3	465	4.3	8.5	82	-10.6
1986	3882	2.2	462	-0.6	14.3	55	-13.3
1987	3838	-1.1	444	-3.8	12.5	124	-10.8
1988	4089	6.5	460	3.7	7.4	102	-11.6
1989	4290	4.9	470	2.1	15.9	-47	-9.2

Source: Adapted from Kadenge (1992).
* Data from IMF (1995).

Much of the blame for this poor performance can be attributed to the structure of the economy inherited at independence and the egalitarian agenda pursued during the 1980s[1]. As a consequence of sanctions and years of economic isolation the economy had become inward looking and highly regulated. The major policy thrust of the 1980s was therefore to redress the socioeconomic imbalances that existed, particularly in the areas of health and education. After independence was achieved in 1980, a policy of national reconciliation was adopted. In essence, this sought to ensure continuity in the structure of production while addressing the inequalities of the colonial era. The government was forced to chart a course that attempted to combine certain established features of the colonial capitalist-based economy with elements of a socialist planned economy. Policies aimed explicitly to achieve growth with equity. The planned rate of annual growth for the period 1982-85 was 8.2 per cent (Killick *et al.*, 1998). The extra tax revenues generated were to be redistributed through a reorientation in government expenditures. Subsequently, the 1980s witnessed increases in real per capita recurrent expenditures by the Ministry of Health and Child Welfare in the order of 50 per cent and about 33 per cent for the Ministry of Education.

Wages were regulated and could only be altered or staff retrenched after consultation with government. Land reform was conservative and piecemeal. Even where land was acquired, the redistribution process often proved to be beyond the administrative and technical capacities of the Ministries involved. By the end of the 1980s, the policies of redistribution had begun to show their limitations and it appeared that the welfarist approach to inequality had become unsustainable. Essentially, the inherited institutional

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1 For an excellent account of agricultural policy in the immediate post-independence period see Bratton (1987).

framework was inappropriate for the realisation of the country's socialist aspirations. The process of social and economic reform stifled enterprise and the stagnation of the formal economy placed fiscal constraints on the centrally funded egalitarian agenda. Davies and Rattsø (1996) argue that the increases in the fiscal deficit were unsustainable and undermined the welfare-based approach to the reduction of income inequalities in Zimbabwe. It was thus the sustainability of the system that provided the motivation for the shift in policy. Therefore, by 1990 it became clear that a complete overhaul of the economy was required if the twin objectives of growth and equity were to be achieved

The emphasis of ESAP was on increasing the flexibility of the economy through trade liberalisation and reducing the role of the public sector. The public sector deficit was to be reduced to 5 per cent of GDP by 1994/95 through a restructuring of the tax system which aimed to increase commercial incentives and to curtail government expenditures. The latter was to be achieved largely by eliminating subsidies to the parastatals (including the GMB), extending and increasing school fees at the primary and secondary levels of education, and a rationalisation of the civil service. Externally, the process of trade liberalisation involved moving towards a market-determined exchange rate, the abolition of import controls and the provision of export incentives. Internally, price controls were to be removed, domestic investment promoted, the financial sector reformed and sound monetary and fiscal polices implemented. Promises were also made to target subsidies in order to protect those vulnerable groups adversely affected by the price rises typically experienced during periods of transition.

The time scale originally envisaged for realising these reforms was to be the 1994/95

fiscal year yet progress to date has been disappointing. Although major reform in the internal and external orientation of the economy has taken place the commitment to rationalise the public sector remains largely unfulfilled. A failure to trim recurrent expenditures necessitated supplementary budgets largely to finance the continued losses incurred by the parastatals. The government was forced to borrow from an already tight domestic money market fuelling inflationary pressures (Government of Zimbabwe, 1994a). Economic growth remained sluggish and levels of inflation persisted at high and erratic levels (table 5.2).

Table 5.2
Macroeconomic Indicators for Zimbabwe 1991-96

Year	Real GDP at Factor Cost (1990 Prices)		Real GDP per Capita (1990 Prices)		Annual Rate of Inflation
	Z$m	% Change	Z$	% Change	
1991	19974	1.9	1978	n/a	23.3
1992	18881	-5.4	1815	-8.2	42.1
1993	19265	2.0	1783	-1.8	27.6
1994	20284	5.3	1827	2.5	22.3
1995	20237	-0.2	1759	-3.7	22.5
1996	21696	7.2	1823	3.6	21.7

Source: Adapted from CSO (1996), CSO (1998b).

Although substantial, income poverty is less severe in Zimbabwe relative to other African countries. Nevertheless, recent estimates classify about 25 per cent of the population as living in poverty, including 7 per cent in extreme poverty (Killick *et al.*, *op. cit.*). Further, poverty in Zimbabwe is concentrated overwhelmingly in rural areas. About 31 per cent of the country is classified as urban, but only 12 per cent of this group

are estimated to be poor. In contrast, the rural areas in which over two-thirds of the population lives comprises 88 per cent of the poor and 92 per cent of the very poor. Finally, within the rural areas the concentration of poverty is most severe in the Communal Areas.

Some of the most devastating effects on poorer groups have been the extent of ESAP-induced retrenchments and the decrease in real per capita incomes. Real incomes are estimated to have declined by about 50 per cent over the period 1980-2000 with the most significant decreases taking place after 1990 (The Economist, 2000). The decline in real wages is perhaps the most important channel through which the process of adjustment has affected the extent of poverty in Zimbabwe (Killick *et al.*, *op. cit.*). It is likely that the reduction in earnings will have led subsequently to reduced remittances with the most serious implications for poor rural households. Equally detrimental for these groups were the effects of inflation on food prices. Food is the most highly weighted commodity in the consumer price index and price rises were more pronounced here than in all other items of expenditure except medical care (table 5.3). Coupled with the decline in real per capita incomes, the impact of the negative income effects of food price rises on food insecurity on the poorest groups are manifest.

Table 5.3
Disaggregated Consumer Price Index for Zimbabwe 1990-1997 (1990=100)

	Food	Drink & Tobacco	Clothing & Footwear	Rent, Rates, Power & Fuel	Furniture & Household Stores	Medical Care	Transport & Communication	Recreation & Entertainment	Education	Misc Goods & Service	All Items
Weights	**29.2**	**9.9**	**9.8**	**18.7**	**7.2**	**2.8**	**8.4**	**2.0**	**7.6**	**4.4**	**100.0**
1990	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991	122.6	123.9	122.7	117.9	122.0	116.3	141.4	123.9	127.6	116.3	123.3
1992	192.7	188.2	161.5	150.2	163.0	144.4	193.8	169.1	191.6	155.2	175.2
1993	267.4	239.6	181.6	204.4	195.1	169.3	224.3	196.9	211.4	175.9	223.6
1994	336.8	288.1	207.8	236.7	234.2	415.9	265.0	218.8	229.1	211.9	273.4
1995	429.3	377.7	239.9	276.2	291.4	496.0	308.5	281.4	258.5	253.2	335.1
1996	544.8	437.1	263.4	339.7	345.0	632.9	356.3	348.8	294.7	303.5	406.9
1997	640.5	508.9	292.3	412.9	392.4	734.0	442.1	426.7	392.3	364.5	483.6

Source: CSO (1998d).

Whether this deterioration is attributable to adjustment policies or to the unsustainability of earlier polices of redistribution is a moot point. However, there is a consensus that poverty did increase in Zimbabwe during the 1990s with which the World Bank (1998) concurs:

> The net effect of the economic changes that have taken place during the 1990s (in Zimbabwe) will be different for different households depending on their sources of income and levels of consumption before adjustment. Some households will be better off, but many will be worse off. On average, we infer that most households will have become worse off.....
> (World Bank 1998b).

What is clear is that ESAP was not designed in ways that minimised its poverty-increasing effects. The 1990s represented a period during which the momentum of the previous decade in reducing inequality was dissipated. In 1991, it was estimated that 50 per cent of the population received less that 15 per cent of total income, while the richest 3 per cent received 30 per cent of the total (Stenflo, 1993). Zimbabwe has an exceptionally high gini coefficient of 0.57 which is similar to the rates of inequality observed in Latin American countries (World Bank, 1999).

In what would appear to be a token gesture to vulnerable groups the Social Development Fund (SDF) was created in 1992 with a budget of Z$20 million. The limited resources of the fund were earmarked to extend assistance with new or increased use charges, higher maize prices and a programme of training and credit for the development of new enterprises (Government of Zimbabwe, 1992). At that time, this budget represented less than two Zimbabwean dollars for every man, woman and child resident in the country. The SDF is widely recognised as a failure and the World Bank

is particularly abrasive:

> The SDF suffered from many problems. Insufficient prior analytical work led to poor targeting of beneficiaries and inaccurate assessment of their numbers and where they lived, leading to an urban bias. The program was slow in getting started. After announcing the SDF component in 1991, the government took 18 months to appoint a coordinator..... The SDF was underfunded, overly centralised, and relied on overworked staff already fully committed to the drought relief effort. It suffered from serious design flaws. It relied on beneficiaries to apply for benefits, and the complicated and costly application process effectively excluded many of the poorest people.....
> (World Bank, 1996).

While this dismal record can be attributed, partially at least, to inadequate design of adjustment policies and a lack of resolve on the part of the government to implement and adhere to the more austere elements of the reform package, natural factors also affected the situation. The Zimbabwean economy is particularly susceptible to weather conditions due to the major influence of the agricultural and agro-processing sectors on GDP. For example, the poor growth rates recorded for 1992 coincided with a year of low rainfall. Similarly, the improvements in the rates of growth achieved during 1993 and 1994 were years of above average rainfall. These linkages are common throughout sub-Saharan Africa and form much of the rationale for the key role accorded to the agricultural sector in economic restructuring across the region. However, the ability of farmers in the Communal Areas to respond to the opportunities created by the economic reform process is less established. Rather than creating the intended conditions under which production may be encouraged, structural adjustment programmes have tended to increase economic variability. This has represented an additional source of exogenous influence on Communal farming systems and its effects have been especially detrimental for the vast majority of households as net-purchasers of food. Structural adjustment programmes formed the dominant policy framework of economic

development in much of sub-Saharan Africa throughout the 1980s and 90s. Therefore, its relevance for food security and the evolution of household coping strategies cannot be ignored in this research.

5.4 The Objectives of Structural Adjustment Policies

Structural adjustment is an ambiguous term but generally refers to that basket of policies designed to deal with structurally related macroeconomic disequilibria. Some of the key objectives of structural adjustment (Commander, 1989) are the restoration of a balance of payments equilibrium and to foster long run economic growth. What distinguishes these programmes from economic policy making during earlier periods is that they consist of a package of individual reform measures worked out in explicit consultation with international agencies and are tied to additional foreign loans (Norton, 1987). Given its traditional role in the management of the international financial system, the IMF has been a major institutional force in the design of adjustment programmes. The World Bank became involved through the threat presented to its project lending operations by poor macroeconomic performance across the region (Reed, 1992). Indeed, Lipton (1990) argues that it was a general disillusionment with the project format that led to the switch in favour of programme lending. The Bank has worked with the IMF to provide Structural Adjustment Loans (SALs) aimed at alleviating liquidity shortages caused by recurrent deficits in the balance of payments.

Adjustment lending by the Bank peaked in 1989 at US$6.5 billion declining to around US$5.0 per annum during the early 1990's (Jayarajah and Branson, 1995). SALs are

rapidly disbursed and accompanied by measures to reduce domestic demand. This latter element of SAPs is not that dissimilar from earlier stabilisation lending which tended to concentrate somewhat narrowly on the reduction of domestic absorption relative aggregate supply (Demery and Addison, 1987a). Policies of this nature have long been advocated by the IMF and derive much from Polak's (1957) 'shortcut' analysis of external disequilibria. Since these are held to be always the consequence of excess aggregate demand fuelled by excessive credit expansion the only cure can be to purge such an excess (Bacha, 1987).

To a large extent the economic difficulties of sub-Saharan Africa during the 1970s and 80s can be traced to the interventionist orientation of domestic policy, particularly to the exchange rate and the size and financing of the public sector deficit (World Bank, 1991b). It is estimated that the real effective exchange rates of African currencies appreciated by an average of 44 percent during the 1973 - 81 period (Cleaver, 1985). Overvalued and inflexible exchange rates as a part of a policy to encourage import substitution had altered the comparative advantage of many African countries by favouring the industrial sector and discriminating against agriculture. Moreover, the resulting distortion in the relative prices of imports and exports led to balance of payments problems across the region. The favoured strategy to address this imbalance was to encourage the volume and competitiveness of tradable goods[2] (Reed, *op. cit.*).

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2 Tradables as opposed to non-tradables are those goods and services which cross international frontiers (e.g. copper, maize and financial services) and, in theory, their prices are determined on the world market. Thus, in the case of a small economy the price of tradables is exogenously determined. Non-tradables on the other hand include those goods and services which are not traded internationally and hence their prices are determined by domestic demand and supply (e.g. construction and personal services). The distinction between the two is not always clear and goods can switch categories. For example, tradables can become non-tradable (and vice-versa) as the result of an import ban (relaxation) or changes in transport costs. Frequently, many food staples such as maize, sweet potatoes and sorghum are produced and consumed locally and in this respect may appear as non-tradable. Strictly, since they can be substituted for imported staples such as wheat and rice, food products of the type should be described as tradable.

For this reason, agriculture as the dominant producer of tradable goods in sub-Saharan Africa has become the focus of adjustment programmes (table 5.4).

Table 5.4
The Policy Content of World Bank Lending Operations
(percentage of the total number of loans with conditions in various policy areas)

Policy Area	Percentage of Loans
Exchange Rate[a]	30.8
Trade Policies	76.9
Fiscal Policy	61.5
Budget/Public Expenditure	69.2
Public Enterprises	61.5
Financial Sector	38.5
Industrial Policy	53.8
Energy Policy	7.7
Agricultural Policy	76.9
Other	23.1

Note: data refer to lending operations under structural adjustment and sector adjustment loans in Ghana, Kenya, Malawi and Zambia.
[a]. Since the IMF has responsibility for exchange rate policy, these figures underestimate the importance of exchange rate conditionality in the Bank's adjustment lending.
Source: World Bank (1991b).

From table 5.4 the specifics of individual programmes differ. However, the basic components of switching polices, long term supply policies and demand restraint, are always present (Stewart, 1991a). The majority (76.9%) have focussed on agricultural policies to initiate structural reform. Across sub-Saharan Africa agriculture contributes between 20 to 60 percent of GDP, 50 to 90 percent of exports and an average of 80 percent of employment (Cleaver, *op. cit.*). Since agricultural output is composed predominantly of tradables the overall economic position will be strongly linked to the

performance of this sector. Therefore, adjustment programmes aim to shift resources from the production of non-tradables into tradables, either exports or import substitutes. The main policy instrument is a currency devaluation coupled with a commitment to remove price distortions such as food subsidies and quotas.

5.5 The Real Exchange Rate

Improvements in the performance of the agricultural sector are central to the success of structural adjustment programmes. The role of the agricultural sector in the process of economic development is well documented (Timmer, 1995). Productivity gains in agriculture free labour for the emerging manufacturing sector, provide food for an expanding population with higher incomes, savings for industrial investments, markets for industrial output, export earnings to pay for imported capital goods, and raw materials for the agro-processing industries (Johnston and Mellor, 1961; Timmer, 1992). The main policy instrument is a currency devaluation coupled with a commitment to remove price distortions. Distortions would include subsidies, particularly those on agricultural inputs and outputs, and restrictions on international trade such as exchange controls, import tariffs and quotas. Devaluations decrease the external value of a currency so that imports become more expensive and exporters earn more, both in terms of the domestic currency. Internally, the removal of price distortions should lead to an allocation of resources more in line with the economy's inherent comparative advantage. In most of sub-Saharan Africa this was expected to encourage a shift away from capital-intensive towards more labour and land-intensive techniques of production, especially within agriculture.

The effectiveness of a devaluation in shifting resources from non-tradable into tradable production will depend upon the extent to which changes in the nominal exchange rate (NER) lead to changes in the real exchange rate (RER). The international economics literature contains a number of alternative definitions of the real exchange rate. The most commonly accepted definition of the real exchange rate (e) is the ratio of the price of tradable goods (P_t) to non-tradables (P_n) (Edwards, 1989) such that:

$$e = P_t/P_n$$

This definition summarises the incentives that operate to drive resources between the tradable and non-tradable sectors. A rise in the RER, or a real exchange rate depreciation (assuming that the relative prices in the rest of the world remain constant) reflects an improvement in a country's international competitiveness. Stated more simply, a rise in the real exchange rate indicates that the domestic cost of producing tradable goods relative to non-tradables has fallen. This may be achieved through efficiency gains in the tradable sector or, as is the concern here, through a currency devaluation. In the former case tradables become more competitive through internal effects such as improvements in productivity secured through capital investment in the tradable sector. In the latter case a devaluation leads to a change in the external value of the currency resulting in a favourable movement in the price of tradables relative to non-tradables.

Maintaining the real exchange rate at the 'wrong' level generates incorrect signals and adversely affects the degree of competitiveness of the tradable sector, such as

agriculture. Determining whether the real exchange rate is out of phase with its long-run equilibrium is theoretically and practically very difficult since it must be measured relative to its unknown equilibrium (Elbadawi, 1992). Where the real exchange rate is deemed to be misaligned then policy packages need to be devised to remedy the situation. Real exchange rate misalignment is defined in terms of sustained deviations of the actual real exchange rate from its long run equilibrium level. The equilibrium level of the real exchange rate is defined as the price of tradables relative to non-tradables that for given sustained equilibrium values of other relevant variables (such as taxes and the level of technology) simultaneously achieves internal and external equilibrium. Internal equilibrium requires that the non-tradable goods market clears in the current time period and is expected to clear in the future. External equilibrium is attained when the discounted sum of the country's current account equals zero (Edwards, *op. cit.*) or, more simply, the current account balances over time.

The 'Dependent Economy' two-sector model (Salter, 1959) provides a suitable framework to examine the theoretical effects of a devaluation as part of a structural adjustment programme. The name of the model derives from the assumption that the country is a small player in international markets and hence a price-taker for exports and imports. The output of the economy is further assumed to be produced by either the tradable or non-tradable sectors, which in terms of international competitive forces, broadly corresponds to the sheltered and unsheltered industries. Tradables comprise exportables where the excess of domestic production is exported and importables where the shortfall between domestic production and consumption is imported. The prices of non-tradable goods are determined by the domestic forces of demand and supply. The

advantage of conflating exports and imports to a single class of good is that from the position of the balance of payments it is immaterial whether an increase in the output of traded goods is achieved either by an increase in exports (increasing foreign exchange earnings) or by an increase in the output of import substitutes (decreasing foreign exchange expenditures).

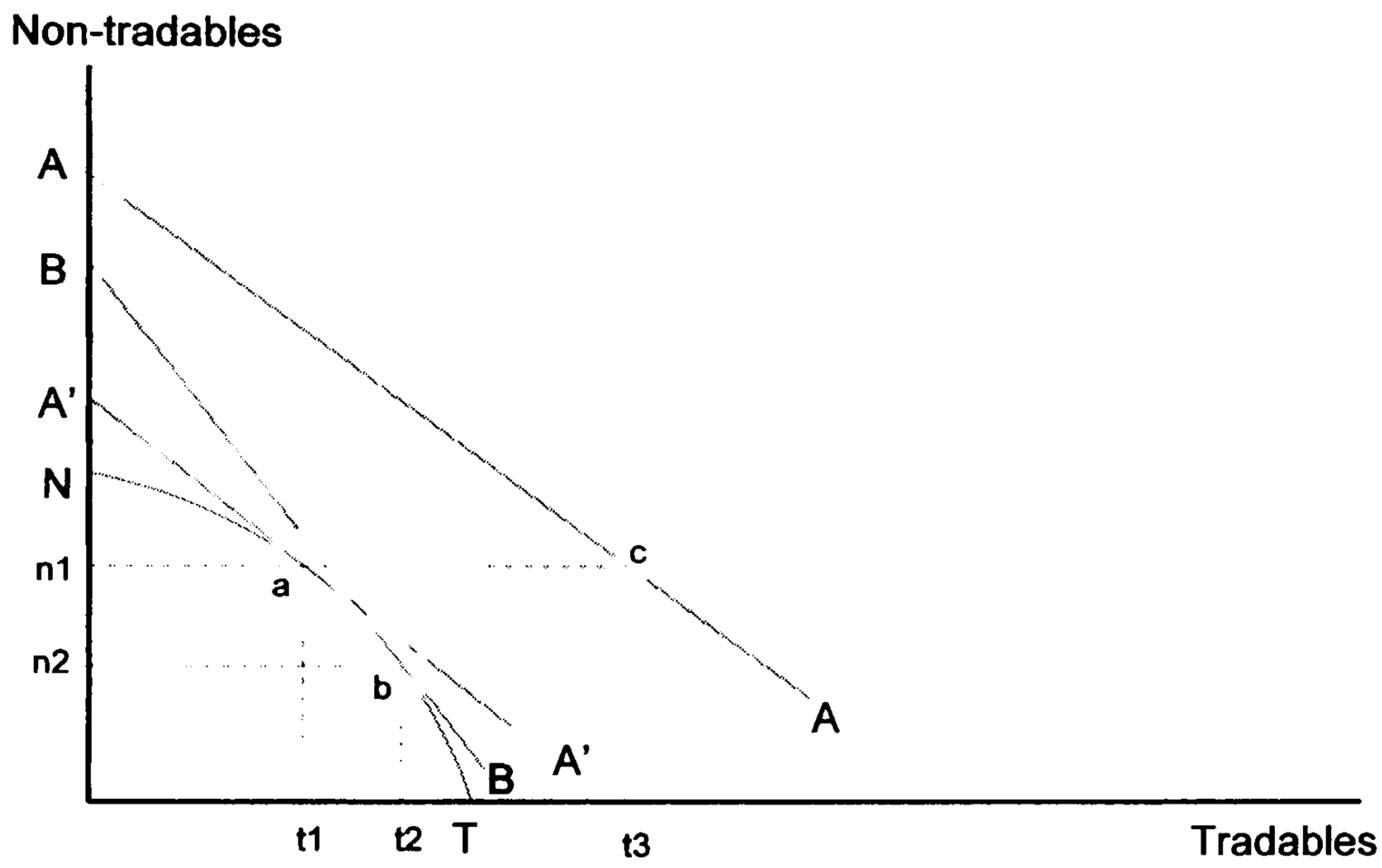


Figure 5.1
The Effect of a Devaluation on Output Composition

This effect of a devaluation on the composition of aggregate output in an economy can be analysed through figure 5.1 where the production of tradable (t1) and non-tradable goods (n1) is shown on the transformation curve NT. As a result of past monetary and fiscal expansion level of national expenditure pre-adjustment is at c while domestic output is at a. The trade deficit is therefore equal to the distance ac or (t3 - t1) in terms

of the domestic consumption of tradable goods. The production of non-tradables is at n1 and the real exchange rate P_t/P_n is given by AA. If the prices of non-tradables were fully flexible the trade deficit could be eliminated simply by reducing aggregate expenditure or domestic absorption. This would create an excess supply of non-tradables leading to a fall in their price resulting in a depreciation of the real exchange rate (a rise in P_t/P_n) indicated by a change in slope of the line BB. Internal and external equilibria would be restored at b as the production of non-tradables decreases by (n1 - n2) and tradable production increases by (t2 - t1). The domestic price level would fall since the price of non-tradables has decreased whilst *ceteris paribus*, those of tradables remains unchanged.

If the prices of non-tradables were inflexible or slow to adjust, at least in a downward direction, a devaluation is required to bring about the necessary expenditure switching required to restore equilibrium. By altering the relative prices of tradable and non-tradable goods a devaluation encourages the movement of resources from non-tradable into tradable (and hence exportable or import substitutable) production. This is illustrated in figure 5.1 by shifting the real exchange rate from AA to BB and production to b. The trade deficit ac has disappeared and the output of non-tradables has been reduced to n2 whilst tradable production has increased to t2. However, unlike the previous situation where price flexibility for non-tradable goods was assumed, a devaluation would cause the domestic price level to rise. The depreciation in the real exchange rate is the result of a rise in P_t as the price of traded goods increases in terms of the domestic currency with the price of non-tradables unchanged. It is this predicted rise in the domestic price level that may undermine the ability of nominal devaluations

to bring about the desired changes in the real exchange rate. Inflationary pressures may build up where the production of tradable goods is particularly dependent on imported intermediate goods. Producers of tradable goods may be unable to source substitutes locally due to supply rigidities. Thus, where the imported content of final production is substantial the competitive advantage conferred by a devaluation may be partially or wholly dissipated due to cost-push factors. Poorly developed manufacturing sectors and weak fiscal and monetary restraint typical in much of sub-Saharan Africa have made many economies especially prone to imported inflation. In the agricultural sector farms which rely on tradable inputs such as fertiliser and capital equipment may experience a squeeze in profits during adjustment. In order to understand how resource allocation at the macro and sectoral levels is affected by adjustment a more detailed analysis is required.

5.6 The African Experience 1980-94

The analysis of the process of adjustment derived from the Dependent Economy model implies (in theory at least) a smooth transition from a situation of severe macroeconomic disequilibrium to a steady state of sustained growth. However, much of the actual experience in sub-Saharan Africa runs contrary to this expectation. This divergence between theory and practice may be attributable in part to incongruous assumptions regarding the economic and political realities of modern African states (Demery and Addison, 1987b). Commander (1989) highlights the apparent paradox of the Bank's continued endorsement of a set of policies which have had adverse effects on those disadvantaged social groups that have traditionally formed the focal point of

its concern.

> Adjustment lending has now emerged centre stage ... the weight given to policy rather than project lending continues to grow. Yet, at least in sub-Saharan Africa, the benefits are not easily visible. (Commander, 1989, p241).

The general rationale for wide-spread devaluations in sub-Saharan Africa was that real exchange rates had been allowed to appreciate over time. The appreciation of many African currencies was a direct consequence of expansionary monetary and fiscal polices that had been pursued in an attempt to stimulate economic growth and import substitution industries . Frequently, supply-side structural rigidities led to the build up of inflationary pressures. Under inflexible exchange rate regimes, when price inflation became more rapid than that of major trading partners, an appreciation in the real exchange rate resulted. Effectively, inflationary rises in the prices of non-tradables caused a decrease in the real exchange rate ratio P_t/P_n leading to an appreciation in the external value of the currency. Where, as part of a protectionist policy, high duties and quotas were imposed on the import of industrial goods the situation was exacerbated by further raising domestic prices relative to world prices. Agriculture therefore suffered since potential earnings were less than would have otherwise been the case. Principally, it was the existence of these distortions that placed the exchange rate firmly on the reform agenda.

Large initial devaluations were favoured in order to expedite the convergence between real and nominal exchange rates. Whether or not a devaluation leads to an improvement in the external trading position depends primarily on the extent to which expenditures

are reduced and the extent to which they are switched. The former depends largely upon the incidence of taxation and the ability of governments to reign in expenditures. Fiscal and monetary policies affect the overall level of production and domestic expenditure through various secondary effects and multipliers. Poor government enforcement of the stringent fiscal and monetary controls required under adjustment programmes, particularly borrowing from Central Banks, further contributed to domestic rate of price inflation (Mlambo, 1995). Whether expenditures are switched depends upon the extent to which a devaluation leads to real changes in the relative prices of tradable and non-tradable goods. Clearly, the level of domestic inflation is of central concern since this will affect both the real exchange rate and real agricultural prices. The experience has been for inflationary pressures to build up through rises in import prices so impeding convergence. Producers unable to find local alternatives for inputs have been forced to pass price rises onto consumers, fuelling cost-push inflation. High rates of inflation therefore, may erode any competitive advantage conferred by a devaluation, frustrating shifts in expenditure patterns and at worst, necessitating further devaluations. Godfrey (1985) estimates that the devaluation of the Kenyan shilling in 1981 added enough to inflation to negate itself in less than a year. In Tanzania, despite several devaluations during the early 1980's, rapid domestic inflation resulted in appreciations in the real exchange rate relative to its pre-oil shock level (Helleiner, 1987). Economies may then become locked into downward trends for both the internal and external value of their currencies. Edwards (*op. cit.*), concludes from cross-country empirical analyses that devaluations have failed to restore external equilibrium in circumstances where macroeconomic, and especially fiscal discipline, have not been realised. In sub-Saharan Africa, competitive gains secured by devaluations have been

widely dissipated by a inflation caused in general by a failure to hold other incomes in check (World Bank, 1983).

An empirical analysis of the relationship between a devaluation of the nominal exchange rate and the effect on the real exchange rate was carried out for selected sub-Saharan economies for the period 1980-94. The real exchange rate has been defined as the ratio of tradable to non-tradable prices ($e = P_t/P_n$). The real exchange rate was calculated by:

$$e = (E^*P_{US})/P$$

where E is the nominal exchange rate measured in US dollars, P_{US} is the US wholesale price index and P is the domestic retail price index. In order to simulate a true real exchange index, the US wholesale price index was used for its bias towards tradables while the domestic retail price index is weighted towards non-tradables. In terms of data availability, this method is attractive since its basic components are national aggregate figures published by the IMF. This approach is also useful since it permits large cross-country analyses. However, this convenience does have a cost in terms of the significance of the results since the price indices used do not perfectly reflect actual movements in the prices of tradable and non-tradable goods. A summary of the results is presented in table 5.5.

Table 5.5
The Relationship between Devaluations of the Nominal and Real Exchange Rates - Selected Countries sub-Saharan Africa 1980-94

Country	US WPI % Δ 1980-94	Dom RPI % Δ 1980-94	% Δ NER 1980-94	% Δ RER 1980-94
Botswana	34.17	348.0	272.5	11.5
Ghana	34.17	7157.8	38788.3	618.9
Kenya	34.17	793.1	501.9	-9.6
Malawi	34.17	768.8	1782.0	190.6
Nigeria	34.17	2747.2	4010.2	93.7
S. Leone	34.17	90715.5	57922.6	-14.3
Tanzania	34.17	2728.0	6401.7	208.5
Uganda	34.17	160827.5	1201635.0	901.9
Zambia[a]	34.17	70006.1	60983.0	15.4
Zimbabwe	34.17	906.0	1252.2	80.3

[a] - data for period 1980-93

The table shows the percentage changes (% Δ) the nominal (NER) and real exchange rates (RER) for ten sub-Saharan economies for the period 1980-94. The table also includes the percentage changes in the US wholesale price and domestic retail price indices over the same period. The relationship between devaluations of the nominal exchange rate and the real exchange rate is far from clear and varies substantially across the set of countries analysed. Despite substantial nominal devaluations the real exchange rate barely depreciated in some cases (Botswana and Zambia) and actually appreciated in others (Kenya and Sierra Leone). In Sierra Leone the Leone was devalued by about 58,000% in nominal terms but in real terms the currency appreciated by about 15%. This situation is mirrored in Kenya where a nominal devaluation of around 500% resulted in a real appreciation of the Shilling of about 10% over the time

period. In Nigeria a nominal devaluation of the Naira in excess of 4,000% resulted in a depreciation of the real exchange rate of 93%. The Ugandan Shilling required a nominal devaluation of about 1,201,600% in order to achieve a real depreciation in the order of 900%. Where nominal devaluations have translated into significant devaluations of the real exchange rate (Ghana and Uganda) this has been achieved at the expense of the domestic value of the currency as indicated by the increase in the domestic retail price indices.

To explain the relationship between devaluations of the nominal exchange rate and value of the real exchange rate it is necessary to examine the behaviour of the US WPI and the domestic retail price indices. Over the period 1980-94 the US WPI increased by about 34% whereas the domestic RPI for the countries examined increased in the range of 350% for Botswana to 160,800% for Uganda. Since the real exchange rate is a relative measure (P_t/P_n) where the prices of non-tradables (estimated by the domestic RPI) rise faster than the prices of tradables (estimated by the US WPI) an appreciation of the real exchange results. In the sample of sub-Saharan economies above the rate of increase of the domestic RPI has persistently exceeded that of the US WPI during the period in question. Consequently, any competitive advantage achieved through a nominal devaluation has been either partially or completely eliminated by increases in domestic inflation. Rises in import prices initiated by the devaluation have set inflationary processes in motion where import demand is inelastic. This has been the case for much of the secondary sector throughout sub-Saharan Africa where producers have been unable to source alternative intermediate inputs locally. Where domestic manufacturing sectors have been unable to supply the required import substitutes the

expenditure switching predicted as part of the devaluation is unlikely to occur. Similarly, improvements in the balance of payments, particularly the current account are unlikely to materialise.

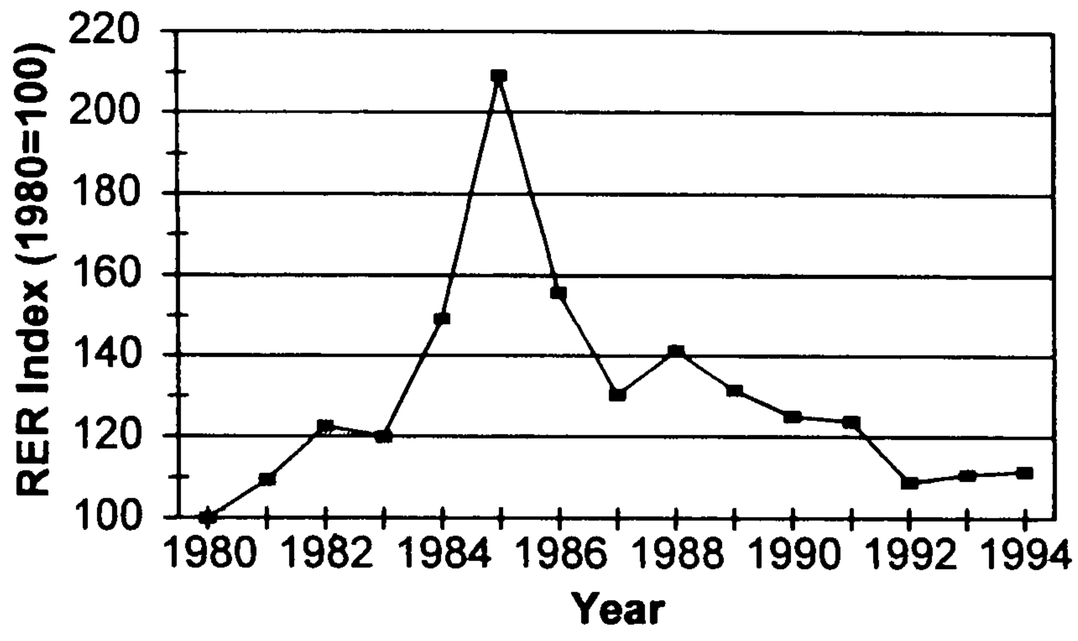
The effect of cost-push factors on the level of the real exchange rate can be more readily appreciated from figures 5.2 to 5.11 below. These figures describe graphically the trends in the real exchange rate over the period 1980-94 for the set of countries analysed. Where devaluations of the nominal exchange rate have translated into smooth devaluations in the real exchange rate the expected trend would be a locus of points from the origin rising diagonally upwards towards the right of the figure. A good example of this expected trend is demonstrated in figure 5.3 for Ghana. However, many of the figures (5.4, 5.6, 5.7, 5.9, 5.10 and 5.11) are characterised by a series of peaks and troughs. The peaks illustrate the immediate effect of a nominal devaluation on the real exchange rate. In the very short-term, nominal devaluations can be expected to deliver corresponding devaluations in the real exchange rate by altering the relative prices of imports and exports. Nevertheless, price rises for imported goods are inevitably passed on fuelling subsequent rises in the domestic price level. Where increases in the domestic retail price index exceed the general increase in world prices an appreciation in the real exchange ensues. This is indicated by the troughs observed in the figures. The initial competitive advantage is lost and the adjusting economy becomes locked into a circular process whereby the internal and external value of the currency is persistently and progressively undermined.

Figures 5.2 to 5.11

Trends in the Real Exchange Rate for Selected sub-Saharan Countries 1980-94

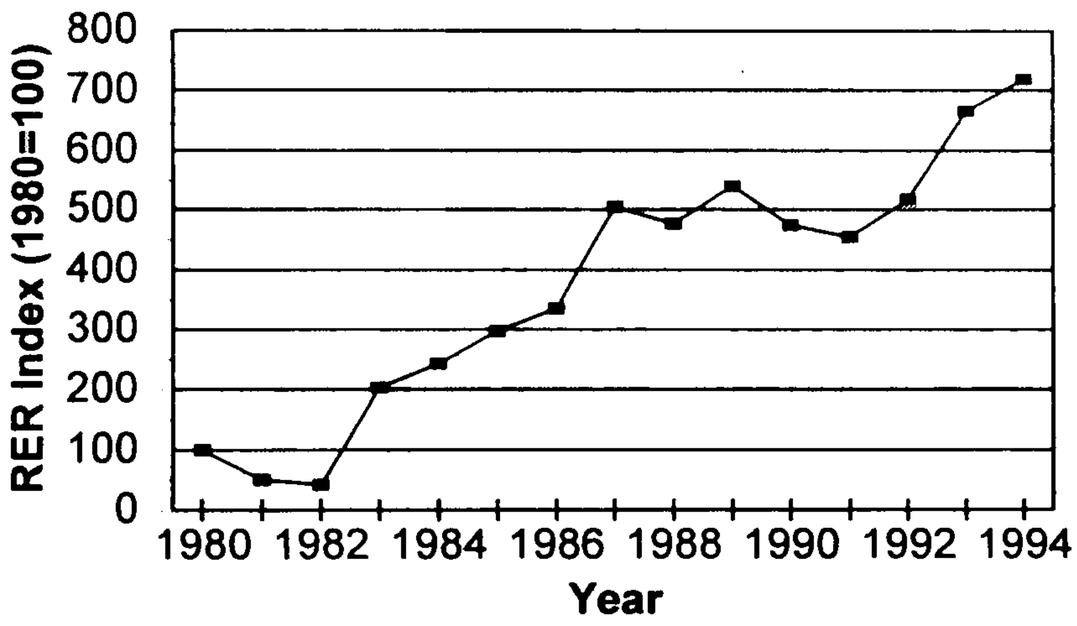
Botswana

Figure 5.2



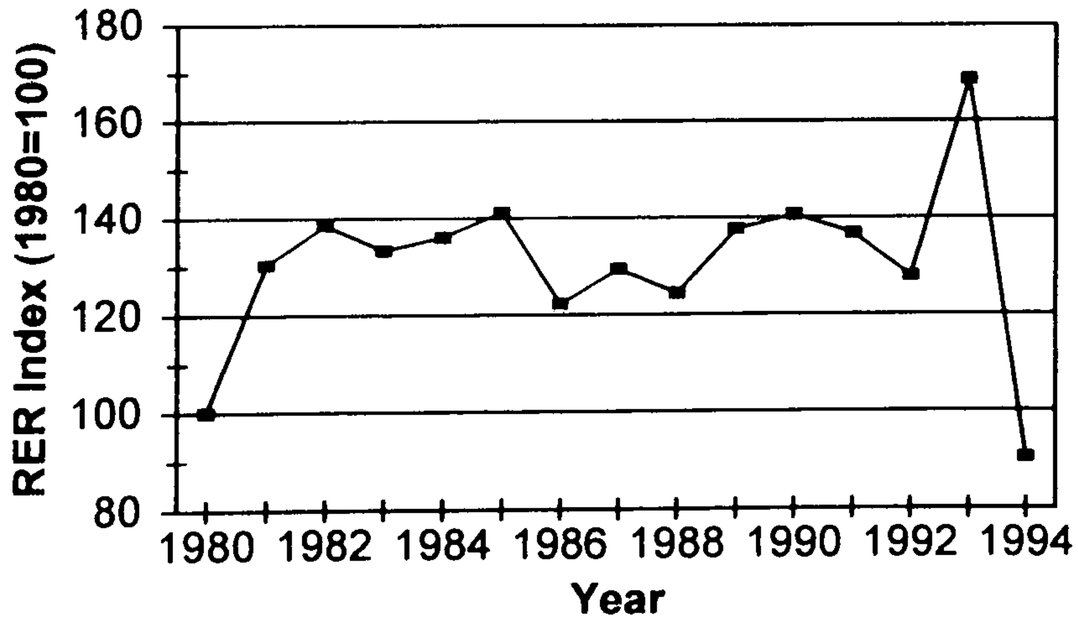
Ghana

Figure 5.3



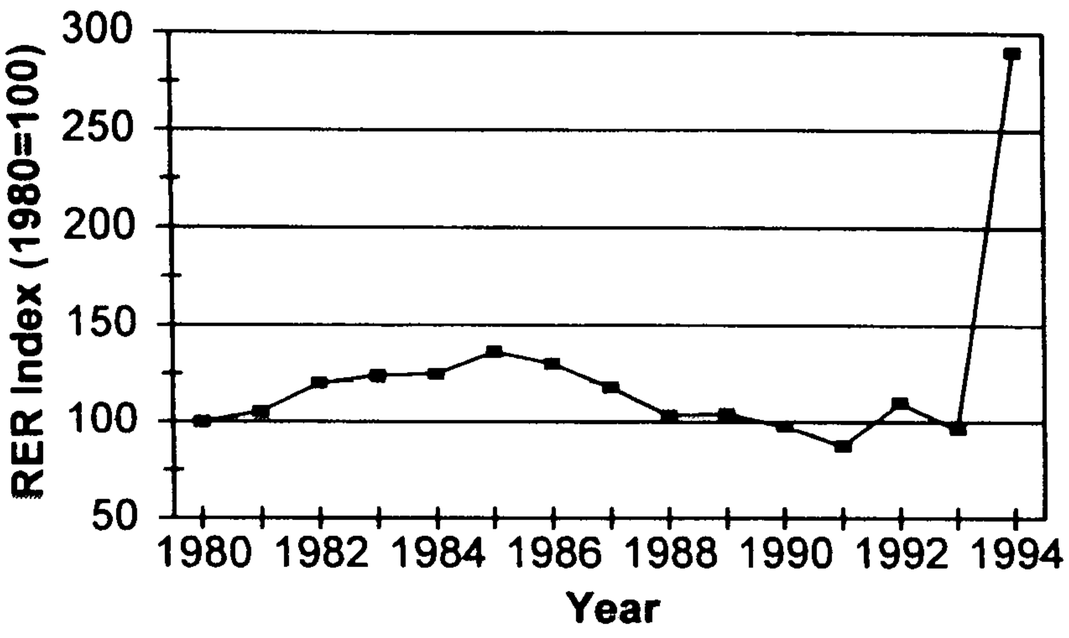
Kenya

Figure 5.4



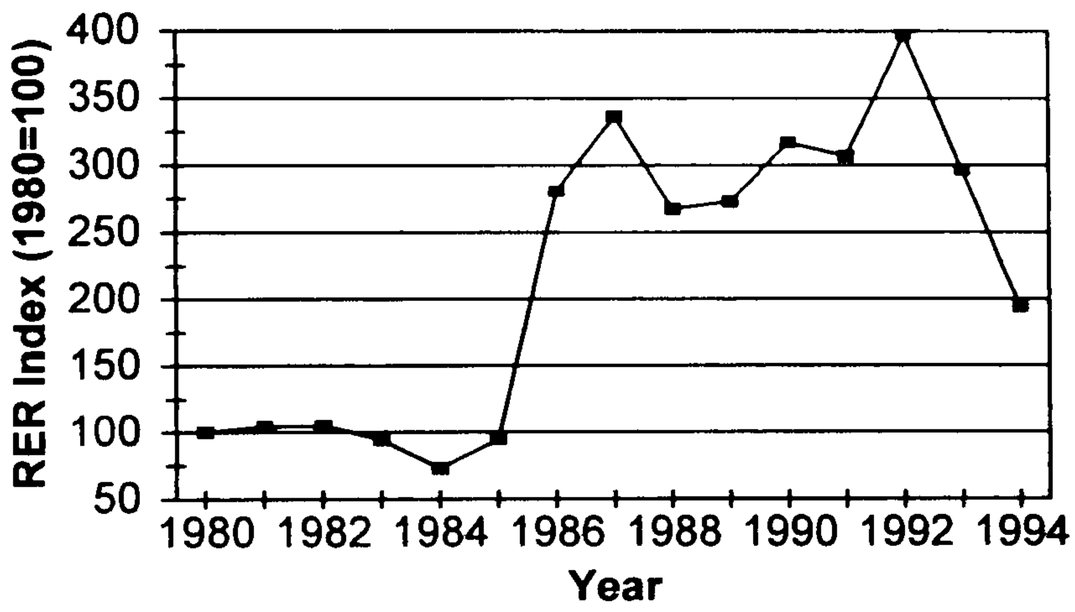
Malawi

Figure 5.5



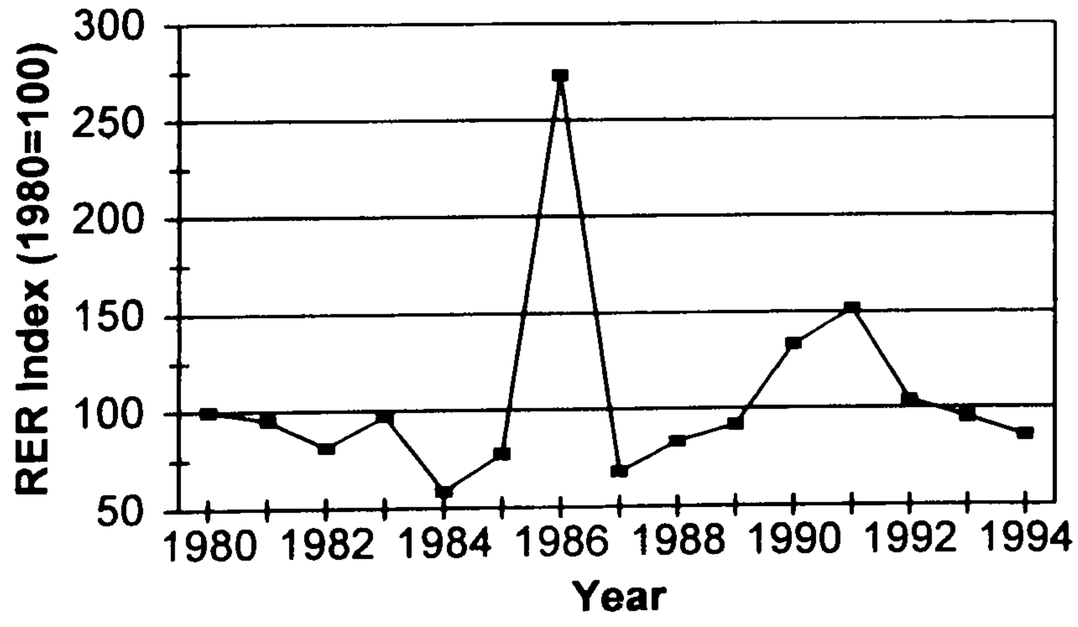
Nigeria

Figure 5.6



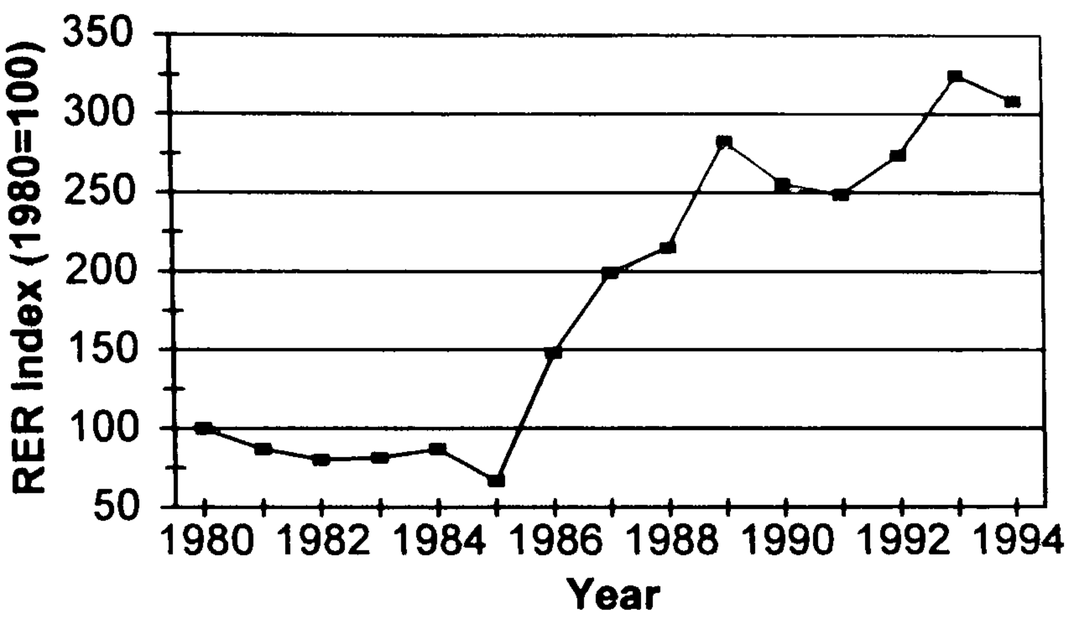
Sierra Leone

Figure 5.7



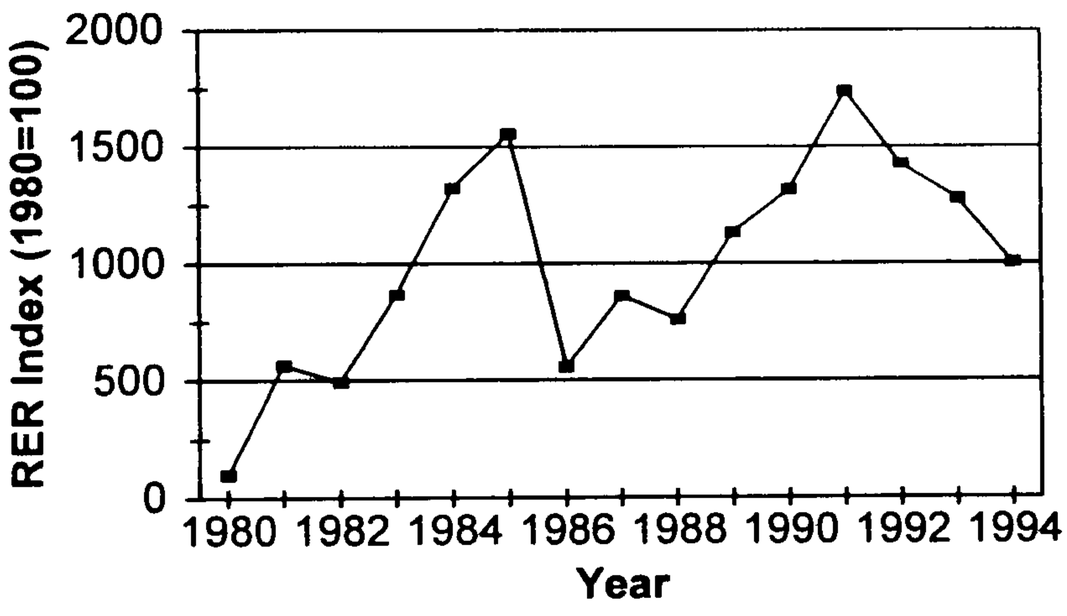
Tanzania

Figure 5.8



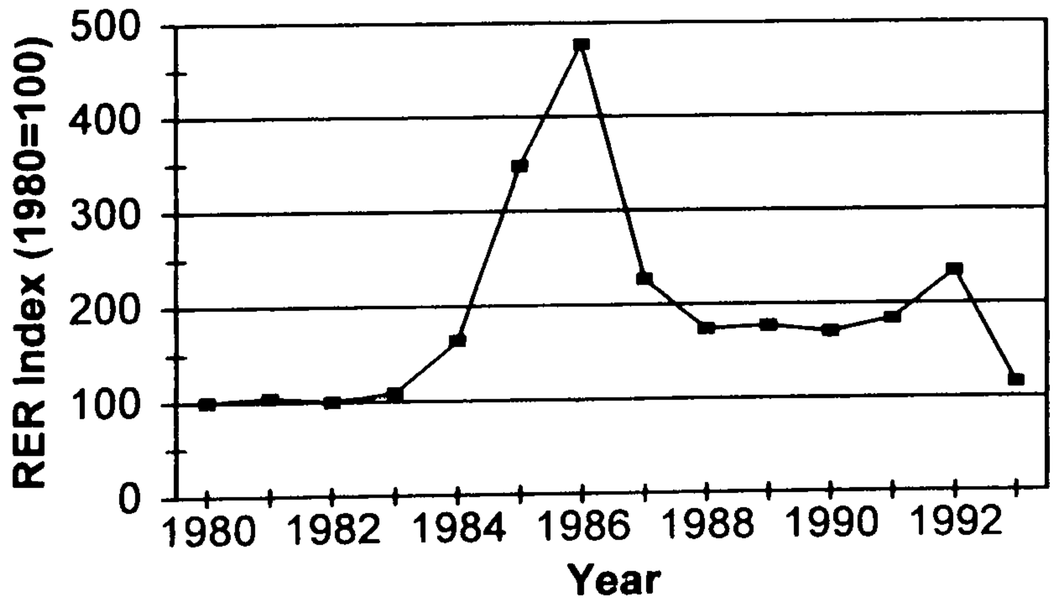
Uganda

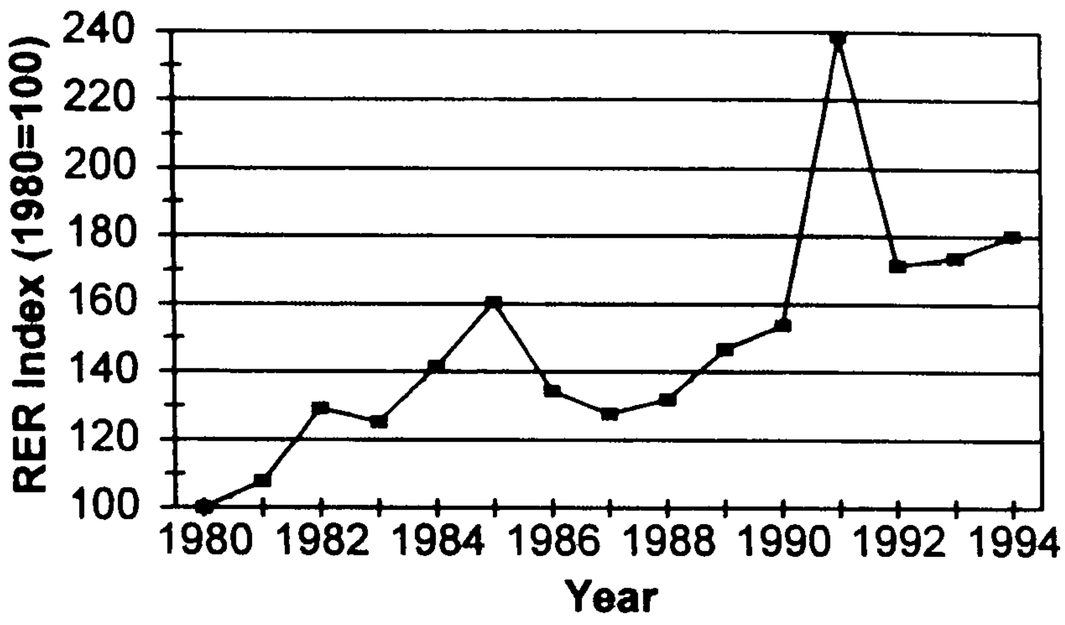
Figure 5.9



Zambia

Figure 5.10





5.7 Farm Households and Adjustment

The analysis of the impact of adjustment programmes at the household level is complicated by a lack of a sufficiently robust model of the heterogeneous farm household. Two issues arise in determining an appropriate conceptual framework for the analysis of household decision-making. Firstly, the majority of farm households in sub-Saharan Africa fulfil a dual role as both a unit of consumption and a unit of production. Consequently there exists an interdependence between consumption and production such that decisions concerning output also affect household consumption and labour supply. Conventional neoclassical economic theory conceives the units of production (the firm) and consumption (the household) as distinct and separate. In Africa and the developing world in general the economic duality of farm households requires that quite different institutional arrangements must be assumed. For example a change in the market wage will affect exchange entitlements through the extent to which the farm household engages in formal employment, the level of on-farm production and hence household consumption. Changes in producer and consumer

prices will have similar and interrelated effects on farm household decision-making. These need to be identified and delineated empirically for a meaningful appraisal of the welfare implications of adjustment. The household response to changes in key economic variables forms an important element of the primary research presented in subsequent chapters.

The second issue relates to whether household decisions are arrived at collectively or by a dominant individual or group. Orthodox theory views the household as a single economic unit with one set of preferences described by the household utility function. It is debatable whether it is accurate to reduce the components of household utility to a single welfare function. 'Unitary' models of the household have a long history (Chayanov, 1966) but were brought into mainstream economic thought through the work of Becker (1965). This class of model conceives the household as having a single set of preferences represented by a utility function. Criticism of unitary models has tended to concentrate on the incompatibility of the neo-classical assumptions regarding the behaviour of individuals in the household and in the market place. Within the household, the decision-makers are assumed to behave altruistically towards other members yet are considered to pursue rational self-interest in the market place. The implied assumption is that the household is undifferentiated and that the preferences of individual members can be reduced to a single utility function. Until relatively recently this encouraged the acceptance, conceptually at least, of the household as a unitary entity for the purposes of policy analysis (Haddad, 1994).

Despite acknowledging their conceptual limitations the World Bank (1991b) draws

heavily on a unitary model in its analysis of the impact of adjustment on farm households. The model presented is a simplified version of the Barnum and Squire (1979) and the Singh, Squire and Strauss (1986) class of models and is presented in figure 5.12 below:

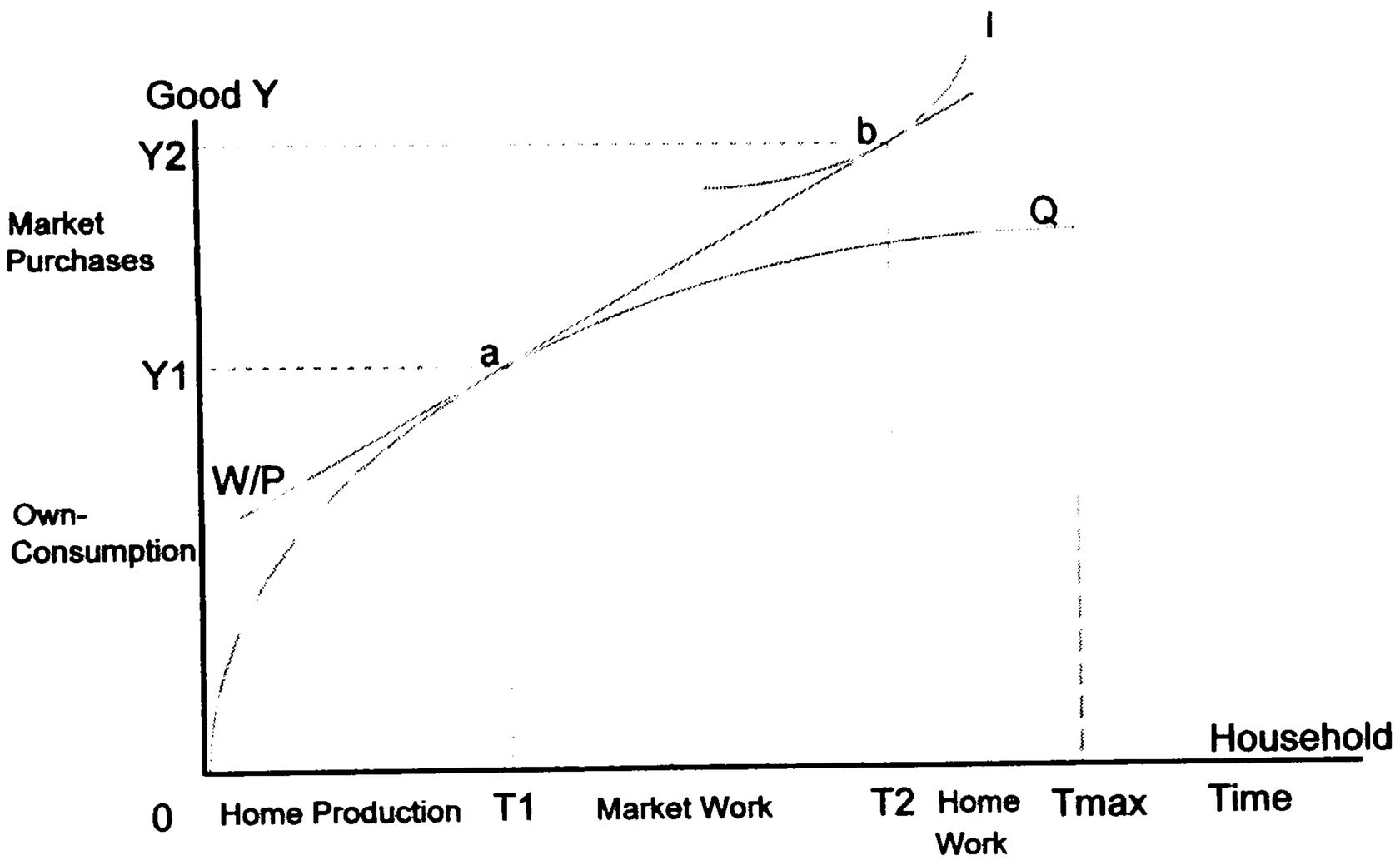


Figure 5.12
Equilibrium of the Farm Household

Households are conceived as allocating total time between the production of goods (for sale or consumption), work in formal markets and home work (household reproduction or 'Z' goods[3]). In the allocation of time between different activities households are guided by the real wage rate and the household utility function. It is assumed that the household attempts to maximise this single utility function subject to the production function and time and income constraints. Finally, it is assumed that the household can produce or purchase a single commodity such as a food staple labelled good Y on the vertical axis.

The horizontal axis measures household time up to the maximum available for all activities, Tmax. Conventionally, the equilibrium of the household in production is given at point a where the real wage, W/P is tangential to the production function, 0Q (i.e. where the value of labour's marginal product is equal to the real wage at point a). The household therefore allocates T1 units of time to the on-farm production of Y1 units of good Y. The indifference curve, I describes the trade-off between consumption and leisure within the household and enables the productivity of labour to be analysed separately from its disutility. Equilibrium in consumption is given at point b where W/P is at a tangent to the household indifference curve I (where the household's valuation of the marginal rate of substitution between consumption and leisure is equal to the real wage rate, W/P). In order obtain (Y2 - Y1) units of good Y through market purchases the household allocates (T2 - T1) units of time to market work. The remaining time, (Tmax - T2) is available for home work which may include leisure but more importantly

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3 Z-goods are those goods that combine household inputs (typically time) with purchased inputs to produce basic utility yielding commodities such as nourishment, care and comfort.

for the production of Z-goods.

In order to assess the impact of adjustment programmes at the household level it is necessary to draw together the main strands of the discussion at this point. If it is assumed that a devaluation increases the ratio P_t/P_n (i.e a real depreciation of the exchange rate) this should lead to a reallocation of resources from non-tradable and into tradable production. This should in turn cause W/P_t to fall and W/P_n to rise in the short-run. In terms of the model of the household introduced above figure 5.13 summarises the possible effect of a change in P_t/P_n on resource allocation at the household level.

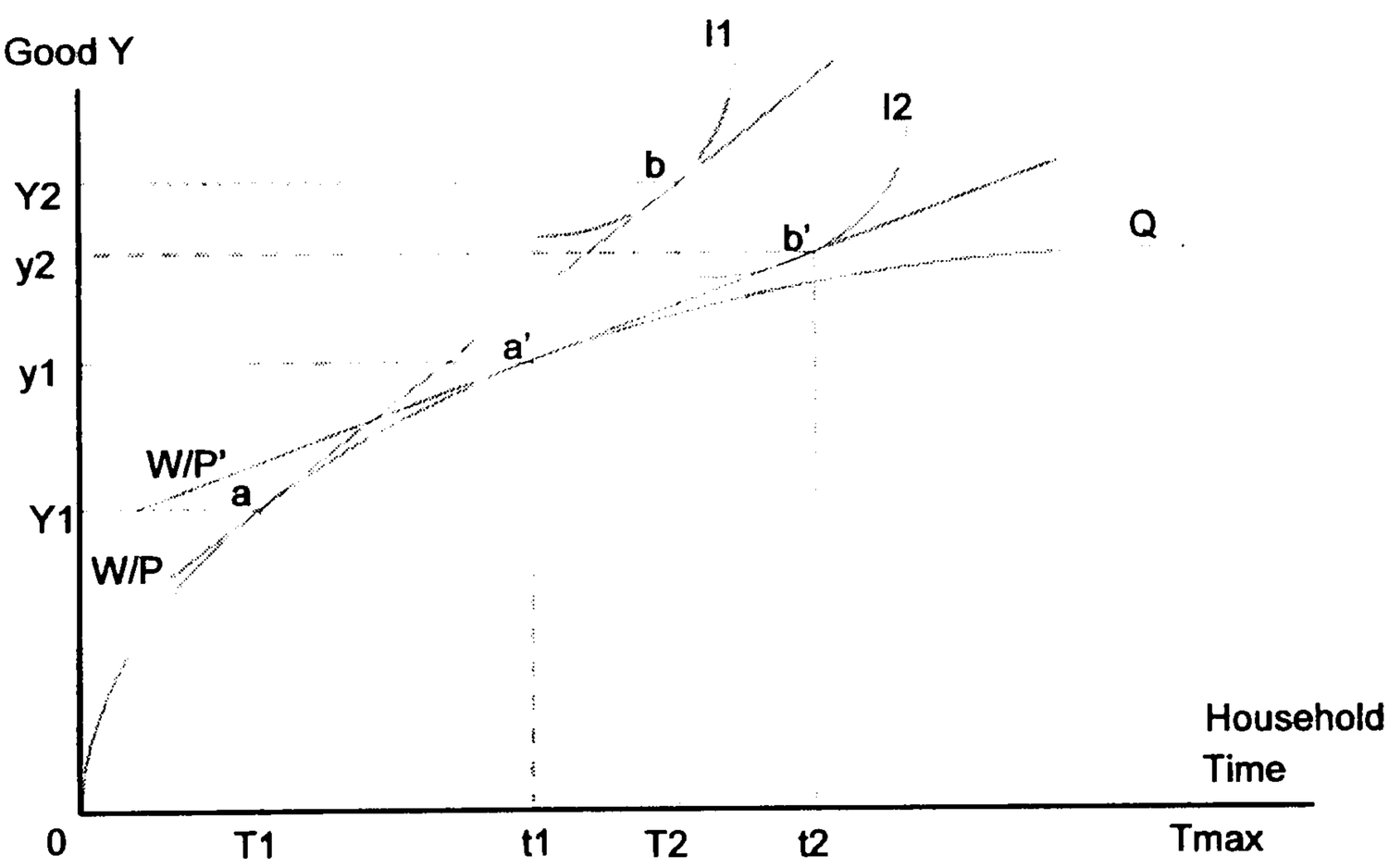


Figure 5.13
Adjustment and the Farm Household

In Africa food staples constitute a substantial proportion of both total production and consumption. Since they can also be substituted for imported alternatives food should strictly be categorised as a tradable commodity. Assuming then that good Y is a tradable commodity (such as maize or rice) the real wage W/P is predicted to fall as the price of tradables rises. This is illustrated in figure 5.13 by a rotation of the real wage line from W/P to W/P'. Consequently, the on-farm production of good Y increases via a reallocation of household time (from T1 to t1) from market to on-farm production. Correspondingly, own-consumption of good Y increases by (y1 - Y1). This reallocation of resources has implications for the amount of household time available for market work (and hence market purchases) and home work. Where the household sells labour, utility will fall as indicated by a shift in the indifference curve from I1 to I2. Participation in market work falls leading to a fall in the market purchases of good Y from Y2 to y2. The time available for home work and the production of 'Z' goods is similarly constrained. In essence, the household responds to an increase in the price of tradables (i.e. food) by attempts to raise domestic production, but in those households that sell labour, overall consumption may fall through a reduced ability to purchase food in the market place.

In terms of Sen's framework the decline in the real wage W/P affects a household's own-labour entitlements by decreasing the terms of trade between market work and the tradable good (e.g. food). Therefore, where households are net purchasers of food efforts to secure sufficient food will focus on production-based entitlements such as by attempting to increase on-farm production. This may involve the production of food staples for home consumption or the production of cash crops to secure food through

trade-based entitlements. Where resources on-farm are fixed efforts to increase domestic production may be constrained. Under such a scenario vulnerability to food insecurity is likely to increase. On the other hand, households that are net sellers of food would benefit from a rise in the price of food. The degree of food security enjoyed would improve through increases in trade-based entitlements.

Unitary models are explicit with regard to the household response in increasing the production of good Y but is less specific as to how this increase is achieved. Within this framework adjustments in resource allocation at the household level will be affected primarily by changes in prices as described above. Changes in the allocation of resources within households may equally be affected by access to resources (especially common property) access to credit and the provision of economic and social infrastructure, all of which may be adversely affected by polices implemented under adjustment programmes. How household time is reallocated between individual members and between the various productive activities will also affect the degree to which households are able to respond to narrowly focussed price incentives. For example, where farm income suffers as a consequence of adjustment the most productive members of the household may be encouraged to migrate in search of formal work. This may mean that the onus for increasing home production falls mainly on female or older members of the household. Similarly, in food deficit households the retail price of the main food staple will be of greater significance than the producer price. If as part of the adjustment package food subsidies are withdrawn then issues such as food security, incomes and income distribution will to a large extent converge on the retail rather than the producer price of food staples. Therefore, changes in

economic and social welfare may not be evenly distributed between and within households. The compound effect may be to increase household perceptions of risk reinforcing subsistence and introspective tendencies rather than creating conditions for market-orientated production.

5.8 The Grain Market under Liberalisation in Zimbabwe.

The discussion so far has endeavoured to establish that the process of adjustment in improving the incentives to produce tradable commodities, particularly those of the agricultural sector, has been frustrated by the existence of poorly developed markets and lack of political will on the part of many African governments. The dominant assumption has been that farmers respond in a predictable manner to increases in producer prices by raising output. However, and as has been suggested, the desired changes in key variables, especially the real exchange rate, have not materialised to the extent anticipated. Moreover, the production of surplus output for sale may be discouraged where farms are net-purchasers of food. This will be particularly true where volatility is introduced to the retail prices of key food staples as a consequence of adjustment policies. This has been the case in Zimbabwe where high levels of inflation have led to regular increases in the price of white maize, the main food staple. An appreciation of the main trends in the grain market in Zimbabwe during the post-independence period is required to prepare the ground for the main work of this research.

White maize is thinly traded on world markets and production in Zimbabwe is highly

unstable due to variable weather conditions. The landlocked position of the country leads to exaggerated fluctuations in maize prices during years of deficits and surpluses. Production of maize is highly correlated with production in neighbouring countries limiting the role of regional trade as a means of ensuring food security (Jayne and Rukuni, 1993). These economic and natural conditions have strongly influenced the country's historical commitment to maize self-sufficiency. Therefore, in the first decade of the post-independence period the highly regulated system of agricultural support was maintained. A prime objective of government policy was to achieve a growth in rural incomes through:

- producer prices above export parity;
- an expansion of GMB buying points to encourage the growth of marketed output in rural areas;
- a massive infusion of government credit recouped from crop sales to the GMB. (Jayne and Chisvo, 1991).

The producer and retail prices of maize were pan-territorial and pan-seasonal being set by the government according to a formula that gave more weight to farm viability, balancing parastatal trading accounts consumer welfare and equity than to market forces (Jiriyengwa, 1993). These prices were published through the GMB with producer prices determined on a farm production cost-plus basis and retail prices set to reflect changes in the purchasing power of industrial wages. Any difference between the two prices including the procurement and marketing costs of the GMB being met by state subventions. High producer prices resulted in the substantial increase in the grain

marketed by smallholder farmers during the period 1980-86 (Eicher, 1995, Stanning,1989). Paradoxically however, overflowing state grain silos existed concomitantly with widespread chronic malnutrition. Inadequate access to food stemming from a reduced purchasing power among the poor was the major reason for the prevalence of food insecurity. Buccola and Sukume (1988) suggest that the high level of stocks held by the GMB during the 1980s was a consequence of an overtly risk averse attitude towards the incidence of drought on the part of policy-makers[4].

The implicit assumption of the pricing policy for maize was that most farming households in the Communal Areas were, or at least given suitable economic incentives could become net sellers of maize. One study established that the incidence of poverty and income inequality was likely to be greater in the Communal Areas than in all other sectors (CSO, 1995). Further, Jayne and Chisvo (*op. cit.*) estimate that in the low-rainfall Communal Areas (Natural Regions IV and V) between 57 to 98 per cent of households were net purchasers of maize, with the vast majority of this purchased from neighbouring households. The question that arises is why then did a policy that aimed to increase rural incomes fall short of those groups most in need of its intended benefits?

Maize price policy led to market distortions by offering subsidised storage and transport

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4 The architects of ESAP argued that the maintenance of excessive stocks of maize was inefficient and placed an unnecessary fiscal burden on the economy. In 1990, the GMB held 1.1 million tonnes of maize equivalent to about 50 per cent of the annual harvest during a good year of production. As part of the liberalisation process these stocks were sold to be replaced by an increased reliance on international markets for securing grain during periods of shortage. National food deficits induced by droughts emerged during 1991-92. The extent of these droughts was such that obtaining additional supplies from the southern African region was problematic. Essentially, the effects of drought were compounded by economic reform and as a consequence food insecurity became established in all provinces of Zimbabwe. For an account of the problems confronted in dealing with food insecurity on this scale see Sachikonye (1992).

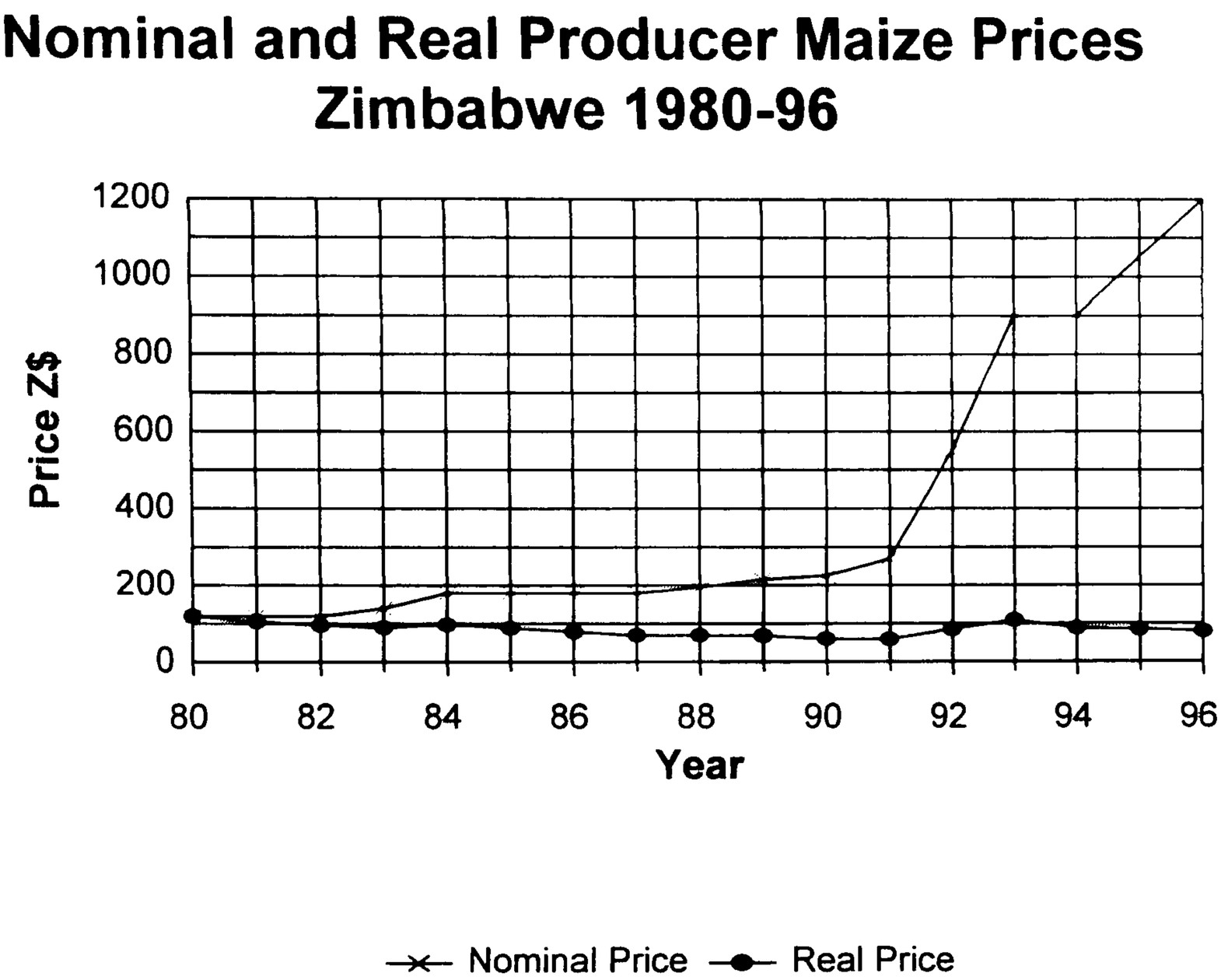
services to selected producers. By maintaining constant prices throughout the year and regardless of location a number of income transfers were effected. Sellers early in the year were cross-subsidised by taxing sellers later in the year and sellers relatively close to GMB depots cross-subsidised sellers in more remote areas. The main impact on food security was to siphon off surplus maize from the semi-arid areas early in the season. Parallel controls on the private movement of maize were enforced to facilitate the successful implementation of pan-seasonal and pan-territorial pricing. During the 1980s less than 2 per cent of the GMB maize sales were accounted for by end consumers and retailers. Some 77 per cent of all sales were channelled directly to urban millers who enjoyed a *de facto* monopoly over the refining and distribution of maize even though their margins were two to three times higher than the small-scale millers (Jayne and Nuppenau, 1993).

Whilst this ensured adequate food supplies to urban centres the development of corresponding mechanisms that ensured the flow of grain to rural deficit households was stifled. Effectively, the urban areas became clearing houses in the grain trade between rural areas so preventing more efficient flows between surplus and deficit regions. The vast majority of deficit households were forced to buy maize meal milled in the cities, which although of high quality was more expensive than locally refined alternatives. Unnecessary transport costs were also incurred in moving grain into the cities and delivering the processed meal back to the rural areas.

The liberalisation of grain markets began in 1993 as an integral, but somewhat belated component of ESAP. The monopoly position enjoyed by the GMB and industrial

millers was relaxed. Although the GMB continued to operate its pan-seasonal and pan-territorial pricing policy it now fulfilled the role of seller of last resort. Private traders were now able to move grain between areas in competition with the GMB. An anticipated outcome of liberalisation was that private distribution networks would emerge between surplus and deficit areas. Whilst there is evidence to support the development of such networks (Vaze *et al.*, 1996) the capital requirements of new entrants for transport and storage has limited progress. Consequently, the current distribution networks has continued to resemble pre-liberalisation structures. However, the GMB did support the entry of small-scale traders by offering a source of grain without high procurement costs. In this way, small traders were able to respond quickly to localised changes in the grain requirements of deficit areas. Although grain may have become more freely available in deficit areas as a result of liberalisation, this in itself will not necessarily guarantee an improvement in household access to maize. The liberalisation process has had negative effects on real producer prices (figure 5.14) and real incomes as described earlier in this chapter. Access and availability represent different aspects of the food security situation. In Zimbabwe, a preoccupation with ensuring maize availability has distracted attention from the more crucial element of access to food in raising standards of welfare.

Figure 5.14



Source: Adapted from Ministry of Agriculture, 1997.

As a consequence of liberalisation and the low prices offered by the GMB many commercial producers of maize concentrated instead on the emerging export markets in horticulture and floriculture. Early in 1998 shortages of maize began to appear. This is evidenced by the divergence between the GMB price of Z$1200 per tonne and Z$2300 per tonne quoted by ZIMACE[5]. Small millers faced with diminishing supplies appealed to the government for 1500 tonnes of grain to be released from national stocks (Chronicle, 1998a). The GMB responded by raising its prices twice during January

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5 ZIMACE (Zimbabwe Agricultural Marketing and Commodity Exchange) developed during the 1990s as part of the liberalisation process to break up the monopoly held by the GMB in the sale of grain. The GMB did not participate in ZIMACE on the grounds that the amounts traded were not significant. Consequently, large differences emerged between the market price of grain (ZIMACE) and that quoted by the GMB.

1998 to bring them in line with those quoted by ZIMACE. Subsequently, some 230 tonnes of grain were offered by the GMB at a price of Z$2800 per tonne. The millers reaction was to increase the retail price of maize by 20 per cent so that a 5kg bag of refined maize that sold for Z$13.20 in October 1997 retailed at Z$29.70 by the end of January 1998 (Chronicle, 1998b).

The government concerned over the political ramifications of the price hikes issued a swift warning to the millers to curb future increases. The response made through the Confederation of Zimbabwe Industry (CZI) insisted that the current uncertainty plaguing the maize market was a result of poor macroeconomic management on the part of government. Amidst this bickering food riots broke out in Harare and spread rapidly to other provincial towns. Cornered and with few options, the government sought to appease the urban population by reversing the price rises, effectively returning the country to an era of price controls. The government denied that such controls had been instigated but rather that it was attempting to compensate for the profiteering tendencies of a ruthless commercial sector. A task force was established to review the prices of basic commodities so that "unjustified and unaffordable levels" would not be repeated (Chronicle, 1998c). This incident provides a useful illustration of the problems faced by governments in enforcing politically unpopular elements of adjustment programmes.

Later the same month under a government directive the GMB price was reduced to Z$2400 per tonne and the regulation of prices of basic commodities was extended to cooking oil and bread. Small producers unable to pass on rises in the prices of

electricity, fuel and wages were threatened with closure. These increases in the main input costs were associated with cost-push inflation induced by a continuing slide in the Zimbabwe dollar. The impact of this squeeze was most severe on those millers in the Communal Areas due to the longer distances involved in transporting maize. Under these circumstances the number of millers and the availability of maize in the Communal Areas was unlikely to improve. In August 1998 the government rejected requests to raise the price of basic food stuffs by 21.6 per cent (The Financial Gazette, 1998). Food processors cited spiralling input costs and import charges for raw materials as grounds for the increase. This was refused again on the grounds that such increases were unjustified.

At the expense of improving access to maize in the short term the longer term objective of encouraging regular and sufficient supplies of maize had been neglected. The increased cash requirement to fund purchases of the limited maize stocks has contributed to the deteriorating position of food security in deficit areas. Households have been faced with deteriorating possibilities to secure their food through either production-based or own-labour entitlements. In addition to the climatic variability experienced during the 1990s (and which is considered in the next chapter), adjustment programmes can be viewed as creating a further source of unfavourable exogenous influence on food security and household resilience.

5.9 Conclusion

This chapter has examined the development and implementation of adjustment programmes in sub-Saharan Africa since the 1980s. The slow economic growth including agricultural output and balance of payments and fiscal crises endemic in sub-Saharan Africa were viewed as the symptoms of economic mismanagement and inappropriate policies. Agriculture, as the key sector in terms of its contribution to GDP, the external trading position and in providing a the main source of livelihood for the majority of the population, has been accorded a central role in the liberalisation process. A main consequence has been that food security and agricultural development can no longer be divorced from the international trading environment. This switch reflects a preoccupation by Washington-based institutions with the achievement of overall macroeconomic efficiency. In order to persuade governments to undertake major macroeconomic and sectoral reforms the international aid agencies have attached conditions to their lending operations. More importantly, this has secured privileged access for the international agencies to the policy-making machinery throughout Sub-Saharan Africa. In 1985, President Julius Nyerere declared:

> The developed countries have a very large measure of control over the world economy. They act as a group, and make decisions which they see as in their own interests. The leadership of this group is in the hands of the nation with the most powerful economy - USA... The IMF has become largely an instrument for economic and ideological control of poor countries by the rich ones... in enforcing the unilateral will of the powerful.
>
> (Nyerere, 1985)

The main policy instrument guiding agriculture in the adjustment process has been a currency devaluation. The rationale for widespread devaluations across the continent was that high domestic levels of inflation coupled with inflexible exchange systems had

caused real exchange rates to appreciate over time. Devaluations, by altering the relative prices of tradable and non-tradable goods, should initiate a shift of resources into the tradable sector.

Agriculture as the main tradable sector has been expected to benefit from a devaluation. While devaluations may significantly affect the nominal value of a currency their impact on the real exchange rate is less established. The real exchange summarises the incentives that drive resources between the tradeable and non-tradeable sectors. It has not been clearly demonstrated that devaluations of the nominal exchange rate lead to predictable changes in the real exchange. The limited options for import-substitution have forced many sub-Saharan countries to continue to import at inflated prices. This has merely stimulated domestic inflation effectively eroding the competitive advantage conferred by the devaluation and discouraging investment and exports. From the discussion and analyses provided an erratic and uncertain picture emerges.

Ownership relations are affected by exchange entitlements and the economic forces that operate on them. Within this framework the effects of adjustment programmes can be linked to the position of food security at the household level. It has been argued that for much of sub-Saharan Africa the poor and vulnerable groups will tend to be located in rural areas. The nature of these effects will depend upon whether households are net purchasers or sellers of food. For the former group rises in the price of food will negatively influence exchange entitlements which may reinforce subsistence production. On the other hand, net sellers of food will benefit where adjustment leads to increases in the price of food through increases in their exchange entitlements.

Unitary models (under strict assumptions regarding the nature of household behaviour in consumption and production) are able to predict the direction of supply response but it is not possible to say *ex ante* how the burden of adjustment will be distributed within households. This is an empirical matter and forms an important strand of this research. Farm household decision-making is influenced by a complex range of variables other than simply agricultural prices. For example, under conditions characterised by uncertainty in the natural and economic environments, cropping patterns may reflect a desire to sustain household food security rather than any particular level of profit or output. In this respect, the availability of resources at the household level may constrain attempts to expand production. Sub-optimal levels of public investment in rural infrastructure as a consequence of adjustment programmes may increase household perceptions of risk. Within households, the effects may be differentiated according to age and gender. Rises in the price of food will have specific implications for women in their roles in household consumption and welfare. As a consequence, food insecurity may increase amongst those groups that have traditionally formed the focus of international development aid.

By 1990 in Zimbabwe it became clear that if equity and economic growth were to be simultaneously realised then major economic reform was essential. The highly regulated economy inherited from the colonial period was inward looking and divorced from the influences of market forces. The policy package negotiated with the IMF was identical in most respects to other adjustment programmes implemented across the continent since 1980. The same commitment to currency devaluations and market liberalisation was expected despite the existence of unique economic and social

circumstances in individual countries. To date economic reform would appear to have merely intensified the macroeconomic situation as evidenced by the continuing declines in real GDP per capita caused by rising inflation and human populations

Most farm households in Zimbabwe are net purchasers of food and their efforts are more likely to be influenced by the retail rather than the producer price of maize. Historically, maize policy in Zimbabwe has concentrated on ensuring adequate supplies rather than improving the general access to grain. Real producer prices have been erratic and retail prices have increased substantially since 1990. The transition from a regulated to a liberalised economy in Zimbabwe has been fraught with difficulties as the government has struggled to strike a balance between implementing market reform and maintaining its political credibility with a disenfranchised electorate. The food riots illustrate the critical importance of the retail price of maize in determining the general level of food security enjoyed within the country. The outcome has been the creation of a climate under which constructive policy-making on food security is unlikely to be realised.

Continuing pressures in the form of growing populations and agro-environment constraints persist in the Communal Areas. Households strive under hostile conditions to produce sufficient food to meet their requirements between growing seasons. Shortfalls in production are a regular occurrence under a capricious climate and on the marginal land available in the Communal Areas for the cultivation of crops. Households have been required to supplement their domestic food supply through purchases of maize in the market place. It is in the market for food staples where the

some of the negative effects of adjustment programmes have been most pronounced. Deficiencies in the administration of public expenditures have meant that governments have not had the capacity to shield those groups that have been pushed across the line into absolute poverty by the adverse effects of adjustment programmes.

Strategies encouraged during colonial period which emphasised access to food through own-labour entitlements have proved increasingly more precarious. This has been a consequence of the rises in food prices (due to the withdrawal of food subsidies and inflation) and the growth in unemployment witnessed throughout the 1990s (due to the competitive forces unleashed on the sheltered domestic industries). In addition, when the diminished ability of domestic production to meet (even partially) the requirements of households is considered, the roots of recurrent food insecurity become more apparent. As the viability of established strategies for securing food has been undermined households have been forced to explore new means of access. In less resilient households, vulnerability to food shocks has increased the extent and frequency of transitory food insecurity. In more resilient households, coping strategies are likely to be adapted and evolve in response to economic adversity. How the effects of food shocks are distributed across farm households is a primary concern of the rest of this research.

Chapter Six

Traditional Coping Strategies and Recurrent Drought

6.1 Introduction

Rainfall is a major determinant of the success of agricultural production in the Communal Areas. In this chapter, the quantity and distribution of rainfall between and within seasons will be assessed to evaluate the effectiveness of traditional coping strategies under recurrent drought. The pattern of rainfall is a fundamental variable to be considered in the analysis of resilience in rural households. Consequently, this section draws on rainfall data obtained from the Meteorological Office in Harare for the five meteorological stations nearest the survey areas. These data are investigated in some detail in order to appraise their impact on the strategies employed by households in production and consumption. Good rains after a period of drought can enable households to reestablish normal patterns in the consumption of food and exceptional rains, in terms of their quantity and distribution, can permit the accumulation of buffer stocks. Successive years of drought on the other hand, have the ability to create conditions under which the degree of food security enjoyed by households may become increasingly more uncertain. The compound of effects of drought and macroeconomic change on household food security are considered and provide the context for the empirical work included in subsequent chapters.

6.2 The Economic Significance of Rainfall Patterns in Zimbabwe

Rainfall data were obtained from the Meteorological Office in Harare for the five stations closest to the survey areas. The locations of the five stations relative to the survey areas are marked in map 6.1. The survey areas shown in map 6.1 have been colour-coded to correspond to the colours of the series presented in the various charts incorporated in this section relating to the analysis of rainfall. Semukwe is marked in red and different shades of red are used to denote the three meteorological stations (Matopos, Kezi and Tuli) in closest proximity. Similarly, Mberengwa is coded blue and different shades of blue have been used for the Mberengwa and West Nicholson meteorological stations.

The approximate elevations of the five meteorological stations above sea level are presented in table 6.1. All stations except that in the Matopos are located in lower lying areas away from the central plateau. The meteorological station at Tuli has the lowest altitude and hence the lowest levels of rainfall. The meteorological station nearest to the Semukwe survey area is at Kezi but differences in rainfall are observable over relatively small distances. Thus, the data presented for Kezi do not necessarily reflect the actual rainfall experienced in the Semukwe survey area. Similarly, the meteorological station in Mberengwa is located about 25 miles from the survey area. Therefore, the data presented provide only an indication of the quantity and distribution of precipitation in the survey areas. However, the data cover a sufficient period of time (1920-95) for reasonable conclusions to be drawn about the impact of rainfall on agricultural production and subsequent coping strategies.

Map 6.1
The Location of the Meteorological Stations and the Survey Areas



For scale see map 3.1

Table 6.1
Approximate Elevations of the Meteorological Stations above Sea Level

Meteorological Station	Elevation (metres)
Matopos	1500
Kezi	1100
Tuli	700
West Nicholson	900
Mberengwa	1000

Agriculture is the most important sector in Zimbabwe. That it constitutes less than 20 per cent of GNP in most years belies the strategic contribution made by the sector to levels of employment and exports. Agriculture provides an income to about 75 per cent of the population, accounts for over 40 per cent of exports and in normal years around 95 per cent of all food and beverages are locally produced (Muir-Leresche, 1994). The substantial size of the domestic agro-processing industries means that the level of output of the manufacturing sector is linked strongly to that of the agricultural sector. It follows therefore, that the success of the Zimbabwean economy in any given year will be closely related to the level and distribution of rainfall in that year.

In order to assess the importance of rainfall to the growth of real GNP a simple analysis was undertaken. Data for the percentage deviations of annual rainfall from the period mean were plotted with data for the recorded annual growth rates for real GNP. Time series data for growth in real GNP were calculated from national income statistics obtained from the 1989 and 1997 editions of *Statistical Yearbook for Zimbabwe* published by the Central Statistical Office in Harare. The trends in rainfall and growth of real GNP presented in figure 6.1 suggest a direct relationship between the deviations in annual rainfall from the period mean and the recorded level of growth for real GNP in the same year. Rainfall data are recorded over the agricultural season from July to June but GNP data are recorded according to the calendar year. The difference in conventions is not serious since the rainfall for any given season (e.g. 1988-89) will influence the GNP growth in the year in which the end of the season falls (1989). The level of rainfall over a season will affect the quantity of crops that are harvested, usually during the months of March and April. Given the strategic importance of the agro-

processing industries in Zimbabwe, the quantity of agricultural crops becoming available for processing after this period will in turn be significant for the level of economic growth recorded during that year.

Figure 6.1

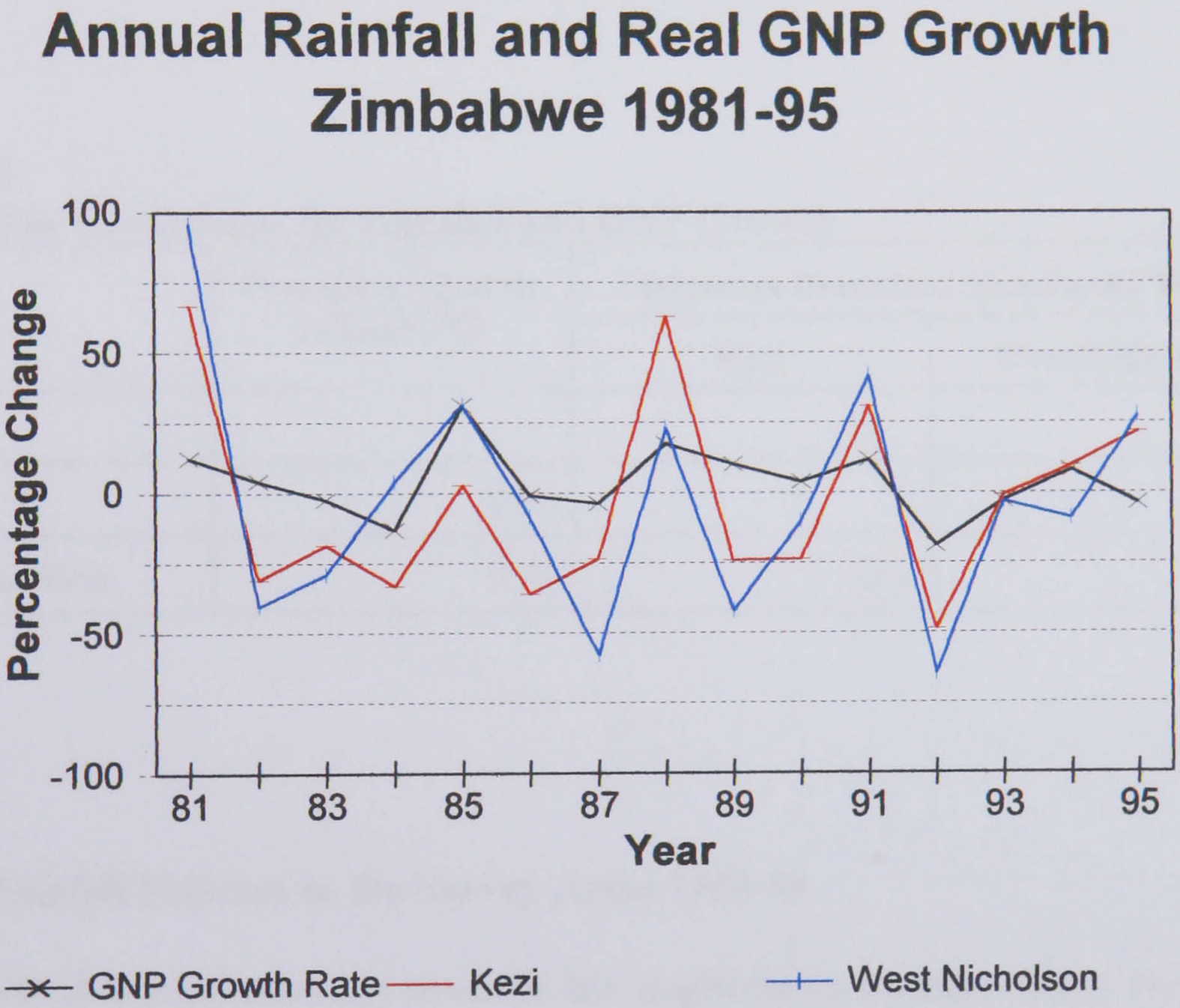


Figure 6.1 shows clearly a correspondence between the percentage deviations from the period means in the distribution of rainfall recorded for the Kezi and West Nicholson meteorological stations. This is supported by a correlation coefficient of 0.83 for the two series of rainfall data presented in table 6.2. The correlation coefficients for the rainfall data against GNP growth are 0.59 for Kezi and 0.53 for West Nicholson. Although these coefficients are not as strong they do nevertheless support the suggestion of a direct link between annual rainfall and growth in real GNP.

Table 6.2
Correlation Coefficients for Rainfall and GNP Growth

	Percentage Growth in Real GNP	Percentage Deviations from Period Mean	
		Kezi	West Nicholson
GNP	1		
Kezi	0.59	1	
West Nicholson	0.53	0.83	1

6.3 Rainfall Patterns in the Survey Areas 1920-90

If the level of rainfall recorded annually has implications for the level of economic activity in the formal economy then its significance for the rural economy is likely to be greater. Agriculture is the major economic activity in rural areas and represents the traditional means through which entitlements to food are secured. In many households, domestically produced cereals constitute a critical source of food for household consumption. Years of high rainfall are associated normally with surplus production either to be stored or to acquire cash through their sale. Drought years which result in

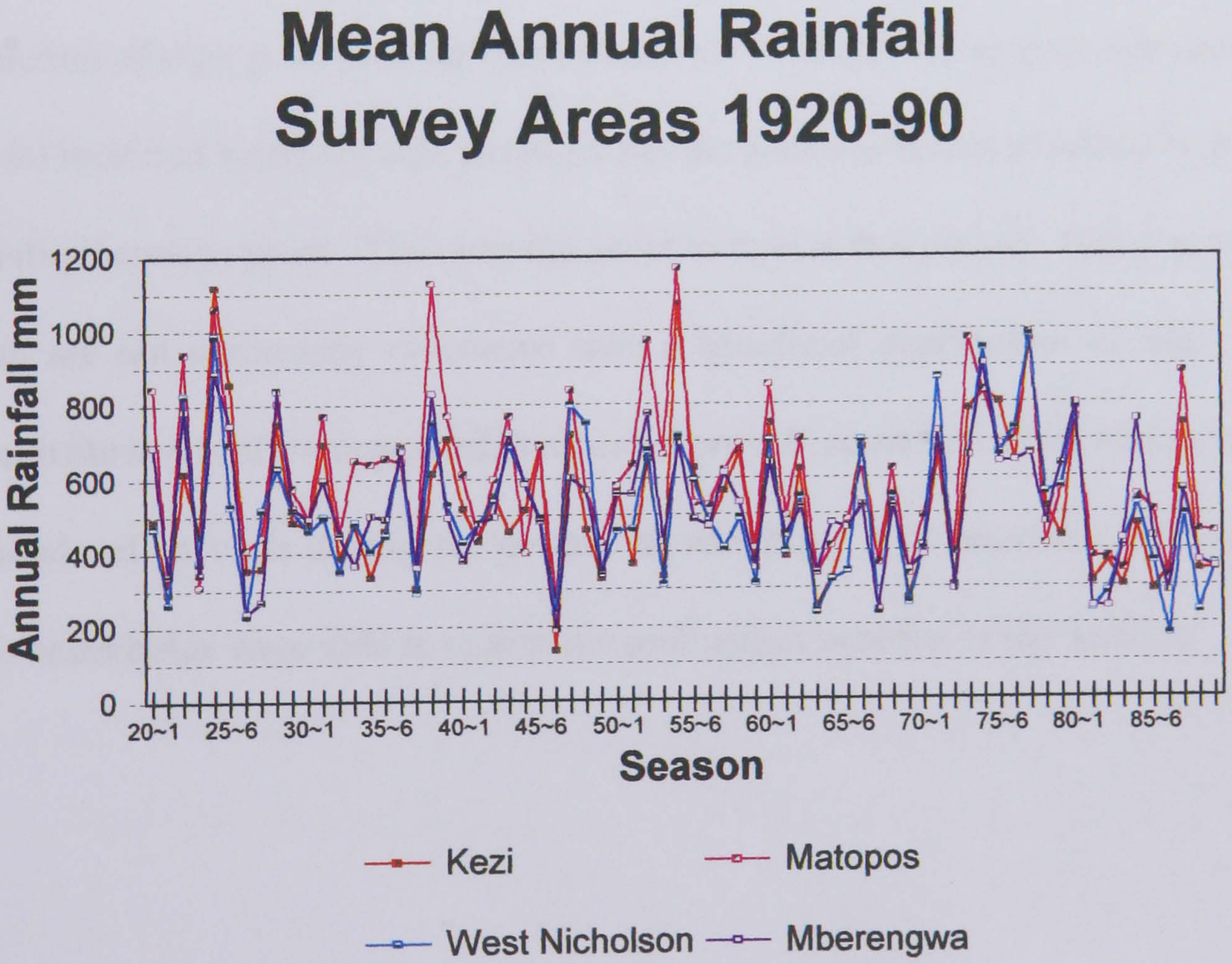
production shortfalls will require the running down of food stocks or cash reserves or both. Thus, the distribution of years of high and low rainfall will determine the extent to which the traditional coping strategies of storing food between seasons are successful in smoothing household consumption requirements.

Figure 6.2 presents the distribution of annual levels of rainfall recorded at four meteorological stations (Matopos, Kezi, West Nicholson and Mberengwa) for the period 1920-90. Data for Tuli have not been included since no records were maintained for this station over the period 1940-59. The trend that emerges from figure 6.2 is one of highly fluctuating rainfall between years for all stations. Moreover, there is a strong correspondence between recorded levels of rainfall between all four stations which is supported by the correlation coefficients presented in table 6.3. This suggests that while the absolute levels of annual rainfall recorded at the four stations may differ in any given year there is a strong relationship between the relative distribution of rainfall over time. Thus, and in general, years of favourable rainfall in Kezi were also good years in Mberengwa and vice-versa.

Table 6.3
Correlation Coefficients for Annual Levels of Rainfall 1920-90
Matopos, Kezi, West Nicholson and Mberengwa Meteorological Stations

	Matopos	Kezi	West Nicholson	Mberengwa
Matopos	1			
Kezi	0.83	1		
West Nicholson	0.77	0.81	1	
Mberengwa	0.81	0.76	0.84	1

Figure 6.2



6.4 Rainfall Variability and Traditional Coping Strategies

The absolute levels of rainfall provide some insight into long-term trends but have little to offer in describing the inherent variability of seasonal rainfall patterns. The variability of rainfall can be analysed at different levels and a useful starting point is provided in table 6.4. Table 6.4 records the period and decadal averages of rainfall at the five meteorological stations and the coefficient of variation for each period is given in parentheses. On inspection, table 6.4 reveals substantial variability in rainfall patterns between seasons and between meteorological stations. However, the existence of a correspondence between decades of high rainfall and the degree of variability of the rainfall in that period is not supported. For example, the decade of 1920-30 represented a period of above average rainfall at all stations but was also a period during which the distribution of high good and bad years was fairly variable. In contrast, the decade of 1970-80 recorded similarly high averages but the period was characterised by a lower variability between years. The essential point to note is that periods of above average rainfall are not necessarily consistent with a beneficial distribution of rain. Thus, although the levels of average rainfall recorded provide some indication of the expected magnitude of harvests during the period, its variability will determine the extent to which households were able to realise the production benefits of the rainfall.

Table 6.4
Decadal and Period Means for Rainfall 1920-90
Matopos, Kezi, Tuli, West Nicholson and Mberengwa Meteorological Stations
Coefficient of Variation given in parantheses

	Kezi	Matopos	Tuli	West Nicholson	Mberengwa
1920-90	524.7 (38.2)	605.1 (35.0)	351.9 (37.6)	505.1 (38.8)	517.9 (33.3)
1920-30	577.4 (45.2)	639.5 (42.1)	386.7 (31.3)	534.6 (43.9)	566.7 (44.3)
1930-40	513.7 (29.6)	657.2 (32.1)	360.5 (26.8)	489.8 (28.4)	526.1 (27.0)
1940-50	480.5 (35.0)	559.8 (31.9)	NA	535.5 (33.1)	485.1 (31.3)
1950-60	570.5 (37.6)	680.1 (33.2)	NA	491.6 (27.7)	547.4 (22.7)
1960-70	466.2 (37.7)	524.8 (32.9)	284.0 (35.1)	428.5 (42.7)	452.0 (25.4)
1970-80	636.0 (33.6)	672.6 (31.4)	431.0 (32.2)	686.6 (33.3)	601.7 (29.0)
1980-90	428.6 (41.0)	502.0 (36.3)	297.3 (53.7)	387.1 (46.8)	446.4 (44.4)

In order to assess the impact of variability in rainfall patterns upon agricultural production the data were analysed in terms of the annual percentage deviations from the period mean recorded at each of the meteorological stations. The results are presented in figures 6.3, 6.4, 6.5 and 6.6. Each figure shows clearly the distribution of rainfall about the period mean. The larger the columns above the mean (0) the higher the level of rainfall recorded in that year. Similarly, the larger the column below the mean the more severe the drought that was experienced during that year. Most importantly, the long-run means for each station are not necessarily consistent with the requirements for the optimal cultivation of the crops. The survey areas are located in semi-arid regions which are more suited to livestock than arable production.

Figure 6.3

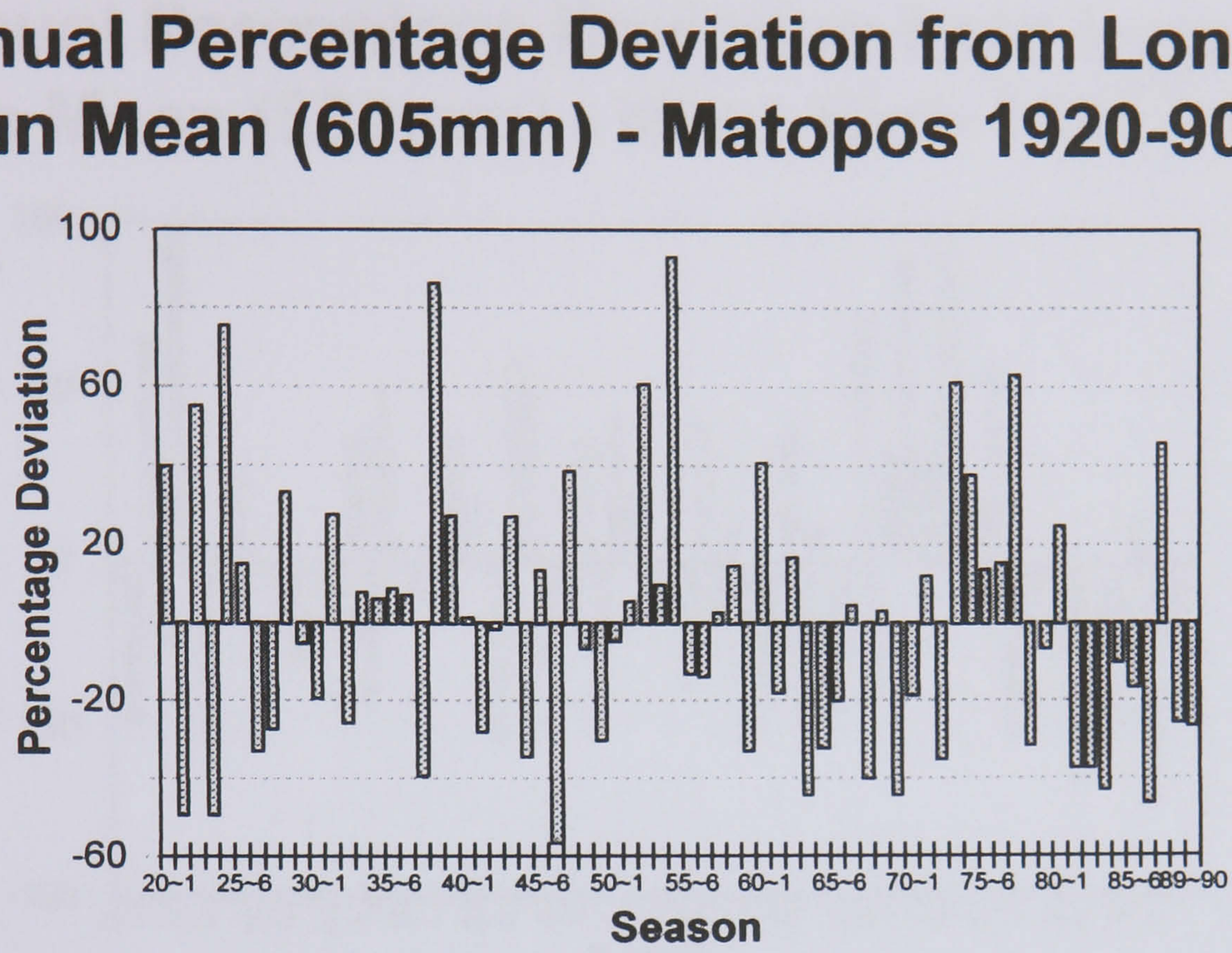


Figure 6.4

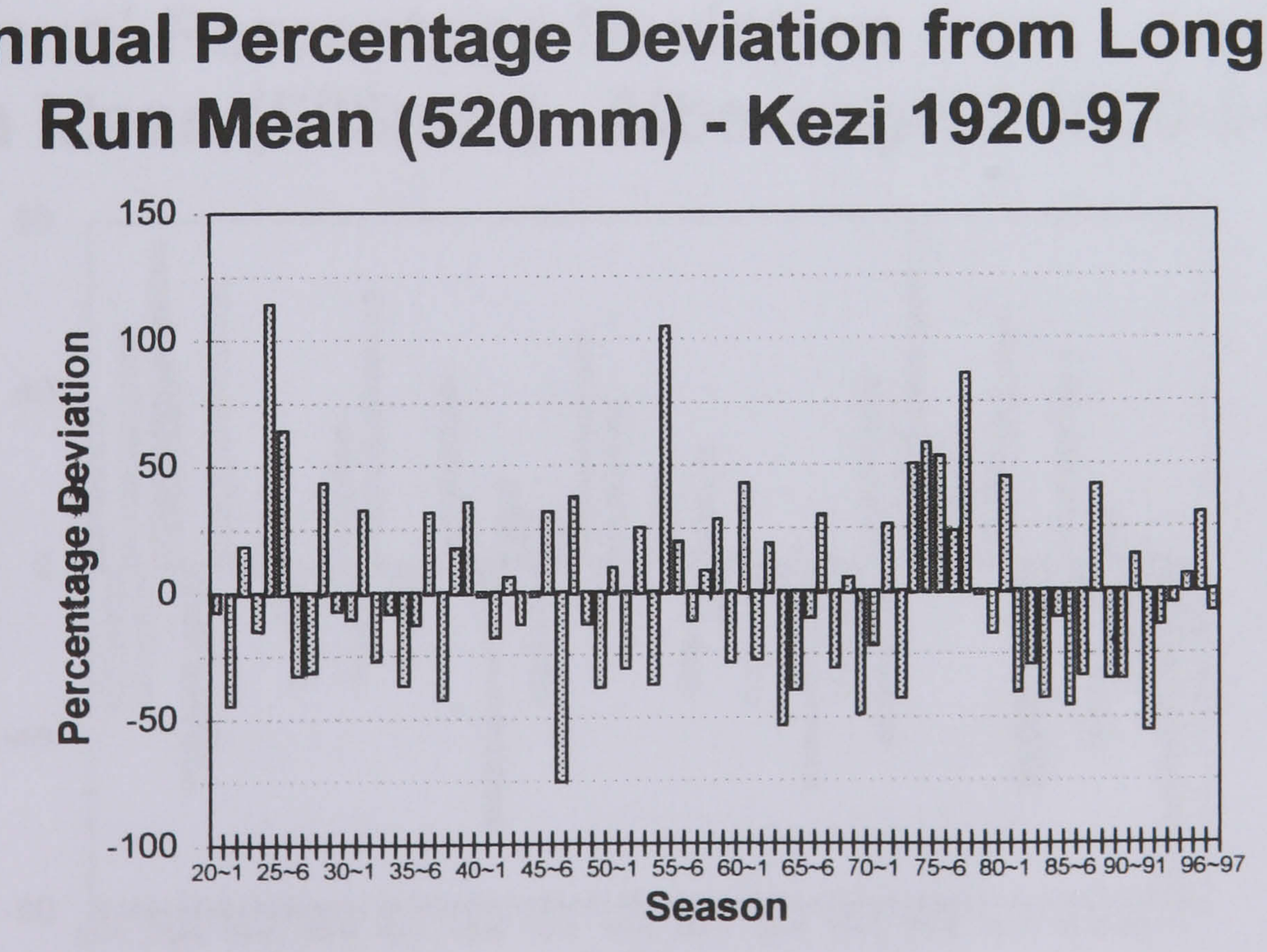


Figure 6.5

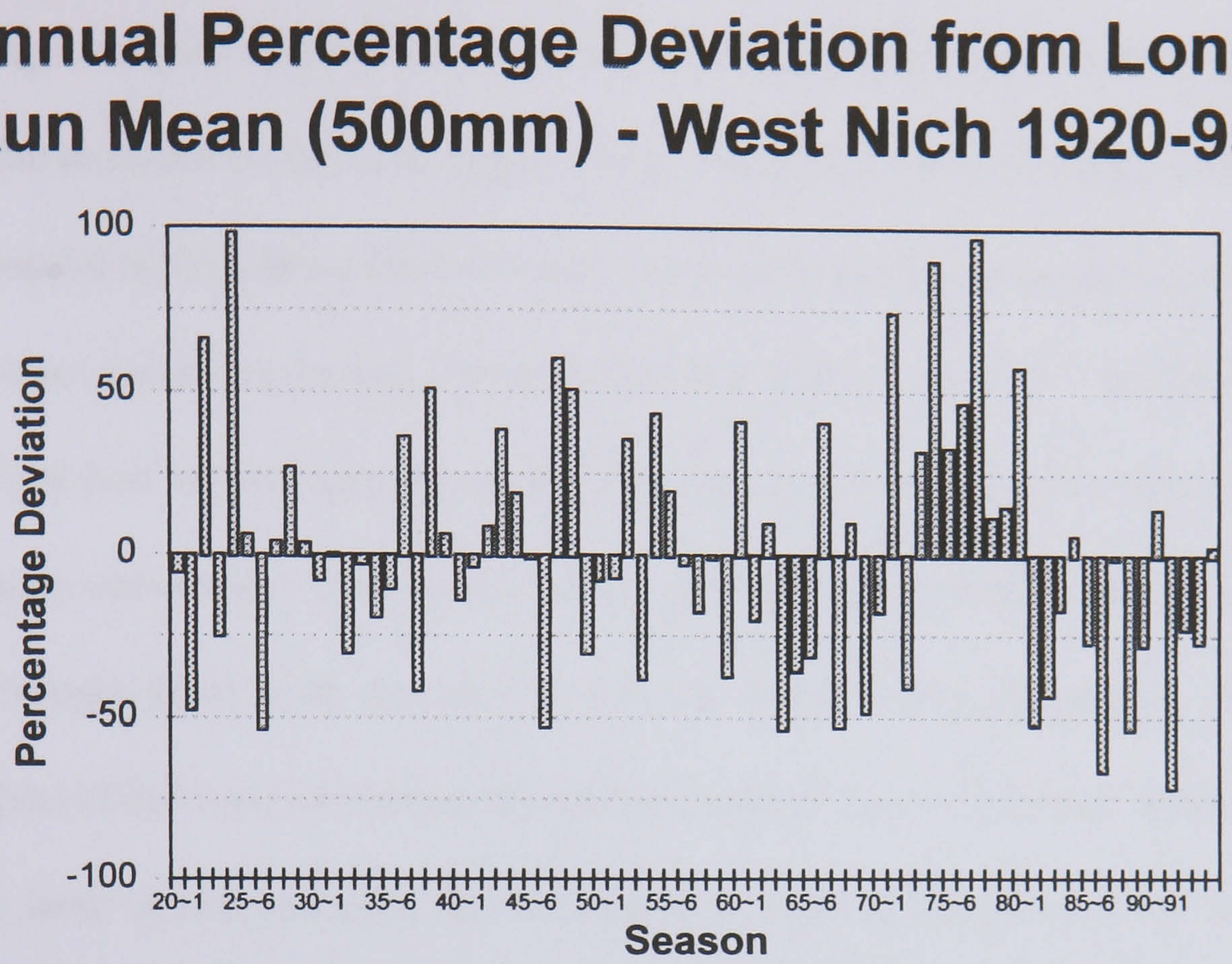
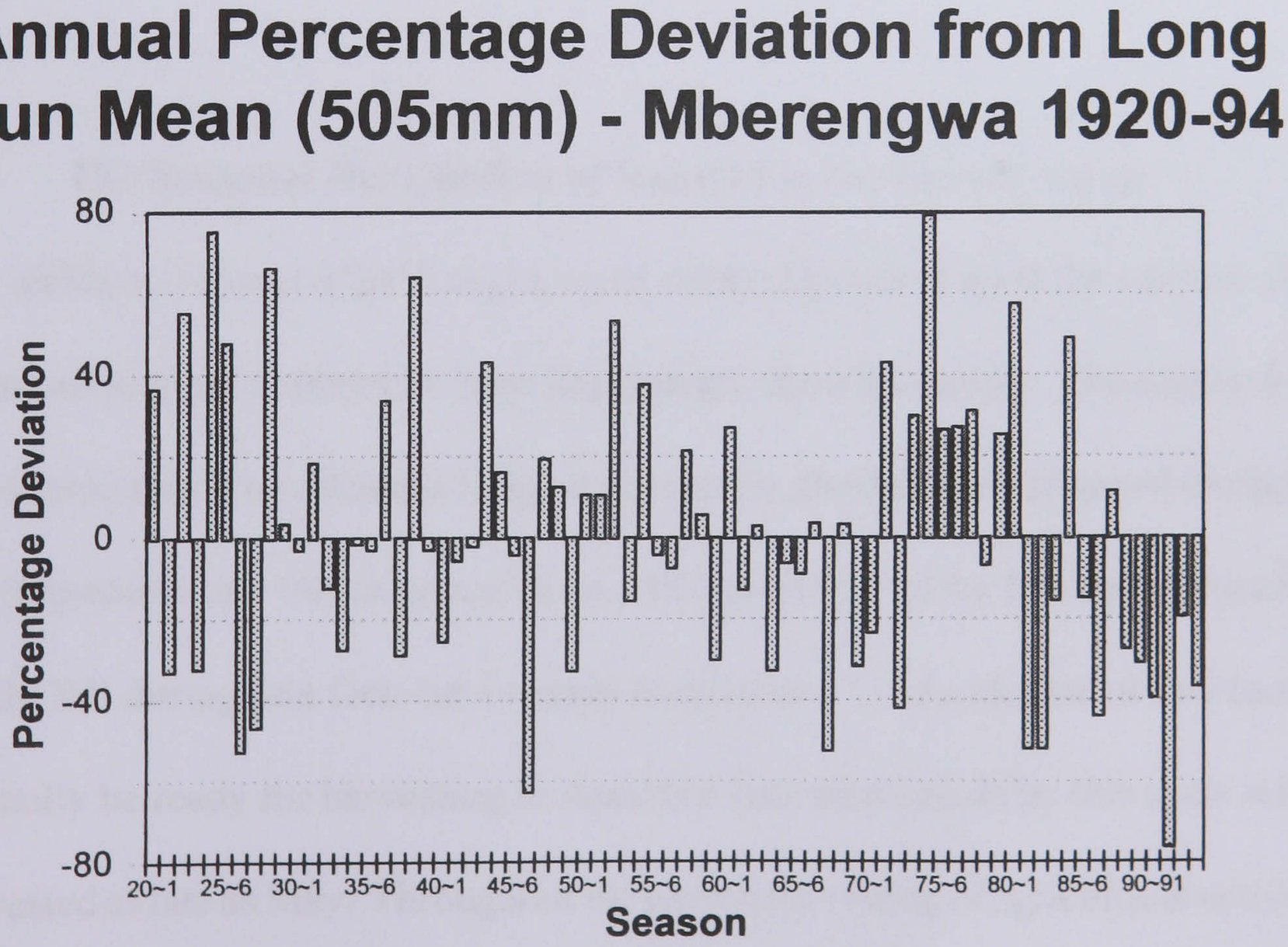


Figure 6.6



Of greater relevance to the analysis of household resilience is the sequencing of years of high and low rainfall measured by deviations from the period mean. Traditional coping strategies centred on the accumulation of food stocks during good years of rainfall to be drawn down during a period of drought. Such a strategy would have been successful in alleviating food shortages as long as the drought did not persist for more than two consecutive years. From figures 6.3, 6.4, 6.5 and 6.6 it would appear that in the first half of the century consecutive years of below average rainfall was not a frequent occurrence. The more common pattern in the earlier part of the century was for drought years to be proceeded by years of above average rainfall. When rainfall patterns of this type were experienced the practice of accumulating buffer stocks would have been consistent with the maintenance of long-term household food security. Therefore, the ability of households to recover after a period of drought was to a large extent influenced by the amount and distribution of rainfall in the subsequent season.

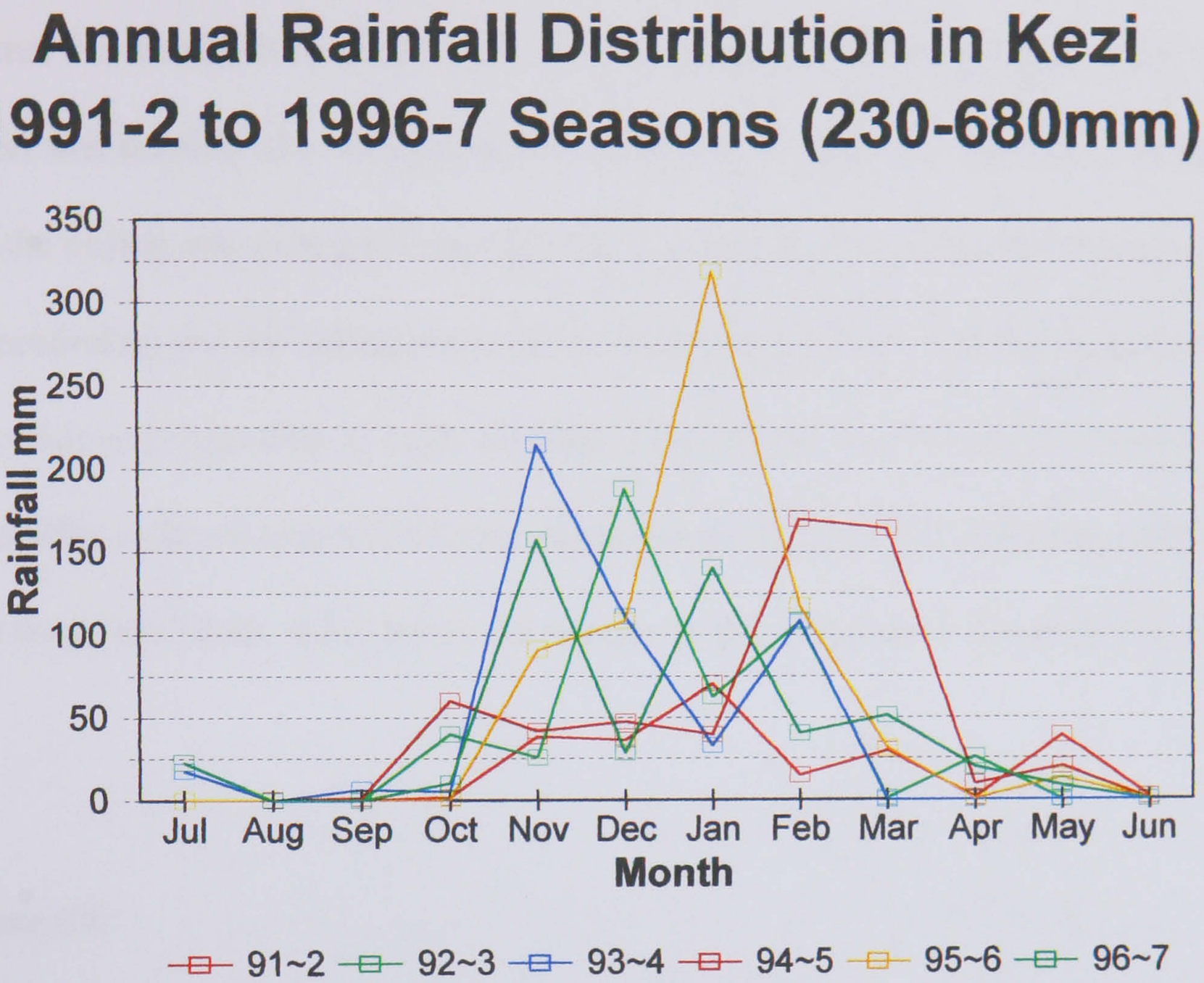
6.5 The Seasonal Distribution of Rainfall in the Survey Areas

The ability to recover after drought is not solely dependent upon the amount of rainfall in the subsequent season but more importantly upon its timing. The season for arable production runs from October to April. Typically, the fields are prepared during August and September and the crops are sown with the arrival of the first rains. Ideally, these would fall during late October or early November. Crops planted at this time would normally be ready for harvesting in April but late rains can delay this cycle with crops harvested as late as May. Throughout the season the timing of agricultural activities and the fall of the rains is critical to the quantity and condition of the crop ultimately

harvested. For example, households without draught power or a plough may be delayed in the preparation of their fields and so may miss the first rains. Once the crops have been sown regular and sufficient falls of rain are required if the growth of the crop is not to suffer. A seasonal distribution of rain that is concentrated into a few heavy downpours can destroy crops. Erratic and inconsistent rains can have stress-inducing effects similar to those of drought. Crops grown under such conditions will tend to be stunted and yields reduced.

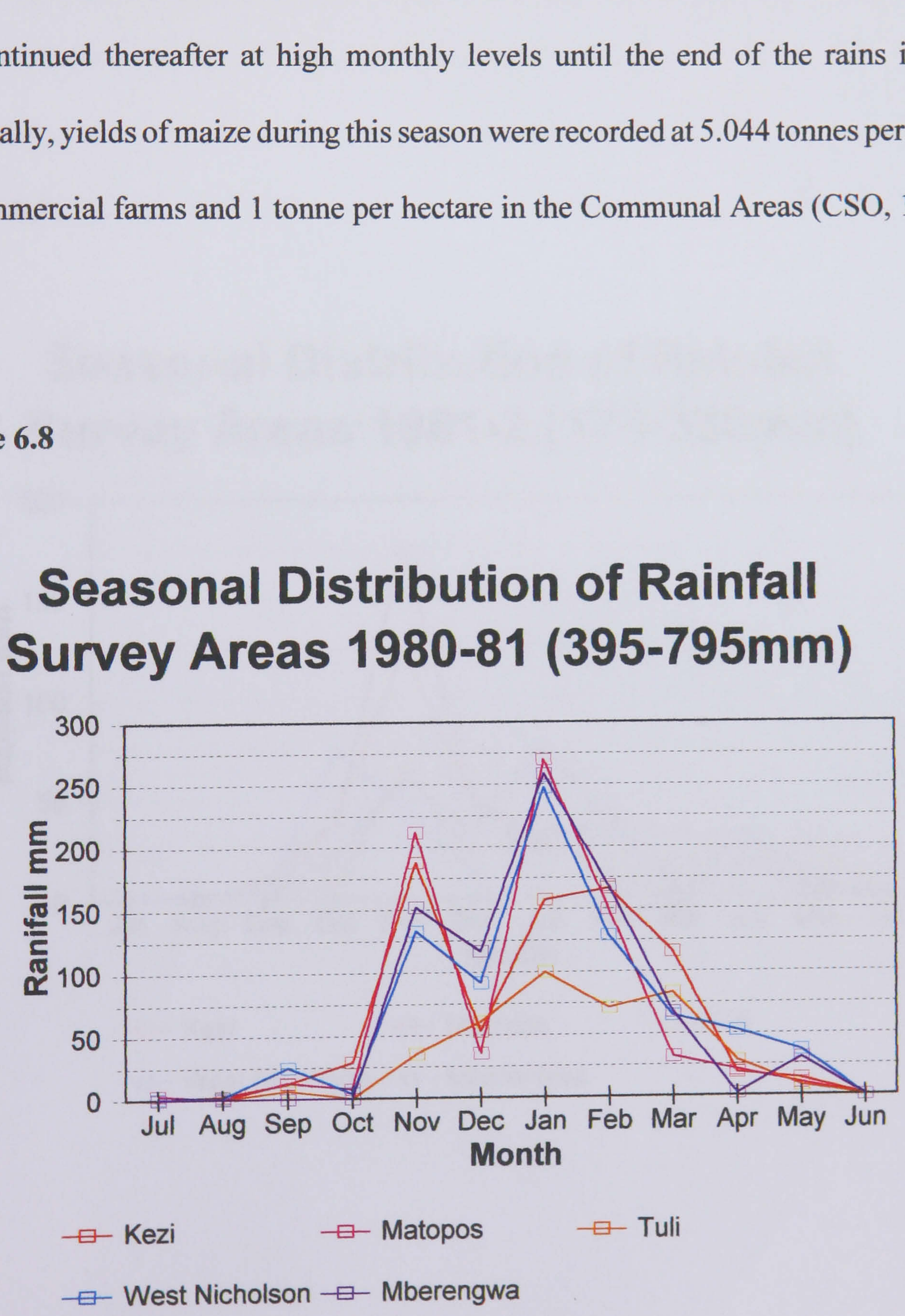
The seasonal distribution of rainfall was analysed for Kezi meteorological station for the period 1991/2 to 1996/7 and is presented in figure 6.7. The figure reveals a seasonal distribution of rainfall over the period that is unpredictable and variable. Rains fell in November in some years and as late as January in another. The bulk of the rain in all of the seasons analysed fell during the months from October to April but the start and end of the rains varied between seasons. Households have little information other than a combination of past experience and guess work to guide them in the critical decisions concerning the timing of field preparation and sowing. Variations in the timing of these events between households will account substantially for any variations in the yields observed. Thus, from year to year households are confronted by uncertainty in making key decisions concerning the timing of arable production.

Figure 6.7


Annual Rainfall Distribution in Kezi
1991-2 to 1996-7 Seasons (230-680mm)
Rainfall mm
350
300
250
200
150
100
50
0
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Month
91~2
92~3
93~4
94~5
95~6
96~7

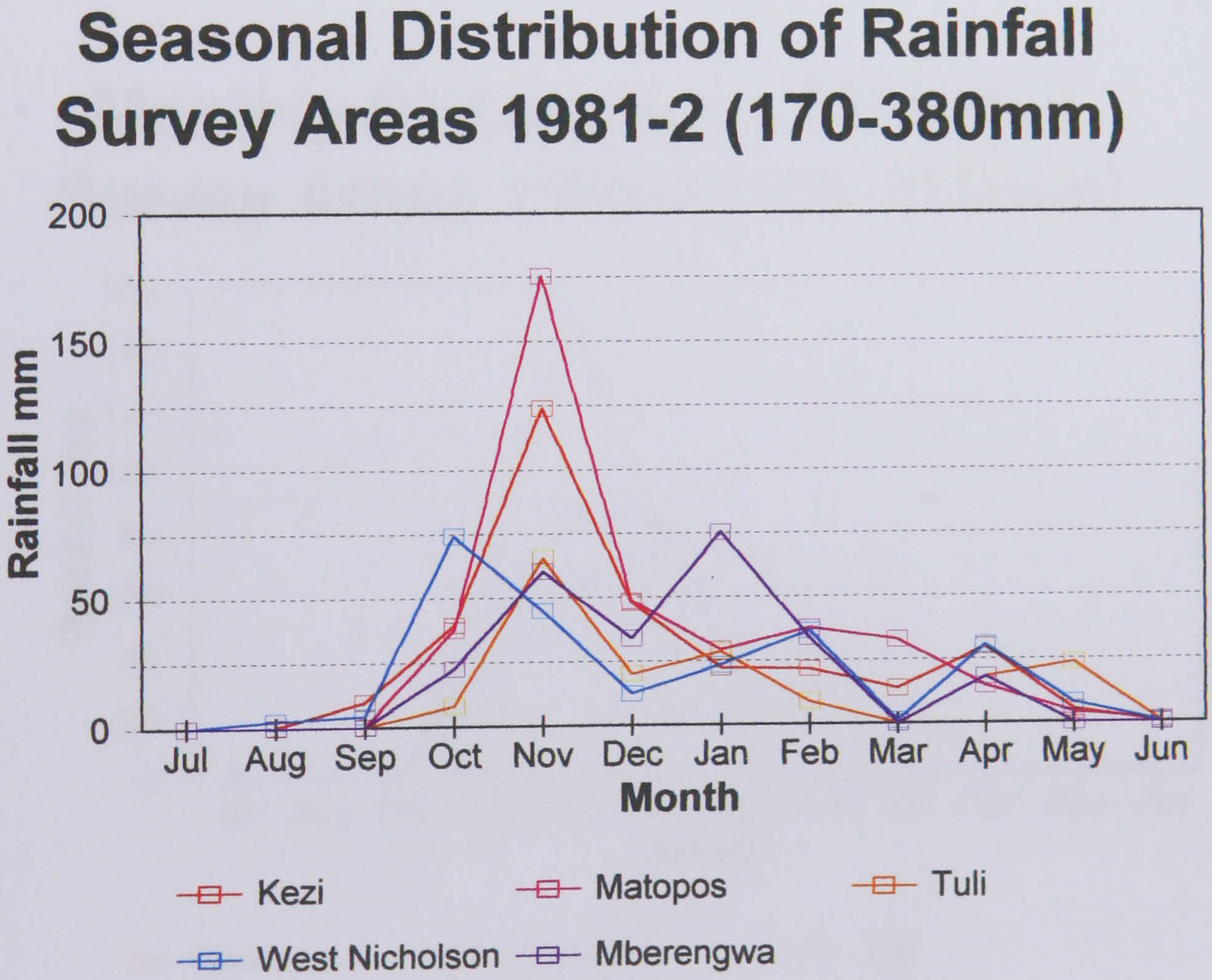
The distributions of rainfall for the 1980/1, 1981/2, 1986/7 and 1987/8 seasons were analysed for all five meteorological stations. The purpose of the analysis was to contrast the distribution of rainfall within a given season between areas. The 1980/1 season was the first after independence and represented an excellent year in terms of both the timing and quantity of rain that fell (figure 6.8). The initial distribution of rain was promising and fell during November. The rains subsided slightly during December but continued thereafter at high monthly levels until the end of the rains in May. Nationally, yields of maize during this season were recorded at 5.044 tonnes per hectare on commercial farms and 1 tonne per hectare in the Communal Areas (CSO, 1998a).

Figure 6.8



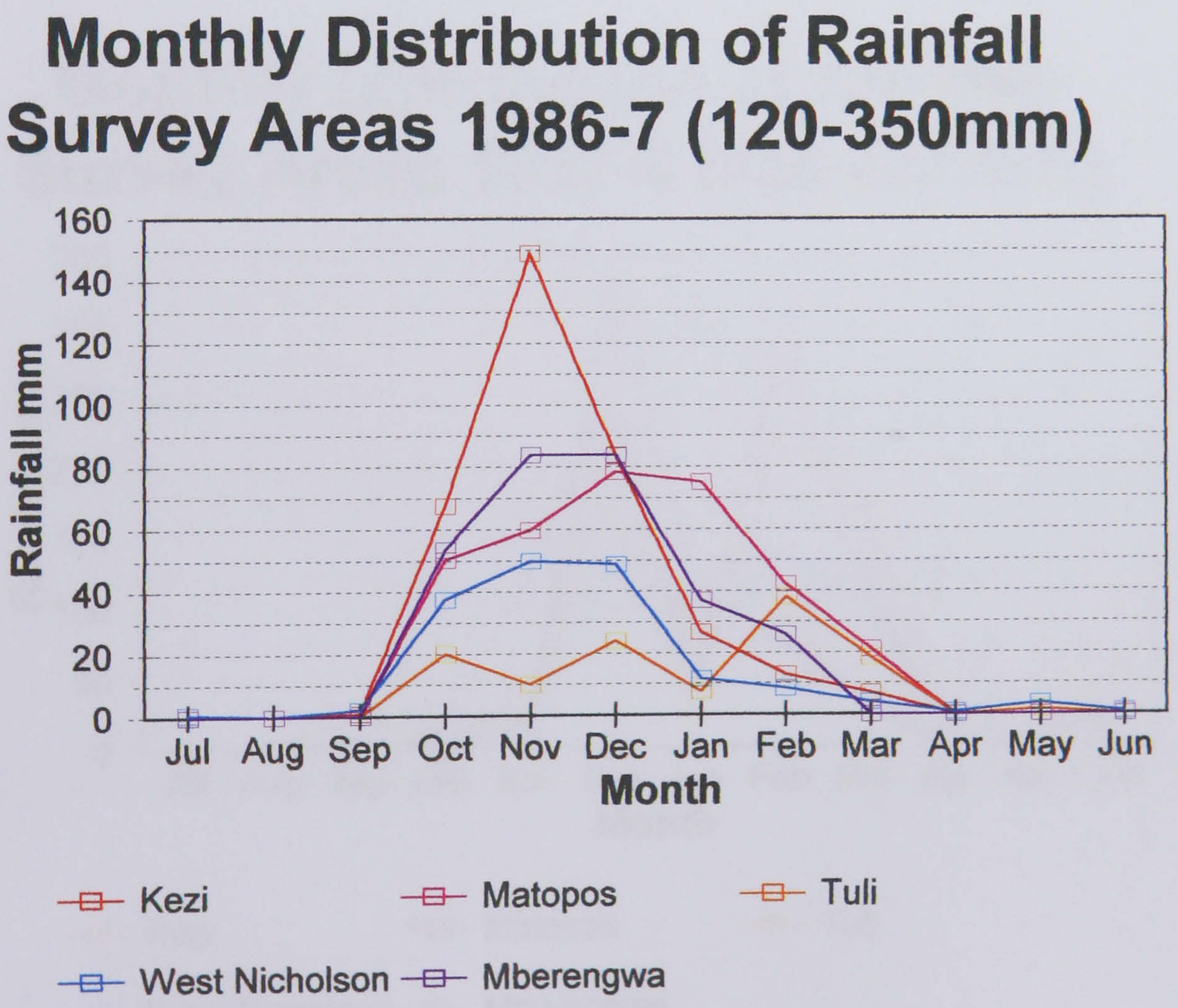
The distribution of rainfall in the following season (1981/2) is illustrated in figure 6.9. The rains again commenced in November but declined markedly and remained erratic over the rest of the growing season. The rains did not cease until June and consequently, may have affected the drying of crops which normally occurs during May and June. The commercial sector recorded yields of maize at 3.835 tonnes per hectare against 0.595 tonnes per hectare on communal farms (CSO, 1998a).

Figure 6.9



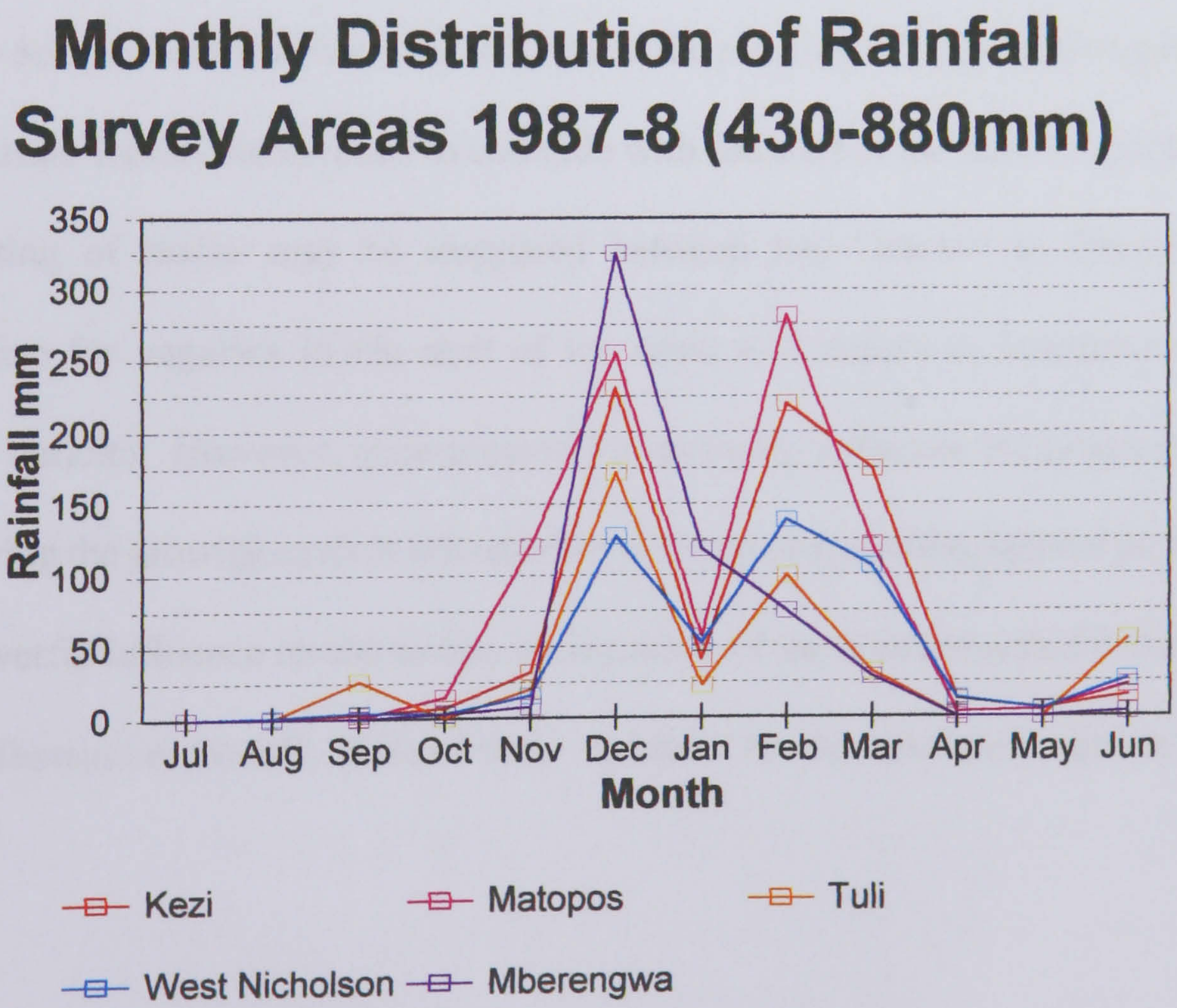
The 1986/7 season was another year of below average rainfall but its distribution differed from that observed in 1981/82 (figure 6.10). The first rains fell in November but at extremely low levels at all five meteorological stations. The rains were not as erratic as those recorded during 1981/2 but persisted at low levels for the remainder of the season. The rains petered out in March depriving crops during the critical finishing period. Maize yields plummeted to 2.98 tonnes per hectare on commercial farms and to 0.55 tonnes per hectare in the Communal Areas (CSO, 1998a).

Figure 6.10



The final example of rainfall distribution is provided for the 1987/8 season and is presented in figure 6.11. This is a useful example since in this season the first rains arrived late in December. The agricultural system is sufficiently flexible to accommodate a small delay in the start of the rains and crops would have been planted after the first fall of rain. In January, the rains subsided but rose again in February with healthy falls recorded over the remainder of the growing season. During this year the commercial sector achieved yields of 3.946 tonnes per hectare and 1.4 tonnes per hectare on communal farms.

Figure 6.11



6.6 Resilience under Compound Exogenous Shocks

The preceding analysis and associated figures have endeavoured to emphasise the capricious nature of rainfall in the survey areas. The conclusions drawn regarding rainfall patterns are simple but have strong implications for the success of agricultural production in these areas. Rainfall is erratic over time, within seasons and between proximate regions. The agricultural systems that have evolved to cope with this climatic variability have attempted to build in a degree of flexibility at the start of the growing season. For example, during the survey period a discussion with a farmer concentrated on the issue of the best time to commence planting. The response was that this would normally occur in November with the start of the rainy season. When asked what the situation would be in years when the rains were late the reply was that planting would be delayed until the first rains fall. Thus, the planting of crops is not regimented to a particular month but is timed to coincide with the start of the rains. Additionally, the planting of maize may be staggered between late October to December to compensate for vagaries in the start of the rains as a means of insurance against moisture deficits. However, once planted the ability to influence the progress of the crops during the growing cycle is restricted to weeding and guarding against pests. The most powerful influence on the quality and quantity of the crop harvested is the timing and distribution of rainfall. Both of these variables remain resolutely outside human control.

Confronted by this variability strategies have been fashioned to cope with the incidence of frequent drought. From chapter four it should be recalled that agricultural systems were characterised by shifting cultivation and the dominant strategy was to store food

in years of surplus to supplement household consumption during periods of crop failure. When drought occurred for more than two successive years strategies would increase in scale geographically as commodities and livestock were traded in areas of surplus grain. Essentially, households exploited inter-regional differences in rainfall patterns to secure their food requirements. Such a strategy proved to be durable as long as land was abundant and households were free to trade between regions. Consequently, the value of these strategies in supporting household food security was limited after the commencement of the land reforms of the colonial period.

The 1980s and 1990s were decades during which trends in rainfall became much more adverse. Six consecutive years of below average rainfall were recorded at Kezi in the 1981/82-1986/87 growing seasons and in a total 8 years during the decade levels of rainfall were experienced below the long run average. This bunching of drought years had the effect of severely impairing the ability of households to source food through domestic production. A major consequence of the prolonged drought was to decimate the communal livestock herd in the semi-arid areas and to reduce acutely the level of arable production. One of the functions of livestock is to act as a hedge against the risk of drought. In years during which the crops failed and household incomes were insufficient to purchase the additional food required then livestock could be sold to augment food supplies. The devastation of the communal herd which was observed through the 1980s severely weakened household resilience by reducing the options to obtain insurance against drought through the ownership of livestock.

The maintenance of household food security had been assisted during the 1980s by the

existence of food subsidies. This practice was carried over from the colonial period and subsidies paid by the government were available on all categories of refined maize. While the subsidisation of maize had both negative and positive effects on rural households, the overall effect is likely to have been positive since it permitted deficit households to purchase maize at prices below the market outcome. Essentially, the effects of drought on the retail price could be either entirely or partially offset by the amount of the subsidy. Consequently, although the total amount of maize produced nationally fluctuated dramatically during the 1980s the retail price of maize remained remarkably stable. Figures 6.12 and 6.13 illustrate clearly the rainfall-induced fluctuations in maize production and yields of the commercial and communal sectors over the period 1980-97. However, the combination of minimum wage legislation and subsidies on maize served to offset, at least partially, the adverse effects of climatic variability by permitting households to maintain some entitlements to food.

Events during the 1990s on the other hand, were to have greater consequences for the resilience of rural households. The launch of ESAP coincided with the worst drought in nearly fifty years. The subsequent widespread crop failures resulted in an increased dependence by the rural populations on market purchases of food supplemented by erratic allocations of food aid (Sachikonye, 1992; Maphosa, 1994)). The removal of subsidies on refined maize as an integral part of the reform process exacerbated the situation further. The price of maize meal became free to fluctuate and was no longer protected from the effects of variable harvests or domestic inflation. In money terms, the retail price of maize rose regularly and substantially (table 6.5). As the extent of food insecurity increased public riots broke out in the major urban areas in response to

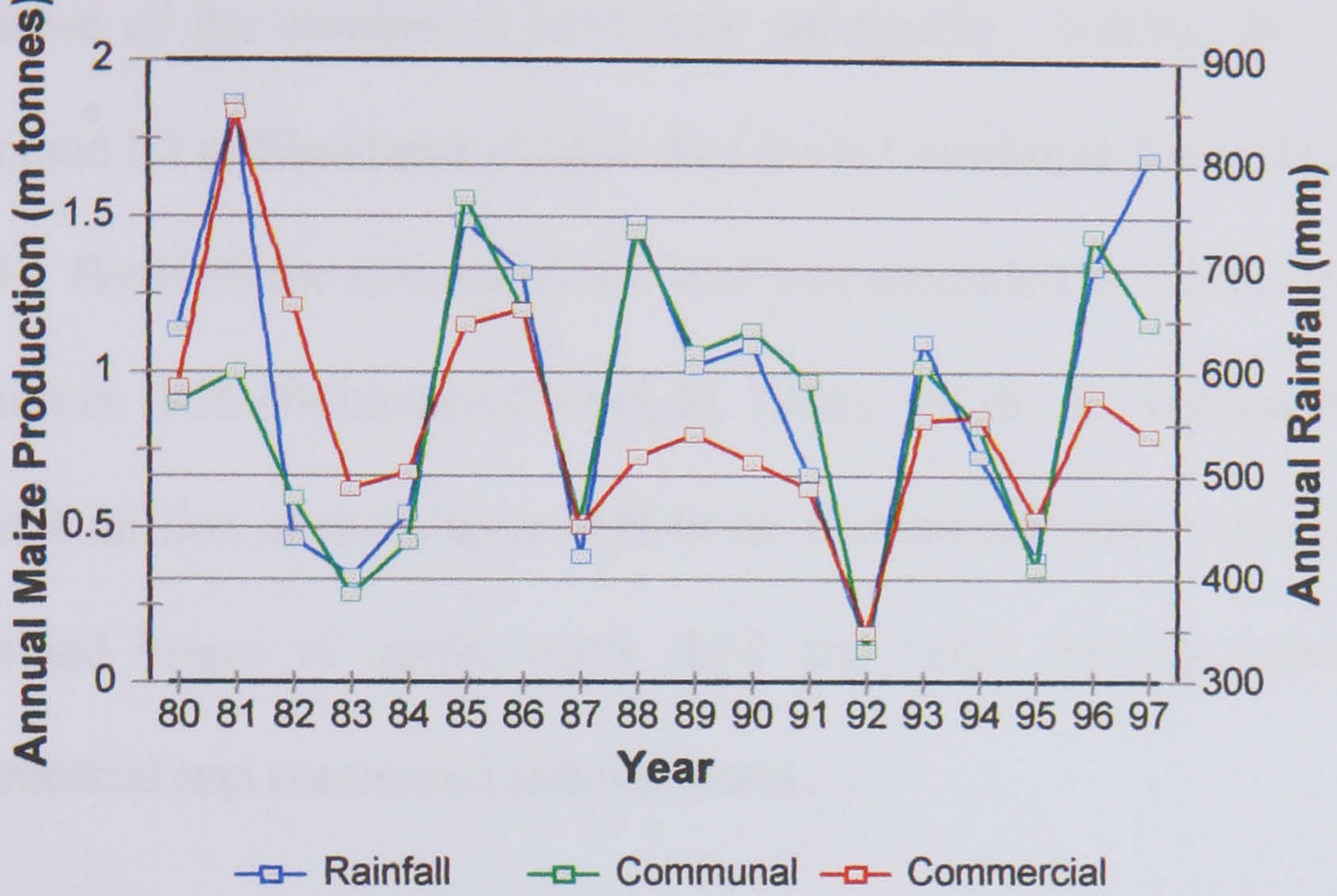
the increases in the price of maize. The government was forced subsequently to reverse the decisions of the private sector and a system of quasi-price regulation was re-introduced for basic food commodities (see figures in bold in table 6.5). After 1992, households were no longer able to rely on the key variables of employment, wages and the price of food remaining stable.

Table 6.5
The Retail Price of Maize
Zimbabwe 1994-97

Date	Retail Price of 10kg Bag of Maize Meal
October 1994	16.89
January 1995	18.07
May 1995	20.60
July 1995	26.78
December 1995	32.94
June 1996	**26.19**
February 1997	28.81
June 1997	**26.65**
October 1997	36.24
December 1997	44.94
19 January 1998	54.38
20 January 1998	**44.94**
3 June 1998	53.03
29 June 1998	**44.94**

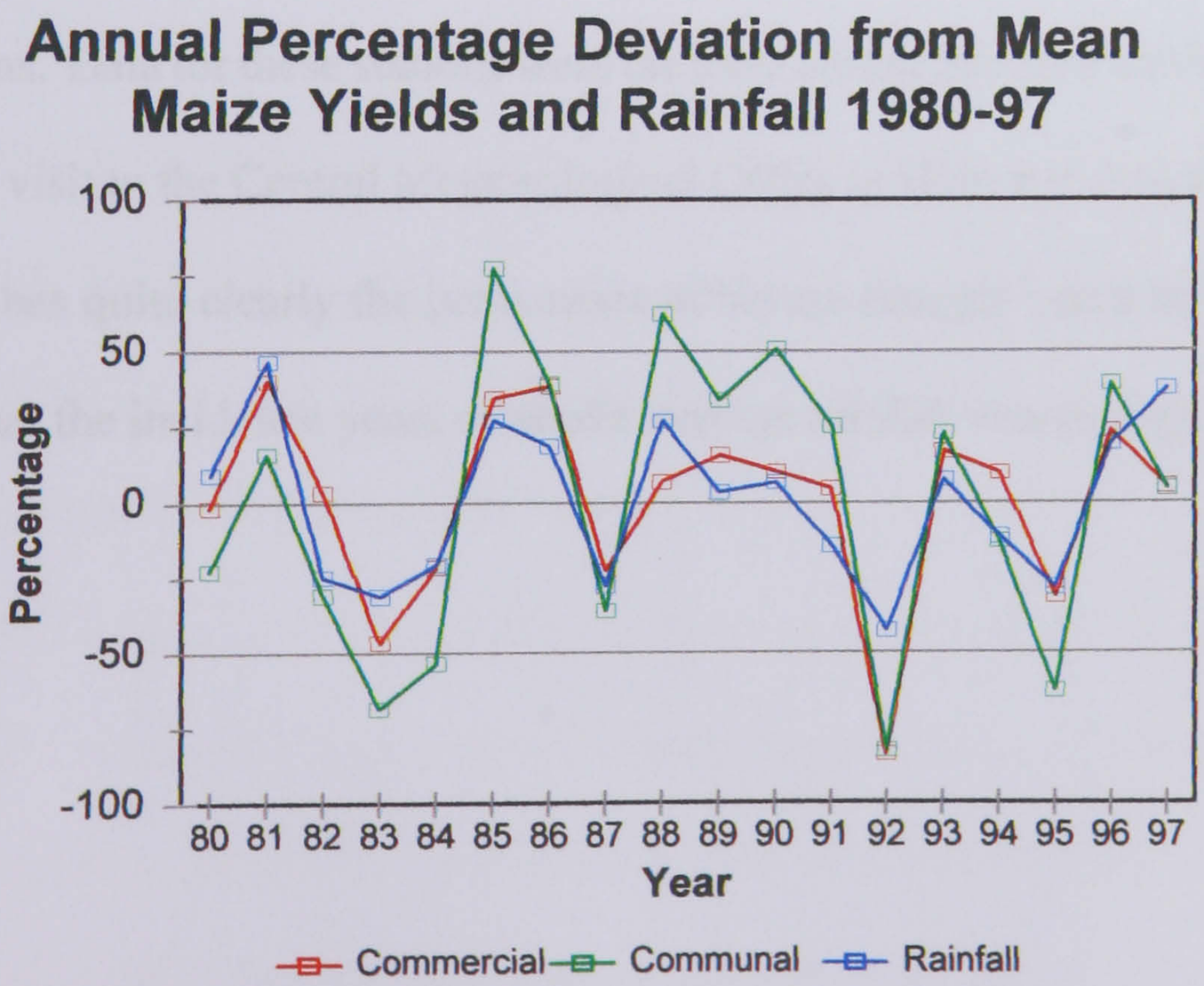
Source: National Foods, Bulawayo (1998)

Figure 6.12



Source: CSO 1998a

Figure 6.13

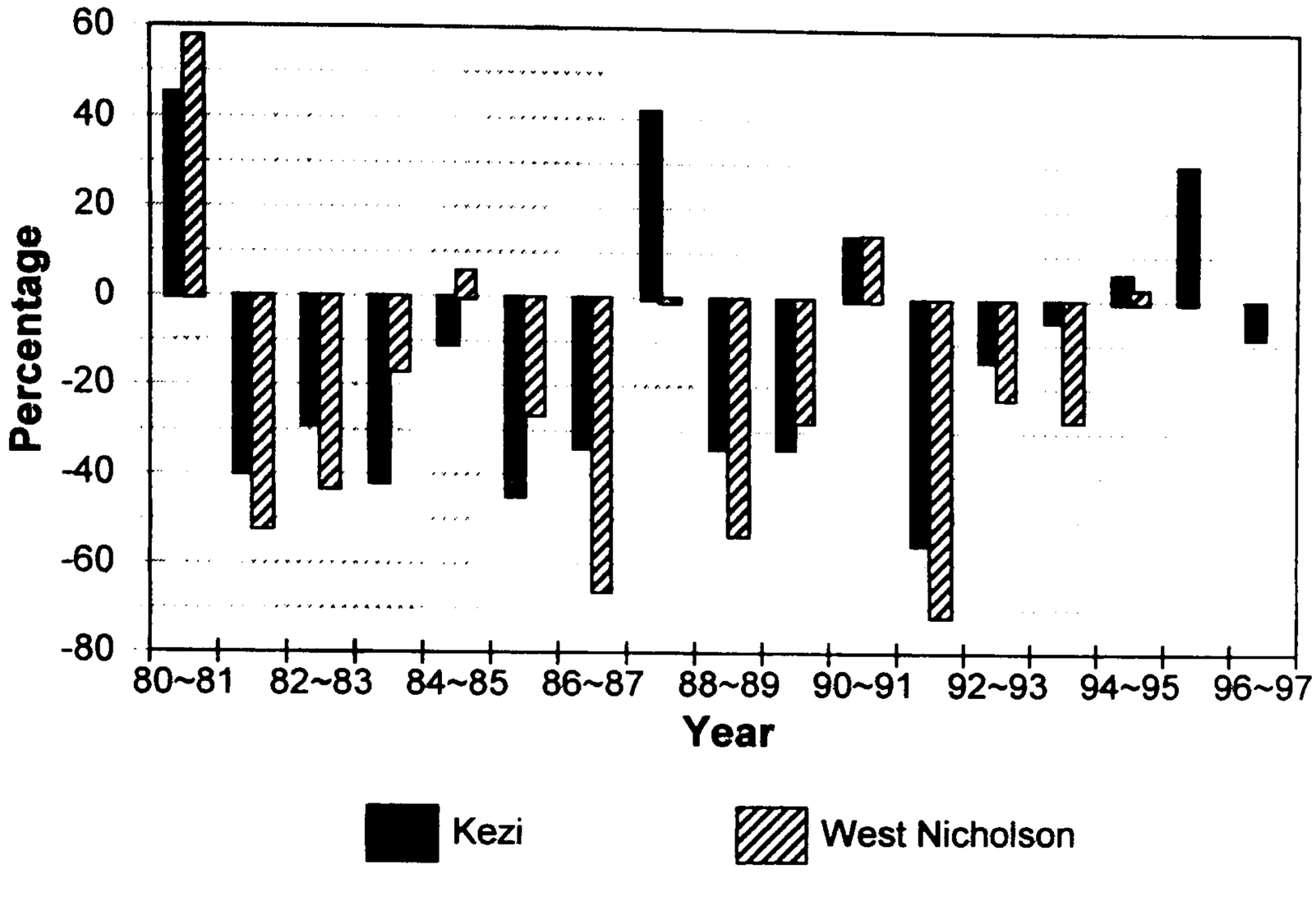


Source: Adapted from CSO 1998a

The effects of the drought in 1992 were devastating and in both survey areas the recorded rainfall was about 30 per cent of the long-run average. Crops failed and in Matabeleland South, and to a lesser extent in the Midlands, the losses incurred in what remained of the communal herd were substantial. During the 1991/2 drought an estimated 1.1 million head of cattle died in the Communal Areas (Bulawayo Chronicle, 1993). By 1996 the national cattle herd was estimated at 5.5 million compared to 6.5 million in 1976 (Bulawayo Chronicle, 1996). Of the 5.5 million in the national herd about 4 million of these were held in the Communal herd. As a consequence of the sustained losses of cattle, stock theft and cattle rustling increased in both the commercial and communal farming areas.

The sequencing of the distribution of drought years during the 1980s and 1990s is best appreciated from figure 6.14. This shows the annual percentage deviations of rainfall from the long-run mean recorded at the Kezi and West Nicholson meteorological stations. Data for these stations were the most comprehensive for this period at the time of the visit to the Central Meteorological Office in Harare in August 1998. The figure describes quite clearly the persistence of severe drought years throughout this period and that the incidence years of above average rainfall was negligible.

Figure 6.14



One serious consequence of these compound circumstances is that transitory food insecurity has become a more regular occurrence. Successive years of what were at best poor harvests and at worst of total crop failures, have constrained severely the sourcing of household food requirements through domestic production. The situation has been compounded by developments in the formal economy where employment opportunities have decreased, real wages have declined and the nominal price of maize meal has increased with regularity. Traditional coping strategies of accumulating buffer stocks and seeking paid employment off-farm have become largely redundant. Households have been forced either to endure the effects of chronic insecurity or to seek alternative

entitlements to food. Given the limited range of alternative opportunities for livelihoods in the rural areas, for many households the only option available has been to internalise the effects of drought which have become manifest as widespread hunger. In effect, the traditional portfolio of strategies that strengthened resilience had become depleted and households had little choice other than to conserve what assets that remained in anticipation of improvements in the economic or natural climates.

6.7 Conclusion

The patterns of rainfall in Zimbabwe both over time and within seasons have profound consequences for the urban and rural economies. This chapter has endeavoured to analyse these trends in some detail and to identify some of the implications for household coping strategies. In agricultural-based economies like Zimbabwe the importance of the inter- and intra-seasonal distributions of rainfall for livelihoods is often neglected. In this study of household resilience a more thorough treatment was considered essential. Agriculture remains the cornerstone of the economy both nationally and regionally. The timing and seasonal distribution of rainfall is a key variable in agricultural production. More importantly, as an input it is free but its supply is erratic. The effects of variable rainfall on these economies can be severe and were emphasised visually in many of the figures presented in this chapter.

Long-term trends in rainfall have implications for the type of coping strategies that emerge. The less frequent the occurrence of drought and the greater the spatial flexibility of agricultural systems then the more significant the role that buffer stocks

may play in determining household food security. The ability of households to recover after a period of drought was to a large extent influenced by the amount and distribution of rainfall in the subsequent season. In other words, the long-term variability of rainfall between seasons is an integral component of household resilience where food is sourced predominantly through production-based entitlements. Where drought becomes more frequent and agricultural systems more constrained then rural households will need to consider alternative strategies for securing food. Equally, differences in rainfall patterns between proximate areas may lead to emergence of strategies differentiated according to local comparative advantage. This will be the case particularly where intra-seasonal differences in the timing and distribution of rainfall exist. Resilience will be strengthened in those households more able to pursue a diverse set of strategies.

Where shocks affect a number of key variables simultaneously then the maintenance of a position of food security will be challenged in most households. The survey areas experienced increased variability in rainfall pattens during the 1980s and 1990s as successive droughts became more frequent. Under such adverse compound conditions food-deficit households will be required to obtain food from alternative sources.

The purchase of maize in the market place is a practice that has been encouraged in Zimbabwe since the colonial period through the agricultural success of the commercial farming sector and a cheap food policy pursued by successive governments. The ability of this strategy to meet food requirements depended on households having some cash income, most logically derived from paid employment and the willingness of governments to underwrite general food subsidies. Both of these strands of food policy

were affected by economic reforms as part of ESAP. The effect on the price of maize of the transition of the grain market to commercial conditions was immediate with retail prices rising dramatically. The more gradual process of exposing domestic industries to external competition delayed the effect on domestic levels of employment. Nevertheless, retrenchments of labour became a more regular occurrence after 1994.

The consequences of increased climatic variability and economic reforms have been to undermine access to food secured through both own-labour and production-based entitlements. The strategic links that households had forged to maintain food security have become partially or totally severed. As a consequence, the reliance on domestic sources of food would tend to increase in many rural households unless alternative strategies could be developed. More resilient households would be able to draw from their existing range of strategies or attempt to develop new ones. In those households with fewer options the consequences of drought and economic adversity would be more critical. Shortages of food would become more frequent and in the extreme, less resilient households may be nudged towards chronic food insecurity. The ways in which households are attempting to maintain some degree of food security under these circumstances is the subject of the empirical work presented in the remaining chapters.

Chapter Seven

The Characteristics of Households and the Institutional Framework

7.1 Introduction

The schematic treatment presented in chapter two places the farm household at the centre of the analysis of resilience through its dual role as a unit of production and consumption. With regard to the efforts of the individual members of the household it is also the most convenient aggregate for the analysis of collective activity and decision-making. Although the causes of food insecurity tend to be analysed at the macro or sectoral levels, its effects become manifest at the level of the household. Therefore, the starting point in this study of resilience and household food security is a descriptive analysis of the socio-economic characteristics of the households in the Semukwe and Mberengwa Communal Areas. Basic demographic data will be analysed separately for each survey area and pooled to provide an overview across both areas. This evidence is compared and contrasted with secondary data obtained from official census data prepared by the Central Statistical Office, Zimbabwe. In particular, the educational status of the heads and individual members of households is considered in this chapter. This is explored in some detail since the quality of human capital will have a significant impact on resilience, specifically the extent to which households are able to adapt strategies and respond to opportunities off-farm.

The household is also located within a community through which inter-household links are established and mediated. The function and strength of these links will vary

according to the degree of heterogeneity observed between households. The role of inter-household links is likely to be more significant where households perceive the achievement of their goals to be linked with those of the community. In this respect, the demographic characteristics of the household and that of the community will be an important determinant of the ability to recover after a food shock. Equally relevant are those links to the institutional infrastructure in the Communal Areas that may be activated in times of food crisis. The current situation regarding the links between rural communities and local, regional and central government are examined in the light of reforms in the post-independence era. The implications of these reforms for the nature of household resilience are considered in the context of those strategies that are emerging.

7.2 Definition of the Household and Household Head

The problems associated with defining the household is a recurrent theme in the literature concerning socio-economic surveys in developing countries (Casley and Lury, 1987; Devereux and Hoddinott, 1992). The decisive factors in selecting the household as the unit of enumeration have already been alluded to. In developing countries it is the dominant form through which production and consumption activities are organised. In this way it is bound together by social ties and economic forces. In the context of this investigation into resilience and survival, the household as a single and cohesive unit is the most practical form of organisation. However, although the value of the household as the unit of enumeration is widely accepted, a universal definition of the household is more elusive. The most useful definitions of the household will be

location-specific and will be tempered by local cultural, social and economic norms. At the most fundamental level, definitions of the household incorporate the notion of a group of people who live and eat together. This may be extended to include the sharing of a common source of income. The problem then becomes one of selecting tangible features that will define those ephemeral qualities that constitute communal living.

In both of the survey areas of this research, the household or residential unit was located typically within a fenced compound. Compounds were residentially distinct units and thus were easily identifiable. Within the compound members of the household lived in one or more individual huts. The household could include the members of the immediate and extended family, and to a lesser extent other people unrelated by kin such as household help. On the whole, the members of an individual household were associated with the same set of resources which included arable land, livestock and agricultural capital equipment. These were used on a communal basis within the household to satisfy the main collective needs of nutrition, education and health. Consequently, the compound and the household contained therein constituted an efficient unit for the investigation into domestic relationships and welfare of the family group. From this perspective, the following definition of the household was selected:

> a group of people normally living together within the same compound, sharing their dependence on a common holding as a source of income and food and eating from a common pot.

This definition embraces three salient features of the farm household in the semi-arid

Communal Areas of Zimbabwe, namely:

1. a common source of the major part of income;
2. sleeping within one compound;
3. a common source of food.

Applying this definition to the households selected for enumeration in the survey areas proved convenient and there were no exceptions which required the definition to be adapted to specific circumstances. However, a further decision had to made as to whether to enumerate the *de facto* or the *de jure* population. Given that the primary concern of this research was to investigate the nature of household resilience then the *de jure* population was selected. The interpretation of what constituted the *de jure* population was liberal since the objective was to investigate the broader character of resilience. For these purposes, information was required concerning the links that extended beyond the household and the local community. Of particular interest were those links forged through migration and marriage which connected the household with the formal cash economy and urban areas. The most important links were explored in greater detail for their potential to derive remittances for the household in the form of cash, food or goods and services.

The collection of data at the household level binds the researcher and those being researched in a social relationship. How this relationship develops, even over the short period of time during which the interview was conducted, will determine the type and quality of the data collected. Special attention was required on the part of the researcher

to minimise the extent to which information was withheld or distorted. In this case, the information requested regarding coping strategies was of a potentially sensitive nature and it was therefore crucial that the process of enumeration was initiated by covering familiar ground. After the necessary introductions and explanation of the purpose of the survey the starting point was to catalogue all members that were either resident now or were *normally* associated with the household. The latter aspect did complicate matters on occasions and clarification was sometimes required. This usually involved identifying those members who were absent currently but were related to the household through direct kinship ties.

Thus, the enumeration began by identifying members of the household and collecting their basic demographic data. The process was at times lengthy, especially where there were a large number of individuals associated with the household. However, the procedure was productive since it enabled individuals to be identified by name and location. Consequently, later in the survey and on more familiar terms the importance of their association with the household could be established. It also served the additional purpose at the outset of relaxing the participants in the interview through a discussion of the extended family. Moreover, it provided valuable preparation for the more sensitive issues of production, consumption and coping strategies included towards the end of the survey.

The final decision was to determine the person who would be classed as the household head. The protocol favoured was to accept the individual stated to be head by the members of the household. In most instances this was a simple matter and indeed the

majority of interviews were conducted with the *de jure* head of household. Usually, this was the most senior but not necessarily the oldest male. In some cases this was a female where the male head of household had died or moved away permanently. In other cases, the eldest son or daughter was accepted as the head in those households where the parents, who had originally established the household, were infirm. In common with much of sub-Saharan Africa, the distinguishing attributes of the household head in the rural areas of Zimbabwe were that he or she functioned as the primary decision-making authority.

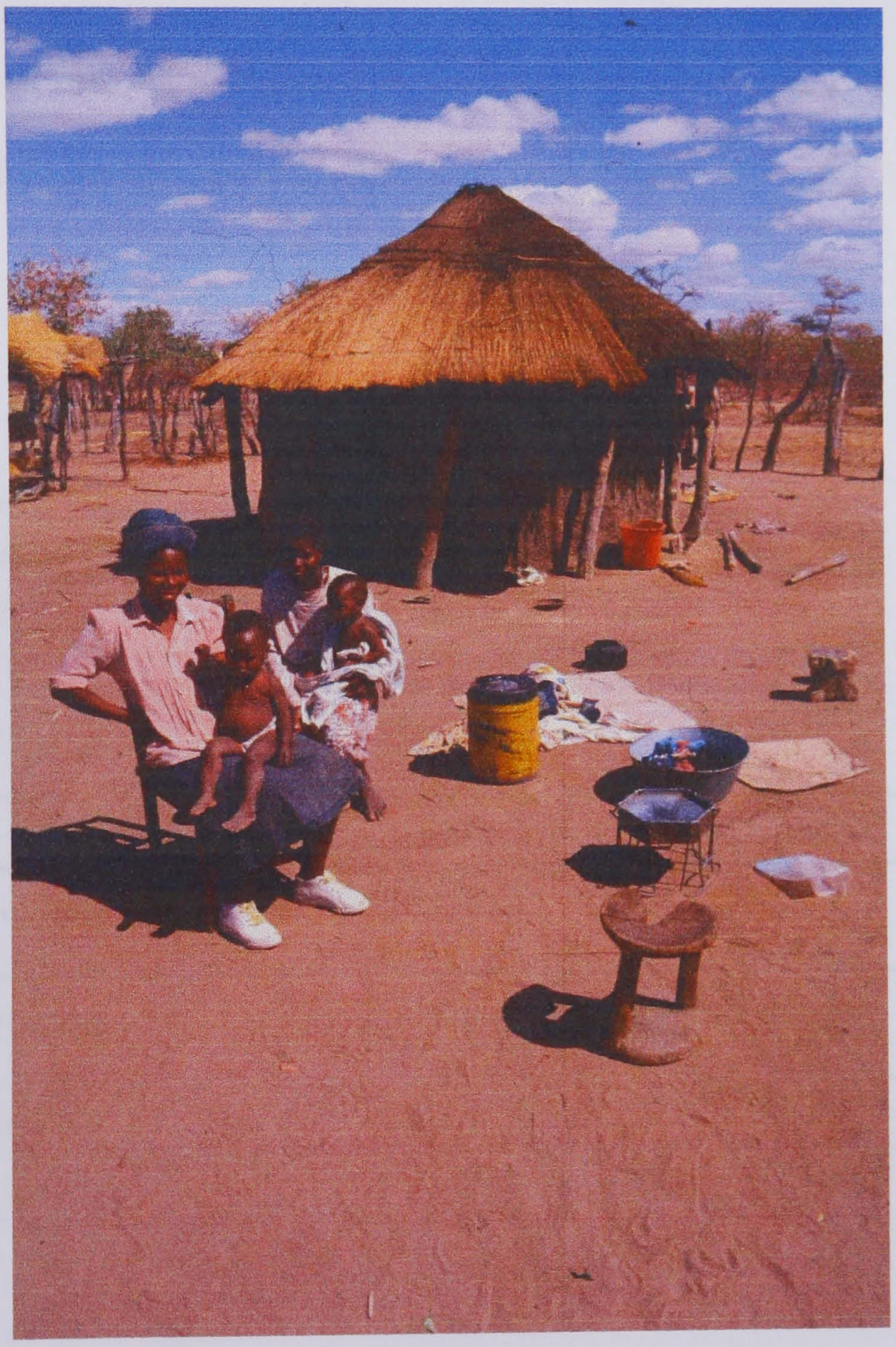
More complicated were instances where the *de jure* male head was resident away from the household and his wife was responsible for the on-going management of the farm. This required further sensitive questioning to establish the extent of the responsibilities of the absent male in the daily organisation of the production and consumption activities. Where these responsibilities were limited to irregular visits to the household or occasional remittances then the senior female was enumerated as the *de facto* head. This distinction is important in determining the gender division of labour, particularly with regard to the nature of strategic decision-making at the household level. For example, a female household head may be forced to work longer hours than a male head of household where he is co-resident with his wife, particularly when the domestic responsibilities are considered. In these circumstances, there may be implications for the quality and quantity of 'Z' goods produced within the household, especially those relating directly to household welfare such as child care and nutrition.

7.3 The Age, Gender and Education Profiles of the Heads of Household

The objective of the following sub-sections is to provide a general impression of the size and composition of the average household on-farm enumerated in the survey areas. The links with members of the household that live and work off-farm is explored in chapter nine. Although the demographic characteristics on-farm are variable across households there is some merit in obtaining some estimate of the average household for purposes of comparison. The age and gender composition of households will provide an indication of the human resources available for agricultural production on-farm. The domestic production of food and livestock will be a key strategy in the resilience of agricultural households. A summary of the gender and age profiles and the average size of households for Semukwe, Mberengwa and the pooled data sets is presented in table 7.1.

The most notable features are that the average age for household heads in all data sets is about 50 years although female household heads were slightly younger on average . The standard deviations for all age averages are about 25 per cent of the mean indicating that the mean is a reasonable estimate of central tendency. There is a significant difference in the proportion of household heads that were female with a larger proportion returned for Mberengwa (52 per cent) than in Semukwe (36 per cent). In both survey areas more females were classified as being the *de facto* than the *de jure* head of household (plate 7.1). In most instances this was a consequence of the husband working away from the household but maintaining only limited contact. This was usually because of work obligations or a distant location of employment which restricted the number of visits to the household each year.

Plate 7.1
Female Headed Household - Semukwe Communal Area 1998



The average size of household stratified by the gender of household head and by survey area is in the region of 6 persons. The standard deviations for the average size of household constitute about 50 per cent of the mean reflecting some degree of variability in the number of persons resident in each household. The mean size of household derived from official census data is 5 persons (CSO, 1992b). This census was conducted nationally and thus benefits from a much larger sample size. However, the census also includes urban households which tend in general to have smaller families and may explain some of the disparity in the average size of household.

Table 7.1
Average Age of Head of Household and Household Size
Semukwe and Mberengwa Communal Areas 1998
Standard deviations given in parentheses

Head of Household	**Semukwe (n=50)**	**Mberengwa (n=50)**	**Pooled (n=100)**
Male - average age (years)	56.9 (12.6)	49.3 (14.3)	53.6 (13.7)
% male HH	64	48	56
Average size of HH (persons)	6.3 (1.8)	7.2 (3.8)	6.7 (2.9)
Female - average age (years)	47.4 (12.1)	49.3 (14.0)	48.5 (13.1)
% female *de jure* HH	14	24	19
% female *de facto* HH	22	28	25
% female HH	36	52	44
Average size of HH (persons)	6.3 (3.0)	6.3 (2.6)	6.3 (2.8)
All HH - average age (years)	53.7 (12.9)	49.3 (14.0)	51.4 (13.6)
Average size of HH (persons)	6.3 (2.3)	6.7 (3.2)	6.5 (2.8)

Household heads are responsible for the management of the farm and for key decision-making regarding production. Their ability to receive, interpret and process information from a range of sources that affect production will be determined by a number of factors. The most amenable indicator selected for the purposes of this survey is the level of education attained by household heads. Summaries of the education levels of heads of household in both survey areas and collectively are presented in tables 7.2 and 7.3.

Table 7.2 presents the distribution for the maximum level of education achieved according to the gender of the household head. The results are fairly consistent in percentage terms when stratified by gender and by survey area. This result is more clearly appreciated in the histograms contained in figures 7.1, 7.2 and 7.3 which illustrate the level of education attained by heads of household. More revealing is the cumulative distribution contained in table 7.3. This suggests that around 80 per cent of household heads whether stratified by gender or by survey area have either no formal education at all or have only completed some basic education at primary school level. The widespread existence of low levels of education amongst heads of households has important implications for the quality of strategy formulation and decision-making generally and during periods of food crises in particular.

Table 7.2

Percent Distribution for the Level of Education Attained by Heads of Household Semukwe and Mberengwa Communal Areas 1998

Total numbers given in parentheses

	Number of Years and Level of Education Completed					
	0 No Education	**1-4 Lower Primary**	**5-7 Upper Primary**	**8-9 Lower Secondary**	**10-11 Upper Secondary**	**Post School Diploma**
Semukwe						
Male HH n=32	9.4 (3)	21.9 (7)	46.9 (15)	9.4 (3)	6.3 (2)	6.3 (2)
Female HH n=18	5.6 (1)	22.2 (4)	50.0 (9)	11.1 (2)	5.6 (1)	5.6 (1)
Total HH n=50	8.0 (4)	22.0 (11)	48.0 (24)	10.0 (5)	6.0 (3)	6.0 (3)
Mberengwa						
Male HH n=24	12.5 (3)	29.2 (7)	41.7 (10)	12.5 (3)	4.2 (1)	0.0 (0)
Female HH n=26	23.1 (6)	38.5 (10)	23.1 (6)	3.8 (1)	7.7 (2)	3.8 (1)
Total HH n=50	18.0 (9)	34.0 (17)	32.0 (16)	8.0 (4)	6.0 (3)	2.0 (1)
Pooled						
Male HH n=56	10.7 (6)	25.0 (14)	44.6 (25)	12.5 (7)	3.6 (2)	3.6 (2)
Female HH n=44	15.9 (7)	34.1 (15)	34.1 (15)	6.8 (3)	4.5 (2)	4.5 (2)
Total HH n=100	13.0 (13)	29.0 (29)	40.0 (40)	10.0 (10)	4.0 (4)	4.0 (4)

Rates of literacy in Zimbabwe are high relative to other developing countries and in 1992 were estimated to be in the region of 86 per cent for males and 75 per cent for females. However, when literacy is stratified by age then rates decline quite rapidly

across the age profile (table 7.4). The younger population exhibits much higher rates of literacy in contrast to the lower rates of their parents and grandparents. This is most likely a consequence of the egalitarian policies pursued in national education during the 1980s in Zimbabwe. Again, this has serious implications for the nature of the household response to food shocks and for any strategies that may be formulated as a consequence. In particular, lower levels of education may hinder the ability to adapt enterprises on-farm and equally, may contribute in limiting the extent to which opportunities off-farm may be exploited. Collectively, the development of an enterprise culture is unlikely to be encouraged where the completion of only rudimentary education is widespread.

Figure 7.1

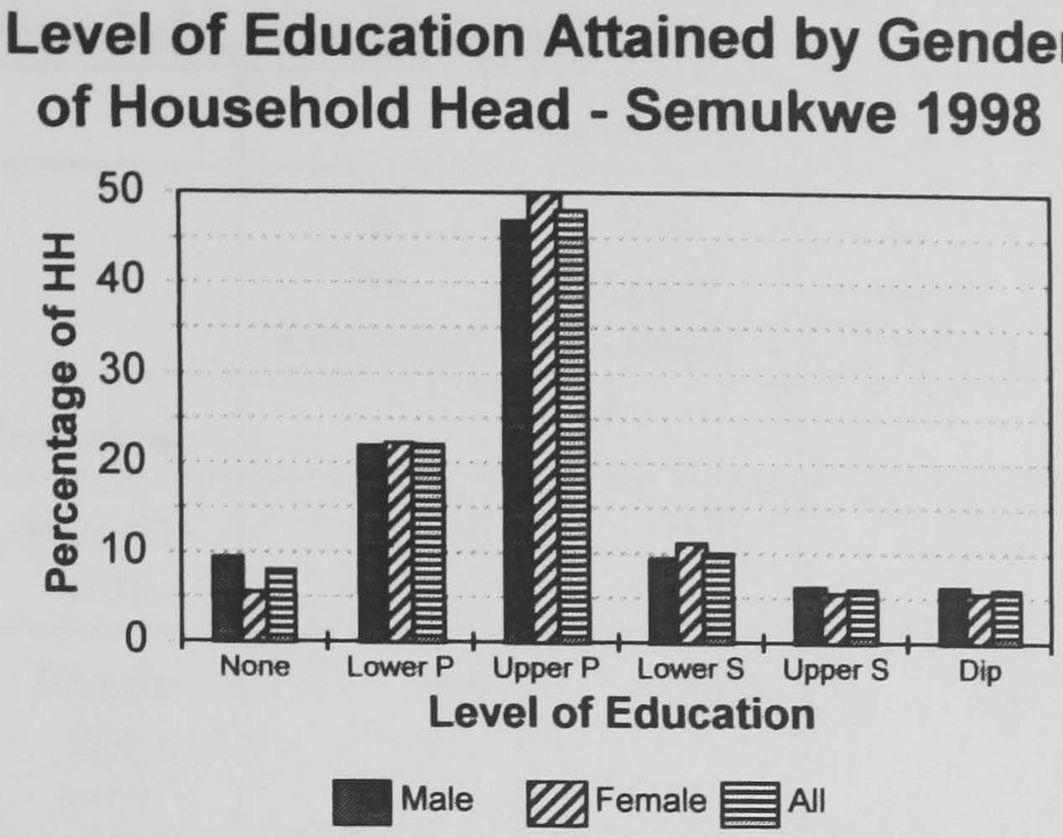


Figure 7.2

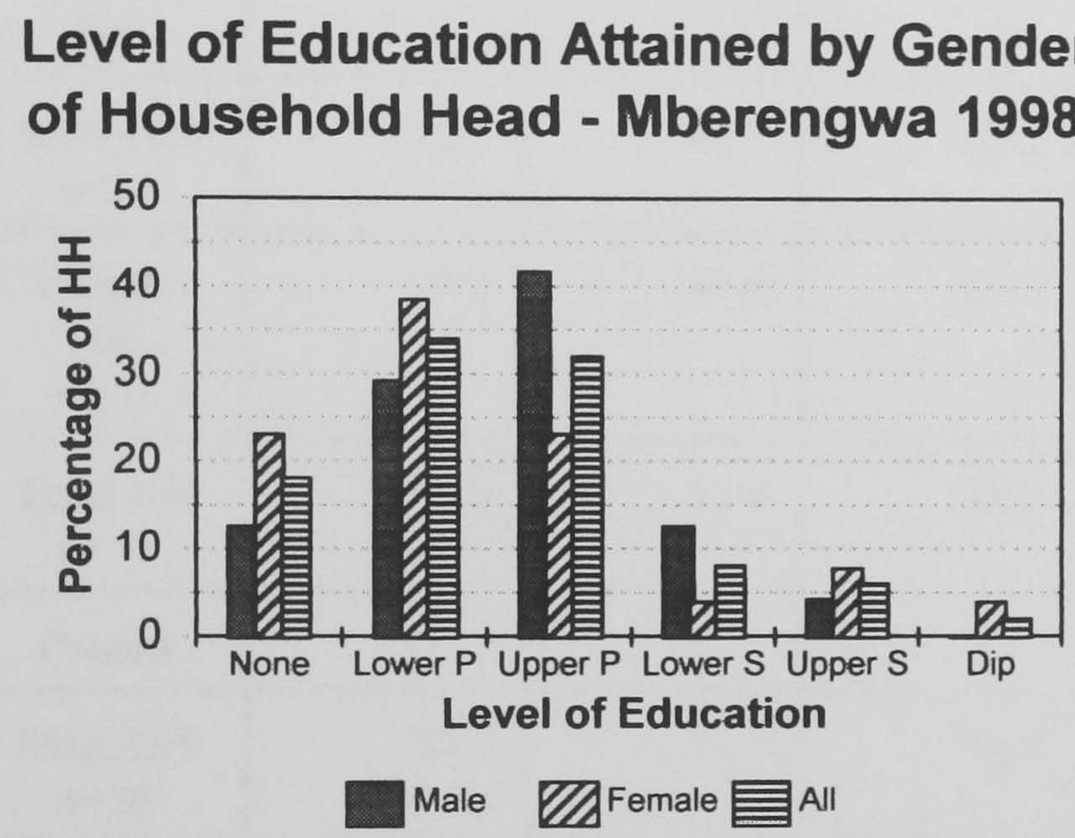


Figure 7.3

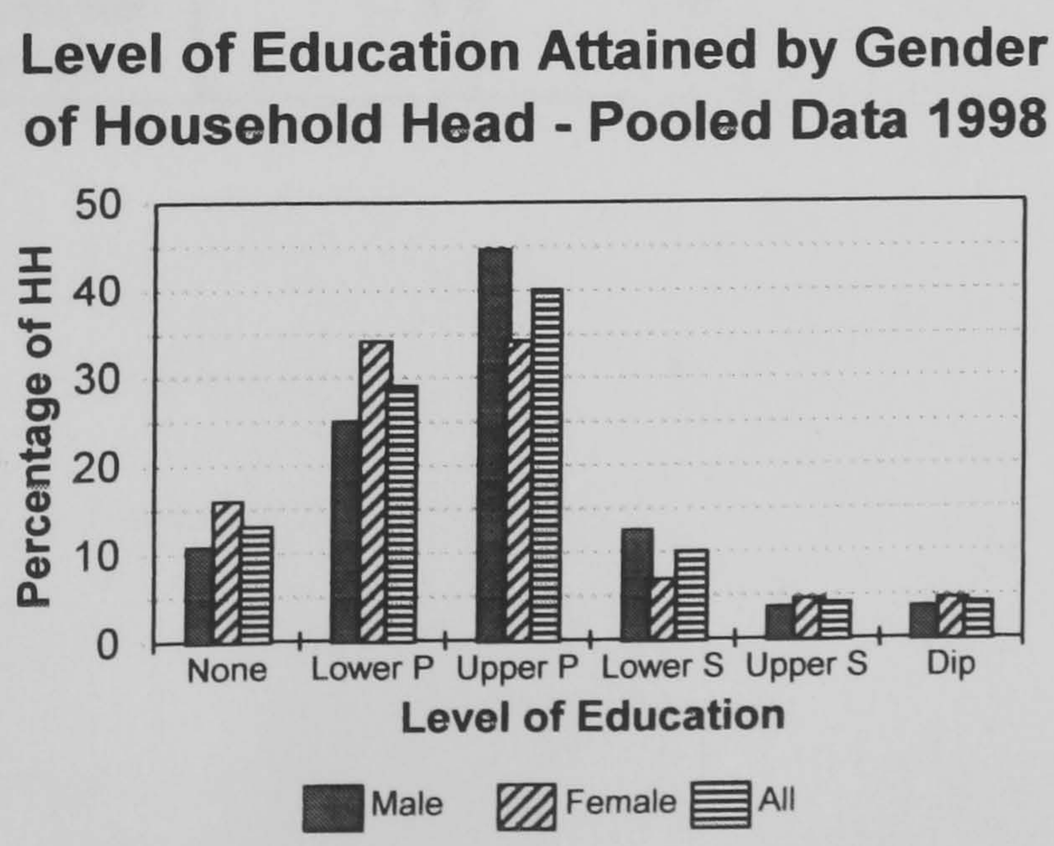


Table 7.3

Cumulative Percent Distribution for the Level of Education Attained by Heads of Household, Semukwe and Mberengwa Communal Areas 1998

	Number of Years and Level of Education Completed					
	0 No Education	1-4 Lower Primary	5-7 Upper Primary	8-9 Lower Secondary	10-11 Upper Secondary	Post School Diploma
Semukwe						
Male HH n=32	9.4	31.3	78.1	87.5	93.8	100.0
Female HH n=18	5.6	27.8	77.8	88.9	94.4	100.0
Total HH n=50	8.0	30.0	78.0	88.0	94.0	100.0
Mberengwa						
Male HH n=24	12.5	41.7	83.3	95.8	100.0	100.0
Female HH n=26	23.1	61.5	84.6	88.5	96.2	100.0
Total HH n=50	18.0	52.0	84.0	92.0	98.0	100.0
Pooled						
Male HH n=56	10.7	35.7	80.4	92.9	96.4	100.0
Female HH n=44	15.9	50.0	84.1	90.9	95.5	100.0
Total HH n=100	13.0	42.0	82.0	92.0	96.0	100.0

Table 7.4
Literacy Rates by Age and Gender in Zimbabwe 1992

Age	Male	Female	Total
15-19	96.2	95.4	95.8
20-24	97.0	93.1	94.9
25-29	94.7	82.2	88.1
30-34	89.6	73.6	81.0
35-39	87.3	70.1	78.6
40-44	82.5	65.7	73.7
45-49	79.1	60.1	69.7
50-54	71.3	47.4	58.7
55-59	67.1	45.3	56.7
60-64	56.3	35.6	46.6
65+	41.0	23.3	31.7
Total	**86.1**	**75.1**	**80.4**

Source: CSO (1992b)

7.4 The Age and Gender Profiles of the Farm Household

The process of collecting information on the members of the household who were normally resident on-farm proved to be more complex and time consuming. The main task was to elicit who actually lived on-farm, their relationship to the head of household and their basic demographic data including age and education. There was an observed tendency not to distinguish between the children and grandchildren of the household since they were often categorised simply as children of the extended family. The distinction is important since there is an established creche function of households in the Communal Areas. The welfare of grandchildren of the household is frequently the responsibility of the grandparents where the parents of the children have left the household to seek work elsewhere. The purpose of this arrangement is usually

economic since in general it is less expensive to maintain children in the Communal Areas. School fees are lower in rural areas and the financial demands placed on the household in the wider maintenance of children is less than in urban areas. Moreover, children contribute extensively within the farm household by sharing the daily work load such as collecting water and fuelwood, cleaning and the tending of livestock so reducing the burden on more elderly members of the household.

Co-residence or even close proximity is not a necessary condition for the maintenance of networks of mutual obligation and support between kin. Most households had members that resided away from the household but with whom long-term economic ties were established. The role of intrafamily connections and resource flows is especially significant where the welfare of children is concerned. Thus, the main reason for determining the exact relationship of children to the household head was to identify possible sources of remittances to the household in the form of maintenance. The assumption was that remittances of this nature could contribute to household food security, particularly during critical periods. Therefore, the survey aimed to establish the extent of remittances for child care in terms of their reliability and variability. The role of this type of remittance is discussed in greater detail in chapter 9.

For present purposes, the interest lies in identifying the typical demographic composition and structure of farm households. The household age and gender profile for the two survey areas are presented in table 7.5 and figures 7.4, 7.5 and 7.6. The age ranges selected have been adapted from the convention adopted in official census data in Zimbabwe so facilitating direct comparisons. More importantly, they correspond to

key stages in human social and economic development. The first age range between 0-14 years approximates to the period when children will normally be undertaking formal education. The ranges of 15-39 and 40-64 years parallel the early and later periods when members of the household are normally economically active. Finally, the last range is intended to indicate those members of the household who would normally be retired or at least, their economic contribution to the household reduced substantially.

The age distributions exhibit a steep pyramidal structure normally associated with populations in developing countries. The populations in both survey areas are typically youthful with about half the population comprising children age 14 years or under. The decrease in the percentages of those household members in older age groups is quite marked after 15 years. Around 45 per cent of the population may be considered in the economically active categories between 15-64 years in both groups surveyed. The dependency ratios for both samples are in the region of 1.2. The implication is that more than one person is dependent on each active member of the household. This measure needs to be treated with caution since children are economically significant in farm households in the Communal Areas. Equally, not all persons included in the economically active category are necessarily productive.

Table 7.5
Household Age and Gender Profiles -Semukwe and Mberengwa Communal Areas 1998

	Male		Female		Sex Ratio Males/100 Females
	Number	%	Number	%	
Semukwe					
0-14	77	24.6	75	24.0	102.7
15-39	38	12.1	44	14.1	86.4
40-64	22	7.0	33	10.5	66.7
65+	11	3.5	13	4.2	84.6
Dependency* Ratio	1.28				
Mberengwa					
0-14	80	23.8	85	25.3	94.1
15-39	50	14.9	62	18.5	80.6
40-64	13	3.9	30	8.9	43.3
65+	7	2.1	9	2.7	77.8
Dependency* Ratio	1.17				
Pooled					
0-14	157	24.2	160	24.7	98.1
15-39	88	13.6	106	16.3	83.0
40-64	35	5.4	63	9.7	55.6
65+	18	2.8	22	3.4	81.8
Dependency* Ratio	1.22				

* The dependency ratio is defined here as the ratio of the economically dependent population (under 14 years but over 65 years) to the economically active population (over 14 years but under 65 years).

The sex ratios in both samples exhibit interesting trends over the age ranges considered. The ratio of males to females declines progressively up to the age of 65 years when it suddenly increases again. This is symptomatic of the custom of male migration

established during the colonial period. The relative abundance of opportunities for paid employment in urban areas provided an important means of livelihood for the male population. Often males would locate themselves near to the place of employment forming a semi-permanent home. The male would return to the farm household infrequently as his employment permitted but would be expected to send regular remittances of cash. Links with the farm household had both economic and social functions since this was where he expected to return during the period of employment, for example on leave or through sickness, but ultimately as the destination for his retirement years. Thus, the increase in the sex ratio after 65 years of age would be accounted for largely by males retiring to the Communal Areas.

The sex ratio for the 40-64 age range in Mberengwa is about 43 males per 100 females which contrasts to that of 67 males per 100 females observed in Semukwe. This divergence is difficult to account for but may be explained partially by the more favourable location of Mberengwa relative to urban areas and heavy industry than the far more remote situation of Semukwe. To some extent, the lower sex ratio of Mberengwa may resolve why the proportion of female headed households is greater in this area than in Semukwe.

Figure 7.4

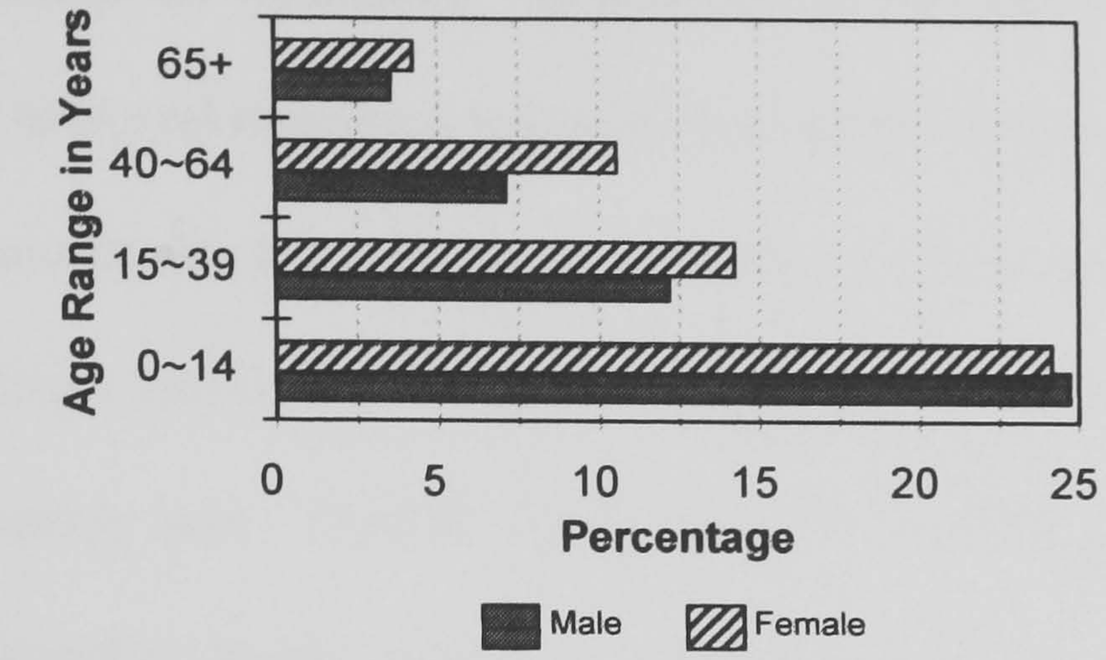


Figure 7.5

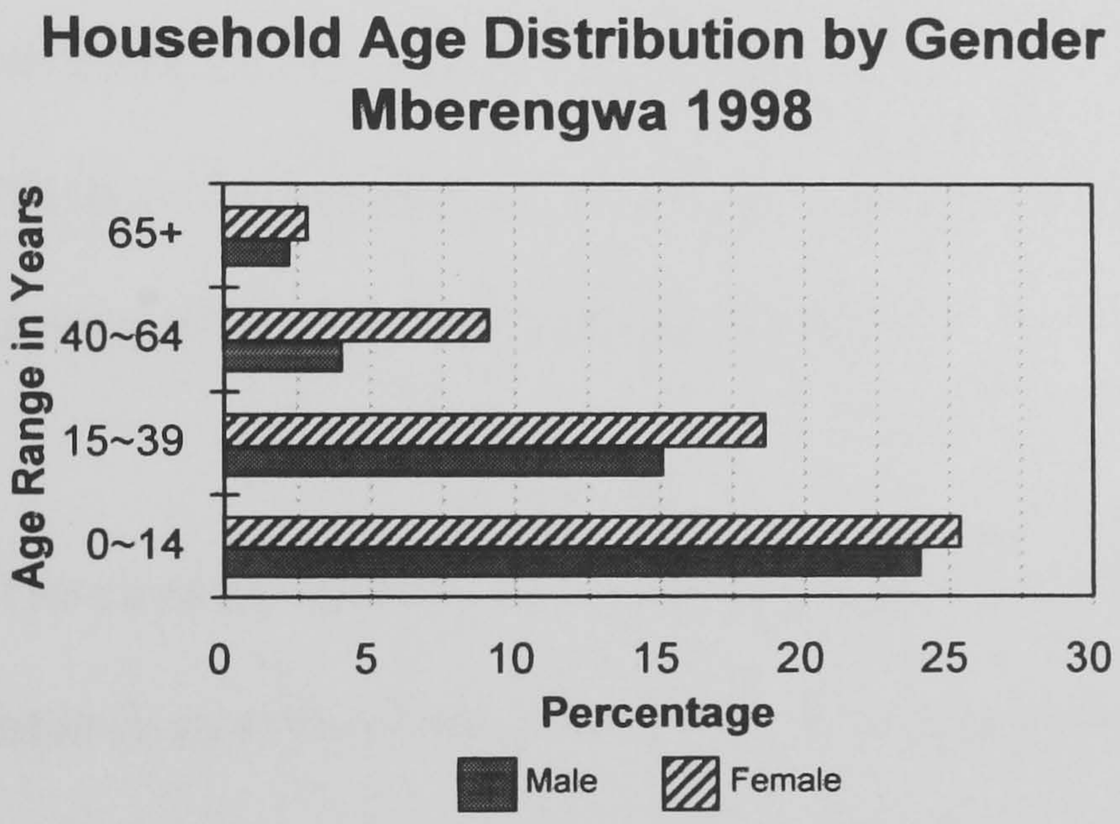
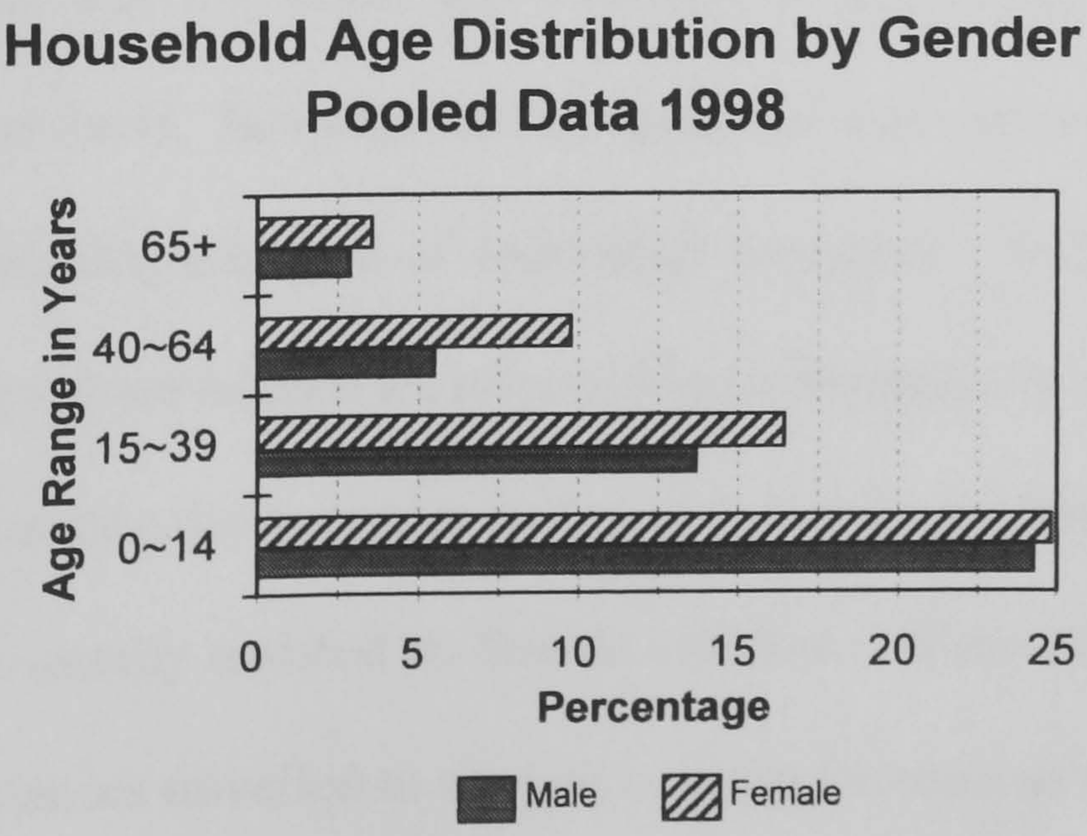


Figure 7.6



7.5 Social Reproduction and the Familial Structure of Households

Some considerable effort was expended to ascertain the nature of kinship relationships within the household. In addition to the reasons outlined earlier, identification of kinship relationships within the household permits an understanding of the nature of the household unit. Where households are comprised predominantly of members of the direct family then it may be reasonable to assume that the household operates as a family unit. This has implications for the direction and motivation of the household response during periods of food crisis. The greater the degree of homogeneity in kinship relationships then it is likely that households would be able to rely with greater certainty on the efforts of individual members. The efforts of individuals are more likely to be directed at the realisation of goals such as food security the greater the extent of kinship within the household.

The existence of altruism within households is an important behavioural assumption in unitary models of the household. It is reasonable to assume that the members of a household are bound together by social and economic ties of mutual interest. That such ties were common, if not the norm, was established through the extensive discussions held with the heads and members of households in the process of conducting the interviews. However, not all resources were necessarily pooled and shared equally, in particular the time of individual members. In both survey areas and throughout Zimbabwe women are responsible for the majority of work within the household. They undertake the important daily tasks of cooking, cleaning and the collection of water and are usually assisted by female children. Water is collected on a daily basis and the distances travelled to sources of water increase as the dry season progresses. Typical

sources are holes dug in dry river beds and to a lesser extent boreholes.

Women and children have the additional responsibility for the more arduous task of gathering wood for fuel several times each week. As a consequence of increasing population pressures and the subsequent degradation of the natural environment in the Communal Areas the distances over which wood is gathered are increasing. Alternatives such as paraffin are not available outside of urban areas mainly because of the cash requirement to purchase the fuel. The collection of fuelwood involves only household time and is thus perceived as a free good. Women are assisted in these tasks by children who also attend to the livestock.

Plate 7.2
Collection of Water - Semukwe Communal Area 1998



A summary of the daily activities according to age and gender are provided in tables 7.6 and 7.7. It should be stressed that the tables provide only an indication of the broad types of activity since there is some degree of flexibility as to when specific tasks are undertaken. For example, during the dry season a certain amount of slack in household time is available for activities such as visiting town, the production of petty commodities such as mats and sewing by adult females and searching for off-farm work by adult males. What is clear from the tables is that more pressure is exerted on the time available for females and children than for males. During the period for arable production from August to March females have tasks to perform in the fields in addition to their normal domestic responsibilities. Equally, attendance at school may be erratic at this time where the labour of children is required for weeding, guarding and harvesting. The contribution of males is limited in domestic activities and tends to be restricted on-farm to those tasks which require physical strength such as ploughing and the maintenance of agricultural facilities.

What constitutes the average farm household in terms of kinship relationships is perhaps not best appreciated through simple averaging. It has been established that the average household consists of about 6 persons but it is far harder to make general statements concerning their relationships to each other. The notion of the nuclear family has limited application in African societies. A traditional strength of African societies has been the links forged through the extended family. Individual responsibilities operate beyond the immediate family and it is common for assistance to be sought from and offered by more fortunate members of the extended family. This practice remains very strong in rural areas of Zimbabwe.

For these reasons it was decided not to disaggregate the data sets on kinship but rather to analyse the sample population as a whole. Histograms of the distribution of kinship relationships to the head of household are presented in figures 7.7 and 7.8. The distributions for Semukwe and Mberengwa are strikingly similar with the largest columns in the figures representing the sons and daughters of the head of household. The percentage of all households with grandchildren resident is also significant in both samples. The presence of the category of husband of the household head appears only in figure 7.8 for Mberengwa since in two of the households surveyed the husbands were sick and infirm. The members of the household classified as others constituted about 6 per cent of both samples and included the more extended members of the family such as cousins and in-laws.

The picture of the household that emerges would tend to suggest a fairly homogenous unit comprising direct family members over three generations. The presence of a substantial percentage of grandchildren is representative of the creche function of households alluded to earlier. The presence of the father or mother of the household head resident on-farm is less significant in these samples. One possible explanation is the existence of higher mortality rates amongst this group or that the parents continue to maintain a separate household. The care of the aged in addition to the young is another vital function of households in the absence of provision by the State. Mothers were more common than fathers again due to differences in the relative mortality rates between males and females.

Table 7.6
Indicative Timetable of Daily Activities by Gender - Dry Season

Time	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6→
Adult Female	Rise and wash	Prepare Break-fast	Domestic chores. Harvesting, drying and storing of crops Apr - Jun			Prepare food.		Lunch	Time for petty production e.g. sewing, making mats. Drying and storing crops Apr- Jun.			Collect water & wood.	Prepare food	
Adult Male		Break-fast	Clear out manure from livestock pens or dig anthills. Off-farm work.						On-farm tasks e.g. fencing. Off-farm work.					Dinner
Child Female		Prepare Break-fast	School									Collect water & wood.	Prepare food	
Child Male		Release livestock	School									Collect wood.	Pen livestock	Dinner

Table 7.7
Indicative Timetable of Daily Activities by Gender - Wet Season

Time	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6→
Adult Female	Rise and wash	Prepare Break-fast	Preparing and sowing fields Aug - Nov. Cultivating and guarding fields Nov - Mar			Prepare food.		Lunch	Rest			Collect water & wood.	Prepare food	
Adult Male		Break-fast	Ploughing Aug - Oct.					Lunch	Rest					Dinner
Child Female		Prepare Break-fast	School. Help in fields with sowing, weeding, guarding and harvesting during peak periods.									Collect water & wood.	Prepare food	
Child Male		Release livestock	School. Help in fields with sowing, weeding, guarding and harvesting during peak periods.									Collect wood.	Pen livestock	Dinner

Figure 7.7

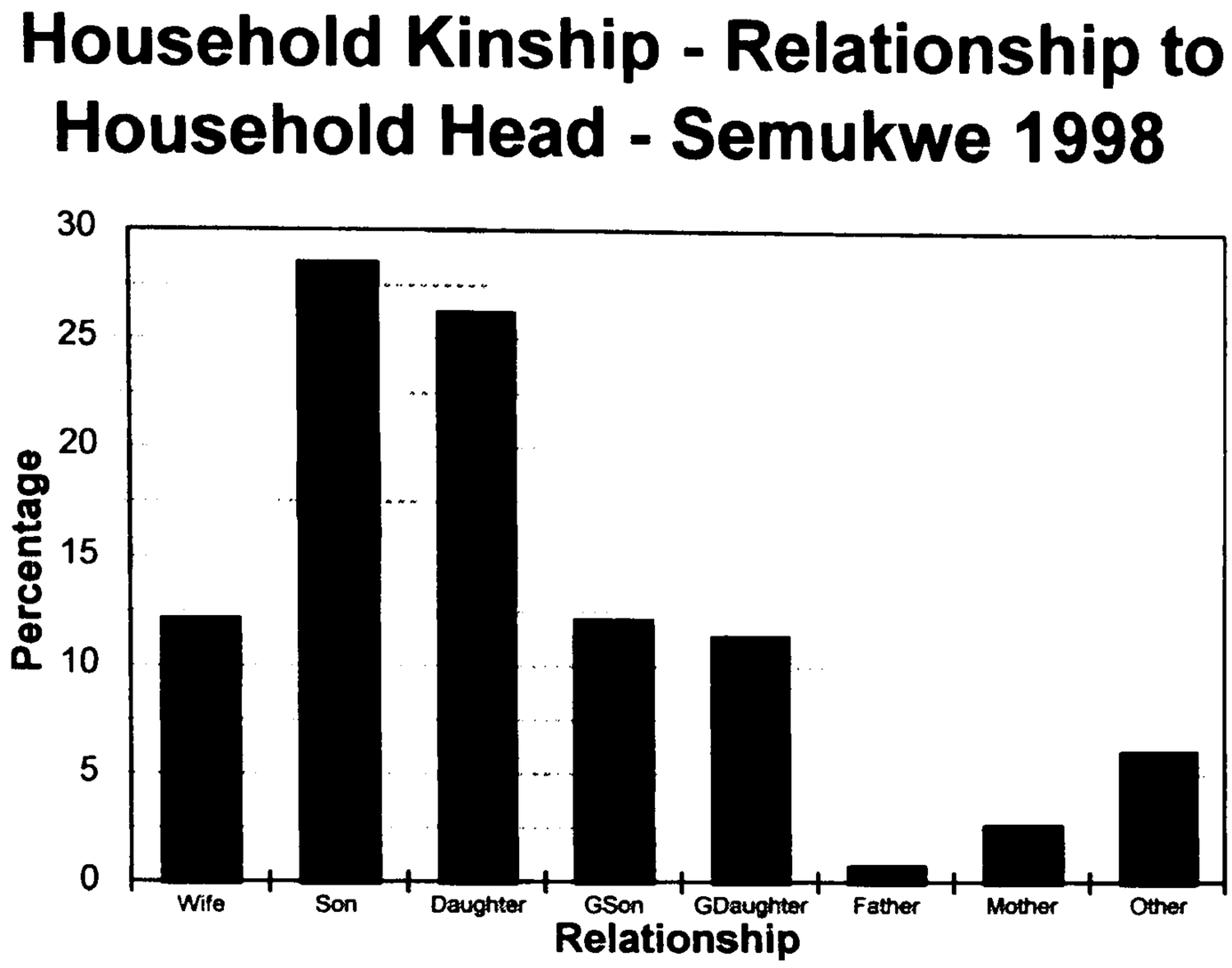
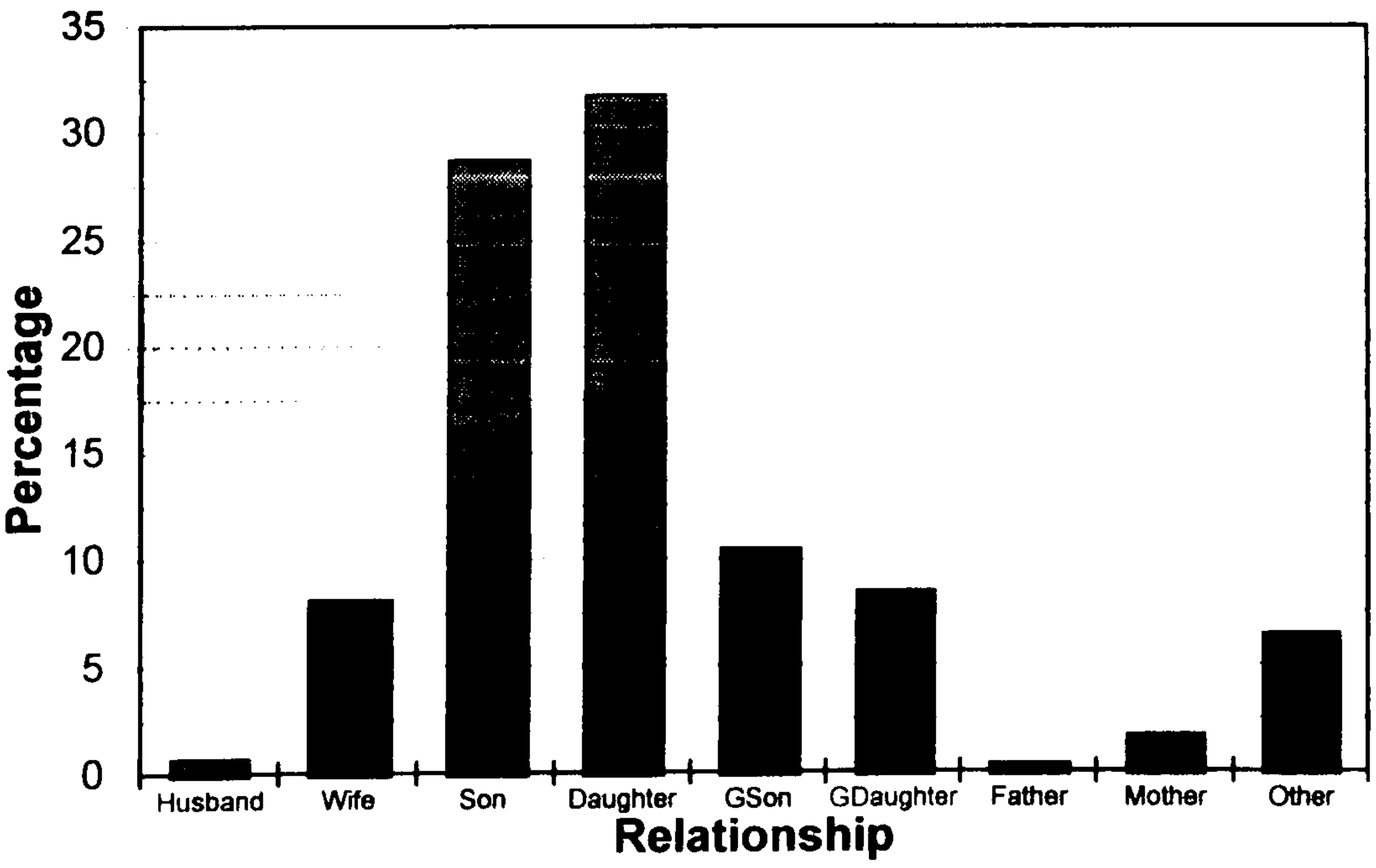


Figure 7.8



7.6 The Education Profile of Farm Households

Education is a revered commodity in Zimbabwe. Investment in children through education represents an important means by which households are able to secure access to a range of benefits and services that are either not provided by the State or are not affordable from private providers. These include the potential for remittances when the child becomes employed, care and housing when the parents become old or sick and an income in their old age that approximates to a pension. In households that are asset-poor, educated and healthy children represent the most important form of social investment and a hedge against the risks associated with increasing age.

The close proximity of primary and secondary schools in even the most remote of areas is a consequence of the significant expansion in the provision of education during the first decade of independence. During this period, education was provided free or at a very low cost in the form of school fees. These are due at the beginning of each term in advance and entitle the pupil to attend classes, receive textbooks on loan and to partake in practical activities such as sports and crafts. School fees are differentiated according to the type of school and are set by the school in agreement with the Ministry of Education. The Ministry of Education uses three classifications for primary (P) and secondary (S) schools. The P1/S1 classifications correspond to the old European schools which have the best facilities and charge the highest fees. The P2/S2 schools are the African schools located in urban areas and P3/S3 schools are located in the rural areas. Traditionally, fees for P3/S3 school have been the lowest with attendance at rural primary schools being free of charge. In addition to the government school fee, schools are able to impose various levies to maintain facilities required for practical classes.

The charging of school fees on an uneconomic basis became unsustainable in Zimbabwe as the decline in the national economy continued to develop towards the end of the 1980s. The advent of ESAP in the early 1990s witnessed the introduction of a policy of cost-recovery through the introduction of user fees. This was a condition for receiving structural adjustment loans and aimed to curb spiralling government expenditures. The greatest social impacts of this policy were in the areas of health and education. In education, the government raised school fees (table 7.8) and continued to pay a capitation grant to schools but an additional responsibility was placed upon parents to meet an increased range of levies to cover different school facilities. Discussions with the Director of Education in Bulawayo and with head teachers in the Semukwe and Mberengwa Communal areas indicated that capitation grants were insufficient to meet the expenses for consumables such as card and chalk so that an increased burden had fallen on parents to meet the shortfalls. Head teachers in the survey areas confirmed that all additional levies were negotiated with parents but that the amount of additional expenses was substantial and did present a problem for many families. Aware of the problems already confronting rural households rises in fees for schools in these areas were delayed by the government for as long as possible. However, by 1996 it was no longer able to sustain cheap education in the rural areas and school fees in both secondary and primary rose after this time.

Table 7.8
Primary and Secondary School Fees - Zimbabwe 1992-97 (Z$)

	1992	1993	1995	1996	1997
Primary 1	70	80	85	100	190
Primary 2	20	25	28	35	50
Primary 3	Nil	Nil	Nil	Nil	10
Secondary 1	150	160	185	210	400
Secondary 2	70	80	95	105	150
Secondary 3	50	50	50	60	75

Source: Bulawayo Chronicle (1997).

The head teachers interviewed suggested that the attendance by some children had become erratic and at worst some had dropped out completely through an inability to pay school fees. Where parents were unable to pay the school fees and levies at the start of a term then the child was excluded from school until the fees were paid. The subsequent lack of continuity in education has clear implications for the quality of learning that can take place for an excluded child and for their rate of progress.

Of greater concern was the suggestion by head teachers that in instances where a family could no longer afford to support all of their children in education, then the decision as to which children to withdraw was often based on gender. Girls would be taken out of school first for their economic value in the household and their expected career path of marriage and domesticity for which education was not perceived as essential. More importantly, sourcing funds to meet the costs of school fees and equipment competes within the household budget for money to purchase maize and other food commodities. Thus, increasingly a trade-off has developed between household social expenditures on nutrition and education. Households have been forced to make decisions between

household objectives of nutrition in the short-term and longer-term investments in human capital. The implications for household resilience are negative whichever option is selected.

The poorest households are able to apply for support from the Ministry of Social Welfare which, subject to a successful application, will undertake to pay the school fees. As school fees began to increase after 1992 the offices of Social Welfare around the country was besieged with applications for support (Bulawayo Chronicle, 1997). A visit was made to the Social Welfare office in Kezi which is about forty miles from Semukwe. The task of managing the office was in the hands of three clerks who worked in what was essentially a small shed. They had responsibility for a highly dispersed population of about 120,000 people and currently had 12,000 welfare cases on their books. The type of assistance offered ranged from different welfare payments to the destitute, grain issues to the disabled and aged and grain loan for those with temporary shortfalls. However, the amount of assistance available from public funds and the time required to complete the formal procedures was sufficient to deter most households from applying.

Table 7.9 presents a distribution that describes the household education profile by gender for those members on-farm for Semukwe, Mberengwa and the pooled data sets. These distributions are illustrated in the histograms presented in figures 7.9, 7.10 and 7.11. The categories for the level of education completed are similar to those used for the household heads in table 7.2 other than the additional category of pre-school for those children not yet enrolled in education. There is a strong correspondence between

the percentages enrolled at each level of education in both survey areas. The percentage of females enrolled at the lower primary level is significantly lower than males in Semukwe and lower than both males and females in Mberengwa for the same level of education. The reason for this is unclear but may reflect a trend of delaying the age when females first start school in Semukwe. However, this hypothesis is contradicted by the significantly larger proportion of females enrolled at the upper primary level relative to males in Semukwe. The total percentage of males and females enrolled at primary school in Semukwe is similar (53.4% for males and 56.4% for females) which may suggest a faster progression through school by females. Zimbabwe has a policy of requiring children to repeat years at school where they fail to meet the expected academic standards in any particular year. From my personal experience of teaching in Zimbabwe, girls tend to be more diligent and conscientious than boys and usually progress more rapidly through the school.

Table 7.9
Percent Distribution for the Level of Education Attained by Gender Semukwe and Mberengwa Communal Areas 1998
Total numbers given in parentheses

	Number of Years and Level Completed						
	Pre-School	**No Education**	**1-4 Lower Primary**	**5-7 Upper Primary**	**8-9 Lower Sec.**	**10-11 Upper Sec.**	**Post-School Diploma**
Semukwe							
Male n=148	16.2 (24)	4.1 (6)	29.1 (43)	24.3 (36)	23.6 (35)	0.0 (0)	2.7 (4)
Female n=165	13.9 (23)	6.1 (10)	16.4 (27)	40.0 (66)	21.8 (36)	1.2 (2)	0.6 (1)
Total n=313	15.0 (47)	5.1 (16)	22.4 (70)	32.6 (102)	22.7 (71)	0.6 (2)	1.6 (5)
Mberengwa							
Male n=150	22.7 (34)	3.3 (5)	26.7 (40)	28.0 (42)	19.3 (29)	0.0 (0)	0.0 (0)
Female n=186	20.4 (38)	5.9 (11)	29.0 (54)	27.4 (51)	16.7 (31)	0.0 (0)	0.5 (1)
Total n=336	21.4 (72)	4.8 (16)	28.0 (94)	27.7 (93)	17.9 (60)	0.0 (0)	0.3 (1)
Pooled							
Male n=298	19.5 (58)	3.7 (11)	27.9 (83)	26.2 (78)	21.5 (64)	0.0 (0)	1.3 (4)
Female n=351	17.4 (61)	6.0 (21)	23.1 (81)	33.3 (117)	19.1 (67)	0.6 (2)	0.6 (2)
Total n=649	18.3 (119)	4.9 (32)	25.3 (164)	30.0 (195)	20.2 (131)	0.3 (2)	0.9 (6)

What is clear from table 7.9 is the decline in enrollments to virtually zero in both survey areas for both males and females at the upper secondary level of education. Education to GCE O Level extends over the first four years at secondary school. At the end of the second year of secondary education students sit for the Zimbabwe Junior Certificate of Education (ZJCE) which is a national examination recognised for employment purposes.

During the final two years of secondary education the curriculum is based on GCE O level and the examinations are validated in the United Kingdom. The fee structures for the two examinations are very different with those for ZJCE determined at local rates and those for GCE set in the United Kingdom. The progressive depreciation of the nominal exchange rate for the Zimbabwe dollar during the 1990s has meant that the fee in local currency for the external examinations is beyond the means of the rural households. Thus, in the majority of cases education is terminated at the end of the second year of secondary education regardless of the abilities of individual children.

When this trend is analysed at the national level the picture is more alarming. Table 7.10 contains data on the distribution of the Zimbabwean population by the level of education completed. The data have been chosen selectively to compare trends in the rural areas (in which the research sample populations are located) with the main urban areas. Semukwe is located in the province of Matabeleland South and Mberengwa is in the Midlands province. The table refers to data derived from the 1992 census which was before the main social impacts of ESAP had become manifest. The official census reveals a strong correspondence in the percentages of the population in all areas that had completed primary education. The policy of education for the masses pursued in the previous decade would account significantly for this strong correlation.

Figure 7.9

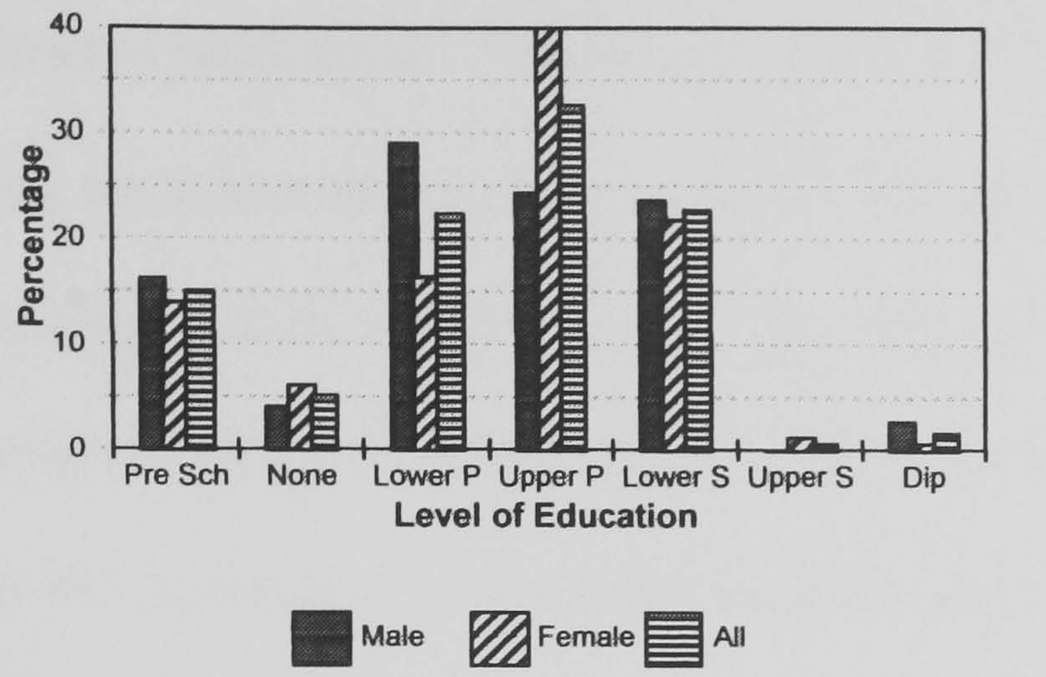


Figure 7.10

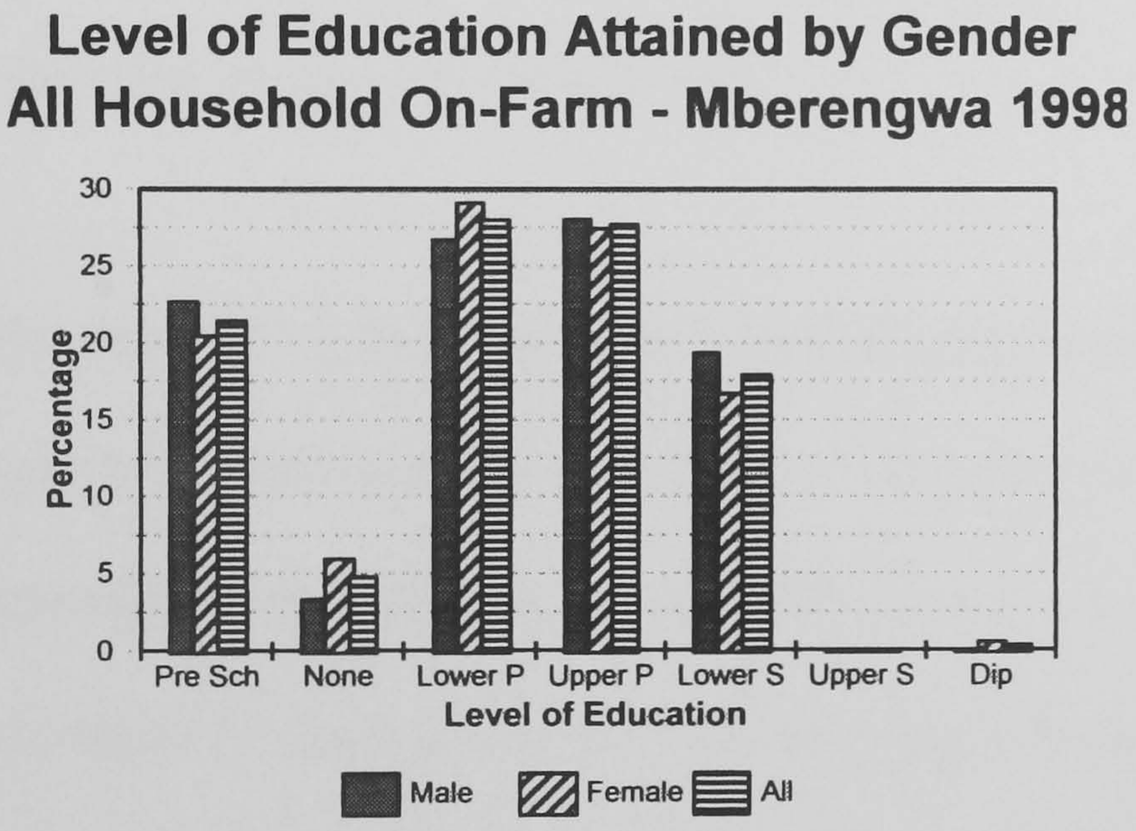
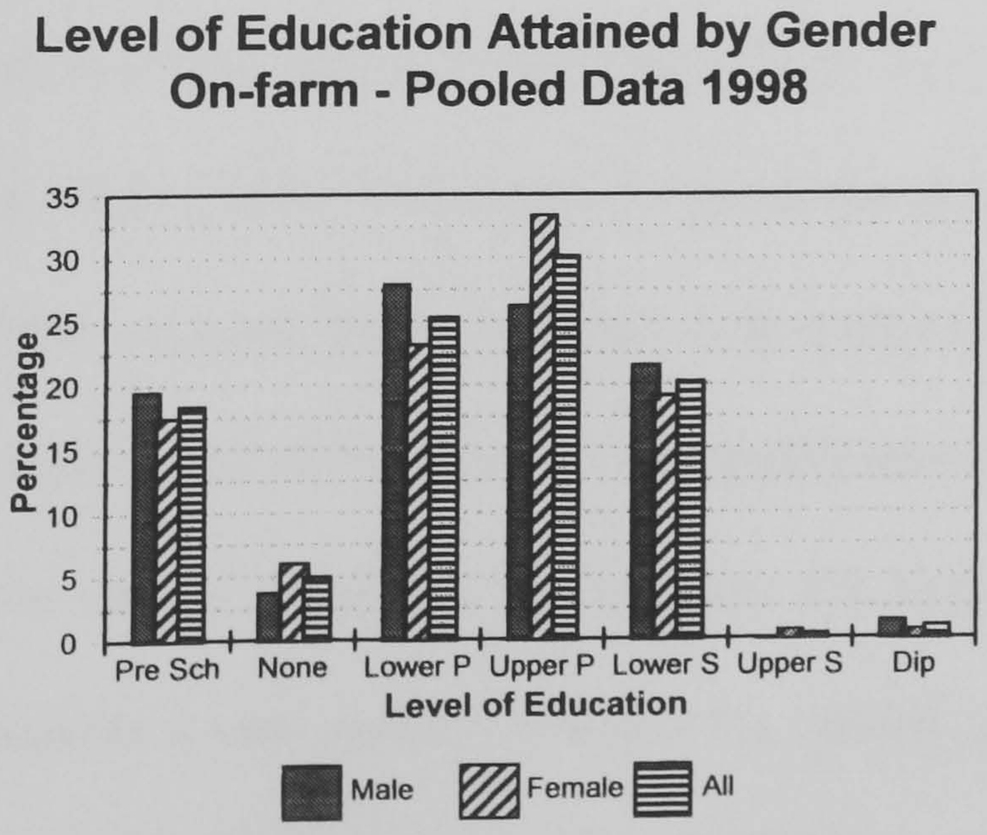


Figure 7.11



Those with no education constitute much higher proportions of the total populations in the rural provinces of Matabeleland South and the Midlands than in the urban areas of Bulawayo and Harare. The divergence in educational attainment between rural and urban areas becomes more pronounced at higher levels of education. Although the percentage levels of attainment in the Midlands province are close to the national averages at all levels of education, those for Matabeleland South are much lower. One possible explanation is that Matabeleland South is predominantly rural but the Midlands province does contain more urban and industrial settlements. Thus, the existence of opportunities for paid employment in the Midlands, and hence to fund investements in education, may have been greater.

The essential point is that lower levels of educational attainment relative to urban areas have been perpetuated in rural areas by the increased requirement to fund the externally determined examination fees at GCE O and A level. Evidence that this trend has increased in intensity since 1992 is suggested by the correspondence between the primary data for 1998 presented in table 7.9 and the secondary data in table 7.10. It is recognised that the data presented in the two tables have been collected at different levels and that only a rough comparison is possible. Nevertheless, the primary data contained in table 7.9 support the trend established in the national survey of 1992 that children in rural areas continue to be constrained in realising their full educational potential. The persistence of widespread lower levels of education within households in the survey areas has implications for resilience in the longer term. Education represents a vital means by which the quality of human capital may be improved and household options increased for the future.

The benefits of higher levels of educational attainment accrue not only through an increased advantage in labour markets and domestic production but also to those within the household which are less tangible and longer term. These would include a tendency towards reduced fertility rates in females and improvements in child care and nutrition. Where this distribution is differentiated by gender, particularly where young females are withdrawn from school through financial constraints, then the expected social benefits of higher educational attainment within households are unlikely to materialise. Arguably, this will have more serious consequences for resilience by perpetuating an environment unfavourable for the social reproduction of households.

Table 7.10
Percent Distribution for the Level of Educational Attained Selected Provinces of Zimbabwe, 1992

	Level of Education Completed				
Province	**No Education**	**Primary**	**Two Years Secondary**	**Four Years Secondary**	**Six Years Secondary**
Matabeleland North	48.78	31.10	8.33	9.15	0.42
Matabeleland South	44.28	33.20	9.91	10.06	0.43
Midlands	39.15	28.29	11.34	17.26	0.60
Bulawayo	16.25	29.73	15.58	28.89	1.87
Harare	15.52	25.05	13.98	30.33	2.91
Zimbabwe	38.95	27.27	10.84	17.11	1.01

Source: CSO (1992b)

7.7 The Social and Institutional Structure of Farm Household Resilience

Households do not exist in isolation but are connected to other households through different links. These links are shaped by various social and economic forces that influence households in their production and consumption activities. The network of interhousehold links incorporates the dimension of local community and social capital into the resilience of household. By definition, resilient households will be those able to survive food crises with sufficient resources to restore a position in which the household is again food secure. The geographic scale over which strategies need to be pursued to support household resilience may increase substantially, such that when local resources fail the strategy may shift to the regional level thereby activating wider geographic and political networks of support. In this respect, resilience links the household to the wider socio-economic system through which strategies for the amelioration of food security are mediated.

The success of a particular community will depend upon their collective ability to coordinate their actions through established social and economic networks above the level of the household. In this respect, the most important social and economic links are nurtured with neighbouring households. The specific nature of some of these links is considered in later chapters. Traditionally, those households in closest proximity are expected to fulfil a range of functions since they are most likely to have an intimate knowledge of their neighbour's domestic affairs. These may include the overseeing of the household while the head is absent, tendering assistance on-farm and informal loans of food during periods of shortage. For example, as one respondent recounted, if while the head was absent a child of the household died the neighbour would be consulted immediately upon return as to why the child had died and what assistance the neighbour had extended. Another respondent stressed the strategic importance of neighbours by explaining that if neighbours could not be relied upon to offer assistance in times of need then who could?

In the survey areas rainfall is erratic within and between seasons and the associated risk of crop failure is high. Both Semukwe and Mberengwa are particularly susceptible to outbreaks of food insecurity resulting from production shortfalls. Around sixty per cent of the sample population considered drought and hunger as the main problems confronting people in the Communal Areas. Under these circumstances, the objective of the survival of the household and the community coincides. Consequently, the redistribution of food staples from surplus to deficit households through informal loans of grain represents the most fundamental way by which this objective may be achieved. Surpluses of food may originate from a temporary improvement in the supply secured

through the different entitlement relations of a neighbouring household. Consequently, households were not restricted to domestic means of access but were able to draw on the pooled entitlements of the group. As such, transfer entitlements represent a key element in the social dimension of household resilience. Households have a responsibility to share food with those less fortunate and equally have a right to seek support from the community when facing shortages. As such, systems of reciprocity facilitated through interhousehold transfers and claims of food represent a key element in the social dimension of household resilience.

The pooled survey data reveal that 85 per cent of households indicated the importance of informal loans of food from neighbours as a dominant coping strategy. Informal transfers of food are extended between households only when the donor household has sufficient food for their domestic requirements. In this respect, interhousehold transfers may be unreliable particularly when food insecurity is endemic. However, a strategy of reliance on the community as the first option for the alleviation of domestic food shortages is consistent with an opportunistic approach to household food security. Although, the sharing of scarce food stocks with a neighbour may reduce options for the donor household in the current time period, the social obligation to reciprocate increases options for the future. This supports the notion that the role of the community in contributing to resilience is most profound when the survival of the individual household is considered to be inextricably linked with that of the group.

Given the prevalence of food insecurity in both survey areas the role of transfer entitlements is limited when hunger is widespread but assumes a strategic function in

distributing scarce food stocks during recovery phases. The fundamental motivation is to support access to food at the household level through the systematic sharing of collective food stocks. However, when local resources fail households may be obliged to link into traditional and government institutional frameworks for support.

As discussed in chapter four, the legal and administrative structures in the Communal Areas suffered as a consequence of the reform process conducted in the immediate post-independence period. This resulted in widespread confusion concerning the roles and functions of the various institutions at the local level. During the 1980s, the government attempted to superimpose quasi-political institutions upon the traditional structures of authority established in rural areas. The Communal Land Act of 1982 empowered the newly formed District Councils in matters concerning land and its resources. The District Councils replaced the functions of the Tribal Land Authorities which had been established by the Tribal Trust Land Authorities Act of 1967. The Tribal Land Authorities corresponded broadly to the traditional power structure and roles in the management of rural land and resources. Paramount in traditional power structures is the chief whose authority is legitimised through headmen and kraalheads. Kraalheads function at the level of the village and report to a headman who has responsibility for several villages. The authority of these roles and the divisions in their functions are long established and accepted in rural society. Thus, it was somewhat naive on the part of a newly elected majority government in Zimbabwe to assume that the authority of the traditional structures could be legislated away by a simple process of reform.

To complicate matters further, the administrative infrastructure of the District Councils

was extended in 1984 to include the Ward Development Committees (WADCOs) and the Village Development Committees (VIDCOs). A VIDCO comprises 100 households and a WADCOs consists of representatives from six VIDCOs. The Chairman of a WADCO is in turn a councillor on the District Council. The geographic boundaries set for the VIDCOs and WADCOs ignored those established for the legitimisation of traditional authority. At the household level, the effect was to create confusion and mistrust as to where legitimate authority regarding the management of land rested. There is documented evidence (Government of Zimbabwe, 1994b) that the dissolution of traditional authority and role in land and natural resource matters at Independence was premature. A resistance to VIDCO/WADCO structures as credible authorities over land and natural resources was widespread and, the VIDCOs in particular, were viewed generally as illegitimate structures, with no credibility, respect, or effective power.

In 1990, the chiefs had their traditional judicial powers restored in matters concerning the implementation of customary law. This important reform was granted in response to agitation from the chiefs for the restoration of their prestige within rural society. However, the present situation regarding the legitimate power structures operating in rural areas remains far from clear. Further, there would appear to be wide regional variations in *de facto* practice as opposed to *de jure* idealisations (Cousins, 1992). Discussions in the survey areas tended to reveal tacit support for traditional structures although it would appear that both traditional and political structures continue in awkward coexistence. For example, discussions during the survey period revealed that in matters regarding the allocation of land both structures were accorded a role. When new land was sought for settlement within an area the VIDCO and kraalhead would be

consulted, and a positive decision was subject to an agreement between both authorities.

However, it would appear that the roles of the two structures have been separated in matters concerning food insecurity. The Grain Loan Scheme (GLS) was introduced to alleviate the effects of drought on agricultural production in the Communal Areas. An informal interview was conducted with the Personal Assistant to the Director of the Provincial Social Welfare Office for Matabeleland South who confirmed that the GLS was made available only when drought had been confirmed officially. It was unclear exactly which circumstances would lead to an official declaration of drought but essentially the GLS allowed those registered to obtain loans of maize grain from the government. Registration for GLS is effected by a household registering the ages and numbers of their members with the kraalhead. These details are then passed from the headman to the chief who in turn forwards the household information through the District and Provincial Administrators Office to Harare. Traditional structures of authority have been favoured to avoid political implications and the possibility of corruption in what is essentially a humanitarian exercise[1]. The process should take about two months from the date of registration to the receipt of a grain loan of 10 kilograms per person per month. This allocation falls short of the FAO recommended minimum of 155 kilograms per person per year.

The assumption behind the GLS was that the loaned grain would ultimately be repaid.

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1 That the GLS has been separated completely from political influence is not always convincing. A rare delivery of grain was witnessed over a public holiday during the survey period in 1998 in the area adjacent to Semukwe (plate 7.3). The public holiday in question was Heroes Day on which the efforts of those involved during the liberation struggle are traditionally celebrated.

Discussions with households in both survey areas during 1997 and 1998 tended to indicate that although food insecurity was endemic the receipt of loans of grain from the government was an infrequent occurrence. Many households reported hearing of loans being made in neighbouring areas but had not received a loan themselves despite being registered for the GLS. In the rare instances where a household confirmed receipt of a grain loan, deliveries had been erratic and consisted usually of one 50 kilogram bag of grain in a season. Even when a delivery was made to a particular area not all those registered for the scheme actually received a loan of grain. In those households that were fortunate to receive grain the terms of the loan were not made explicit. Frequently, it was assumed by the receiving household that it was a grant without any conditions. In some cases, representatives of the GLS had appeared the following the year demanding the repayment of the loan in cash or in grain and threatening jail terms for default.

Plate 7.3
Grain Loan Delivery - Semukwe Communal Area 1998



As far as this research was able to explore, no households reported penalisation for non-repayment of a grain loan. The extent of the food insecurity in the semi-arid Communal Areas of Zimbabwe and the limited resources of the government to assist these populations has meant that the amount of grain loaned has fallen far short of actual requirements. More importantly, the supervision required to ensure the effective recovery of grain debts has proved to be beyond the administrative capacity of the government. Although this administrative deficiency may have contributed to improving the degree of food security enjoyed by some households at some time, in the longer term these institutional, organisational and resource constraints served merely to

undermine the sustainability of this important scheme.

With regard to household resilience, the erratic and ostensibly random nature of grain deliveries has served to reinforce opportunistic tendencies in the achievement of food security. Rather than a scheme that could be depended upon in times of food shortage it has tended to become another strategy for households to improve their options for the future. Operated efficiently, the GLS offered the potential to release those household resources committed to the sourcing of food during the period of the crisis. These resources would then have been available for restoring a position of food security by strengthening household resilience in the longer term. In practical terms, this could have involved the redirection of household efforts towards the improvement of farm production in the following season, for example by releasing household time or removing the necessity of converting strategic assets into food. This potential has been dissipated further by the lack of clarity induced by successive reforms of the administrative infrastructure in rural areas. Confusion as to where legitimate authority in matters of rural affairs is vested has not contributed to achieving the essential flow of information, especially in times of food crises, from the Communal Areas to government ministries in Harare. Ultimately, the effect has been to create a sense of isolation in the Communal Areas and to encourage the persistence of opportunism in household food security strategies.

7.8 Conclusion

This chapter has attempted to provide an impression of the average household in both survey areas in terms of its key demographic characteristics. A main proposition of this thesis is that this structure is at the core of household resilience. The household is the unit through which the fundamental activities of production and consumption are conducted. In this respect, the quality and quantity and its human resources will be a major determinant of the extent to which household food security may be achieved. Although the number of household members on-farm may have implications for the amount of effort that may be directed at domestic agricultural production, the quality of its human resources has connotations for the extent to which opportunities may be exploited off-farm. Resilient households will be those most able to recover after a food shock through the ability to pursue a range of strategies to secure access to food.

The main definitional and conceptual issues relating to the household have been considered in this chapter. The convention favoured in resolving the problems that arose was to compromise between a location-specific approach and the objectives of the survey. These issues became particularly relevant in those decisions concerning who was to be considered as the household head and which members of the household to include in the enumeration. The limitations of averaging in providing an impression on paper that is borne out by the actual circumstances at the field level are acknowledged. With regard to characteristics of the household, there was a healthy correspondence in the results between the Semukwe and Mberengwa survey areas when contrasted with official secondary data. This is encouraging and suggests a degree of quality in the survey data.

The typical head of household was about 50 years of age with a fairly equal probability of being male or female in Mberegwa but more likely to be male in Semukwe. Around 80 per cent of household heads were classified as having either no education at all or had completed all or part of primary school. The average size of their household was six members comprised predominantly of direct kin. These offspring tended in general to have a higher level of education level than the household head, often to lower secondary school level having benefited from free or low cost education during the first part of the independence period. Grandchildren represented a significant proportion of the total household population signifying the creche function of rural households and the economic value of children on-farm. The homogenous composition of the household kin structure was interpreted as being generally beneficial since this should have a positive effect on the magnitude and direction of the efforts of individuals during a period of food shortage.

The population structure in both areas was youthful displaying a steep pyramidal structure typically associated with developing countries. With one exception, the number of females exceeded the number of males in all age groups and in both areas. It was suggested that this may be accounted for by male migration in search of employment. This was supported by the finding of a rise in the number of males relative to females in the over 65 years group as males returned to the Communal Areas upon retirement.

One consequence of ESAP has been the increase in user fees for education which head teachers in schools in the survey areas suggested had led to an increase in the number

of children being withdrawn from school. In these circumstances, it was suggested that enforced decisions as to which children to educate had led to a discrimination in favour of males. However, while there was anecdotal evidence to support this the survey failed to determine if this was a significant trend. Of greater concern were the increases in examination fees at GCE O level which could not be afforded by the majority of rural households. Enrolments at the upper secondary level were virtually zero in both survey areas which were argued to have severe implications for household resilience in the longer term. The level of educational attainment of household members is a critical consideration in the analysis of those components of resilience that are of greater significance in the longer term. Those with less education will be less able to take advantage of opportunities for paid employment reducing the range of strategies that a household may pursue. Equally, lower levels of education within the household may result in a failure to realise a range of social benefits such as improved family planning, child care and nutrition.

The significance of community for household resilience was highlighted through the role of interhousehold transfers of food. In drought-prone areas typical of Semukwe and Mberengwa such arrangements develop from a correspondence between the individual and group objectives of survival. Effectively, they release the household from the limited range of domestic entitlements to food and enable it to tap into the pooled entitlements of the group. Informal loans of food are tendered under varying degrees of expected reciprocity and fulfil functions for the donor and the receiving households. The receiving household achieves a temporary improvement in food security while the donor households increases their options for the future through expected reciprocity.

However, in food insecure areas such entitlements may be of limited value during periods of food scarcity but may become more significant when recovery commences.

From the discussion provided, the ability of households to link in with official structures of support appears to be restricted. Institutional and political reform in the post-independence era has resulted in the coexistence of traditional and official power structures. This has caused widespread confusion as to where legitimate authority resides over affairs in the Communal Areas. A more serious consequence has been that the timely flow of information on the status of local communities to local and central government has been obstructed. In instances where assistance was attempted such as the GLS, the inadequate administrative and organisational capacities of the government have inhibited any intended improvement in the circumstances faced at the household and village levels. An extreme sense of isolation and removed position from central authority was a common theme in many of the discussions held with households.

Finally, the compound effect of declining opportunities for education, the limited role of community and the uncertainty that has ensued from institutional reform has been to raise perceptions of risk in the Communal Areas. This in turn has encouraged an opportunistic approach to strategies that contribute towards household resilience. In an environment characterised by uncertainty, a strategy that exploits erratic and at times random opportunities to secure food is both rational and resourceful. Moreover, when planning horizons are short and the future is heavily discounted, such an approach may even be considered to be adroit. Opportunistic strategies as means of securing food may also become a necessity when traditional strategies have failed successively. In rural

households the cornerstone of food security has been agricultural production and the laying down of food stocks. These practices are examined in the next chapter concerning agricultural production and the implications for household strategies are identified.

Chapter Eight

The Components of Resilience On-farm

8.1 Introduction

Agricultural production remains the cornerstone of the economy in the Communal Areas. The discussion presented in chapter five suggested that one consequence of macroeconomic reform in Zimbabwe has been that access to food derived through own-labour entitlements has become increasingly precarious in more vulnerable households. This situation has arisen through rises in food prices, widespread retrenchments and the withdrawal of government support for food subsidies. Under these conditions, it may be expected that the role of domestically produced food would assume renewed importance in rural households that are net-purchasers of food. However, the ability to expand domestic agricultural production depends substantially on the natural environment and the existence of excess capacity on-farm, in terms of the quantity and quality of household resources.

Therefore, the main objective of this chapter is to assess the contribution of on-farm production in supporting household resilience. Such an assessment requires an examination not just of the agronomic aspects of production, but equally needs to consider the marketing arrangements for the sale of farm outputs. In the schematic treatment of resilience presented in chapter two the elements of on-farm production in resilience are described in the upper half of the hexagon. The three strategy domains on-farm are arable and livestock production and, productive and non-productive assets.

Agricultural systems in the Communal Areas are substantially integrated and hence, the synergies between arable and livestock production receive special attention. Where the effectiveness of these synergies has been reduced the consequences for arable and livestock enterprises may be severe, and hence, the ability of on-farm production to support the resilience of households may be diminished.

From the results of the survey the amount of food derived from domestic production is estimated and the dominant characteristics of food deficit and surplus households are identified. In this respect, the implications for household coping strategies of deficits in the domestic production of food are considered in the light of data obtained from the survey. The dual roles of livestock in arable production and improving household food security are considered and the efficiency of marketing systems for livestock is appraised in the light of recent reforms in the meat market. Finally, a redirection of policy-making is proposed to encourage a degree of autonomy and flexibility that would enable households to manage their position of food security more effectively.

8.2 The Fertility and Structure of the Soil in the Survey Areas

The structure of the soil is perhaps as fundamental to agricultural production as the quantity and distribution of rainfall. It will determine the extent to which rainfall can be stored and released for use by crops and its fertility will affect the uptake of nutrients in the root zone. In the semi-arid Communal Areas increasing human and livestock populations have exerted pressures on the soil and the shift to the permanent cultivation of fields has limited options for bush fallow. Of greater concern has been the shift towards the cultivation of marginal lands as population densities have increased. There is little reliable evidence of the extent of encroachment in the Communal Areas but as soil fertility has declined rural households have extended the area under crops in an attempt to maintain total crop output. The type of land typically available has been marginal in quality and more susceptible to soil erosion. Decreases in the fertility of these soils have resulted in additional pressures to increase the area under cultivation, intensifying the extent of the problem.

The production of livestock is an integral characteristic of communal farming systems. The accumulated manure from cattle pens (*isibaya* - plate 8.1) provides an important but deficient source of fertiliser to replenish nutrients and improve the composition of the soil. Cattle are grazed on communal land and high stocking densities and poor range management have resulted in additional pressures on the soil. Excessive and selective grazing leads to an increase in the number of annual plant species at the expense of perennials (Whitlow, 1988). This results in annual fluctuations in the quantity of rain dependent biomass available for use by livestock. Moreover, the quality of grazing available will determine the quality of the manure applied to arable land.

Where the quality of forage has been affected adversely by overgrazing its nutritional contribution will be reduced when applied to fields as manure. Additionally, soils in grazing areas can become compacted reducing infiltration and increasing surface run-off. The latter consequence is perhaps the most serious since this can lead to soil erosion and the gradual dessication of the landscape with concomitant negative effects for plant growth and livestock production.

Plate 8.1
Manure Cleared from a Cattle Pen (*isibaya*) - Semukwe Communal Area 1998



The estimation of rates of soil erosion is problematic and indications of rates of soil loss under different agricultural systems are given in table 8.1. These should to be treated with caution. One obvious manifestation of the loss of soil and it nutrients is the decline in the productivity of the land. However, declines in soil fertility may be offset by better husbandry and improved varieties of maize. On commercial farms sustained increases in maize yields have been achieved through the application of nitrogenous fertilisers. However, farmers in the semi-arid Communal Areas do not in general apply chemical inputs and hence the observed growth in yields has not been as dramatic as those of the commercial sector. In most years the yields obtained in the Communal Areas are less than 25 per cent of commercial yields. Further, sustained increases in yields in the Communal Areas has been elusive over the period 1970-97 (CSO, 1998a) suggesting that soil fertility is at best stagnant in these areas. For example, Du Toit (1985) estimated that in some Communal Areas the soil depth could be insufficient to grow maize within 10 years and for sorghum within 30 years.

Table 8.1
Estimates of Rates of Soil Loss for Zimbabwe 1986

Location	Soil Loss (tonnes/ha/year)
Commercial Grazing Land	3
Commercial Arable Land	15
Communal Grazing Land	75
Communal Arable Land	50

Source: Stocking (1986)

As a part of the survey four soil samples were collected from three locations in each of the survey areas. One additional sample was collected from an anthill or termite mound to investigate its properties since these are applied to fields when cattle manure is in

short supply or unavailable. The aim was not to undertake a analysis of soil structure and fertility that would be statistically significant but simply to obtain some insight into the condition of the lands cultivated in the survey areas. The samples were analysed for their nitrogen, phosphorous, potassium and organic matter content in the soil laboratories at Harper Adams University College.

The results confirm that the soils are of the typical sandy variety which are inherently infertile and cover about two thirds of the country. Soils of this type have the advantage that water is readily available for use by crops immediately after a fall of rain. Equally, they are easily worked by hand or by plough but are particularly susceptible to erosion by wind and rain once exposed. Moreover, they leach easily, have a low water retention capacity and dry out quickly in between falls of rain. Thus, in areas of erratic rainfall the incidence of water-induced stress is likely to be common occurrence. This latter problem can be overcome by either staggering the planting period or encouraging the crop to develop deeper rooting systems by deeper ploughing and the application of nutrients (Grant, 1981). The last two practices are not common in the Communal Areas so that moisture stress and its effects on crop development persist during most years.

The results of the soil analyses are presented in tables 8.2 and 8.3. The results indicate extremely low levels of nitrogen in all samples, being far less than one per cent. The percentage of organic matter in the soil is similarly low in nearly all of the samples with the average content in the region of half of one per cent. The only exceptions found were in the samples obtained from a household vegetable garden in Mberengwa. Gardens tend to be worked more intensively to produce a regular output of vegetables

for household consumption and for sale. Consequently, the relatively high levels of organic matter contained in these soils is not surprising.

The analysis of the single sample taken from an anthill (sample 9, Semukwe) does not appear to reveal significant differences from the other soils sampled. The estimated levels of nitrogen and organic matter are at the top end of the distribution but are broadly in line with those recorded for the sandy soils. It is difficult to make inferences from a single sample but it would seem that the practice of applying anthill material to the land is not intended to raise the fertility of the soil (plate 8.2). Soils from anthills tend to have a higher clay content and consequently, have a better water retention capacity. Thus, the application of anthill soil to the fields may be designed more to improve the structure and composition of the soil than raising its fertility.

The indices recorded for phosphorous were zero which is not surprising given the general deficiency of this mineral in Zimbabwean soils. Potassium was found to be present in the soils but at low or very low levels with the indices ranging from 1 to 2. The presence of other weatherable minerals was detected such as magnesium derived from mica which is common in the rock substrata. However, and in general, the soils found in the Communal Areas are of low fertility and have a poor water-holding capacity. The latter characteristic of these soils has serious implications for the reliability of arable production in areas of erratic rainfall. Further, Whitlow (1980) estimates that about 80 per cent of the Communal Areas lie outside the limit for dryland cropping a situation which is compounded by the inherent inability of sandy soils to store water.

Therefore, it would appear that households have severely constrained options to effect a recovery in the position of food security enjoyed by realising increases in domestic production, even during seasons of above average rainfall. The structure and fertility of the soil is such that it is unable to produce reasonable yields of maize even in years of good rainfall. Thus, the ability of domestic production to contribute to household resilience is likely to be extremely limited.

Plate 8.2
Digging Anthills - Mberengwa Communal Area 1998

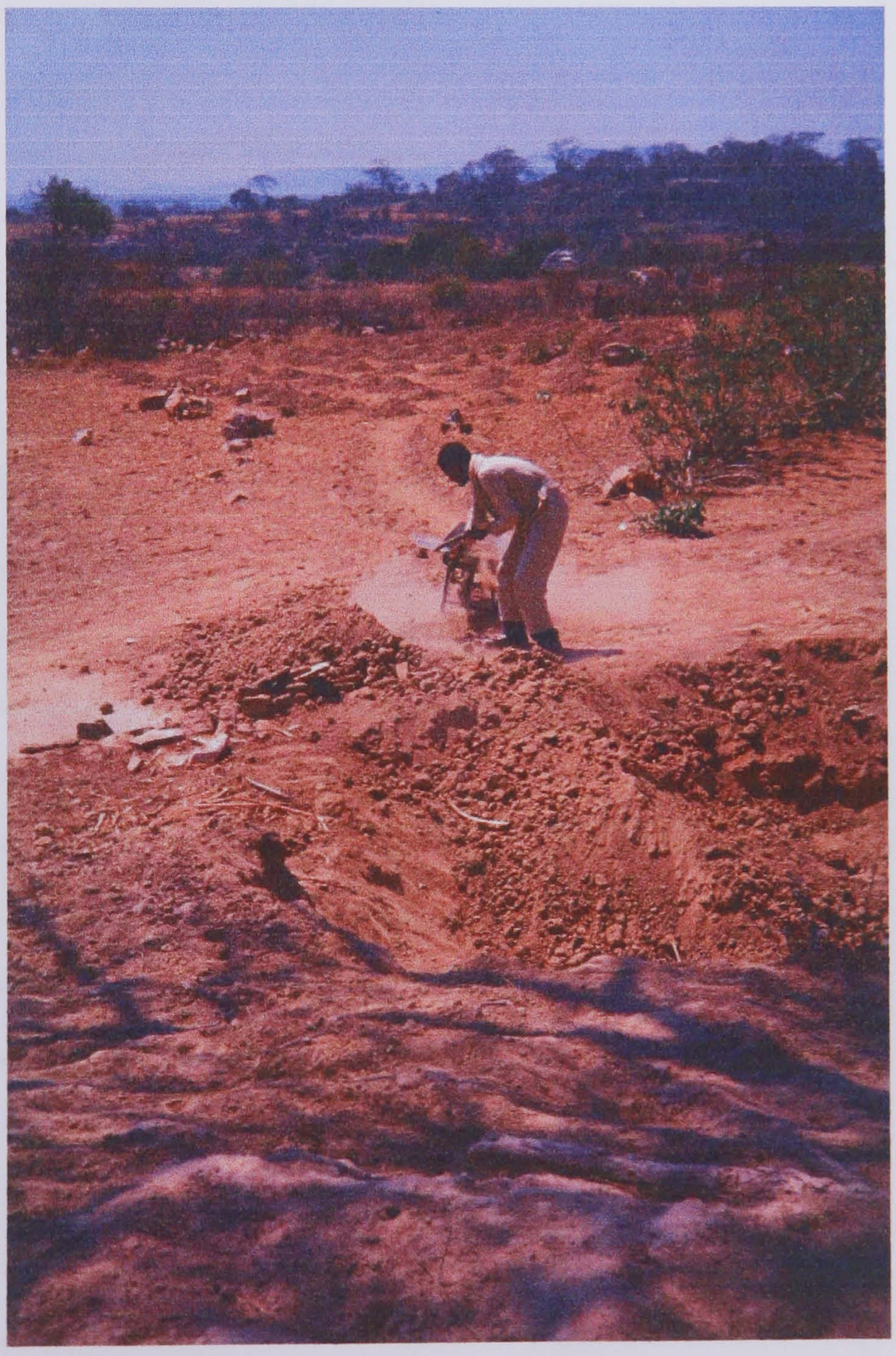


Table 8.2

Soil Analysis - Semukwe 1998

Sample	Percentage Nitrogen	Percentage Organic Matter	pH	Comments
1	0.032	0.5		
2	0.016	0.5		
3	0.017	0.3		
4	0.015	0.3	6.5	
5	0.042	0.7		
6	0.044	0.7	7	
7	0.026	0.4		
8	0.04	0.7		
9	0.043	0.7	7.5	Anthill
10	0.025	0.4		
11	0.036	0.6		
12	0.032	0.5	7.5	
13	0.048	0.8	7.5	

Table 8.3

Soil Analysis - Mberengwa 1998

Sample	Percentage Nitrogen	Percentage Organic Matter	pH	Comments
1	0.047	0.8		
2	0.051	0.9	7	
3	0.034	0.6		
4	0.054	0.9		
5	0.042	0.7		
6	0.031	0.5		
7	0.032	0.5	7.2	
8	0.028	0.5		
9	0.075	1.3	6.5	Household vegetable garden
10	0.051	0.9		
11	0.306	5.1	8	
12	0.093	1.6	8	

8.3 The Characteristics of Arable Production in the Survey Areas

A major component of the survey was to determine the patterns of arable production in the survey areas during the 1996/97 and 1997/98 growing seasons. The quantity of cereals derived from domestic production constitute an important source of food in many households in the Communal Areas. The survey limited the enquiry to these two seasons since household responses were based on recall. It was felt that extending the period of recall beyond this time period could result in the collection of data that were of an unacceptable quality. Information was requested on a number of key variables including area of arable land, the preparation of fields, cropping patterns and the harvests of maize and sorghum that were realised during the two seasons.

The farming systems in Semukwe and Mberengwa are similar with respect to the farming calendar and the interdependence of crop and livestock enterprises. A summary of the timing of the main agricultural activities is given in table 8.4.

Table 8.4
Agricultural Calendar

Activity/Month	J	F	M	A	M	J	J	A	S	O	N	D
Ploughing									✓	✓	✓	✓
Manuring								✓	✓			
Planting										✓	✓	✓
Guarding/Weeding	✓	✓	✓									✓
Harvesting		✓	✓	✓	✓							
Births Goats (G) and Cattle (C)			G	G				G	G	GC	GC	

The demand for household labour peaks in the months from January to March as the crop matures and weeding and pest control is required on a continuous basis. The peak demand for draught power falls during September to December to prepare the fields prior to the commencement of the rainy season. Households with their own span of animals have more flexibility in ploughing of fields than households that rely on other arrangements such as borrowing or hiring. Both cattle and donkeys are used as a source of draught power and the ploughing period coincides with the end of the dry season when the condition of animals is likely to be poor. This will undermine the ability of the available draught power to till the land effectively. Poor preparation of fields will have consequences for the crop that is ultimately harvested.

The amount of land available for arable production in terms of both total land area and the area of land per head will be a decisive factor in determining the extent to which household food requirements can be met through domestic production[1]. The distributions for the size of land holdings are presented in figures 8.1 and 8.2. Figure 8.1 reveals a highly variable distribution in the total acreage available per household both between households and between survey areas. However, when the distribution is analysed by the amount of land available per resident member of household (adults and children), a more even distribution emerges. The majority of households have one or two acres per head for the production of crops.

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1 The metric unit of hectares as a measure of land area has been adopted in the preceding chapters. However, the respondents in the survey used acres when referring to the area of their land. This local convention has been retained in the empirical sections of this work.

Figure 8.1

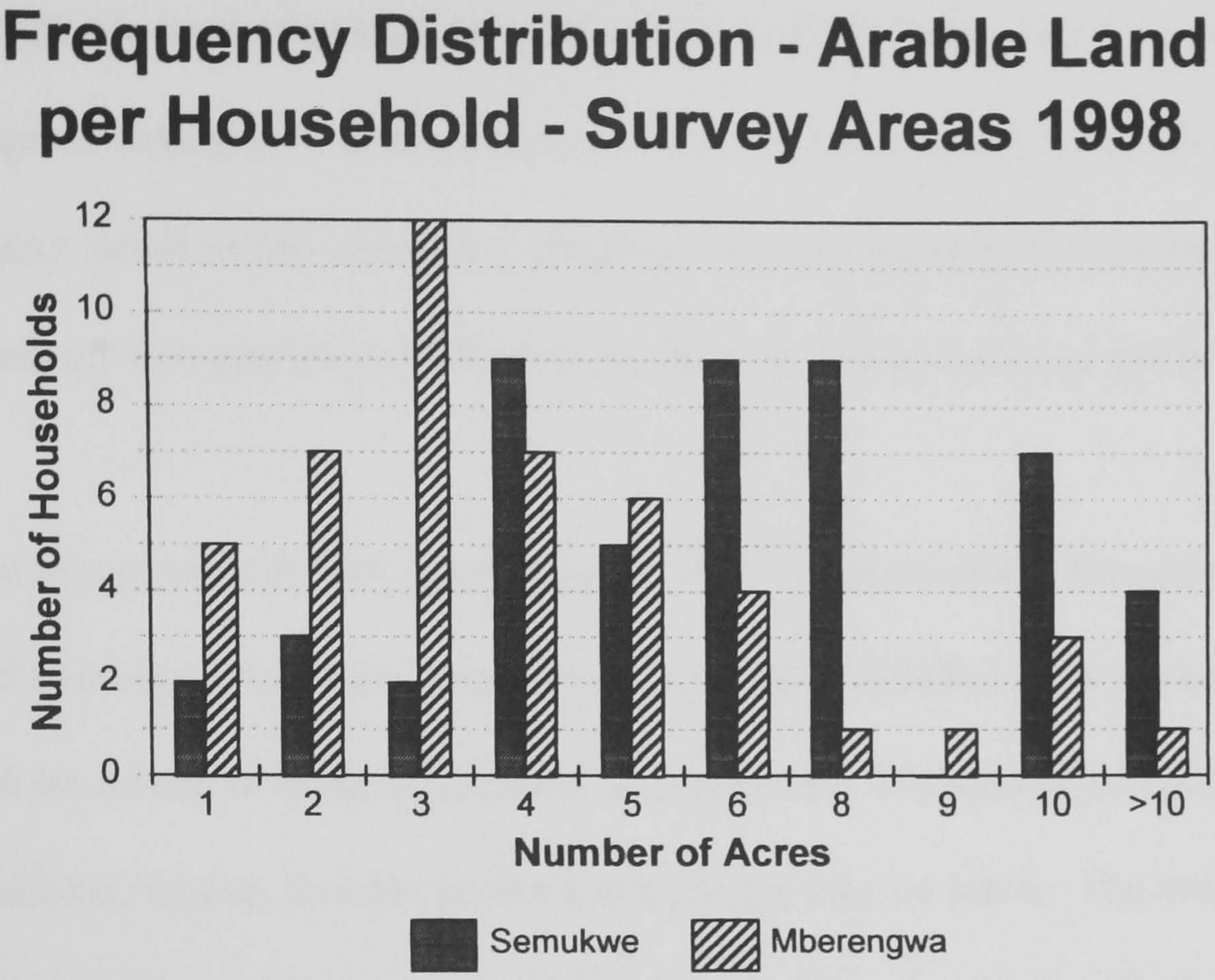
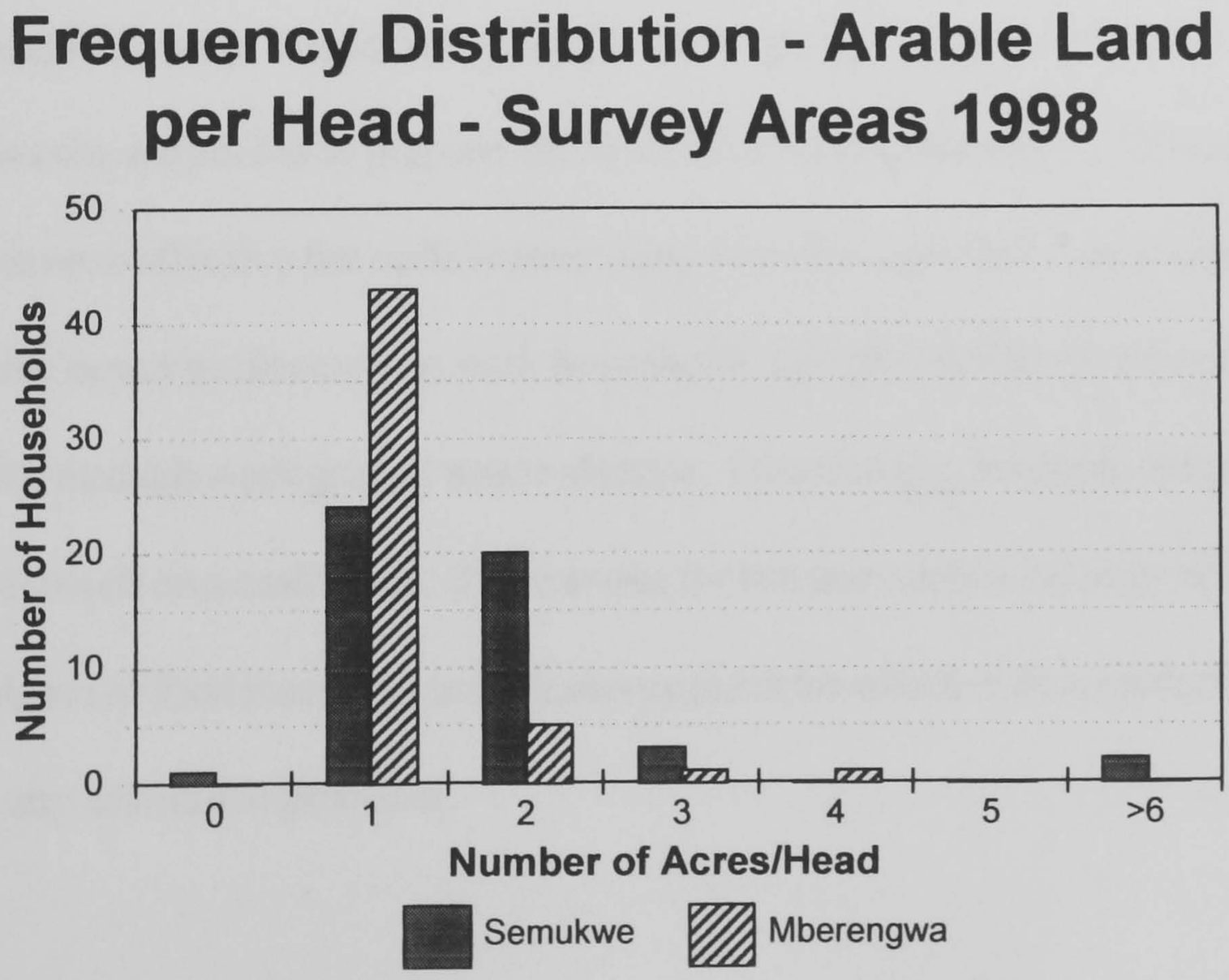


Figure 8.2



The prevalence of the low number of acres per head for arable production does not necessarily imply that such households are food insecure. Most households pursue a range of strategies to secure access to food, the exact nature of which is considered in greater detail in the remaining chapters. For the present, it is sufficient to note the relatively low and even distribution in the size of land holdings per head.

The timely and efficient preparation of fields requires labour, draught power, a plough and a source of fertiliser. Those households that are deficient in any of these resources will be forced to make alternative arrangements. In those households where cash is available, labour, draught power and a plough may be hired. The main problem with this option is that frequently such households have to queue until the required inputs become available. This can delay the preparation of the fields which may have consequences for the development of the crop over the growing season. Alternatively, households may cooperate through work groups (*ilima*) whereby the collective resources are pooled to prepare the fields of individual members. This approach can be more cost-effective but suffers potentially from the same delays associated with hiring. It was noted in discussions with households that the traditional practice of preparing fields through work groups was in decline. Increasingly, assistance in ploughing fields is obtained on a cash basis. The reasons for this are unclear but may reflect the general problem of food insecurity in both survey areas for which cash is preferred in settlement for any assistance provided.

The distributions of the main arrangements for preparing fields are given in figures 8.3 to 8.6. Figure 8.3 confirms the importance of domestic labour in the preparation of

arable land in both survey areas. Equally, it also supports the existence of the trend towards hiring labour over work groups in this activity. A small number of households did not cultivate their fields during the survey period. The typical reason given was that there were insufficient financial resources to hire labour and draught power. Only one household in the whole survey had no land. This was an extremely elderly couple with a very young grandchild who depended entirely upon welfare distributions of grain.

In Semukwe about 86 per cent of households in contrast to 44 per cent in Mberengwa owned a plough. Draught power has been provided traditionally by cattle but a severe decline in their numbers has led to an increasing use of donkeys, particularly in the drier areas. This substitution has been made with great reluctance since donkeys, unlike cattle, have no terminal value. However, donkeys are hardier than cattle and are more able to survive periods of drought. Figure 8.4 illustrates the distribution of arrangements for draught power in the survey areas and indicates that domestic sources of this input are more available in Semukwe than in Mberengwa. Livestock in general and cattle in particular have long been an important feature of Ndebele rural economy. Consequently, livestock production is more important in Semukwe than in Mberengwa. The greater availability of livestock in Semukwe results in the hiring draught power being a more significant practice than in Mberengwa. General shortages of draught power in Mberengwa have led to work groups assuming an increased role in sourcing draught power. Equally, the combined effect of shortages in draught power and cash have led a larger proportion of households in Mberengwa preparing their fields by hand.

Figure 8.3

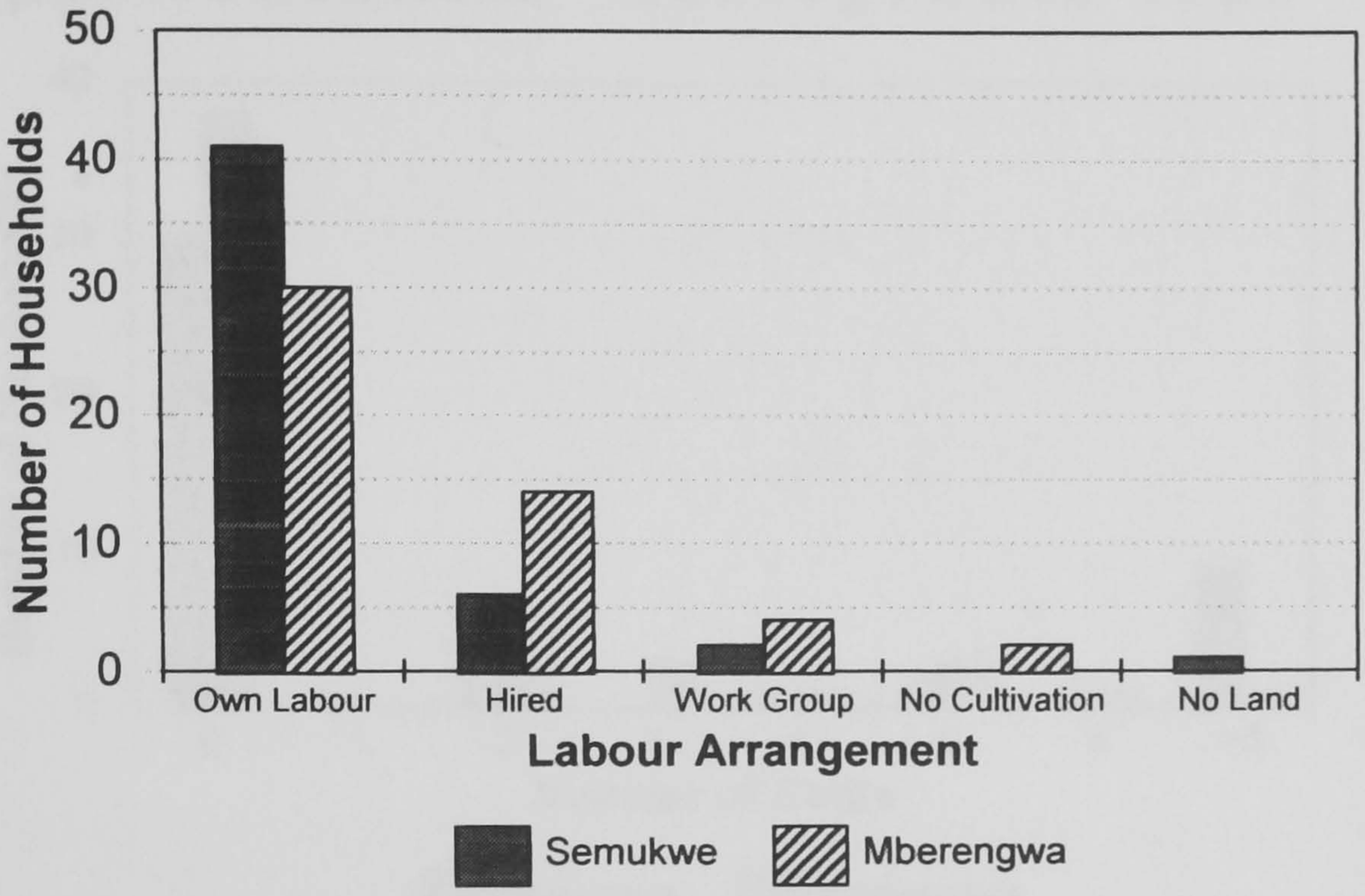


Figure 8.4

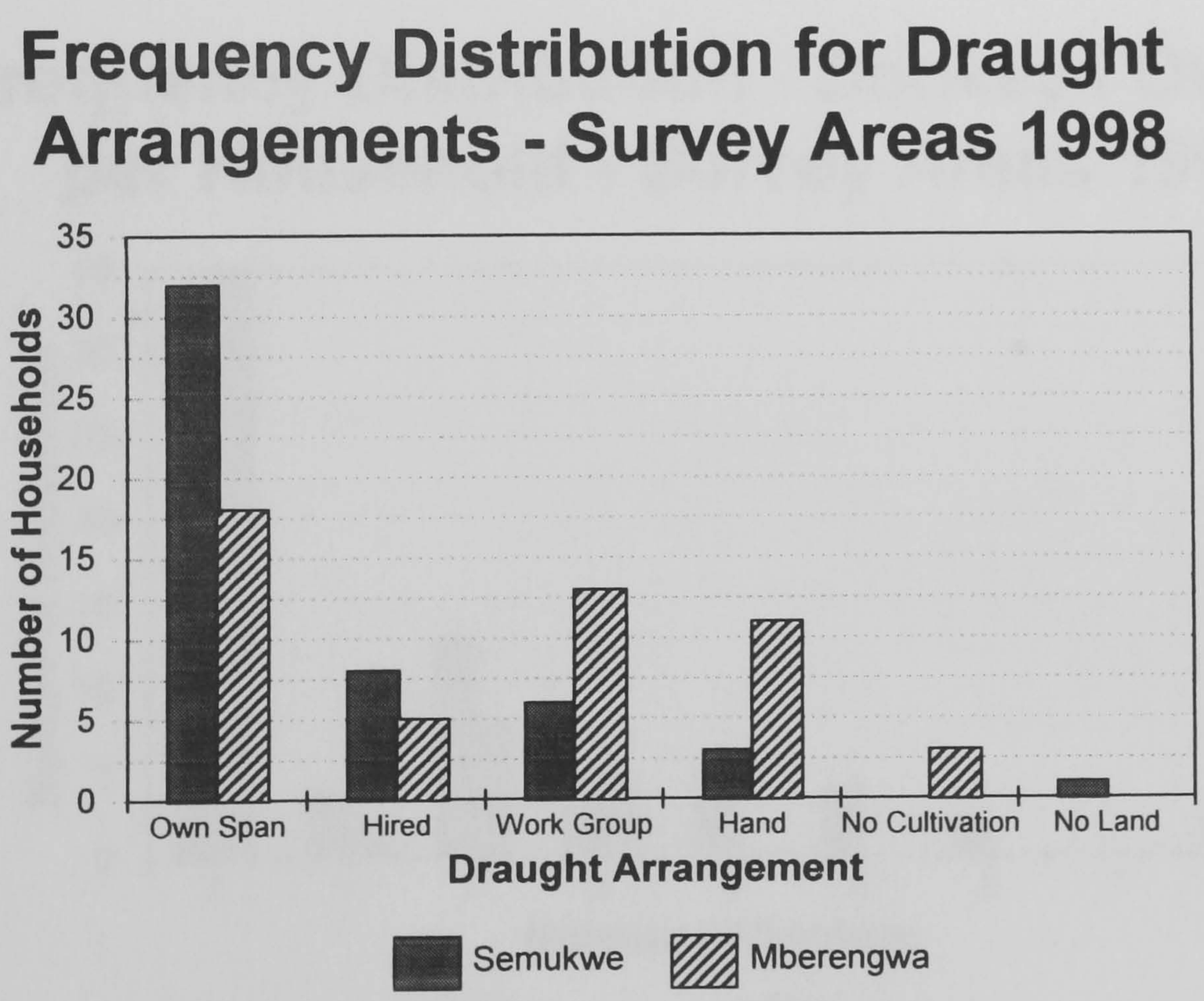


Figure 8.5

Frequency Distribution - Cattle Owned per Household - Survey Areas 1998

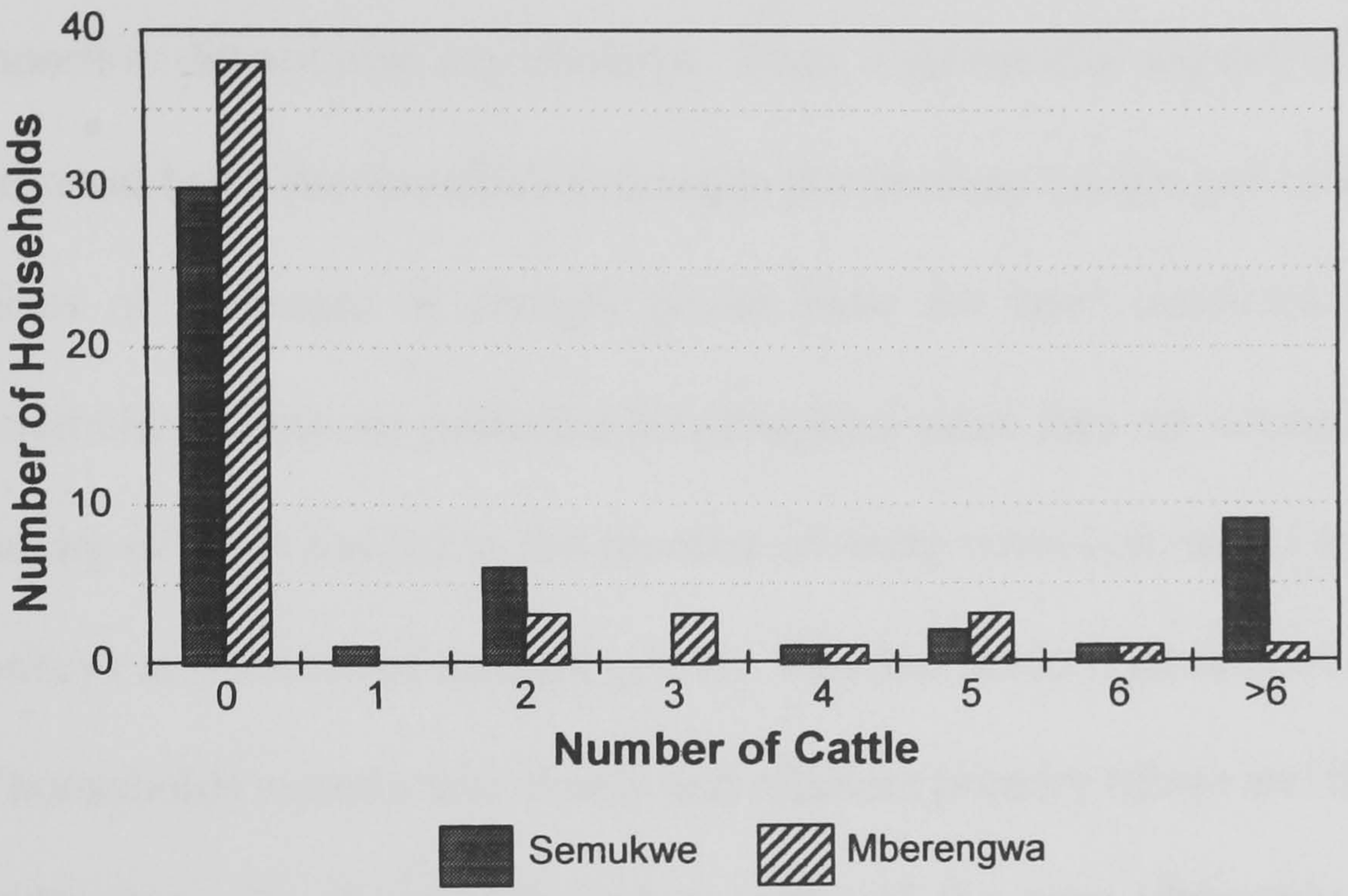
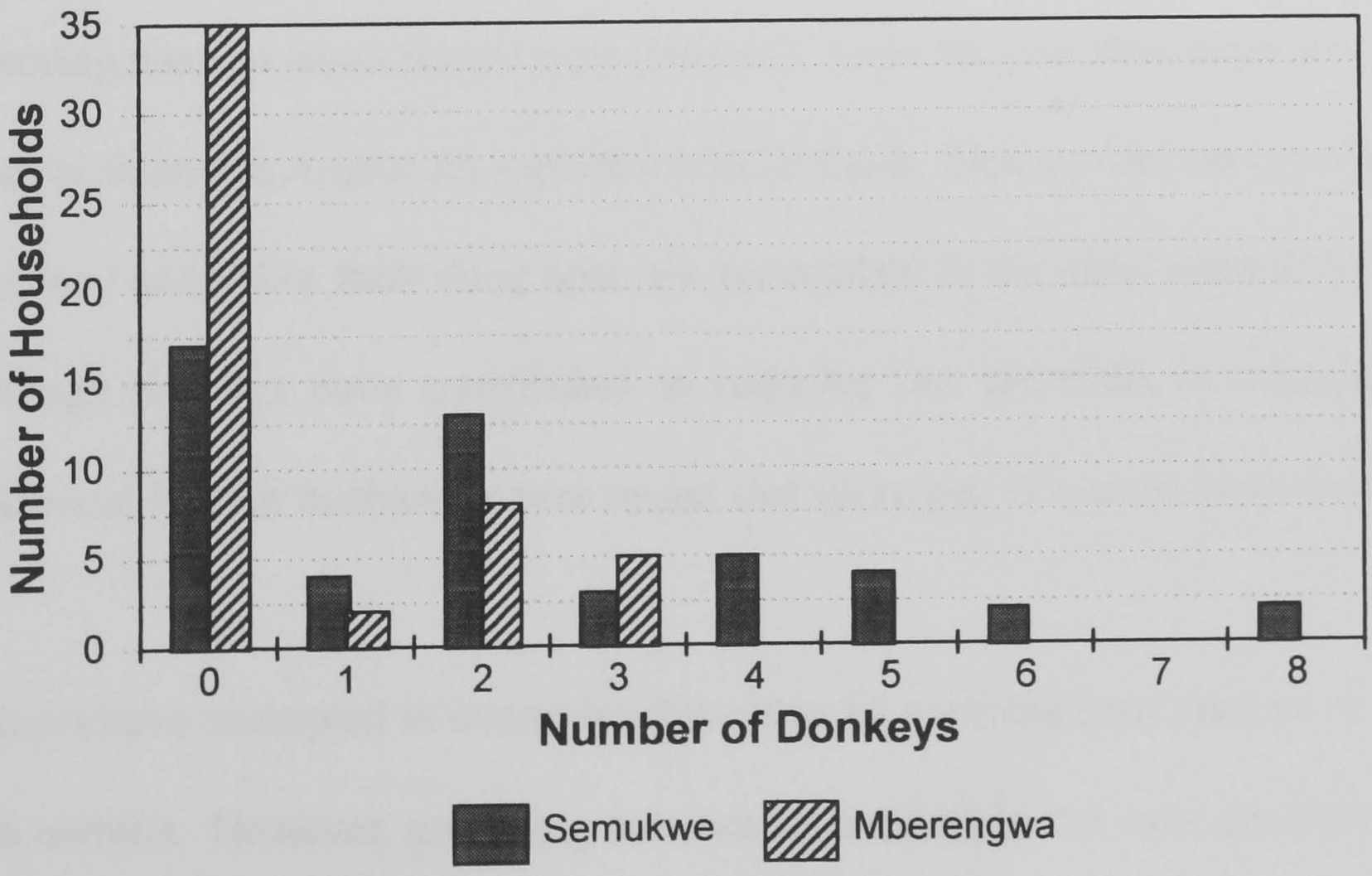


Figure 8.6

Frequency Distribution - Donkeys Owned per Household - Survey Areas 1998



The increasing importance of donkeys as a source of draught power is supported by the distributions presented in figures 8.5 and 8.6. About 60 per cent of households in Semukwe and 75 per cent in Mberengwa did not own any cattle and a smaller proportion did not own any donkeys. Thus, a substantial proportion of households in both areas had either insufficient draught power or no draught power at all. The general effects of shortages of draught power have not been restricted to this group of households. Oxen are preferred for ploughing since they are stronger and faster but a scarcity of oxen has led to the practice of using cows and mixed spans of cattle and donkeys as a source of draught power. This has made it problematic for the majority of households to undertake timely and efficient primary tillage and has had associated implications for the quality and quantity of the crop ultimately harvested. The distribution of cattle was similar between areas but donkeys were more prevalent in Semukwe. However, the trend towards an increasing dependence on donkeys has had implications for the quality and the composition of the soil. Cattle are protected at night by storing them in wood fenced pens (*isibaya*). Over the year their dung accumulates which is cleared in August for application to the fields. Donkeys are not corralled in the same way and hence their dung does not accumulate in the same systematic manner. Although donkeys have contributed to reducing the shortfalls in draught power, differences in their husbandry have meant that shortages of manure have developed.

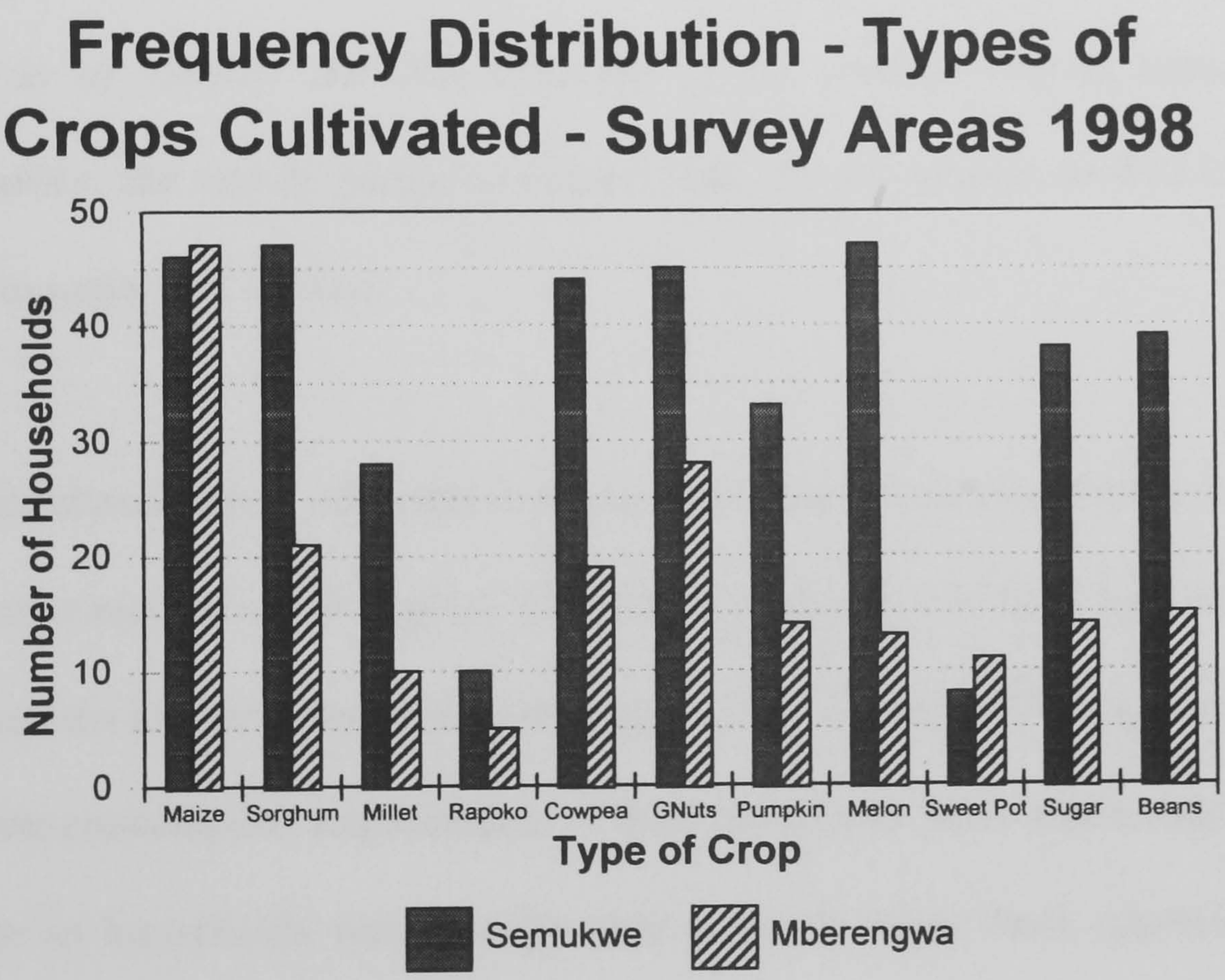
Farmers have attempted to overcome this either by applying goat manure or material from anthills. However, goat dung does not accumulate in the same quantities as that of cattle and the agronomic benefits of applying anthills are debatable. In Semukwe 74 per cent of households indicated that they had applied either cattle or goat manure to

their fields as opposed to 32 per cent in Mberengwa. This can be explained by differences in the relative availability of livestock between the survey areas. It also would tend to explain why 46 per cent of households applied material from anthills to their land in Mberengwa in contrast to just 16 per cent in Semukwe. Chemical inputs are rarely used and the reported burning of crops by fertilisers due to inadequate rain coupled with cash shortages have discouraged their widespread adoption. What is clear is that the impact of droughts in previous years goes beyond crop failures and livestock losses but persists in subsequent years as shortages in draught power and manure. This will undermine resilience in future periods where the domestic production of food staples constitutes an important source of household consumption.

The cropping patterns in both survey areas are similar and are presented in figure 8.7. Seed is usually retained from year to year for most crops but for maize, purchased hybrids are often used. In Semukwe, smaller areas tend to be planted to maize due to lower rainfall and larger areas are given over to more drought resistant crops, typically sorghum and millet. Maize is usually grown on sandier, wetter soils with the heavier soils reserved for sorghum where a choice of land types is available. Generally, Semukwe is more arid than Mberengwa and hence sorghum as a more drought-resistant crop is more widely grown in this area. The main cereal crops are frequently intercropped with melons, pumpkins, groundnuts, beans, cowpea and sweet potatoes. Households in Semukwe tend to grow a larger variety of crops although the success reported was mixed. It would appear that practice is driven by attempts to spread the risk of crop failure. These crops can be eaten immediately after harvesting but are usually dried to supplement household diets throughout the year. In Mberengwa,

households tended to concentrate their efforts in maize production with a smaller range of other food crops grown. The reasons for this are not clear but may result from the more established practice of cultivating vegetable gardens in this area. The contribution made by vegetable gardens to household food security is considered in greater detail in the next chapter.

Figure 8.7



8.4 Domestic Arable Production and Household Food Security

The problems associated with survey data derived from recall are well established. The longer the time period over which recall is expected and the more precise the information required then, in general, the poorer the quality of the resultant data. This is especially true for data relating to the amounts of individual crops harvested. For crops other than the main food staples of maize and sorghum, the respondents were not expected to quantify the amounts harvested but simply to indicate the range grown. Maize and sorghum are usually collected from the fields in bags and households are often able to recall the number of bags harvested. However, the size of bags and the quantity of grain they hold is highly variable so that converting these to precise estimates of weight are difficult. The convention usually adopted to overcome this problem is to identify the characteristics of an average bag at harvest time. Unfortunately, the survey period coincided with the dry season so that it was not possible to apply this method.

Since, almost exclusively, all cereal crops produced are consumed within the household an alternative method was attempted. The protocol adopted was to ask respondents how long in months the harvested cereals during the 1996/7 and 1997/8 seasons were able to meet the consumption requirements of their household. This was a much simpler procedure as households were usually able to recall when these supplies became exhausted. However, this method is far less precise and may overestimate production in those households which eke out supplies of cereals by supplementing their diet with other purchased and non-purchased food stuffs. This is not a serious problem since the objective was to ascertain the time period over which domestic production was capable

of satisfying household demands. At this level, the data produced the necessary orders of magnitude for the importance of household cereal consumption sourced from domestic production. From this, any period of food shortage could be determined providing the context for discussions concerning the identification of associated coping strategies.

The distributions for the duration of household cereal consumption derived from domestic production and measured in maize and sorghum months for the 1996/7 and 1997/8 agricultural seasons are presented in figures 8.8 and 8.9. The manner in which the distributions are presented is somewhat unconventional but aims to provide a visual contrast between the two seasons for maize and sorghum. In order for the computer software to accommodate the series for each crop on one set of axes, a minus sign was attached to the data for the 1997 season which should be ignored for interpretation purposes. Upon initial inspection, it is apparent from both figures that the 1997 season represented a more favourable season than 1998. The harvest of both maize and sorghum failed completely in fewer households during 1997. More positively, in this year a larger number of households were able to source more of their cereal consumption requirements from domestic production. A number of households in both survey areas were able to satisfy the total household requirement for cereals during 1997. Harvests during 1998 were much poorer as indicated by the bunching of the distribution of both crops towards the left-hand side of the graph. Equally, no household in either area was able to meet their annual requirement for maize during this year and only one household in each of the survey areas was successful in harvesting sorghum sufficient for one year.

Figure 8.8

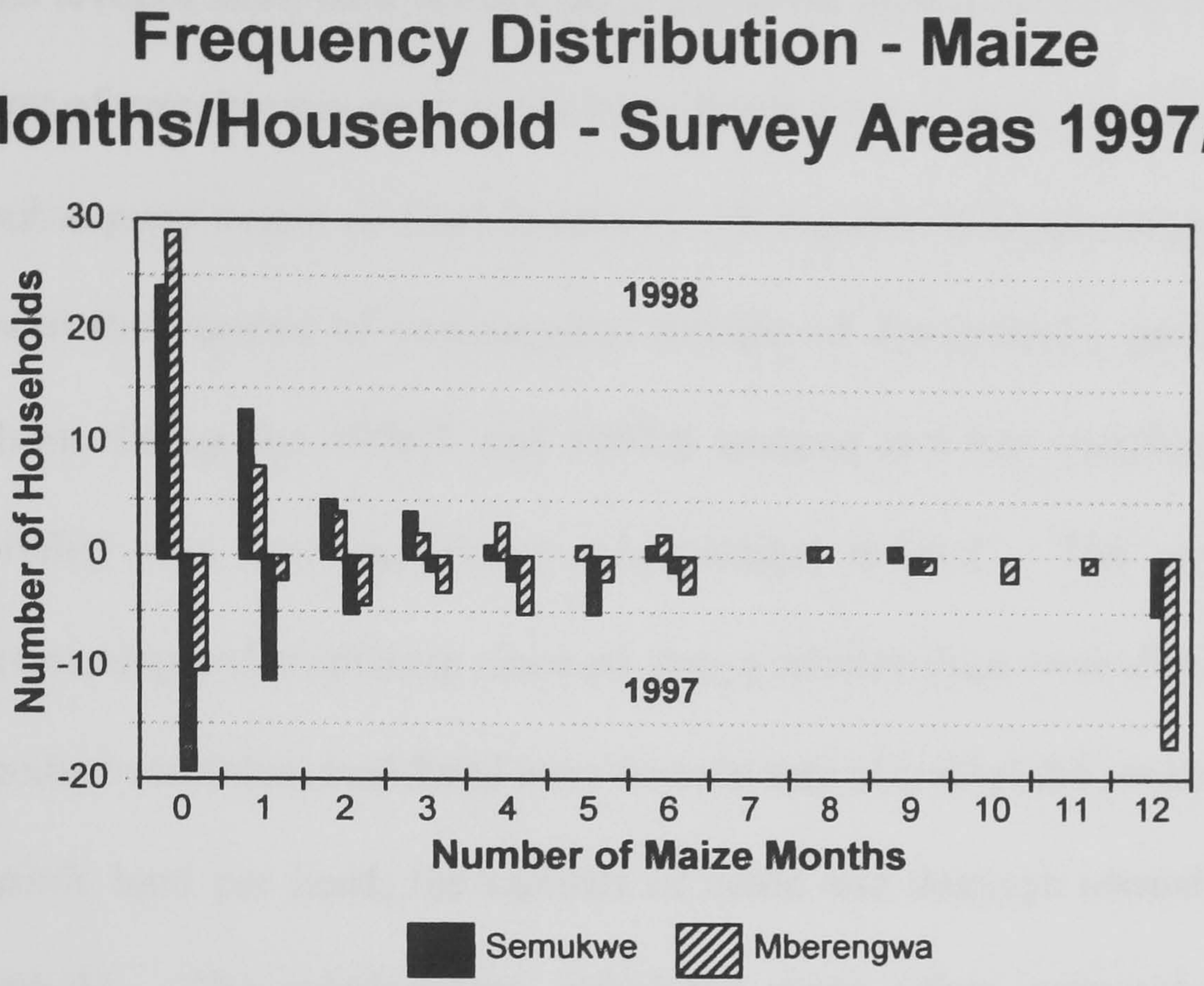
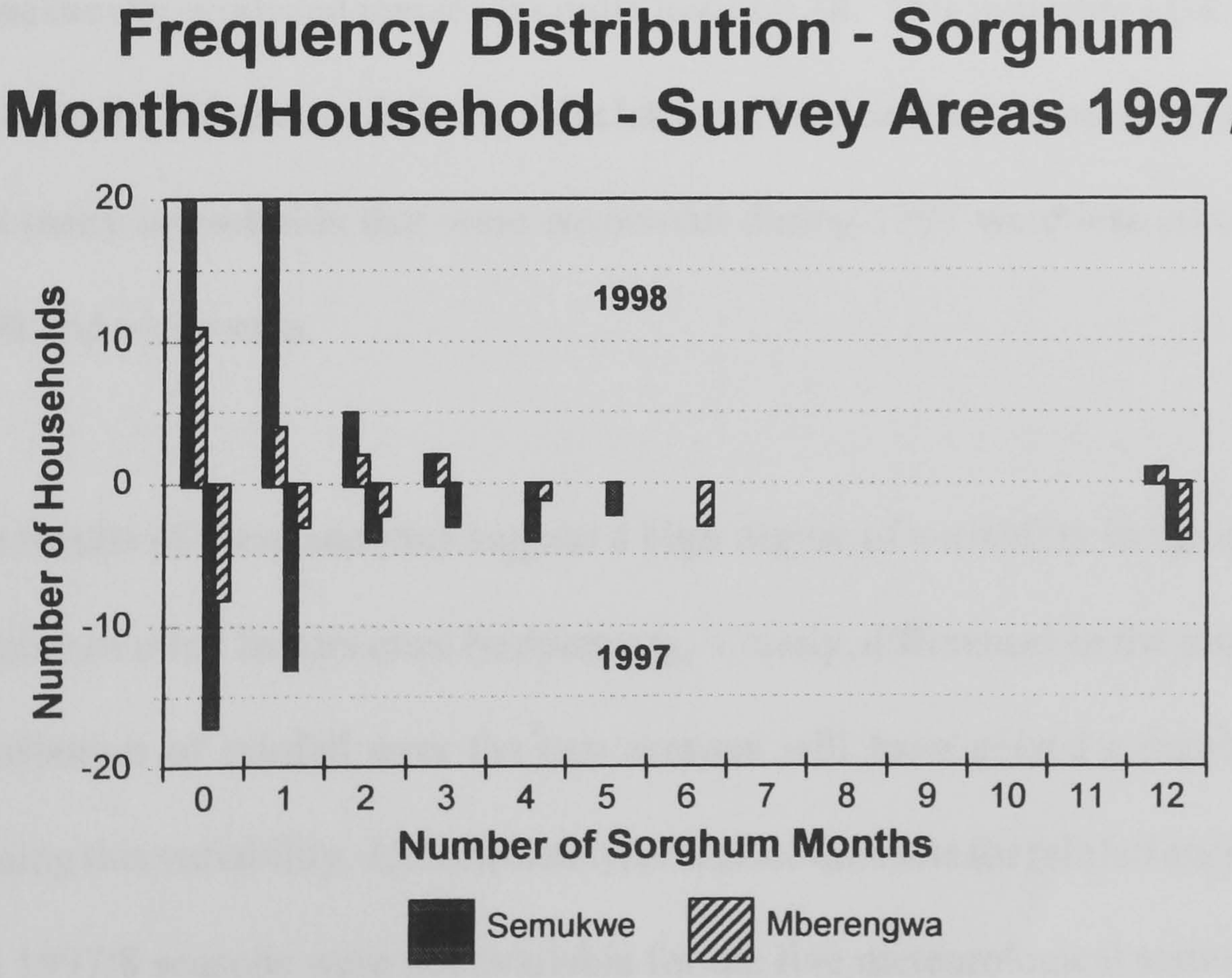


Figure 8.9



8.5 The Characteristics of Food-Sufficient Households

At this level of analysis it is difficult to comment further regarding the distribution of amount of cereals consumed within households sourced from domestic production and the subsequent extent of food insecurity. A number of simple regressions were run between the number of consumption months of domestically produced maize and sorghum during the 1996/7 and 1997/8 seasons and key variables to explore the possibility that any significant relationships existed. The results were both disappointing and surprising since no strong relationships were discovered. The key dependent variables considered were the total area of arable land per household, the area of arable land per head, the number of cattle and donkeys owned and the size of household. The relationships calculated were either extremely weak or were inconsistent with what would have been expected. The correlation coefficient between the two seasons for the number of months of household consumption derived from domestically produced maize was quite low at 0.38. This indicates a poor relationship between the success (or failure) of the harvests between the two seasons. It also implies that many households that were successful during 1997 were less successful during 1998 and vice-versa.

The results of these analyses suggest a high degree of variability in the data and that a number of other factors must be operating. Clearly, differences in the total amount and distribution of rainfall over the two seasons will have played a significant role in causing this variability. Unfortunately, complete data sets for rainfall during the 1996/7 and 1997/8 seasons were not available for the five meteorological stations at the time of enumeration. Thus, it is difficult to determine the exact influence of rainfall at these

times. However, it should be noted that there were substantial discrepancies reported in the length of the consumption periods of domestically produced maize and sorghum between neighbouring households. At one level, this points to variations in rainfall that occurred over very small areas and which had an impact on the amount of crops harvested from particular fields. It also tends to confirm the critical importance of the timing and distribution of rainfall to the success of agricultural production in the semi-arid Communal Areas.

Although variations in rainfall of this nature will have some impact on the quality and condition of the crop harvested they are unlikely to be able to explain all of the variation observed. A range of other factors including the timing and availability of draught power, the fertility of the soil, the ability to apply manure, the specific variety of cereal grown, and the size and composition of households will contribute to the observed variability in individual production and consumption patterns. In order to establish the specific characteristics of food deficit and food sufficient households a more detailed treatment was required. The initial interest of this inquiry concentrated on identifying the characteristics of those households that lay to the right of the distribution during the more favourable season of rainfall in 1997. This would be those households that had realised a harvest of cereals sufficient for most or all of the year, perhaps even with some grain retained as buffer stocks. Consequently, the inquiry restricted itself to establishing the characteristics of those households that had achieved a harvest of maize sufficient for six or more months of consumption. Each survey questionnaire completed for this group of households was re-analysed in its entirety to identify any common attributes.

The results derived for Semukwe were interesting since a relatively consistent profile for this group of households emerges. There were only seven households in Semukwe that had achieved a harvest sufficient for six or more months of consumption. These households tended to have areas of land per head above the survey average for Semukwe of 1.3 acres. More significantly, all of these households had sufficient draught power on-farm and maintained large numbers of goats. Generally, this would permit the timely and adequate preparation of their fields with some manure to apply, at least selectively, to the more important crop areas. Equally, households with sufficient cattle and donkeys are able to derive an income by offering these for hire to those without draught power. In two of the households the head worked for AGRITEX, the government extension service and in another two the heads commanded regular incomes from paid employment. In the three households without a regular money income the sale of goats was a significant source of cash which could be depended upon in years of poor harvest. Moreover, the evidence of their relative wealth was apparent immediately upon entering their compound at the time of enumeration. The compounds were noted as being well maintained and organised with crop residues neatly stored to supplement the feeding of their livestock Buildings were often of brick rather than mud with zinc as opposed to thatch roofing. Thus, their food security status was evident not just from the figures reported for domestic cereal production and consumption but also from the observed ability to manage their farms and livestock.

In order to provide deeper insights into the experiences of this group, brief profiles of three of the households are presented below:

Survey Code - MS21
In this household the head had worked as a supervisor for AGRITEX in Matabeleland South for 34 years. He was 63 years old and had been educated to diploma level. His farm had 10 acres of arable land for a household of 7 resident members (1.4 acres per head). Soil samples were taken from his fields which although slightly higher in their nitrogen and organic matter content, were not different significantly from the other samples collected in Semukwe. He achieved a harvest of maize sufficient for 12 months of consumption in 1997 and 9 months in 1998. He had a mixed herd of 39 cattle and 40 goats. Unusually, he also had a flock of 18 sheep and had one sow which was served by a boar on a neighbouring farm. Payment for this service was made by giving a male piglet in return (a boy for a boy). He sold animals regularly for slaughter and led a local syndicate of farmers with the purpose of obtaining higher prices for animals through bulk sales. Therefore, this farmer demonstrated a degree of proficiency not only in the production of his arable and livestock enterprises but additionally, was aware of the potential constraints in the marketing of his livestock for which some steps had been taken to address.

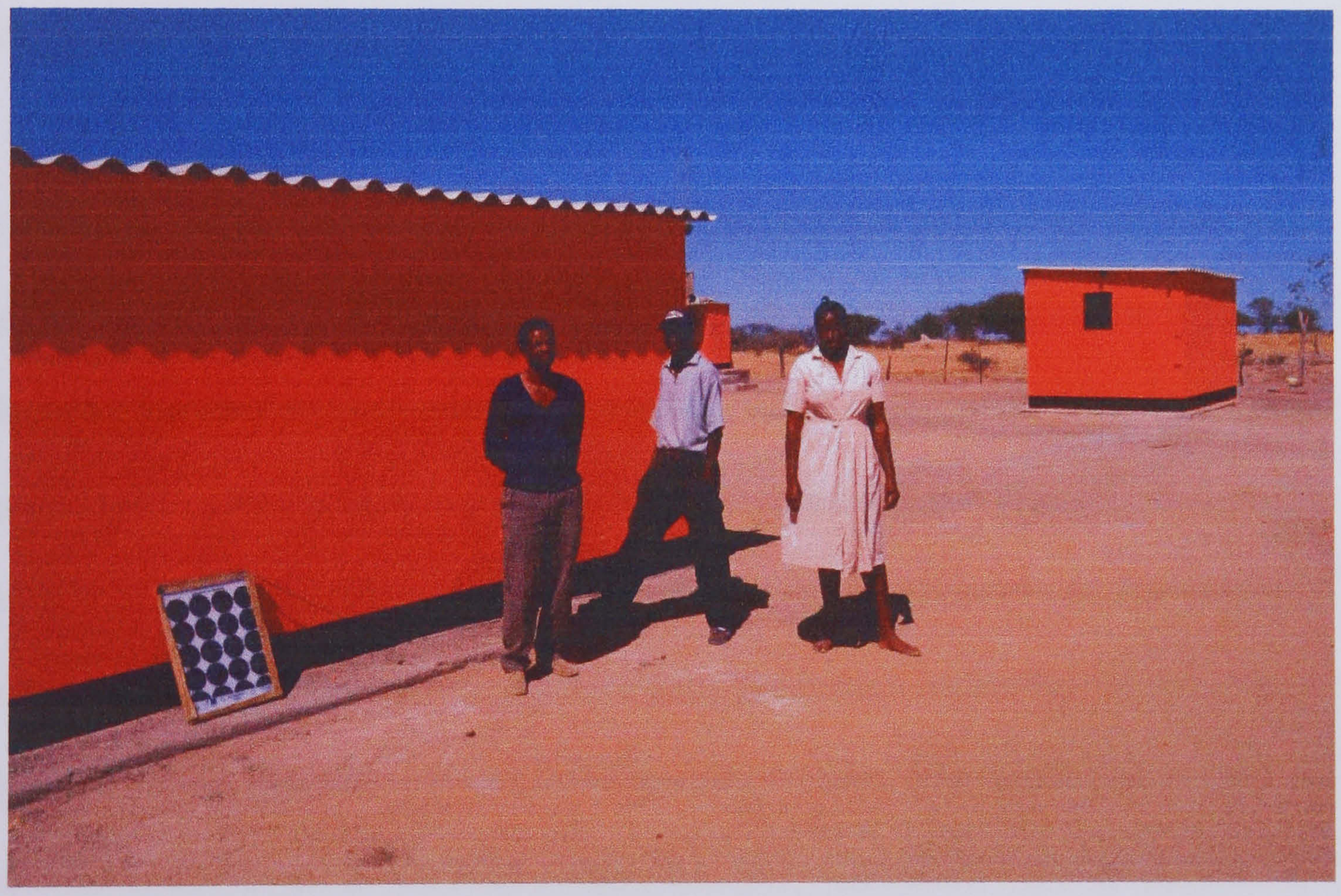
Survey Code - MS28
This household head was 62 years old and had been a farmer all of his life. He had received only primary education and his household included 6 resident members. He had 15 acres of arable land (2.5 acres per head) to which he applied both manure and material from anthills. He had 2 head of cattle which he combined with his brother's donkeys to obtain sufficient draught power. He obtained maize sufficient for 12 months during 1997 and 3 months in 1998. He had not sold any grain from the good harvest obtained in 1997 due to uncertainty over the size of future harvests. He had 20 goats which he sold to obtain grain when domestic sources became exhausted.

Survey Code - MS40
The husband in this household was employed as an orderly at a health centre about 40 kilometres from his farm. He was 42 years old and his wife was 38 years old. Both had received only primary education. The husband travelled to work at the beginning of each week by bike and returned each weekend. During the week his wife and son were responsible for the farm and undertook most of the work cultivating the fields and managing the livestock. They had 5 acres of land (1.7 acres per head) and the farm had 5 head of cattle, 5 donkeys and 19 goats. Maize had been harvested for nine months of consumption in 1997 and 3 months in 1998. The household reported that they were never without food because of the ability to supplement domestic food supply with the husband's salary or from livestock sales. The buildings in the compound were made from brick, well laid out and had been painted bright red (plate 8.3). The household possessed a solar panel which had cost Z$8000 (about £250) which provided sufficient power for two light bulbs and a radio. This was the only household in both survey areas that was discovered with this facility.

The profiles are illuminating for the life they breathe into the data collected and from the perspective of the consistency in their general characteristics. All seven of the food-sufficient households in the sample enjoyed a high degree of food security resulting from the sound management of agricultural enterprises and the existence of cash

incomes accruing from paid employment or from the sale of livestock. This latter aspect emphasises the importance of income sources in determining the position of food security enjoyed.

Plate 8.3
A Food Secure Household - Semukwe Communal Area 1998



The analysis of the questionnaires for those households that had obtained six or more months of cereal consumption during 1997 in Mberengwa was less consistent. A total of 23 households had achieved this level of consumption, 17 of which reported that they had secured sufficient food for the whole year. It would appear from the extent of the better harvests obtained in Mberengwa during 1997 that rainfall had been more favourable here than in Semukwe. This again reinforces the notion of high variability in rainfall patterns across and within proximate regions. The number of livestock held by this group of households in Mberengwa was generally very low with five households owning no livestock, and 16 that had insufficient draught power. Sixteen of the households had areas of arable land per head smaller than the sample average for Mberengwa of 0.8 acres.

It would therefore appear that agronomic factors alone (other than the favourable rainfall during this year) cannot account for this apparently successful year in terms of domestic production and consumption. A detailed examination of the completed questionnaires for this sample revealed that twenty households in this group had reliable sources of income. These accrued (in different combinations) from the salaries of males in paid employment, receipts from petty production undertaken by females and from household vegetable gardens maintained by females. The specific nature of these incomes is discussed in the next chapter but their significance for household food security is noted here.

It is doubtful that all of those that had reported sufficient supplies of domestically produced grain in 1997 had achieved either similar quantities in the total crop harvested

or, more relevantly, similar quantities measured in consumption months per resident member of the household. It is more probable that highly variable harvests were obtained, both in total and per head of household within this group. However, in those households with additional sources of income it is unlikely that domestic sources of grain function as the sole supply of food staples until they become exhausted. Regular sources of income enable a household to purchase food on an ongoing basis to supplement and add variety to domestic supplies.

This supports the notion alluded to previously, that households eke out domestic supplies by combining them with purchased food. Thus, although a large proportion of households in Mberengwa reported obtaining maize sufficient for their annual requirements, the size of this requirement will differ between households. These differences will arise from variations in the composition of households, in consumption patterns and in the size and range of income sources available for the purchase of food. For example, vegetables grown in household gardens can add variety to a meal, reduce the quantity of maize required and be sold to purchase food products such as bread and meat, which in turn will reduce pressure on domestic maize supplies. Therefore, the role played by additional sources of income is critical in supplementing the domestic production of food. Regular cash incomes can enable households to reduce the impact of variability in annual harvests by smoothing consumption through the eking out of domestic supplies.

Three profiles have been selected from the 23 households in Mberengwa that reported sufficient maize in 1997:

Survey Code - MB2
This large household of 19 members was headed by a male aged 51 years. The household comprised different members of the extended family including children, grandchildren and a large number of cousins. The household possessed 10 acres of land (0.53 acres per head) and five head of cattle. During 1997 the maize harvested was sufficient for 11 months of household consumption but for only one month during 1998. In order to reduce the risk of food insecurity the head of household derived an income from different sources. He was a builder by profession but had concentrated his energies on establishing a local store selling basic food and household products. He also owned a pick-up truck which was used to transport supplies for the shop and was available for commercial hire. At the time of the interview the truck had been overturned in an accident and was in a workshop until funds could be acquired for its repair. The was a critical loss for the household as the truck provided an income greater than that of the store. During normal periods the head was able to earn an income from the truck and the store adequate to supplement the food requirements of the household.

Survey Code - MB23
This was a small household consisting of a husband, his wife and two small children. The total arable land area was 4 acres (1.0 acres per head) and no livestock were owned by this household. The husband had developed mental illness and the household now depended entirely upon the efforts of the wife. She prepared the fields with a span, plough and labour borrowed from her mother-in-law. During the growing season she was assisted in the fields by her children. The maize harvested in 1997 had been sufficient for the whole year but for just two months in 1998. The wife sold various goods house to house to earn money to purchase maize. The items she sold included dried fish, washing soap and plastic kitchenware which had been purchased from town. Her approach may be considered enterprising since these types of goods are usually not available in rural areas. The wife indicated that her household was sometimes without food which involved short periods of hunger until she could earn money from the sale of her goods.

Survey Code - MB43
A female aged 50 years had been the head of this household since her husband had died in 1996. She lived together with five daughters aged between 10 and 29 years of age. The household cultivated 3 acres of land (0.6 acres per head) and owned 12 goats and 3 donkeys. The donkeys functioned as the source of draught power but neither manure nor anthill material was applied to the soil. During 1997 a good harvest of maize and a smaller one of sorghum had provided enough grain for the annual consumption needs of the household. In 1998 the maize crop failed but the sorghum produced a bountiful crop. The entire crop of sorghum was sold to a brewery and the funds acquired used to purchase maize. The household head also made lace mats for sale in town, worked as a tailor from home, cultivated a garden of vegetables for sale and domestic consumption and raised chickens for sale. Each of the incomes from the individual enterprises was small and variable in amount. However, the collective income from all sources was larger and, more importantly, less variable enabling incidences of food shortage to be reduced. Nevertheless, periods of food shortage were still experienced in this household.

Common characteristics of the three households above are that the total and per head acreages of land are generally smaller and the number of livestock, especially goats,

maintained by households are lower than in Semukwe. Additionally, strategies to smooth consumption by this group in a drought-prone area tend to focus on the earning of incomes from a diverse set of enterprises. These may be rural-based but frequently involve urban linkages for the efficient operation of these enterprises. The degree of monetisation between rural and urban areas differs markedly, resulting in a potential for arbitrage. It is this potential that petty entrepreneurs like those described in the profiles above have been quick to exploit.

However, the rewards from petty enterprises in the semi-arid Communal Areas will also be influenced indirectly by seasonal rainfall. During periods of drought, less money is available and what money there may be circulates largely as a means of settling transactions relating to the purchase of food. Deficit-households will be forced to reduce the amount of goods and services that are purchased or hired by the increased requirement to buy-in food. Equally, where possible, domestic labour will be substituted in the tasks these goods and services had performed. Consequently, the incidence of drought can undermine the effectiveness of an enterprise-based strategy exactly during that period when the financial benefits of such strategies are expected to contribute to the smoothing of household consumption. The problem then becomes not one of accumulating buffer stocks but rather of accumulating money in the form of savings. Where drought is persistent then savings, like buffer stocks, will become depleted rapidly. As these become depleted and the need to purchase food increases, enterprises can become starved of cash and cease to be able to operate. The recovery of these enterprises becomes less viable the longer the period of drought. Where enterprises fail then the resilience in these households is likely to be reduced.

8.6 The Characteristics of Households with Crop Failures

Another group of interest in this analysis were those households where the crop of maize had failed completely during both 1997 and 1998. The interest was to establish the significance of domestic production failures for household food security and the nature of any strategies that may have developed subsequently. The most probable cause of a total crop failure in maize would be variations in rainfall. Maize can withstand severe moisture stress early in its vegetative growth but at about five weeks after germination, prolonged stress will affect yields. The maize plant is particularly sensitive to stress just before flowering which occurs about half way through its growing cycle. Where drought conditions are protracted at this time (December to January) the effectiveness of pollination will be limited, and in the extreme, the ovules within the young ears of the plant will degenerate. Consequently, the viability of any particular maize crop is a function of the quantity of rain at the start of the season, but more critically, of the timing and quantity of those falls in the middle of the growing season. The ability to manage intra-season variability is severely constrained in the absence of supplementary irrigation. This increases the potential for poor harvests by exposing the crop to variations in rainfall at key periods during its growing cycle. When the composition of the soil, its low fertility and the general shortage of draught power are introduced, the potential for poor harvests increases.

Intuitively, the total failure of the maize harvest for two consecutive years could be assumed to have had severe consequences for household food security. However, a thorough inspection of the completed questionnaires from this group revealed, in some cases, circumstances to the contrary. A total of eight households in Semukwe and a

further six in Mberengwa had experienced a total failure in their maize harvests during the 1996/7 and 1997/8 seasons. In exactly half of each survey sub-group, this represented a critical shortage measured by their constrained ability to obtain food from alternative sources. Common characteristics of these sub-groups were that they possessed areas of arable land per head that were around or below the averages for each survey area, had few or no livestock and, more importantly, had no reliable income sources. In the other half of each sub-group for whom successive crop failures were not critical, regular sources of income existed. These could be relied upon for the purchase of food during periods of domestic production failure. In effect, domestic production became secondary to reliable sources of income in the maintenance of household food security.

8.7 The Nature and Extent of Food Insecurity - A Preliminary Appraisal

The results above were surprising since it was felt that a crop failure for two consecutive years would have affected more households. In order to ascertain the extent of food insecurity in the two survey areas each completed questionnaire was re-assessed to determine the vulnerability of each household to shortages in the supply of food from domestic production. To assess the vulnerability of individual households specific criteria had to be established. It was essential to evaluate the entire samples from both survey areas since *all* households had obtained supplies of grain from their arable production insufficient to satisfy the annual domestic consumption requirement during at least one of the two seasons under examination. Any criteria selected needed to incorporate the main forms of access to food from external sources. The two most important means would be the ability to earn a regular cash income and the number of livestock available for sale.

Nearly all households had some form of external income which was used predominantly to purchase food. In most cases these incomes were variable in amount and frequency and, hence could not be relied upon during times of food shortage. Therefore, respondents were required to list their most important sources of income in terms of the frequency and the amount of receipts of cash. This was the first stage in evaluating the extent of vulnerability to food shortages by identifying those households with infrequent and variable income sources.

The next stage was to catalogue those households with insufficient livestock. However, insufficiency in terms of the number of livestock owned is problematic to determine.

The absolute number of livestock per household is not a useful indicator since many respondents confirmed a reluctance to sell animals when numbers became low. This number varied between households and depended on individual evaluations of the likelihood of future risk. The persistence of drought throughout the 1980s and 1990s has served to sharpen perceptions of risk. In many households the sale of livestock when numbers fell below a certain level was undertaken with great reservation and only when all other possibilities had been exhausted. For example, one household in Semukwe which consisted of one woman and some children had not had any food for several days at the time of enumeration. The household owned only one goat and when asked why this hadn't been sold to purchase food the response (in exasperation) was that there would be nothing to sell if the situation became more critical. Households desired to maintain some minimum level of livestock in order to facilitate the re-establishment of herds during more favourable seasons of rainfall. Effectively, the strategy was to discount current consumption in favour of preserving a key component of household resilience, namely a viable number of livestock for breeding purposes or at least, some degree of insurance against critical food shortages in the future.

A lack of information on household perceptions of risk required that some minimum number of livestock had to be assumed for the whole sample. It was considered vital that the minimum number selected incorporated the two most important functions of livestock; the ability to perform as a viable breeding herd and to act as a means of insurance. Since most households are without sufficient draught power the numbers of cattle and donkeys owned were not considered to be significant in this analysis. Instead, the analysis concentrated on the numbers of small livestock, typically goats. It is this

category of livestock that is most able to recover after a drought and would tend to be sold more readily for the purchase of food.

The minimum acceptable number for breeding purposes was set conservatively at five animals. This was subtracted from the total number of goats owned in each household and this figure was then divided by the number of members of the household. The figure arrived at represents the number of goats available for sale per resident member of the household. This number was deemed to be critical where it fell below the minimum of one goat per household member. An accepted rule of thumb in the Communal Areas is that an average goat should convert to one 50 kilogram bag of maize. This is at best a crude exchange rate since it ignores the condition of the animal, the place of sale and the retail price of maize. According to the FAO estimates, the minimum annual requirement of maize for an individual is 155 kilograms. Given the crude exchange rate between goats and maize a single goat would represent a supply of maize sufficient for one person for about four months. This is clearly inadequate but makes some allowance for contingencies such as food obtained from domestic sources or purchased with household incomes.

Therefore, the households identified as vulnerable to shortages in domestic production were those where income sources were infrequent and unreliable *and* where the number of goats fell below the minimum level described above. On the basis that both of these criteria were met around 44 per cent of households in Semukwe and 62 per cent in Mberengwa could be considered as vulnerable to transitory food insecurity. Another question in the survey asked households to indicate and rank the different types of

strategy for coping with food shortages. In Semukwe, 90 per cent of households and 64 per cent in Mberengwa confirmed that reducing consumption was an important strategy when confronted by food shortages. This suggests that the figure arrived at above for the proportion of households that are food insecure may be a fairly reasonable estimate for Mberengwa. In contrast, the figure for Semukwe would appear to underestimate substantially the extent of the problem. This is perhaps because the ownership of livestock plays a less significant role in household strategies in this area. Although the survey revealed that livestock ownership was widespread in Semukwe, the reported reluctance to dispose of them during times of food shortage may reduce their role in household food security. The criterion set for the number of goats owned is conservative as it converts into a food supply per individual of less than four months. Most households, particularly in Semukwe would consider five animals as too small for herd viability. If the role of livestock is to function as a means of insurance against food shortages then a general unwillingness to sell them would suggest that food insecurity is more transitory than chronic in nature in Semukwe.

These issues emphasise some of the real problems encountered in attempting to determine specific criteria for the identification of vulnerability where households pursue a range of strategies to secure access to food. In circumstances where information is incomplete and data are imperfect one solution is to attempt to triangulate results obtained from different sources. Rather than offering a degree of precision in estimates, triangulation can provide more useful information on possible ranges for the extent of the problem.

From the preceding analysis the incidence of transitory food insecurity is widespread in both survey areas. The extent to which transitory insecurity has developed into the more chronic form is unclear at this stage. This will require a more complete analysis of other household strategies which are considered in the next chapter. What has been established tentatively is that those households with less livestock and fewer options to earn an income will be more vulnerable to the effects of food shocks. Transitory insecurity will be a more frequent occurrence amongst this group and consequently, the preservation of household resilience by forgoing consumption will be a more common strategy.

8.8 The Significance of Sorghum in Food-Deficit Households

The final analysis undertaken with respect to the role of arable production in household food security was to assess the importance of sorghum in food-deficit households. Sorghum is more drought tolerant than maize and hence more suited for cultivation in the semi-arid Communal Areas. Therefore, it may be expected that those households particularly susceptible to the effects of food shocks would tend to cultivate more sorghum than those relatively more sufficient in food. Around 95 per cent of households in Semukwe reported growing sorghum in contrast to only 40 per cent in Mberengwa. Generally, sorghum commands a higher price than maize in the Communal Areas as a main ingredient in traditional beer making. It would appear from the survey data that those households that were more successful in growing maize in 1997 were, in general, the same households that enjoyed a similar success with sorghum. This points to the agricultural proficiency of these households and also to the

robustness of their food security strategies. This is confirmed by a correlation coefficient of 0.68 between the data series for maize and sorghum during the year of better rainfall in 1997. In contrast, this coefficient fell to almost zero in 1998 when most households experienced worse harvests of both crops due to poor rainfall.

The observed bias towards maize production can be explained by a number of factors. Firstly, substantial research has been undertaken to develop maize hybrids that are more tolerant of drought. This has not been the case for sorghum which has been much neglected in the development of improved varieties. Secondly, the labour profile for sorghum is greater than that of maize. Sorghum, unlike maize produces an exposed ear which attracts birds and requires fastidious guarding during the ripening period. Thirdly, a major strand of agricultural policy in Zimbabwe in the colonial period was to increase the production of maize from the commercial sector. This was supported by a cheap food policy that provided subsidised refined maize to all consumers. As a consequence, refined maize is available all over the country yet sorghum continues to be difficult to obtain. Fourthly, maize is more palatable than sorghum being preferred because the porridge produced is lighter in colour and texture. Finally, the food aid received from abroad during years when the national harvest was insufficient was typically yellow maize, reinforcing consumer preferences.

This bias towards maize was confirmed in the profile of the household in Mberengwa (MB43) above where the sorghum crop succeeded in 1998 but was sold to a brewery to purchase maize. Despite the apparent advantages of sorghum in semi-arid areas the extent and success of it cultivation takes a poor second place to maize. More

surprisingly, it is not cultivated on a more significant scale in those households identified as being food insecure. Even where it was cultivated as a fall-back crop by a large proportion of households in Semukwe, the results relative to the maize crop were disappointing. Although the development of drought-tolerant hybrids may offer the potential to reduce the extent of food insecurity in semi-arid areas, there will be considerable resistance to growing these as domestic food crops so long as the maize culture persists in Zimbabwe.

8.9 The Management of Livestock in the Survey Areas

Livestock in general, and cattle in particular have traditionally played an integral role in agricultural systems in sub-Saharan Africa. This chapter has discussed already some of the functions of cattle. Cattle are desired for the stream of goods and services that they yield to farm households. These are either not provided by the market or can be more cheaply secured through the ownership of livestock. Whilst systems of agriculture in the Communal Areas are not homogenous, the production of crops and livestock are closely integrated. Cattle are used as draught animals, as a means of transportation, and provide manure which improves the composition and fertility of the soil. During the early part of the dry season, as grazing becomes scarce, crop residues supply important supplementary fodder. Cows produce milk for household consumption and occasionally for sale. At the socioeconomic level, herd size can determine social status and can function as a means of saving (e.g. to meet unexpected expenses) or as a store of wealth (e.g. pension). Slaughtering of livestock is very much a terminal function and would tend to be of older, less productive animals.

The persistent droughts experienced throughout the 1980s and 1990s have undermined the traditional role of cattle. Drought-induced losses of cattle have affected both the commercial and communal herds but losses have usually been more severe in the drier Communal Areas. In Semukwe livestock losses were as high as 75 per cent as a consequence of the 1992 drought (Ellis-Jones *et al.*, 1994) but were probably lower in Mberengwa. Accurate records on the numbers of cattle held in the communal herd are difficult to obtain and those for losses sustained are even scarcer. The accounts of many households during the enumeration period confirmed the severity of the 1992 drought during which a substantial proportion lost the few head of livestock that had survived the successive droughts of the late 1980s.

One apparent consequence of the extent of drought during the last two decades in Zimbabwe is that there are signs that this is leading to a change in the structure of the communal herd. It would appear that increasingly donkeys and goats are fulfilling many of the functions previously performed by cattle. The number of donkeys is growing in the more arid Communal Areas like Semukwe and to a lesser extent in Mberengwa. Evidence in support of this trend is provided in a common complaint from respondents that donkeys were expensive to purchase. This would tend to suggest that the demand for donkeys is exceeding supply so exerting upward pressures in their price. This would arise from the hardiness of donkeys as compared to cattle and their ability to survive a period of drought in greater numbers. However, donkeys are not as strong as oxen and are not able to plough as deeply resulting in poor moisture conservation. Thus, the substitution of donkeys for cattle in agriculture has not been perfect in terms of the quality of the resultant tillage.

Goats are able to thrive on a wider range of browse than cattle and are less susceptible to the effects of drought. The small amount of milk they are able produce would be usually sufficient to meet a household's daily requirement for consumption with tea. A strong demand for their meat in urban areas means that they are readily convertible into cash to meet household expenses such as food and school fees. Therefore, the main benefits of goats tend to be realised more at the socioeconomic level in meeting basic household needs for milk, as a means of saving and a store of wealth.

The active management of all types of livestock is generally poor. Cattle and goats are penned at night for their protection from predators and are turned out in the mornings to graze. The animals graze on communal lands over which there appeared to be little, if any, constructive management (plate 8.4). Attempts were made during discussions with farmers to determine if distinct grazing areas existed. These discussions tended to confirm that animals were released daily to graze freely in the surrounding areas. The low availability of grasses during the dry season meant that goats in particular grazed the leaves of smaller trees and bushes. This compounded the problem of the regeneration of the bush and led to the widespread compaction of exposed soils. This resulted in increased run-off during the rainy season and, in the extreme, to the incidence of sheet and inter-rill erosion.

Plate 8.4
Communal Herd on Grazing Land - Semukwe 1998



Concern on the part of the government and aid agencies during the 1980s over the effects of over-grazing in the Communal Areas led to the funding of a number of grazing schemes. This aimed to provide paddocks in specific areas in which rotational grazing was practised. Their impact on over-grazing was limited and have now been largely abandoned. The main causes for the general lack of success were a combination of conflict of interest, vested interest and disinterest. The location of paddocks frequently failed to consider accepted village boundaries so that confusion arose over which households were eligible to use the scheme. Households with larger numbers of cattle tended to use the paddocks as finishing pens prior to the sale of the animals but

continued to graze them on surrounding lands at other times. As a consequence, those households with fewer animals became marginalised and were therefore unable to alter their grazing practices. Under these circumstances it was difficult to mobilise the interest of the community in managing local grazing practices. The negative impact of successive droughts on the total number of animals held has contributed further to a decline in the motivation to improve the management of grazing in the Communal Areas. Moreover, many farmers would suggest, and in common with some researchers on the matter (Behnke *et al.*, 1993; Ellis, J. E., 1988; Westoby *et al.*, 1989) that the condition of the range is more of function of long-term rainfall patterns than the number of livestock held.

Selective breeding is not practised but rather mating takes place during the periods when animals are released for grazing. In cattle this can result in negative selection since larger bulls are castrated to be used as oxen for ploughing with smaller and weaker bulls retained for mating purposes. The Communal herd is therefore a mixed bag of indigenous and exotic species. The poor control of the selection of breeding animals can raise their susceptibility to various problems during the dry season. For all types of livestock these would include weight loss due to insufficient forage and water availability leading to the slow growth of animals, the impairment of reproductive functions, a lowered resistance to disease and higher mortality rates.

The routine veterinary treatment of animals was recorded rarely during the survey. Farmers appear to be unaware of the full benefits of prudent and timely animal health care. The dipping of cattle to protect against tick-borne diseases was widely practised

where dips and chemicals were available. Cattle dipping is provided by the government for a small charge in the Communal Areas. The survey revealed that this was regularly undertaken in Semukwe but that the practice had largely ceased in Mberengwa at the time of the enumeration due to budget constraints. Reduced budget allocations in real terms have been experienced by government departments offering services in the rural areas including agricultural extension, water and irrigation, roads, veterinary and health. Much of the reduction in allocations of central funds can be attributed to ESAP through the need to trim government expenditures.

Farmers often considered the regular inoculation of animals an unnecessary expense either because of insufficient cash or because they were unaware of the value of the protection offered. Discussions with an agricultural extension worker in Semukwe provided a story which confirms the lack of appreciation on the part of many farmers of the full benefits of animal health care. Mortality rates amongst goats may be as high as 50 per cent largely due to low rates of inoculation (Petit, 1998). Farmers had been advised to inoculate their goats against pulp kidney, a common ailment in the Communal Areas. Each treatment cost Z$3.00 (about 10 pence) and was readily available from the extension services. This was successful initially in encouraging a number of farmers to initiate a process of inoculation in their herds. However, high mortality rates in goats result from a range of diseases, many of which are tick-borne. Where an animal that had been inoculated subsequently died (and most likely from causes other than pulp kidney), farmers became less convinced of the benefits of the practice and were reluctant to continue. The effect was to reinforce existing misconceived opinions regarding the value of purchased veterinary care. Additionally,

the prevalence of tick-borne diseases and the growing number of goats in the Communal Areas has meant that there was an increasing need to provide dips. The extension worker confirmed that no funds were available to initiate the development of dips for goats so that high mortality rates amongst this category of livestock would persist.

The total number of livestock held by individual households is presented in figure 8.10. This indicates that more households in Mberengwa are without any type of livestock and that the majority of households in both survey areas owned less than twenty animals. It also confirms that the ownership of total numbers of animals in excess of forty was restricted to a few households in Semukwe. While this distribution is interesting from the perspective of the household ownership of livestock it says little about the structure of individual herds. More useful insights into this structure are provided in figure 8.11 and 8.12. These figures present the structure of the total number of cattle, goats and donkeys held by the entire sample of households in both survey areas. In order to provide a visual contrast between the two distributions the scale on the Y-axis was set the same in both figures. The figures consist of stacked bar charts with the colour coding for each type of animal the same for each distribution. The result is quite striking and confirms Semukwe as an area where livestock production is far more significant than Mberengwa. In Mberengwa, the total numbers of all types of livestock were much smaller. Cattle are coded in grey and form the lower end of the bar at the X-axis. It is clear that in Semukwe that cattle ownership is restricted in the main to those households with larger herds. Goats constitute the most important type of animal in both areas but are much more significant in Semukwe. Finally, donkeys

are held in smaller numbers in both areas but are owned by a larger number of households in Semukwe.

Figure 8.10

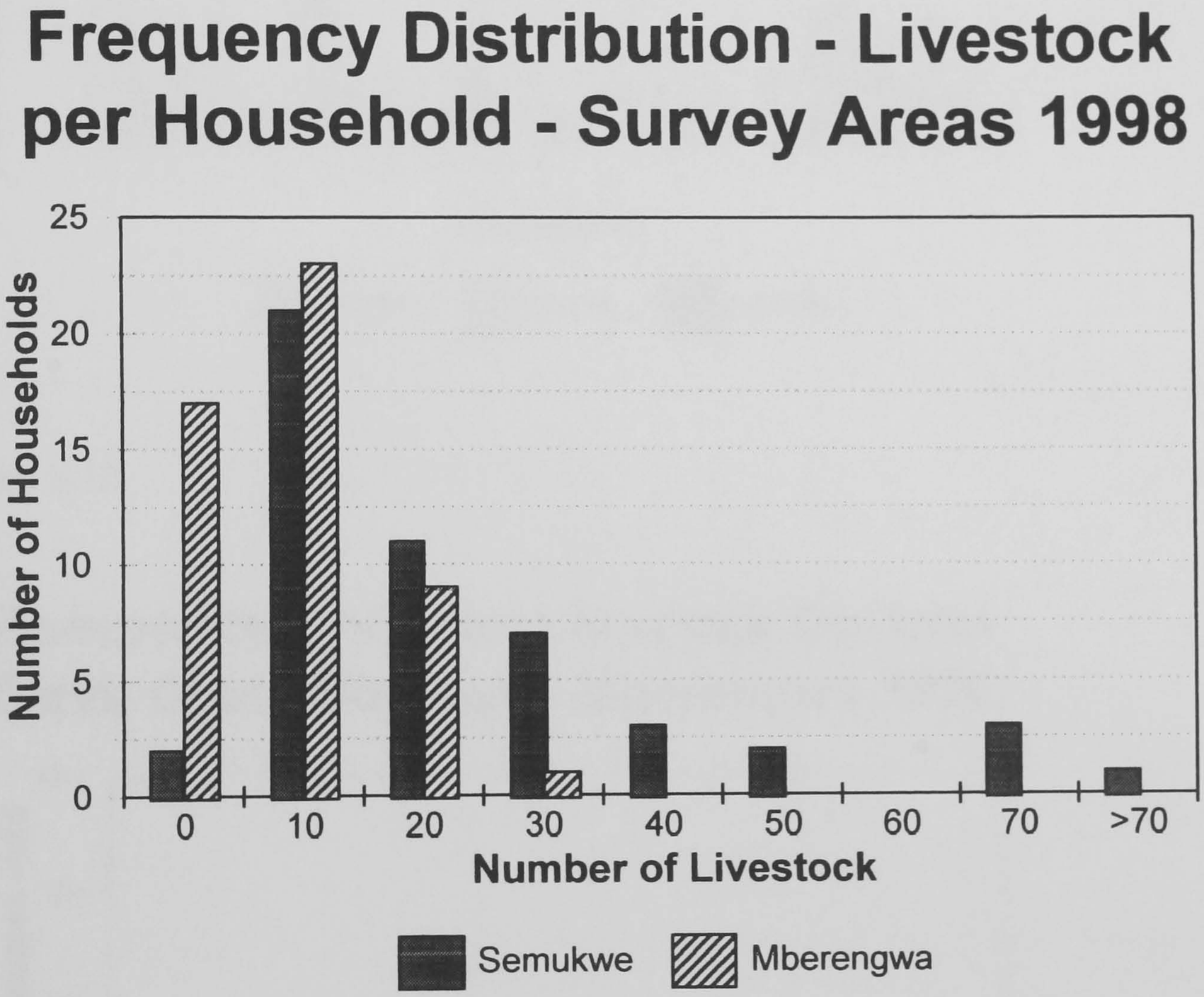


Figure 8.11

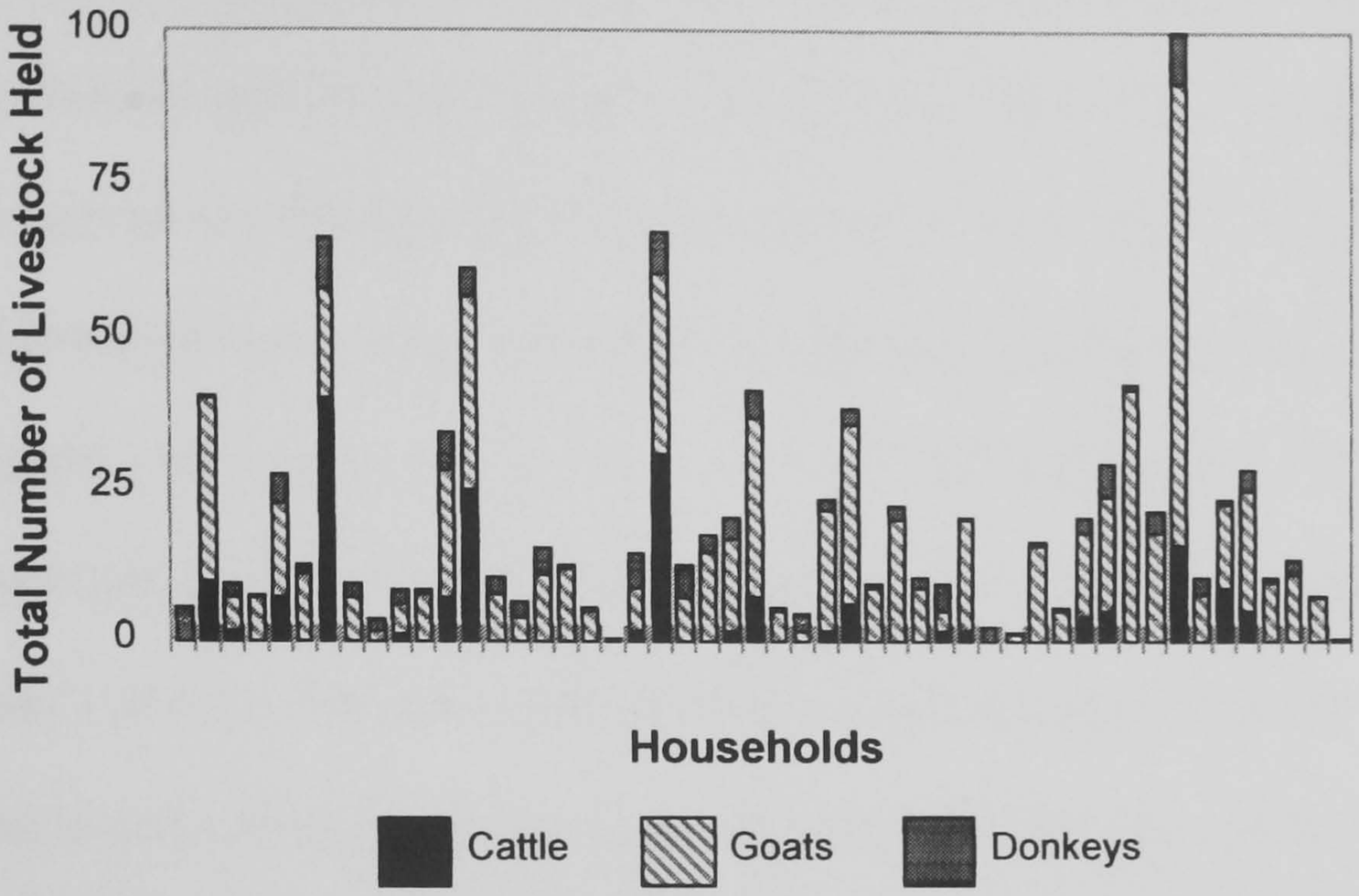
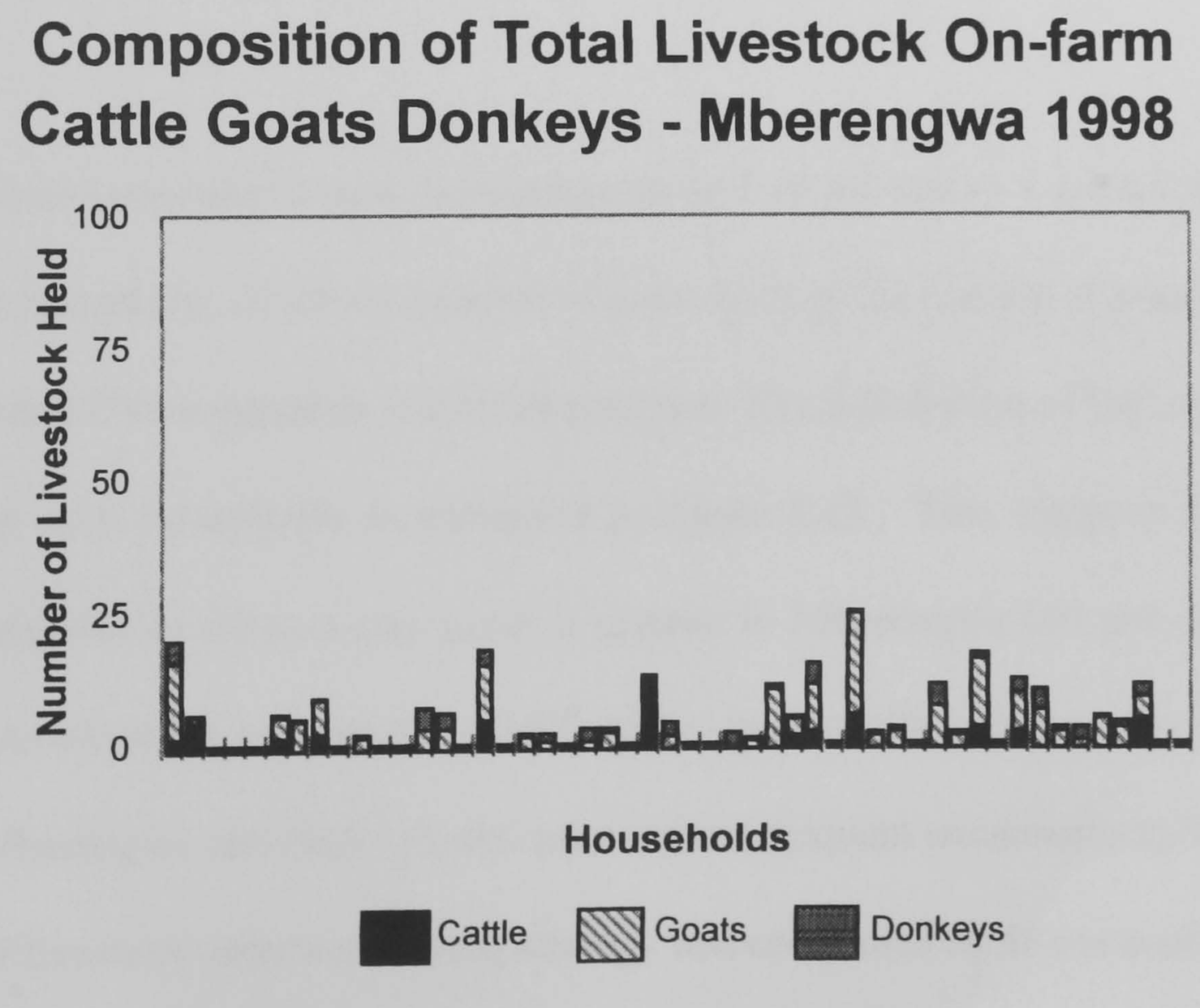


Figure 8.12



8.10 The Role of Goats in Household Food Security

This research aims to identify the elements of household resilience and to determine how these have been affected by exogenous change in recent years. The discussion to this point concerning livestock has restricted itself to their functions in arable production and the typical forms of husbandry practised. The general shortage of draught power in both areas and the implications for the timely and efficient cultivation of fields has been noted. Insufficient draught power and animal manures can affect the quality and the quantity of the cereal crop that is harvested. What has not been established is the role of livestock in augmenting household food supplies through their sale. Cattle are sold infrequently because of their strategic function in arable production and in determining the socio-economic status of households. Sales would tend to be of older and less productive animals. A total of four households in Semukwe and two in Mberengwa confirmed that they had sold cattle during 1998. Similarly, donkey sales are rare and no sales were recorded in either survey area.

Goat ownership is more widespread in both of the survey areas but far more significant in Semukwe. The total number of goats held by the sample of population in Semukwe was 757 in contrast to 162 in Mberengwa. The distribution of the numbers of goats held by each households is presented in figure 8.13. This suggests that the number of households without any goats is greater in Mberengwa (40 per cent) as opposed to Semukwe (8 per cent). Additionally, that smaller flocks were more common in Mberengwa and larger flocks were a more frequent occurrence in Semukwe. The use of livestock sales as a coping strategy was confirmed by 48 per cent of the total sample of households in Semukwe but by only 6 per cent in Mberengwa. However, of those

households in Semukwe that owned goats, only 11 (out of 46 or 24 per cent) indicated that they had sold any during 1998. In Mberengwa, just 5 (out of 30 or 16 per cent) had sold goats to purchase food. If food insecurity is widespread in the survey areas the question must be asked why so few households had sold goats in order to improve the supply of food during critical periods?

The most obvious answer is that food scarcity is a temporary phenomenon for which households respond by reducing the quantity and variety in their diets. This tends to be confirmed by the responses of 88 per cent of households in Semukwe and 66 per cent in Mberengwa that indicated reducing consumption as a dominant strategy. However, this does not explain why the sale of goats was relatively low in Semukwe when compared to the total number of animals owned. The reasons for this apparent discrepancy are complex and require the husbandry and marketing arrangements for goats to be considered.

The husbandry of small livestock is often considered to be of secondary importance to that of cattle. The ability of goats to thrive under extremely variable conditions serves only to reinforce this attitude. Nonetheless, goats are susceptible to a range of diseases from birth and throughout their life. Kidding can take place throughout the year but the majority are born between August and November and March and April. Losses of kids due to neglect can be substantial during their first weeks. The main reasons for mortality at this stage would include lack of milk, unfavourable weather conditions, accidents, predators and sensitivity to diseases such as pneumonia and diarrhoea. Losses can be reduced by keeping the young animals warm and penning them for

supplementary feeding and to protect from predators. Additionally, they can be separated from the mother during the day to allow her to graze and produce milk. At night the kids should be stalled with their mothers to suckle. Young animals need to be monitored regularly during their first weeks in order that weak ones may be separated from the flock and treated where appropriate. Losses in adults due to disease and accidents can be equally devastating with mortality rates from disease alone accounting for between 35-50 per cent of all mortalities. Goats can suffer from a range of diseases against which protection is available. The unwillingness of farmers to fund primary animal care has been noted earlier in this chapter.

The data on goat production collected during the survey tend to confirm the essence of the preceding paragraph. A summary of the key components of goat production are given in table 8.5. These are very crude figures and need to be treated with caution. Most households were unable to provide accurate figures on the numbers of males and females so the inquiry was restricted to ascertaining the total numbers of goats owned. This has limited the range of analyses possible from this data set. On this basis, the figures contained in table 8.5 provide orders of magnitude rather than precise estimates of the key parameters of goat production. The birth rates estimated by the total number of births relative to the total number of goats in the sample is in the region of 40 per cent for each survey area. However, the death rate in Semukwe is about half that estimated for Mberengwa. This may be due to better husbandry in Semukwe where the production of goats is more important. This would also offer some explanation as to why, in general, the absolute number of goats and the crude growth rate of flocks is higher in Semukwe.

Therefore, it would appear that there are a number of constraints that serve to undermine the productivity of goats in the survey areas. Since the majority of households that reported owning goats had also experienced losses of both young and old animals, this would increase perceptions of risk and may discourage sales. The sale of goats may therefore be induced only when the food situation in households became critical. However, given the extent of food insecurity in the survey areas this is unlikely to account entirely for the relatively low volume of sales. The ability to sell goats when desired and the prices obtained will be determined largely by the dominant marketing arrangements.

The marketing of cattle and goats has been traditionally the function of the Cold Storage Commission (CSC). The CSC and the GMB were parastatals created during the colonial period and effectively controlled the main elements of the national food supply. Through a complex system of producer and consumer subsidies these institutions were able to regulate the prices and volumes of the basic food commodities. The CSC had additional responsibilities during periods of drought such as moving cattle from affected areas to feeding pens and the purchase and storage of distress sales. Moreover, they were required to assist with restocking when the period of drought ended. The CSC also managed a sale pens located all over the country for the purchase of livestock from both communal and commercial farming communities.

The extent of these responsibilities became too unwieldy to manage effectively during the drought prone years of the 1980s and the trading losses recorded during this period mounted. When ESAP was introduced in 1992 one of the first concerns was to improve

the operating efficiency of the main parastatals. Essentially, the role of the CSC shifted from developmental towards a more commercial approach to livestock marketing. This was effected through a process of deregulation which allowed a number of other operators to enter the industry. For example, in 1992 the CSC commanded control of 50 per cent of the market for slaughtering animals but by 1997 this had fallen to 32 per cent as a the number of private abattoirs increased (CSC, 1998). These tended to be smaller operations with a low turnover and serving local markets. By 1995, the share of the meat market controlled by the CSC had fallen from 80 to 45 per cent (Sibanda, 1995).

Figure 8.13

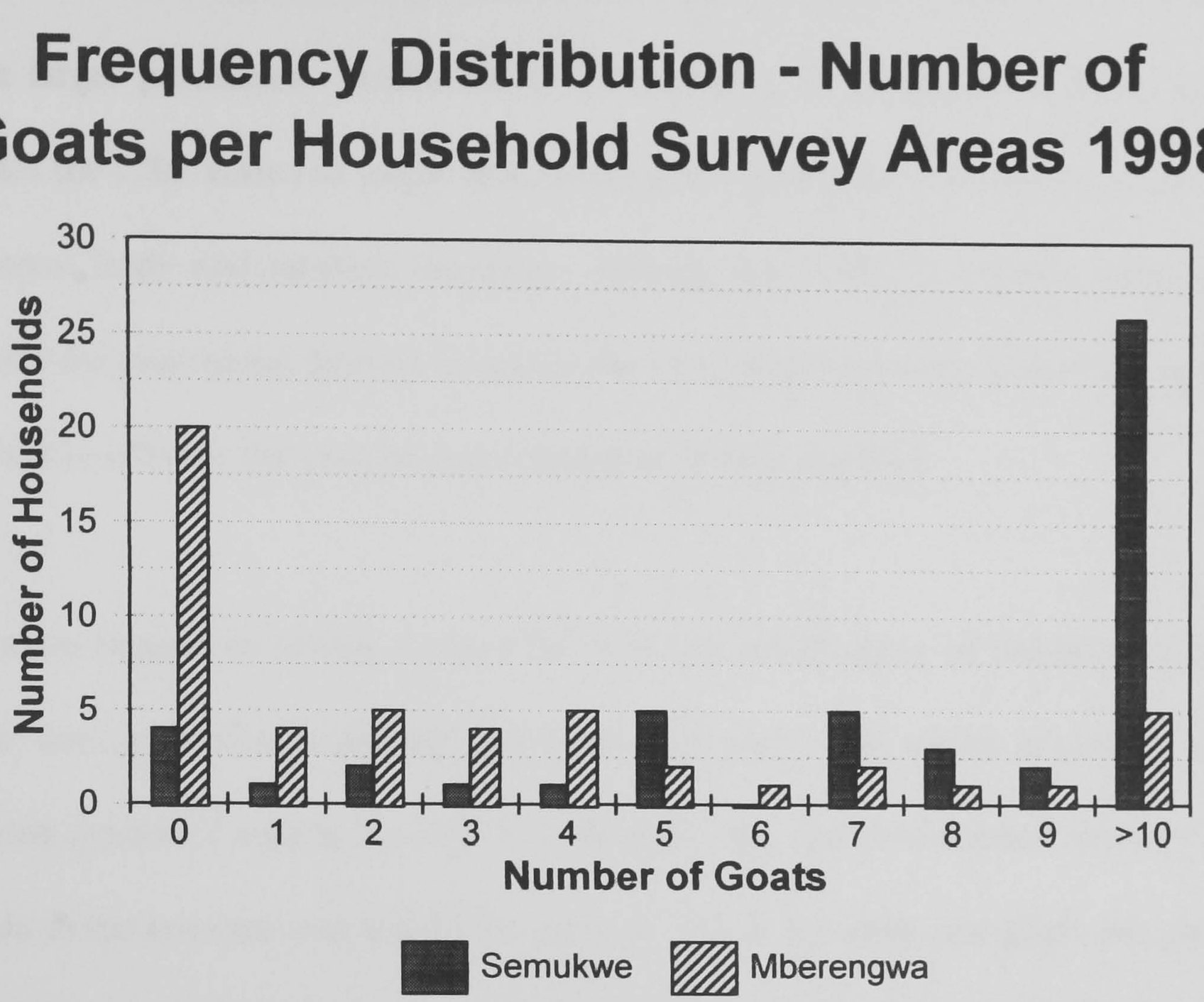


Table 8.5
Crude Indicators of Goat Productivity - Survey Areas 1998

Area	Total Number of Goats	Total Number of Births	Births as % of Total Number of Goats	Total Number of Deaths	Deaths as % of Total Number of Goats	Total Number of Goats Sold	Crude Herd Growth Rates
Semukwe	757	307	40.6	160	21.1	32	19.4
Mberengwa	162	74	45.7	63	38.9	13	6.8
Total	919	381	41.5	223	24.3	45	17.2

The effects of the deregulation of the meat market in the Communal Areas have been varied. The CSC began to reduce its activities in these areas and to restrict its dealings to the larger producers. Additionally, by confining its purchases to better quality animals the CSC aimed to target specific markets, particularly the national hotel and restaurant trade and markets overseas. During the 1990s, it became increasingly difficult for communal farmers to sell to the CSC either because of the low volumes they had to offer or the general poor condition of their animals.

One main benefit of selling to the CSC was the transparency in the prices offered. These were published nationally for goats and cattle and varied according to the different grades of animal for both live weight (LW) and cold dressed mass (CDM). Trends in the nominal and real CDM and LW prices for cattle and goats are given in figures 8.14 and 8.15. These were reconstructed from data collected from CSC records held in Bulawayo. Figure 8.14 suggests that the nominal prices for cattle and goats have increased progressively since the mid 1980s. An inspection of the trends in real prices presented in figure 8.15 reveals a different picture. The real prices offered for goats both live weight and cold dressed mass have continued to lag behind those offered for cattle. The real CDM prices for cattle and goats did increase over the period for which data are available although those for goats rose to a lesser extent. In contrast, the lowest real price was paid for live goats which was variable and remained firmly below 1986 levels throughout the period. The amount received by farmers at livestock sales in the Communal Areas would be based on this price.

Since the deregulation of the meat market in Zimbabwe a number of other operations

have moved in to fill the gap left by the departure of the CSC in the Communal Areas. Goat meat has a high bone to meat ratio and is a popular accompaniment to traditional dishes. Accordingly, there is a strong demand for this meat in the urban areas but butchers in the high density suburbs of Bulawayo reported that it was not always possible to obtain supplies. They pointed to the poor marketing and distributions for this meat as the main cause. This shortage of goat meat has led to a number of different operators cruising the Communal Areas in search of animals for sale. Their numbers include butchers, abattoir owners and petty entrepreneurs. They are poorly organised and their approach is opportunistic, simply turning up in a village and asking if any goats are available for sale. They are willing to buy single animals and may expend substantial time and effort to collect a few animals.

Figure 8.14

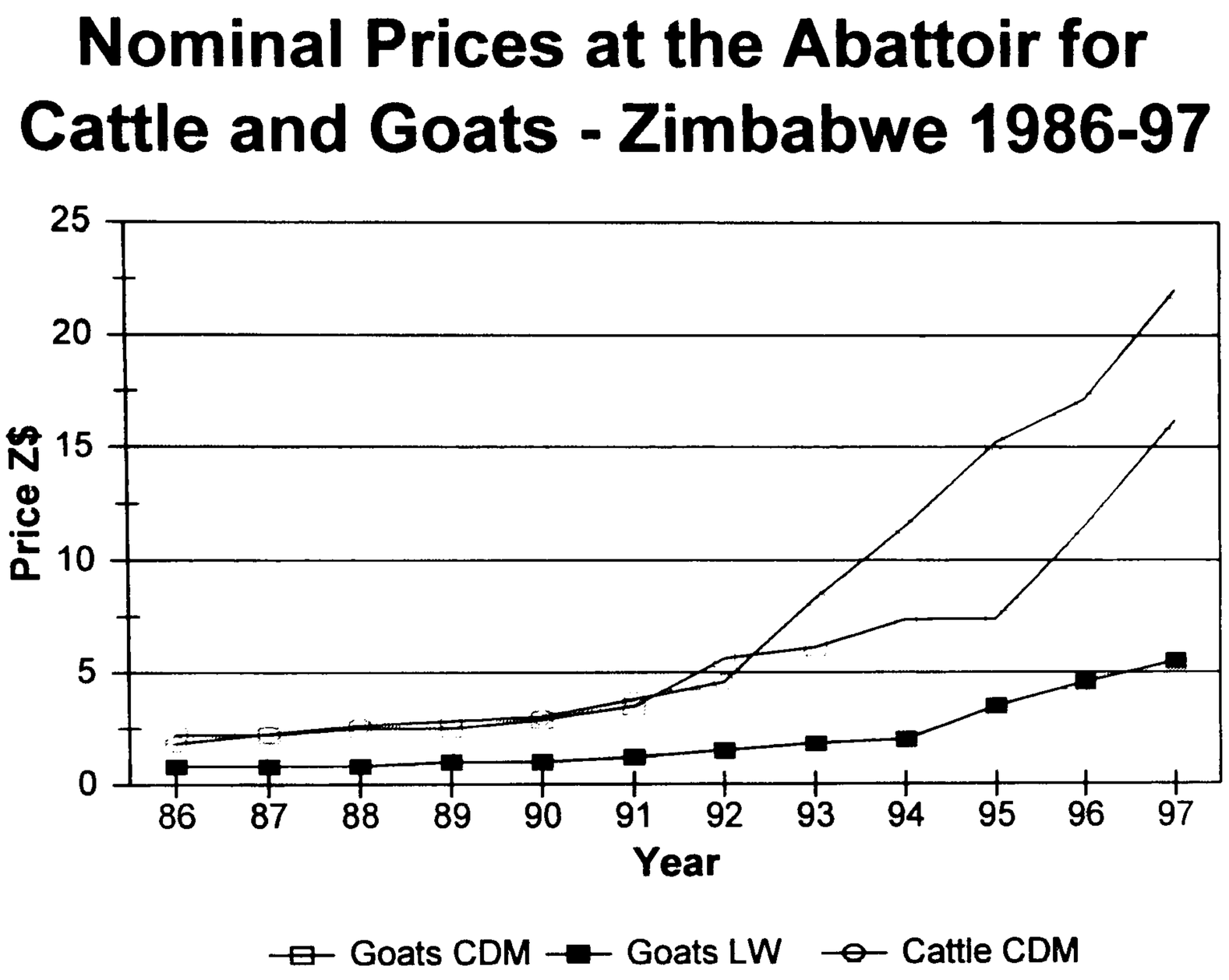
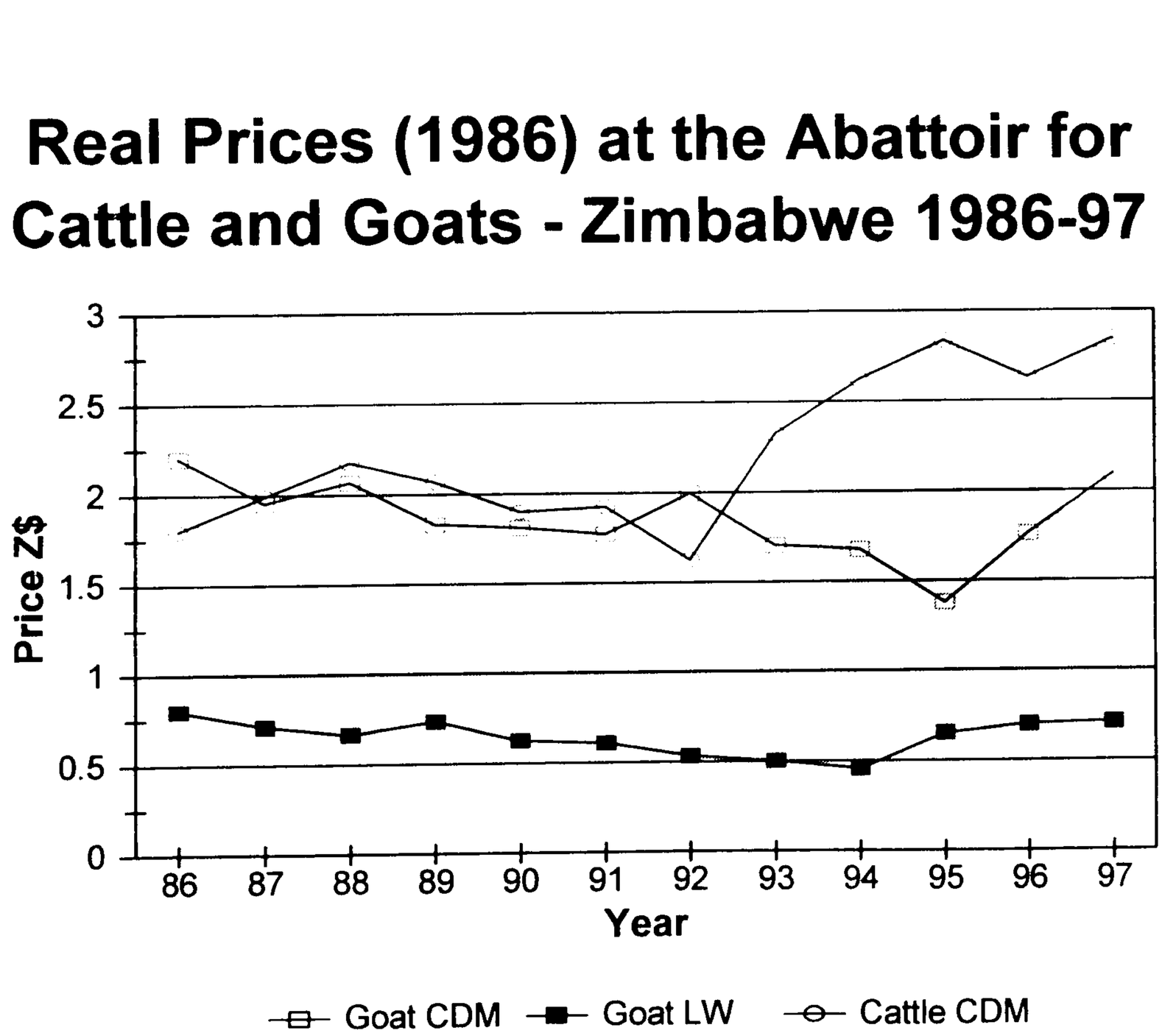


Figure 8.15



At one level, the arrival of different buyers of goat meat in the Communal Areas may be considered a benefit through the increased possibilities to sell animals. Households are no longer restricted to the fixed CSC sales but are able to sell animals when cash is required. However, most households were disparaging about the type of buyer that now operated in the Communal Areas. In Semukwe, this class of buyer had been given the name *amazongo* which translates roughly to the equivalent of a 'cowboy' trader. Interestingly, the term was unheard of in Mberengwa perhaps because this type of entrepreneur was less prominent in this area due to the lower number of goats available. The prices offered by the *amazongo* were considered to be the lowest and many households refused completely to deal with them. One reason for the low prices offered would be the high transactions costs that were incurred by buyers in finding sufficient animals to purchase. Equally, the type of household most willing to sell would tend to be those where cash was required urgently. This would reduce their bargaining position and force them to accept lower prices. Finally, buyers would be able to exploit deficiencies in the information available in the Communal Areas on the prices that animals would fetch in the urban areas. High and persistent rates of inflation during the 1990s resulted in the prices of many food commodities increasing frequently. Thus, more ruthless buyers may be able to convince households in their ignorance that the price offered was reasonable and fair.

The consequences for household food security of the recent changes in the marketing arrangements for livestock in the Communal Areas are probably negative. The decreased possibilities to sell to the CSC have resulted in the loss of transparency in the prices offered. The calibre of buyer that has entered the market to purchase livestock

has not reassured sellers. Prices are now opaque as sellers in the Communal Areas have limited opportunities for comparison. The degree of monetisation in the Communal Areas is low whereas in urban areas inflation has resulted in prices increasing dramatically and regularly. The existence of high levels of inflation may persuade owners of livestock to retain animals due to declines in the real value of money. The overall effect has been to create an atmosphere of distrust within which the existing reluctance to dispose of livestock is likely to increase. The initial strategy for dealing with food shortages appears to be to reduce consumption. When the situation became more critical households may be induced to sell livestock where other options were not available. The lack of transparency in the prices offered may in some circumstances encourage households to defer sales and so prolong hunger within the household. Thus, while some of the functions of goats may be to act as a means of saving and insurance against the risk of crop failure, imperfect marketing arrangements have limited the effectiveness of goat sales in satisfying these ends. This will diminish the ability of goat ownership to contribute to the resilience of households where the exchange rate between goats and food staples has declined as a consequence of changes in the marketing arrangements.

8.11 Conclusion

This chapter has considered the contribution made by agricultural production in supporting the resilience of households and the degree of food security enjoyed. The detail in which this task has been undertaken reflects the strategic importance of agricultural production to the resilience of rural households. The typical resources at the command of rural households (land and livestock) results in a bias towards agriculture as means of expressing household efforts. However, recurrent droughts have limited the role played by arable production in satisfying the annual requirements for domestically consumed cereals, typically maize and to a lesser extent sorghum. During 1996/7 and 1997/8 the yields of these cereals estimated in terms of household consumption months varied widely between households, regions and seasons. The main cause of this variability was differences in the level of rainfall received both locally and between survey areas. Additionally, other factors such as the poor condition of the soils, the availability of draught power, manure, labour and financial resources and the timing of planting would all have influenced the quality and quantity of the crop harvested.

A dependence on the hiring of services during the preparation period was observed in both survey areas as a consequence of widespread deficiencies of key inputs. It appeared that the traditional practice of pooling resources through work groups (*ilima*) was declining through the increased requirement by households for cash. Those households without sufficient financial resources were forced to cultivate their fields by hand, increasing the likelihood of a poor harvest. It was noted that the impacts of drought persisted into subsequent years by decreasing the number of cattle available as

draught and the quantity of manure for application to the soil. It appeared that attempts were being made to overcome this constraint by restructuring the communal herd to include more donkeys. Donkeys had improved the availability of draught power but the quality of the preparation was inferior to that possible through the use of cattle. The role of livestock in both arable production and the contribution made to household food security was more important in Semukwe than in Mberengwa.

The dominant characteristics of those households able to secure a larger proportion of their cereal requirements from domestic production differed between survey areas. In Semukwe the importance of livestock and larger areas of land were more significant than in Mberengwa where the earning of reliable incomes was more established. The availability of such incomes enabled households to eke out domestic supplies by supplementing them with purchased food. As a consequence, domestically produced cereals were able to sustain households over longer periods. This hypothesis was supported by the finding that the failure of the crop over two successive seasons was not critical in all of the households that experienced them. Incomes in these households enabled the regular purchase of food such that the domestic production of maize and other crops had assumed a secondary role.

Nevertheless, food insecurity appears to be pandemic in both survey areas. This was suggested by the number of households unable to grow grain sufficient for their annual requirements and who also lacked reliable incomes or viable numbers of livestock. There was also a reasonable correspondence between the estimated proportion of households in this category with those that confirmed reducing consumption as a key

coping strategy. This would tend to imply that food insecurity is predominantly transitory in nature although the extent of chronic insecurity is not clear at this stage.

The multiple functions of livestock were noted, particularly those fulfilled at the socio-economic level in providing a means of saving and insurance against the risk of crop failure. However, the husbandry of livestock was poor either through ignorance or limited financial resources to provide the necessary veterinary inputs. Equally, the availability of dips against tick-borne diseases was variable for cattle and non-existent for goats due to reductions in government expenditures as a part of ESAP. The function of goats was singled out for special examination through the strategic role they perform in household food security. Deficiencies in basic husbandry had led to high recorded rates of mortality in both young and adult animals. This had increased perceptions of risk and had encouraged the prolonging of hunger by deferring sales for as long as possible during critical periods of food supply. Hunger is reversible but the sale of livestock is absolute in terms of future options foregone.

The reluctance to dispose of livestock has been compounded by changes in the marketing arrangements which arose as an indirect result of the ESAP inspired deregulation of those markets previously dominated by the parastatals. A major consequence was that the CSC had scaled down its activities in the Communal Areas. Prices offered for livestock had become less transparent and the organisation of marketing was now undertaken by a range of buyers. These buyers capitalised on the general lack of information in the Communal Areas regarding the prices that could be obtained for livestock in urban areas. Moreover, the existence of food insecurity was

used as leverage to drive down the prices offered. As a result, the burden for adjustment in this market had fallen disproportionally upon communal farmers in the lower prices that they were able to negotiate. This would reduce the amount of maize that could be purchased through livestock sales. The effect has been to heighten perceptions of risk and to encourage the sale of goats to be deferred over longer periods. From the perspective of household food security this would tend to increase the reliance on reducing consumption as the dominant coping strategy.

The concept of resilience is particularly useful at this level of analysis since it focusses on the nature of household efforts to maintain access to food during and after periods of food shortage. The government has attempted to support rural households through loans of grain but the extent of food insecurity in the semi-arid Communal Areas has proved beyond their organisational and financial capacities. Although loans of grain may resolve, at least partially, the problem of food insecurity in the short-term it does not contribute to strengthening household resilience in the longer term. Loans of grain tie up the resources of various government departments in recording and collecting repayments and those of households in servicing their food debt obligations. These resources could have been directed more productively to support the resilience of households. In Semukwe and to a lesser extent in Mberengwa, livestock contribute to the efficiency of arable production and the food security position of individual households. Redirecting government expenditures towards improving animal husbandry through the agricultural extension services would offer a more cost-effective approach by supporting the autonomy of households in the procurement of food supplies. By encouraging independence a greater degree of flexibility is conferred in

managing food security at the household level than is possible through a system of welfare loans.

The benefits of deregulation are also debatable where markets are incomplete, at least in the short term. The terms of trade between rural and urban areas are weighted against communal farmers and have been exacerbated by recent changes in the marketing of livestock. Policy-making needs to be more active and cannot assume that markets will develop spontaneously in areas previously dominated by the State. The tenets of the market are culture bound and may not transfer perfectly between different societies. An increasing reliance on market mechanisms as a part of the structural adjustment programme has involved a reduction in the developmental role of the government. This has exposed households to the vagaries of the market system which are more pronounced in less developed countries like Zimbabwe. The degree of monetisation in the Communal Areas is low and is correlated strongly with the success of the annual harvest. The price signals received in the Communal Areas which lay very much on the periphery of the formal cash economy may be heavily distorted. This is particularly true for food staples and livestock. The nominal retail price of maize has risen progressively in recent years due to factors unrelated largely to the aggregate availability of grain. Similarly, the prices offered for livestock in the Communal Areas have fallen despite a strong demand from the urban areas. A willingness to work within the market economy is unlikely to develop in these circumstances. Instead, perceptions of risk will increase and reinforce inward-looking behaviour in the rural economy.

The role of marketing in providing the links between producers and end users is often

underestimated. Efficient systems will increase the price received by producers and lower those paid by consumers. Much of the distortion in these prices is caused by market imperfections. These could be reduced through the increased availability of information on the wholesale and retail prices paid for meat in the urban areas. Equally, institutional development needs to be encouraged to persuade farmers of the potential benefits of collective organisation through producer groups. Coupled with information on prices this would improve the negotiating position of farmers and reduce the transactions costs of buyers.

In regions where agricultural production is susceptible to the effects of climatic variability the collective organisation of farmers can assist in spreading risks from the individual to the group. The process of commercialisation in Zimbabwe appears to be undermining the traditional practice of pooling of resources in favour of an increased preference for cash. Equally, the institutional reforms of the post-independence period have subverted traditional structures of organisation through which collective action has been generated. Policy-making needs to recognise this and sustain those practices and traditions that have proved effective in managing risk. The contemporary development of rural areas should attempt to combine elements of those practices that have enabled households to cope with adversity in the past with those that will contribute to their survival in the future.

Finally, the survey results presented in this chapter suggest that households are severely constrained in their efforts to increase the domestic production of food. Although, households have continued to concentrate on production-based entitlements to food on-

farm, the emphasis of strategies was observed to be differentiated according to survey area. For example, the production of small livestock would appear to be a more important element of resilience in Semukwe than in Mberengwa where the maintenance of vegetable gardens is a more significant practice. Moreover, these strategies tend to be differentiated by gender. Thus, where agricultural production is unable to satisfy domestic requirements, the efforts of households must shift off-farm if the effects of food insecurity are to be minimised. The process of eking out domestic supplies can only be sustained by securing additional supplies of food from non-farm sources. The off-farm dimension of household resilience forms the principal interest of the next chapter.

Chapter Nine

The Components of Resilience Off-farm

9.1 Introduction

Where the ability of agricultural systems to produce sufficient food is constrained by agronomic and climatic factors the earning of incomes off-farm assumes critical importance in determining the degree of food security enjoyed. Households that are deficient in domestically produced sources of food, especially cereals, will be required to augment supplies through market purchases. In this respect, a main interest of this chapter is those efforts of households aimed at the earning of incomes to purchase food. However, access to purchased sources of food has become more tenuous as a consequence of the macroeconomic reforms introduced in Zimbabwe during the 1990s. The effects of concern to rural households have been frequent increases in the retail price of maize and the reduced availability of paid employment. Conditions have therefore been created under which more vulnerable households may be required to adapt existing strategies or to consider developing new means of access to food.

Therefore, this chapter seeks to consider how households have exploited opportunities off-farm to improve access to food in response to constrained possibilities on-farm. Households have been obliged to consider developing different means of access to food, particularly those that derive from own-labour and trade-based entitlements. In the schematic treatment of the components of resilience presented in chapter two off-farm efforts are summarised in the lower half of the hexagon. The strategy domains in this

region emphasise the role of migration, petty production and the environment in the earning of incomes. In areas characterised by climatic and economic uncertainty the strategy of earning of incomes from a diverse range of sources may offer support for the resilience of households. Individual incomes earned off-farm may be variable in amount and irregular in receipt such that their impact on household food security is erratic. However, the collective contribution of a range of incomes from diverse sources may be more significant in smoothing consumption. To assess the extent to which the total number of income sources provides an indication of the degree of food security enjoyed, the risks associated with the different elements of household strategies are evaluated.

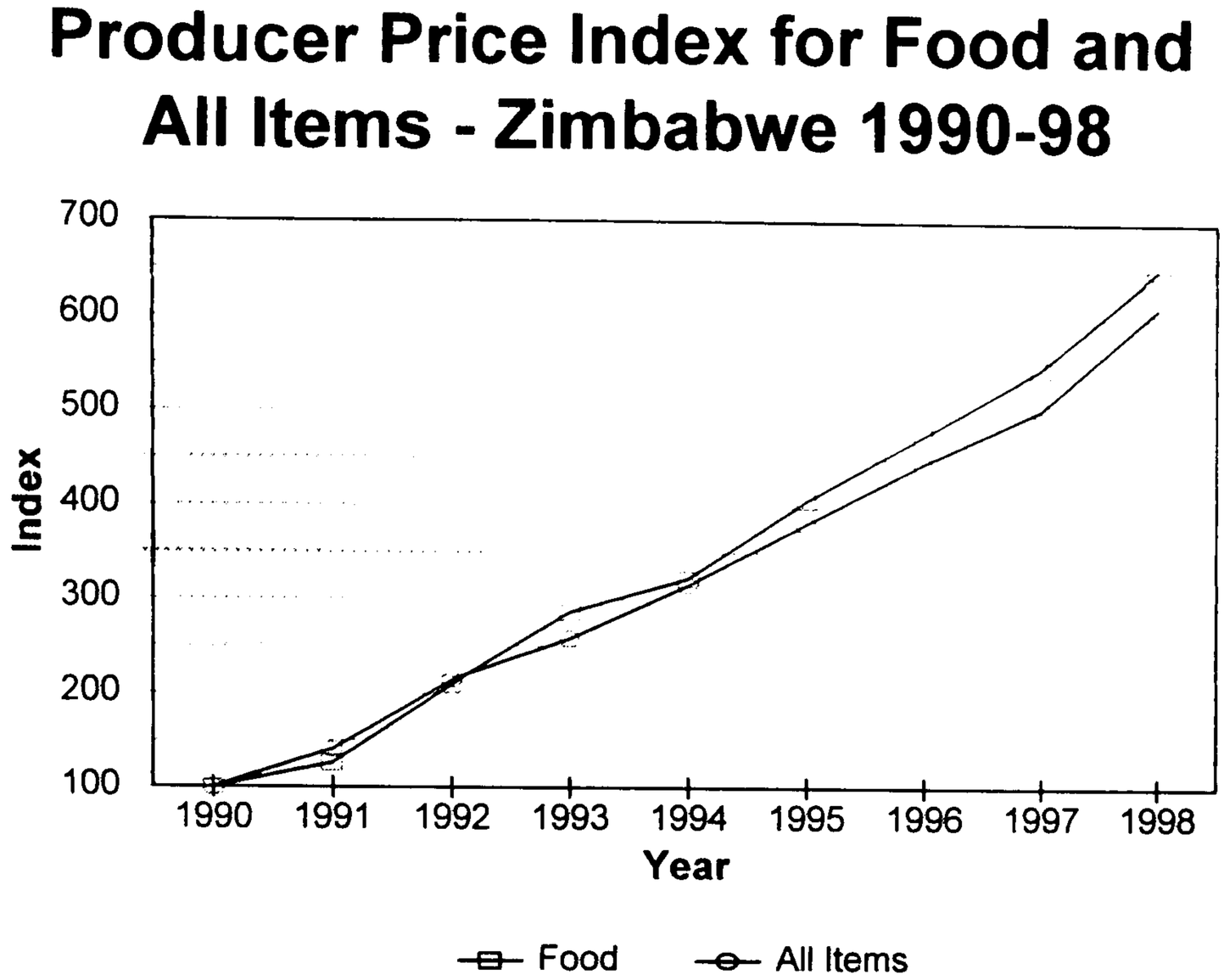
9.2 Off-farm Incomes and Household Food Security

The analysis presented in chapter eight suggests that the incidence of transitory food insecurity is widespread in both survey areas. Some households were able to produce sufficient food in years of good rainfall but the majority of households realised harvests inadequate for their annual requirements. Thus, the majority of households in Semukwe and Mberengwa are net-purchasers of food. That the majority of households are net-purchasers of food does not imply necessarily that all are food insecure. The existence of off-farm incomes can reduce the occurrence of transitory food insecurity by enabling households to supplement domestic production. However, a number of factors will determine the extent to which off-farm incomes are able to smooth consumption. Firstly, the real value of incomes will be an important factor in determining the quantity of food that households are able to purchase. In Zimbabwe, the high levels of inflation

that persisted throughout the 1990s have reduced real incomes. In those households where expenditure on food constitutes the largest proportion of income, there will be a strong correspondence between the real value of that income and the price of food. Food prices that rise faster than the general rate of inflation will reduce the real value of household incomes more rapidly in poorer households. The trends in the producer and consumer prices for maize are presented in figures 9.1 and 9.2 which were derived from CSO data (CSO, 1998c and 1998d).

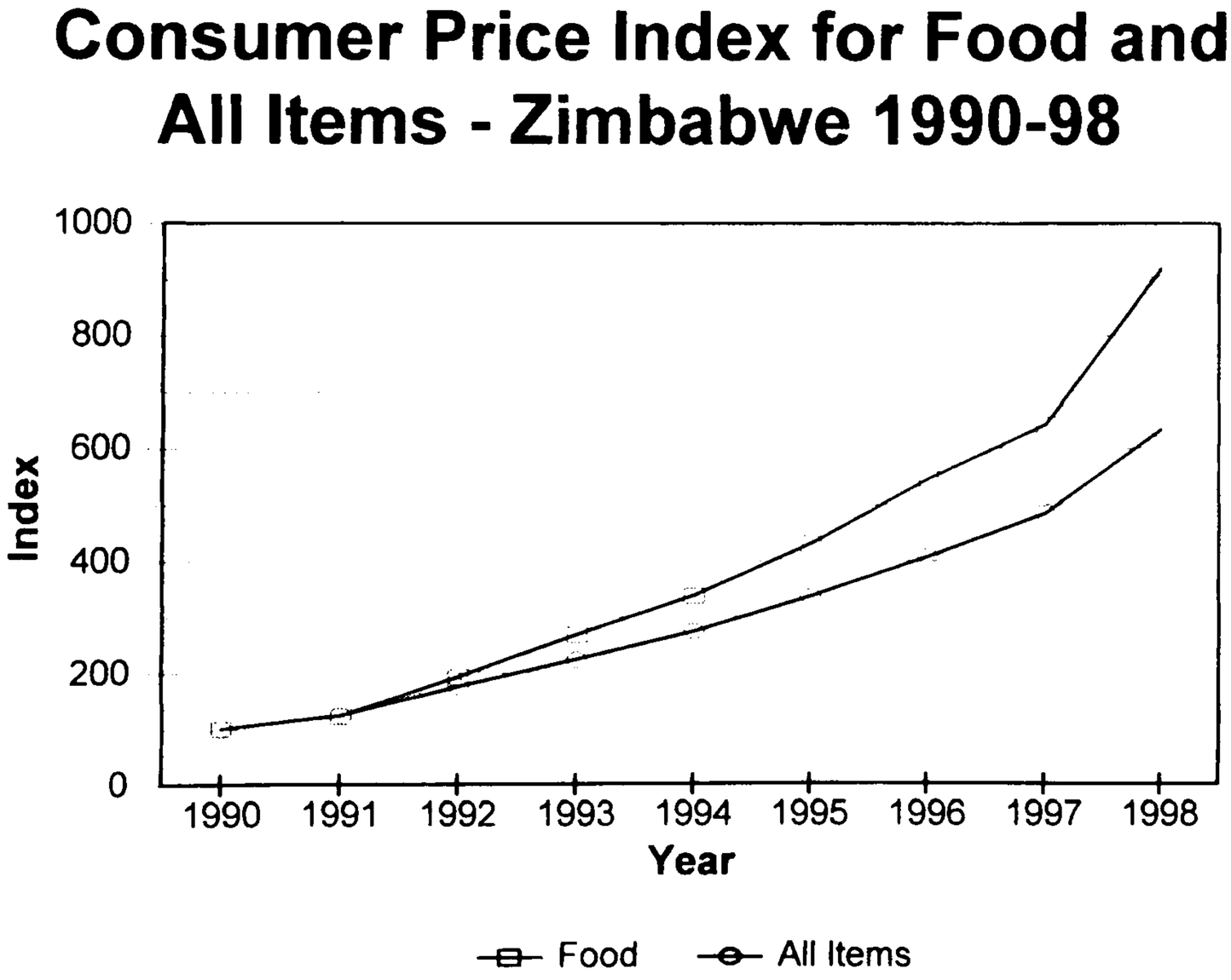
Figure 9.1 illustrates the trend in the index of producer prices of food and figure 9.2 for the index of consumer prices for food. In both figures the index for all items is included for comparative purposes. The indices of producer and consumer prices have risen faster than the general index throughout the 1990s but the rise in the consumer price index has exceeded that observed for producer prices. Between 1990 and 1998 the producer price index rose by 550 per cent in contrast to an 800 per cent rise in consumer prices. Price rises on this scale and over such a short time period will have had serious consequences for food security in those households with few or unreliable sources of income, typically those in the Communal Areas. The real price of food will increase where the index of consumer food prices exceeds the rise in the general index. The low degree of monetisation in rural economies has already been noted in previous chapters. Declines in the value of money as a consequence of rises in the real and nominal price of food will affect adversely the ability to smooth household consumption patterns.

Figure 9.1



Source: CSO (1998c)

Figure 9.2



Source: CSO (1998d)

A second factor that will influence the ability of off-farm incomes to smooth consumption will be the frequency and variability of household income flows. Clearly, the greater the degree of observed variability in the amount of the incomes and the timing of their receipt the less able they will be to contribute to household food security. A key strategy to reduce the extent of this type of variability is to attempt to earn incomes from a diverse range of sources. Thus, a third factor will be the total number of income sources that individual households may receive. The greater the number of income sources the greater the potential to offset variability in the amount and frequency of incomes. Fourthly, a degree of flexibility in the earning of incomes off-farm is essential if they are to contribute effectively to improving food security during critical periods. In rural areas, a substantial proportion of total household resources will be committed to agricultural production during specific periods of the cropping season. During these periods the ability to earn incomes off-farm will be limited for resident members of the household. Therefore, it is important that the earning of off-farm income is sufficiently flexible to accommodate variations in the household labour profile throughout the year. Those income sources that can be suspended temporarily during periods when on-farm demand for labour rises but can be reactivated later will be more effective in stabilising household consumption.

The final factor to be considered is the motivation and ability of households to earn incomes off-farm. It may be expected that shortages of food would provide sufficient motivation to earn incomes to augment food supplies. However, the motivation of households will be influenced by the extent to which perceived opportunities to earn an income exist. The incidence of food insecurity in the survey areas is regular and

widespread affecting many households simultaneously. The opportunities for earning incomes by hiring labour or from petty enterprises in rural areas will be severely constrained where household budgets are heavily committed to meeting expenditures on food. As a consequence, households may be required to increase the geographical area over which strategies for the earning of income are pursued. This may involve the development of links with urban areas such as the occasional use of urban product markets for the sale of goods, or on a more permanent basis in the case of migration to seek paid employment.

The costs of developing and maintaining such links may be outweighed by variations in the frequency and reliability of incomes earned subsequently. Under these circumstances, household enterprise is unlikely to be encouraged but may actually reinforce the more common strategy of reducing consumption. This will extend the period over which food insecurity is endured and more importantly, will undermine household resilience. The motivation of households is critical to resilience but extends beyond simple opportunity. In addition to opportunity, the effective motivation of households requires the existence of basic managerial competencies and the availability of assets, credit and information. The survey did not reveal any of these as being present to a significant extent in the Communal Areas.

A part of the survey involved the collection of data on the nature of household income sources. The aim was to establish the dominant sources of income by enterprise type and by gender, and to ascertain the reliability of these in terms of their total number, variability, frequency and flexibility. An analysis of the results are presented in the

following sections concerning incomes derived from local sources and those from remittances obtained through the migration of household labour. Before these results are discussed some preliminary observations are made on the gender distribution of household members on and off-farm. It should be recalled from chapter seven that substantial efforts were made at the time of enumeration to determine the characteristics of those members who were resident on-farm and those who were connected with the household but lived in other areas. The purpose of collecting data on absent members was to identify the existence of possible income sources in the form of remittances. The distribution of the on-farm and absent populations is presented in table 9.1

Table 9.1
The Distribution of the Household Population On and Off-farm - Survey Areas 1998

	On-Farm			Absent			Total
	Number	% by Gender	% of Total Pop	Number	% by Gender	% of Total Pop	
Semukwe							
Male	148	58.7	29.7	104	41.3	20.9	252
Female	165	67.1	33.1	81	32.9	16.3	246
Total	313			185			498
Mberengwa							
Male	150	70.8	33.5	62	29.2	13.8	212
Female	186	78.8	41.5	50	21.2	11.2	236
Total	336			112			448

Table 9.1 reveals that a larger proportion of the male and female population were resident on-farm in Mberengwa than in Semukwe measured as a percentage by gender and of the total population. In both areas the number of males on-farm was lower than for females but in Semukwe migration appears to be a more significant practice. In order to determine how differences in the distributions of the on-farm and absent populations between the survey areas affected the pattern of household income sources the analysis needs to be stratified by gender and location. The following section examines those incomes derived from local sources according to enterprise type and by gender.

9.3 The Nature of Off-farm Local Incomes

The ability to earn local incomes offers rural households the potential to improve their position of food security. Where the earning of such incomes is flexible then the disruption to on-farm activities can be minimised. Households will be more able to activate sources of this nature during slack intervals in the agricultural cycle to accumulate savings or during periods of scarcity to purchase food. Equally, the total number of income sources will influence the degree to which consumption can be smoothed during times of shortage by spreading the risk of failure of one or more sources. The total number of income sources by gender derived from the household income data for both survey areas is presented in table 9.2. It should be noted that these figures exclude the earning of income from the sale of livestock which was discussed in some detail in the previous chapter. This will be considered again when the total sources of income are examined later in this chapter.

Table 9.2
Percent Distribution for the Number of Local Income Sources by Gender Survey Areas 1998

	Number of Local Income Sources					
	0	**1**	**2**	**3**	**4**	**5**
Semukwe						
Male	60	34	6	0	0	0
Female	62	30	6	0	2	0
Mberengwa						
Male	66	34	0	0	0	0
Female	16	52	26	2	2	2

The data contained in table 9.2 for males and females without any sources of local income suggest that the ability to earn local incomes is constrained in both survey areas. About 60 per cent of males and females in Semukwe and over 60 per cent of males in Mberenbgwa recorded no source of local income. The existence of a single source of income was indicated for about 30 per cent of males and females in Semukwe and a similar percentage for males in Mberengwa. In contrast, just 16 per cent of females in Mberengwa had no income sources pointing to the importance of female enterprises in this area. This is supported by the finding in chapter seven that Mberengwa had a higher proportion of female *de jure* and *de facto* head of households than Semukwe. In the region of 50 per cent of females had a single source of income in Mberengwa and a further 26 per cent had two sources.

The dominant types of activity for earning incomes from local sources by males in the survey areas is presented in figure 9.3. This tends to confirm the low occurrence of local incomes for males and provides some insight into the most common activities. The availability of full-time employment is limited and those few recorded worked in teaching, local transport or in development work employed by the government. The majority of the local work was undertaken on a casual basis and the most common activities for males required physical strength. Thus, labouring on other farms and local construction work were the most important categories of male local employment. Discussions with males indicated that, in general, these were not undertaken on a permanent or regular basis but rather when the need for cash arose. The production of bricks and the cutting of poles for roofing tended to be commissioned and hence, the earning of income from these sources could be erratic. The approach of males to the earning of off-farm income may be considered opportunistic and motivated more by actual occurrences of food shortages than the desire to develop regular sources of income.

Figure 9.3

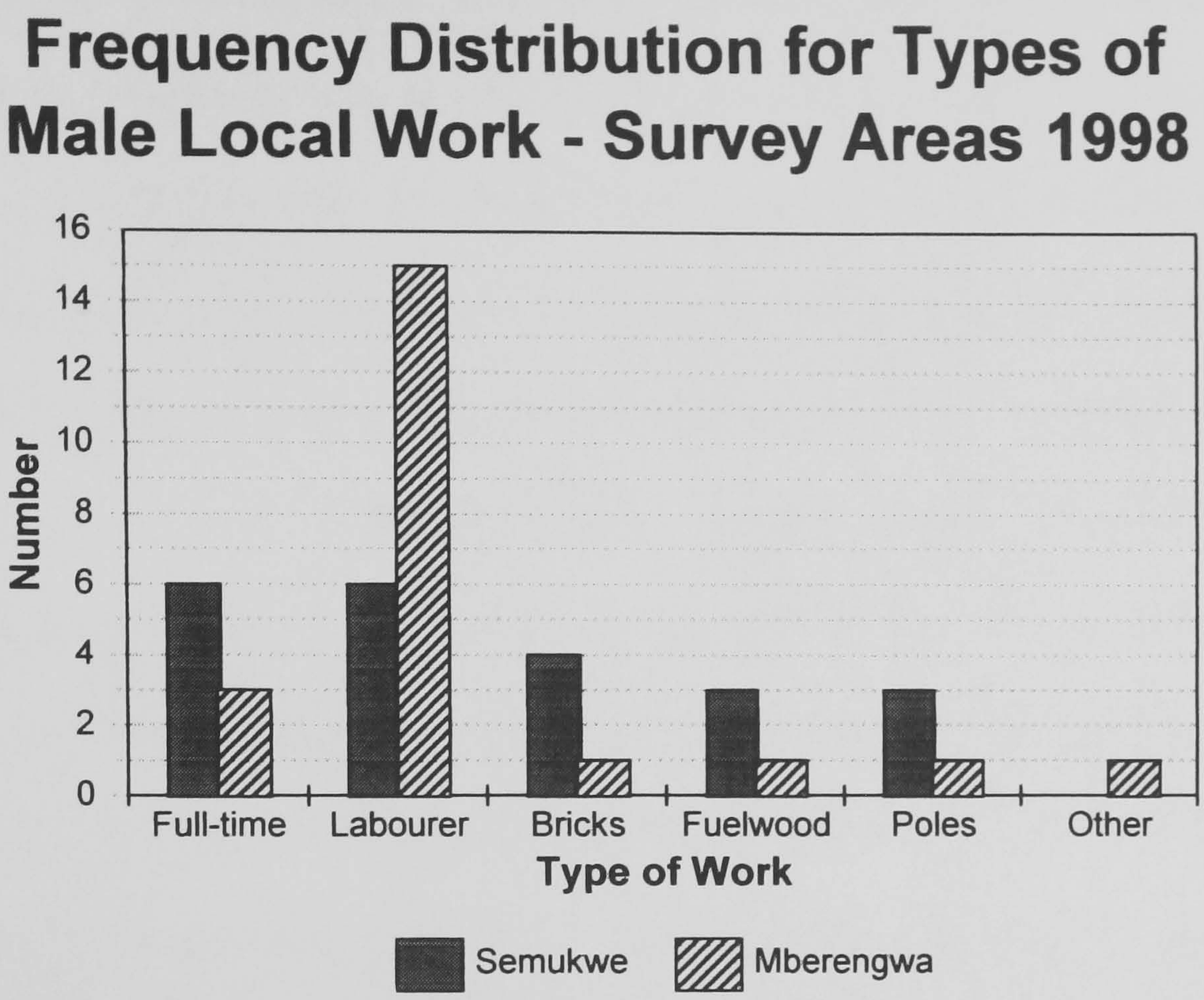
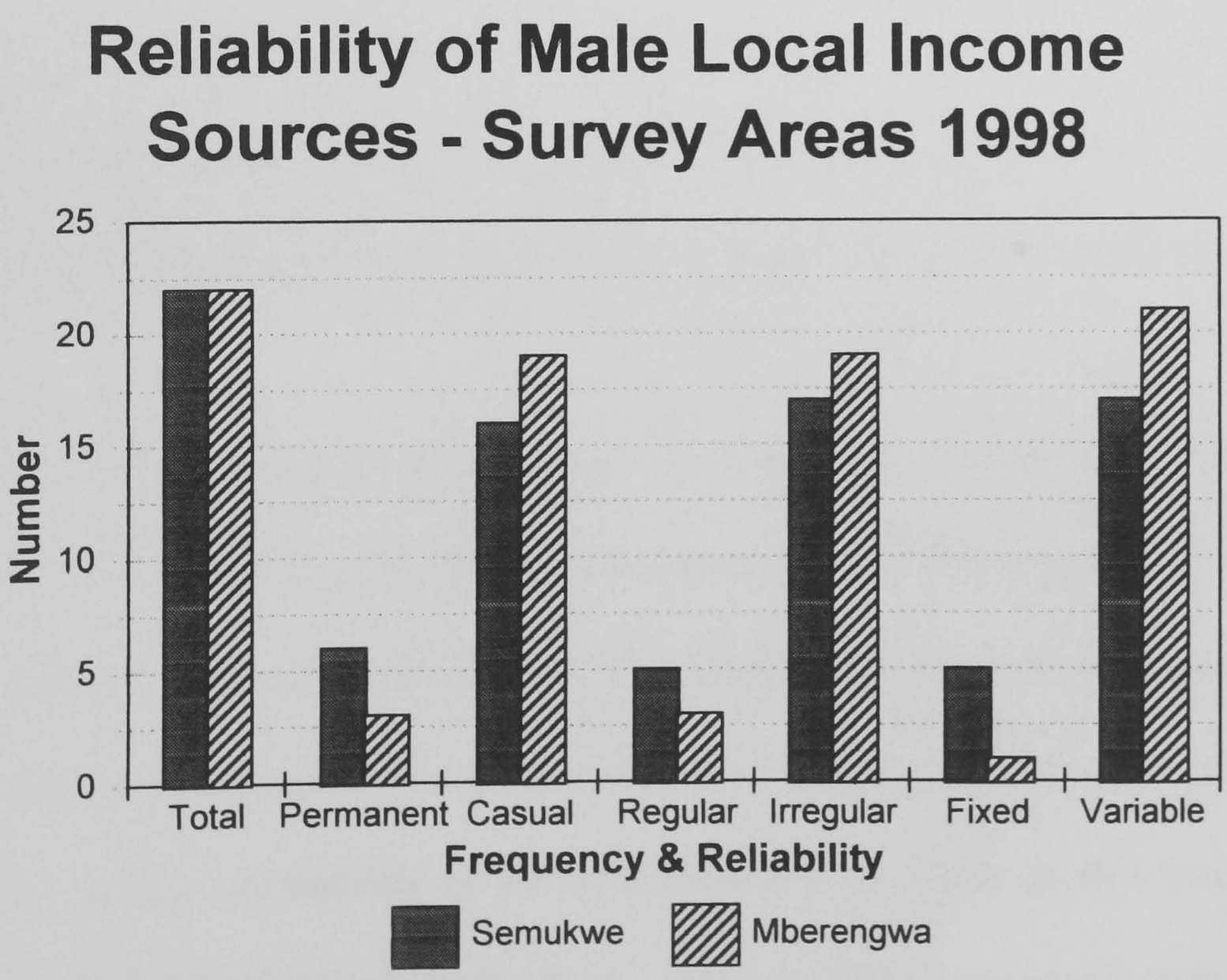


Figure 9.4



Confirmation of this proposition is suggested by figure 9.4 which illustrates the reliability of income sources from male activities. The first category on the x-axis in the figure shows the total number of income sources in each of the survey areas. The next two categories indicate whether these incomes were derived from permanent or casual employment. The final four pairs of bars in the figure show the distributions of these incomes according to whether they were regular or irregular in receipt and whether they were fixed or variable in amount. Figure 9.4 suggests quite strongly that the incomes from male activities were earned predominantly from casual sources in the form of irregular receipts and for variable amounts. More positively, the types of activity favoured for the earning of male incomes are flexible and can be activated quickly in times of food shortages. Equally, participation in these activities can be organised to coincide when the demand for labour on-farm decreases. Although access to food may be secured through labour-based entitlements during period of scarcity, where insecurity is widespread locally, the potential to realise an income from these sources may be limited. Thus, in general, the contribution that such incomes may be able to make to household resilience by ameliorating food security is likely to be erratic.

The analysis of female local income sources provides a contrast to those of males. The most common activities for female effort are summarised in figure 9.5. Of the female activities recorded, the maintenance of vegetable gardens is the most important in both survey areas although to a far greater extent in Mberengwa. The reason for this would be the greater availability of perennial sources of water in this area. The land surrounding Mberengwa benefits from a number of small mountain ranges which feed the small. shallow streams that traverse the district. Semukwe on the other hand is low-

lying area on the edge of the Kalahari desert and streams dry up rapidly as the dry season progresses. Where gardens were maintained in Semukwe these were generally close to sources of waters, usually small dams. In both areas the proximity of water determined the location of household gardens which were normally away from the farm household. The gardens consisted of small areas of land of about 10-20 metres square and protected with a fence of wooden poles and thorn bush. Gardens would be attended each day for the watering of crops and routine maintenance by adult females assisted by children. The gardens would be worked more intensively than arable land and would receive more regular applications of manure. It should be recalled from the soil analyses in chapter eight that the most beneficial soils in terms of structure and fertility were obtained from a vegetable garden in Mberengwa (plate 9.1).

The typical crops grown would include tomatoes, onions and green leaf vegetables which are used to make a relish as an accompaniment for maize porridge. The dearth of shops selling fresh food in the Communal Areas provides those households with gardens the opportunity to engage in a daily trade in vegetables. Women would gather for most of the day but more commonly in the late afternoon at trading centres and display their produce for sale. The sums raised were usually small and depended on the abundance of their produce and the general availability of cash. An indication of the meagre sums to be earned was the typical concern of women selling together in groups that the vegetables to be purchased were selected equally from their individual stocks. Each woman therefore expected a share of the total expenditure.

Plate 9.1
Maintaining a Vegetable Garden - Mberengwa Communal Area 1998

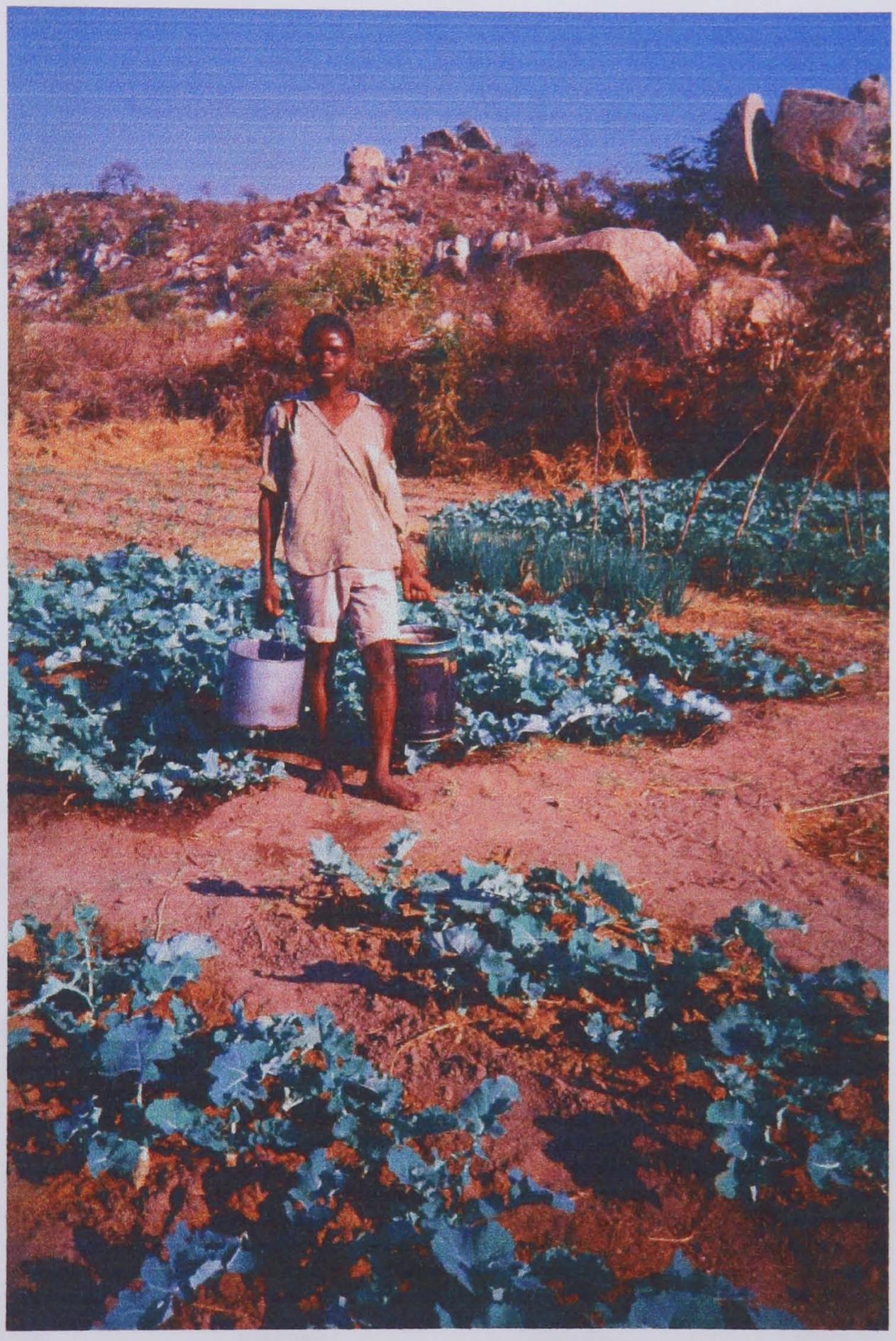


Figure 9.5

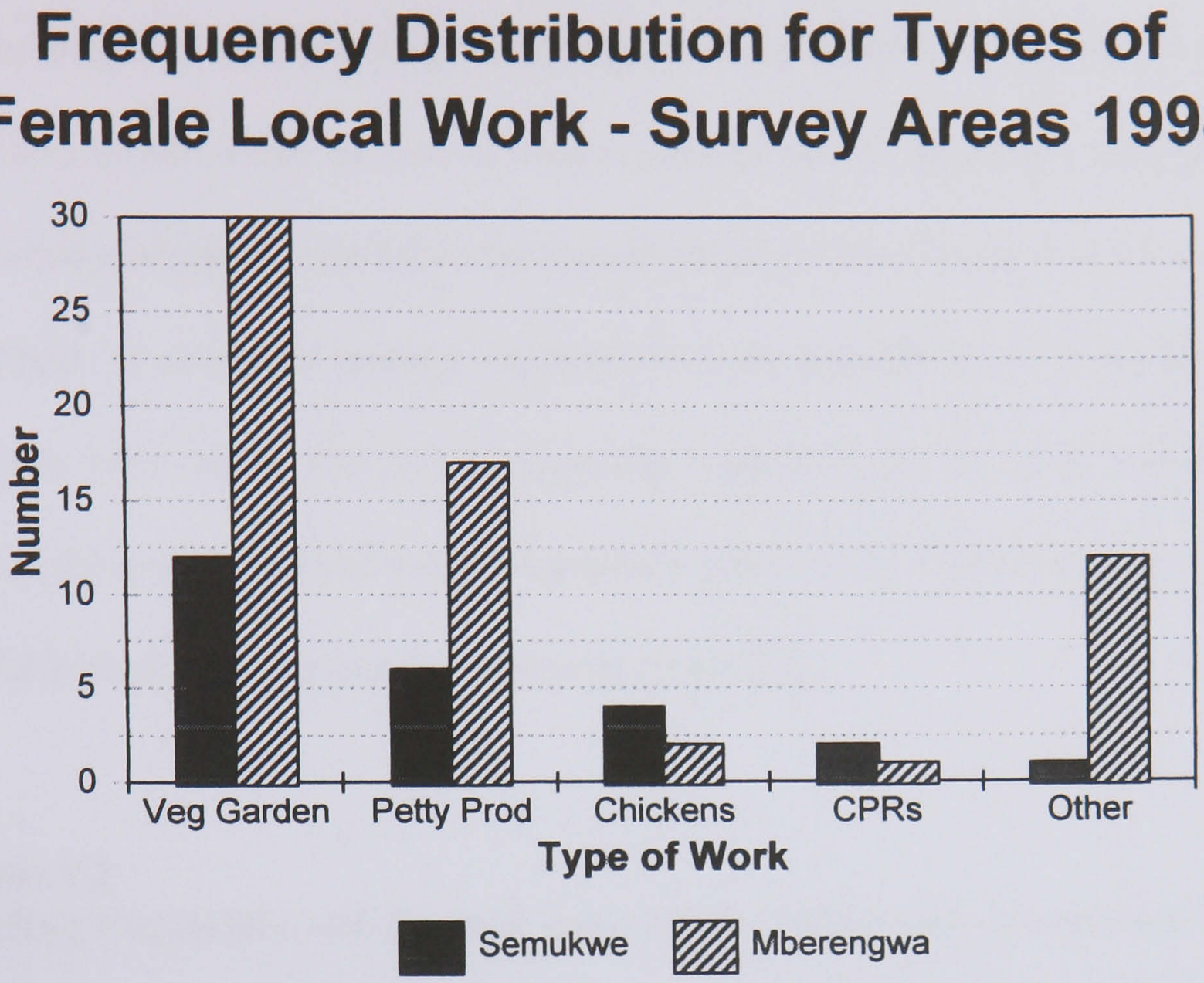
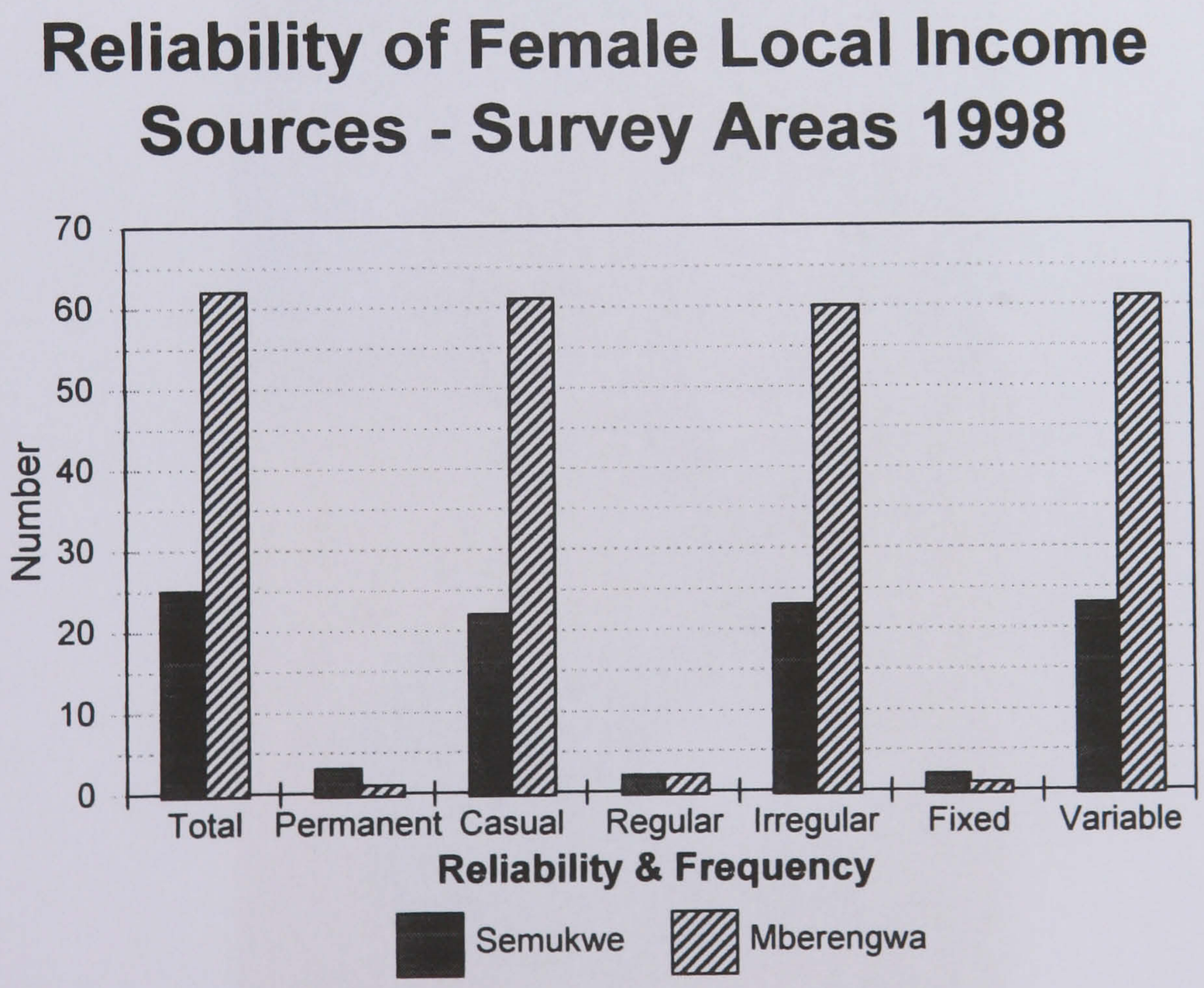
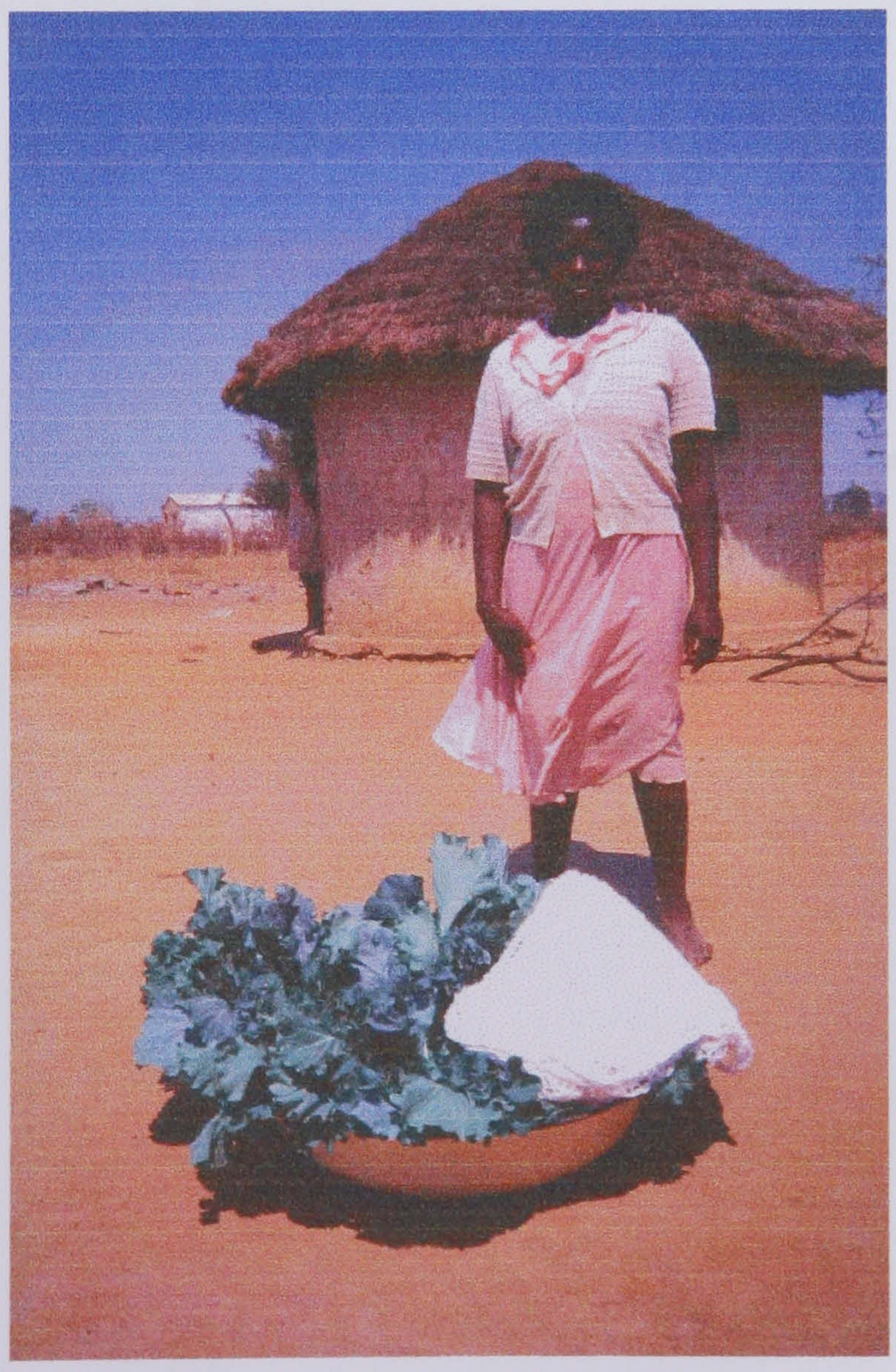


Figure 9.6



The food security benefits of vegetable gardens are two-fold. First, when food insecurity is widespread whatever limited cash is available will be used for the purchase of food so that some income is almost assured when vegetables are offered for sale. Secondly, whatever vegetables are unsold can be retained to augment domestic supplies of food. A common strategy reported by those households with gardens when food staples were scarce was to eat vegetables supplemented by bread purchased locally. Thus, the production and sale of vegetables achieved the dual objectives of contributing to household income and food security (plate 9.2).

Plate 9.2
Selling Vegetables and Knitted Lace Cloth - Mberengwa Communal Area 1998

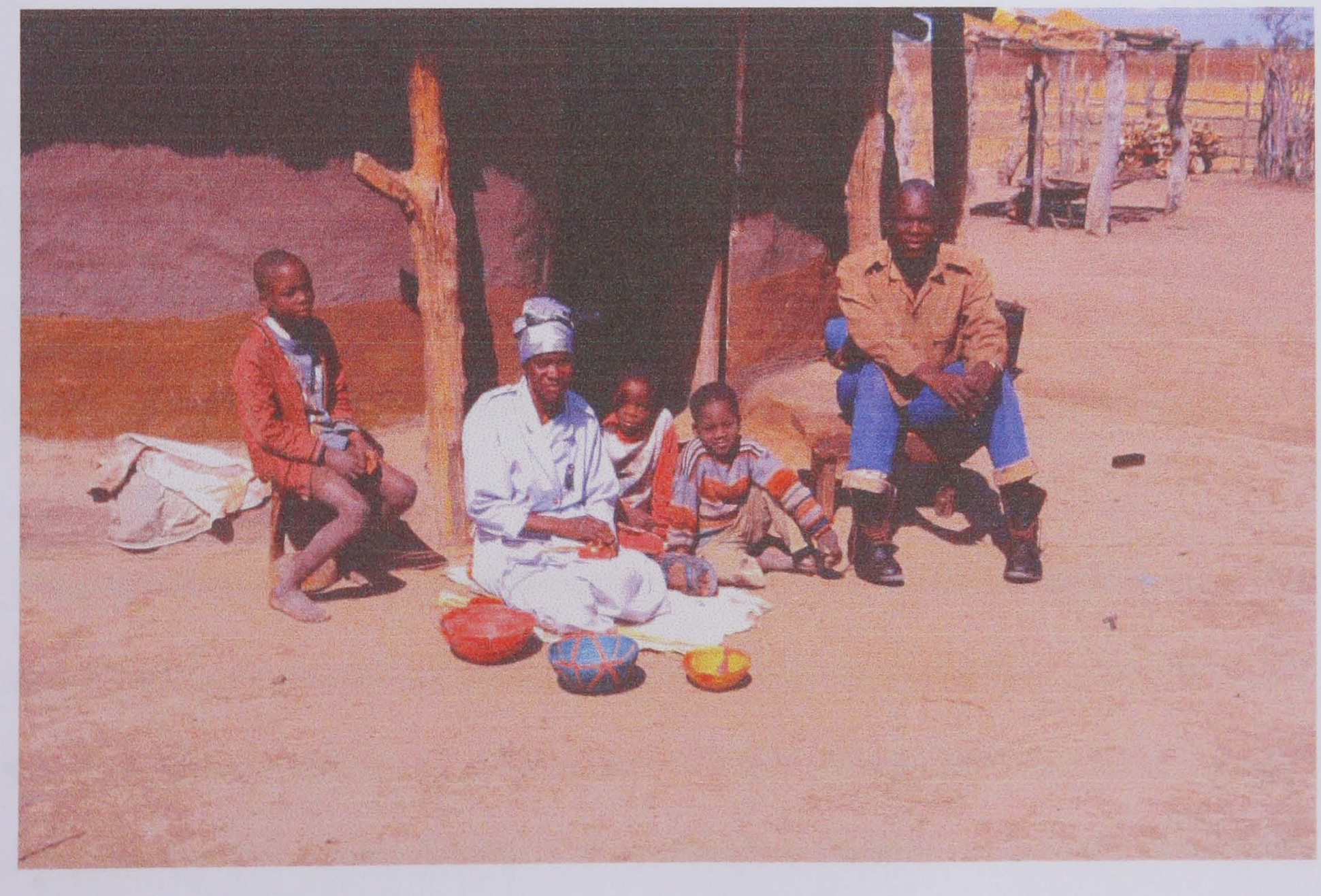


The second most common female activity in both survey areas was to engage in petty production. These would be enterprises that could be established on-farm and organised around periods when labour was not required for agricultural production. The traditional types of petty production would be the making of woven mats, basket work, clay pots, sewing clothes and knitting (plates 9.3 and 9.4). The last two activities appeared to be less established perhaps because these required purchased inputs. More frequent was the production of items made from inputs that could be gathered and collected freely from the local environment. These were combined with female time and skills to make a variety of useful household products which could be sold locally or in the town. Income from these sources tended to be more irregular and variable since the local demand was not as constant as for fresh vegetables. Higher prices could be obtained for these goods by selling them in town but this would incur transport costs.

Plate 9.3
Mat Weaving - Mberengwa Communal Area 1998



Plate 9.4
Traditional Bowls - Semukwe Communal Area 1998



Chickens raised on-farm are the domain of women and most households would have very small flocks. These would be used predominantly for domestic consumption but a few households in both survey areas reported the sale of chickens as a significant source of income. The management of flocks is generally inadequate and with supplementary feeding restricted to food scraps. The birds were usually small in frame and size and their condition poor. Most households were unable to recall the number they possessed which would suggest a limited role for chickens in food security. Chickens would usually only be eaten on special occasions so that income from their sale would be irregular but less variable.

Traditionally, households have gathered wild foods such as fruits, nuts, leaf vegetables and insects from the local environment to supplement diets. There is evidence to suggest that as a consequence of agricultural development in the Communal Areas the availability of many wild species is in decline (McGregor, 1995). This decline has not been uniform but has been differentiated by species. For example, those vegetables most suited to woodlands have diminished in abundance whereas those that invade agricultural or disturbed land have generally increased. The availability of the latter type will be influenced strongly by the level and distribution of annual rainfall.

The availability of edible caterpillars (*mcimbi* or *mopane worm*) has declined markedly and in some areas households reported that the local stocks had all but collapsed. These breed on mopane trees and the larvae are collected during the early part of the rainy season in October and November. The consumption of edible caterpillars is culturally significant in Ndebele society and there is a strong urban demand as a cheap and

nutritious food source. As a consequence, the nature of their exploitation has shifted from harvesting for local consumption to mining to meet market demand. A discussion with a local policeman concerning the decline in the availability of mopane worms is recalled. His attitude was the decrease in their abundance was the responsibility of local people since mopane worms were never intended to be sold but used only to supplement food supplies when other sources were scarce. At a deeper level, the increased scarcity of this form of gathered food is indicative of the failure to manage common property resources (CPRs) under conditions where the market has extended and households have an increasing requirement for cash to purchase food. The institutional capacity to manage common property resources has not developed to cope with the increasing pressures to exploit them by a growing number of households and for commercial purposes. This issue receives attention in the next chapter.

The harvesting of common property resources to earn an income was not established to any extent in either area. When households were asked what wild foods were collected and if these were sold the usual response was one of confusion. This arose from the fact that the local availability of wild foods was poor and so did not make a significant contribution to household food security. In Semukwe, which at one time had substantial forests of mopane trees, only two households reported the collection of mopane worms as a source of income. In Mberengwa, the collection of wild foods for commercial purposes was not recorded but one female confirmed cutting grasses during the dry season for sale as thatch. Thus, the contribution made by incomes derived from the exploitation of common property resources by females in both areas was limited.

Other sources of income from miscellaneous activities by females were more prevalent in Mberengwa. These fell into no particular category but included employment in maintaining the gardens of other households, the offering of services as a traditional healer, selling items, begging and sale of young fruit trees from a household nursery. This range of activities confirms, in general, the greater extent of female enterprises relative to those of males but more so in the Mberengwa Communal Area. However, the distributions of the frequency and amount of female incomes from all sources (figure 9.6) exhibit the same high degree of variability as those recorded for males (figure 9.4). Incomes were derived predominantly from casual work for which the remuneration was variable and infrequent. More significantly, in aggregate female incomes were obtained from a greater number of different sources in Mberengwa than Semukwe which would effectively reduce risk by spreading receipts over time.

Although the pattern of incomes in terms of their frequency and reliability is similar for males and females the nature of the activities is differentiated by gender. As previously suggested, male income-earning activities tend to be more opportunistic and are activated in response to the occurrence of food shortages. Equally, the major input in male activities is human physical effort combined with simple tools such as a hoe or an axe. As such, they require little planning and investment in order to perform them effectively. In contrast, female efforts are more consistent for which the more regular input of time and resources is essential. Additionally, the earning of incomes from female activities does not react to food shortages but are pursued in preparation for occurrences of scarcity. Thus, female sources are generally more instrumental in supporting household resilience through the contingency nature of their activities.

A further contrasting attribute of female efforts to earn local incomes is their demonstrated ability to draw on the pooled resources of a group. At the most simple level this would include the bulking of output from individual sources by selling produce collectively. For example, the quantity and type of vegetables for sale from individual gardens is limited on a daily basis. However, output that is sold collectively by groups of females becomes more attractive to potential customers through the increased choice offered. Similarly, the local market for petty produce is small, particularly when food insecurity is widespread. The sale of produce in urban markets becomes more viable when many items are sent so reducing transport costs. The organisation of distribution networks that link rural and urban areas is effected through women's clubs. Whereas goods are produced at the individual level, their marketing is undertaken at the level of the group in order to exploit economies of scale. Therefore, the main functions of clubs are to enable groups of women to bulk the quantities offered for sale and to reduce the costs associated with their distribution. This can improve the prices received for goods and spread the costs of marketing across the group.

A major constraint on the development of enterprises in the Communal Areas for males and females is the lack of availability of credit. The development of credit has been prevented largely because the typical assets owned by rural households are not accepted forms of collateral. Under communal land tenure households do not possess the title to their land but rather have rights of use. Thus, households do not have a tenure of land that is sufficiently secure for the borrowing of money. Households also accumulate wealth and savings in the form of livestock. These are also not recognised for credit purposes. Households are therefore restricted severely in their ability to

borrow money to fund enterprises. This will affect the number of enterprises in aggregate in the Communal Areas but more importantly will restrict the type of enterprise to those that require minimal purchased inputs. This reinforces a dependence on environmental resources and limits the extent to which households are able to participate in formal markets. Most of the produce sold in towns tends to pass through informal markets around bus stations and along road-sides. This is not a serious consequence since these markets are more important for poorer groups which would demand the type of goods produced in the Communal Areas.

In an attempt to overcome credit constraints the functions of some women's clubs have been extended to include credit unions. The principle is simple and the advantages are several. Women in a particular club are required to place a specified amount of money into a pool on a monthly basis. The whole pool is then given to one member of the group so that each member receives the total contributions in an agreed rotation. The sums contributed are necessarily small but the process of bulking provides a useful sum of money that can be used to develop a household enterprise or to purchase food. Moreover, participation in a credit union can avoid the frittering of small amounts of money by offering the potential to save. The general impression of those groups that were identified through wider investigations during the survey period was that they were well managed and their success derived largely from the equity in the contributions to and receipts from the pool. However, the practice of women's credit unions did not appear to be widespread and was restricted to more enterprising females. Thus, the benefits of collective approaches to credit are unlikely to be realised in poorer households. However, the existence of collective approaches to resolve individual

constraints is interesting given that the traditional practice of community cooperation in agriculture appears to be in decline. The basic principle of pooling individual resources for the benefit of the group remains the same but has been adapted to the contemporary circumstances that now confront rural households. It is also provides a useful and representative example of how traditional strategies have been modified to support household resilience.

In a few cases there was a demonstrated ability by females to exploit potential synergies between different enterprises. Rather than enterprises being treated as distinct entities they were managed to maximise the benefits from dealing in different markets. In this way the actual return from the enterprise-mix was greater than the potential return if the enterprises had been managed individually. Essentially, the returns from one enterprise were invested to increase the potential returns from other enterprises. For example, a case was recorded in Mberengwa where a female produced lace mats which were taken to the town to be bartered for clothes. The clothes were brought back to Mberengwa to be bartered for food. The lace mats were easily traded in town and the lack of availability of clothing *and* money in the rural areas meant that food could be used as the medium of exchange. Clothing would tend to be higher priced and food lower priced in rural than in urban areas. By conducting her trade through barter and in different markets it was possible to improve the rate of exchange between the lace mats and food. Moreover, by managing the two enterprises together (lace mats and clothes) the contribution to household food security was greater than if they had been treated separately. Another female in Semukwe made clothes for sale and the funds received were used to purchase goats. This enabled money to be saved by investing in livestock

which would realise a larger sum of money when sold at a later date. Moreover, the livestock provided some insurance against food scarcity in addition to a return on savings.

These examples provide some evidence of new strategies which have been facilitated by changes in the conditions in rural and urban markets. It needs to be stressed that encounters of this relatively sophisticated management of enterprises by females were rare during the survey period. They are mentioned here not to draw attention to the role that production and trade-based entitlements may play in improving household food security but rather in support of the preceding discussion which suggests that the strategies of females tend to be more enterprising than those of their male counterparts. If the resilience of households is to be supported then policies may need to be differentiated by gender. Frequently males are targeted as the potential beneficiaries of development initiatives whereas the distribution of management competencies, particularly in the area of household enterprises, may lay principally with females.

9.4 Migration and Remittances to Households

When local resources fail to satisfy the food requirements of households the spatial extent over which strategies are pursued may need to increase. The practice of male migration from rural to urban areas to seek paid employment became established during the colonial period. This was an adaptation of the traditional strategy of linking in with wider geographic and political networks in times of food scarcity. The main motive for migration in the contemporary context remains that of improving household food

security. The limited range of opportunities in the rural areas has resulted in forced migrations to seek livelihoods elsewhere. This can be of benefit where this alleviates the localised effects of population pressures on the environment through a reduced demand for land and its resources. However, those most able to secure alternative livelihoods outside of the Communal Areas will tend to be the younger and more productive members of rural society. Indeed, the age and gender composition of individual households will determine substantially the patterns observed in off-farm work. This migration can reduce productivity on-farm which may be wholly or partially offset by any remittances that accrue to rural households from absent members.

The characteristics of the absent population in the survey areas were collected and the nature of any remittances was identified. The age distribution of the absent members was stratified by gender and are presented in figure 9.7 for males and 9.8 for females. The distributions contain few surprises with the most common age group for absent males and females being between 15 and 39 years. This group will possess a greater comparative advantage in the labour market and will tend to be the most successful group in obtaining employment. Those aged between 40 and 64 years form the second most significant group but constitute a much smaller proportion of the total absent population. The absent members aged under 15 years were recorded as boarding at schools away from the Communal Area.

Figure 9.7

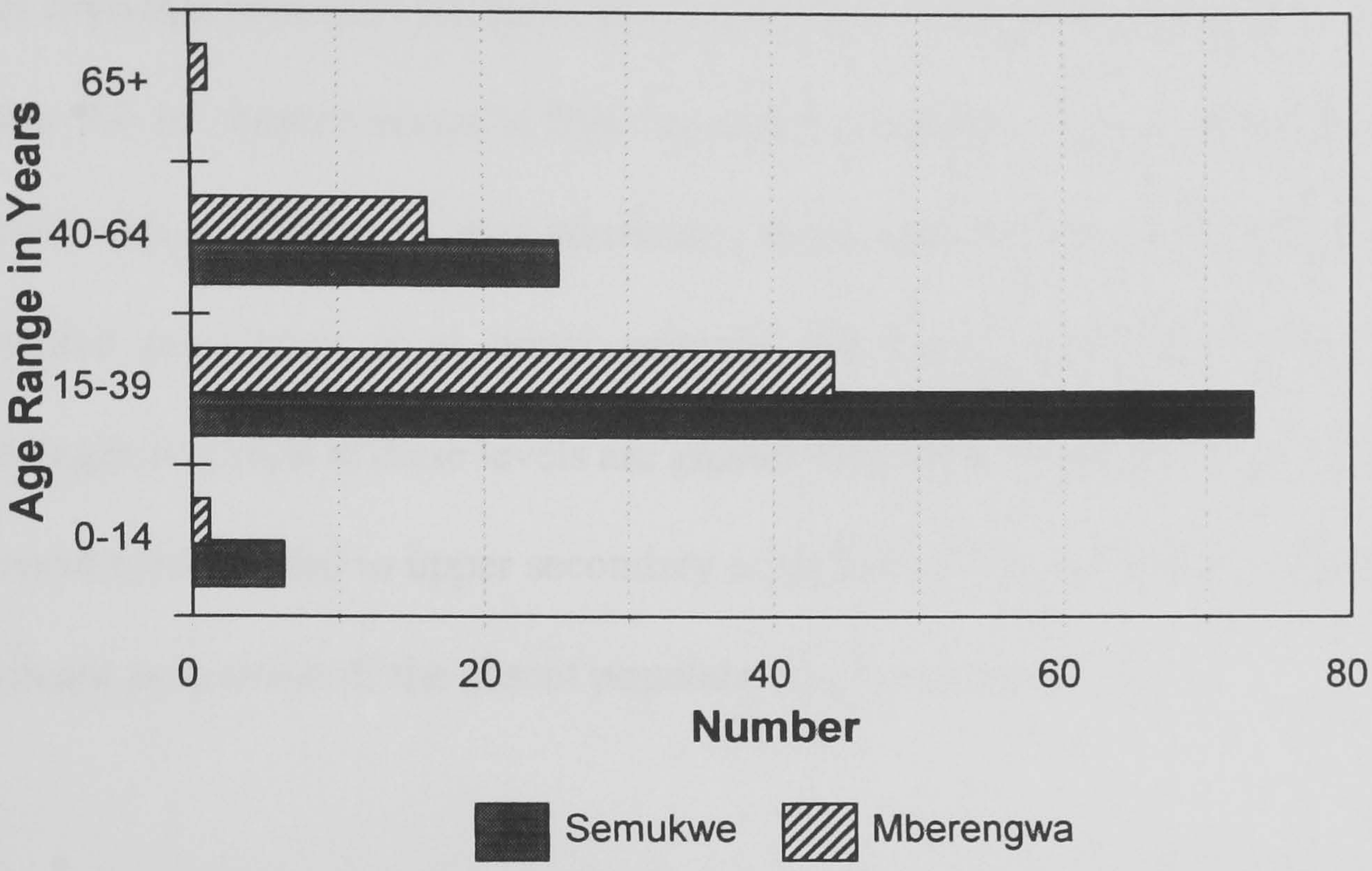
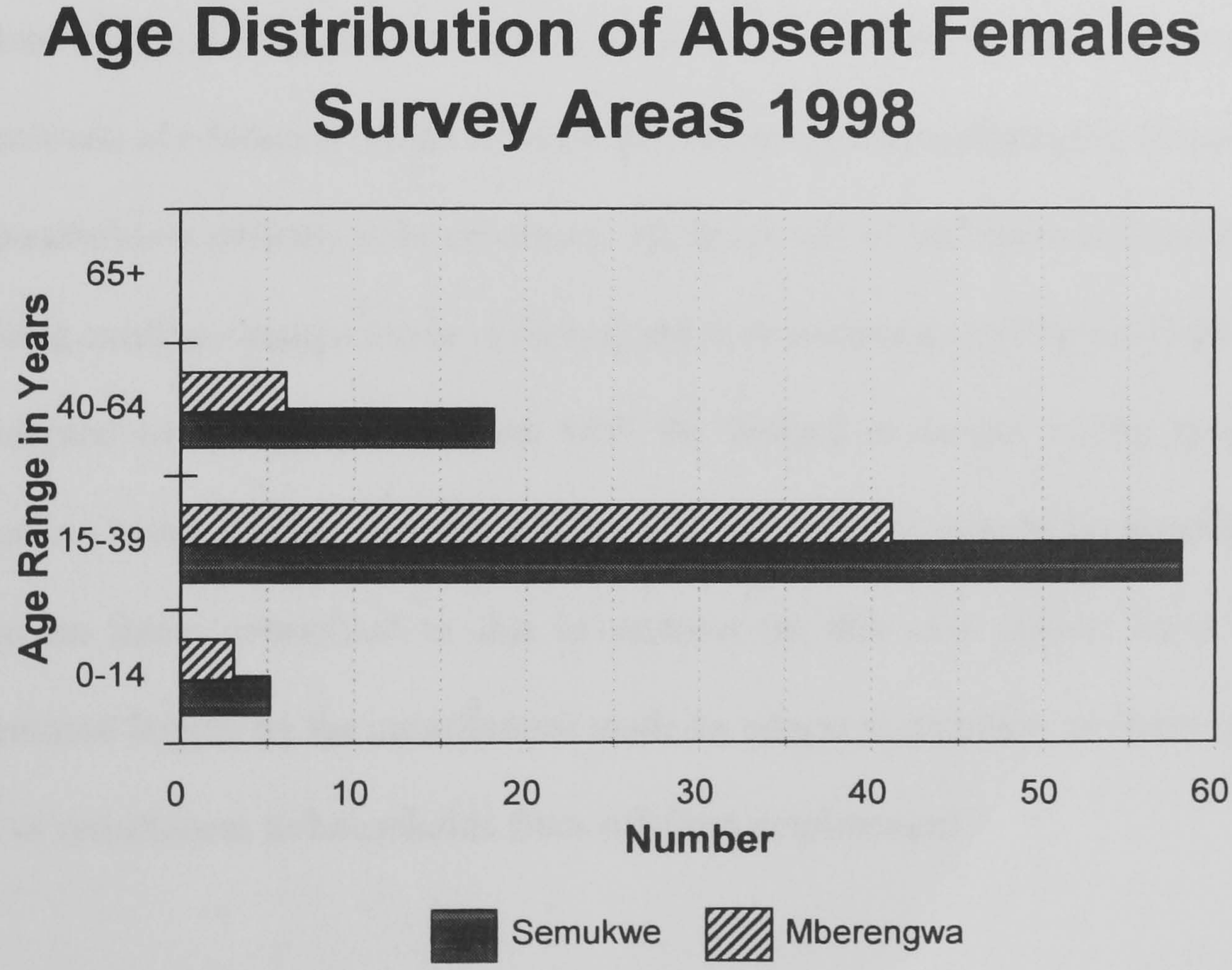


Figure 9.8



The level of education attained by absent members is presented for males in figure 9.9 and for females in 9.10. Table 9.3 below contains the percentage distribution for the levels of education attained by absent members in both survey areas. This distribution differs from that presented for the education levels for the on-farm population included in table 7.9 in chapter seven in that the absent members have a lower proportion recorded with only lower primary education. In general, the educational attainment for the absent population is at upper primary and lower secondary levels and the percentages recorded at these levels are greater than those for the on-farm population. The numbers educated to upper secondary or diploma level are small but constitute a significant proportion of the absent population in both survey areas.

It appears, therefore, that the education levels of the absent members are higher than for those members on-farm. This is to be expected given the importance of education in obtaining paid employment. Where the retention on-farm of those members with lower levels of education results in the perpetuation of existing strategies, the resilience of households is unlikely to be enhanced. Higher levels of education will be crucial in enabling existing strategies to be reviewed and in considering ways by which these may be adapted to changing conditions with the limited resources of the household. Education is perhaps the most important social investment made by households. The return on funds committed to this investment (in this case school fees) will be determined largely by the contribution made by educated members on-farm or in the flow of remittances to households from off-farm employment.

Table 9.3
Percent Distribution for the Level of Education Attained by Gender of Absent Population - Semukwe and Mberengwa Communal Areas 1998
Total numbers given in parentheses

	Level of Education Attained					
	None	**Lower Primary**	**Upper Primary**	**Lower Secondary**	**Upper Secondary**	**Diploma**
Semukwe						
Male n=104	0.0 (0)	12.5 (13)	35.6 (37)	46.2 (48)	3.8 (4)	1.9 (2)
Female n=81	1.2 (1)	14.8 (12)	40.7 (33)	37.0 (30)	2.5 (2)	3.7 (3)
Total n=185	0.5 (1)	13.5 (25)	37.8 (70)	42.2 (78)	3.2 (6)	2.7 (5)
Mberengwa						
Male n=62	0.0 (0)	14.5 (9)	40.3 (25)	41.9 (26)	1.6 (1)	1.6 (1)
Female n=50	2.0 (1)	6.0 (3)	50.0 (25)	28.0 (14)	4.0 (2)	10.0 (5)
Total n=112	0.9 (1)	10.7 (12)	44.6 (50)	35.7 (40)	2.7 (3)	5.4 (6)

The analysis of the importance of remittances derived from the employment of absent members begins with an inspection of tables 9.4 and 9.5. These tables describe the percentage distribution of the main locations of absent members and their main activities by gender. The locations of absent members are stratified on the simple basis as to whether they occurred in Zimbabwe or outside of the country. All of the females and the majority of males recorded from Mberengwa were located in Zimbabwe. They tended to become established in towns near to Mberengwa where a number of industrial operations are located and opportunities for paid employment are greater. Migration to search for work outside of the country was almost insignificant for absent members from Mberengwa with only one male recorded as working in South Africa.

Figure 9.9

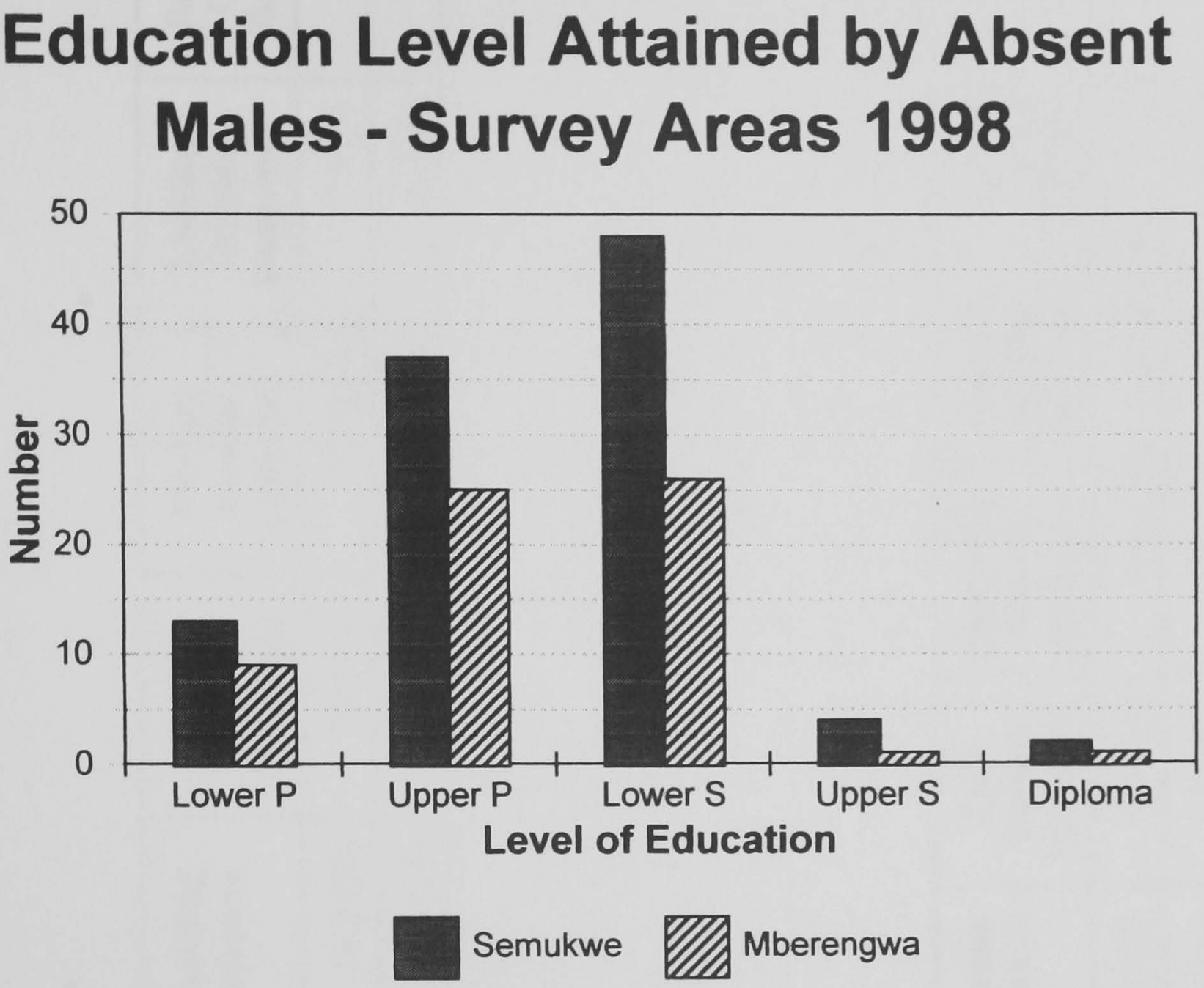


Figure 9.10

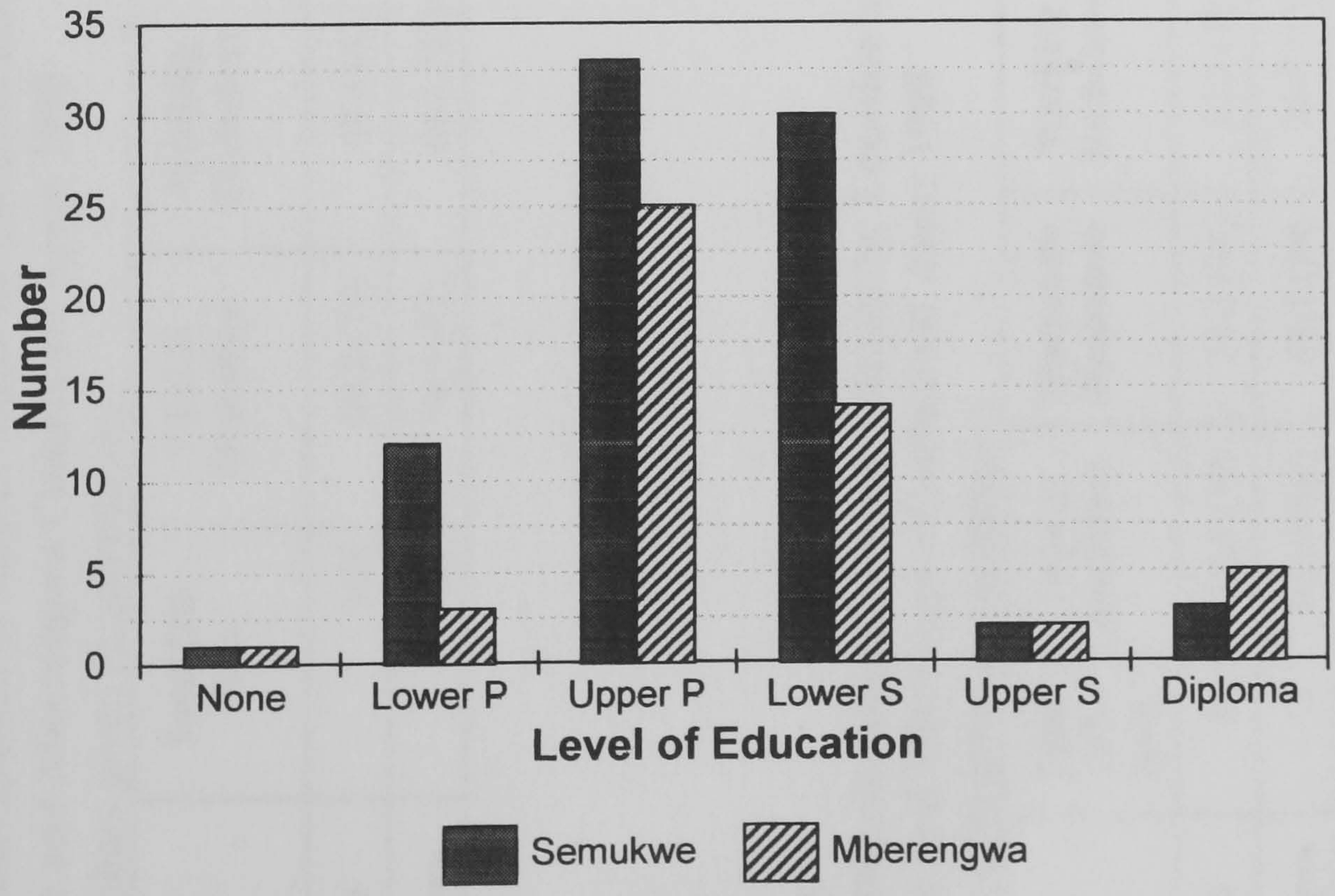


Table 9.4
Percent Distribution of Absent Males by Location and Main Activity
Semukwe and Mberengwa Communal Areas 1998
Total numbers given in parentheses

	Total Off-farm	Total in Zimbabwe	Working Zimbabwe	Looking Zimbabwe	Remitting Zimbabwe	Total Outside Zimbabwe	Working Outside Zimbabwe	Looking Outside Zimbabwe	Remitting Outside Zimbabwe
Semukwe	104	69.2 (72)	40.4 (42)	15.4 (16)	19.2 (20)	30.8 (32)	27.9 (29)	2.9 (3)	12.5 (13)
Mberengwa	62	98.4 (61)	66.1 (41)	22.6 (14)	22.6 (14)	1.6 (1)	1.6 (1)	0.0 (0)	0.0 (0)

Table 9.5
Percent Distribution of Absent Females by Location and Main Activity
Semukwe and Mberengwa Communal Areas 1998
Total numbers given in parentheses

	Total Off-farm	Total in Zimbabwe	Housewife Zimbabwe	Working Zimbabwe	Looking Zimbabwe	Remitting Zimbabwe	Total Outside Zimbabwe	Housewife Outside Zimbabwe	Working Outside Zimbabwe	Looking Outside Zimbabwe	Remitting Outside Zimbabwe
Semukwe	81	86.4 (70)	54.3 (44)	12.3 (10)	4.9 (4)	9.9 (8)	13.6 (11)	4.9 (4)	6.2 (5)	2.5 (2)	2.5 (2)
Mberengwa	50	100.0 (50)	58.0 (29)	26.0 (13)	0.0 (0)	12.0 (6)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)

The absent members from Semukwe tended to be established either in Bulawayo for those in Zimbabwe or in Johannesburg for those outside of the country. The ethnic composition of people in Semukwe is more homogenous than in Mberengwa with the vast majority people belonging to the Ndebele group. This group of people are distributed over a wide area in southern Africa from the Zambezi river on the Zambian border south through Matabeleland and into South Africa as far south as Natal. The strong cultural, ethnic and linguistic correspondence of the Ndebele people with other groups in South Africa has enabled migrant workers to be integrated rapidly into society. The illegal practice of border jumping across the Limpopo river into South Africa is common. The existence of opportunities for paid employment in Zimbabwe for Ndebele people has been limited by widespread discrimination based on ethnic origin since independence. Consequently, the preferred locations for employment are Bulawayo in Matabeleland where Ndebeles predominate and in South Africa.

Therefore, the high percentages for both males and females from Semukwe recorded in tables 9.4 and 9.5 as living outside of Zimbabwe is not surprising. About 1 in 3 males and 1 in 8 females from Semukwe were living outside of Zimbabwe in contrast to virtually zero from Mberengwa. Higher proportions of males and females from Mberengwa were noted as being in paid employment in Zimbabwe than those from Semukwe. The ethnic composition of Mberengwa is more mixed but the Shona group predominate in this region. On the basis of ethnicity alone, people from Mberengwa would enjoy a greater advantage in securing paid work in the industrial towns in the Midlands province of Zimbabwe[1]. Nevertheless, a significant proportion of males from

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[1] For a discussion of migration and urban unemployment in Zimbabwe see Potts (2000).

both areas were recorded as looking for work. This observation serves to underline the inducement provided by the limited opportunities for paid work in the Communal Areas to seek remunerated employment elsewhere. In both survey areas, the proportions of females in paid employment were less than that of absent males since many of the absent females had married into new households.

The range of jobs in which absent members were employed was large and excluded the possibility of preparing a convenient summary. For this reason, the exercise was not attempted in the manner presented previously in this chapter for local work off-farm. More important to this analysis is the nature of remittances to households derived from the paid employment of absent members. For comparative purposes this is presented in a similar format to that for incomes from local work in figures 9.4 and 9.6 above. The distributions for the reliability and frequency of remittances from absent males and females are given in figures 9.11 and 9.12.

Figure 9.11

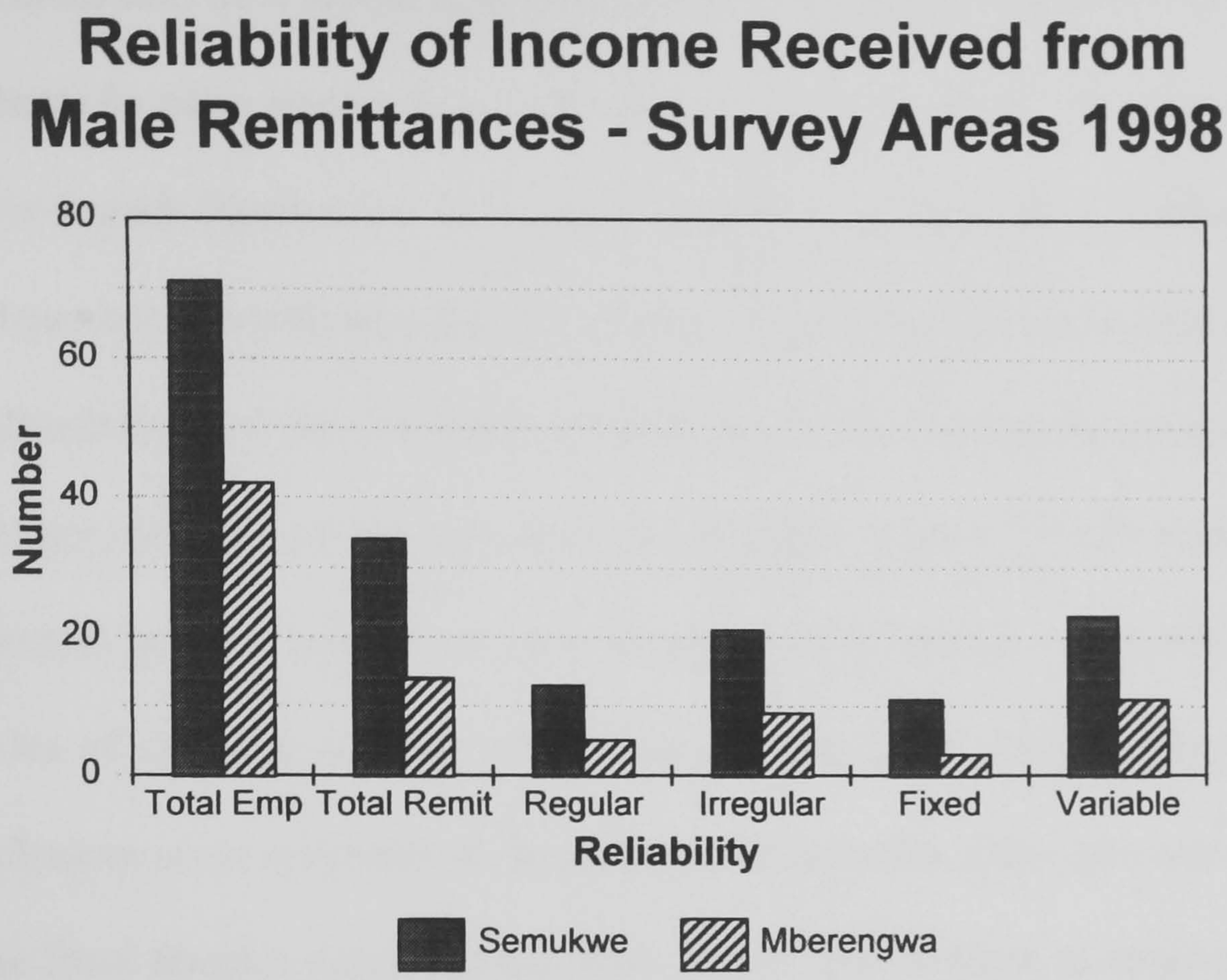
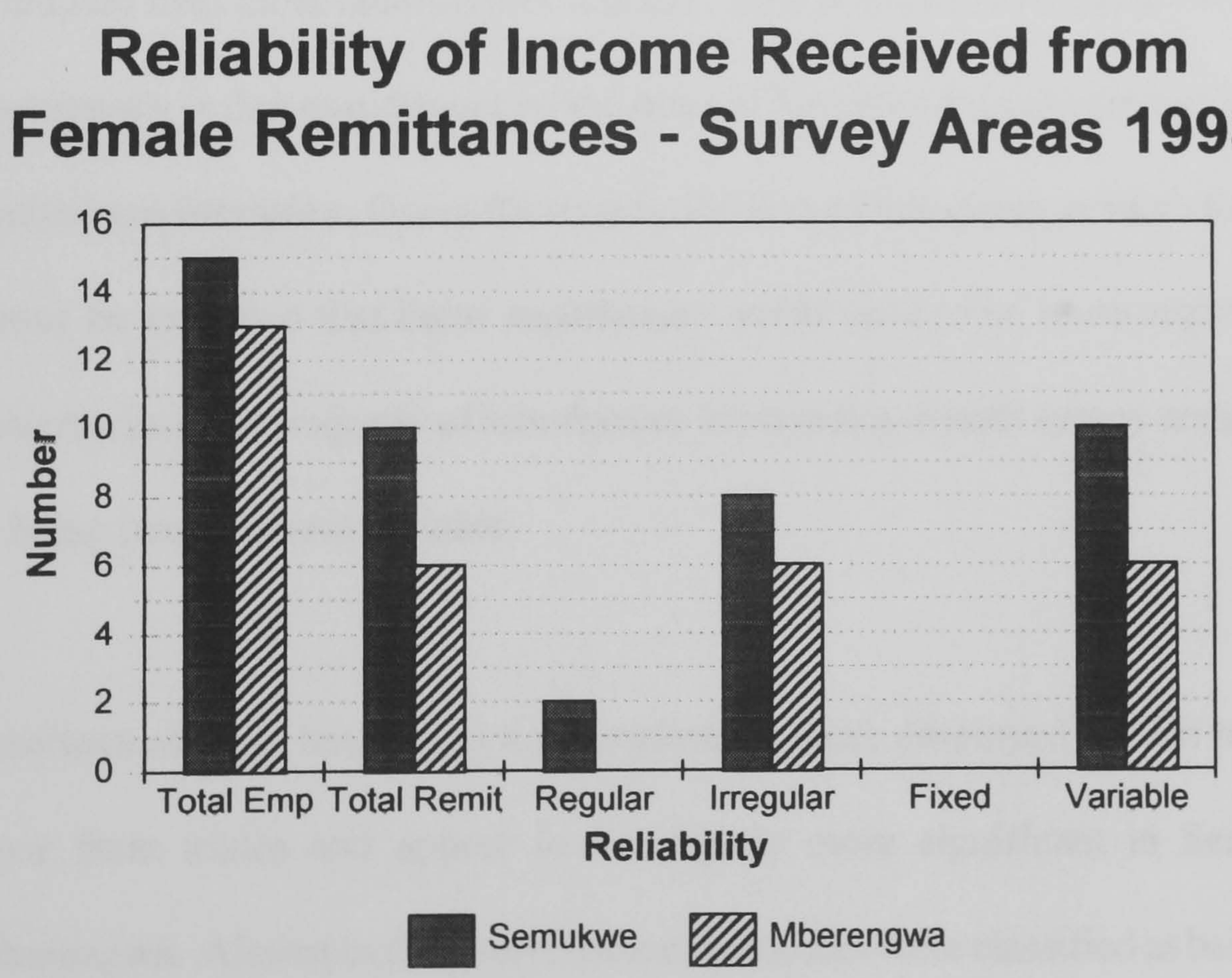


Figure 9.12



Figures 9.11 and 9.12 have been constructed from data for those absent members from both areas who were in paid employment but exclude those members who were recorded as absent for other reasons (e.g. looking for work or married). The first category on the x-axis in each figure refers to the total numbers in employment and the second to the total number of remittances from this group. The last four categories in the figures show the distributions of these remittances according to whether they were regular or irregular in receipt and whether they were fixed or variable in amount. The first and perhaps most important point to note about these distributions is that the relationship between the exodus of members to work away from the household and the subsequent flow of remittances is not symmetrical. Remittances from males, although more numerous than those from females constitute less than 50 per cent of those in employment for both survey areas. These remittances tend to be more reliable in frequency and more fixed in amount than those recorded for females. One possible explanation to account for this discrepancy is that remittances by the head of household would predominate in the total remittances for males. Given the responsibilities of this group towards their households, it may be expected that these remittances would tend to be more regular and reliable. Nevertheless, the majority of remittances from males in both survey areas were recorded as being irregular and variable.

Remittances from females as a proportion of those employed tended to be better than those from males and appear to be slightly more significant in Semukwe than in Mberengwa. Almost exclusively, these remittances were classified as being irregular and variable. The irregularity and variability of remittance flows from absent males and females may be explained by the high cost of living in urban areas. Incomes derived

from employment will be rapidly used up in paying for rent, food and general living expenses. The decline in the real value of incomes in Zimbabwe has already been discussed and would serve to reduce any residual amount that may be available for remittances. Respondents confirmed that absent members sent money when they were able, and that usually this involved small amounts of money. More importantly, these remittances could not be relied upon during times of food scarcity since in all likelihood absent members were facing similarly adverse economic conditions. Consequently, the extent to which individual remittances are able to support household resilience is limited.

An understanding of ESAP as a process of economic reform was largely absent amongst the sample population. Nevertheless, some households exhibited a degree of awareness of the adverse consequences of the policy for employment opportunities. About 56 per cent of households in Semukwe and 32 per cent in Mberengwa felt that ESAP had exacerbated problems in the Communal Areas, predominantly through increases in retrenchment. Household tended to link the employment-reducing effects of ESAP to the position of food security at the household level. A selection of the comments is provided below:

- "ESAP is self-reliance".
- "Prices go up and people cannot afford to pay them".
- "When there is hunger people say that it is ESAP".
- "ESAP is suffering when you don't know what to do".
- "Shortage of money for workers leading to retrenchment".
- "The government is trying to economise and get some money".

- "Changes the future as we are starving more".
- "Cuts jobs and causes hunger through a shortage of money".

These findings are supported by the work of Potts and Mutambirwa (1998) on urban migrant's perceptions of the impact of ESAP on households in rural and urban areas. From the results of a survey conducted amongst migrant workers in Harare the paper argues that the effects of ESAP have been more pronounced in urban areas. In towns, the satisfying of household needs required cash but in rural areas the environment and domestic agriculture played a supplementary role in sustaining rural populations. This latter aspect was supported by findings from this research where 97 per cent of the sample population indicated a preference for living in the Communal Areas due to the reduced requirement for cash. This underlines the importance attached to agricultural production by the population in the Communal Areas. Although the function of remittances and off-farm work in general assumes critical importance during periods of localised food scarcity, the rural population continues to accord domestic agriculture a strategic role in determining the level of food security enjoyed. However, the contribution made by remittances to household resilience should not be discounted. It derives not from their frequency or amount but by increasing the total number of possible income sources of a household.

9.5 Household Resilience and Total Income Sources

The discussion contained in the preceding sections suggests strongly that the individual sources of income that accrue to households are generally infrequent and variable in amount. As a consequence, most households are unable to rely on a single source of income to secure access to food. A key strategy to support the resilience of households then becomes one of attempting to derive incomes from diverse sources to increase the extent to which variability in the amount and frequency of incomes may be offset. An analysis of total number of income sources (including livestock) and their composition is likely to reveal useful insights into degree of food insecurity in the survey areas and the extent to which strategies are differentiated between areas. The total number of income sources for individual households was derived from the data and the results are presented in figure 9.13 for both survey areas.

Figure 9.13 indicates that all households in both areas had at least one source of income and that the mode for both Mberengwa and Semukwe was two sources of income. Less than 20 per cent of households in Mberengwa had more than two sources of income in contrast to over 40 per cent in Semukwe. Given that the majority of these incomes were infrequent and variable it is difficult to comment further at this stage on the contribution that these were able to make in supporting the resilience of households. Although it may be expected that those households with a larger number of income sources will be more able to smooth consumption the relationship is not exact. For example, a household that has one source of income that is both regular and fixed (e.g. full-time local employment) may be more food secure than a household with several sources of income that are infrequent and variable. Nevertheless, the total number of incomes accruing to any

particular household will have implications for the extent to which consumption can be smoothed. In this respect, an analysis of the composition of household incomes is likely to reveal deeper insights into the nature of household resilience between survey areas.

Figure 9.13

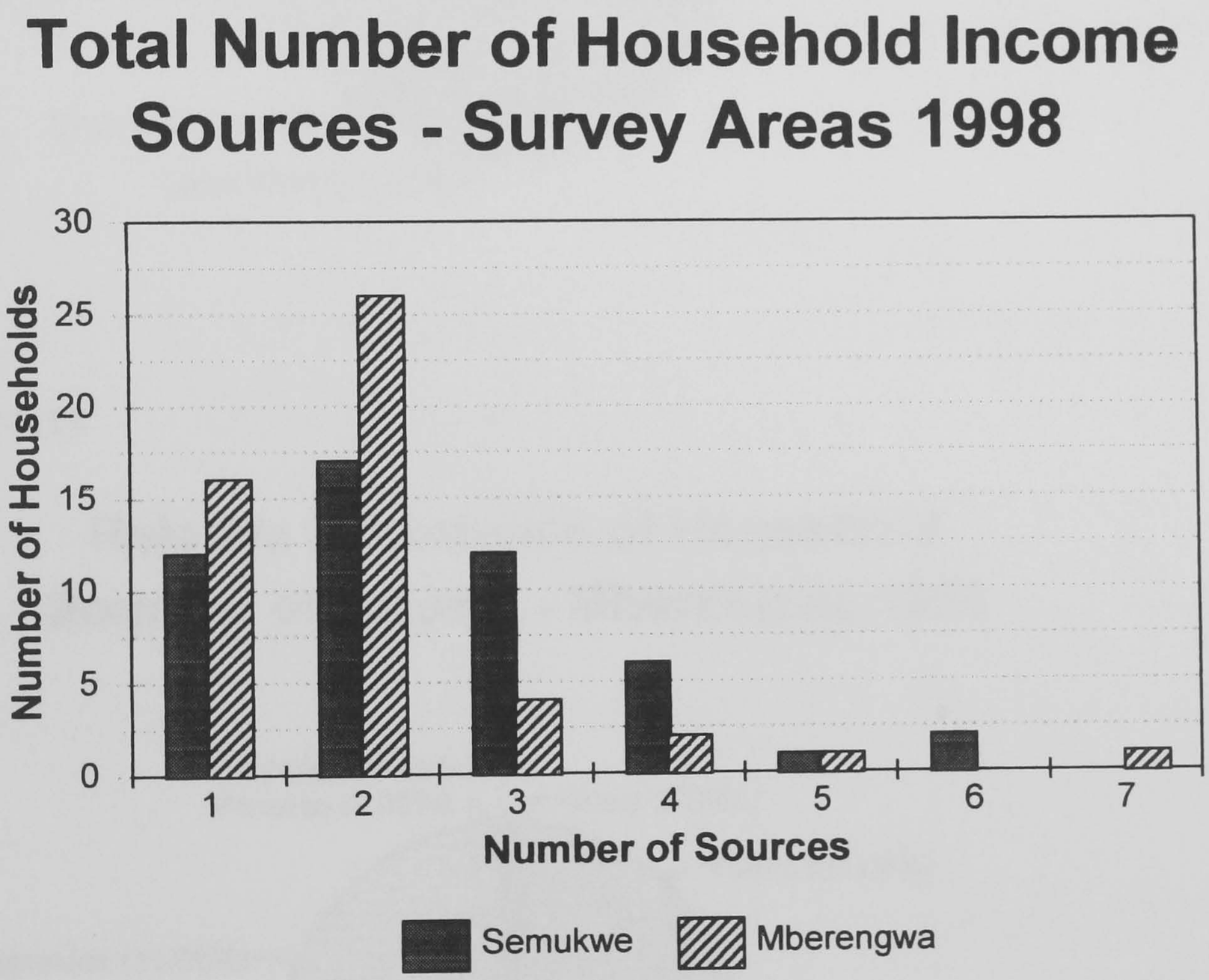


Figure 9.14

Relative Importance of Household Sources of Income - Semukwe 1998

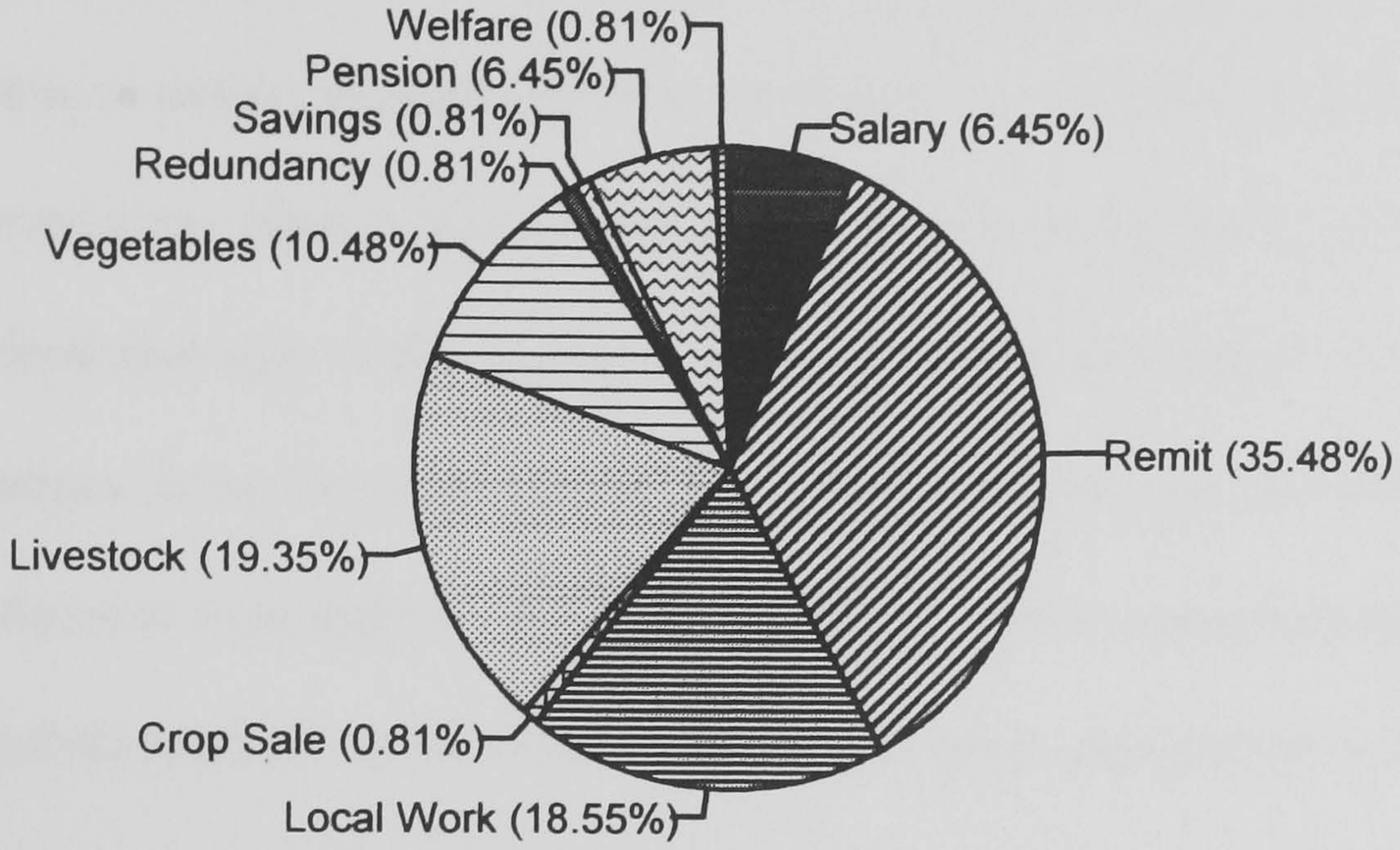
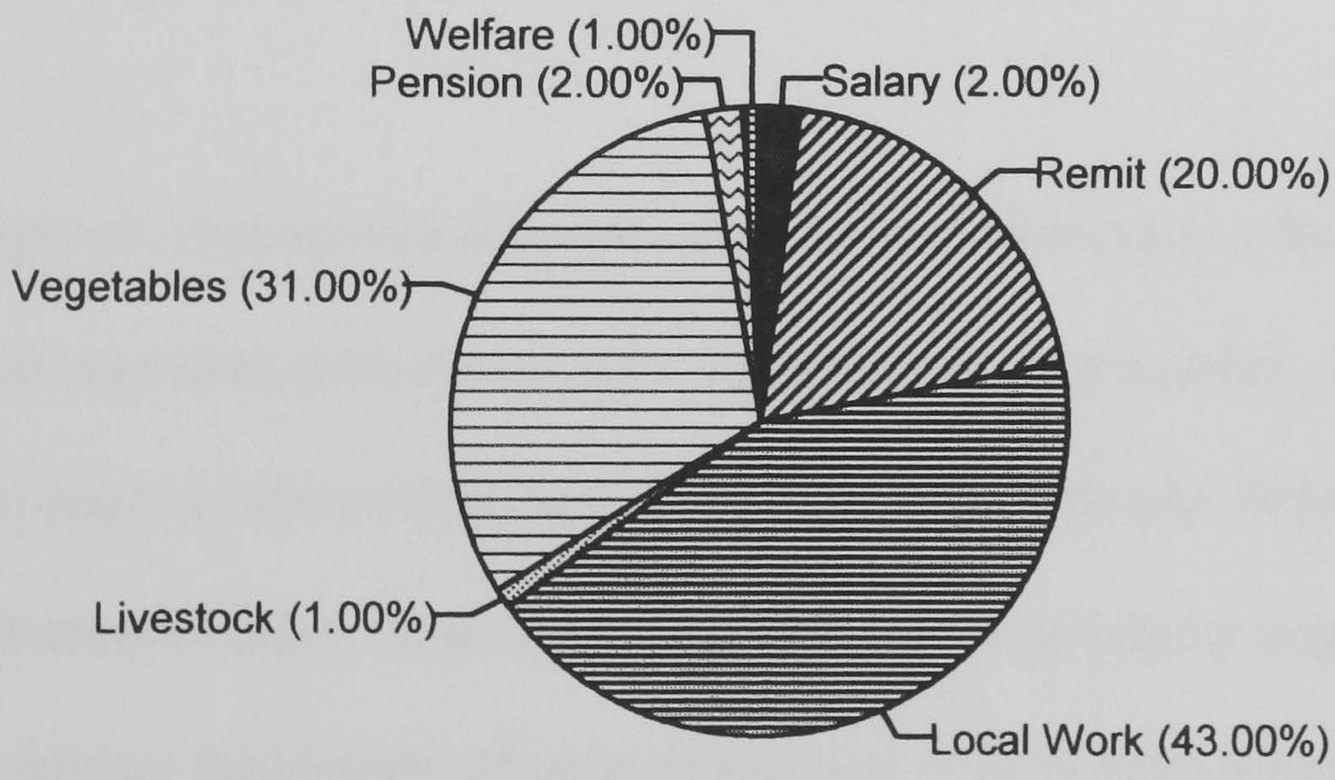


Figure 9.15

Relative Importance of Household Sources of Income - Mberengwa 1998



Figures 9.14 and 9.15 are pie charts that describe the aggregate composition of incomes in each survey area. Figure 9.14 presents the composition of incomes in Semukwe and suggests that remittances and livestock sales are the most important sources in this area. However, it has been established previously in this discussion that remittances are at best erratic in nature. Equally, by their very nature the incomes from which these derive are earned away from Semukwe and consequently, are not activated easily during periods of food shortage. Although incomes from livestock are more readily activated the recent changes in the livestock market described in chapter eight have discouraged their sale in times of food scarcity. Incomes from local work are also significant in Semukwe but from the analysis earlier in this chapter these are predominantly infrequent and variable. Moreover, they will be more difficult to activate where they are earned locally (typically the case for male local work) particularly when food shortages are widespread. Incomes from remittances, livestock sales and local work constitute over 70 per cent of the total incomes earned by the sample of households in Semukwe but the dependability of these is highly variable. Thus, taken individually, the contribution that these activities are able to make to household resilience is likely to be limited.

Figure 9.15 presents a contrasting picture for Mberengwa which suggests that local work and vegetable sales are the most important income sources. It should be recalled from the analysis above that these categories of income are derived substantially from the efforts of females. This is the case almost exclusively for vegetable sales and to a large extent for the element of petty production in local work which together constitute over 70 per cent of the total incomes earned in Mberengwa. Incomes from these sources were considered infrequent and variable but are likely to be more dependable by their

contingency nature. The cultivation of vegetables provided both an income and a supplementary source of food supply. The sale of petty produce was not restricted to the local area so reducing the effects of general income constraints when food insecurity was widespread. Moreover, these sources of income tend not to be activated when food becomes scarce but are pursued regularly to provide more durable support for household food security. Thus, the contribution that these sources of income are able to make to household resilience is probably more significant.

In order to assess the validity of this proposition, the distribution of income sources was investigated by household for each survey area. The results are presented in the stacked bar charts contained in figures 9.16 and 9.17 below. The figures show the range and total number of incomes by household in colour-coded stacked bars. The impression provided is immediate and suggests a consistency in the dominant strategies pursued in each area. The total number of sources of households in Semukwe is greater and more diversified than in Mberengwa. The dominant colours are orange and red which relate to livestock sales and remittances respectively. As discussed, these sources are not easily activated when food is scarce. To compensate for this it would appear that households pursue a range of other income-earning strategies to reduce the risk of failure of any one source. This diversity is indicated by the scattering of other colours in figure 9.16 which correspond to other sources of income. For example, there is a concentration of light green bars to the right of figure 9.16 which relate to vegetable sales. These households are clustered in a sub-area of the sample where convenient and reliable sources of water were available in the locality. Conversely, yellow bars corresponding to local work are distributed relatively uniformly in the figure and signify the importance of male-oriented

activities such as labouring in household strategies in Semukwe. This type of activity tends to react to food shortages and is less reliable in earning income. Nevertheless, it represents a potential source of income to be used in conjunction with other strategies during times of food scarcity.

The range of income sources in Mberengwa presented in figure 9.17 appears to be far more homogenous with green and yellow as the most dominant colours. These refer to vegetable sales and local work respectively both of which are generally female-oriented activities. These tend to be more reliable and are undertaken together in the majority of households. As emphasised above, both of these are not activated in response to a food shortage but are pursued more or less continuously to provide more enduring support for household food security. The range of other income sources recorded for Mberengwa is less than for Semukwe and from their distribution in figure 9.17 appear to be far less significant. The limited range of strategies pursued in Mberengwa suggests that vegetable cultivation and petty production are capable of earning fairly reliable (or less unreliable) sources of income such that the necessity to explore alternative strategies is much reduced. As consequence, household strategies are far less diversified in Mberengwa than in Semukwe.

Figure 9.16

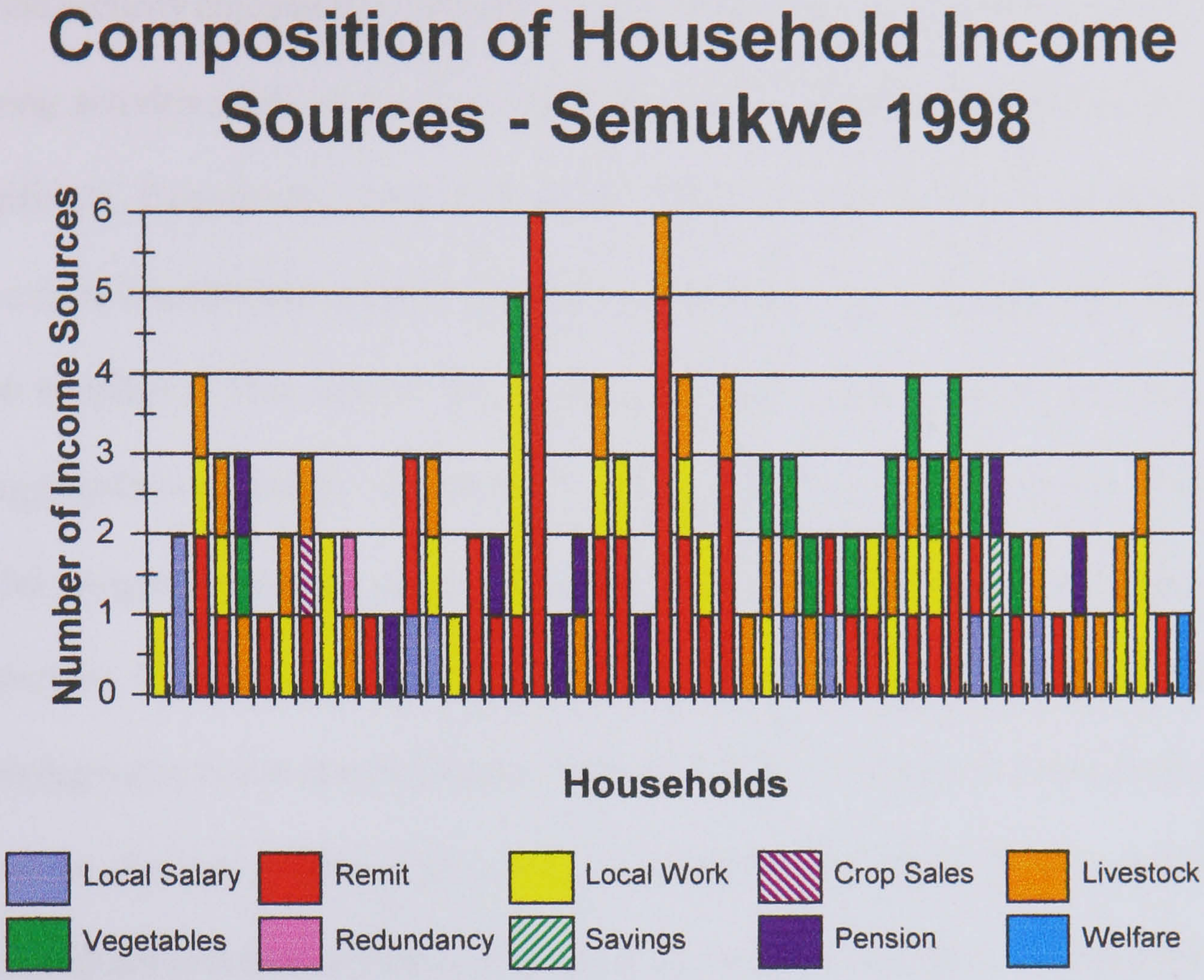
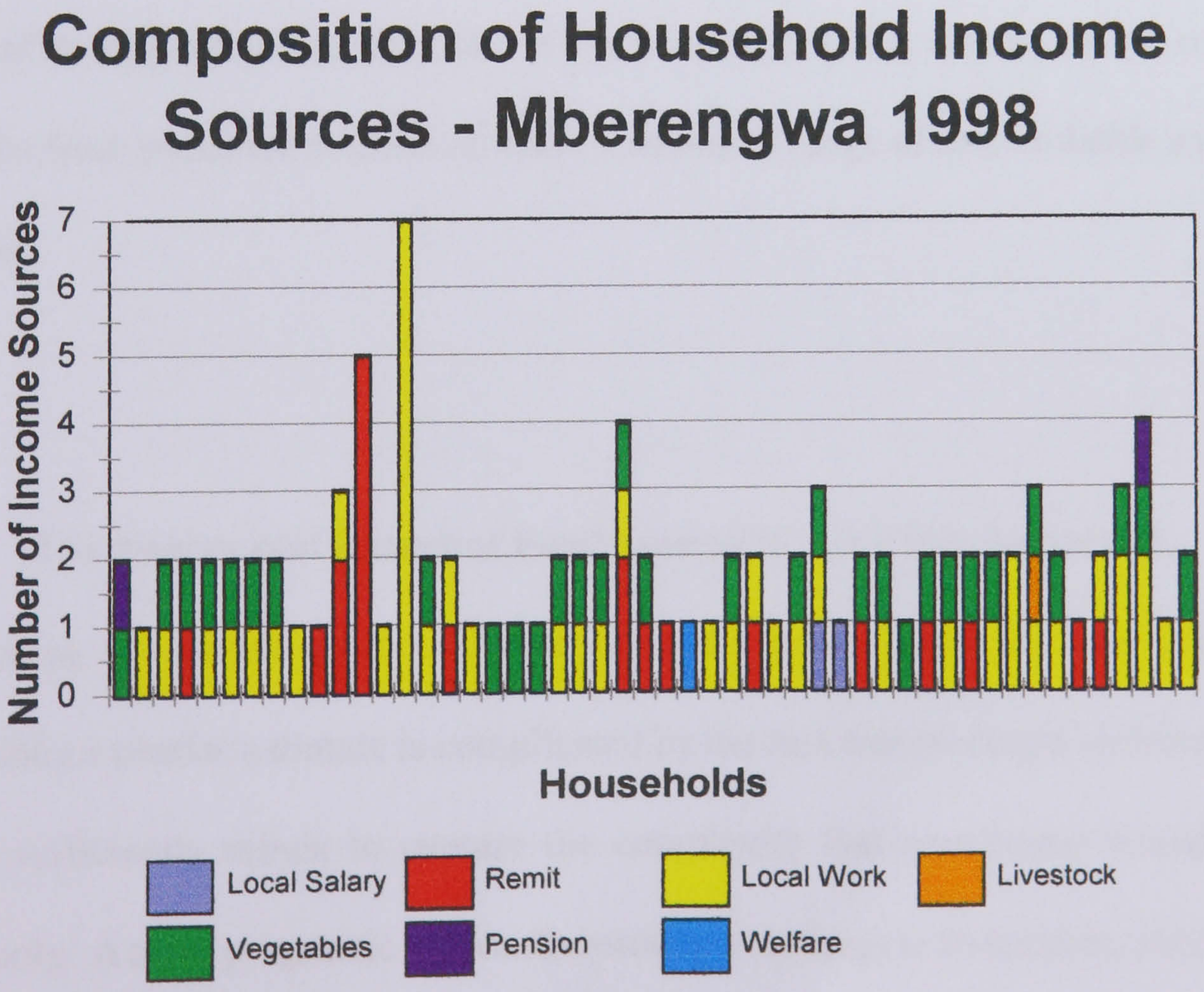


Figure 9.17



Thus, the total number of income sources does not correlate necessarily with the degree of food security enjoyed by a household. The above analysis suggests that more income-earning activities will be pursued where the risk of failure of any particular source is significant. Conversely, those households with less income sources are not necessarily more food insecure but rather that these sources offer a more reliable means to augment food supplies. This makes the analysis of food security more complex but the disaggregation of simple indicators of welfare (e.g. total income sources) can reveal useful insights regarding those strategies that support household resilience. Upon inspection, it is easy to infer from figure 9.13 that Semukwe is more food secure than Mberengwa by virtue of the existence of more income sources per household in this area. However, the extent of food insecurity is similar in both areas but the amelioration of this situation is differentiated according to the strategies pursued. In Semukwe, which is drier and geographically more remote than Mberengwa the risk of failure of any particular strategy is greater. Consequently, households attempt to pursue a broader range of strategies to offset this risk. In Mberengwa, which is closer to urban centres and benefits from perennial sources of water a narrower range of more reliable strategies is pursued.

9.6 The Nature and Extent of Food Insecurity - A Final Appraisal

Estimating the extent of food insecurity in the survey areas remains problematic. Obtaining a precise estimate is complicated by the fact that no single indicator is likely to be sufficiently robust to capture the complexity that constitutes household food insecurity. A more pragmatic approach would be to attempt to triangulate estimates from

different indicators. The discussion presented in chapter eight included an analysis of survey data on the incidence of the coping strategy of reducing consumption amongst households in both survey areas. According to this indicator it was estimated that about 90 per cent of households in Semukwe and 64 per cent in Mberengwa experienced food shortages which led to a reduction in consumption. Another indicator presented in chapter eight was constructed from data on the extent of domestic production shortfalls in both survey areas. This was combined with information on the size of individual herds of small livestock which were assumed to be held as insurance against food shortages. Households which had been unable to secure sufficient supplies from domestic production *and* owned numbers of livestock below a specified level (calculated by a formula) were considered vulnerable to the effects of food insecurity. On this basis, about 44 per cent of households in Semukwe and 62 per cent in Mberengwa could be included in this group. These estimates were obtained by making a conservative assumption regarding the minimum size for herds of small livestock held by individual households. If this number had been set at a higher level the effect would have been to increase the estimate of vulnerable households, especially in Semukwe.

A further indicator of the extent of food insecurity was obtained by analysing the completed questionnaires from individual households to determine the number of households that had experienced shortages of food at some time. This indicator needs to be interpreted with caution since the fact that a household had suffered from food shortages does not imply necessarily that food insecurity was a regular occurrence. More frequent bouts of food insecurity will provide the motivation for households to initiate strategies to augment supplies of food. In contrast, infrequent shortages of food may be

resolved through informal loans of food between households, reducing the need to consider more structured efforts such as the earning of incomes off-farm. Nevertheless, 96 per cent of households in Semukwe and 84 per cent in Mberengwa confirmed that food shortages had been experienced at some time over the period considered by the survey.

A visit to the Provincial Social Welfare Office for Matabeleland South during August 1998 enabled the collection of data on registrations for the Grain Loan Scheme (GLS). Prior to June 1998 a total of 359,479 people had been included on the register for loans of grain from the government. During June 1998 there had been a sharp increase with 134,159 new registrations recorded bringing the total to 493,638 people. Out of an estimated total of 650,000 people in the province, this represented an increase from 55 per cent to 76 per cent in the proportion of the population that had registered for the GLS. This substantial increase would be a general response to the poor harvests of the 1997/98 season which were predominantly the consequence of poor and erratic rainfall that year. This indicator will also offer only an approximation of the actual extent of food insecurity since it records only those people who had registered for loans of grain. Thus, the register would include those who were currently experiencing shortages and those who were expecting to become deficient in food. In this latter group, some applications may have been made simply as a means of insuring against future risks of shortages even though the position at the time of registration was relatively food secure. Equally, some households may not have registered for the scheme where it was perceived that likelihood of receiving grain was low. However, the sharp increase in registrations during June 1998 would tend to reflect the growing extent of food insecurity

caused by recurrent exogenous shocks in the province of Matabeleland South as a whole.

Thus, from the four indicators presented it is possible to derive ranges for the extent of food insecurity amongst the sample population in the survey areas. For Semukwe it is estimated that between 44 and 96 per cent of households had suffered the effects of food insecurity at some time. For Mberengwa the situation appears to be less severe with between 62 to 84 per cent households affected by shortfalls of food. It needs to be emphasised that both of these ranges are at best crude approximations and refer only to the sample populations.

One possible explanation for the narrower range estimated for Mberengwa could be the more significant role played by female enterprises in this area which resulted in the earning of more reliable incomes. Similarly, the wider range estimated for Semukwe could be rationalised in terms of the higher risk of failure associated with the specific type of income earning activities in this area. This would result from the more arid and remote location of the area and the existence of fewer possibilities to earn off-farm incomes. If the conservative assumption regarding the threshold level for herds of small livestock is relaxed then the lower end of the range would rise. Generally, the impression gained during the annual visits was that the incidence of food security was high in both areas and would tend to distributed at the upper end of the ranges. For Semukwe at least, this contention would tend to be supported by the figures for grain loan registrations obtained from the Provincial Social Welfare Office.

What has been established is that the existence of food insecurity in both areas is

considerable and affects a substantial proportion of the population. This insecurity is more likely to be transitory than chronic in nature since all households have some access, albeit irregular, to domestically produced food or income. However, the frequency of exposure to transitory food insecurity is of concern since the consequences of irregular access to food, such as malnutrition are likely to be of greater significance for the resilience of households in the longer term.

9.7 Conclusion

This chapter has examined the range and type of income earning activities stratified by gender in both survey areas. The potential of these income sources to contribute to the smoothing of household consumption was assessed in terms of the variability in their amount and the frequency of receipt. Additionally, the risk of failure of individual sources was evaluated with respect to the gender orientation and specific nature of the different activities. Where the risk of failure of individual sources of income was significant the strategy of pursuing an increased range of incomes was noted to be a more common practice. This was the situation in Semukwe where the earning of incomes, typically from livestock production and through migration, was more precarious. Consequently, households in Semukwe tended to concentrate on securing access to purchased food by earning incomes from a number of sources. In contrast, the role of female enterprise in Mberengwa was observed to be more significant in earning incomes that were more reliable. It has been suggested that the increased reliability of incomes associated with female enterprises in this area contributed to reducing the necessity to pursue a greater number of activities. Thus, although the earning of incomes from a range of sources is stressed in both Semukwe and Mberengwa, the strategy is

differentiated by the existence of real or perceived risks between areas.

For the efforts of households off-farm to support resilience the earning of incomes from these activities needs to be able to respond rapidly to occurrences of food shortage. This chapter had identified differences in the strategies pursued by individuals stratified by gender. The activities of females tended to be more contingent in nature and were undertaken in the expectation of food scarcity. Typically, these activities required more consistent effort in terms of time and resources and it was suggested that incomes derived from these activities were more able to support the resilience of households. The motivation for the efforts of males was more opportunistic and tended to respond to the actual occurrence of food shortages. These tended to be less reliable particularly when food insecurity was widespread. However, it would appear that some complementarity exists between the strategies of males and females. The incomes derived from female activities would, in general, tend to be more stable over time and facilitate more regular purchases of food to supplement that obtained from domestic production. During periods when shortages became critical the more flexible activities of males could be activated in an attempt to increase household incomes for the purchase of food. The combined contribution of incomes from male and female activities may therefore enable households to limit the frequency and extent of food insecurity.

It was noted in this chapter that the effectiveness of household activities off-farm may be limited due to the existence of critical constraints. For example, efforts to access food through trade-based entitlements (typically female enterprises) may be frustrated by deficiencies in managerial competence, a lack of available credit, the distance from

markets and the poor transport infrastructure. This would tend to limit the number of purchased inputs that are used and would encourage low input-output technologies. The bulking of production to obtain economies of scale to reduce distribution costs and increase bargaining power in the sale of outputs relied on the ability of producer groups to coordinate their activities. Some positive evidence has been provided in this chapter to support the existence of a degree of organisational capacity but that this was more widespread was less established. Strategic deficiencies of this nature will undermine the resilience of households and so may extend the recovery phase. This will tend to prolong the exposure of households to the more insidious and longer term effects of food insecurity, especially malnutrition.

The strategic role played by off-farm incomes lies in the contribution they make in eking out limited supplies of domestically produced food. However, the need to pursue remunerative activities off-farm for the purchase of food exposes households to exogenous influences from the formal economy. These would include rising prices for food and the growing problem of unemployment induced by macroeconomic reforms. One way by which households may seek to limit the consequences of these external effects is by investing in the education of their children. Higher levels of education increase opportunities for paid employment and regular incomes offer some protection against rising prices. Indeed, the survey indicated that household members with higher levels of education were more able to obtain off-farm employment. However, the flow of migrant labour from households and the subsequent receipt of remittances were not symmetrical. One possible consequence is that households may become reluctant to continue to undertake investments in education if it is perceived that these are not fully

compensated by remittances and other non-pecuniary benefits. If the extent of unemployment is also considered then this could reinforce the trend of withdrawing children from school, particularly females. This would have severe and negative implications for household resilience in the longer term.

Finally, the extent of food insecurity in the survey areas was estimated from a range of indicators. These suggested that food security affects a substantial proportion of the populations in both areas. The nature of food security was considered to be more transitory than chronic since all households had access, albeit erratic, to domestically produced food or a source of income. Therefore, the response of households to food insecurity will be influenced by the size and frequency of the shortages experienced. The temporal dimension of food insecurity with regard to coping strategies and household resilience is the subject of the final chapter.

Chapter Ten

Summary of Results, Discussion and the Implications for Policy

10.1 Introduction

In this final chapter, a summary of the nature of household food security strategies and their evolution in response to exogenous influence is presented. The consequences of those recurrent shocks that have affected households within the time frame of this study are noted. These are evaluated in terms of the principal responses by households revealed by the survey and are combined with the schematic framework introduced in chapter two. From this analysis, the most significant components of household resilience are identified in both survey areas. The transitory nature of food insecurity in these areas is reemphasised in light of evidence on the dominant household coping strategies. The relationship between irregular access to food, malnutrition and household resilience in the longer term is examined briefly.

The theoretical framework provided by the unitary model of the household (introduced in chapter five) is revisited to consider the effects of drought on the productivity of agricultural systems. This analysis is undertaken to understand the possible uses of household time according to the degree of resilience exhibited. It is argued that the effective use of any increase in time made available by the decrease in the productivity of domestic agriculture may be constrained by the extent of options for off-farm activity. Where these are limited, the ability to endure the effects of frequent bouts of food scarcity is considered as the lowest level of resilience.

From the evidence provided on the components of resilience, the durability and limitations of household strategies are described and their implications for policy are identified. In the design and implementation of policies to support household strengths in recovering from food shocks, the importance of identifying an appropriate local institutional structure is stressed. It is argued that a process of policy-making that is firmly rooted in the local institutional structure will be better placed to complement the efforts of households during the recovery phase. Finally, the limitations of this research and suggestions for further study are noted.

10.2 Summary of Results

The principal concern of this research has been to investigate the impact of recurrent exogenous change on household resilience in the semi-arid Communal Areas of Zimbabwe. The concept of resilience has its origins in the ecology literature and has been applied to a limited extent in the study of socio-economic systems. The value of its application to the analysis of household food security has been stated in this research to derive from the focus it provides on the efforts of households during the recovery phase. The main sources of exogenous influence in the context of sub-Saharan Africa were considered to be the effects of drought and those macroeconomic reforms instigated under structural adjustment programmes.

Households may pursue a range of strategies during and after the occurrence of a food shock which aim to preserve the ability to recover. It has been suggested that such strategies need to manage the trade-off between reducing the severity of food shocks by

maintaining some access to food and preserving options for recovery in the future. Moreover, this trade-off will influence the extent to which households are able to manage their position of food security in the short and long term. For example, households that sell assets such as livestock to satisfy current food requirements will reduce their options for recovery after the period of food shortage has elapsed. A common approach to reducing this tension between food security objectives over time has been to endure hunger by reducing consumption in the short term in order to protect options for survival in the future. If the extent of food insecurity in sub-Saharan Africa is to be reduced then it has been argued that policy-making should endeavour to support the efforts of households during the recovery phase.

The recent experience in Zimbabwe has been complicated by the bunching of successive shocks. Frequent droughts have had an adverse influence on the productivity of domestic agricultural enterprises at a time when macroeconomic reforms (which have resulted in regular increases in the real price of food staples) have reduced access to purchased food. Moreover, successive shocks have affected different food entitlements simultaneously so limiting the range of responses and possible adaptations of strategies. In effect, the bunching of shocks has frustrated attempts by households to effect a recovery. Each successive shock has reduced resilience and has obliged households to confront future food shocks with a diminished ability to recover. The trajectory becomes one of increasing exposure to bouts of transitory food insecurity and, in less resilient households towards a more chronic position.

To determine the impact of exogenous change on household resilience it was necessary

first to assess its status. In the absence of a suitable conceptual framework, chapter two attempted to develop a structure for the analysis of resilience in rural households. The framework presented combined the individual strategy domains that households may pursue with Sen's (1981) analysis of access to food secured through exchange entitlements. The contribution made by this integrated approach was the assistance extended in disaggregating the various efforts of households aimed at maintaining some access to food.

It was argued that the current status of resilience will be linked to the outcome of past, present and the likelihood of future catastrophic events. In this respect, the major interest of chapter five was to evaluate the nature of household responses to incidents of food scarcity in Zimbabwe from the time immediately before the colonial period to the present day. In the immediate pre-colonial period traditional strategies concentrated on a combination of production and trade-based entitlements to food. Indigenous systems of agriculture relied on shifting cultivation to maintain the productivity of the soil and to enable the accumulation of buffer stocks. When food became scarce as a consequence of successive drought-induced crop failures (i.e. a failure of production-based entitlements) the geographical scale over which strategies were pursued increased. Essentially, the strategy exploited spatial differences in food availability and increased the emphasis placed on trade-based entitlements. Through established networks of inter-regional trade food was bartered from surplus areas for livestock and goods obtained from petty-production.

The land reforms of the colonial period had the twin effects of undermining the

productivity of traditional agricultural systems by confining the African population to marginal areas and limiting the spatial extent over which food security strategies could be pursued. However, the growth of the colonial economy provided opportunities to engage in paid employment off-farm which encouraged the substitution of own-labour entitlements to food for those traditionally derived through production and trade-based entitlements. The migration of African labour to the towns resulted in the development of rural-urban linkages and increased their role in the maintenance of household food security. Fundamentally, these linkages enabled the rural population to supplement their declining capacity in agriculture by participating in the formal and informal economies in urban areas. Thus, the food security position of rural households became linked inextricably to the availability of paid employment on one hand and, a willingness on the part of government to subsidise maize produced by the commercial agricultural sector on the other.

The first decade after independence in Zimbabwe saw a progressive stagnation of the economy as a result of a heavy fiscal burden. This was associated with funding the egalitarian policies of the government which aimed to address the inequalities of the colonial period. By 1990, it was realised that the process has become unsustainable and that fundamental macroeconomic reform was required. This was initiated in the form of ESAP and was developed in consultation with the IMF and the World Bank. This was discussed in some detail in chapter five which identified the subsequent rise in food prices as the main linkage of the policy with the food security position in rural households. The rises in the price of food were a consequence of the dismantling of the colonial system of general food subsidies and inflation caused by successive

devaluations of the nominal exchange rate. Equally, the restructuring of the Zimbabwe economy to improve the functioning of market mechanisms reduced employment opportunities as domestic industry became exposed to competition from the world market. Thus, two of the main consequences of ESAP for food security in general have been a reduction in the effectiveness of strategies to earn incomes off-farm and a decrease in the real value of household incomes in purchasing food. Therefore, it has been argued that food insecurity has increased in rural areas as a partial consequence of those policies implemented under the structural adjustment programme.

Somewhat ironically, it has been through those rural-urban linkages which were forged originally to improve household food security that the effects of ESAP have increased food insecurity. Moreover, these effects became most pronounced at a time when agriculture in the Communal Areas was suffering from recurrent droughts. The significance of these was highlighted in chapter six where the implications of the successive droughts experienced during the 1980s and 1990s were noted for those coping strategies aimed at the accumulation of buffer stocks. The situation was compounded by declining soil fertility in the Communal Areas and drought-induced losses of livestock. The impact of the latter was particularly serious since the overall productivity of agricultural systems is influenced to a large extent by the synergies between crop and livestock enterprises. These were noted in detail in chapter eight and include the contribution made by livestock to the timely preparation of fields and the addition of their accumulated manure to improve the structure and fertility of the soil. The loss of livestock also reduced the extent to which they were able to act as a means of savings and insurance against the food scarcity.

From the preceding discussion, households in the Communal Areas have been confronted by declining possibilities to secure access to food through established strategies that emphasised own-labour and production-based entitlements. This research has argued that such compound conditions will encourage the adaptation of systems of access to food that preserve the ability to recover after a period of crisis. Indeed, the ability to adapt has been identified in this research as a key factor in determining the robustness of household resilience. In more resilient households this may involve adapting existing means of access or by developing new strategies for obtaining food. In less resilient households with limited options for sustaining current consumption and effecting a recovery, efforts would tend to focus on minimising the long term consequences of food insecurity by using hunger as a defence strategy.

In order to investigate these propositions a household survey was conducted in the Semukwe and Mberengwa Communal Areas. The survey aimed to determine the nature of household strategies stratified by survey area and by gender. Moreover, the analysis of the survey data attempted to evaluate the effectiveness of individual strategies in terms of their ability to sustain food consumption and contribute towards effecting a recovery in the future. This was structured by grouping the analysis of the data according to the individual strategy domains described in the resilience hexagon presented in chapter two. At its simplest level, the analysis was concerned with evaluating the nature and effectiveness of strategies according to whether they were directed on or off-farm. The schematic framework presented in chapter two has been adapted in figures 10.1.and 10.2 to summarise the nature of household resilience in each of the survey areas.

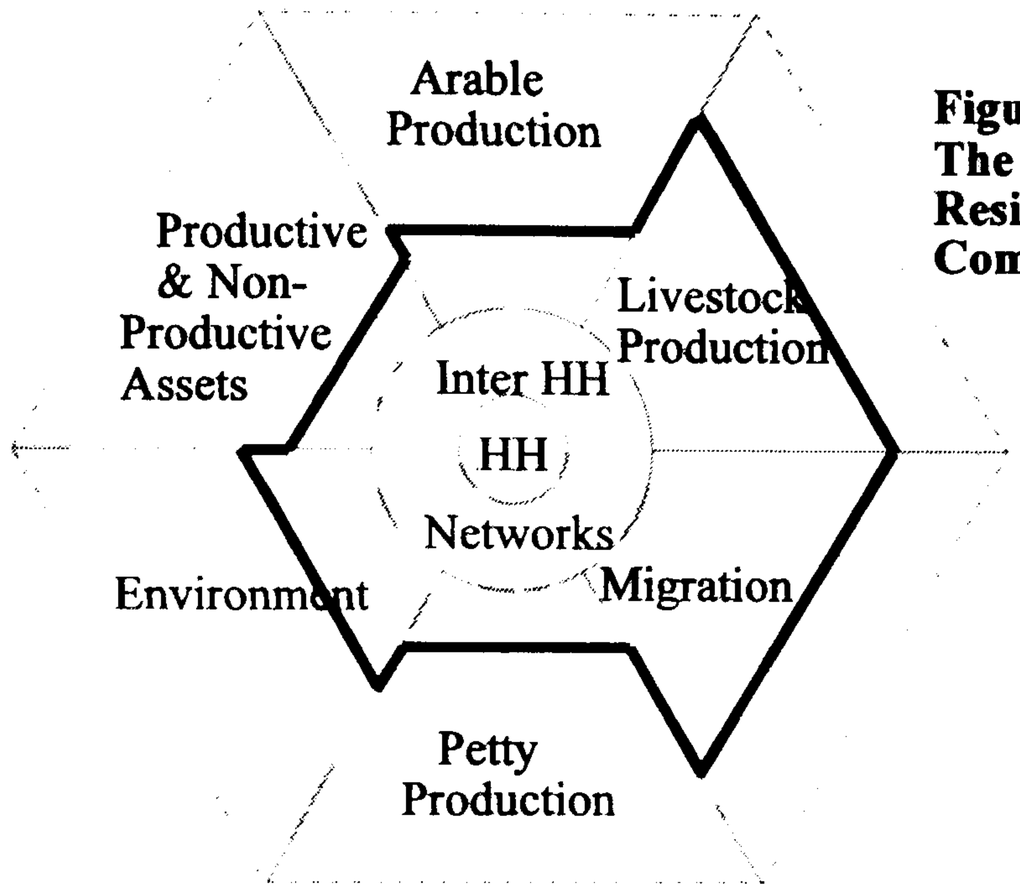


Figure 10.1
The Nature of Household Resilience - Semukwe Communal Area 1998

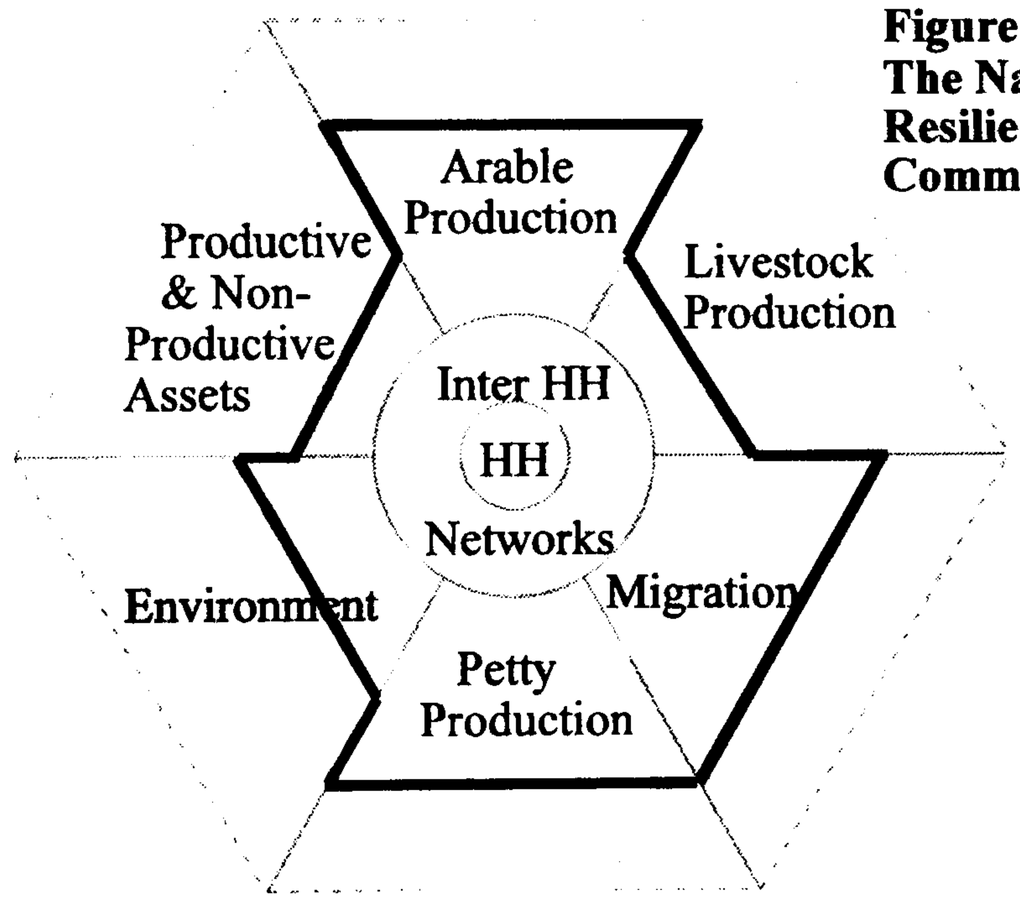


Figure 10.2
The Nature of Household Resilience - Mberengwa Communal Area 1998

It should be recalled that the value of the schematic presentation results from the focus it provides in thinking about resilience. It requires the analyst to think holistically about resilience by concentrating on the strengths of households that contribute to recovery. In figures 10.1 and 10.2 the hexagon has been drawn using broken lines to indicate the frontier of resilience within each strategy domain. The shape in bold within each hexagon has been derived from an appraisal of the relative strengths of the individual strategy domains by survey area. This appraisal was gleaned from the results of the survey which were presented in chapters seven, eight and nine.

In figure 10.1 which refers to Semukwe, the survey revealed that significant support to effect a recovery could result from household strengths in the production of small livestock and from migration. Goat production was well established in Semukwe with most households maintaining a small herd, predominantly for insurance and savings purposes. Migration comprised those remunerative activities off-farm, both in and away from the local area. The benefits of migration with regard to Semukwe were the remittances received from the employment of absent members, typically in South Africa, and from different types of local employment. The contribution made by arable production was limited by poor rainfall, sustained losses of cattle and the declining fertility of the soil. The increasing pressures of both human and livestock populations has led to a progressive degradation of the natural environment. Equally, political reform at the local level and a failure of traditional institutional structures to cope with the increased pressures on the environment has undermined the collective ability of households to manage common property resources effectively. This has reduced the extent to which households have been able to rely on gathering activities during periods

of food scarcity. Finally, the results of the survey suggest that petty production was not particularly established in this area.

In contrast, figure 10.2 for Mberengwa stresses household strengths in petty production, migration and a lesser extent from arable production. Petty production was a more common activity amongst females in this area and provided more consistent sources of income. Migration in the context of Mberengwa referred more to the localised efforts of males off-farm, such as in construction and the collection and sale of firewood. Remittances from absent members were less significant than in Semukwe. Although the observed success in the production of food staples was similar between survey areas, the strength of arable production in Mberengwa derived substantially from the maintenance of vegetable gardens by females. This practice was more prevalent in this area due to the greater availability of perennial sources of water. This underlines the productive potential of water in semi-arid areas, even in limited quantities and where its availability is highly localised. The production of livestock was less established in Mberengwa but the circumstances affecting the management of the natural environment were similar to Semukwe.

The role of productive assets in resilience was expected to derive from their combined contribution in household enterprises. These included the technical ability of human capital (i.e. obtained largely through education), agricultural equipment such as ploughs, livestock used as draught power and the size and quality of individual holdings of land. Most households owned such assets but disparities in the size of their relative holdings of each asset led to sub-optimal combinations in production. However, the productive

potential of these assets made households reluctant to sell them during periods of food scarcity since this would reduce options for recovery. In general, the ownership of non-productive assets was not widespread and was restricted to more food secure households.

10.3 Household Coping Strategies and Malnutrition

From the analysis presented in the preceding chapters and summarised in the figures 10.1 and 10.2, it would seem that the capacity of households to effect a recovery is severely constrained. Households have faced limited options both on and off-farm through which to express their efforts. Increasingly precarious access to food has exposed households to effects of regular bouts of transitory food insecurity. Although resilience focusses attention on the efforts of household in the short to medium term, it is the nature of coping strategies that informs on the actual response to the immediate effects of occurrences of food shortage. These are summarised in figure 10.3 which presents the percent distribution of household coping strategies.

Figure 10.3

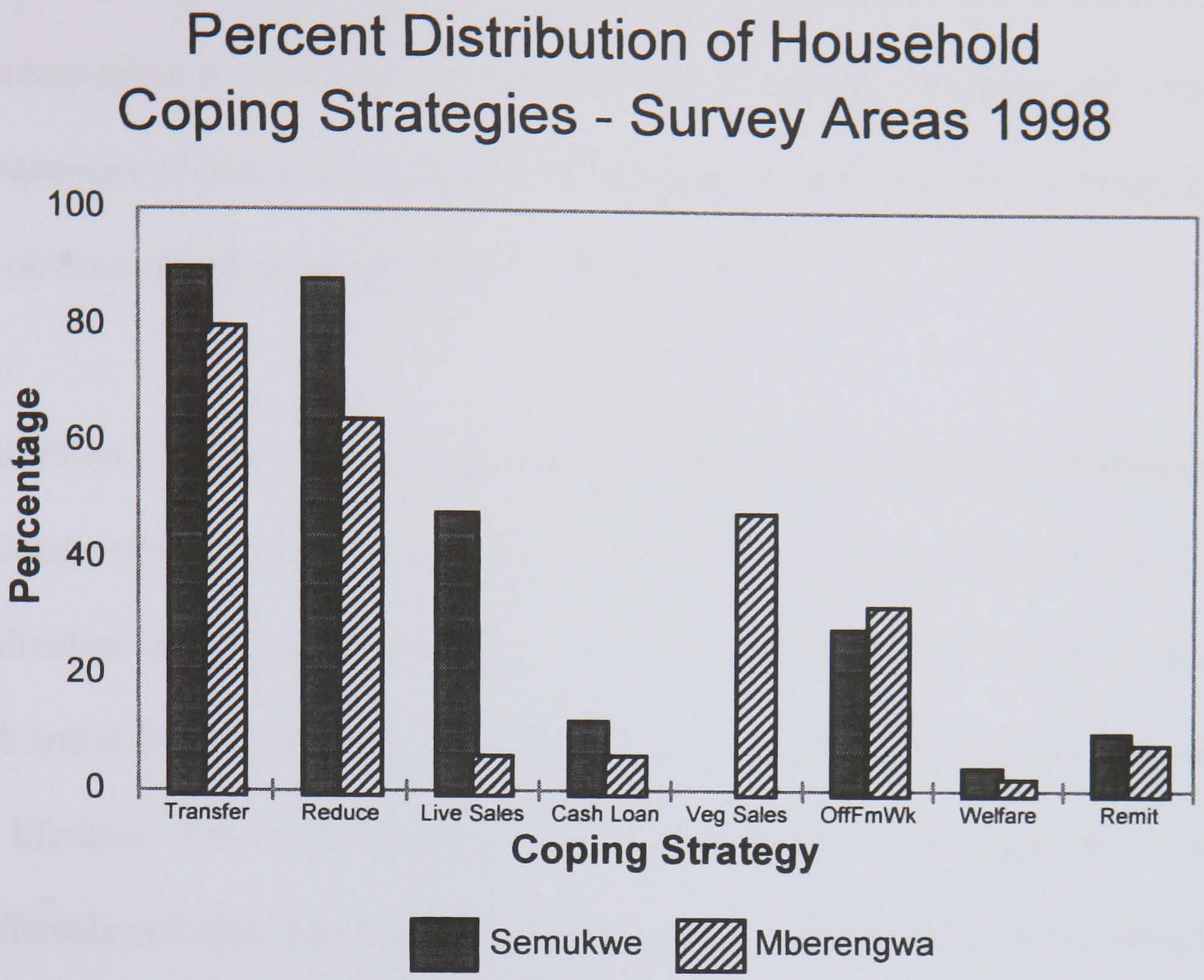


Figure 10.3 confirms informal transfers of food between households and reducing consumption as the most important coping strategies. Livestock sales in Semukwe, vegetable sales in Mberengwa and off-farm work in both areas figure as being less significant in coping with immediate consequences of food scarcity. This is perhaps because they are less reliable in providing income to purchase food in the very short term. Incomes sources need to be sufficiently flexible to increase rapidly in response to random occurrences of food scarcity. Ensuring a degree of flexibility may be problematic, particularly when the shortage is widespread. Consequently, the immediate effects of food shortages are most usually alleviated by attempting to borrow

grain from neighbours or by reducing food intake. The predominance of such low level strategies tends to support the conclusion drawn in chapter nine that food insecurity in the survey areas is more transitory than chronic in nature. However, the long term consequences of irregular access to food are likely to be serious and debilitating, the most obvious of which are the effects of malnutrition.

Malnutrition is a physiological condition resulting from an inadequacy or imbalance in food intake (FAO, 1999). As a process, malnutrition may extend into the later life of an individual and to future generations (Gillespie and Flores, 2000). It can begin in the womb and children born malnourished will be more susceptible to disease throughout their lifetime. One study (Andersson and Bergström, 1998) suggests that a low male/female sex ratio may occur in women who are malnourished during pregnancy, the socio-economic implications of which are profound. Later in life malnourishment can also result in a reduced performance at school and underweight adults will less able to maintain stable livelihoods.

The extent of malnutrition is often accepted as a late indicator of the extent of famine. This view has been challenged (Young and Jaspars, 1995) on the basis of evidence that a common response to irregular supplies of food is the deliberate reduction of intake. The paper proceeds to argue that this broadens the range of possible interventions in response to high rates of malnutrition to include measures to support livelihoods under threat of collapse. This position complements the emphasis of this research that attention to the components of household resilience can provide a focus for policy-making in supporting the efforts of communities experiencing irregular access to food.

An assessment of the extent of malnutrition in the survey areas is beyond the scope of this research. However, discussions with health workers in both areas indicated that it was most prevalent amongst the elderly and children under five years of age. The accuracy of the records held on malnutrition depended on attendance rates but was estimated to occur on a monthly basis in 6 - 12 per cent of the children brought to clinics. However, a drive to increase local awareness of malnutrition during 1998 in Semukwe resulted in this figure rising to 19 per cent. The clinics had also recorded an increase in the number of deaths due to tuberculosis. In Zimbabwe, this disease is a common source of death in people suffering from AIDS. A health worker in Mberengwa suggested that while AIDS may be a part of the overall picture of mortality in the survey areas, the sheer extent of malnutrition could make it responsible for a larger number of deaths.

Malnutrition results from irregular access to food. In this research, the causes of insecure access have been rationalised in terms of recurrent exogenous shocks which have affected simultaneously different entitlements to food. The position at the household level has been exacerbated by the dominant coping strategy of reducing consumption. Households may be conceived as being on a treadmill in their attempts to obtain sufficient food. Their efforts have been diverted and distracted by the continual need to secure food in the short term. This inhibits the implementation of strategies to improve the status of household nutrition and standards of living in the longer term. Effectively, households have been forced to endure the effects of food shortages in an attempt to preserve options for recovery. Thus, endurance may be conceived as representing the lowest level of resilience. From the preceding discussion,

the physiological consequences of enduring irregular access to food may have serious implications for the resilience of households in the long term. The cycle is reinforcing and without external support, becomes increasingly difficult to break.

10.4 The Incorporation of Drought into the Unitary Model of the Household

In chapter five the unitary model was introduced to examine the predicted effects of a devaluation on economic incentives at the household level. The rationale for a devaluation was the expected increase in the price of tradable goods that would occur relative to that of non-tradables. If food is considered as a tradable commodity then incentives are provided (under strict assumptions) to reallocate household time from market work into the domestic production of food. Where this reallocation is more generally applied amongst rural households the sector as a whole is expected to benefit from a devaluation.

The experience of farm households in Zimbabwe revealed in this research runs contrary to these predicted outcomes. Most households are net purchasers of food such that an increase in the producer price resulting from a devaluation will feed into rises in the retail price. This was identified as the main linkage of ESAP with the food security position in rural households. A more serious criticism of this analysis concerns the degree of abstraction inherent in the unitary model. For example, demographic factors, the prevailing agro-climatic conditions and the possibility of production constraints at the household level are ignored. In the context of sub-Saharan Africa, the effects of drought on the productivity of domestic agriculture are not considered. Drought not

only deprives arable production of the most critical resource but losses of livestock can have equally severe consequences in integrated systems of agriculture.

If the restrictive assumptions are relaxed to allow the effects of drought to be introduced then the predicted outcomes of the model alter significantly. These are presented in figures 10.4, 10.5 and 10.6 below. Figure 10.4 has been adapted from figure 5.3 in chapter five to include a new production function indicated by Q*. This production function represents the decline in productivity of domestic agricultural systems induced by the compound effects of recurrent drought. In essence, households are conceived as being less able to convert their available resources into food through agricultural production.

The decrease in the real wage from W/P to W/P' induced by a devaluation was originally expected to motivate an increase of production on-farm from Y1 to y1 (where good Y is a tradable good such as food) by increasing household time devoted to agriculture from T1 to t1. Under conditions of recurrent drought, the relevant production function becomes Q* and by a parallel shift of the real wage line (under devaluation) W/P' it is possible determine the effect on domestic agricultural production. The new equilibrium between Q* and W/P' occurs at a* reducing household time in this activity to t1* and production to y1*. Despite the incentive provided by the fall in the real wage (W/P'), households are unable to realise an increase in output due to drought-induced production constraints.

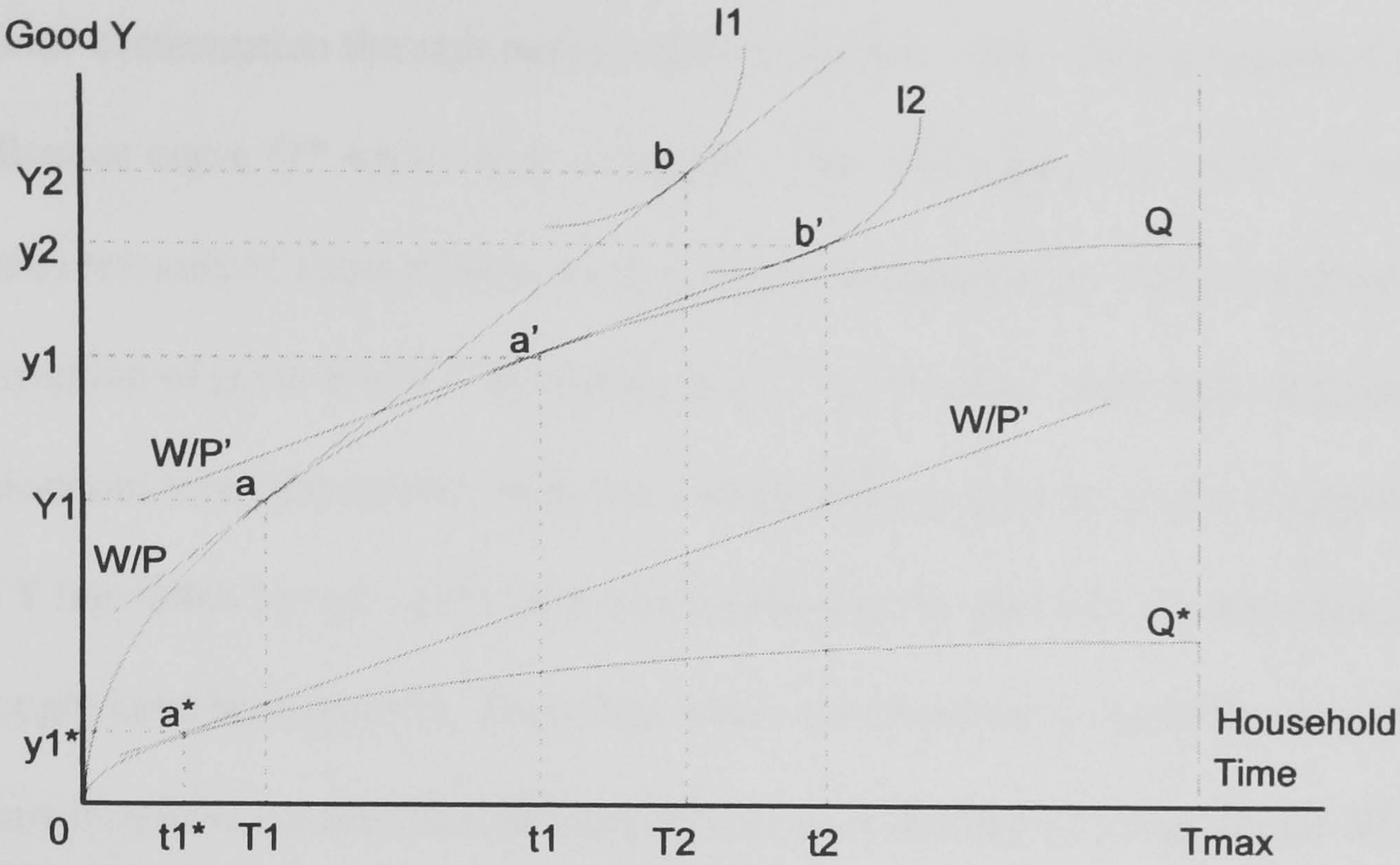


Figure 10.4
The Farm Household under the Combined Effects of Devaluation and Drought

To assess the impact of these combined conditions on consumption it may be useful to consider the circumstances faced by resilient and less resilient households separately. The inclusion of an indifference curve (between consumption and leisure) in the model enables the level of consumption to be determined. It should be recalled at this stage that more resilient households will be able to pursue a wider range of strategies to support a recovery, particularly those efforts directed off-farm. If these efforts are assumed to constitute market work in the broadest sense then resilient households will be more able to exploit such opportunities to endure food scarcity and to effect a recovery.

Figure 10.5 refers to the situation in more resilient households. Their superior ability to take advantage of off-farm opportunities enables this group to convert household time into consumption through participation in market work. This is indicated by the indifference curve I2* which is at a tangent to the real wage W/P' at b*. From the financial rewards of these efforts, more resilient households are able to increase their consumption of good Y to y2* by buying in (y2* - y1*) units. Although the allocation of household time into market work has increased the overall level of consumption of good Y has fallen by (y2 - y2*) units as compared to the scenario in which the effects of drought have been ignored. Therefore, while more resilient households are still food insecure they have succeeded in limiting the extent of shortages by engaging in off-farm activities. This would translate into reducing the frequency and duration of incidences of food scarcity.

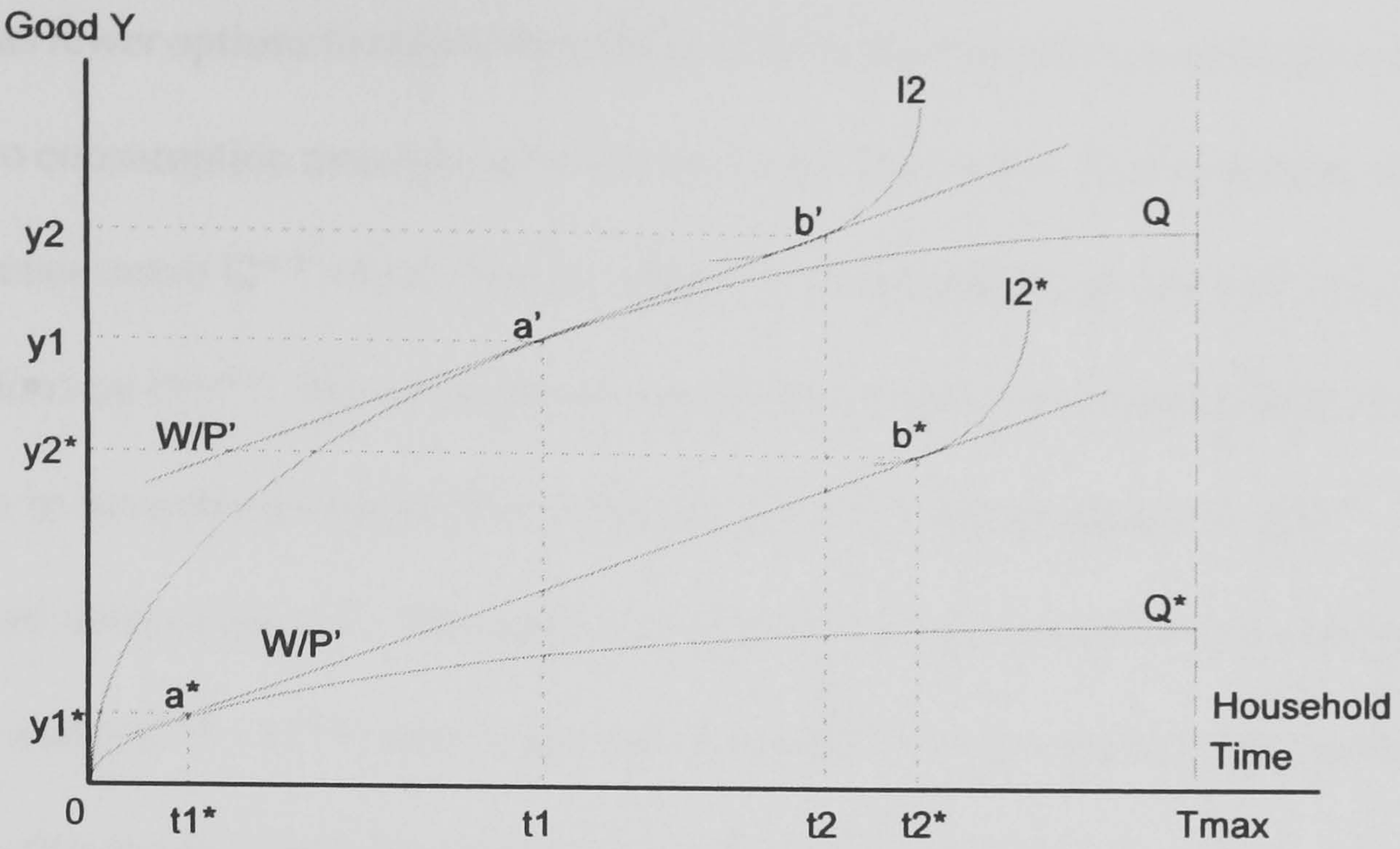
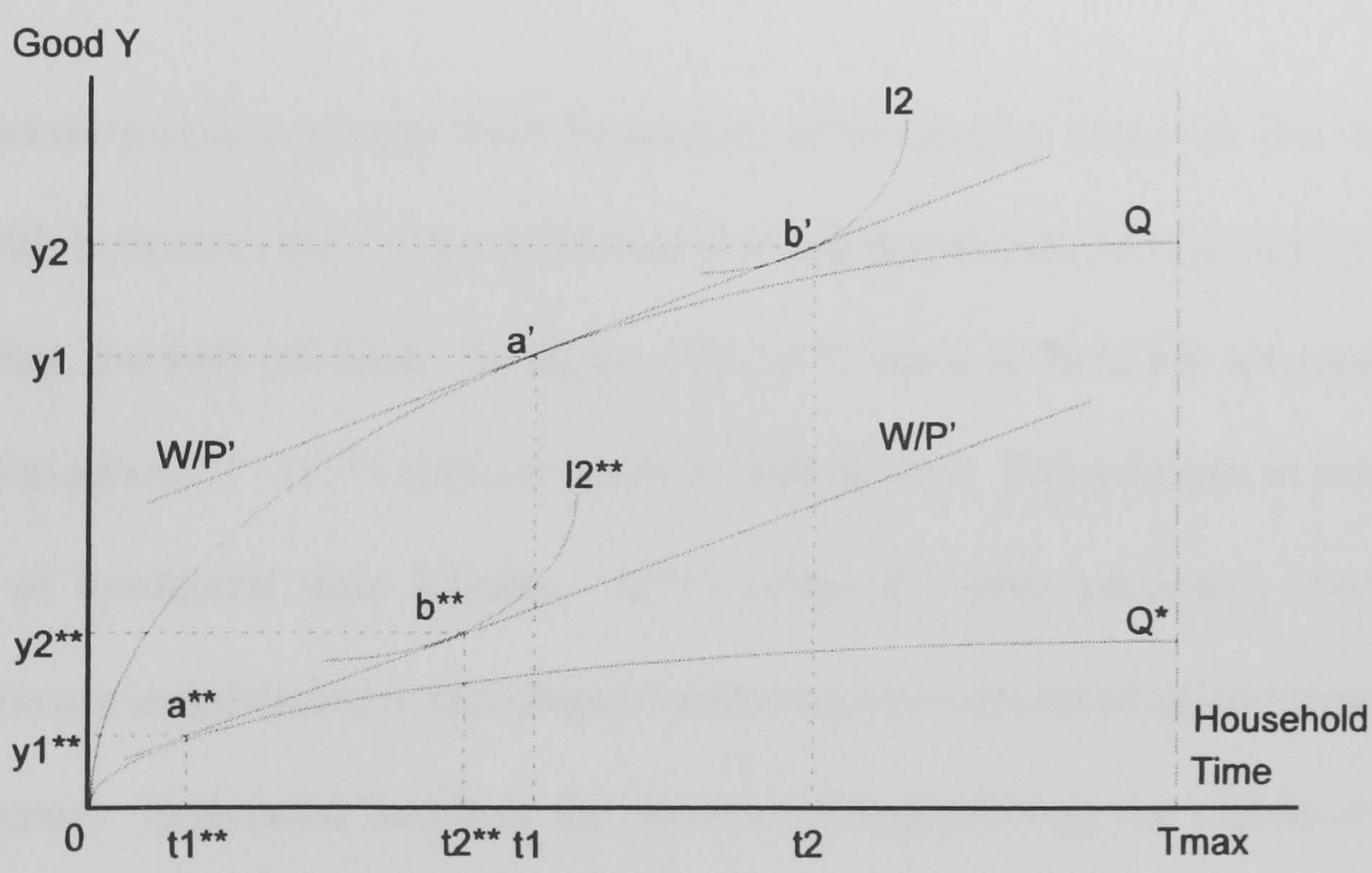


Figure 10.5
The Combined Effects of Devaluation and Drought on More Resilient Households



10.6
The Combined Effects of Devaluation and Drought on Less Resilient Households

Figure 10.6 examines the conditions in less resilient households. By definition, this group has fewer options to reduce the effects of food shortages by converting household time into consumption through participation in off-farm work. This is indicated by the indifference curve I2** which forms a tangent with the real wage line W/P' producing an equilibrium at b**. The constrained possibilities to earn incomes off-farm limits the increase in household consumption obtained from market purchases to (y2** - y1**) additional units of good Y. Thus, although the allocation of some household time into market work (t2** - t1**) results in some increase in food consumption the situation faced by this group is more severe than in more resilient households. As a consequence, the bouts of transitory food insecurity experienced by less resilient households are more frequent and prolonged. The longer term implications of malnutrition have already been emphasised.

One interesting issue to emerge from the analysis of the adapted model for less resilient households is the use made of the additional time arising from the limited opportunities for earning incomes off-farm. In figure 10.6, t1** units of time are allocated into production and (t2** - t1**) units are given to market work. This releases an increased amount of household time ((Tmax - t2**) units) for other purposes. From the discussion presented earlier in this chapter endurance was conceived as the lowest level of resilience. Endurance involves the process of internalising the effects of food shortages through hunger. The main objective is to preserve options for recovery when conditions may eventually improve. It involves minimising human effort to conserve energy by eking out what limited supplies of food may be available. Thus, it may be conceived that the additional time is used to minimise the physiological effects of food

shortages on the individual members of the household.

This was the distinct impression gained during interviews with more food insecure households over the survey period. There was a general feeling of exhaustion and resignation and, that some households had become reconciled to the limited options for securing food. In less resilient households there appeared to be a preoccupation with conserving and preserving resources for the possibility of recovery. Most commonly, this was hoped to result from favourable rains in the coming season. The severity of food insecurity appeared to be similar between survey areas but was differentiated by its extent. Households that were forced to endure the effects of food shortages were found in both areas but appeared to be marginally more widespread in Semukwe. This is perhaps because the region is more arid and remote from urban centres than Mberengwa.

10.5 Wider Relevance of the Research Findings

The literature concerning food security in Zimbabwe has developed significantly since independence. The purpose of this section is to evaluate areas of this literature in relation to the main findings of this research. The main focus of this research has been to examine the effects of recurrent exogenous shocks, principally structural adjustment and drought, on the efforts of households in the semi-arid Communal Areas to maintain secure access to food. The implementation of structural adjustment policies since 1990 has had interactive and additive effects with the frequent droughts that have occurred over the same period. An understanding of the compound effects on food insecure

households requires that the literature on both of these events is considered.

The literature on structural adjustment in Zimbabwe grew significantly during the 1990s as the social impacts of adjustment on the poorer sections of the population became more apparent. The concerns of early writers have largely been borne out by some of the actual experience of ESAP in Zimbabwe, aspects of which were discussed in chapter five. From the experience of structural adjustment in other countries in the region the anticipated benefits of adjustment were not expected to be realised by the poorer sections of Zimbabwean society (Chakaodza, 1993). Chidzonga (1993) suggests that women would be required to make increased contributions to household production as a consequence of structural adjustment with serious implications for the welfare of children.

The twin processes of deregulation and liberalisation were expected to have detrimental effects on the competitiveness of domestic manufacturing sector and the level of unemployment (Kadenge *et al.*, 1992). Reliable data on unemployment are scarce and estimates vary. However, unemployment may have been as high as 40 per cent in 1993 (Rakodi, 1994) rising to around 50 per cent by 1996 (EIU, 1996). Even accepting these figures as crude estimates the rising unemployment witnessed within the time frame of ESAP will not have contributed to improving access to food in those households dependent on income from paid employment. The ability to secure employment off-farm was noted in chapter four as a central component of household resilience by increasing access to purchased food through own-labour entitlements.

One of the main economic components of structural adjustment programmes is the devaluation of the nominal exchange rate. Mlambo (1995) is critical of devaluation as a major instrument of adjustment policies. In particular, the paper argues that the ability to meet the rising prices of imported products is undermined by the reduced earnings from exports such that any gains from devaluation may be more imaginary than real. This supports the important conclusions derived from the empirical analysis of the real exchange rate undertaken in chapter five. Essentially, the competitive gains of the export sector derived from a devaluation of the nominal exchange rate may be partially or wholly dissipated through the subsequent rises in the price of imports. Rises in the prices of the latter fed into the general price level fuelling domestic inflation. The ability of liberalisation to fill the void created by the withdrawal of government control in food markets has also been challenged. The efficacy of markets in replacing existing means of access to food, at least in the short term has been questioned throughout this research. Jayne *et al*. (1990) argue from a range of evidence that the development of functioning food markets in the Communal Areas has not materialised as anticipated and that public investment is required to encourage the entry of private grain traders and millers in the rural areas.

Parallel reforms to reduce the size of the budget deficit required reductions in government social expenditures. The social impact of this strand of adjustment policy was particularly deleterious as price controls on basic foodstuffs were progressively removed . One of the main functions of these was to ensure that basic foodstuffs were affordable by low income households (Kadenge *et al*., 1992). The removal of these was expected to lead to general rises in the price of food with negative effects on real

incomes in those households where food constituted a significant proportion of the budget. Chapters five and six presented data on the subsequent rise in food prices and the negative effects at the national and household levels were noted. Kanji and Jazdowska (1993) recorded that rapid and visible processes of impoverishment were initiated as many low-income families were squeezed between stagnant wages and rising prices. With regard to the effects of rising prices at the household level a survey of the cost of a validated basket of food was conducted in the high-density suburbs of Bulawayo (Velempini and Travers, 1997). Comparisons with the government-stipulated minimum wage revealed that the costs of this basket was 2.3 to 4.88 times greater than the monthly salary for a worker. Research conducted in Harare on the perceptions of ESAP (Potts and Mutambirwa, 1998) confirms food price rises as a major concern amongst the migrants interviewed.

Additional negative effects arising from the reduction in government expenditures as part of ESAP were the introduction of user fees in health and education. These were discussed in chapter seven and it was suggested that a main consequence of the latter was the withdrawal of children from school in poorer households. The introduction of charges for medical services was expected to lead to the deferring of treatment and an increased responsibility within households to care for the sick. These conclusions are supported by evidence from urban households in Gweru (Rakodi, 1994) and on poorer groups in general (Sachikonye, 1992; Lennock, 1994; Gibbon, 1995; Mlambo, 1995; Marquette, 1997. A recent study (Chisvo,2000) conducted in two Communal Areas of contrasting agro-potential concluded from an analysis of economic and social indicators that the position of both communities had deteriorated during the ESAP period.

It was unfortunate that one of the most severe droughts to affect Zimbabwe and the southern African region should have occurred during the early stages of ESAP. The negative effects of ESAP on unemployment and the general price level were compounded in rural households by widespread crop failures. This dire situation was exacerbated by the disposal in 1990 of a substantial proportion of the national maize stocks held by the GMB in order to reduce the fiscal burden associated with the storage of grain (Sachikonye, 1992). Maphosa (1994) is critical of the failure of producer prices to keep pace with input costs during the late 1980s which led to a reduction in the area planted nationally to maize. The stagnation in real producer prices for maize was discussed in chapter five and the consequences for national food security of the induced shift by many commercial producers into more lucrative crops were stressed.

The effects of the drought were most pronounced in the semi-arid Communal Areas with both survey areas in Mberengwa and Matabeleland South seriously affected (Sachikonye, 1992). The intensification of famine was prevented in many rural areas through the availability of government 'food-for-work' programmes. Deliveries of food were recorded as erratic due to limited transportation facilities. This evidence corresponds with that provided by informants during the survey for this research that the delivery of drought relief was unpredictable and unreliable.

Chapter six of this research argued that the regular incidence of drought during the 1980s and 1990s had undermined the traditional insurance mechanism of storing grain between seasons. Maphosa (1994) suggests an alternative view that household food security in rural areas has been gradually eroded through an increased dependence on

the national maize surpluses of the GMB. This concern is echoed by Davies (1988) who in a review of the subject argues that the subsidisation of food prices acted as a disincentive to produce food crops for household consumption and storage. Further, that food subsidies have resulted in a shift towards the production of non-food crops so that the compound effect was to undermine the traditional basis of rural food security in the long-run. This decline in the fundamental practice of storing food is cause for concern. It has particular relevance for Zimbabwe given its responsibilities as the food security co-ordinator for the SADC region (Rukuni and Eicher, 1987; Takavarasha and Rukovo, 1990; Chidzonga, 1993). However, food stocks whether maintained at the regional or national levels may promote the increased of availability food but do not necessarily offer secure access to food.

Some countries in southern Africa have pursued a policy of food self-sufficiency particularly with regard to the production of maize. Policies of this nature have been justified by landlocked countries (such as Zimbabwe) which face high international marketing costs on the grounds that white maize is thinly traded and that the producer price for self-sufficiency can normally be achieved at price levels below import parity (Jayne and Rukuni, 1993). More recent research (Maasdorp, 1998; Van Rooyen and Sigwele, 1998) places greater emphasis on the role of increased co-operation between countries within the southern African region to ameliorate food security. It is suggested that this may be achieved by increasing the efficiency and intensity of agricultural production within a framework of increased co-operation between SADC countries that exploits national comparative advantage. Abalu and Hassan (1998) underscore the importance of intensifying agricultural production in ways that increase both its

profitability and sustainability. In addition to an explicit regional trade policy Duncan (1998) stresses the need to promote smallholder agriculture in general. In this respect, the paper proposes that efforts should concentrate on improving existing agricultural systems rather than encouraging the adoption of technologies more suited to the commercial sector. Nyamapfene (1989) voices concern that the significance of peasant farming practices especially in semi-arid regions of Zimbabwe, have been underestimated and calls for a reappraisal of their role in agricultural development.

These conclusions are consistent with the approach to household resilience developed in this work. At the policy-making level this would be to support the key strengths of households. In rural areas these strengths would be predominantly agro-based and food policy should seek to enhance existing strategies rather than to encourage the adoption of new practices. Zimbabwe has made impressive progress in harnessing the productivity of the smallholder sector in the post-independence period (Cliffe, 1988; Eicher, 1995; Mabeza-Chimedza, 1998). However, this success has been largely confined to regions of higher agro-potential and has benefited primarily the larger peasant farmer (Amin, 1992; Cousins *et al*. 1992). The resettlement programme in Zimbabwe represents a further notable success in raising the contributions of the smallholder sector to national food security. Resettled households enjoy higher and more evenly distributed incomes cropping twice the area and earning three times the revenues of their counterparts in the Communal Areas (Kinsey,1999). Thus, one strand of a food security policy for the region must be attempts to raise the productivity of smallholder agriculture in the semi-arid areas through a focus on existing strengths and based on the comparative advantage of individual systems.

There is substantial consensus as to the causes of food insecurity in the region. At the national level in Zimbabwe this is considered to arise predominantly from the occurrence of frequent droughts, the landlocked position of the country, the limited funds available for the development of the agricultural sector, poor physical infrastructure and a shortage of skilled manpower (Rukuni and Bernsten, 1988, Takavarasha and Rukovo, 1990). There is an additional concern that the documented success of Zimbabwe in achieving maize self-sufficiency has concealed problems of irregular access to food at the household level (Rukuni and Eicher, 1987; Jackson and Collier, 1991; Chidzonga, 1993). The major components of food security at the household level in Zimbabwe are considered to be the capacity to produce food supplemented by the earning of incomes off-farm (through paid employment and the sale of farm outputs) and food transfers especially the localised sharing of food between households (Callear, 1984; Rukuni and Bernsten, 1988). Vulnerability to food insecurity is explained in terms of critical resource constraints especially the limited availability of land and the subsequent dependence on waged labour and petty production to supplement household food requirements (Kaluwa *et al.*, 1990). A major factor contributing to the low production, marketing and incomes in the Communal Areas relates to their agro-ecology since around 75 per cent are located in semi-arid regions (Natural Regions IV and V) (Mudimu *et al.*, 1990). This evidence corresponds broadly with that presented in the later chapters of this work. Indeed, the components of household food security described above form the basis of the structure of resilience developed in this work.

Much emphasis in the literature on food security in Zimbabwe has been placed on the

pressing need to raise agricultural productivity in the Communal Areas. It is estimated that 59 per cent of farm households in the semi-arid Communal Areas are unable to produce sufficient food to meet domestic annual requirements in a good year of rainfall rising to 79 per cent during a drought year (Jayne *et al.*, 1990). These figures support the estimates provided by this research for the extent of deficits in the production of food grains at the household level which were presented in chapter eight. Blackie (1987) stresses the need for substantial investments in research for yield-improving technologies that will strengthen household food security by increasing food production and reducing the price of purchased food.

A number of authors have expressed concern over the observed increase in maize production at the expense of more drought-resistant crops in the semi-arid Communal Areas (Callear,1984; Truscott, 1986; Rohrbach, 1987; Wright *et al.*, 1998;). It is argued that this trend has been encouraged by a preoccupation with maize on the part of government through investments in research, extension, credit and product market infrastructure (Rohrbach, 1988; Rohrbach and Mwila, 1990). In contrast, sorghum which is more suited for cultivation in semi-arid areas is frequently viewed as an inferior crop and has a lower social status relative to maize. Consequently research into the potential role of this crop in household food security has received less attention. Sorghum is often cultivated as an insurance crop should the more important maize harvest fail (Stanning, 1987). However, more widespread production of sorghum has been discouraged by the substantial requirement for household labour during the ripening and processing stages of production (Truscott, 1986; Rohrbach, 1987). The desirability of increasing the production of sorghum as part of a national strategy to

improve food security has been emphasised (Muir-Leresche, 1987), particularly white sorghum which is considered as a more palatable variety (Gomez *et al.*, 1987). The preferences and reasons for maize production over that of sorghum were noted in chapter eight of this research. In particular, it was observed that sorghum production was more common in the more arid area of Semukwe and that in both areas it appeared to fulfil the objective of spreading the risk of crop failure. If sorghum is to be incorporated more effectively into cropping patterns in the semi-arid Communal Areas then research needs to give priority to raising its cultural and social acceptability in addition to the more common focus of improving the production technology.

At the more general level of agricultural productivity in the Communal Areas the widespread shortage of draught power is identified as a major constraint on the growth of arable production (Callear, 1984; Blackie, 1987; Zinyama *et al.*, 1988; Ndlovu, 1990; Ellis-Jones *et al.*, 1994; Chisvo, 2000)). This research has identified the main impact of inadequate access to draught power on food security in rural households as the yield-reducing effects on crops as a consequence of poor field preparation and delayed planting. Additionally, the finding that households without cattle are unable to accumulate manure and so are prevented from implementing effective soil management practices is supported in similar work undertaken in the Communal Areas (Truscott, 1986; Jackson and Collier, 1991).

The potential of small livestock, typically goats and sheep to contribute to household food security has been noted in this research. Further, that the low productivity associated with production systems in the Communal Areas is a main factor

undermining the effectiveness of this role. This situation has been compounded by the reliance of farmers on informal markets for the sale of livestock. Ndlovu (1990) states that in the Communal Areas of Zimbabwe a deficient system for grading and the low prices offered for animals have not provided the incentives required for the adoption of improved production technologies. These findings concur with those presented in chapter eight which stressed the need to improve both the production and marketing systems if the potential contribution of livestock to household food security is to be effectively harnessed.

Where the production of food on-farm is insufficient to meet the requirements of households then efforts to secure supplementary supplies will be directed off-farm. In chapter nine of this research these were noted to involve the earning of incomes from diverse sources. These included those incomes earned from employment in the formal and informal sectors, through remittances obtained from migration and from petty production. A number of authors provide similar evidence on the composition of household income in the Communal Areas of Zimbabwe (Stanning, 1987; Mudimu *et al.*, 1988; Stanning, 1988; Zinyama *et al.*, 1988; Mudimu *et al.* 1990; Chisvo, 2000). Further, the impact of non-farm activities on reducing income equality and improving food security by productively absorbing rural labour and providing a major source of income has been stressed (Kilby and Liedholm, 1988; Helmsing, 1991). The relative significance of individual sources of income varies across different studies and according to the Communal Areas researched. However, and in common with this research, these studies highlight the significance of incomes derived from remittances, local off-farm work, livestock sales and petty production for their contribution to

improving household food security. Research conducted in areas of low rainfall in Zimbabwe (Stanning, 1987, Mudimu *et al.*, 1988; Mudimu *et al.*, 1990) supports an important finding of this work that purchased food is the largest item in household budgets.

The role of women in household enterprises featured significantly in this research. In urban areas, research by Mudimu (1996) identifies the cultivation of crops on open and unused land by women as making a useful contribution to household food security. This practice is illegal but occurs through the responsibility of women for feeding their households and the limited opportunities for paid employment. Chidzonga (1993) provides a detailed account of the roles of women in agriculture in the Communal Areas. The paper stresses the constraints placed on the more effective contribution of women, most notably their limited access to land and credit. However, the paper does not consider female participation in off-farm enterprises which were discussed in chapter nine. In this respect, the most significant area of female activity off-farm identified by this research was the practice of maintaining vegetable gardens. These were considered particularly important for sustaining household food security through their dual role in providing a source of food for consumption and the earning of income through their sale. The role of household gardens in providing opportunities for female livelihoods and improving household security has been recognised by other authors (Takavarasha, 1987; Zinyama *et al.*, 1988; Drescher *et al.*, 1999; Chisvo, 2000). The earning of incomes by women was considered in this research to be motivated by the expectation of food shortages. Schafer (1998) calls for extension to support female income-generating activities if their critical role in household food security is to be

strengthened. This viewpoint receives further attention in the next section of this chapter.

Social responses to food shortages were described in this work as the informal transfers of food especially between neighbouring households. The suggestion that these were effected through established relationships based on expected reciprocity is supported by similar work in the region (Zinyama *et al*., 1988; Chisvo, 2000). However, and as discussed in chapter seven, the effectiveness of this collective strategy is limited when food shortages are widespread (Jayne *et al*., 1990). The survey conducted for this research identified a reluctance by households to sell livestock to purchase food during period of scarcity. The main reasons considered were the low numbers of livestock held by households and the irreversibility of such decisions. In contrast, Kinsey (1998) identifies the sale of cattle as the most important response to the 1991/92 drought in the Resettlement Areas of Zimbabwe. This is explained in terms of the larger herds maintained in these areas where it is estimated from sample data that cattle ownership rose from 58 per cent to 90 per cent of households and average herd size increased from four to around ten animals over the period 1983-95.

The sequencing of coping strategies according to the degree of reversibility was considered in some depth in chapter two. Other work suggests that strategies are selected on the basis of the anticipated disruption to the socio-economic system with the least disruptive being selected first (Zinyama *et al*., 1988). The most common initial strategy derived from this research was to alter food intake either by reducing the frequency and size of meal or by substituting less preferred foods. This practice is

confirmed in other studies, particularly in the months immediately before the harvest (Kaluwa *et al.*, 1990; Tagwirey and Greiner, 1994). A major consequence of this strategy is the observed rise in the incidence of child malnutrition since growing children are least able to internalise the effects of food shortages (Sanders, 1982). In Zimbabwe, malnutrition has been cited as the biggest killer amongst children between the ages of two and five years (Chidzonga, 1993) and is estimated to be widespread in children under five years of age (Jackson and Collier, 1991). The concurs with the anecdotal evidence presented in a previous section of this chapter.

Zinyama *et al.* (1988) suggest that a common range of strategies is pursued at the household level in response to food shortages. The most significant of these strategies have been discussed in this section and have received greater attention in previous chapters of this work. The approach to food security offered by the framework of resilience developed in this work emphasises the importance of supporting the strengths of households in pursuing existing strategies. In this respect, it is critical that households are able to retain a substantial degree of autonomy in the selection of coping strategies if policy-making on food security is to be cost-effective and efficient. This important conclusion is echoed in the findings of similar research:

> Dependence upon exogenous, rather than local institutions, implies not only greater uncertainty but also greater cost to national governments. Local strategies are essentially free, in the sense that they represent calls on insurance mechanisms for which premiums are paid continuously within the rural people-environment system. External relief involves the costly allocation of scarce funds which are diverted from development activities which might otherwise reduce the incidence of shortages in the long term. It would behove governments to maintain local coping strategies, rather than allow them to be undermined by increasing reliance upon external relief sources or by rural development plans which fail to consider them.
> (Zinyama *et al.*, 1988, p200).

Chisvo (2000) calls for safety nets to be broadened and adequately financed in future programmes of economic reform if communities are to be cushioned from the effects of exogenous shocks. The report links the access to resources enjoyed by households to their position of food security. Moreover, it suggests that this position could be improved during periods of scarcity through government support aimed at sustaining access to "crucial factors of production". Crucial in this context may be interpreted as those resources most able to support local strengths in maintaining secure access to food. The report draws the important conclusion that poverty reduction is not only a moral and political priority of government but also a critical economic objective. The implications for policy-making on food security and household resilience in the semi-arid Communal Areas are considered in the next section.

10.6 The Implications for Policy-making

It is easy to become distracted by the distressing circumstances faced by less resilient households, particularly since this group formed the majority in the sample population. However, the value of resilience as an approach to the analysis of food insecurity lies in the emphasis it gives to household strengths. Although the experience of the majority of households is disconcerting there is much to be learned from those households more able to secure their food requirements from a range of sources. This requires that the more robust strategies to secure access to food are identified and their potential for more general adoption is explored. One advantage of the analytical framework presented in this work is that it can be calibrated easily according to the components of resilience in different regions. The results of such an analysis should provide a critical input into the formulation of those policies concerned with food insecurity. It has been argued in this

research that policy-making that has a primary focus on household strengths will be more able to support and complement the process of reducing the effects of food insecurity. More importantly, by limiting the number of options that are used up during a period of scarcity will reduce the erosion of resilience and enable households to realise a more rapid recovery.

A summary of the more durable strategies revealed by the survey are presented in table 10.1. The table also includes brief detail on the contributions and limitations of each strategy in supporting household resilience and the associated policy implications. For convenience the strategies have been grouped in table 10.1 according to whether they were implemented on or off-farm. For example, in Semukwe where the production of livestock is more established, policy-making could attempt to encourage more regular sales by improving marketing structures. However, households will only be persuaded to dispose of stock on a more frequent basis if herd productivity can be increased. This will require complementary policies that support the development of livestock production through improved technical training and increasing access to veterinary services.

In Mberengwa, the practice of maintaining household vegetable gardens could become more widespread if water was more easily available. This could be achieved though the development of small-scale irrigation facilities such as boreholes. For example, a project piloted in the neighbouring Masvingo Province between 1993-96[1] developed community gardens served by small scale irrigation facilities. Eighty per cent of the

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[1] For an evaluation of this project see Lovell *et al.* (1996) and Waughray *et al.* (1996).

participants were women and just under half came from the poorest groups. Participation rates were high and the impact on food insecurity was impressive. The main direct benefits to households were an increase in the absolute and seasonal availability of fresh vegetables. This had improved household nutrition and provided an additional source of income. Nearly fifty per cent of the participants belonged to informal credit unions to provide funds for investment in the household or other income generating activities. The development and implementation of the project was rooted firmly in the local institutional structure and consequently, was well placed to identify community strengths. It also provides a useful illustration of the benefits that can accrue from the increased availability of water in semi-arid areas. By complementing local efforts the project was able to support a key component of resilience in this area.

By supporting the key strengths of households in a community it is possible to increase the concentration of the local knowledge base. The demonstration and dissemination of best practice is more readily achieved where a limited range of enterprises are established in a particular locality (e.g. small livestock production in Semukwe or vegetable gardens in Mberengwa). Moreover, efficiency gains can be derived from the specialisation of economic activity in accordance with local comparative advantage. Ultimately, inter-regional trade could be encouraged for the exchange of goods between different rural areas. This process would tend to intensify household and community self-reliance by increasing the range of options available for achieving food security.

Table 10.1
Summary of Strategies to Support Household Resilience and the Policy Implications

Strategy	Contribution to Household Resilience	Durability or Limitations of Strategy	Implications for Policy
On-farm			
Investing in human capital through education.	Higher levels of education may provide improved access to paid employment or enable individuals to exploit on and off-farm opportunities more effectively.	Increased school fees have raised the cost of investments in education. Return on investment may not be realised where labour migrates permanently and remittance flows are erratic.	Re-evaluate policy of charging user fees in light of full benefits from education. Reorient school curricula in rural areas to recognise the skills and knowledge required to operate in rural as well as urban environments.
Investing in social relations.	Enables local support to be tendered rapidly during periods of food scarcity.	Limited ability to provide support when food insecurity is a general occurrence.	Need to be considered for more cost-effective distributions of food aid.
The accumulation of buffer stocks.	Enables households to endure effects of infrequent crop failures.	Effectiveness limited by inherent low productivity of agricultural systems and during periods of recurrent drought.	Development of more drought resistant varieties of cereals, particularly sorghum. Research to improve arable production systems under local conditions.
Communal arrangements in agricultural production.	Facilitates the pooling of limited resources during critical periods in the agricultural cycle.	Social relationships essential for cooperation have been undermined by growth in market economy.	Recognise and provide support to sustain local institutional frameworks.
The development of household vegetable gardens.	Provides variety in household diets and can supplement food supplies during periods of scarcity. Can provide a source of income for the purchase of food staples.	Development constrained by availability of perennial sources of water.	Develop communal boreholes to support vegetable enterprises.

Strategy	Contribution to Household Resilience	Durability or Limitations of Strategy	Implications for Policy
The maintenance of household livestock herds.	Provides a means of savings and insurance against the risk of crop failure. Synergies with arable enterprises that can raise productivity. Cattle can be hired to earn an income.	Limited knowledge of and willingness to provide basic animal health care. Drought-induced losses can be substantial. Inefficient marketing systems can reduce returns to livestock production and may reduce willingness to sell.	Increase public provision to support livestock production. Provide assistance for efforts to restock after drought. Support the development of efficient marketing arrangements to encourage the regular supply of livestock.
Off-farm			
Casual local work.	Flexible and can respond rapidly to the occurrence of food shortages.	Opportunities may be limited when food insecurity is a general occurrence.	Initiate food for work schemes during periods of scarcity that develop the economic infrastructure in rural areas.
Petty production.	Can provide more frequent sources of income. May exploit rural-urban linkages to improve household food security. Can be organised to coincide with slack periods in the agricultural cycle. Can reinforce local social relationships when organised collectively.	Development of petty enterprises may be constrained by lack of credit. Distance from urban markets may deter more widespread development of enterprises. Limited access to market information may undermine success of enterprises.	Support the development of micro credit in rural areas. Encourage focussed institutional development to offer support for rural entrepreneurs.
Migration	Departure of individuals can reduce the degree of food insecurity on-farm. Employment can result in the flow of remittances to the household.	Departure of more educated members may reduce productivity on-farm and limit extent to which local opportunities may be exploited. Outflow of labour and receipt of remittances may not be symmetrical.	Improve the availability of opportunities for paid employment in rural areas. Encourage focussed institutional development to offer support for rural entrepreneurs. Support the development of micro credit in rural areas.
Common property resources	Can provide supplementary sources of gathered food during critical periods. Can provide a source of inputs for household petty production enterprises.	The availability of environmental resources is influenced by drought. Limited capacity of local institutions to manage CPRs sustainably.	Provide support to sustain and develop the collective managerial capacity of local institutions.

Policy-making at the macroeconomic level should also strive to nurture the potential of enterprise to contribute to improved levels of food security in the Communal Areas. For example, the conditionality attached to structural adjustment loans could be extended to include institutional reforms and the establishment and funding of adequate food safety nets. Such measures would serve to minimise the poverty-increasing effects of adjustment programmes such as the observed increases in the price of food. In agro-based economies like Zimbabwe and elsewhere in sub-Saharan Africa, climatic variation can lead to substantial swings in GDP with associated implications for the levels of employment, output and income. The magnitude of these seasonal swings can frustrate the realisation of the expected benefits from market-based reforms.

When the effects of drought exacerbate the level and extent of food insecurity the efforts of a substantial proportion of the population in the Communal Areas become distracted and preoccupied by the need to secure sufficient food. If this productive capacity is to be harnessed then structural adjustment programmes need to give greater consideration to the efficient functioning of food markets, especially for the main staples. The rationale for a system of food subsidies becomes more apparent where food purchases constitute the largest outlay in household expenditures. The targeting of such interventions could be increased by restricting subsidies to less refined maize which tends to be more preferred by poorer groups. Given the extent of food insecurity amongst the urban and rural populations in Zimbabwe, it could be argued that increasing access to cheaper food staples should form an integral component of a more constructive and pragmatic process of economic reform.

The importance of identifying the most appropriate local institutional structure has already been stressed. This will require that existing institutions are recognised and their links with policy-making bodies such as local, regional and central government, NGOs and international aid agencies are strengthened. Where the flow of information (in both directions) concerning status of the key components of resilience can be improved then cooperation in the design and implementation of policies will be enhanced. If the predicted increases in the extent of malnutrition and food insecurity in sub-Saharan Africa in the next twenty years are to be avoided then those household strategies that provide more durable and reliable access to food need to be considered. A food policy that explicitly recognises more robust strategies will be more able to support the efforts of households in improving their position of food security. In this way, policy-making will be more able to break the circular process between recurrent shocks, asset depletion and the erosion of household resilience.

10.7 Limitations of the Study and Proposals for Further Research

The results of this research represent the outcome of an association with Zimbabwe by the author over a period of nearly twenty years. However, the elements of the research that relate to the study of household resilience have been conducted over a much shorter time period. Although this does not necessarily invalidate the results a more extended period of time is required to assess the long term effects of food insecurity, particularly the dynamics of irregular access to food. In an attempt to offset this shortcoming, substantial reference was made to historical sources of information to determine how household resilience has evolved over time in Zimbabwe. This required efforts to

develop an implicit understanding of resilience in the absence of direct references in the literature.

Given the current extent of food insecurity in sub-Saharan Africa, it was hoped that the results of this research would contribute to a wider understanding of recovery mechanisms at the household level. Inevitably, it is difficult to make generalisations concerning responses to insecure access to food from household data collected over such a limited geographical area and time period. Nevertheless, the effects of structural adjustment programmes and recurrent drought have been experienced across the continent over the last twenty years. Although, the nature and extent of these effects may be differentiated by various local factors, it has been suggested that an approach that concentrates on supporting the strengths of households has the potential to make a more general contribution in reducing food insecurity.

The study has identified a number of areas where further research is required. These would include:

- more information on the organisation of female credit unions, particularly how these structures may be used to increase the availability of micro credit to support enterprises on and off-farm;
- the most appropriate form of marketing structures to encourage more frequent sales of livestock;

- the range of support required to improve animal husbandry and health and how these may be provided and sustained;

- if regional specialisation is to be encouraged then the most promising sources of local comparative advantage need to be identified and developed;

- the nature of curriculum reform required if school education is to improve the management of local resources in rural areas;

- the most appropriate institutional structure for transmitting information between households and policy-making bodies needs to determined;

Finally, the characteristics of more promising interventions to support resilience need to be identified explicitly if self-reliance in maintaining some degree of food security is to be nurtured at the household and community levels.

Appendix One

Pre-Survey Questionnaire 1997

Household Survey - Matabeleland South and Midlands Provinces

Household Head: _____

Communal Area: _____

Name of Chief: _____

Date: _____

Household Age/Gender Profile		0-16	17-25	26-40	40+	Total
Household Head	M/F					
Males						
Females						
Total						

Off-Farm Work - Migration				
M/F	Age	Time Away	Position	Place of Employment

Off-Farm Work - Local			
M/F	Age	Position	Place of Employment

Household Education Data				
M/F	Age	Primary/ Secondary	Local/Town	Term Fees Z$

Non-attenders at School			
M/F	Age	Level Completed	Reason for Non-attendance

Establish crop year

Household Crop Data 1996/97 Season					Total Crop Area =		ha
Crop	Tick	Area Top 3	Normal Year?	Food Top 3	Normal Year?	Sales	Buy
Maize							
Sorghum							
Millet							
Rapoko							
Cowpea							
Groundnuts							
Pumpkin							
Water Melon							
Sweet Potato							
Sugar Cane							
Beans							

Household Cattle Inventory							
	Cattle	Bulls >4yrs	Oxen >4yrs	Young Males 1- 4yrs	Cows >4yrs	Heifer 1- 4yrs	Calve <1yr
Current herd							
Largest herd							
Births this year							
Deaths this year							
Sales this year							
Purchases this year							

Household Goat Inventory			
	Billies	Nannies	Kids
Current flock			
Largest flock			
Births this year			
Deaths this year			
Sales this year			
Purchases this year			

Household Miscellaneous Livestock Inventory				
	Donkeys	Chickens	Rabbits	
Current				
Largest				
Births				
Deaths				
Sales				
Purchases				

Where do you graze your animals?

Is there enough grazing land for your animals?

Would others mind if you were to put more animals on the land?

Would you mind if others put more animals on the land?

Who would you consult if you had a disagreement over grazing land?

Crop Cultivation					
	Plough own/hire	Span own/hire	Hand cultivated	Work group (Ilima)	Timing for rains
Last year					
This year					
Next year					

Rainfall 1996/97					
	Very Good	Good	Average	Poor	Very Poor
At planting					
Distribution over the season					
Crop yields					

Household Consumption of CPRs					
CPR	Tick	Domestic	Sales	> or <	Where
Firewood					
Fish					
Marula					
Delele					
Lude					
Xaku Xaku					
Amacimbi					

Do all households in this area gather these items?

What do you do when there is not enough to collect?

Who would you consult if one household was gathering too much?

Household Decision-Making		
Decision	**Decision-maker**	**Work undertaken**
Crops grown **Ploughing** **Sowing** **Weeding** **Harvesting** **Drying/Storing** **Sales/Purchases** **Guarding Crops**		
Livestock grazing **Water** **Herding** **Penning at night** **Young animals** **Slaughter** **Sales/Purchases**		
Off-farm work		
Household work **Cleaning** **Washing clothes** **Collection of water** **Firewood** **Food grown** **Food preparation** **Food cooked** **Sales/Purchases**		
Education **Pays school fees** **Buys uniform** **Pays exam fees**		

Ranking of Household Income and Expenditure					
Income Sources	Frequency	Reliability	Main items of expenditure Weekly	Monthly	Annually

Prices	Last year	Last five years	Independence
Maize			
School Fees			
Cattle			
Goat			
Wages			

Local Availability	Last year	Last five years	Independence
Maize			
Goat			
Cattle			
Paid Work			

Annual Calendar of Farm Activities

Month	Jan "	Feb "	Mar "	Apr ☼	May ☼	June ☼	July ☼	Aug ☼	Sept ☼	Oct "	Nov "	Dec "
Crops												
Livestock												
CPRs												
Off-Farm												
School												
Income												
Expend												

Appendix Two

Household Food Security Questionnaire 1998

Survey Number:	

Food Security Survey Matabeleland South and Midland Provinces, Zimbabwe August-September 1998.

Village:_____ Ward:_____ Chief:_____

Communal Area:_____ Natural Region:___ Date:_____

Notes:

1. Household Age/Gender/Activity Profile								
Name		M/F	Relationship to HH	Age Last Birthday	Normal Place of Residence	Length of Time Resident	Highest Level of Education Achieved	Main Activity
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

1a. If any of the above children are not attending school what is the reason?

1b. Who is responsible for paying school fees for the children listed above?

2. Household Livestock Inventory										
	Cattle			Milk ✓ / ✗	Goats			Milk ✓ / ✗	Donkeys	Chickens
	Bulls	Cows	Calves	Total	Billies	Nannies	Kids	Total		
Current Numbers										
Births this Year										
Deaths this Year										
Sales this Year			Z$				Z$		Z$	
Purchases this Year			Z$				Z$		Z$	
Largest Numbers										

2a. Do you dip your livestock (how often) or have they ever received veterinary treatment (if so, what)?

_____

2b. Where are your animals watered during the wet/dry seasons?

_____

2c. Is grazing a problem during the dry season? Do you ever buy feed for the livestock?

_____

3. Household Crop Inventory **Ownership of Land:**

Total Crop Area = **ha/acres**

Crop	Tick	Month Consumed By		Sales		Purchases	
		Last Year	This Year	Last Year	This Year	Last Year	This Year
Maize							
Sorghum							
Millet							
Rapoko							
Cowpea							
Groundnuts							
Pumpkin							
Water Melon							
Sweet Potato							
Sugar Cane							
Beans							

4. Household Preparation of Fields

Inputs	Own	Purchased	Notes
Plough			
Span			
Labour			
Seed			
Fertiliser			

Rainfall 1998/99			
	Good	Satisfactory	Poor
At Planting			
Season Distribution			
Crop Yields			

5. Household Off-Farm Work

No.	Place of Work	Type of Work	Time in Work	Absent Parents	Remittances or Income	
					Regularity	Variability

6. Household Decision-Making

Decision Domain	Decision-Maker	Work Undertaken	Income
Crops			
Vegetable Gardens			
Livestock			
Household Work			
Other			

7. Household Income and Expenditure Ranking

Income Sources	Rank	Frequency	Reliability	Expenditure Weekly	Monthly	Annually

8. Household Food Security, Coping Strategies and Consumption Smoothing

Strategy	Tick	Rank - Notes
Reduce variety and number of meals per day (note gender and age).		
Inter-households transfers of food.		
Sale of household (z) goods (including CPRs).		
Collect wild foods (CPRs).		
Sale of household assets (including livestock).		
Borrow money.		
Seek work off-farm.		
Welfare.		
Other (specify).		

8a. How do you to plan for future shortfalls of food?

_____

_____

_____

8b. Who decides how food for the household is to be secured?

8c. Who decides on a daily basis the amount of food to be eaten and its allocation within the household?

8d. What does ESAP mean to you? Do you know when ESAP began in Zimbabwe?

8e. Has ESAP affected your life? Explain

8f. What are the biggest risks/dangers/uncertainties for people living in the Communal Areas?

8g. If you had the choice would you prefer to live in the town or the CAs? Explain.

Comments:

Daily Activities Dry Season

Time	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6-7
Adult Fem														
Adult Male														
Child Fem														
Child Male														

Daily Activities Wet Season

Time	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6-7
Adult Fem														
Adult Male														
Child Fem														
Child Male														

Annual Calendar of Farm Activities

Month	Jan 〃	Feb 〃	Mar 〃	Apr ☼	May ☼	June ☼	July ☼	Aug ☼	Sept ☼	Oct 〃	Nov 〃	Dec 〃
Crops												
Livestock												
CPRs												
Off-Farm												
School												
Income												
Expend												

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