





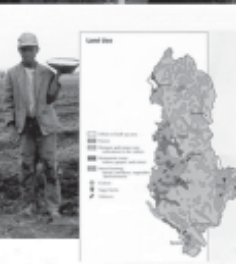

LTC Research Paper

Land Tenure, Agrarian Structure, and Comparative Land Use Efficiency in Zimbabwe:

Options for Land Tenure Reform and Land Redistribution

by

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LIST OF ACRONYMS

AFc	Agricultural Finance Corporation
AGRITEX	Department of Agricultural, Technical and Extension Services, Crop Production Branch, MLARR
ARDA	Agricultural and Rural Development Authority
BsAC	British South Africa Company
CPI	consumer price index
CMB	Cotton Marketing Board
Cso	Central Statistics Office
DERUDE	Department of Rural Development
EPC	effective rate of protection
GDP	gross domestic product
GMB	Grain Marketing Board
Lscs	large-scale commercial sector
LU	livestock unit
MLARR	Ministry of Lands, Agriculture, and Rural Resettlement
MLRRD	Ministry of Lands, Resettlement, and Rural Development
NGO	non-governmental organization
NLHA	Native Land Husbandry Act
NPC	nominal rate of protection coefficient
NR	natural region
sscs	small-scale commercial sector
UDI	unilateral declaration of independence
USAID	US Agency for International Development
VIDCO	village development committee
WADCO	ward development committee

PREFACE

The fieldwork for this report was undertaken from 29 April to 2 June 1990, followed by a five-week period ending 26 July for data analysis. Funding was provided by the Zimbabwe mission of the US Agency for International Development (USAID). Papers were produced for the World Bank to assist the Ministry of Lands, Agriculture, and Rural Resettlement (MLARR) in addressing the land-policy issues covered in this report. During the mission, visits were made to the crop, animal, and land-use planning units of AGRITEX, ADA Estates, Commercial Farmers Union, Standard Charter Bank, Land Acquisitions Office, Agricultural Finance Corporation, Ministry of Local Government, Central Statistics Office, and Windmill (Pvt.), Ltd. Field visits were also conducted to the Makoni District Council, Maungu Model A Resettlement Scheme, ADA Middle Savi Estate, Commercial Farms in Burma Valley of Manicaland, Simukai Model B Cooperative, and Mana Pools National Park.

We gratefully acknowledge the special assistance provided by numerous individuals and the financial support supplied by USAID, without whose help this study would not have been possible. While in Zimbabwe, the authors worked closely with Mr. Msindo, Mr. Godfrey Makombe, Mr. Dennis Mungate, Mr. Aggrey Pilime, Mr. Vudjizena, and Dr. Hans Walker of the Central Planning Unit of MLARR. Their assistance was invaluable in generating ideas, identifying data sources, making contacts, arranging schedules, assisting in meetings, and helping to provide substantive direction for this report. Valuable assistance was also provided by Mr. Ben Cousins and Mr. James Murombedzi, who helped with data collection, and Mr. Jeff Cochrane, who assisted with statistical analysis. Special thanks are extended to Mr. Will Masters in MLARR who generously gave the mission access to his data bases and use of his crop-budget models to estimate the rates of protection and domestic resource costs cited in this study. The authors also acknowledge the timeless efforts of Ms. Paula Despins, Mr. Steven Smith, and Ms. Jane Dennis, who assisted with editing and report preparation.

Chapter 1

INTRODUCTION: LAND REFORM AT A CROSSROADS

1.1 ISSUES

Zimbabwe reached a crucial crossroads in its land reform with the expiration of the Lancaster House Constitution in April 1990, which opened the door for policy debate on alternative land-redistribution options. Proponents of the land reform have aggressively called for an expansion of the resettlement program to help redress the unequal distribution of land resources and to rectify acute land scarcity in communal areas. Opponents of rapid and substantial land reform have emphasized the superior efficiency of the commercial farming sector and the adverse consequences that a substantially expanded resettlement sector would have on agricultural output and the balance of trade.

Many key questions lie at the heart of the land policy debate. First, what tenure arrangements might best serve farmers in the different sectors—communal, commercial, and resettlement—and how might they be instituted to provide equitable access, secure tenure, and flexibility in the face of changing economic conditions? Second, what legal framework ought to be instituted to facilitate the movement of land between farmers and enterprises within the system and what outcomes would be expected in terms of the distribution of agricultural landholdings among individuals and groups in society? Third, how would the process of land reform influence output, trade, and income distribution? Specifically, should land reform continue, and if so, what form should it take? What is the comparative efficiency of production in the commercial and communal sectors, and what gains or losses might be anticipated from resettlement? What legislative, institutional, and market reforms are needed to complement resettlement and to resolve the problems of land resource degradation in communal areas? These and other questions serve to focus this study.

1.2 AGRARIAN STRUCTURE AND RESETTLEMENT

Over a century ago, the British South Africa Co. (BSAc) moved into what is now Zimbabwe in search of minerals. Failing in that endeavor, it turned to granting land to soldiers as payment for services and later to the sale of land to white settlers for profit. The Southern Rhodesia 1898 Order in Council led to the designation of native reserves. Under pressure from the settlers, BSAC selected the most productive lands for European settlement on the recommendations of the Native Reserves Commission of 1914. The Land Apportionment Act of 1931 legalized the segregation of land between European settlers and Africans. By 1931, 19.7 million hectares, including most of Zimbabwe's best agricultural land had been designated as "European," and 11.6 million hectares, as African reserves (World Bank 1986).

Between 1945 and 1960, fifteen amendments to the Land Apportionment Act addressed concerns of land scarcity and resource degradation in the reserves. However, by 1969, the size of "European areas" had declined only slightly to 18.1 million hectares. Land in the African reserves had increased to 18.2 million hectares mainly due to the reallocation of previously "unassigned" lands (Moyo 1987). This skewness in land distribution prevailed up to the time of Zimbabwe's independence in 1980.

At independence, targets were established for the resettlement of 162,000 families on 9 million hectares of land. Over the period spanning from 1980 to July 1989, 3.2 million hectares were redistributed to 53,968 settler families, including 0.5 million hectares of state land and 2.7 million hectares acquired by government from the large-scale commercial sector (LSCS) on a "willing buyer-willing seller" basis at a cost of Z$68.9 million.' Over 83 percent of the 3.2 million hectares had been acquired by 1983/84. The land acquisition and resettlement program slowed substantially in the late 1980s as the government experienced difficulties in acquiring land and providing infrastructure for the resettlement schemes.

Despite past achievements with land reform, Zimbabwe's land distribution still remains highly skewed. As of 1988, 4,660 farms still held 11.2 million hectares, while over 1 million African families in the communal sector lived on 16.4 million hectares. Critics of the willing buyer-willing seller provision assert that it has hampered land acquisition because prices are high due to speculation, and the land offered is too small or located in low rainfall zones.

1.3 LAND REFORM POLICY

Following the expiration of the Lancaster House Constitution, the constitution of Zimbabwe Amendment Bill No. 11 was passed by Parliament in December 1990, and the Land Acquisition Bill, in March 1992. Under the 1992 Land Act, 6.9 million hectares would be acquired by the government from the LSCS. Of this amount, 5.0 million hectares would be added to the resettlement sector, expanding its size from 3.3 million hectares to 8.3 million hectares, and 1.9 million hectares would be added to the state farm sector, increasing its size from 0.5 million hectares to 2.4 million hectares. Land allocations in the communal and small-scale commercial sectors would remain unchanged at 16.3 million hectares and 1.2 million hectares, respectively. Only land in "designated" areas will be acquired. The government has stated its intent to concentrate first on acquiring underutilized land, and only after these farms have been acquired will it begin procuring more intensively utilized farms. More resources will be provided to the Rural State Land Office and the Farm Management Section of the Ministry of Land, Agriculture, and Rural Resettlement (MLARR) to strengthen their capacity in carrying out land inspections for land underutilization and absentee landlordism. To facilitate government land acquisition, the new land policy stipulates state control of land prices, limits on size and number of farms, and "designation" of areas for

1. In June 1990, Z$2 = US$1.

land acquisition and resettlement. The policy seeks a politically acceptable land distribution while maintaining or increasing agricultural production and exports. Achieving these multiple goals will not be easy. In implementing the reforms, three principal issues will have to be given careful consideration.

First, resettlement cannot solve the problems of poverty and landlessness in communal areas. Based on an existing population of 1 million families and an annual population growth rate of 3.0 percent in communal areas, the resettlement of 110,000 families would lower the communal population for only 4-5 years before the original population of 1 million families is surpassed. Combatting poverty in the communal areas will thus require a more comprehensive set of policies than land reform alone.

Second, land redistribution runs the risk of destabilizing agricultural investment, employment, food security, and export earnings. The LSCS employs 231,589 workers and generates 75 percent of gross agricultural output, 82 percent of commercial crop sales, 94 percent of livestock sales, and 50 percent of total export earnings. Redistributing 6.9 million hectares of land from the LSCS to the resettlement sector raises important unanswered questions about the impact of the reforms on white-farmer confidence, investment, and agricultural production. The status of the country's two pressing problems—high unemployment and foreign exchange shortages—will depend crucially on the magnitude and process of land reform.

Third, the process used to acquire land is as important as the amount of land being redistributed because efficiency varies among producers and the process determines from whom and where the land is acquired. Bratton (1993) discusses numerous policy options to redistribute land, including land taxation to encourage sales, lengthening the time for government to exercise its right of first refusal on land offered for sale, controls on land purchases for land not consolidated into blocks or without access to rural infrastructure, and mandatory acquisition of unused, misused, and underutilized commercial farmland in the event that the above measures fail to provide sufficient land for accelerated resettlement. The land acquisition bill calls for land valuation procedures to replace the willing buyer-willing seller provision in determining the purchase price; for limits on the number of farms owned, on farm size, on absentee landlords, and on foreign ownership; and for designated areas for land acquisition and resettlement (Masoka 1993).

The government's land policy and to a lesser extent Bratton's proposals seek nonmarket solutions and greater government intervention to resolve the land question in Zimbabwe. Other authors (Bruce 1990a; Roth 1993) have recommended greater reliance on quasi-land market mechanisms and less emphasis on these nonmarket solutions. The land question in Zimbabwe thus engenders an economic and political debate over the appropriate policy framework: that is, quasi-land market versus nonmarket approaches to government land acquisition, and dispersed land acquisition and resettlement versus "block" acquisition and large-scale resettlement schemes in designated areas.

While most would agree that land reform is necessary to achieve both more equitable land distribution and certain social objectives, there is also considerable agreement within government that:

- a "core" commercial sector comprised of large-scale farms is needed to maintain agricultural productivity, exports, and farm employment;
- the confidence of the white minority population in commercial farming is essential to ensure the economic health and vitality of the economy;
- sustained growth will depend on a more equitable and integrated agrarian structure with equal access to markets; and
- land is a valuable asset and must be allocated to those best able to use it productively; new settler criteria must emphasize farm management skills and farm experience.

How to achieve these goals while at the same time minimizing the social and economic disruption of land redistribution is the greatest challenge that the government now faces.

1.4 OVERVIEW OF REPORT

After this introductory chapter, chapter 2 defines the two macro levels of disaggregation—natural region and administrative province—by which data are presented and analyzed in the paper, followed by an examination of data sources, strengths, and weaknesses. The historical evolution of land distribution in Zimbabwe is explored in chapter 3, which introduces both the tenure categories in which land is held and the system of land classification by agricultural potential and examines the relationship between them. Chapter 4 reviews in greater detail the rules governing land access and use in the different tenure categories, the legal mechanisms for land reform, and the legal framework for resettlement of land acquired. Chapter 5 introduces the idea of a market-based land reform, evaluates the operation of the land market under the government program of land acquisition, and examines changes in the agrarian structure from 1900 to the present. In chapter 6, the focus shifts to changes in land use patterns in the 1970s and 1980s, and the influence of market and nonmarket forces on determining these changes. Chapter 7 investigates rates of protection in the agricultural sector and the comparative advantage of selected commodities among sectors and natural regions. In chapter 8, data on cropping patterns and land resource endowments are used to estimate rates of arable land utilization for crop production and grazing land utilization for livestock production. Chapter 9 analyzes various government policy options being legislated for land reform.

Chapter 2

DATA

The scope of analysis in this paper fundamentally depends on data availability, coverage by sector, length of time series, and content (whether census, forecast, or survey by sampling). The subsequent investigation thus warrants some discussion at the outset of data origin and availability. This chapter focuses on official data sources and specifically is concerned with agricultural data. No primary data collection was undertaken for this study, though the statistical results of several official data sets, which had not been previously analyzed or published, are reported here for the first time. Despite perceptions that Zimbabwe is relatively well endowed with data compared to other African countries, significant data voids or weaknesses are apparent for certain types of information (e.g., inputs) and for certain sectors (e.g., communal, resettlement). In some cases, information is collected but data-processing constraints and limited funds for publishing prevent wider public dissemination.

2.1 REGIONAL DISAGGREGATION

2.1.1 PROVINCES

Regional data are published by province, providing some indication of variability in land use according to climatic factors. But data are limited by two problems. First, provinces comprise one or more natural regions. Second, the number and boundaries of provinces changed in 1983, affecting data reporting. Current provincial boundaries are illustrated in figure 2.1. Boundary demarcations prior to and after 1983 are illustrated in table 2.1.

TABLE 2.1
Changes in provincial data reporting

PRE-1983	PoST-1983
Manicaland	Manicaland
Mashonaland North Mashonaland South	Mashonaland West Mashonaland East Mashonaland Central
Matabeleland	Matabeleland North Matabeleland South
Midlands	Midlands
Masvingo	Masvingo

FIGURE 2.1
Provincial Boundary Map of Zimbabwe

Mashonaland Central

Mashonaland West

Mashonaland East

Matabeleland North

Midlands

Manicaland

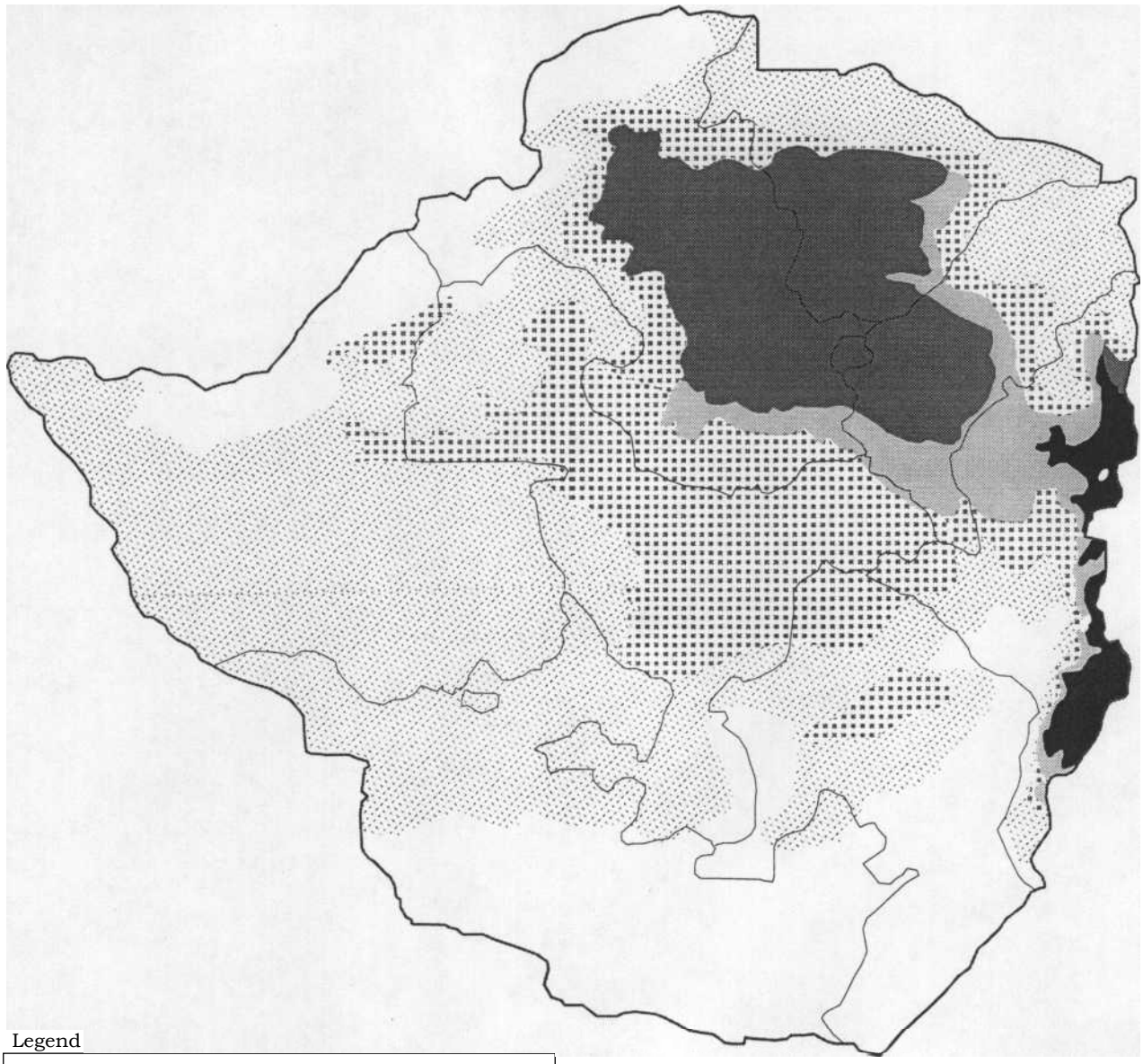
Masvingo

Matabeleland South

Land Area by Provinces	Land Area (km2)
Manicaland	34 870
Mashonaland Central	27 284
Mashonaland East	24 934
Mashonaland West	60 467
Matebeleland North	73 537
Matebeleland South	66 390
Midlands	58 967
Masvingo	44 310
Total	**390 759**

Map Source: Zimbabwe, *1987 Statistical Yearbook* (Harare: Central Statistics Office, 1987)
Map Produced By: Land Tenure Center and ANNAGRAPHICS, Madison, WI, 1994

FIGURE 2.2
Map of Natural Regions in Zimbabwe



Legend

1 Specialized and Diversified Farming Region

2a Intensive Farming Region

2b Intensive Farming Region
(crop yields in certain years affected by relatively short rainy seasons or dry spells during the seasons)

3 Semi-Intensive Farming Region

4 Semi-Extensive Fanning Region

5 Extensive Farming Region

Map Source: "Zimbabwe, 1:1,000,000," *Zimbabwe Natural Regions and Farming Areas,* 2nd ed. (Harare: Surveyor-General, 1984); and Zimbabwe, *1987 Statistical Yearbook* (Harare: Central Statistics Office, 1987)

Map Produced By: Land Tenure Center and ANNAGRAPHICS, Madison, WI. 1994

2.1.2 NATURAL REGIONS

The concept and delineation of natural regions in Zimbabwe were first put to use in the work of Vincent, Thomas, and Staples (1962) starting in the early 1950s. This classical work demarcated natural land-use regions on the basis of climate, soil, and topography; assessed arable and nonarable landholdings by sector; and evaluated current and potential land-use practices within each natural region.

Zimbabwe is divided into five natural regions (NR) on the basis of soil type, rainfall, and other climatic factors (figure 2.2):

NR I. Specialized and diversified farming: 700,000 hectares; rainfall is relatively high with more than 1,000 millimeters per annum in areas lying below 1,700 meters and more than 900 millimeters per annum at greater altitudes; normally some precipitation is received in all months of the year. Relatively low temperatures and high rainfall enable forestation, fruit, and intensive livestock production. **In** frost-free areas, plantation crops such as tea, coffee, and macadamia nuts are possible.

NR II. Intensive farming: 5,860,000 hectares; rainfall is moderately high (750-1,000 mm), but is confined to the summer months. Two subregions have been defined. **Subregion** IIA receives an average of at least 18 rainy pentads per season and is normally reliable, rarely experiencing severe dry spells in summer. [2] The region is suitable for intensive crop or livestock farming systems. **Subregion IIB** receives an average of 16-18 pentads per season, but is subject to severe dry spells during the rainy season or to relatively short rainy seasons. Crop yields are affected in certain years, but not frequently enough to justify shifting cropping practices away from intensive farming systems.

NR III. Semi-intensive farming: 7,290,000 hectares; precipitation is moderate (650-800 mm), but its effectiveness is limited by severe midseason dry spells and high temperatures. Growing conditions are marginal for maize, tobacco, and cotton production or for enterprises based on crop production alone. Farming systems are suited to livestock production and to fodder crops and cash crops on soils with good moisture retention.

NR IV. Semi-extensive farming: 14,780,000 hectares; rainfall is relatively low (450-600 mm) and is subject to periodic seasonal droughts and severe dry spells during the rainy season. Low and uncertain rainfall make cash cropping risky except for drought-resistant crops and soils with better water retention. Farming systems are suited to livestock production with some intensification possible with drought-resistant fodder crops.

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2. A rainy pentad is defined as the center period of three 5-day periods (pentads) which together receive more than 40-mm rainfall, two of which receive at least 8-mm rainfall.

NR V. Extensive farming: 10,440,000 hectares; rainfall is too low and erratic for reliable production of even drought-resistant fodder and grain crops. Included in this region are areas below 900 meters in altitude, where the mean rainfall is below 650 millimeters in the Zambezi Valley and below 600 millimeters in the Sabi-Limpopo valleys. Farming systems based on extensive cattle or game ranching are best suited to these conditions.

While natural regions now form the basis of land use planning in most government ministries, data on land use patterns by natural region are available only since 1987, and then only for the large-scale commercial sector.

2.1.3 SPATIAL OVERLAP

Despite the widespread use of natural regions in land-use planning, most agricultural data, particularly time-series data, are available only at the provincial level. Analysis by natural region thus requires some knowledge of the proportion of each province in each ecological zone. Unfortunately, such a breakdown proved difficult to locate. One study, by the Zimbabwe Energy Accounting Office, provides such data, but with slight modifications. It combines regions IIB and III into just one region III, and regions IV and V into just region IV. While not strictly comparable with AGRITEX plans, it provides a useful construct for evaluating provincial data (table 2.2).

TABLE 2.2

Provincial areas by natural region

	NR I (%)	NR II (%)	NR III (%)	NR **IV** (%)
Manicaland	17.0	5.3	**42.4**	35.3
Mashonaland Central		**42.1**	18.2	39.7
Mashonaland East		31.5	**40.9**	27.6
Mashonaland West		**36.9**	34.0	29.1
Midlands			**64.2**	35.8
Masvingo			**14.9**	85.1
Matabeleland North			6.2	93.8
Matabeleland South				100.0

Source: D.K. Munasirei, "Methodology for the Assessment of Land-Used in Zimbabwe" (Harare, n.d.).

Ecological diversity is greatest in Manicaland, with widely varying altitude, rainfall, and soils. Yet 64.7 percent of its land mass falls in either NR I, NR II, or NR III. A sizable area of Mashonaland Central, East, and West also lies in these more productive rainfall zones, that is, 60.3, 72.4, and 70.9 percent, respectively. Conversely, Matabeleland North, Matabeleland South, and Masvingo all have at least 85 percent of their land area in NRs IV and V, which are the most arid and least productive rainfall zones.

2.2 DATA SOURCES

Three primary sources comprise the base of agricultural data in Zimbabwe: (1) census data on the commercial sector and resettlement schemes; (2) national household survey of communal lands; and (3) projections of the crop forecasting committee within AGRITEX. The schematic diagram in table 2.3 illustrates years and quality of data availability as of 1990.

2.2.1 CENSUS DATA-LARGE-SCALE AND SMALL-SCALE COMMERCIAL SECTORS

Farmers in the large-scale and small-scale commercial sectors are required under the Agricultural Statistics Regulations of 1969 (amended 1970 and 1973) to complete an annual census of their crop and livestock activities. The census is conducted by the Central Statistics Office (CSo) for the agricultural year ending 30 September. Detailed data are collected on: (a) area and output (bags, tons, or value) of cereals, industrial crops, vegetables, fodder crops, and tree crops; and (b) livestock holdings (number of cattle, sheep, pigs, and goats; age and sex of cattle) and dynamics of animal herds (purchases, sales, slaughter, deaths, losses, and other transfers). Data are also collected on the number of owners, partners, and occupiers involved in the farm operation and on the number of permanent and seasonal (or casual) workers employed on the farm. While farmers are queried about their use of chemical fertilizers, such information is not published in official bulletins. Up through 1985, data were reported only by province. However, since 1987 data have been processed by province and natural region.

As shown in table 2.3, data for the large-scale commercial sector have been published annually in the *Crop Production of Commercial Agricultural Units* from 1980 through 1985. Data for 1986 were collected but never processed or tabulated. Crop and livestock data for 1987 and 1988, though not in printed form, have been processed and are available on computer printouts at CSo. Preliminary computer printouts of the 1989 data were computed in June 1990, but were awaiting verification and correction.

Up to 1983, data for the small-scale commercial sector (SSCS) were published along with the LSCS. Since 1983, the "Survey of Small-Scale Commercial Farms" has continued to be administered annually, but data have not been processed due to computer and data management-related problems in the CSo. Census crop and livestock data are thus available only up to 1983.

TABLE 2.3

Data sources and years of availability

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Census data (by province, **1980-89; by** NR, 1987-89)										
Lscs	+	+	+	+	+	+				?
Sscs	+	+	+	+		-			?	?
Resettlement (DERUDE)							-	p	?	?
National household survey of communal lands				+	+	+				?
Crop Forecasting Committee estimates (national)	+	+	+	+	+	+	+	+	+	+

Note: Blanks indicate surveys not administered. Other symbols apply as follows: surveys administered but data never processed (-); data processed and published in official government bulletins (+); data processed but results available only on computer printouts in Cso (=); provisional (p); and data either not yet automated on computer or entered but not verified (?).

2.2.2 AGRICULTURAL CENSUS OF RESETTLEMENT SCHEMES

An annual census of resettlement schemes has been administered by the Department of Rural Development since 1983 for both Model A and B schemes. For each scheme, data are collected on number of growers, total area and production of crops grown on the scheme, amount of crop output sold and retained by households, amount of fertilizer used, inventory of equipment, livestock numbers and changes in animal stocks, demographic information, and number of permanent and seasonal employees. Since its inception, data on crop area and production have been established on computer but never processed. Data on inputs have been automated for only the 1986/87 season. No data base could be identified for inventory of equipment, livestock holdings, or employment.

2.2.3 NATIONAL HOUSEHOLD SURVEY OF COMMUNAL AREAS

Starting in 1983/84, the permanent Sample Survey Unit of the CSo has administered the agriculture and livestock survey in communal lands. Based on a stratified sampling design and on maps and household lists recorded in the 1982 population census, surveys were administered to 3,920 households in the 1983 and 1984 seasons, and 1,460 households in 1985. Data were collected on area and production of principal crops, animal stocks, inventory of farm equipment, and credit facilities.

Despite the comprehensive nature of the survey instruments, data have been published only for crop area and production. As illustrated in table 2.3, results for communal lands were published for 1983, 1984, and 1985. Data bases have been established for subsequent

years, but constraints on data processing have prevented analysis. Published data are reported only by province.

2.2.4 CROP FORECASTING COMMITTEE ESTIMATES

Annual estimates of crop area and production are also made by the Crop Forecasting Committee of the CSo, derived from AGRITEX field worker estimates. Forecasts are made for the LSCS, SSCS, communal, and resettlement sectors at the national level. Because data are summed upward from district-level measurement, breakdowns by province and natural region are theoretically possible. For example, the MLARR (Will Masters, personal conversations) has disaggregated district-level data on crop area for communal areas into natural regions by approximating on maps the proportion of a district lying in a natural region and by assuming that crops are evenly distributed among natural regions within that district. While this approach enables a rough calculation of crop area, large potential errors are possible when disaggregating production data since yields are strongly influenced by rainfall across natural regions.

2.3 SUMMARY

The above analysis points out several problems with data that have important implications for a regional analysis of land use by sector. First, only for the LSCS are regional data on crop area and production reasonably current and complete. Published data for the SSCS, the communal areas, and the resettlement schemes are either out of date, incomplete, or have never been analyzed or published. Second, compared with many African countries which underinvest in primary data collection, the annual surveys employed in Zimbabwe are quite thorough and comprehensive across sectors. The principal problem is that data are collected but not processed in a timely manner due to an underinvestment in computer-processing capacity and public dissemination.

Chapter 3

AGRARIAN STRUCTURE

3.1 HISTORICAL CHANGES IN THE AGRARIAN STRUCTURE[3]

The land problem in Zimbabwe fundamentally derives from the patterns which originated in the colonial era. This chapter briefly examines the history of land administration from the early 1900s to present and shows that despite the substantial land redistribution that has already taken place, Zimbabwe's agrarian structure still remains highly skewed. Farms in the large farm sector have land in the best rainfall zones, while the majority of the rural population in communal areas farm the most arid lands.

One of the legacies of European settlement in Zimbabwe is a highly unequal land distribution. The land problem stems from the British South Africa Company's (BSAC) move into southern Zimbabwe in 1890 for gold and mineral exploration. After prospects for gold faded, the company, led by Cecil Rhodes, turned to using land as payment to soldiers and later for sales to white settlers for profit. By 1894, most of the Matabeleland lands with heavy red and black loamy soils had been granted as concessions to both individuals and companies. By 1906, one-sixth of the country, including the majority of prime agricultural land, had been allocated to settlers (World Bank 1986). Native commissioners were entrusted with demarcating land for the indigenous African inhabitants.[4] But the fertile highlands were largely reserved for the Europeans.

In 1901, based on very rough estimates, Zimbabwe's total population was 712,600, including about 700,000 Africans and 12,600 Europeans, Asians, and "coloureds" (CSo 1985).[5] Land set aside for Africans in reserves amounted to about 8.4 million hectares, with the remaining 32 million hectares being allocated for purchase by Europeans. Africans could also purchase land, but were generally unable to do so due to high land prices and low purchasing power. Spurred by settlers' growing demand for land, the company gradually shifted its focus to land dealings for profit, leading in 1908 to the Colonial Secretary

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3. This section draws heavily on the World Bank (1986, pp. 1-12).

4. "Africans" as used during the colonial era shall also be used here to designate indigenous or "non-European" Zimbabweans, for lack of a more precise and inoffensive alternative. This is in no way intended to imply that Zimbabweans of European ancestry may not be considered "African" as well.

5. The term "coloured" came to be used as part of the colonial state's racial classification system and refers largely to persons having historically bi- or multiracial ancestry.

approving reserve boundaries, and to the BSAC opening an Estates Department to promote European settlement.

Growing demand for land for European settlement and the spillover of Africans out of the reserves into unalienated areas and onto European land eventually led to the appointment of the Southern Rhodesia Native Reserve Commission by the British government in 1914. It was not until 1920, however, that the commission's recommendations were finalized in an Order-in-Council. This order made a "final disposition" allocating about 8.7 million hectares for tribal reserves for the roughly 1.1 million Africans. The settlers by this time had increased in number and power and the forces that ultimately led to separation had begun to mount. To help preserve its dwindling power, the BSAC felt compelled in turn to grant more concessions to meet growing settler demands.

Rhodesia attained self-government in 1923. According to its constitution, all unalienated land belonged to the state. Authority over the reserves (8.7 million ha) was vested in the British High Commissioner. The "Cape Clause," which since 1894 had theoretically permitted Africans to purchase land, continued in effect, albeit to the agitation of the settlers. By 1925, only 19 farms comprising 19,000 hectares had been sold to Africans. According to the settlers, this was evidence that Africans preferred living on reserves and were not inclined to want individualized land rights.

The Morris-Carter Land Commission in 1925 was charged with examining the desirability of defining separate areas for use and occupation by Africans and Europeans. It recommended that the "Cape Clause" be repealed, and that specific areas of the colony be set aside in which Africans alone could purchase and hold freehold title to land. The commission's recommendations were later embodied in the Land Apportionment Act of 1930, which partitioned all lands in the colony into European and African reserves. This set aside 6.8 million hectares as reserves for European purchase and some 3.0 million hectares as African freehold, called native purchase areas (table 3.1), that is, areas where Africans could purchase freehold farms of between 30 and 300 acres from the crown. Earlier, the "Cape Clause" in the original Order-in-Council creating Southern Rhodesia in 1898 had recognized the right of Africans to hold and dispose of land on the same conditions as non-Africans, but only small amounts had been purchased. Now future land purchases by blacks were placed on a geographically segregated basis.

This legal segregation within the freehold sector persisted until the Land Tenure (Amendment) Act of 1977 removed racial restrictions on the ownership of freehold land. Legally, the two freehold sectors became one at this point in time. Structurally, however, the dualism remains both in racial patterns of ownership and in the disparate farm sizes. The underlying motivations for this partitioning are not entirely clear. According to Cheater (1984), the purchase areas were intended to reserve some land for Africans before all land was purchased by whites. Weinrich (1975) claims that the apportionment was intended to prevent progressive and wealthy African farmers from opening up farms in predominantly European areas, but also that there was a genuine interest in assisting progressive peasants.

Palmer (1977) argues that the motives were to protect the interests of white settlers with little regard for Africans or African production.

Regardless of the motive, the act sharply reduced the supply of land for Africans by depriving them of the right to buy land outside the reserves. Other restrictions limited the opportunity to buy land within the reserves if inconsistent with European economic interests. Peasant farmers were further prohibited from subdividing their farms.

TABLE 3.1

Land tenure categories in Southern Rhodesia
(million ha)

	1931°	1953°	1969°
European areas:			
African areas:			
Native reserves	**8.64**	**8.34**	16.29
Special native areas		1.65	
Native purchase areas	2.98	2.26	1.42
Other African land			0.49
Unassigned or undetermined land:			
Unassigned land[a]	7.12	5.68	
Undetermined land	0.03	0.02	
State lands:			
Wankie Game Preserve		1.19	
Forest areas	0.24	0.39	
National land			2.73
Total'	38.68	38.49	39.04

a. Remote and tsetse-infested areas.
b. Differences in total land area among years reflect more accurate surveys over time.
c. Data for 1931 and 1953 are reported in World Bank, *Zimbabwe Land Subsector Study*, Report no. 5878-Zink (Washington, D.C.: World Bank, 1986); and for 1969 in Sam Moyo, "The Land Question," in *Zimbabwe: The Political Economy in Transition, 1980-1986,* ed. Ibbo Mandaza (Harare: Jongwe Press, 1987), p. 168.

As the African population grew, it became more difficult for legislation to control pressures for movement of Africans into European areas and onto unalienated lands. During the war years, this movement continued largely uncontrolled; much of the 6.8 million hectares reserved for European purchase had not been alienated by 1948, and African squatters resided on a significant percentage of these lands. With the return of soldiers and

returned. Attempts to resettle squatters, some onto reserves, resulted in unrest and violence. A special committee appointed in 1948 to examine the African need for additional land gradually added to the reserves mainly by reallocating land from the unassigned and purchase areas, as did subsequent committees. The new reserves, called Special Native Reserves, were no different than the earlier reserves with regard to land rights. With the new reserves plus purchase areas, the African areas increased from 11.62 million hectares in 1931 to 12.3 million hectares in 1953. State lands grew with the establishment of the Wankie Game Reserve, decreasing unassigned lands from 7.2 to 5.7 million hectares.

Prior to colonization, land was plentiful and labor was the scarce factor of production. By the 1940s, however, with the alienation of land to white settlers, the introduction of the oxen plow, and rapid population growth due to improved medical services, land became the more limiting factor in communal areas (Mansell and Johnson 1966; Weinrich 1975). Population data prior to the 1982 census are very imprecise. Based on crude estimates, population densities in African areas grew steadily from 8.3 persons/km^2 in 1901 (8.4 million ha), to 12.1 persons/km^2 by 1931 (11.62 million ha), and to 16.6 persons/km^2 (18.2 million ha) by 1969.[6] "As the African population grew and could obtain no new land outside the .. . fixed tribal boundaries, shifting cultivation became impossible [and fertility declined]" (Weinrich 1975, p. 67). Today, most communal areas are heavily populated and experiencing ecological degradation (Cheater 1984).

Establishing the purchase areas also proved to be difficult. Most land suited for farming had already been alienated. Approximately 1.6 million hectares were ultimately designated, but in remote areas of the northern and southern parts of the country which were poorly suited for agricultural development due to harsh ecological conditions (Weinrich 1975; Whitlow 1988).

Compared with the overcrowded African reserves, however, the purchase lands were located in higher rainfall zones, and strict criteria in selecting settlers resulted in a more progressive farmer. Following World War II, the government adopted increasingly strict requirements for settler applicants as the demand for freehold in purchase areas intensified. Weinrich (1975, p. 145) notes that "[u]ntil 1952, only some agricultural knowledge was required [to obtain freehold in the purchase areas]. In 1953, the master [farmer] certificate became a prerequisite. By 1957, applicants had to possess, in addition, capital assets in cash or kind to the value of £300. By the 1960s, a points system was introduced by which .. . points were given for capital equipment, agricultural experience, [and] proved character of the applicant." These requirements ensured that settlers in newer purchase areas were more skilled and better financed than farmers in older purchase areas or in communal areas.

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6. According to the Cso (1985, p. 10), the African population was 700.0 thousand in 1901 and 1.41 million in 1931. Since some unknown, but probably small, number of Africans lived in cities while others lived as permanent workers on European commercial farms, densities based on these approximates are somewhat overestimated. In 1969, the population of district councils, which consist of both communal lands and the Sscs, was 3.02 million, based on a land area of 169,556 km^2 and 17.8 persons/km^2 reported by the Cso (1985, p. 47).

the applicant." These requirements ensured that settlers in newer purchase areas were more skilled and better financed than farmers in older purchase areas or in communal areas.

Responsibility for managing the native reserves was transferred to the tribal authorities in the Tribal Trust Land Act of 1967, and later reconfirmed in the Land Tenure Act of 1969. The 1969 Constitution of Rhodesia fixed these tribal trust lands, previously native reserves, at about 18.2 million hectares, set all European land at 18.1 million hectares, and reserved 2.7 million hectares as national land. Of the 6.3-million-hectare increase in African reserves, 0.8 million hectares were taken from former African purchase areas and 5.5 million hectares from previously unassigned land.

Numerous laws were passed in the decade before independence. The Tribal Trust Land Authority was replaced by the Tribal Land Development Corporation in 1970. In 1977, the 1941 Land Apportionment Act was amended once more to allow Africans to purchase land in the European areas. In 1979, the Tribal Trust Land Act was amended and all reserves became the responsibility of the president. In the same year, the Rural Land Act provided the legal basis for resettlement schemes.

3.2 LAND CLASSIFICATION BY FARM CATEGORY AND REGION

After independence in 1980, land categories in the previous land acts have been redefined: the LSCS contains the lands formerly held by Europeans; the SSCS contains those lands formerly classified as Native Purchase Areas; the communal areas contain those lands formerly held by Africans in the reserves; the resettlement areas are those lands acquired and redistributed to smallholders under state-sponsored resettlement schemes since 1980; and public lands contain the former parks, preserves, and unassigned lands. Data in table 3.2 indicate landholdings by each of these tenure categories by natural region drawn from various sources.

The column labeled "other" is the difference between the sum of land areas across tenure categories and total land area. The total area of other land—1,494.8 thousand hectares—seems reasonably accurate. It comprises the 198,082 hectares of inactive farms in the LSCS, approximately 200,000 hectares for urban areas, and another 900,000 hectares for forest areas (Chavunduka 1982, p. 63), leaving only 196,000 hectares truly unaccounted for as other. Yet, regional breakdowns illustrate a problem. Despite careful accounting and fairly strong sources of regional data for the LSCS, SSCS, and communal sectors, total area across tenure categories exceeds total land availability for NR III by 319.6 thousand hectares. Unlike provinces, which form a well-defined administrative boundary for data collection, lines for natural regions are more diffuse and less clearly delineated for data collection in practice. Weak data on the regional distribution of land in parks, wildlife sanctuaries, and forests further exacerbate accurate accounting of the land area.

TABLE 3.2

Land distribution by farm sector and natural region, 1988

(000 ha)

NATURAL REGION	COMMUNAL AREAS[a]		LARGE-SCALE COMMERCIAL FARMS[b]		SMALL-SCALE COMMERCIAL FARMS[c]		RESETTLEMENT AREAS[d]		STATE FARMS[e]		WILDLIFE AREAS		PARKS AND[f] OTHER		TOTAL AREA[g]	
	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)
I	135.0	**0.8**	202.2	1.8	7.3	**0.6**	**30.0**	**0.9**	**10.0**	2.0	**50.1**	1.0	**265.4**	17.8	**700.0**	1.8
II	1,270.0	7.8	**3,687.0**	32.8	222.2	17.9	**590.0**	17.9	**10.0**	2.0	25.0	**0.5**	**55.8**	3.7	**5,860.0**	**15.0**
III	**2,820.0**	17.2	**2,405.4**	21.5	438.3	35.4	**1,240.0**	37.8	**160.0**	32.0	**545.9**	11.0	**-319.6**	-21.4	**7,290.0**	18.7
IV	**7,340.0**	**44.9**	2,429.1	21.7	473.3	38.2	**810.0**	**24.6**	**60.0**	12.0	2,514.1	**50.3**	**1,153.5**	77.2	**14,780.0**	**37.8**
V	**4,790.0**	29.3	**2,489.7**	22.2	**97.6**	7.9	**620.0**	**18.8**	**260.0**	**52.0**	**1,843.0**	37.2	339.7	22.7	**10,440.0**	26.7
Total	16,355.0		11,213.4		1,238.7		**3,290.0**		**500.0**		**4,978.1**		**1,494.8**		**39,070.0**	

a. **Adapted from G.L. Chavunduka,** ***Report of the Commission of Inquiry into the Agricultural Industry*** **(Harare: Government Printer,** I982); **and** *1987* ***Statistical Yearbook*** (Harare: Central Statistics Office, 1987).

b. Cso data as of 30 September 1988; excludes I98,082 ha of farms that are inactive.

c. **Based** on **data by natural** regions **in** Dan Weiner et **al., "Land** Use **and Agricultural Productivity in** Zimbabwe," ***Journal of Modern*** *African* ***Studies*** *23* (I985), p. 259, less **areas acquired** for resettlement-Vuti (29,856 **ha,** NR II), Chenjiri (56,871 ha, NR III), Copper **Queen (40,958 ha,** NR III; 48,342 **ha,** NR IV), **and Mshawasha** (I,38I **ha,** NR IV). The total area **includes approximately** 230,000 ha not yet settled **(MLARR).**

d. Figures **include** 2,743.3 **ha acquired** for resettlement from **I979/80** to **I988/89** plus 543.7 from former **state land (MLARR).**

e. ARDA estates held 498,535 **ha** in **I988/89** (ARDA **Planning** Unit).

f. **Adapted** from **Chavunduka** (I982) **and** Annex A.

g. Difference between sum of land across tenure categories **and** total land area.

h. From *1987 Statistical* ***Yearbook*** (p. 14I).

i. **Percentages** are of column totals.

3.2.1 COMMUNAL AREAS

Previously referred to as native and special native reserves or as tribal trust lands, the communal areas in 1988 accounted for 16.4 million hectares or 41.9 percent of the land area in Zimbabwe. Of this total, 74.2 percent of the land is located in the poorest rainfall zones of NRs IV and V. The total population in 1988 was roughly 5.1 million persons and 1,020,400 households, representing a population density of about 31.1 persons/km^2.'

The communal areas farming system involves rain-fed and ox-plow cultivation focused heavily on maize production at—until quite recently—very modest levels of productivity. Differences in sizes of landholdings are modest within the communal areas, reflecting for the most part differences in the ability of households to place land under cultivation due to constraints on ownership of plow oxen and household labor. Roughly half the households have 1-5 hectares, while another 40 percent have 6-10+ hectares. Estimates of landlessness range between 6 and 12 percent of households (Cliffe 1986, p. 34; Bratton 1990).

3.2.2 LARGE-SCALE COMMERCIAL SECTOR

Formerly the European areas, this sector comprised 4,660 large commercial farms and 11.2 million hectares (28.7% of the land area) in 1988. Most of these farms are still owned by Zimbabweans of European ancestry, though ownership is obscured by the high levels of corporate ownership of farms (61 %) and by the recent influx of black farmers buying land in the sector (estimated to be between 400 and 450). In 1988, the sector employed 227.6 thousand permanent and casual workers. Based on the population in rural councils of 1,571.3 thousand in 1982 and a 3.0 percent growth rate, 1,876.2 thousand people resided in the sector in 1988. Owners have full title to the land as governed by the Roman-Dutch law of the Cape Colony in 1891, as amended. Farmers are represented by the Commercial Farmers Union. Company ownership represents the most common form of management by area (61.0%), followed by individual ownership (34.3%) (table 3.3). Government, parastatals, cooperatives, and the other categories make up the remaining 4.7 percent. Average farm size is 2,406 hectares nationwide; individual farms average 1,402 hectares/farm; companies, 3,835 hectares/farm; and parastatals, 19,611 hectares/farm. Farms in the LsCS are also located on the best agricultural lands. As indicated in table 3.2, 34.6 percent of land in the sector is located in NRs I and II, 21.5 percent in NR III, and 43.9 percent in NRs IV and V.

3.2.3 SMALL-SCALE COMMERCIAL SECTOR

Formerly called the purchase areas, the SSCS encompasses 1,238.7 thousand hectares scattered over numerous sites, mainly in NRs III (35.4%) and IV (38.2%). However, the lack of consistent estimates on area and number of farms raises important questions about the

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7. The 1988 population is roughly estimated to be 5,102,000 persons, based on population estimates of 4,272,811 in district councils (communal lands and Sscs) in 1982 and a population growth rate of 3.0% (Cso 1985, pp. 11, 47). Number of households is calculated as 1988 estimated population divided by an average family size of 5.0 members per household (Cso 1989).

reliability of these figures. Census data on number and area of farms were last compiled in 1983. Based on these data, the sector comprised 8,653 farms on an area of 1,074,767 hectares, with an average farm size of 124.2 hectares.8.' Available information on type of tenure is equally outdated. According to the MLARR, the SSCS comprised 1,428,623 hectares and 9,129 holders in 1981. Of this total, 564.8 thousand hectares were allocated under agreements of lease and purchase, and 484.0 thousand hectares, under deeds of grant and transfers. This leaves 379.8 thousand hectares unallocated. Of this total, 177.4 thousand hectares had been taken by the government for resettlement through 1985, leaving around 202.4 thousand hectares still vacant and not designated for other purposes.

TABLE 3.3

Ownership of land in the large-scale commercial sector

TYPE OF OWNERSHIP	NUMBER OF FARMS	**TOTAL AREA**	AVERAGE FARM SIZE
Individual ownership	2,739	3,841,050	1,402
Company	1,784	6,842,259	3,835
Central government	33	54,513	1,652
Local government	4	14,304	3,576
Parastatal	18	353,006	19,611
Cooperatives	10	10,422	1,042
Other	72	97,832	1,359
Total	**4,660**	11,213,386	**2,406**

Source: Central Statistics Office.

The farmers who were able to obtain land in the purchase areas were generally well educated and certified as master farmers. In spite of ecological limitations and disadvantages in market access, they were relatively productive in the early years. If measured in terms of percentage of total sales, their productivity rivaled European commercial farming (Duggan 1980, pp. 234-35; Cheater 1984, pp. 35-36). The lackluster performance in recent years is generally explained in terms of the sector having been "peasantized" by accommodating extended family members from the communal areas and in terms of unequal access to support services (Moyo 1987, p. 193). During the unilateral declaration of independence (uDI), the SSCS was out of favor as an example of blacks' operating freehold farms, and in the early years after independence, the government focused its attention on communal area farmers, leading to a drop in credit extended to SSCS farmers. Also cited as contrary considerations are the poorer soils and rainfall, the advanced age of SSCS farmers, and the fact that many of the

8. From Zimbabwe, *Crop Production of Large-Scale Commercial Farms,* 1983, p. 77.

children, having received better educations, moved into the civil service and other productive sectors.

3.2.4 RESETTLEMENT[9]

Following independence, the resettlement program became the government's main policy instrument to redress inequities in land distribution. Initiated in 1980 at the Lancaster House talks which culminated in Zimbabwe independence, the resettlement program was initially planned to relocate, over 3 years, 18,000 families on about 1.2 million hectares of land previously owned by European farmers at a cost of US$60 million. In 1982, however, the target for number of settlers was raised in the Transitional National Development Plan to 162,000 families on 10 million hectares of land with capital costs of over $500 million (Cusworth and Walker 1988; MLRRD 1985, p. 2). The target of 162,000 families still holds to this day, though the appropriate land area remains a widely debated issue.

The Lancaster House Constitution further required that the government acquire land for the resettlement program on a willing buyer-willing seller basis, through April 1990 when the Constitution terminated. The Land Acquisition Act of 1985 both broadened the powers of government in land acquisition and increased the government's access to information on land coming to market. The provision of willing buyer-willing seller was maintained in this act. But the seller of any private rural land is required first to notify the government of his/her "offer" or asking price, giving the minister the right of first refusal to buy the land. Provisions were also spelled out giving government more power in price negotiation.

The progress made in land acquisition and resettlement has been substantial. According to MLARR data, the government acquired 3,248.0 thousand hectares of land at a total cost of Z$68,903.4 million (table 3.4) between 1980 and 1989. Of this area, 612,534 hectares were taken from state land, and 2,635,484 hectares, through purchases in the LSCS. Provincial data on number of schemes, area settled, and number of settlers are given in Annex C. Of the land acquired, 19 percent is in NR I, 18 percent in NR II, 38 percent in NR III, 25 percent in NR IV, and 19 percent in NR V. All but 230,000 hectares have been settled. Of the land so far unsettled, 176,000 hectares are located in Matabeleland South, where the security situation delayed work (data provided by MLARR).

Through the course of the resettlement program, 53,968 families have been settled, with room for an estimated 7,000 more families. Of those relocated through July 1989, 42,494 families have been settled on family holdings with access to grazing commons (Model A and accelerated schemes), 6,504 on cooperative production schemes (model B), 508 on individual holdings associated with core estates run by ARDA, which administers the state farms, or managed cooperatively (model C), and 4,462 on model D grazing schemes. Per-person cost differs substantially by scheme type: for model A, it is $140/person including dependents; for model B, $325/person; and for model C, $410/person (MLARR 1988, p. 7).

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9. This section draws heavily on Cusworth and Walker (1988) and Kinsey (1982).

TABLE 3.4

Provincial distribution of land acquired for resettlement

	AREA (ha)	COST (Z$)	NOMINAL **COST (Z$/ha)**	**REAL COST/HA (Z$/ha)**
Acquisition by province to 1989):				
Manicaland	568,719	14,431,177	25.37	
Mashonaland Central	402,522	4,256,568	10.57	
Mashonaland East	240,530	8,489,930	35.30	n.a.
Mashonaland West	434,619	11,415,985	26.27	
Masvingo	**408,104**	7,309,233	17.91	
Matabeleland North	197,409	3,695,535	18.72	
Matabeleland South	508,433	9,614,174	18.91	
Midlands	487.682	9.311.447	19.09	
Total'	3,248,018	68,524,049	21.10	
Resettlement allocation:				
Model A (normal)	2,453,556	50,122,658	20.43	
Model A (accelerated)	190,859	2,999,920	15.72	
Model B	182,142	8,815,927	48.40	n.a.
Model C	18,864	4,264,222	226.05	
Model D	402.597	2.321.322	5.77	
Total'	3,248,018	68,524,049	21.10	
Acquisition by year: [a]				
1979/80	162,555	3,104,380	19.09	20.12
1980/81	219,152	3,537,172	16.14	16.14
1981/82	819,155	**15,414,248**	18.82	16.63
1982/83	807,573	21,524,782	26.66	21.29
1983/84	173,848	4,596,078	26.44	17.16
1984/85	74,848	3,062,930	40.92	22.10
1985/86	86,187	3,444,610	39.97	19.90
1986/87	133,515	3,898,335	29.20	12.71
1987/88	80,554	2,889,328	35.87	13.89
1988/89	78.097	7.431.575	95.16	34.29
Total'	2,635,484	68,903,438	26.14	

a. Real prices are calculated as nominal prices divided by the consumer price index for lower income households in Zimbabwe, *Quarterly Digest of Statistics* (Harare: Central Statistics Office, 1989).

b. Difference between area acquired and acquisition/year is due to 504,491 ha of state land in provincial totals that were acquired at no cost.

3.2.4.1 Model A scheme

A "typical" model A scheme as originally envisaged by the MLARR would have about 500 families divided into roughly 15 nucleated villages of 25-50 families, with services including 3-4 schools and a clinic. Land allocations within a scheme replicate on a larger scale the threefold division in land use found in communal areas (residential, arable, commons). Each family is given a residential stand of 2,500 square meters, an arable allocation of 5-6 hectares, and access to communal pasture sufficient to support a herd for draft power. Land is occupied on the basis of a number of temporary permits. Grazing is shared communally within village grazing areas, and the number of livestock units (LU) varies according to agroecological zone. For NRs I and II, 4-5 LU are assumed, which translates into 20 hectares of communal grazing per family; for NR III, 8 LU and 56 hectares; for NR IV, 10 LU and 80 hectares; and for NR V, 15-20 LU and 150-200 hectares (Cliffe 1986, p. 48; MLRRD 1985, p. 15). The net income target set by planners was $400/family/year (ibid.). A typical scheme includes approximately 245-593 settler families on 21.7 to 25.5 thousand hectares of land, depending on geographic location and resource base (Annex C). Schemes are provided with access roads linking all villages with a Rural Service Center, where agricultural extension agents, cooperative and health workers, and resettlement officers are situated. The scheme would ultimately be expected to have a health center and primary school established. The majority of resettlement efforts have focused on the model A scheme, whether measured by population settled (78.7%, Annex C) or area allocated (81.4%, table 3.4).

Settler selection standards utilized since the first years of the program required that a settler be "effectively landless," poor, or distressed. Specific criteria include: (a) no land or too little land, (b) not employed, (c) poor, (d) married or widowed with dependents, (e) aged 18 to 55 years and physically fit, (g) returned Zimbabwean refugee, or (h) experienced and master farmer. Settlers must also be prepared to give up all land and grazing rights in the communal area of origin and wage employment elsewhere (MLRRD 1985, p. 23). Moyo (1987, p. 193) indicates that slightly over 60 percent of settlers have come from the communal areas. A master list of qualified applicants is maintained, and when a resettlement scheme is implemented and the area becomes ready for occupation, the resettlement officer and the rural district council draw a specific list of settlers for the scheme from the master list of applicants (MLRRD 1985, p. 23).

The selection criteria have subsequently been criticized on grounds that the landless lacked the plows and draft oxen necessary to bring their full arable allocations under cultivation, and that individual selection criteria and the mixing of settlers from different backgrounds and localities may make it more difficult to develop a sense of community and establish useful practices such as sharing of draft animals (Kinsey 1982, p. 109; Cliffe 1986, p. 93; Bratton 1990). The Zimbabwe National Farmers Union (1987, p. 9) has called for a reordering of priorities to emphasize trained and master farmers, arguing that higher productivity is being achieved by master farmers in the SSCS and the communal areas than by resettlement scheme farmers. This call for an emphasis on recruiting experienced farmers

as settlers has been recently reiterated in a joint declaration by the presidents of the three farmers' organizations (Joint Presidents' Agricultural Committee 1990, p. 3).

Perhaps the most difficult settler-selection issue facing government now is that of displaced labor from the large-scale commercial farms which are being taken over, a problem that will grow as the program increasingly appropriates operating units rather than abandoned farms. A general sense prevails, based largely on anecdotal evidence, that the displaced employees are less productive than most settlers, partly because their experience in agriculture is so different from farming in the model A schemes and partly because they do not have oxen, plows, and other implements necessary to begin cultivation. On the other hand, they cannot simply be expelled. They may find the organization of labor in the model B (cooperative) schemes more familiar, but most will need to be accommodated into the model A schemes and special attention must be paid to their demands for equipment and credit.

There are continuing concerns, however, about whether the intensity of land use and productivity in the model A schemes can justify the replacement of large-scale commercial farms with this model. The fact that the model is less labor absorptive than much commercial farming was an early concern of commentators on resettlement such as Kinsey (1982, pp. 105-06). A denser model A design is one solution. Underutilization of land on the resettlements early in the program led to suggestions that holding sizes in resettlements in NRs I and II in particular could be reduced (Cliffe 1986, p. 84). Some commentators suggested major remodeling such as 2-hectare mechanized holdings in the highland areas (Bratton 1990). Now the ministry is concerned that 27 percent of families on the model A schemes are significantly exceeding the recommended rotational fallowing requirements, and that an estimated 43 percent of the total area is getting between one-half the recommended fallow and no fallow at all (data provided by MLARR). If holdings are to be reduced in future models A, it would be from grazing allowances, where underutilization still exists, or from both arable and pasture areas, if mechanical draft is available.

3.2.4.2 Accelerated model A scheme

Whereas in the normal model A scheme substantial infrastructure is provided prior to settlement, settlers in the accelerated scheme are provided with only limited installations. The model is most appropriate in situations: (1) where severe squatting and overpopulation have already resulted in settlement of land, (2) when resettlement of large numbers of people in a short time frame is advisable, (3) when budget resources for development are limited, and (4) where acquired commercial farms are small and geographically dispersed (Kinsey 1982). Nearly 6 percent of the resettlement program area has been settled under this model (table 3.4). Average scheme size is smaller than the model A schemes (7,235 ha), but varies widely from an average of 1,620 hectares in Mashonaland to 15,618 hectares in Matabeleland (Annex C).

3.2.4.3 Model B scheme

The model B scheme is based on communal living and a cooperative mode of farming. Livestock may be privately owned, but all other property, including land and equipment, are owned cooperatively. Profits are shared according to a formula devised by settlers. The model is intended to enable those with limited resources to participate in viable agricultural activities. The model B was intended to be the centerpiece of the government's policy of achieving a socialist transformation of agriculture, while model A schemes were expected eventually to become collectives (Cusworth and Walker 1988). However, by 1989, less than 6 percent of the land area had been resettled using model B (table 3.4).

The properties selected for this model tend to be single, former commercial, farm units with well-developed infrastructure, such as irrigation or processing facilities, still intact. The ministry's target size for the cooperatives has been in the range of 50-200 members. All adults are full members, including wives and children of 16 years of age. Property, resources, and equipment plus livestock are held collectively. While in the early days of the scheme stock in the commercial herd is to be individually owned, stock ownership is supposed to shift to cooperative ownership once the group becomes established. The livestock holdings are 20 LU per settler family, including small stock. Cultivation is carried out collectively and, together with management, purchasing, and marketing, is controlled by cooperative committees. It is possible for members to be allocated small plots of up to 0.5 hectare for individual cultivation (MLRRD 1985, pp. 15-16, 21).

Cliffe (1986, pp. 51, 53) notes considerable demand, with 200 registered cooperative societies that have put themselves forward to receive land under the model B scheme. Memberships appear to have been somewhat smaller than planned. As of July 1989, 6,504 settlers had been resettled on 82 schemes encompassing 182,142 hectares. Actual schemes averaged 1,163-3,166 ha/scheme and 17-90 settlers/scheme, depending on the province (Annex C).

The performance of the model B schemes has been disappointing. Cliffe (1986) notes some exceptional success stories which suggest that productivity growth is possible, but the general picture is not encouraging. Only a small proportion of the available land has been cultivated, and the irrigation and other infrastructure have not always been maintained (Cliffe 1986, p. 51). A 1988 evaluation found that overall farm use was less than one-quarter of potential. Problems have also been experienced with the supply of tractors and inputs and with members, less than a quarter of whom had management training and even fewer had relevant agricultural skills (MLARR 1988, p. ii). The indebtedness of the model B cooperatives is also alarming. At the end of FY 1987/88, outstanding loans through the Agricultural Finance Corporation (AFC) to model B cooperatives stood at Z$2.25 million, of which $1.5 million was in arrears. The MLARR estimates that up to $1 million may be irrecoverable. The poor performance has been attributed to several factors, including lack of working capital, poor technical skills, and problems of organization and management. There have also been difficulties with obtaining assistance for the cooperatives from major donors, so that most have had to be supported through a combination of Government of Zimbabwe funding and

assistance from a variety of NGOS. Many co-ops have not received their establishment grants in a timely fashion (Moyo 1987, p. 193).

A number of suggestions have been put forward to improve the performance of the model B schemes. Cliffe (1986, p. 94) saw two choices: either retreat to a limited program, with a restricted number of schemes and carefully selected members, possibly from former commercial farm laborers; or resolve to invest much more in inputs and resources and provide trained management for the cooperatives. The 1988 report by MLARR's Monitoring and Evaluation Unit (MLARR 1988) has one set of recommendations for established schemes, another for new ones. For established programs, it suggests that since many are unlikely to be able to make full use of their land resources in the near future, they should be replanned in light of the capabilities of the membership, with training and advisors provided as needed. If the scheme is near a model A scheme, surplus land would be allocated for smallholder use. If isolated, the land could be subdivided or a surplus made available for a new group to be properly established. Indebtedness of over a third of these schemes is so high that it is unrealistic to expect any repayment, and a minimum loss of $1 million is to be expected. For new schemes, the report recommends that farms be assigned only to cooperatives whose members have already received the necessary training; that the cooperative not be allowed to move to the farm until the establishment grant has been received; that memberships be kept small (around 50 members) to minimize management problems; and that the prepared farm plan be based on that membership and not on settler projections (MLARR 1988: iii).

Zimbabwe's experience with the cooperative production model has been fairly typical of experiments carried out in Ethiopia, Tanzania, and Mozambique (Bruce 1989, pp. 3-8; 1990b, pp. 3-6). Countries which built their agriculture around this model, such as China, are now abandoning it for smallholder cultivation, with very positive impacts on productivity (Bruce and Harrell 1989, pp. 5-9).

3.2.4.4 Model C scheme

The model C scheme is patterned after the "nucleus estate." A core estate provides production and marketing services, and settlers are outgrowers. As in model A, individuals are allocated parcels of arable land, and grazing land is communally managed. Profits from private plots are retained by the occupiers. Estate management is provided by a professional manager who is responsible for organizing and coordinating production and marketing activities. Such schemes were introduced to involve smallholders in such enterprises as tobacco and dairy production which require considerable vertical integration of production and marketing activities, high capital investment in central processing facilities (e.g., tobacco barns, dairy parlors), specialized technical knowledge, intensive management, and substantial economies of scale in processing, input distribution, and output marketing. By 1989, this

model represented less than 1 percent of the resettlement area. All model C schemes are located in Manicaland; the average scheme contains 169 settlers on 4,316 hectares of land. [10]

The core estate is run by a cooperative of the settlers, to which all contribute their labor, or by the Agricultural and Rural Development Authority (ARDA), which employs its own labor force but provides essential services such as mechanical draft, inputs, seed reproduction, and processing and marketing facilities for the settlers. Settlers have small arable holdings of their own, usually smaller than those in a model A scheme, and residential land and woodlots are allocated to households. Grazing land is communal. The early versions of this model all involved ARDA core estates. The scheme, however, was criticized as creating dependency and control relationships with peasants and engendering "kulakisation" through restricted tenant farmer selection (Moyo 1987, p. 196).

The core estate, which is cooperatively managed by outgrowers rather than ARDA, appears for the first time in the 1985 revision of the "Intensive Settlement Policies and Procedures," and is known as the "Zunde *(insimu yabantu)* concept." It reflects a vision of model C as an evolutionary bridge between the individual holdings of model A and the more fully cooperative paradigm of model B. Most core estates to date are still ARDA-operated, but even in that case it is envisaged that eventually the core estate (a state farm) will be taken over and operated by a cooperative of the settlers (MLRRD 1985, pp. 2, 16-17).

Not surprisingly, very little has been written about the performance of the model. Only 3 schemes, covering 18,864 hectares and commissioning 510 settlers, all at sites in Manicaland (Annex C), had been established through July 1989. To ARDA personnel, the nucleus estate must seem a minor modification of the nucleus operations which it has run for smallholder irrigation schemes. The tenure arrangements present a genuine conflict of aspirations between the settlers and the conceived model C. ARDA has used leasehold tenure fashioned from use in older irrigated settlement schemes. This "Memorandum of an Agreement of Lease" is issued under the Agricultural Land Settlement Act (ch. 137) and provides spaces for a specific duration and for a rental amount. The provisions for termination by government are very broad (for no reason, by 3 months' notice; or upon insolvency, death, or detention of the lessee as mentally defective, without prior notice). No compensation is payable for improvements. The lessee is little better off in terms of security of tenure than a model A settler. But SEC. 16 provides that after a certain number of years (to be specified), if the lessee has complied with the terms and conditions of the lease, s/he may apply to purchase the leased holding. Nothing is said about the criteria for approval of the application beyond compliance with the terms of the lease and the expiration of the specified number of years. If the application is approved, all rental payments are treated as a part of the purchase price.

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10. Tobacco schemes, where the core estate provides the management of centralized production, processing, and marketing, coordination of smallholder tobacco production, and provision of extension advice and inputs, represent one possibility for applying this model.

A number of settlers have sought to take advantage of this provision. On the ARDA core estate/outgrower scheme in the Lower Sabi, settlers' leases contained options to purchase their irrigated holdings after two years. A large number of settlers sought in 1984 to exercise this option. About ten applications were approved by the scheme and forwarded to ARDA headquarters. The settlers complained in 1990 that no action had yet been taken. Without title, many proclaimed an unwillingness to invest in their holdings, especially in housing; they further expressed a sense of insecurity since some had been evicted in the past.

In terms of the future of the model C schemes, the core run by a cooperative of outgrowers (as opposed to ARDA) has very little potential. The management limitations of production cooperatives are already clear from a number of other contexts. The core estates in these cases, ARDA state farms for the most part, are complex operations and well beyond the management capabilities of a cooperative of outgrowers, even if professional management is provided. If there is a desire to move away from the state farm core/outgrower model, one way to do so—short of divestiture and full privatization—is to develop a "responsibility system" similar to that devised in China for the 1978-84 breakup of its communes. Parts of the enterprise are assigned to subgroups within the collective which become independent accounting and profit centers. Minimum performance requirements are set, which, when exceeded, create profit at open market levels. For instance, outgrowers contract to sell the cooperative a specified amount (which the co-op must commit to purchasing) at a specified, below-market price, but production above the contracted level may be sold on the open market. Similarly, processing and marketing can be set up as independent cost centers, which has some security but must also bear to some extent the costs of mismanagement (Bruce and Harrell 1989, pp. 3-6).

3.2.4.5 Model D scheme

The model D scheme attempts to integrate acquired grazing land into a land use plan for adjoining communities in the communal areas. It has been tried in only one case, yet encompasses 402.6 thousand hectares or 12.4 percent of the total resettlement area. The pilot program, established by AGRITEX at Doddieburn-Manyoli, near Gwanda in Matabeleland South, is based on a pocket of freehold land acquired by government and is located in the midst of four communal area communities. The communities are to share the grazing in annual rotations, each utilizing the area for one year in four. The year in which relief is provided to the communities is seen as an opportunity for "internal resettlement" within the territories of those communities, which are to paddock their own pasture areas. While the model was designed with arid NRs IV and V in mind, the ministry intends to replicate it more broadly through DERUDE (MLRRD 1985, pp. 2, 18-19). However, its performance is difficult to assess because model D consists of only one pilot scheme—and this in an area where security problems in the past have hindered development. This scheme comprises 26,000 hectares and 4,462 settlers.

The legal arrangements for the existing model D pilot are unclear. Ideally, such a rotational scheme involving several communities calls for a contractual arrangement among the communities, creating mutual rights and responsibilities. The acquired land might be

leased on a long-term basis to the four communities and eventually deeded to them jointly. Where a single communal area community is involved, the acquired grazing land would best be simply merged into the community's land, becoming communal land. The minister has the authority to do this under SEC. 6 of the Communal Lands Act.

3.2.5 THE STATE FARM SECTOR

This sector has its origins in the colonial period, the first state farms having been established as growth points in relatively arid areas, usually involving irrigation. ARDA, a parastatal under the MLARR, administers the state farms. It has absorbed a number of smallholder irrigation schemes, such as those in the Sabi Valley, and has more recently become responsible for the management of model C resettlement schemes. The number of ARDA schemes has grown from 9 in 1980, to 18 in 1985, and to 28 in 1989. Some schemes are pure state farms; others, nucleus estates with tenant producers; and still others, agro-industrial estates. The estates are heavily mechanized, capital-intensive operations which produce a wide variety of commercial crops, largely for export, among which tea, wheat, and cotton dominate. ARDA has fixed assets of over Z$50 million, an annual revenue of $45 million, and earned $20 million in foreign exchange in 1989. It employs a permanent staff of 4,000, of whom 169 work in the headquarters, and 17,000, as casual laborers. It administers about 5,000 hectares of land, of which about 5 percent was cropped in 1988/89, roughly the same figure as the LsCS. If estates with livestock production are excluded, the portion of land cropped rises to 30 percent (figures provided by MLARR).

ARDA has been criticized for being too profit-oriented, resisting the application of a new minimum wage, relying too heavily on seasonal labor (rather than providing more meaningful full-time employment opportunities), and providing poor living conditions for its labor (Moyo 1987, p. 196). Nonetheless, ARDA is losing money at an alarming rate. The authority's deficits increased from $916,000 in 1984, to over $2 million in 1987, and then to over $2.5 million in 1988. In the 1986-88 period, 7-8 of the estates suffered losses each year, though, interestingly, they were not the same farms each year. The ministry attributes the losses to undercapitalization, inflated staffs, and social functions which ARDA is expected to undertake. Two very different options have been considered for dealing with this problem: (1) a streamlining, involving layoff of part of the labor force and the turning over of some of the unprofitable schemes for resettlement; and (2) expanding operations and land managed, allowing ARDA to absorb currently large overhead costs.

Opinion in the ministry seems to favor the second option because of the difficulty of laying off staff in conditions of growing unemployment and the desire to maintain this state farm sector as a safe backup for the LSCS, which is considered potentially unreliable. There is also a general sense that there should be state participation in the agricultural industry. It is difficult to believe that overhead costs would not continue to rise with the expansion of this sector, and that government would only end up with larger deficits from a larger state sector. It would seem preferable, where possible, to deal with the deficits through new infusions of capital from the private sector. Government should give serious consideration to establishing joint ventures with private business to renovate these schemes.

3.3 SUMMARY

Since 1979, 2,635.5 thousand hectares, or more than 18 percent of the 1979 land area in the LsCS, have been acquired for resettlement. The original owners received compensation. Many unemployed, squatting, landless, and communal area farmers received land allocations. Since much of the land procured in early stages of the program consisted of abandoned farms, output from resettlement areas has had a net positive impact on national output.

The land acquisition process based on a willing buyer-willing seller approach has also brought about the securing of higher quality land—57 percent is located in NRs I, II, and III, equivalent in percentage terms to the LSCS and greatly in excess of the 26 percent figure for communal areas. While the acquisition of high quality land needs to be greater to redress the land problem, the achievements of land accumulation on a willing buyer-willing seller basis should not be discounted. Land acquisition, however, has slowed in recent years. Nearly 83 percent of the land was obtained in the initial five years of the program, 1979 to 1983, and only 17 percent, in the last five years.

Before turning to problems underlying land acquisition, some attention needs to be given to the criteria used by the government in obtaining land. According to Kinsey (1982) and personal communications with MLARR officials, land is sought that is: (a) capable of exploitation for agriculture and is near or adjacent to communal areas, particularly those with high population pressure; (b) not actively farmed and preferably already offered to the government; (c) in a block large enough to permit economic development of services and infrastructure; (d) in an area already adequately served with basic infrastructure (e.g., roads and water); (e) in a region where basic planning information is available to facilitate implementation; and (f) priced to reflect "fair" market value. Problems of declining levels of land acquisition have been attributed to various factors, including overly high land prices, inadequate government funds for procurement and development, insufficient allotments from NRs I and II coming onto the market, and meager sizes of blocks offered for resettlement. All these issues are intertwined with the legal provisions (ch. 4) and the operation of the land market in the LSCS (ch. 5).

Chapter 4

EVOLUTION OF FORMAL AND INFORMAL LAND LAW

4.1 FREEHOLD TENURE IN THE COMMERCIAL SECTORS

4.1.1 LEGAL ASPECTS

At independence, Zimbabwe inherited both a colonial statute law and a body of common law, court-made, based not on the precedents in English judiciary but on the decisions interpreting Roman-Dutch law, which the Dutch had introduced into South Africa. The basic law for colonial Zimbabwe was, by the High Commissioner's Proclamation of 10 June 1891, also applicable to the Colony of Good Hope in South Africa up to that date, subject to subsequent legislative acts. There was no statutory restatement of the law of ownership of land, and so the Roman-Dutch common law governs the basic rights of property. That law of ownership is in most respects very similar to ownership under English law. Some of its particularities, such as quit-rent tenure, have been removed by statutes in Zimbabwe. In other cases, the difference is a matter more of Roman-Dutch terminology than of substance, as in the use of the term "hypotec" rather than "mortgage." The Roman-Dutch law of ownership is, in fact, simpler than that of England, the former utilizing a simple concept of allodial ownership, uncomplicated by the feudal influences which encumber English land law. Ownership under Roman-Dutch law implies a perpetual and heritable right to use and alienate land. The land could be left by will by both blacks and whites. In cases of intestacy, inheritance in the case of whites is handled under the Intestate Estates Act, but in the case of blacks is governed by the customary law of the deceased.

Recording and proving title to freehold property are handled under the Deed Registries Act (CAP 139). All titles granted from crown land were registered at the time of grant, and the law requires the registration of all subsequent transactions, subdivisions, and inheritances. All freehold land is thus registered, as are leases for ten years or more or for the life of one of the parties and mortgage deeds. Contrary to the English rule in deed registration, the fact of registration is virtually conclusive evidence of good title, and a chain of title need not be traced. The Survey Act required a fixed (rather than general) boundaries system and a high degree of accuracy in cadastral survey for freehold land. There is a busy private surveying profession—the registry in Harare handles 150-250 registrations a day, and the one in Bulawayo, 100-120 per day.

Freehold's unfettered transferability has made it attractive collateral for loans, and, in fact, freehold land has served extensively as security in the LSCS and SSCS sectors. The AFC makes long-term (20-30-year) loans only against collateral, and commercial banks lend to the agricultural sector almost exclusively against such a guarantee. Availability of collateral

helps explain why 4,660 large-scale farming units still receive two-thirds of total agricultural credit. The banks depend heavily on foreclosure, barring rights to redeem land easily and regularly. The same is true of the AFC, which under SEC. 40 of the AFC Act (CAP 101) need not even go to the High Court to get a foreclosure order. A highly developed land market makes it easy to dispose of the collateral.

Freehold has been the classically secure tenure and, as such, has been reported to provide the greatest incentives for long-term investment in land. Tenure security was preserved by the Lancaster House Constitution. But freehold, and the security with which it is held, is regarded by policymakers with considerable reservation. MLARR's draft "Communal Lands Development Plan" (MLARR 1986, p. 46) suggests that "freehold tenure has resulted in generally acknowledged high standards of land conservation, land improvement and agricultural productivity but at the expense of high land concentration and income inequalities among the rural population and at the cost of partial underutilization of the land." While indicating that no drastic changes are needed, it notes that the Land Acquisition Act provides government with new controls over freehold and suggests that a further adjustment would involve conversion of the freehold title over land into long-term leasehold title from the state for a period of 99 years, with the landholders or their heirs given the first option for renewal of the leasehold contract.

4.1.2 GENDER BIASES IN LAND RIGHTS

From a production standpoint, women's land rights are less important for the LSCS than for the SSCS. In the LSCS, women do not act as field managers to any important extent. In the SSCS, women may be performing this role to the extent that it has become "peasantized," but are doing so under a legal structure quite different from that in the communal areas.

A freeholder has been able to pass land to a daughter by will, though in cases of intestacy, customary rules would have excluded a daughter from the heirs. Under Roman-Dutch law, it has been possible to marry in or out of community property. But there are many obvious nonlegal impediments, and, in fact, very few women own freehold land. Cheater's 1981 (cited in Gaidzanwa 1988, p. 8) study of small-scale commercial farmers found that only 4 out of 301 landowners were women. In a more recent investigation, Chimedza (1988, p. 60) found no female nor joint husband/wife registrations on the large- and small-scale commercial farms studied.

While women have long been able to own freehold land and to be registered as the owner, they were treated in legal terms as minors and only very recently have been able actually to "deal in it." The Legal Age of Majority Act, No. 15 of 1982, gave African women requisite legal capacity for the first time. However, in spite of the act, it appears that SEC. 15 of the Deeds Registry Act still limits the ability of women to deal with land in their own right. This section requires that a married woman have her deed attested by a registrar or a legal practitioner, disclose that she is indeed married, and state the name of her husband. She must be assisted by her husband in executing any deed or document required or permitted

to be registered in the deeds registry, unless proof is produced to satisfy the registrar that she has the legal capacity to execute it without the assistance of her husband. Maboreke (1990, pp. 13-14) argues convincingly that this provision was implicitly repealed by the Legal Age of Majority Act, since it apparently reflects earlier law that women were perpetual minors and, after marriage, had their husbands as their guardians. Apparently this is not the position of the Deeds Registry Office, which regards the Deeds Registry Act requirement as still in force.

In situations of divorce and widowhood, the wives of African freeholders face many of the same problems as women in the communal areas. If there is a will and it provides for them, all is well. If not, the law of intestacy will generally be the customary rules, and wives do not figure as heirs under those precepts. A marriage in community of property under Roman-Dutch law provides a solution in that on divorce, the matrimonial property is partitioned and a surviving spouse inherits the matrimonial property on the death of the spouse. Such community of property can be created by a stipulation in an ante-nuptial contract. But Roman-Dutch community of property is a very unsatisfactory solution for other reasons. During the marriage, the matrimonial property belongs to both spouses in undivided shares, and the husband is the administrator of the property. He can do whatever he wants with the matrimonial property without reference to the wife. He need not give her an account of how he has spent the money, and he can actually sell the property over her objection. Only three of the ante-nuptial contracts have been registered since 1929 (Maboreke 1990, pp. 15-16).

4.2 COMMUNAL TENURE

4.2.1 CUSTOMARY LAND TENURE

Despite considerable diversity in rainfall, soil quality, and population density, the communal areas share a system of land tenure which is described as "communal," with land rights originating in indigenous practice. The system is generally characterized as one in which the community, represented by the chief, "owns" the land but allocates households' heritable rights to cultivable and permits them to graze their livestock on unallocated community lands as a commons (Holleman 1952). It has been suggested that the system embodies socialist values (community control of land, relatively egalitarian distribution) which render it a valuable source of norms for modem Zimbabwe (Ushewokunze 1990, pp. 1, 3).

There is considerable debate over the origins and essential character of the tenure system in communal areas. Recent work by Scoones and Wilson (1989), Cheater (1988), and Ranger (1985, 1988) is summarized in Cousins (1990a, pp. 12-14). They question whether the system is accurately described as "traditional." The system of land allocation to communities originated in disposition by the colonial government, as it rearranged the population to accommodate European settlement. Also, the early twentieth century saw a major shift in African land-use patterns from intensive, continuous, hoe cultivation of limited *vlei* areas to a much more extensive shifting cultivation made possible by introduction of the

ox-plow. Evidence of self-selection of land rather than chiefly allocation in the early colonial period, of significant inequalities in landholdings, of the early emergence of individual entrepreneurships in farming, and of native readiness to buy land in the freehold areas suggest that the "communal" nature of the tenure system has been overstated.

These authors further suggest that communal tenure is largely a colonial construct, a part of the pattern of inflation or wholesale creation of powers for chiefs and headmen to construct an effective basis for indirect rule and control of land resources through the chiefs. The intensity of colonial interventions in rural society in Zimbabwe makes this thesis tenable, though comparable patterns of evolution took place in other areas of Africa without similar direct intervention. Community control of access to farmland, relatively loose when a resource is plentiful, tends to tighten as the resource becomes scarce, then fall away (or be transformed into a more exclusively dispute-settlement role) once there is no more arable land left to be allocated (Bruce 1986). The sudden crowding onto the reserves may have been a critical factor in producing (for a time) more active community control of land use. It would appear that colonial policy has been more effective (or damaging) in Zimbabwe relative to other attempts by colonial and postindependence governments to alter tenure on the continent, which have largely "bounced off" customary tenure systems. By the same token, a stage may now have been reached where little arable land remains available for allocation, and community control of arable land would, in the natural course of things, be directed more toward dispute settlement.

Recent legislation has enshrined the concept of communal tenure. The Communal Land Act 1982 vests ownership of communal land in the president (SEC. 4) and assigns its administration to district councils rather than chiefs and headmen (SEC. 8). The act regulates access to land according to the "customary law relating to the allocation, occupation and use of land" (SEC. 8), but does not attempt to restate the customary rules. The evolving nature of customary law is recognized. By virtue of the Customary Law and Local Courts Act 1990 (SEC. 2), "customary law" means the "customary law of the people of Zimbabwe, or of any section or community of such people, before the 10th of June 1891, as modified and developed since that date." A district council may make bylaws relating to its duties and functions (SEC. 13), and the minister may publish model bylaws which district councils may adopt by reference (SEC. 14). The ministry has enacted Communal Land (Model) (Land Use and Conservation) Bylaws, 1985 (S.I. 166/85), which provide for the preparation of land use plans for all land within a council area, any ward or combination of wards on communal land, any part of a ward or wards on communal land, or any village development committee area or areas on communal land (SEC. 4). Such plans may in detail regulate landholdings and use of both pasture and arable land (SEC. 6). An ability to alter custom and a degree of control is theoretically available, to which, in all probability, no chief would have aspired. The act may be seen as an extension of the colonial drive toward state control via community control, "subordinating custom to state control" and ignoring the significant individualistic elements within the tenure system (Cheater 1990, p. 22).

The revisionist viewpoint on "communal" tenure in Zimbabwe put forward by scholars in recent years is of more than historical interest. If tenure in the communal areas is more

individualistic than communal tenure models suggest, policymakers should not plan rural transformations which rely upon an inherent communal dynamic in rural society. These individualistic elements do not represent a sudden departure from custom, but an extension of tendencies evident for some time. It is difficult to say how far or how rapidly this process is moving. In particular, not enough is known to assess the nature or implications of the emerging market in land rights, and how far full alienability of land rights is gaining acceptability.

4.2.2 A CRITIQUE OF CUSTOMARY LAND TENURE: INVESTMENT, CREDIT, AND PRODUCTIVITY EFFECTS

The conventional critique of land tenure arrangements in the communal areas needs to be examined with the above rethinking in mind. The critique has tended to focus on a lack of individual security of tenure implied from communal control of landholdings, which, it is suggested, weakens incentives to invest in agriculture. Similarly, because under customary tenure land cannot be sold and thus cannot be mortgaged, those tenure rules have been cited as a constraint on the ability of communal area farmers to obtain credit for investment. A further critique often heard elsewhere, that the absence of a land market freezes land in less productive hands, has been raised less frequently in policy discussions in Zimbabwe.

Because land use differs dramatically between the commercial sector and the communal areas, there has been an understandable tendency to attribute the difference to land tenure. Simple correlations between tenure and phenomena such as low productivity and erosion are assumed to reflect a causal connection (Whitlow 1988, pp. 21-24). This is the case in spite of the relatively obvious differences between these tenure areas and other critical factors such as rainfall, soil quality, low levels of technology, market access, and crowding. MLARR's draft "Communal Lands Development Plan" (MLARR 1986, pp. 44-46) speaks in these terms. It cites an inadequate land tenure system as the key to problems of the communal areas, concluding that it is "quite clear that the traditional communal tenure shows strong comparative advantages with respect to equity but a number of serious disadvantages with respect to growth stimulation." The opinion is based largely on deductive reasoning and makes no reference to empirical evidence. Three distinct questions arise: Are all or some characteristics of the customary tenure system potential constraints on the behavior desired of farmers? Are these constraints binding now, or only potentially might become binding at some time in the future? Do we have alternatives which are cost-effective to put in place? Bratton (1990) notes that there is no consensus on these points.

The lack of a consensus in Zimbabwe mirrors the situation in the literature on land tenure in Africa. Conventional wisdom has long held that communal tenure is an obstacle to development. Security of tenure is a difficult concept with which to work because it concerns a matter of attitude, only imperfectly related to actual probabilities of loss of the holding. Students of African land tenure have become increasingly skeptical about assertions of insecurity under customary tenure and its consequences, though insecurity clearly exists in some specific cases (Bruce 1986, 1989). Recent World Bank research in four African countries (Place, Hazell, and Lau 1990) suggests that customary land tenure systems tend to

evolve toward fuller and more secure individual tenure rights in response to growing population pressure and commercialization of agriculture. This raises questions about the priority which should be accorded to expensive interventions intended to force the pace of tenure change, such as land titling programs.

Have customary tenure arrangements limited growth of production by discouraging investment in agriculture, by limiting access to land for those who wish to expand cultivation in response to market opportunities, or by constraining access to credit because of inability to mortgage? There are a few serious economic studies addressing this question in Zimbabwe which were carried out in the late 1960s and early 1970s. Framed to contrast African freeholders in the native purchase areas with communal area farmers, they suggest that tenure is a factor determining higher levels of productivity in the purchase areas (Massell and Johnson 1966; Johnson 1968; Weinrich 1975; and Cheater 1978, 1982, 1984). However, none of the studies employed a sufficiently rigorous econometric approach to allow any conclusive disaggregation of tenure impacts from effects of other factors such as farm size and/or greater access to capital through off-farm income enjoyed by purchase area farmers.

In more recent policy writing on the topic, these earlier studies tend to be ignored and more impressionistic criteria used. Cliffe (1986, pp. 26-27) concludes that the evident willingness to make investments (e.g., tree planting or fence building) suggests that adequate security of tenure exists, and that there is no demonstrated need for formal title in either freehold or leasehold. The World Bank (1986, pp. 8, 32-33) conjectures that concerns in Zimbabwe about security of tenure under the customary tenure system are based on misapprehensions about the nature of communal tenure systems. Cusworth and Walker (1988, p. 90) reach the same conclusion.

Evidence of successes in peasant production in response to the lifting of other constraints suggests that tenure has not been a binding restriction. In the years following independence, communal area farmers showed a remarkable ability to respond to new opportunities. The successes in maize and, to a lesser extent, cotton production were due to (1) the lifting in 1980 of marketing disincentives in peasant areas, including abolition of the 10 percent marketing levy, raising the net price received by sellers, and increasing the number of Grain Marketing Board collection points in and near the communal areas; (2) communal area farmers' receiving the same price as that in the L.SCS from the Grain Marketing Board, at or above international parity levels; (3) better access to high-yielding varieties and fertilizers; (4) major expansion of extension services; and (5) greatly increased access to credit (Amin and Chipika 1990, pp. 7-11). Of the 5.3 percent (9.0%) increase in maize production experienced over the 1970-80 period (1979 to 1989), 2.0 percent (2.2%) came from area expansion, and 3.3 percent (6.7%), from growth in crop yields. Of the -1.1 percent decline (26.5%) in cotton production over the same period, area expansion represented 1.6 percent (25.0%), and change in yields, -2.6 percent (1.3%) (Annex 1). These increases in production appear to have come about through both expansion and intensification of cultivation, with wide variation among crops and years. The response to these market opportunities was unevenly distributed both regionally and locally. Areas that already were important maize producers because of rainfall and better access to institutional support

benefited the most. Within communities, established large producers with ox-power sought and obtained additional land, and credit was skewed to larger producers (Rohrbach 1988, 1989).

The fact that very substantial credit resources were directed to the sector without land collateral might at first glance appear to support the adequacy of the customary tenure system. But, due to low repayment rates, that credit has turned out to be a very expensive proposition for the AFC. The AFC normally insists on collateral for long-term credit. Long-term loans (6-30 years) for purchase of land, erection of buildings, and installation of improvements are made only against solid collateral—in the case of land, freehold title. The land used as collateral may be farmland, urban holdings, or other property. The AFC depends heavily on foreclosure in such cases. The Agricultural Finance Corporation Act (CAP 101, by SEC. 40) makes foreclosure a relatively simple process—it is not necessary for the AFC to go to the High Court to get a closing order—and a highly developed land market makes it easy to dispose of the security. (The MLARR must, however, give its certificate of no objection before the sale.) Medium-term loans (2-6 years) are made against security in movable property such as farm machinery or livestock. Short-term (seasonal) credit is given unsecured, but AFC is to some extent protected by the Farmers Stop Order Act (CAP 110), which allows it to encumber the farmers' payments from the Grain Marketing Board with their indebtedness.

Lending by the AFC to the communal sector grew from almost nothing to a substantial amount in the years immediately following independence. The number of communal area farmers receiving its credit increased from near zero in 1979/80 to a peak of 77,500 in 1986/87. The AFC's recovery experience with loans to communal farmers has, however, been poor and is getting worse in terms of both numbers repaying and amounts refunded. While the AFC can recover its loans from those larger farmers who regularly produce a surplus and who are registered with the Grain Marketing Board, the producers of small, occasional surpluses sell through "approved buyers" (local traders) and can escape the net. AFC has had to begin to target loans more carefully, reducing its exposure. In the 3 years following 1986/87, the number of communal area borrowers fell by 26 percent, and this trend continued into the first half of the 1989/90 season, when the number of loans declined 13 percent over the same 6 months of the previous year (Ushewokunze 1990, p. 12). This trend reflects not just a tightening of AFC creditworthiness criteria, but also a reduction in applications for credit from the communal areas.

This record does not mean that credit has successfully been made available to communal farmers without recourse to collateral in land. Availability of such collateral might have kept costs of AFC credit lower and broadened access to it. On the other hand, one can wonder whether foreclosure commensurate with the broad defaults would have been feasible. There is little experience from elsewhere in Africa to suggest that had these smallholders had titles available, commercial lenders would have responded by increasing credit supply. There is some impressive evidence to this effect from Thailand (Feder et al. 1988), but no comparable cases from Africa, where administrative costs of lending tend to be much higher. In the late 1980s, the AFC began a group-lending pilot project to encourage savings. As of 1989, it had loaned 34 groups about $0.5 million at 10 percent interest, which the groups

were then supposed to lend to members at 13 percent. There is too little experience to assess this experiment, but it offers a risk-reduction strategy which potentially could compensate for unavailability of title as collateral.

4.2.3 THE POTENTIAL FOR EFFECTIVE TENURE REFORM

If one concludes that customary tenure arrangements confer limited and ambiguous rights, under certain circumstances, what possible interventions might be considered for enhancing tenure security in the communal areas? The current position under the Communal Land Act is that the state owns all communal land, a sufficient *legal* basis for varying the tenure system. The administration of land is conferred on the district councils, now the rural district councils, which are enjoined to follow customary law. But these councils are given the authority to enact bylaws which can alter those rules substantially, as indicated by the model bylaws published by the MLARR.

But who actually administers the land? The current legal position is the latest of several swings of the pendulum. An attempt by government to assume control of land administration from traditional authorities under the Native Land Husbandry Act of 1951 failed, with de facto control shifting back to the chiefs and headmen by the early 1960s and full legal control of land restored to them by the Land Tenure Act of 1970. There is a paucity of information about how the new attempt at state control represented by the Communal Land Act is faring. The creation of effective local land-administration institutions is a precondition for serious planning for changes in land regulation in the communal areas.

At what level could such an institutional capability be created? The districts are too far removed from farmers and their needs to make decisions on the use and allocation of farmland (Cliffe 1986, p. 36). The structure of local government for the wards into which districts are divided and the villages of which wards consist was specified in a "Statement of Policy and a Directive by the Prime Minister" issued in 1984. Further details are given in an undated paper prepared by the Ministry of Local Government and Town Planning, titled "Structure of Village Development Committees, Ward Development Committees and Extension Services." These describe village development committees (VIDCOS), each with six members, at least four of whom are elected by adults from a hundred households, the other two representing youth and women's mass organizations. Six IDCOS are to constitute a ward, and each ward, with its approximately six-hundred households, would have a ward development committee (WADCO). Each WADCO consists of the chairperson and secretary of each constituent VlDCO, one representative each from youth and women's mass organizations, and the councillor (rural district council member) for the ward, who chairs the WADCO. The district council is made up of one elected councillor for each ward of the district council area and councilors appointed by the minister to represent special interests, not to exceed one-quarter of the councilors. The Rural District Councils Act 1988 makes reference to the WADCOS and IDCOS (ART. 60) but only to specify their membership.

While it appears that the land allocation functions of the district councils may sometimes be carried out by ward development committees or village development

committees, formal delegations have not generally been made. It is only these more local units of government that can hope to take hold of local land administration. In practice, to an extent which is unclear, chiefs and headmen continue to make dispositions concerning land (World Bank 1986, pp. 11, 32). Headmen are sometimes elected to positions in the village or ward development committees, and it is not always clear upon which source of legitimacy they are drawing in making land administration decisions. The lack of solid information on this point is critical. If there is no effective implementation ability in these new, lower-level institutions, it will do little good for central ministries to indulge in an plethora of planning. This applies to both tenure change and land-use design. In the absence of convincing evidence of an ability to implement policy at the local level, the experience in other African countries suggests that heavy skepticism is in order.

Should an attempt then be made to increase security of tenure, to clarify and enhance individual rights in land? In light of the above discussion, it is difficult to make a strong case for an expensive or ambitious program of tenure reform. Cliffe (1986, pp. 77-79) lists three options: community control and allocation, individual titling in freehold, or conditional leasehold under state ownership. The primary policy document in this area, the "Communal Lands Development Plan" (MLARR 1986, p. 46), takes the third option and recommends that all communal land, for residential, arable, and grazing purposes, be owned and allocated by the state, subject to cadastral survey, proper land-use planning, and demarcation according to minimum farm sizes. Allocations could be granted on the basis of family, group, or cooperative/collective farm. Arable and grazing land would be allocated on heritable, 99-year leaseholds, with size minimums, which could be subdivided or sold without government permission. The 1987 National Symposium on Agrarian Reform in Zimbabwe endorsed this approach, arguing that tenure within the communal (and resettlement) areas should be on "an individual permit basis . . . the permits shall guarantee succession, prevention of sub-division, abidance by environmental regulations and acceptable land and animal husbandry practices" (MLGRUD 1987, recommendation 3.11, p. 29).

There are a number of problems with the state-leasehold approach. Cliffe (1986, p. 79) points out that the lease conditions usually prove difficult to police and enforce. If extension agents are charged with this function, it can destroy their rapport with farmers. Because cancellation or reallocation of the lease is the sanction, tenure insecurity is increased, and tenure can become a matter of favoritism and bribery. There is considerable evidence from elsewhere in Africa to substantiate Cliffe's concerns (Bruce 1989, pp. 8-18).

Leasehold tenure can, if made very long-term, unconditional, and heritable, be almost as strong as freehold, but it is usually adopted rather than freehold tenure precisely because of a desire to build controls of land use into the lease and to make tenure conditional on their observance. Such conditions are part of the "command cultivation" mindset, which often seeks to make farmers behave in ways for which they lack positive economic incentive rather than trying to ensure that motivations are adequate. The approach is ill-conceived, because such planning is based largely on land potential. While land potential is relatively constant, the best use of land depends at least as much on technological change and varying market

conditions. Farmers respond to these changes far more effectively than any bureaucracy and need to be able to do so without worrying about a "development plan" attached to their lease.

Moreover, enforcement of lease conditions generally tends to be sporadic and arbitrary, given shortages of trained staff, vehicles, and petrol and the difficulty of putting into practice such phrases as "sound husbandry." Often attention is focused on a farmer's performance for the wrong reasons—membership in the "wrong" political party, a personal disagreement with an official, or someone else coveting the farm. Tenure security is undermined, unnecessarily, because use of freehold land can be regulated adequately, if in less detail, and at lower costs through zoning or other rules enforced by fines.

Is freehold then the answer? The creation of a full private-ownership system (or even a leasehold system) implies that the state or its local agents effectively substitute themselves for traditional authorities as the guarantors for titles. This requires the creation of a new institutional memory of rights, one based not on knowledge passed down by word of mouth and learned in life in a local community, but on registers and cadastral maps. The investment needed to create such a system is considerable. The "Communal Lands Development Plan" (MLARR 1986, p. 46) calls for demarcation and cadastral survey of allocations, and the "Land Subsector Study" (World Bank 1986, p. 33) makes the same suggestion. It is difficult to reconcile the recommendation with the World Bank's "rule of thumb that the cost of surveying, mapping and documenting a parcel of land should be about 2 percent of the value of the land, and should rarely exceed more than 5 percent" (ibid., p. 38). Such costs vary widely, with average parcel size, topography, and extent of tenure conversion figuring in the process. In recent projects, costs for registering smallholdings have ranged from $25/hectare in Thailand (Feder et al. 1988) up to $150/hectare in St. Lucia (Barnes 1990) in the Caribbean. Much of the land in the communal areas is marginal, and it is clear that only very modest portions would be worth registering under that rule of thumb.

Of course, not all holdings need to be brought within the new system. There are economies of scale in doing all holdings at the same time, but they may not be economies at all if only a few farmers positioned for expansion and commercialization of their production can make productive use of an individual title (Carter et al. 1990). The Joint Presidents' Agricultural Committee (presidents of Commercial Farmers Union, National Farmers Association of Zimbabwe, and Zimbabwe National Farmers' Union) (1990, p. 10) proposes that titles (leasehold or freehold is not specified) be granted selectively "to communal farmers who have proved that their operations are on a sustainably productive basis." Such a selective approach is reemerging as a viable policy on titling for rain-fed agricultural areas in most areas of Africa, after having, for many years, been considered less satisfactory than systematic titling of all holdings (LTC 1990, pp. 21-22). There is a precedent for such an approach based in the recent announcement that titles may now be available for commercial premises located at growth points in the communal areas. Under such a system the person seeking the title generally bears a significant part of the costs of demarcation and survey, whereas more generalized titling—because everyone must get a title—is usually done at the expense of the state to ensure compliance.

While a selective approach to establishing freehold or leasehold rights in the communal areas is feasible, the question remains how the vast majority of communal lands, which remain unregistered, could be administered. Botswana's land boards, established under its Tribal Lands Act 1968, provide a promising model. The land boards are comprised of local land-administration institutions which are representative of local interests but are linked into the bottom of the hierarchy of the Ministry of Local Government and Lands. They administer most land according to customary rules, which have been altered in important particulars. For instance, boards may allocate land to a "non-tribesman," that is, any citizen of Botswana. They also allocate land on long-term leases for commercial purposes, for large-scale ranching, and, where requested, for residences. The system is worth examining because of the seriousness with which it has been implemented and the substantial investments which have gone into support services and the training of board members and staff. The boards have an executive secretary and a vehicle provided by the ministry. Chiefs, who in Botswana decide land and other disputes under customary laws, need to work closely with the boards, often serving as members." There is a growing tendency in Botswana to recognize that the boards must use the headmen as sources of information and executing agents if they wish to be effective. Proposals have been made to compensate them for this work (Riddell and Dickerman et al. 1986, pp. 10-17; Bruce 1989, p. 23). The strength of the Botswana program has been its clear focus on the need to create effective local institutional arrangements for dealing with land. The time may have come for Zimbabwe to fill the legal lacuna which exists with respect to ward- and village-level institutions.

An approach which emphasizes institution-building and plans for incremental change in tenure seems appropriate given Zimbabwe's experience with the Native Land Husbandry Act 1951 (NLHA). The act transferred the authority of the chiefs to allocate land to the Department of Native Affairs. Numerous rights to both arable and grazing lands were distributed to individuals. Transactions in these rights were allowed. Holleman notes that by 1963, over 700 arable rights and 19,600 grazing rights had been sold to new individual owners (cited in Cheater 1984, p. 11). The "Land Subsector Study" (World Bank 1986) indicates that the act irrevocably introduced the concept of the right to transfer land to the communal areas. By the end of 1960, 1,155 family rights had changed hands at an average price of £5.9s.7d./acre. In addition, 13,511 grazing rights had been transferred at an average price of £4.7s.5d. per animal unit. It is asserted that the land market is still functioning today (ibid., p. 9), but it is unclear what today's land transactions owe to NLHA. Cousins (1987, p. 34), for instance, found no evidence in his three years of research on grazing associations of transactions in grazing rights.

The NLHA's implementation collapsed in the face of widespread opposition in 1962, and the Tribal Trust Land Act 1967 returned the authority to allocate land to the chiefs. The Communal Lands Act 1982 again shifts the authority away from chiefs and to district councils. This vacillation may reflect a reaction to abuses which occur whenever central

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11. In Zimbabwe, land disputes are excluded from the jurisdiction of the chiefs' local courts by SEC. 15(1)(d) of the Customary Law and Local Courts Act 1990.

government or traditional authorities have full control, suggesting a need for a new system of checks and balances; the Botswana model merits further study in this regard.

Beyond this basic institutional development, are there any substantive changes in customary tenure which should be legislated? The most serious candidate for such treatment would appear to be transactions in land under customary tenure. There are some indications that land transactions are gaining increasing acceptance. A forthcoming study by Cousins of two communities in Masvingo Province indicates that the number of such transactions varies greatly among communities. Most of the transactions to date represent a buying into the traditional tenure system or, as Cousins put it, "a negotiated entry into the collectivity of the 'community' or the village which brings with it the property rights and obligations held by the other members of that collectivity" (Cousins, personal communication). This is a limited form of commoditization, but the fact remains that land is being transferred by individuals rather than the community. If land transactions are emerging in some communities on a significant scale, as appears to be the case, the time has come to think through a legal framework for them. An amendment to the Communal Lands Act would appear to be the most appropriate legal approach.

4.2.4 WOMEN'S RIGHTS

Women farmers provide most of the labor for communal area agriculture (Cliff 1986). However, studies of the role of women in agriculture in Zimbabwe show that the male head of household, even if only occasionally resident, will insist upon making the basic farm-management decisions. Often he will also claim control of any cash earnings from the woman's work on the farm or even off-farm (UNICEF 1984).

Gaidzanwa (1988, p. 3) describes the traditional position of women under customary land tenure in the communal areas:

> In Shona and Ndebele custom, women obtained land use rights through their membership in particular patrilineages. Male lineage heads obtained land from chiefs and headmen and then allocated this land within their subsistence units. The internal allocation of land use rights within households was very important. Women were allocated land use rights in their capacities as wives and daughters in patrilineages. Married women were allocated land use rights by husbands. This land was *tseu* (woman's portion) to which every married woman was entitled amongst the Shona. There was also a family field to which the husband, wife and children contributed labour. The produce of this family field was used to entertain visitors, pay tribute or for consumption when the woman's food from her portion ran out.
>
> As daughters, women obtained land from their patrilineages. In their fields, daughters grew crops for food which could be exchanged for other property in readiness for marriage. Divorced daughters could also look after themselves by working the land assigned to them by their agnatic patrilineages. Women's land rights were mediated through the men who headed their agnatic and affinal patrilineages.

There do not appear to be significant differences between Ndebele and Shona customary laws in these matters (Chimedza 1988, p. 47). Females have no rights of inheritance from their parents. While this application of customary law under the Communal Land Act 1982 may appear discriminatory, neither SEC. 23 of the Constitution nor the Prevention of Discrimination Act prevent such discrimination where it is enjoined in law (Maboreke 1990, p. 16).

While women are entitled to acquire rights to land from their husbands upon marriage, not all wives actually have plots. In a recent study, one-third of the married women in a sample did not have parcels. Often this was a voluntary decision on the part of women, if they had an alternative source of cash. Those women who had plots did not expect to get them every year. Sometimes there was a rotation system among wives. Asked if they would be interested in greater formal rights in land, the women explained that the real issue was control over the proceeds of the land (Chimedza 1988, p. 41). Another study found that in only 23 percent of a sample of 123 households were wives allotted land for their exclusive use (usually under 0.8 ha) and concludes that the practice of separate allocations for wives may be on the decline (Sunga et al. 1990).

When divorce takes place, a woman traditionally has no rights in her husband's land. It has been suggested that the problem has become acute because of the ease of divorce and the erosion of social control as men have entered the wage market (Pankhurst and Jacobs 1988, p. 211). The Matrimonial Causes Act (No. 33/85) provides for a more equitable division of matrimonial property on dissolution of marriages by divorce, but it is not clear that the late husband's land from his patrilineage is part of the matrimonial property. Sunga et al. (1990) concluded that it will not be so treated. This seems to be the message of a recent High Court decision (George Khoza and Thembeka Muriel Khoza, HC-B-106/87) indicating that after divorce, the wife has no right to live on her husband's communal lands, not even in a home she built and furnished during the marriage (Maboreke 1990, p. 2). Any impact of the Matrimonial Causes Act would in any case be limited because most divorces are conducted with no legal formalities (Pankhurst and Jacobs 1988, p. 211).

Widows are without even the theoretical protection provided to divorcees by the Matrimonial Causes Act. [12] According to custom, the widow has rights against the heir. The heir succeeds to the deceased husband's obligation to her (Chinowa v. Margwende SC 84/87), and the heir can only insist on his right to succeed if he makes more than just a show of complying with his customary obligations (Masango v. Masango HC-H-107/87). Widows have been identified as one of the more needy groups in the communal areas and have been given preference in selection of participants in the resettlement schemes (Cliffe 1986, p. 37).

What impact do women's very limited rights in land have upon their incentives to produce? Chimedza (1988, pp. 47, 51) found no evidence of an adverse effect on production. The issue, as she describes it, is part and parcel of the larger question of power structures

12. The proposed legislation on successions before Parliament in 1988 has not been enacted.

and decision-making within the household. Discrete land rights will achieve little if unaccompanied by an understanding that the land's produce is at the woman's disposal (Pankhurst and Jacobs 1988, p. 204; Chimedza 1988, p. 47; Gaidzanwa 1988, p. 18).

Access to credit for women may be constrained by their inability to produce collateral, but this is the position of all communal area farmers. Credit and marketing of cash crops are often linked, as when the Grain Marketing Board deducts short- and medium-term loans by AFC from the crop sales of communal area farmers. This is the communal farmers' major solution to their lack of collateral. Since men traditionally market these crops, women have no had independent access to credit. Indeed, until the Legal Age of Majority Act (Act No. 15/82) gave women the ability to enter into contracts, women could not incur debts. Now that this is possible for females over the age of 18, the AFC has made some loans to women but has still not created an adequate legal framework for its lending (Chimedza 1988, pp. 47-48). A case in point has been brought by a husband against the AFC for allegedly breaching customary law by entering into a loan agreement with his two wives without his knowledge or approval (Maboreke 1990, p. 1). Group lending may have special importance for women, who can form groups and obtain credit in this way. Chiefs have sometimes given plots to women's groups, providing access to land outside the family holding, where women can grow marketable crops and divide the proceeds among themselves (Chimedza 1988, p. 47).

Certain reforms in women's land rights were attempted under the ill-fated Native Land Husbandry Act 1951. A detailed description of the provisions is provided by Gaidzanwa (1988, pp. 4-7), and Pankhurst and Jacobs (1988, p. 204) summarize its impact:

> Changes in men's rights, which guaranteed individual tenure and inheritance, occurred in the absence of any definition of women's rights of access to land. Married women, particularly, had no legal recourse to prevent men's restriction of their access to land they had previously cultivated. Widows and divorcees, on the other hand, were, in theory, formally entitled to a plot half the size of those allocated to male heads of families. Nevertheless, they could not inherit land or pass it to their children.

There is no consensus among researchers on tenure reform to redress gender biases. Financial autonomy is seen as the real issue, and it is still an open question to what extent that objective can be attained through greater tenure rights for women (Chimedza 1988, pp. 47, 60). The experience of the NLHA has made commentators leery of individualization scenarios generally and has led some to a more favorable evaluation of customary rules (Gaidzanwa 1988, pp. 16, 17). Others support freehold tenure specifically for women as the only reform dramatic enough to provide women with real financial autonomy (Pankhurst and Jacobs 1988, p. 222), while still others consider that both private ownership for women and joint ownership with husbands deserve consideration (Maboreke 1990, p. 24). Cliffe (1986, pp. 38, 78) endorses equal rights for women but in the form of joint rights for the household, husband, and wife together. His preference is grounded in his concern that ". . . today kinship is still one of the most crucial bases for community solidarity at the grass roots level, a solidarity rooted in the status women have as the 'cement' between families and kinship groups."

4.2.5 LAND USE PLANNING AND COMMONS MANAGEMENT

Beginning in 1926, "centralization" was introduced on the reserves by the Department of Native Agriculture. The core strategy was the demarcation of separate grazing and crop cultivation areas. By 1946, over 3.8 million hectares had been centralized. Contour plowing and grass-stripping were encouraged (Whitlow 1988, p. 9). As human and livestock populations continued to grow, the initial efforts based on persuasion gave way to compulsion following enactment of the Natural Resources Act in 1946. Communal tenure arrangements were blamed for resource degradation and, in 1951, the NLHA removed land administration from native authorities.

An ambitious land-use planning program was implemented. The NLHA prescribed standard land areas for crop production and grazing to be granted to an individual, the farming practices that could be ordered, and the number of animal units that could be browsed on a given area. It is estimated that two-fifths of adult males in the reserves lost their farming rights because they had not, as the act required, farmed the land in the season immediately before the act came into effect. Some 20 percent of farmers and their families had been removed from their villages to other areas in order to comply with the standard size of holdings that the act prescribed. In addition, some 113,000 residents of the reserves were evicted because there was too little arable land to accommodate all the occupants at the specified sizes. After collapse of the NLHA, chiefs allocated 71,000 hectares to their people in 1962 and 1963, largely from the grazing areas (World Bank 1986, pp. 8-9).

The legal framework put in place since independence recreates possibilities for similar compulsions. There is a tradition of highly paternalistic conservationism in Southern and Central Africa, one which can be revitalized through government attempts to superimpose a "communal" tenure system on peasant rationality (Murombedzi 1990, p. 16). The draft "Communal Lands Development Plan" (MLARR 1986, pp. 52-53) calls for a program of "village consolidation," which would involve delineation of village boundaries, consolidation of residential areas, incorporation of arable lands into one contiguous block, combination of grazing lands for eventual cooperative grazing, and merging of the remaining "reserved" lands. The VIDCOS (village development committees) would play a key role in this process, and the need for peasant participation is stressed. Once village boundaries are demarcated, each VIDCO would have to spearhead its own consolidation plan. The report notes a number of potential problems, such as a lack of legal basis for the VIDCOs in enforcing the village boundaries delineated.

The mention of participation is well advised, but effective entry will need a solid legal basis and will, in any case, be hard to achieve. Old habits of "educating" the peasants die hard. VIDCOs should not only spearhead their own consolidation plans, but should be able to implement elements selectively (for instance, consolidation of grazing areas only) or decide to do no such planning at all. This emphasis on the need for local input is especially advisable because some elements in the planning process seem questionable. "Villagization," in particular, has had a poor record elsewhere. While it is recognized that these plans are not nearly as radical as those in Tanzania, that is, they ask only that houses be moved together,

the need even for this must be assessed critically. Delivery of services can be facilitated by villagization, but there is every reason to provide the services first and then allow farm households to move near them, rather than pressing for consolidation of villages in advance of the delivery. There are also potential costs, in terms of productivity, in moving farmers off their holdings, particularly in less efficient use of labor and animal traction. Farmers should be given the chance to weigh these costs and benefits themselves.

Consolidation of farmland is intended to avoid some of these potential inefficiencies in labor and animal use, but it, too, has a down side. Farmers pursue opportunistic strategies by farming little pockets of land where there are better soils and moisture. By operating a fragmented holding, they sometimes get access to different soils, retard the spread of pests and crop diseases, and, in mountainous areas, get access to different microclimates. Fragmentation of arable holdings can be a risk-avoidance strategy at both the household and the village level (Bruce 1986, pp. 43-45). It is not at all clear, as a general proposition, that consolidating arable land in a block will increase productivity per hectare or efficiency in input use.

Consolidation of pastureland is a precondition for gaining control over land use for livestock grazing. One can be skeptical about the accuracy of current carrying capacity estimates, as is Cousins (1990b, pp. 16-19), but in the long run such control is essential. Consolidation, however, will be a long-term investment. It is a very long way from the designation of discrete grazing areas to effective control over their use through enforcement of a paddock system or stock limitations. Support for a grazing association and a consolidated pasture may help reduce the labor demands of livestock management and "secure preferred access to pasture in circumstances of land inequality" among communities, but not necessarily result in better pasture management (Scoones and Wilson 1989, pp. 105-07). Common property management requires effective local institutions. Because there do not appear to have been traditions of communal management of grazing in Zimbabwe, but rather the "free-for-all" situation usually described as "open access" grazing, this task of institutional innovation is likely to be difficult. Cousins (1990b) very correctly directs attention to "co-management" models rather than paradigms that stress the role of either government or community to the exclusion of the other. However, co-management is an idea whose time has come, not a model for which there are many working examples. It requires significant autonomy for the grazing associations, but there is little sign of real empowerment in the few grazing-committee constitutions or bylaws available. Gutu District in Masvingo Province has adopted the pattern bylaws. The conditions for the Makumbe Vela Management Scheme there state some specific rules, but for the most part rely on plans to be developed by (part 4): (1) the grazing capacity of the scheme will be determined annually; (2) the grazing system to be used in the scheme will be devised; and (3) the community should strictly adhere to the grazing regime scheduled.

Two other grazing-scheme bylaws are reproduced by Cousins (1987, pp. 93-96). They do not defer quite so broadly to AGRITEX and yet still do not convey a solid sense of the *rights* of the grazing associations or their governing committees. Cousins (ibid.) found that written bylaws did exist for a large majority of the mature schemes which he studied. On the

other hand, alternate sets of popular rules had often developed parallel to the official bylaws. Cousins (ibid., p. 81) concludes that this institutional framework of elected committees, a set of agreed-upon bylaws, and a fair degree of authority in the hands of local government committees embodies considerable ambiguity and stands in need of clarification.

Cousins (1990b), in a paper on communal area grazing, draws attention to two important points, inter alia: (1) the creation and management of grazing commons is not primarily a technical planning exercise but is social engineering, that is, the creation of patterns of behavior through new rules and institutions to enforce them; and (2) the constructive development of institutions must proceed on the basis of technical facts about which those interested can come to agreement, and there are still real doubts about the adequacy of our notions of carrying capacity.

If an adequate institutional basis for commons management could be instituted, are fundamental changes in legal assumptions needed? Cliffe (1986) suggests that people with good jobs should be excluded from running livestock on the communal pasture, and the National Symposium on Agrarian Reform (MLGRUD 1987, p. 29) made a similar recommendation with respect to those who do not cultivate. These are often the largest stock owners, men of influence in the community. It would need to be clear what was to happen to their livestock if they were excluded from communal grazing. A very strong and democratic institutional structure would need to be developed to stand a chance of enforcing such a policy in the face of outright opposition and the fairly obvious subterfuges which would be utilized (e.g., token cultivation, lending of stock to relatives).

If commons management is such a difficult business, why is this approach being taken at all? Why not individualize pasture? In areas of high rainfall, the National Symposium on Agrarian Reform (MLGRUD 1987, p. 24) recommended its consideration. As Cousins (1990b) suggests, the issue is whether it is possible to have the feed resources for each family to have its draft power and still have room for all the families. The preconditions for a positive answer would appear to be: (1) intensive fodder cropping; and (2) an operation profitable enough to justify investment in a water source, which probably suggests a mixed farming operation with a dairy component. Individualization is not a relevant solution in the more arid areas, where a return which would justify the water source investment on an individual holding basis would require large-scale ranching similar to Botswana's Tribal Grazing Land Policy. The exclusion of large numbers of traditional users would be too high a cost to pay, and in any case the commercial ranch model should be approached cautiously until a better sense is gained of why it has not performed well in Botswana.

The above analysis is a more skeptical assessment of land use planning and consolidation than that of the World Bank (1986, p. 31), which argued that a nationwide land-use planning program which deals with large contiguous areas was needed, on the grounds that "as long as grazing schemes are isolated experiments surrounded by the much larger and universally accepted communal grazing system, there is no way to prevent non-members from encroaching on the grazing scheme and the members from reverting to the traditional grazing system outside the scheme," especially in times of stress. An argument that government must

control all land to control any land is an contention for reassessing our objectives. Even in countries where very considerable donor resources have been placed behind similar programs, as with the regional development areas (RDA) program in Swaziland, production and commercialization results appear to have been negligible. There the land consolidation element was dropped out of the program in its later stages (Funnell 1982).

These problems suggest a very cautious approach to land use planning. The proposal by the National Symposium on Agrarian Reform (MLGRUD 1987) is sound: authority for regulation of land use would be devolved to the VIDCO level. The IDCOS would be reconstituted **by kraalhead** *(sabhuku)* areas and given appropriate legal powers. The management of the commons, including grazing land, would be undertaken by the VIDCOs should be free to decide how they wish to administer their commons. Simple illustrative legal forms and extension materials should be made available, but the should be free to modify the models. A VIDCO should be able to decide which categories of land should be consolidated, if any. Once VIDCO areas are demarcated, a very useful first step, each community must be encouraged to take charge of its own resources. The role of local government should be to provide effective enforcement of VIDCO decisions where necessary. Communal areas should not remain vested in the state but be controlled by the communities themselves. This is perhaps the only way forcefully to establish local community responsibilities for land resources.

In addition to basic legislation to define the roles of WADCOS and IDCOS, the present legal framework for bylaws would need to be modified substantially. Rural district councils can adopt the model bylaws or make regulations of their own for the preservation and conservation of natural resources, the protection of common property, and the location and situation of structures (Rural District Councils Act 1988, Schedule II). Government has enacted the Communal Land (Model) (Land Use and Conservation) By-Laws 1985, which provide a framework within which the district council adopting them can prepare a plan for all the communal land within the council area, or any ward or combination of wards or any part of a ward or wards, or any village development committee area or areas. The council is to prepare a plan for an area under a VIDCO when requested by the VIDCOs. Consultation with local residents is enjoined by SEC. 4 of the bylaws, but the plan can be approved over community objection, if necessary. There is provision for a review of approved plans by the provincial administration in all cases, whether or not an objection was made—but with a note of objection where one has been made—but no provision for an appeal.

The model bylaws set out powers to plan and control land use which are very extensive. There is no specific provision for the delegation of these powers from rural district councils to WADCOS or IDCOS, not in the model bylaws, the Communal Land Act, or the Rural District Councils Act. Once a district adopts the model bylaws promulgated by the ministry, they are in force throughout the district without further action at ward or village level (Rural District Councils Act 1988, SEC. 92). The legal approach requires reconsideration.

4.3 LEGAL DIMENSIONS OF LAND ACQUISITION

4.3.1 THE LANCASTER HOUSE CONSTITUTION, 1981

One of the factors limiting land acquisition for resettlement has been legal. The Lancaster House Constitution, Zimbabwe's 1981 independence constitution, contained an entrenched provision (not susceptible to amendment or repeal for a period of 10 years) which sought to protect European landowners against confiscation of their lands. That provision, SEC. 16, stipulates in sub-section (4) that no property may be acquired compulsorily except under a law which requires: (1) adequate notice; (2) public necessity, which specifically includes settlement for agricultural purposes, in the case of land which is underutilized; and (3) prompt and adequate compensation. There is also a requirement that the owner have the freedom to remit overseas the whole of any compensation [SEC. 16(5)]. It is stipulated that these provisions are not intended to interfere with acquisition by government of derelict land [SEC. 16(7)].

Before the constitution expired in April 1990, this provision was often cited as the principal limitation of the government's program of land acquisition for resettlement on a willing buyer-willing seller basis. It does not explicitly do so, but has had that effect because it limits compulsory acquisition to underutilized land and requires that there be a law on such acquisitions which complies with the constitutional restrictions. That law, the Land Acquisition Act, was not enacted until four years later, in 1985. In the interim, government had no choice but to proceed with land acquisition on a willing buyer-willing seller basis. This basis limited government to what land was offered to it with a (perceived) consequence that the land which was offered in the early years was largely situated in the arid NRs IV and V.[13]

4.3.2 THE LAND ACQUISITION ACT, 1985

This act was the government's response to the constitutional requirement of the law on compulsory acquisition which meets the constitutional criteria. It provides for compulsory acquisition of underutilized land, but contains other provisions which have in practice been more important. The president may acquire: (1) any land compulsorily for settlement for agricultural purposes, where the land in question is underutilized; and (2) land which has been declared derelict (SEC. 3). Underutilization is defined as failure to substantially put the land to appropriate agricultural use for a continuous period of three years, taking into account the extent of the development of the area and disregarding any interruptions of use due to public disorder or disaster (SEC. 14). Derelict land is land which has been abandoned by the owner, a determination made taking into account factors such as nonoccupation, noncultivation, inability to locate owner, lack of control by owner, nonpayment of local rates, and so forth (SEC. 16). An owner may demand the acquisition of the whole of a property, where

13. The reality, as documented in ch. 5, is that the government was offered higher quality land but refused many offers because farm sizes were deemed to small and/or prices too high.

government seeks to take a portion of it for underutilization and the taking would render the remainder unsuitable for use (SEC. 12).

A requirement of prompt, adequate compensation is stated in principle for both underutilized and derelict land (SEC. 19), but after relatively straightforward statements, which seem to imply market value as the standard, wording is used in relation to judicial review of the adequacy of compensation which confuses matters considerably. The court is to endeavor to arrive at compensation which is "fair and reasonable, having regard to: (i) the right of the claimant to be paid compensation for the land, materials, interest and right in the land concerned, as the case may be; and (ii) the general public interest in the acquisition of the land, materials, interest or right in the land concerned, as the case may be . . ." (SEC. 22). The provision appears to allow for a reduction of compensation where the acquisition is based on a strong public interest. There have been no court decisions construing this provision and a lack of practice to indicate how the government interprets it.

Through 1989, the provisions on underutilization had not yet been used to acquire land, though small amounts of derelict land had been seized. The reasons appear to be primarily: (1) the difficulty of judgments concerning underutilization; (2) the fact that the act defines underutilization very broadly (as no substantial, appropriate agricultural use), seriously limiting its utility for acquiring land; and (3) the difficulty which government would have in meeting the constitutional requirement (not mentioned in the act but still very much in force) of freedom to remit compensation overseas. As a result, almost all land acquisition for resettlement has continued to be on a willing buyer-willing seller basis. That basis, it should be noted, has the major advantages of not requiring the government to identify or prove underutilization and not requiring overseas remittance of compensation.

The most important provision of the Land Acquisition Act from a practical standpoint has been a provision which facilitates acquisition of land by giving the MLARR the right of first refusal over any land (in the LSCS) which comes on the market. The owner of any rural land may not sell the land unless he first offers it to the ministry and the ministry issues a "certificate of no present interest" or fails to respond with an acceptance or a counteroffer within 30 days (SEC. 6, 7). If a price cannot be agreed upon, the ministry must, within 14 days after the failure of the negotiations, either issue a certificate of no present interest or proceed to acquire the land compulsorily, if it is underutilized, or if a provision in the owner's title deed gives the government the right to resume ownership of the land.

The act also reaffirms the right of the state to take advantage of any provision in a deed of grant of land which entitles the state as grantor to resume ownership in certain circumstances (SEC. 4). The provision has not been widely used and seems unlikely to become a quantitatively important means of acquiring land.

4.4 LEGAL DIMENSIONS OF RESETTLEMENT

4.4.1 MODEL A

The land tenure system in model A schemes is based on three permits issued by the plan for land use: a permit to reside, a permit to cultivate, and a permit to depasture stock. The permits are issued under the legal authority of SEC. 6 of the Rural Land Act (CAP 155), which confers broad authority on government to lease or alienate state land. An alternative basis would have been SEC. 11 of the Agricultural Land Settlement Act (CAP 137), which in many ways seems the more logical provision for government to have relied upon, but it may have been avoided because some of the statutory provisions on leaseholds are rather specific and would have reduced government's area of discretion in framing tenure arrangements.

The above permits confer broad rights to the MLARR but remarkably few rights to the permit holder. In each case, the use of the land is strictly limited to the purpose for which the permit is granted, and the permit holder renounces any right to build upon, cultivate, or depasture livestock on the grazing commons. In the permits to reside and cultivate, the ministry may at any time and without notice replace the permit, may terminate the permit for failure to observe its terms, and may terminate for any reason if compensation (as the minister may determine) is paid. In the permit to depasture stock, it is specified that the minister is the sole judge of reasons for termination. In the permit to reside, it is specified that on expiry or revocation there will be no compensation for improvements, though they may be removed. (No period is stated in the permit, so it is difficult to see how it would "expire.") In the permit to cultivate, compensation claims for improvements are avoided by prohibiting the holder from constructing any building or other structure on the arable land. None of the permits states how long it remains valid and there is no blank in which to enter the duration. One suspects that they are technically terminable at the will of the government unless the contrary is specified. Cusworth and Walker's evaluation (1988, p. 85) suggests, however, that these permits were initially granted for a five-year period and that in many cases a second set of permits has been issued.

It would be difficult to imagine a less secure form of tenure: uncertain duration, broad powers of termination on the part of the MLARR, and few rights to compensation for investments. On the other hand, the permits are not highly prescriptive. They do not specify a plan of operation with which the holder must comply, but rather refer to general responsibilities and duties under specified laws. There is no sense of a command cultivation system enforced through the permits. But the very vagueness of the requirements render it administratively difficult to assess whether or not they have been met, and potentially exposes the settler to arbitrariness.

How far has insecurity of tenure affected settler commitment and investment? Kinsey (1982, p. 108) expressed concern on this point early on, as has Cheater (1990, p. 15) more recently. Cliffe (1986, p. 92) notes some evidence that settlers have a sense of insecurity under the permit system. The ministry has sometimes tended to dismiss these concerns: "It is now clear that settlers are psychologically secure in their holdings in spite of the

theoretically short-term nature of the permit system" (MLRRD 1985, p. 13). But a year later, the "Communal Lands Development Plan" noted "an anxiety on the part of the settlers on whether they will stay on the schemes permanently," a problem which the report attributes to "the implementation and interpretation of the permit system" (MLARR 1986, p. 64). The Cusworth and Walker (1988, p. 90) evaluation of the resettlement program two years later indicated adequate security of tenure, citing the building of houses and the planting of fruit trees by the settlers. At present there does not appear to be substantial fear on the part of the settlers that they will be dispossessed, an understandable perception as there have been virtually no evictions.

Has credit been constrained by lack of a marketable title? Short-term seasonal loans and medium-term loans (up to 5 years) have been available for purchases such as Scotch--carts, draft oxen, fencing, and implements (MLRRD 1985, p. 26). Cliffe (1986, p. 50) reports 60 percent of settlers receiving AFC loans (as opposed to 10 percent of communal area farmers), with the average loan being Z$480. Loans for buildings and other long-term improvements on the land do not appear to be available from AFC, however, and lack of mortgageable titles is one reason—among others—why commercial banks will not meet this credit need. Availability of land security for loans would potentially make it less expensive for government to extend credit for these purposes.

The scant evidence on these issues has not prevented commentators from suggesting directions the system should take in the long run. There does appear to be a consensus, shared by the MLARR, that the permits are not an adequate long-term solution, and that the fragile tenure associated with them carries with it the potential for abuse by administrators, whether or not such abuse has so far occurred. The "Communal Area Development Plan" (MLARR 1986, pp. 47-48) recommended that permits should be granted initially for 5 years, then converted to a lease for 25 years with an option to extend to 99 years. The leases are intended to be mortgageable interests. A similar proposal for leasehold has been made by the union of communal area farmers (National Farmers Association of Zimbabwe 1989, p. 10). Cliffe (1986, pp. 92-93) recommends a system of community rather than state control of land, urging that it can allow for reallocations of land over time to cope with new households and for reallocations which may be required in attempts to intensify land use. Bratton (1990) recommends either an ownership which prevents owners from subletting or selling to anyone but another smallholder, or a 99-year lease which is transferable within the family. A recent joint memorandum from the presidents of the three farmers unions (Joint Presidents' Agricultural Committee 1990, p. 3) makes the strong recommendation that "future resettlement must provide absolute security of tenure to the farmer, by way of a lease convertible to title." Further, it makes a striking suggestion that some of the direct costs of farm development be recovered from the beneficiaries over 40 years.

In the absence of good information on what settlers want in Zimbabwe, there is some virtue in examining the experience of other African countries. Historically, settlement schemes in Africa have generated strong demands for inheritability as the initial generation of settlers has aged (Bruce 1986, pp. 98-100). There is every reason to anticipate that this will be the issue raised first and most strongly in Zimbabwe. In addition, recent World Bank

studies in Ghana, Burkina Faso, and Rwanda, exploring the impact on investment and productivity of increments in tenure security, have found that the most significant effect occurs with the establishment of inheritability, rather than with the later establishment of alienability (Place, Hazell, and Lau 1990, pp. 32-33).

The objective should be to ensure that settlers enjoy the same intergenerational security of tenure as do holders of communal land. This means an indefinite term, perpetually granted and largely free of provisions for termination by the state. Should subdivision of these holdings among heirs be permitted? While it is tempting to seek to limit subdivision, the practical difficulty of enforcing such a provision, as experience in other countries, makes this a moot question.

Should leasing and borrowing be permitted? As in the communal areas, provisions need to be made to provide an orderly basis for such transactions. They serve a very legitimate function in case of illness or as households age. However, it is important that sales of holdings be strictly limited for some substantial time, perhaps 20 years. Otherwise, some will apply for land in the resettlement schemes with the intention of shortly taking a profit by selling the land.

Women's access to land, via the permits, is an important issue. It is possible for a female head of household to have permits issued in her name. Settler selection criteria gave priority to widows and other female heads of household as beneficiaries because of their poverty and the disadvantages under which they cultivate in the communal land sector. Ministry policy specifically affirms that in resettlements, women should have the land assigned to them in their own right (MLA 1985, p. 23). However, a 1988 study (Chimedza 1988, p. 53) found that only 7 percent of permits had been issued to such women, and model schemes are reported to have proportionately more male heads of household than those in communal areas (Gaidzanwa 1988, p. 12). This last observation is not surprising, since male heads of household (on resettlement schemes) are prohibited from taking employment elsewhere. In the case where there is a male head of household, the permits are issued in his name. If the household head contravenes the regulations and loses his holding, so do his wife and family.

As in the communal areas, the clearest need is to establish firmly the rights of widows and divorcees. Presently, if a settler dies, the widow is usually allowed to maintain the holding, not as a matter of right but as a matter of administrative discretion on the part of the scheme administrators. A divorcee usually leaves the scheme and rejoins her father's people (Gaidzanwa 1988, p. 12).

There have been proposals for the issuance of the permit jointly to husband and wife (Chimedza 1988, p. 10), but this appears to contravene SEC. 8 of the Rural Land Act (CAP 155), which prohibits leasing or alienating land to two or more individuals jointly without the consent of the minister (Maboreke 1990, p. 11). The standards for such a consent are not clear, but one supposes that a blanket consent for all husbands and wives would be legally feasible if a case could be made for it. There have also been proposals for separate allocations

for husband and wife, but, given the instability of marriages, there has been concern that this would in the end result in too many substandard holdings (Pankhurst and Jacob 1988, pp. 211, 222). Given instability of marriages and the tendency toward subdivision, the same problem can be raised with a joint permit, but it has less force in that case.

4.4.2 MODEL B

The legal instruments for assignment of land in a model B scheme differ from those in model A. A permit to occupy is issued to the cooperative. It is for an unspecified period and is revokable in the minister's sole discretion if he concludes that the cooperative has failed to make proper, beneficial use of the holding; if the cooperative ceases to be registered as a cooperative society; if the financial affairs of the cooperative are such that it is no longer able to pursue its objectives; or if its membership falls below fifty. As in the case of individual holders in model A schemes, there is an obligation to comply with a number of laws relating to husbandry and conservation. The cooperative cannot without the consent of the minister erect any building; carry on or allow any person to carry on a trading, commercial, or industrial operation on the holding; or cut or remove indigenous trees from the holding. In case of expiry or revocation of the permit, the cooperative is entitled to no compensation for improvements, though the improvements may be removed. The bylaws of the cooperative cannot be changed without the written approval of the minister.

A second legal instrument is a temporary permit to cultivate, which appears to be for the 0.5-hectare individual plots permitted to cooperative members. It resembles very closely the "permit to cultivate" held by model A settlers, except that it limits the right to cultivate to one year and makes no mention of renewal. It also contains a prohibition of subdivision which, strangely, has no parallel in the model A permit to cultivate. There are no permits which correspond to the model A permits to reside or depasture stock (MLRRD 1985, pp. 71-76).

It is difficult to believe that the very fragile tenure provided in the cooperative's permit to occupy does not have some disincentive effect. This is particularly true given that the state of land utilization and financial position of many cooperatives leave them quite vulnerable to termination at the discretion of the minister. Cliffe (1986, p. 53) notes that tenure insecurity may be an inhibiting factor to cooperators committing themselves to long-term improvement. As in the case of local communities in the communal areas, the soundest approach may be to empower these cooperatives by granting them freehold title over the land they have been assigned.

Cliffe (1988) suggests that the reform needed is not just a matter of defining more clearly the rights of the cooperative entity, but of delineating the rights of the cooperators as they join and leave the cooperative. He suggests a review of the law on cooperatives. A statute intended for multipurpose cooperatives on the Western model does not meet the needs of a production cooperative. That law should protect the interests of individual cooperative members, as Cliffe suggests, but should also confer on them collectively a large degree of freedom to change their bylaws, to determine the extent to which they desire to cooperate,

and to permit them, if they wish, to dissolve the cooperative and divide its assets among themselves.

Model B schemes present a distinctly different set of issues concerning women's access to resources. In the cooperatives, women participate as members in their own right. Indeed, the issues have little to do with tenure, and, on the critical issue, how women fare in decision-making about resources in the household, there seems to be little or no information.

4.5 LAND TAXATION

A system of land taxation over freehold land has been in force for some time, that is, the system of land development levies which has been used to meet the costs of district administration. The legal basis for the system of rates and land development levies has recently been renewed in the Rural District Councils Act, No. 8 of 1988. This rating system applies not only to freehold land, but to certain specified classes of communal land: land which under SEC. 10 of the Communal Land Act 1982 has been set aside by the Minister of Local Government and Town Planning by notice published in the *Gazette* for purposes such as a township, business center, village, industrial area, or irrigation scheme (SEC. 95 of the Rural District Councils Act).

For urban property, the act provides for imposing a supplementary charge to cover the expenses incurred by the council in the maintenance and administration of the area. The council may issue bylaws to this effect and base the charge upon any unit of land or, alternatively, a unit of residential or business accommodation. The council can vary the charges according to the tenure under which the property is held, the value of the property based on the value of the land and/or improvements, the area of the property, and the use to which the property is put (SEC. 89).

For rural property, a council may impose a land development levy on all owners of rural land (freehold land or communal land set aside by the minister) in accordance with the Third Schedule to the act, or, as a rate, in the same manner as urban land; or may in a communal or resettlement ward impose a development levy on household heads, assessed on a per-capita basis (SEC. 96). It may also, with the approval of the minister or at the direction of the minister, impose a special land development levy or a special development levy to recover expenses of a development project or service, or to meet expenses of an unusual nature, or which arise from unusual circumstances or from an unequal demand on services provided by the council. Rules on assessment for the special levies are the same as those for the regular levies (SEC. 97).

A majority of rural district councils (39 of 42) base their land development levies on the unit taxes provided for in the Third Schedule to the act (rather than a rate system). The scales for the land development levy are set out in SEC. 2 of the schedule to the act. That provision permits a council in any given year to choose from two scales. One scale is a flat

rate applied on total farm area. Farms pay 1 tax unit for every 405 hectares of land, or part thereof. The second scale is a progressive rate: between 0 and 20 hectares, 0.5 tax unit; and 20-1,619 hectares, 1 unit. Beyond 1,619 hectares, additional taxes are levied progressively: for the next 809 hectares, 1.2 units; next 2,024 hectares, 1.5 units; next 2,024 hectares, 1.0 unit; next 4,047 hectares, 1.0 unit; next 4,047 hectares, 2.0 units; next 8,094 hectares, 12 units; next 16,188 hectares, 32 units, and beyond 40,470 hectares, 1.0 unit for each 405 hectares. The value of the unit is decided upon by the respective councils, but has to be approved by the Ministry of Local Government. Tax rates levied by rural councils in 1989 are shown in table 4.1. Rates average Z$220-to-Z$258 in higher rainfall zones of Mashonaland, and Z$58 in Masvingo (mostly NR V).

TABLE 4.1

Tax rates levied by province, 1989

PROVINCE	TOTAL NO. TAX UNITS	RATE PER TAX UNIT (Z$)
Manicaland	163	7,759
Mashonaland Central	258	4,355
Mashonaland East	230	5,929
Mashonaland West	220	7,753
Matabeleland North	58	9,133
Matabeleland South	80	2,448
Masvingo	58	4,276
Midlands	67	4,427

A council may elect to utilize a rate basis for rural land rather than the scales under the Third Schedule. Three councils do so (Chipinge, Chiredzi, and Kwekwe). A rate is levied on the assessed value of the land, which should reflect its agricultural potential, including the possibility of irrigation. The rate charged is a percentage of the assessed value of the land. In Chiredzi, the rate is (on average) 0.5 percent of the value. To adjust for the differences in the degree to which different parts of the community draw on the resources of the council, the rate varies from 0.25 percent to 0.9 percent. The 1986 Commission of Inquiry into Taxation concluded that the rating system distributes the burden more evenly, especially where there are important variations in the potential of land. It also permits revenues to be increased substantially without hurting the owners of land with low potential. The cost of the evaluation exercise in Chiredzi was said to have been recouped in one year (Zimbabwe Commission of Inquiry into Taxation 1986, p. 229).

Chapter 5

LAND MARKET AND CHANGES IN AGRARIAN STRUCTURE

5.1 RATIONALE FOR A LAND MARKET-BASED REFORM

The very large farm size of the LSCS was a product of the size of the original grants of land to European settlers. Cliffe (1986, p. 43) is worth quoting at length on scale of these large farms:

> The presumption is that they are "economic units" whose size of operation embodies certain economies of scale. In fact, historically, their size came about in a very haphazard way, partly derived from Afrikaner custom in 19th century South Africa, in part so as to deny land to Africans even if not used. The only economic "logic" to any of them is in the case of those farms that have come into existence as a result of sub-division (or the refusal of subdivision, for permission has always had to be sought from government). The criterion for sub-division, as also seemed to have been the case with new allocations post-World War II, is on the basis of guaranteeing a certain *income* level to the owner/manager. Thus if their existing scale of operation has any rationale, it is an underlying socio-political judgement about what income large farmers *deserve* rather than one based on the economics of production. In fact, a common practice is for farms in areas with good arable potential to have **a** portion intensively farmed and the rest used for only light grazing. There may be several reasons for this ("part-time" farming, speculation, etc.) but the World Bank review was probably right in suggesting a "management constraint"—that the present average cropped area in the Lscs sector, 130 hectares, is probably close to the optimum farm size in terms of cropped hectares that can be successfully managed by a farmer and his family (with existing mechanical equipment), when considering the particular crops grown—part of them irrigated—and also taking into account that many of the farms run livestock as well.

The illusion survives among Zimbabwean policymakers that mechanized and modernized agriculture is possible only under large-scale or cooperative farming systems. The myth of large-scale efficiency was central to the ideology of colonial agriculture in the settler colonies and may have been reenforced by the Marxist faith in efficiencies of scale. It is obvious that settler agriculture in Zimbabwe achieved levels of productivity which were impressively higher in at least limited areas of the large-scale operations. But it is equally obvious that for historical reasons, large scale went together with access to improved technologies, extension services, markets, and subsidies. The impact of these factors is commonly confounded with those of scale itself.

Empirical research which attempts to isolate scale as a factor has reached very different conclusions. An inverse relationship between scale and productivity per hectare for most crops has been documented by Berry and Cline (1979). While most of the evidence

comes from Asia, the available African data suggest that the relationship may hold there as well (Levi and Haviden 1982). Greater investments of household labor and the efficiency advantage of that labor over wage labor appear to more than compensate for potential economies of scale, which in practice are usually unrealized (Carter 1984). Even where yields per hectare are not greater on smaller holdings, the costly inputs required for large-scale production may mean that economic efficiency in terms of domestic resource costs may be greater on the smaller operations, as was recently found in Kenya and Malawi (Lele and Agarwal 1989). [14]

There are exceptions to this inverse relationship. While many traditional plantation crops such as coffee can be grown by contract farmers for a central processing facility, economies of scale in both processing and marketing for some plantation crops such as bananas are transmitted to the scale of farms via the necessity of tight coordination between harvesting and processing (Binswanger and Elgin 1988). Characteristics such as skilled management for commercial production in Zimbabwe are historically associated with large scale and confused with efficiencies of scale. The confusion is perhaps understandable given that the historical association is a reality which is not easily altered, and the scarce management skill can, for a variety of political and economic reasons, be lost with a reduction of scale.

What then is the efficient scale? An efficient scale for maize is likely to be quite different from that for horticulture, and will vary not only by crop but by land capability and capital and labor endowments of the firm. Market economies recognize that efficient size will vary with a multitude of factors and that any attempt to stipulate it will necessarily involve substantial inefficiencies. Farm size or scale is thus allowed to adjust through the operation of the land market.

5.2 LAND MARKET RESTRICTIONS—SUBDIVISION

There has been little opportunity for the land market to promote size efficiency in Zimbabwe. Dating from the colonial period, the Town and Country Planning Act (CAP 213) placed limits on subdivision. This is still the case under today's Regional, Town and Country Planning Act, No. 22 of 1976. A permit is required for any subdivision and for anything which might be an attempt to accomplish what amounts to a subdivision: an agreement for a change in ownership of any portion of a property; for a lease of any part for ten years or more or for a lifetime; for a right to occupy for those periods; or for a renewal of a lease or right to occupy which would take the period over ten years (SEC. 40). A permit may be applied for from the local planning authority, which is the rural district council (SEC. 10). If the permit is not granted within four months, it is deemed to have been refused. Appeals may be taken to a planning appeals board appointed by the Minister of Local Government (SEC. 61), and appeals on points of law, taken from the board to the Appellate Division.

14. The analysis of domestic resource costs in Zimbabwe is covered in ch. 7.

Within the Appellate Division, those appeals go to the administrative court established by the Administrative Court Act, No. 39 of 1979, from which appeals can be taken to the Supreme Court. About five subdivision cases a year on average come before the administrative court, and these usually concern urban properties.

An MLARR committee advises the Ministry of Planning regarding the viability of proposed subdivisions. AGRITEX participates and provides technical criteria. The committee has recently been reviewing its criteria, which have been relatively informal, in order to be able to demonstrate consistency. In general, the committee has not been willing to permit subdivision simply on the ground that the land would sell more easily and for higher prices per hectare in smaller units. There is a reluctance to allow parcels to be fragmented just for "speculative" purposes. There should be a purchaser, with capital and a viable project. The MLARR (in personal conversations) has suggested that there are not large numbers of potential black purchasers who would benefit from a relaxation of the subdivision criteria. Most of those interested would be businessmen who lack farming expertise and are involved with smallholdings not productive enough to warrant managers, unless tobacco is grown.

Further controls with respect to subdivision are built into the Rural Land Act (CAP. 137). Co-ownership is discouraged because of its potential for subdivision (each co-owner has the right to request "partition," subdivision of the co-owned land). The act provides that land may not be sold or leased to two or more individuals jointly without the consent of the minister. A sale to a corporate body, which as a single legal personality does not raise the specter of subdivision in the same way, is allowed (SEC. 8). Sharecropping is prohibited except with the approval of the minister (SEC. 10). The sharecropping provision appears to have been intended to prevent de facto subdivision of large holdings among sharecropping black tenants. A similar prohibition exists in South African law. Criminal penalties, including imprisonment for a period up to two years, are prescribed for contravention of these provisions (SEC. 11).

In time it is likely that a relatively free land market would break up many of the larger holdings in the LSCS, as has been the case in the former white highlands of Kenya. The persistence of land concentration owes a good deal to the limitations which have been placed upon its marketability through restrictions on subdivision. The same applies to underutilization of land. While underutilization of freehold land is sometimes blamed on the relative absoluteness of freehold tenure (one need not use it to avoid losing it), operation of a land market is the mechanism by which a freehold system attempts to ensure that underutilized land moves into hands which will use it better. Land markets rarely perform these tasks perfectly. Market imperfections abound in developing countries. But the land market, as the dynamic factor in a freehold tenure system, is critical to maintaining efficient scale and utilization. And the operation of a land market and its potential for redressing the highly unequal land distribution have been largely negated by public policy in Zimbabwe.

Beyond provisions on subdivision and underutilization, one further legal provision regarding the rules of inheritance restricts land markets in the SSCS sector. The 1933 African Wills Act specified that in the absence of a will, the senior male heir at customary law would

inherit the entire land in his individual capacity (rather than as a representative for a larger group of heirs). While customary rules imposed a duty to try to accommodate siblings and their descendants who stood in need of land in order to subsist, a study in the 1970s found that the number of siblings and their offspring in the SSCS sector was small and decreasing with time. In fact, heirs of these farms have required the approval of the state even after the title has been granted. In the past, successive native land boards have invalidated the provisions of black landowners' wills which attempted to bequeath the land to more than one heir, individually or collectively. This particular restriction was removed by the Africans Wills (Amendment) Act 1976, but in practice little seems to have changed. Local administrators still attempt to ensure that SSCS farms are inherited by single heirs (Cheater 1982, pp. 77, 86). Where subdivision on the record is restrained, it takes place anyway but off the record, leading to patterns of use and perceived rights which have little to do with what can be proved under the Deed Registries Act. If this is the case to the extent suspected, a program of resurvey, title adjudication, and re-registration may be necessary. If a more focused inquiry found extensive confusion of titles in the smallholder areas, enactment of a land adjudication act of the type used in African countries with title registration systems would be appropriate as a basis for restoring the integrity of the title deed system in these areas. Such a statute would also be needed if a systematic extension of the title deed system to parts of the communal lands were desired.

5.3 LAND TRANSFERS

The performance and operation of land markets in the communal areas is difficult to assess due to the paucity of data. According to MLARR officials (personal conversations), land transfers in the LSCS have been rather modest. While some speculative buying has been occurring in peri-urban areas in recent years, most of the transactions are between fathers and sons. Thus far, there are no signs of the emergence of the land-buying companies which played such a major role in the transfer of white settler land to black farmers in Kenya. In terms of racial balance, new large-scale operators seeking to buy land in the LSCS run two black purchasers to each white. There is not much market action in the SSCS, and what there is does not seem to involve scaling-up. There is little leasehold market activity because those who want land on lease want smaller units, for which the Rural Land Act requires the owner to get a subdivision permit. With appeals, obtaining the permit can take several years.

From independence until April 1990, the government acquired land from the LSCS on a willing buyer-willing seller basis. The Land Acquisition Act, enacted in 1985, designated government as the buyer of first resort, thereby requiring sellers first to "offer" land to the government at the sale price. These processes for land purchases have been criticized by government on three grounds: the land market provides too few transfers and too little land for resettlement; land prices are excessively high and speculative; and farm sizes are too small for resettlement.

5.3.1 LAND PURCHASES AND OFFERS (LSCS)

The argument that the land market is not sufficiently robust to bring about redistribution of land, or to facilitate the redistribution of the highest quality land, appears to be overstated given available data. The land market based on voluntary sales has been quite effective in redistributing land since independence. Between 1979 and 1988, land acquisition has reduced the total number of farmers in the LSCS from 6,113 to 4,660, and total land area, from 15.1 to 11.2 million hectares (table 5.1). The percentages of farm numbers and areas by farm size category remained fairly constant between 1979 and 1988, indicating that the land market did not discriminate against farm size or natural region. Land acquisition through the land market has enabled the government to get high quality land; over 57 percent of the land acquired was located in NRs I, II, and III, equivalent in percentage terms to the proportions held by farms in the LSCS .

Also, between April 1986, when the government first started compiling records on "offer-of-sales," and September 1989, 1,691.0 million hectares had been proffered to the government on a willing seller-willing buyer basis, excluding farms < 100 hectares in size. Of this total, 541,128 hectares were ultimately purchased by the state (MLARR). For those offers rejected, data are provided in table 5.2 on the characteristics of two separate samples: (1) parcels greater than 100 hectares offered to the government between April 1986 and September 1989; and (2) farms greater than 300 hectares offered to the government during the same time period.

Three salient points are striking. First, a large number of farms have been offered to the government. While the total figure is not known, data from sample 1 indicate that at least 1,856 offers were made. Second, nearly 53 percent of these offers were for parcels located in the high rainfall areas of NRs I and II. If NR III is included as well, total area offered but rejected was in excess of 67 percent. Third, the land market indicated by offers continued to remain robust through September 1989 (sample 2).

If land is coming to market, why has the government not participated more strongly as a buyer? In the past, a number of reasons have been given by the Land Identification and Selection Committee: (1) land in NRs I and II is too expensive; (2) land is not offered in large enough blocks to justify scheme development; (3) land in NR IV is not suitable for human settlement because of low or erratic rainfall; and (4) land in NR V is suitable only for livestock and game ranching (personal conversations, MLARR). Of these, factors (1) and (2) are considered to be the most important.

5.3.2 LAND PRICES

The price of real estate is a function of many factors, including location; access to markets; land characteristics (soil fertility, slope, rainfall, access to water, and fixed capital improvements); general price inflation in the economy; and use value or profitability of land in agricultural production. Land prices may exceed the implicit value of land in agricultural

TABLE 5.1

Structural change in the large-scale commercial sector, 1979-1988

SIZE CATEGORY (ha)	1979		1984		1988	
	Number (#)	Area (ha)	Number (#)	Area (ha)	Number (#)	Area (ha)
< 200	1,324	104,674	1,410	105,202	947	75,136
200-399	445	125,805	435	124,197	367	104,000
400-599	446	220,176	415	206,161	392	192,344
600-799	425	294,387	363	249,640	356	246,837
800-999	423	374,916	346	307,438	348	309,067
1000-1999	1,372	1,931,189	1,156	1,624,882	1,063	1,491,043
2000-3999	905	2,503,591	748	2,056,633	673	1,853,162
4000-5999	289	1,425,735	222	1,089,370	182	893,705
6000-7999	142	974,229	126	866,023	99	687,039
8000-9999	100	888,225	264'	5,843,440'	233'	5,361,053'
z 10,000	242	6,223,289				
Total	**6,113**	**15,064,216**	**5,485**	**12,472,986**	**4,660**	**11,213,386**
		Comparable percentages of land area				
< 200	21.7	0.7	25.7	0.8	20.3	0.7
200-399	7.3	0.8	7.9	1.0	7.9	0.9
400-599	7.3	1.5	7.6	1.7	8.4	1.7
600-799	7.0	2.0	6.6	2.0	7.6	2.2
800-999	6.9	2.5	6.3	2.5	7.5	2.8
1000-1999	22.4	12.8	21.1	13.0	22.8	13.3
2000-3999	14.8	16.6	13.6	16.5	14.4	16.5
4000-5999	4.7	9.5	4.1	8.7	3.9	8.0
6000-7999	2.3	6.5	2.3	6.9	2.1	6.1
8000-9999	1.6	5.9	4.8	46.9	5.0	47.8
z 10,000	4.0	41.2				
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

a. More than 8000 ha.

Source: For 1979 and 1984, Zimbabwe, *Crop Production of Large Scale Commercial Farms* (Harare: Central Statistics Office); and for 1985, Central Statistics Office.

TABLE 5.2

Sample of land offers refused by the government

	NO. OF OFFERS	TOTAL AREA OFFERED (ha)	AVERAGE FARM SIZE (ha/farm)	AVERAGE ASKING PRICE (Z$/ha)
1. Total number of offers, parcels° > 100 ha				
NR I	28			373
NR II	955			446
NR III	266			**46**
NR IV	560			52
NR V	47			20
2. Random sample of offers, parcels > 300 ha				
1986:				
NR I	3	5,696	1,899	99
NR II	14	12,042	860	140
NR III	10	21,780	1,278	64
NR IV	**8**	12,496	1,562	39
NR V	**4**	9,646	2,412	28
1987:				
NR I	3	1,115	372	**174**
NR II	26	30,702	1,180	180
NR III	11	19,621	1,784	118
NR IV	13	26,963	2,074	33
NR V	3	21,819	7,273	30
1988:				
NR I	3	1,312	437	374
NR II	28	65,344	2,334	129
NR III	14	18,298	1,307	100
NR IV	11	17,456	1,587	45
NR V	10	67,678	6,768	21
1989[b]:				
NR I	2	2,271	1,136	139
NR II	23	21,379	930	446
NR III	5	10,570	2,114	45
NR IV	9	11,775	1,308	52
NR V	3	11,199	3,733	18

a. Random sample from the period April 1986 to September 1989 (MLARR data).

b. Data through September only.

production for resettlement if: the urban (or infrastructure) land value exceeds the agricultural value; general price appreciation from inflation exceeds the nominal interest rate on interest-bearing deposits; or general price inflation is greater than the growth in agricultural profit. When it is stated that the land price is "too high," the implicit meaning is: these nonfarm factors that influence land prices are not acceptable determinants of rural land prices; commercial farmers are colluding to charge inflated land prices; the government is underestimating the value of land in agriculture; or budget constraints and ability to pay are imposing negative perceptions about the level of nominal land prices.

During inflationary times, individuals tend to shift to durable assets because inflation erodes the returns of fixed-income securities. Over the period 1980-85, inflation measured by the GDP deflator averaged 12.7 percent per annum; inflation in 1986 hit 13.7 percent before dropping to 9.6 percent in 1987 (World Bank 1989). Over the same period, 12-month certificates of deposit averaged 10.3 percent (Zimbabwe, *Quarterly Digest of Statistics).* Passbook savings would have yielded even less. While these aggregate data mask significant underlying variations, the aggregate figures indicate that the real value of liquid assets would have declined 2.4 percent if held as certificates of deposit or by even more if held in passbook savings due to high inflation and low fixed interest rates.

Average land prices paid by the government (table 5.2) indicate that nominal prices paid increased from Z$19/hectare in 1979 to Z$95/hectare in 1988. Analysis of these prices is difficult because of the confounding influences of price variation by natural region, with the proportion of land acquired by natural regions varying from year to year. Also, these prices show only land acquired by the government, and not land turned down by the government because prices were too high. After adjusting for inflation, real prices varied between Z$12.7 and Z$22.1 over much of the decade; real prices in 1986 and 1987 were the lowest in the time period. Only in 1988 did real prices spike upward to Z$34.3/hectare for unknown reasons. From the government's perspective, when faced with tight budgets, the rapid escalation in prices poses a severe problem in land acquisition. But it would be difficult to conclude from these data alone that collusion or excessive speculation has been occurring.

Land in NRs I and II is worth more than in NRs III and IV because of its higher yield potential. Nonetheless, questions remain whether absolute land prices are too high, and whether a price premium of 100 to 200 percent is justified for land in NRs I and II. These questions are difficult to answer without detailed analysis of individual parcel-level data. Yet, some feeling for the relative worth of land can be derived from its use value in agriculture:

(5.1)
$$\mathbf{V} = \frac{\mathbf{U}}{(i + r)}$$

where V = implicit value of agricultural land (Z$/ha);
U = net returns per hectare of land (Z$/ha);
i = opportunity cost of capital, e.g., returns on 12-month certificates of deposit; and
r = risk premium.

Equation 5.1 compares the returns of an investment of V dollars in agricultural land with the returns those same dollars could earn elsewhere, for example, certificates of deposit (12%). Since returns in agriculture are inherently more risky than bank deposits, the value of land is less to the investor as the size of the risk premium grows larger. In NR II, where rainfall is high and reliable, the risk premium is probably quite low (2-3%). However, in NRs III and IV, where rainfall is lower and more erratic, the riskiness of crop production increases, but there is also a shift to livestock production in farm plans. For sake of simplicity, a risk premium of 3 percent is assumed for all regions. Net returns per hectare of various crop and livestock rotations, based on AGRITEX recommendations, are given in table 5.3 (Chaonwa 1989), calculated as 1988 prices times theoretical yields, less fixed and variable costs.

TABLE 5.3

AGRITEX estimates of net crop returns, 1988

	NET RETURNS PER HECTARE (Z$)			IMPLICIT LAND PRICE (Z$/ha)		
	NR II	NR III	NR IV	NR II	NR III	NR IV
TB-MZ-GS, beef (3-year fallow), heavy soils	89			593		
CT-SB-MZ (100% cropping), heavy soils	44			293		
GN-MZ-MZ-GS (3-year fallow), light soils	35			233		
Beef, heavy soils	8			53		
Beef, light soils	6			40		
CT-MZ-MZ-GS (3-year fallow), heavy soils		41			273	
Dairy production		52			347	
Extensive beef grazing			5			33

TA = tobacco, MZ = maize, GS = grass, CT = cotton, SB = soyabeans, GN = groundnuts in rotation.

a. From W. Chaonwa, "Summary of Recommendations in Respect of Agrarian Reform and Subdivision Criteria" (Harare: AGRITEX, Agricultural Management Services Branch, July 1989).

Given the above assumptions, implicit land values are estimated from equation 5.1 and shown in table 5.3. The value of land in a tobacco rotation is worth Z$593/hectare in NR II, falling to Z$293/hectare under a cotton rotation, Z$233/hectare under a groundnut rotation,

and Z$40-53/hectare under a beef rotation. In NR III, the value of land in a cotton rotation is Z$ 273/hectare, and Z$347/hectare in dairy production. Land suitable for extensive grazing production in NR IV is worth only Z$33/hectare, and Z$20/hectare in NR V. These estimates are quite close to the average asking price reported in table 5.2 for the period 1986-89, though calculations are quite sensitive to changes in the interest rate (t) and the risk premium (r). The implicit land value would decline if net profits fall (e.g., because subsidies are removed or taxes are increased), a higher discount rate or opportunity cost of capital is used, or the riskiness of agriculture is underestimated.

There are three main problems with the above calculations:

- not all arable or grazing land may be utilized to its full potential;
- farms contain some portion of wasteland with no value that is included in the offer price; and
- some farms have substantial investment in irrigation, tobacco barns, and other fixed-place assets that, while located on a very small portion of farm area, add substantially to total farm value.

Under current statutes prohibiting subdivision of land, factors (1) to (3) artificially increase the value of underutilized or idle land. As farms are normally sold "lock-stock-and-barrel," the price of land is some weighted average of the value of utilized farmland, unutilized farmland, wasteland, land with high-cost fixed-place investment, and natural region location. By removing restrictions on subdivision, the price of underutilized land should theoretically fall as long as land is abundant and underutilized in the aggregate. (The extent of underutilized land is examined in ch. 7.) Even if this argument holds, however, and land prices of unutilized land drop significantly with subdivision permitted, criteria that land be acquired in large blocks would still be a constraint to land acquisition.

Nonetheless, the limited available evidence from 1988 would suggest that the land price offered (Z$374 in NR I, Z$129 in NR II, Z$100 in NR III, Z$45 in **NR** IV, and Z$21 in NR V) is not excessive given the implicit value of the land in agriculture at that time and the 1988 nominal prices.

5.3.3 AGRARIAN STRUCTURE

Changes in the structure of the LSCS in table 5.1 reflect the outcome of transactions and sales to the government that have taken place through the land market. The number and area of farms by farm size category are shown for three periods-1979, 1984, and 1988. Regional breakdowns are provided in Annex B. A number of conclusions can be drawn from the data.

First, there has been a dramatic reduction in number of farms and area in the LSCS Total number of farms declined from 6,113 in 1979 to 4,660 by 1988. Area of farms declined from 15.1 million hectares to 11.2 million hectares over the same time period. In terms of land quantity, the land market has clearly been effective in redistributing land.

Second, this downsizing has been uniform in terms of both number of farms and area, indicated by the uniform percentages of land in each size category across years. In the less than 200-hectares category, for example, number of farms (area in parentheses) represented 21.7 (0.7) percent of total farms in 1979 and 20.3 (0.7) percent by 1988, despite a large absolute decline in area. At the opposite end of the scale, in the above 8,000-hectares category, number of farms (area in parentheses) represented 5.6 (47.1) percent in 1979 and 5.0 (47.8) percent by 1988. Similar trends are apparent for other farm size categories in between.

Third, aside from differences in land quality among regions (examined shortly), land distribution still remains highly skewed among farms within the LSCS. In 1988, for example, 51.7 percent of the farms less than 1,000 hectares in size controlled only 8.3 percent of total land area. Nearly 75 percent of the farms less than 2,000 hectares in size controlled only 21.6 percent of the land area. However, in the largest farm category—above 8,000 hectares—5.0 percent of the farms own 47.8 percent of the land area. Most of these farms, however, are located in drier regions, that is, Masvingo, Matabeleland, and Midlands.

5.3.4 BLOCKS OF LAND FOR RESETTLEMENT

The government has generally tried to acquire land in large blocks of upward of 6,000 hectares to achieve economies of scale in resettlement. As indicated earlier in table 5.2, a sizable number of offers in excess of 1,000 hectares/farm has been rejected partially on grounds that the price was too high, but also because the farm size was too small. According to resettlement criteria, land sizes must be sufficiently large to spread the costs of infrastructure development—access roads, dip tanks, boreholes, staff housing, clinics, and schools—over a greater number of settlers. Three interrelated issues emerge.

First, can the government afford to maintain the large-block criterion and continue to pass by parcels that fail to meet size criteria in higher rainfall zones? Land was more abundant in the early 1980s, in part due to the large area of abandoned farms. But these areas have already been absorbed. In the higher rainfall zones [e.g., provinces of Manicaland; Mashonaland Central, East, and West (Annex B)], only 1.3 million hectares remain on farms in excess of 4,000 hectares in size. If blocks only greater than 6,000 hectares are considered, only 855.7 thousand hectares remain. Since some fraction of this land is currently utilized [about 50% (ch. 8)], acquisition for resettlement would involve the redistribution of some land out of high-yielding commercial production to low-yielding resettlement production. The result would be a net negative loss in aggregate production in at least the intermediate run (see ch. 6 and ch. 7).

Second, smaller farms could be acquired and then pooled. But it would be highly unnatural for contiguous parcels in a large area to be put up for sale on the market at the same time. Holding parcels for a prolonged period of time would entail significant opportunity and holding costs for the government.

Third, the resettlement models employed by the government involve significant economies of scale, but only if infrastructure is provided and only if settlers are considered. Current programs, however, ignore the population of farm laborers on commercial farms. The argument is usually made that the establishment of schools and clinics requires a large number of settlers to spread construction and development costs. Yet, by establishing facilities only for resettlement populations, planning disregards potential economies of choosing size and location of public schools and clinics on the basis of settlers and farm workers alike, or the possible diseconomies in planning for each separately. Large commercial farms currently provide schools (government provides the teachers), but the quality of facilities is highly variable. If, alternatively, the government centrally locates schools and clinics for populations of both farm laborers and settlers, which ultimately it must do in the long run, economies to scale are decoupled from issues of land availability for resettlement, allowing for smaller parcels to be acquired and settled.

5.4 SUMMARY

The history of land administration from the early 1900s to the present shows that, despite the redistribution of 3.2 million hectares of land from the LsCS to the resettlement sector, Zimbabwe's agrarian structure still remains highly skewed. Farms in the large farm sector have access to land in the best rainfall zones, while the majority of the rural population in communal areas farm the most arid lands. The analysis also reveals that the land market in the LsCS has been quite dynamic. It has provided small-scale settlers access to higher quality lands and has brought about a gradual but stable shrinkage of the sector.

Nominal land prices and parcel size were cited as the major factors curtailing government acquisition of land. However land prices appear to have been driven largely by general inflation in the economy, by the profitability of agriculture, and by the scarce supply of land in higher rainfall zones. These conclusions are based on limited and very aggregate data on land transactions and prices and on gross estimates of the opportunity cost of capital to estimate implicit land values. Nonetheless, it would be difficult to conclude, based on these macro data, that land prices are either excessively high or speculative. An analysis of agrarian structure further shows that the criterion of large block size is beginning to impose a constraint on land acquisition because of the limited number of large farms remaining in NRs I and II.

The analysis further raises important issues related to land reform: (1) What is the extent of underutilization in the LSCS and, thus, the production implications of land reform? (2) What is the relative efficiency of LsCS, SSCS, communal, and resettlement sectors? (3) How has land use been affected by market and institutional forces? (4) What form should the resettlement process take? (5) What are the efficiency and equity implications of various options—land ceilings, restrictions on land prices, designated areas, and the like—for land redistribution? These issues are dealt with in subsequent chapters.

Chapter 6

CHANGES IN LAND USE PATTERNS

6.1 INTRODUCTION

Besides the changes in agrarian structure that have occurred over the decade, dramatic changes have also been experienced in land use patterns and in the way factors of production (land, labor, and capital inputs) have been combined in farming. In the LSCS , two general shifts have been apparent: a gradual shift away from maize production to industrial and specialty crops, and the substitution of capital in the form of machinery for labor. The "miracle" of increased smallholder production in communal areas has mainly been a function of increased farmers' access to both commercial markets through government expansion of grain depots and to new cultivars and fertilizer from government investment in input distribution systems. Both sets of trends are closely examined in this chapter to study the implications of future resettlement activity on output and balance of trade. Implications of changes in land use patterns for the efficiency of land utilization in the LSCS is examined in chapter 8.

6.2 LARGE-SCALE COMMERCIAL SECTOR

6.2.1 CHANGES IN CROPPING PATTERNS

Since 1975, total crop area in the CS has declined over 15 percent, from 590.6 to 500.6 thousand hectares by 1988 (table 6.1). Total land in the LSCS shrank by 26 percent (see table 5.1, p. 62), indicating that a large part of the decline in crop area was due to structural change. However, the decline in crop area masks two important underlying trends in land use, indicated by percentage changes in the crop mix (table 6.1). First, farms have tended to decrease their reliance on cereal crops, principally maize (Annex E.1), from 48.5 percent of total crop area in 1975-77, to only 39.5 percent by 1987/88. Second, farms have shifted toward a greater concentration of industrial crops in the crop mix over time. In 1973-75, industrial crops including mainly tobacco and cotton averaged 34.6 percent of total crop area. By 1987/88, industrial crops averaged 46.6 percent of total crop area. Fodder crops, as a percentage of crop area, have tended to remain stable over time at around 2-3 percent. Tree crops declined from around 0.9 percent of crop area in 1975 to 0.6 percent by the mid-1980s, before increasing sharply in recent years (1.1 percent in 1988).

TABLE 6.1

Changes in crop area, large-scale commercial sector

YEAR	CEREAL CROPS[a] (%)	INDUSTRIAL CROPS[b] (%)	FODDER CROPS[c] (%)	TREE CROPS[d] (%)	OTHER[e] (%)	TOTAL CROP AREA (000 ha)
1975	**48.3**	35.3	2.7	0.9	12.9	590.6
1976	**47.9**	33.8	3.3	0.9	**14.1**	566.4
1977	49.9	34.7	2.6	**0.8**	12.0	574.8
1978	46.7	38.3	2.3	**0.8**	12.0	563.5
1979	**45.4**	40.0	2.3	0.9	11.6	542.2
1980	47.3	39.4	2.0	0.6	10.7	574.8
1981	57.7	30.3	1.8	0.7	9.5	599.9
1982	54.8	33.8	2.0	0.6	**8.8**	585.0
1983	**48.2**	39.1	2.5	0.7	9.5	**548.4**
1984	**44.0**	42.5	2.6	0.8	10.2	**531.9**
1985	47.9	39.3	2.4	0.6	**9.9**	541.1
1986						
1987	**38.5**	47.5	2.9	**0.8**	10.2	**484.8**
1988	40.5	45.6	2.4	1.1	10.3	500.6

a. Includes maize, sorghum, wheat, barley, munga, rapoko, and other grains.
b. Includes tobacco, coffee, cotton, groundnuts, soyabeans, sunflower, sugarcane, tea, and other industrial crops not specified.
c. Includes lucerne, other legume hays, and silage.
d. Includes citrus fruits (orange, grapefruit, mangoes), deciduous fruits, strawberries, tropical fruits (banana), avocado, and tree nuts.
e. Includes edible drybeans, sunhemp, nyimo, sweet potatoes, potatoes, onions, peas, tomatoes, other unspecified vegetables, garden flowers, shrubs, seedlings, and planted pastures.

Source: Zimbabwe, *1987 Statistical Yearbook* (Harare: Central Statistics Office), for 1978 to 1983; and Central Statistics Office, for 1984 to **1988.**

A 15-year time series of area, production, and yield was compiled for this study for the period 1973 to 1988.[15] The resulting crop data for 8 provinces is voluminous, precluding detailed presentation in this report. Averages of area, production, and yield are provided instead for the periods 1973-75, 1979-81, and 1987/88 (Annex D). Growth rates in area, production, and yields are further estimated for two separate time series: a 9-year period from 1973 to 1980, representing the preindependence period; and an 8-year period from 1979 to 1988 (data for 1986 are missing), representing the postindependence era. Although years do not exactly correspond to pre- and post-independence, some adjustment was necessary to achieve a sufficient number of observations for the statistical estimation of growth rates.

Maize. The crop of maize in 1988 was 151.0 thousand hectares or 30.2 percent of total cropped area in the LSCS. Of this total, 84.7 percent was grown in NR II, and 12.8 percent in NR III (table 6.2). Cropped area has declined sharply over time. Starting from a base of 282.2 thousand hectares in 1973, cultivated area has declined at an average annual rate of 4.3 percent per annum over the period 1973-80, and 5.5 percent over the period 1979-88. A number of factors have contributed to this decline: (1) the official policy of the Commercial Farmers Union promoting crop diversification; (2) economic considerations discussed shortly; and (3) the imposition of production controls for a limited period in 1986 (Joint Farmers' Unions 1990). Production nationally also declined at a rate of 5.3 percent per annum between 1979 and 1988, mostly due to the decline in area. Yields, nationwide, have grown at a fairly modest and constant rate of 0.3 percent over the last two decades, indicating a very slow rate of technological change. The modest improvement that has taken place is as much a function of poorer land being taken out of production as technological improvement. Only in Mashonaland did yields increase appreciably over the decade (1.8); Masvingo experienced the greatest annual rate of decline in yields (-6.1).

Wheat. The area planted in wheat has expanded rapidly over time. Starting from 21.3 thousand hectares in 1973, total wheat area nationally reached 41.8 thousand hectares in 1988, roughly 8.4 percent of total crop area in the LSCS. Nearly 75 percent of wheat is grown in NR II, followed by NR V (17.3) and NR III (6.5). Over the decade 1973-80, wheat area expanded at an average annual rate of 6.9 percent per annum, and production, at 10.2 percent per annum, due to rapid growth in productivity per hectare (3.1 %). However, growth has slowed in the 1980s. Over the period 1979-88, wheat area nationwide grew less than 1 percent per annum; production, 2.1 percent; and yields, 1.2 percent. New cultivars and improved management have been chiefly responsible for this increase in productivity (Joint Farmers' Unions 1990). However, while area and yields have remained stable or increased in Manicaland and Mashonaland, wheat area since 1979 has declined sharply in Masvingo (-20.2), Matabeleland (-11.1), and Midlands (-14.9).

15. From Zimbabwe, *Crop Production of Large Scale Commercial Farms,* for 1973 to 1985; and from Cso, for 1987 and 1988.

TABLE 6.2

Cropping patterns by natural region, large-scale commercial sector, 1988 crop season

	NR I (%)	NR II (%)	NR III (%)	NR IV (%)	NR V (%)	TOTAL AREA ('ha)
Maize	**0.4**	**84.7**	12.8	2.1	0.1	150,989
Sorghum	0.7	70.6	13.5	12.5	2.7	3,773
Wheat	0.0	**74.9**	**6.5**	1.4	17.3	**41,846**
Barley	0.0	51.5	**43.6**	4.9	0.0	5,374
Other cereals	13.0	74.3	**5.4**	7.3	0.1	794
Tobacco	0.7	95.6	3.3	0.0	0.4	**54,842**
Coffee (productive)	59.0	35.7	1.7	0.6	3.0	6,539
Cotton	0.1	73.1	8.9	0.3	17.7	60,095
Groundnuts	0.3	87.6	10.8	1.1	0.2	5,201
Soyabeans	0.1	93.0	6.9	0.0	0.1	51,594
Sunflowers	0.1	39.7	56.5	2.6	1.1	10,092
Sugarcane	0.0	0.0	0.3	0.0	99.7	31,853
Tea (productive)	62.4	37.0	0.0	0.6	0.0	4,691
Other industrial crops	52.5	34.7	3.8	0.9	8.0	3,502
Fodder	2.3	82.9	9.4	5.1	0.3	54,279
Fruit	10.4	69.1	7.8	2.4	10.4	5,710
Other	0.6	73.1	6.6	10.5	9.2	9,380
Total crops	2.3	75.8	9.7	1.8	10.5	500,554

Source: Central Statistics Office.

Sorghum. Sorghum area in the LSCS in 1988 covered 3,773 hectares, only 0.8 percent of total crop area. About 15.2 percent of sorghum area is planted in the drought-prone zones of NRs IV and V; the majority (70.6) is still grown in NR II. Breweries in Zimbabwe require 20-30,000 tons of red sorghum annually for beer production; white sorghum is an effective supplement to wheat in bread. Like maize, sorghum's importance in the crop mix has declined over time. Since 1973, sorghum area nationwide has declined at a rate of 3.7 to 5.0 percent per annum. Yields grew rapidly in the 1970s (9.7%). Since 1980, yields have continued to rise at an annual rate of nearly 2 percent.

Barley. Barley is produced for the National Breweries on contract. Historically, the requirement has been 30,000 tons annually, roughly half for beer, the other half exported. Export demand has recently increased, resulting in new production targets of 45,000 tons per annum (Joint Farmers' Unions 1990). Barley was cultivated on 5,374 hectares in 1988, representing 1.1 percent of total cropped area. Because of its drought-resistant qualities,

nearly 49 percent is cultivated in the more arid and drought-prone areas of NRs III and IV, though the majority is still grown in NR II (51.5). Unlike maize and sorghum, barley area has been growing modestly over time (0.2-0.8%). However, these trends mask important regional differences. Since 1980, barley area has expanded rapidly in Midlands (15.9), while declining sharply in Manicaland (-32.6) and Mashonaland (-4.4). During the 1970s, impressive growth in barley yields was achieved due to varietal improvements. But since 1980, growth in yields has flattened while the introduction of new technology has stagnated.

Cotton. Cotton was cultivated on 60.1 thousand hectares in 1988, representing 12.0 percent of total crop area in the LSCS. Of this total, 73.1 percent was grown in NR II, 17.7 percent in NR V, and 8.9 percent in NR III. Cotton area grew slightly in the 1970s, but has tended to decline in the 1980s (-1.6), though substantially less so than the overall rate of decline in total land area in the LSCS. Important regional differences are again masked by the national trend. While cotton area in Manicaland and Matabeleland has grown 3.8 and 9.4 percent per annum, respectively, since 1979, cotton area in Mashonaland has fallen 1.0 percent, and in Masvingo, 11.2 percent. Cotton yields have shown moderate but consistent growth over time due primarily to the introduction of new cultivars and improved management, research, and extension. From 1973 to 1980, cotton yields nationally grew 2.7 percent, and by 1.9 percent from 1979 to 1988. Growth in productivity has been widespread, indicating high rates of technology diffusion. Yields in Manicaland have grown 0.9 percent per annum, 2.6 percent in Mashonaland, 0.4 percent in Midlands, and 0.1 percent in Matabeleland.

Tobacco. Tobacco was grown on 54.3 thousand hectares in 1988, representing 10.9 percent of total cultivated area in the LSCS. Nearly all tobacco production in Zimbabwe is concentrated in three provinces—Mashonaland West (43.6% of area cultivated), Mashonaland Central (26.7%), and Mashonaland East (22.1 %)—all on lands located primarily in NR II (95.6%). Unlike maize, tobacco area has remained fairly stable over time. Over the period 1973-80, tobacco area grew at an average annual rate of 2.3 percent; since 1980, area has stagnated (0.0% growth). Like cotton, however, this stagnation, combined with the decline in total land area in the LSCS, has resulted in a higher proportion of tobacco in the cropping system. Production, on the other hand, grew 7.3 percent between 1973 and 1980, and 2.0 percent between 1979 and 1988 due mainly to growth in yields (4.9% and 2.0%, respectively). Heavy investment in research and extension have contributed to sustained yield improvements. The Tobacco Research Board was responsible for the development of white mold-resistant varieties in the late 1960s and the introduction of suckerides in the late 1970s, which dramatically increased yields. Concomitantly, the Tobacco Training Institute has served to extend new production methods to growers of flue-cured tobacco.

Soyabeans. Soyabeans are grown mainly on heavy soils in rotation with maize, cotton, and winter wheat. At present, soyabeans provide about 40 percent of Zimbabwe's vegetable oil demand. About 51.6 thousand hectares of soyabeans were cultivated in the LSCS in 1988, representing 10.3 percent of total crop area. Of this total, 93.0 percent was cultivated in NR II, and 96.0 percent in the three provinces of Mashonaland. Soyabeans experienced explosive growth in the 1970s. Starting from a base of only 8.2 thousand hectares in 1973, area

expanded at an average annual rate of over 26 percent from 1973 to 1980, and 4.2 percent from 1979 to 1988. Yields also grew rapidly (7.4%) in the 1970s, though yields have been stagnant since 1980 (-0.2% and -0.5% percent, respectively, for Zimbabwe and Mashonaland).

Groundnuts. Groundnuts are grown by farmers mainly in the communal farming areas and the SSCS. Commercial production is principally long-season varieties grown under irrigation in rotation with tobacco. Groundnut area in 1988 was 5.2 thousand hectares, only 1 percent of total cropped area. As with soyabeans, most are grown in NR II (87.6%), primarily in the three provinces of Mashonaland (88.9%). Since 1979, groundnut area has grown 0.6 percent annually, and production, 1.4 percent. Yields have increased modestly (0.9%) in part due to irrigation.

Coffee. Coffee was cultivated on 8.6 thousand hectares (6.5 ha productive) in 1988, or 1.7 percent of the total cropped area in LSCS. The majority is grown in the Central Highlands of Manicaland (76.7%), primarily on soils in NR I (59.0%) and NR II (35.7%). Growth expanded rapidly in the 1970s. Between 1973 and 1980, area grew at an annual rate of 6.0 percent; production, 20.3 percent; and yields, 13.5 percent. Although growth has moderated in the 1980s, area still grew at an average annual rate of 4.4 percent between 1979 and 1988; production, 6.9 percent; and yields, 2.3 percent. These trends are very similar to those estimated for Manicaland. Systems of coffee production in Zimbabwe have changed dramatically since coffee was first introduced in 1962. Nearly all coffee grown in Zimbabwe today is irrigated, a factor largely responsible for increased yields. Considerable investment in research and extension by the Department of Research and Specialist Services, the Coffee Research Station at Chipinge, and the Coffee Growers Association has also contributed to the high and sustained growth in productivity.

Horticulture. Until recently, horticultural crops have involved only a few large-scale farms concentrated around the main urban markets. Specific climatic requirements of citrus and deciduous fruit have also led to pockets of producers in outlying areas. Over 69.1 percent of all fruit-tree production is located in NR II, and another 10.4 percent in NR I. Total production of tree crops was 5,710 hectares in 1989, or 1.1 percent of total crop area. The area of tree crops declined at a rate of 7.3 percent in the 1970s, but since 1979, area has expanded at an annual rate of 2.4 percent nationwide.

6.2.2 CHANGES IN LIVESTOCK PRODUCTION

Regional and national numbers of beef cattle, dairy cattle, sheep, goats, and pigs are given in table 6.3 for five two-year periods between 1980 and 1989. Numbers of pigs have remained fairly constant throughout the decade. Numbers of goats and sheep have generally declined nationally, from 156.7 thousand in 1982/83 to 133.3 thousand by 1988/89. Most of this decline occurred in Mashonaland (83.4 to 71.7), Matabeleland (30.9 to 24.3), and Midlands (20.2 to 16.4). The most important changes in the livestock sector, however, involved changes in the beef and dairy herds.

TABLE 6.3

Changes in livestock numbers, large-scale commercial sector, 1980-1989

	1980/81 (000 head)	1982/83 (000 head)	1984/85 (000 head)	1986/87 (000 head)	1988/89 (000 head)
National:					
Beef	2,093.5	2,075.2	**1,851.4**	1,731.3	**1,653.9**
Dairy	104.7	103.3	111.5	**115.8**	122.3
Sheep and goats		156.7	153.2		133.3
Pigs	92.6	103.7	77.6		95.5
Manicaland:					
Beef	**80.9**	93.9	**99.6**	**89.6**	**85.5**
Dairy	6.5	7.2	6.8	8.3	8.1
Sheep and goats		11.5	**12.8**		11.6
Pigs	**5.5**	6.0	6.1		4.6
Mashonaland:					
Beef	834.8	**855.4**	885.7	757.7	726.6
Dairy	59.4	**58.7**	63.6	67.2	**70.4**
Sheep and goats		**83.4**	82.7		71.7
Pigs	69.0	78.7	55.9		70.0
Matabeleland:					
Beef	563.0	531.5	399.0	391.5	297.6
Dairy	13.4	12.7	11.0	12.0	12.6
Sheep and goats		30.9	25.8		24.3
Pigs	11.7	**12.4**	**11.4**		13.9
Midlands:					
Beef	**408.3**	355.3	292.7	289.1	277.4
Dairy	23.1	22.0	24.9	25.1	**28.4**
Sheep and goats		20.2	19.5		**16.4**
Pigs	3.3	**3.4**	2.8	-	3.3
Masvingo:					
Beef	206.6	239.1	173.5	203.4	216.8
Dairy	2.5	2.8	3.2	3.0	2.8
Sheep and goats		**8.9**	11.8		9.3
Pigs	3.2	3.2	2.3	-	3.9

Source: Zimbabwe, Department of Veterinary Services, census data. Not all provincial totals sum to national totals due to discrepancies in the reported data. All discrepancies fall within a margin of error of 2%.

Beef cattle. The 1980s were a difficult decade for beef producers. Following a fairly steep decline in cattle numbers in the 1970s, more remunerative prices resulted in herd size stabilizing around 2,093.5 to 2,075.2 thousand head (2-year averages) in the early 1980s. The debilitating drought from 1982 to 1984 again resulted in herd reductions. By 1984/85,

average herd size had been reduced to 1,851.4 thousand head. The drought of 1986/87 combined with a difficult price-policy environment resulted in further herd reductions to 1,731.3 thousand head in 1986/87. Price increases in the late 1980s helped to restore profitability, but an outbreak of foot-and-mouth disease in April 1989 resulted in the suspension of beef exports to Europe and the loss of the 30C/kilogram export bonus paid to producers. Countrywide restrictions on cattle movement were imposed. By 1988/89, average herd size was 1,653.9 thousand head nationwide, 21 percent lower than a decade earlier. Some part of this decline can be attributed to the downsizing of the sector. Some provinces fared worse than others. Between 1980/81 and 1988/89, beef cattle numbers fell 47.1 percent in Matabeleland, 32.1 percent in Midlands, and 13.0 percent in Mashonaland. Manicaland and Masvingo, on the other hand, had a slight increase in herd size, but changes are negligible compared with the massive declines experienced elsewhere.

Dairy cattle. Zimbabwe's dairy industry has shown slow but steady progress throughout the decade. Increases in real disposable income after independence led to a dramatic rise in the demand for liquid milk products. Dairibord, the nation's milk marketing organization, had to reduce or stop production of certain processed products (cheese, butter, skim milk powder), increase imports of some of these products, and halt exports. Government also responded with remunerative pricing to expand milk supply. Milk prices paid to farmers were raised fairly substantially between 1979 and 1982 (Annex F), and then more gradually for several years thereafter. Dairy cattle numbers increased from 104.7 thousand head in 1980/81 to 111.5 thousand head by 1984/85. Producer prices remained constant between 1985 and 1987, resulting in an erosion of real prices. However, herd sizes continued to grow to 115.8 thousand head by 1986/87 due to improved management and breeding techniques. The high capital investment required for dairying results in considerable asset fixity. Once investments are made, producers continue to produce in the short run as long as variable costs are recovered, though erosion of the capital base affects long-term viability.

6.3 COMMUNAL SECTOR

6.3.1 CHANGES IN CROPPING PATTERNS

As mentioned in chapter 1, data for the communal areas are not broken down by natural region in official statistics. The MLARR (Masters 1990) has disaggregated cropped area using district maps, but this approach was unsuitable for disaggregating production and yield data at the time of this study in 1990. A household survey was being conducted by CSO to improve time-series data, but these are published only for provinces, and only three years had been compiled as of 1990. The most complete source of time-series data on area, production, and yields is estimates of the Crop Forecasting Committee. These data are provided for principal crops for the period 1970 to 1989 in Annex G (table G.1). Cropping patterns by province, based on data from the "National Household Survey of Communal Areas," are presented in table G.2, and cropping patterns by natural regions, estimated by the MLARR, are given in table G.3. Note that land acquired from the LSCS was absorbed by

either the resettlement sector or the state sector, not by communal areas. Thus changes in crop area in this section are on based on constant total land area.

While the LSCS shows a diversified mix of crop enterprises, cropping patterns in communal areas show a high reliance on grain production. Based on MLARR data, maize was cultivated on 45.3 percent of the cropped area in 1986-1989, followed by millet (15.0%), sorghum (10.3%), cotton (7.2%), groundnuts (4.7%), sunflower (3.7%), and rapoko (2.8%). In NRs I and II, maize tends to predominate, averaging in excess of 65 percent of total crop area [16] Conversely, in NRs IV and V, millet and sorghum are prevalent, together averaging 60 percent or more of cropped area. Groundnuts and sunflower vary only marginally across natural regions. Cotton, on the other hand, is quite important in NR IIB extending into NR III, occupying nearly a third of the total area.

Growth rates were estimated from the time-series data in table G.1 to measure how cropping patterns and production have changed over time. Results are provided for the most important crops in table G.4 for area, table G.5 for production, and table G.6 for yields.

Maize. Farmers in communal areas grew 920 thousand hectares of maize in 1988, representing 87 percent of total maize planted nationwide (including the LSCS). Production was 1,062 thousand tons, or 61 percent of total maize production in all sectors. Ever since the early 1970s, maize area has been gradually expanding at a rate of 2 percent per annum, slightly less than population growth (3.0%). Production, however, increased at an annual rate of over 5 percent in the 1970s and 9 percent in the 1980s due mainly to growth in yields-6.7 percent annually between 1979 and 1989. Factors contributing to this improvement include:

- Hybrid seed deliveries increased from 3,000 tons in 1975/76 to 10,000 tons by 1979-1981, to 23,133 tons by 1987-1989.

- Total fertilizer utilization by the SSCS (including the small number of small-scale commercial farms) increased nearly fivefold in the 1970s, rising from 21.1 thousand tons in 1974-1976 to 94.5 thousand tons by 1980-1982. Growth in fertilizer use has slowed in the 1980s, rising from 94.5 thousand tons in 1979-1981 to 110.7 thousand tons by 1987-1989 (Windmill 1990).

- Grain depots in communal areas have expanded from four in 1982 to sixteen in 1989. Concomitantly, Grain Marketing Board (GMB) procurements of grain from the SSCS and communal sector (communal areas not listed separately) increased from 124.5 thousand metric tons in 1979/80 to 437.8 thousand tons by 1986-1988. Approximately 73 percent of communal deliveries was procured from prime agricultural areas such as Guruve and Chiweshe in NR II. Improved market opportunities have increased cash incomes, improved

16. Provincial data in table G.2 suggest that maize occupies a greater area than this, and that millet and sorghum are less prevalent in the crop mix (see data for Masvingo, Matabeleland North and South).

purchasing power, and reduced marketing costs. Together these factors have increased producer incentives to invest in both nontraditional and traditional (labor, manure, etc.) inputs in agriculture.

- Communal farmers experienced an emerging comparative advantage in maize production compared with the LSCS (see "Domestic resource costs" analysis in ch. 7, pp. 96-99).

Rapoko and mhunga. About 120,000 hectares of rapoko and 237,000 hectares of mhunga were grown in communal areas in 1988 compared with only 179 hectares in the LSCS. Production in 1988 was 84 and 184 thousand tons, respectively. Cropped area of both rapoko and mhunga expanded rapidly in the 1970s, 13.0 and 5.8 percent per annum respectively, reflecting a dramatic push of cultivation onto marginal lands in NRs IV and V. Since 1980, areas of both crops have declined around 3 percent per annum. Reasons for the decline are not entirely clear, but possible explanations include:

- Substantial build-up of stocks combined with limited disposability has led to a curtailment of procurements by the GMB. In 1985, the GMB purchased 31.8 thousand tons of mhunga and 10.9 thousand tons of rapoko nationwide. By 1988, GMB procurements had declined to 12.3 and 2.1 thousand tons, respectively.

- Crop substitution of cotton and sunflower for millet in NRs III and IV has been occurring.

- Low profitability (see "Domestic resource costs" analysis in ch. 7, pp. 96-99).

Cotton. Cotton has experienced explosive growth in area and output. Since 1980, area has expanded at an average annual rate of 25 percent; production, 26.5 percent; and yields, 1.3 percent. Productivity has grown roughly in line with that of the LSCS. The number of registered cotton growers in communal areas has been increasing steadily, from a negligible number in the 1960s to 111.0 thousand in 1987-1988 (AMA 1985). The Cotton Marketing Board (CMB) has played an important role in encouraging cotton cultivation by expanding market opportunities, increasing seed-cotton purchases from 52.3 thousand tons in 1980-1982 to 160.4 thousand tons in 1987-1989. Emphasis on extension and training by such agencies as the Cotton Training Centre at Kadoma have also benefited communal farmers.

Groundnuts. Communal area farmers grew 197,000 hectares of groundnuts in 1988, about 97 percent of total groundnuts planted nationwide. Despite production of 106,000 tons, deliveries to the GMB averaged less than 3,500 tons between 1987-1989, compared with deliveries of 15-20,000 tons by the LSCS. An unknown but sizable quantity is sold on the private market. Despite their importance, groundnuts have been declining in significance. Since 1980, area nationwide has declined 3.9 percent, and production, 1.3 percent, while yields have increased 2.7 percent.

6.3.2 CHANGES IN LIVESTOCK PRODUCTION

Changes in numbers of livestock during the 1980s are shown in table 6.4. Average numbers of cattle, sheep and goats, and pigs are given for four two-year periods from 1981 through 1988.

TABLE 6.4

Changes in livestock numbers, communal sector

	1981/82 (000 head)	1983/84 (000 head)	1985/86 (000 head)	1987/88 (000 head)
National:				
Cattle	3,108.2	3,045.9	3,341.9	3,555.2
Sheep and goats	1,265.2	1,415.6	2,057.3	2,455.7
Pigs	102.9	83.9	103.6	**118.6**
Manicaland:				
Cattle	399.0	475.7	564.0	566.2
Sheep and goats	-	186.8	384.3	455.6
Pigs		4.7	7.7	10.2
Mashonaland:				
Cattle	676.1	749.6	766.8	909.8
Sheep and goats		151.9	221.2	353.3
Pigs	-	35.8	**45.8**	62.3
Matabeleland:				
Cattle	**817.5**	681.3	**815.4**	777.3
Sheep and goats		456.8	571.7	732.5
Pigs		**10.9**	17.1	21.3
Midlands:				
Cattle	592.8	571.3	578.9	664.7
Sheep and goats	-	395.3	452.2	471.2
Pigs		10.0	**13.8**	9.9
Masvingo:				
Cattle	622.9	567.9	615.9	638.3
Sheep and goats		251.7	427.9	412.4
Pigs		22.5	**18.4**	**15.0**

Source: Zimbabwe, Department of Veterinary Services, census data. Not all provincial totals sum to national totals due to discrepancies in the reported data. All discrepancies fall within a margin of error of 2 percent.

Beef cattle. Cattle numbers nationwide have grown steadily through the decade, from 3,108.2 thousand animals in 1981/82 to 3,555.2 thousand in 1987/88. On average this

represents a growth of about 2 percent per annum, roughly in line with the growth rate in maize. These results are particularly surprising in light of the severe droughts experienced in 1982-1984 and again in 1986/87. The increase in cattle numbers has been greatest in Manicaland (6%), Mashonaland (5%), and Midlands (2%). Cattle numbers in Masvingo and Matabeleland fell sharply in 1983/84 due to the drought. Herds were rebuilt by 1985/86, but numbers have stagnated or declined slightly since.

Goats **and sheep.** The number of goats and sheep in the communal sector has exhibited phenomenal growth. Total number of animals nationwide nearly doubled, increasing from 1,265.4 thousand head in 1981/82 to 2,455.7 thousand by 1987/88, an annual growth rate of 10 percent." Goats, being natural browsers, thrive in scrubland not used for other farming enterprises. But the fact that the growth in numbers has been widespread across all regions suggests that the growth reflects more than just the expansion of communal areas onto marginal lands. It is agreed by all that goats are a valuable source of meat and mohair, and sheep, a valuable source of meat and wool, but a more rigorous analysis is needed of the economics of livestock production to understand fully why these changes are occurring.

6.4 PRIMARY FACTORS INFLUENCING LAND USE PATTERNS

Changes in land use patterns in the LSCS and communal sectors can be attributed to five principal factors: (1) reduction of total land area in the LSCS due to resettlement; (2) commodity price shifts; (3) technological improvement; (4) employment markets; and (5) market access. Land use in the LSCS commercial sector has been driven primarily by factors (1) through (4). Changes in land use in the communal areas has been determined largely by factor (5).

6.4.1 LARGE-SCALE COMMERCIAL SECTOR: COMMODITY PRICES AND TECHNOLOGY

Net crop returns over time are influenced by three fundamental factors: changing output prices; rate of technological change determining growth in crop yields and average costs per unit of area; and changing input prices affecting total costs. For maize, which has experienced the greatest decline in area in the LSCS, two negative factors have affected profitability. Real maize prices have declined over 34 percent between 1981 and 1988, roughly a 7 percent decline per annum on average (table 6.5). Yields, however, have increased only 0.3 percent per annum over the decade, resulting in a real net decline in revenue after accounting for inflation. Wheat also witnessed a 15 percent decline in real output prices between 1980 and 1988, equivalent to a decline of roughly 2 percent per annum. Wheat yields, however, grew about 1.2 percent over the decade, slightly offsetting the decline in real output prices. Overall, cropped area of these two crops has been either stagnant in the

17. Goats comprise 80% of the total.

case of wheat or sharply declining in the case of maize, explaining in large part the decline of cereal production in the sector.

TABLE 6.5

Real crop and livestock prices paid to producers

YEAR	MAIZE (Z$/mt)	WHEAT (Z$/mt)	COTTON (Z$/mt)	TOBACCO (Z$/mt)	SOYABEANS (M$/mt)	CATTLE (Z$/head)	MILK (Z$/head)
1979	63.5	**120.8**	362.5		154.2	145.7	151.2
1980	**89.0**	134.7	363.0	795.0	159.6	168.2	175.1
1981	105.3	153.3	336.0	1,615.4	149.9	**186.0**	190.8
1982	95.5	149.2	397.0	1,339.5	159.0	226.5	220.9
1983	77.6	142.6	320.0	1,223.9	166.7	**186.4**	199.2
1984	82.1	134.5	297.0	1,115.6	154.4	173.1	188.3
1985	89.1	141.2	321.6	1,336.0	158.8	161.6	194.3
1986	77.5	130.1	314.3	1,364.0	146.5	164.2	173.4
1987	69.5	127.5	286.5	843.6	148.2	192.4	154.1
1988	69.6	130.5	284.0	1,418.0	150.1	173.0	**141.4**

The story for industrial crops is mixed. Soyabeans, the only major crop that has maintained a fairly constant real price over the decade, also experienced rapid growth in productivity per hectare, over 4 percent per annum, a major reason for its expansion in terms of area. Tobacco prices have declined in real terms by 12 percent between 1981 and 1988, or slightly over 1.5 percent per annum. But growth in yields of 2 percent annually over the decade has enabled producers to more or less maintain cultivated area. The opposite is true for cotton. Its price has declined more than 21 percent from 1981 to 1988, roughly 2.5 percent annually, while yields have increased on average only 1.9 percent. As a result, cotton area decreased at an annual rate of 1.6 percent during the 1980s.

Real cattle prices have fallen about 24 percent since 1982, the last year that prices were considered remunerative by large-scale commercial producers. Real milk prices have also declined by about 36.0 percent since 1982. While the dairy industry has demonstrated dramatic technological improvements over the decade, milk productivity would have had to increase at a rate of over 5 percent per annum to offset this magnitude of price decline.

Two important points need stressing. For crops that have experienced slow rates of technological change and declining real prices, for example, for maize in the LSCS, profits and area cultivated have sharply declined. Technological improvement in other crops such as

wheat, tobacco, and cotton were sufficient to offset declining real prices, with the result that cropping areas have remained stable. For soyabeans, which have experienced not only remunerative prices but also rapid improvement in yields, area has been expanding rapidly. Conversely, dairy stock numbers have increased slightly despite rapidly declining real milk prices due to high-fixed capital investment and limited opportunities to diversify. A more careful analysis is made shortly of crop profitability and comparative advantage between the LSCS and the communal sectors.

6.4.2 COMMUNAL SECTOR: MARKET ACCESS

If, as data suggest, net returns to maize in the LSCS have been gradually eroding over time and led to a decline in maize production, why has maize production in the communal sector increased so strongly? There are a number of contributing factors. First, and most obvious, is the increased investment in rural infrastructure—in input and marketing services and in extension—in communal areas following independence. These investments have increased communal farmers' access to inputs, lowered their marketing costs, increased farm-gate prices, and generally resulted in higher levels of commercialization. Second, communal areas are able to value their labor at private opportunity costs, while LSCS farms are required by law to pay a minimum agricultural wage rate. Incentives have shifted in the LSCS toward crops with higher marginal productivity of labor, mainly industrial and specialty crops. In sectors such as maize, which have experienced very slow rates of technological change (LSCS), evidence suggests that smallholders now hold a comparative advantage in its production (see ch. 7).

A number of points stand out from this analysis. First, price policy and technology have gradually resulted in a shift of resources away from relatively stagnant sectors with low profitability to sectors that have had steady growth in real prices and/or in productivity. Second, growth in maize and cotton in the communal sector is primarily a function of increased market access. The rapid technological growth experienced by the LSCS in the 1970s became available to communal farmers in the 1980s through technology diffusion and increased market opportunities. Finally, comparisons of growth in the LSCS and communal sectors reveals that the latter is dynamic, largely due to the relative state of neglect that existed at independence. National growth rates in yields since 1980 are as follows: maize (LSCS 0.3, communal area 6.7); sorghum (LSCS 1.9, communal area 1.1); cotton (LSCS 1.9, communal area 1.3); and groundnuts (LSCS 0.9, communal area 2.7).

6.5 EMPLOYMENT IN THE LSCS

The demand for agricultural labor in the LSCS is driven by three fundamental economic forces: (1) the profitability of agriculture, that is, as profitability increases, labor demand increases particularly for such labor-intensive industries as tobacco, cotton, horticultural crops, and vegetables; (2) the cost of labor, determined by the wage rate, as well as legislation affecting hiring and firing practices; and (3) substitution possibilities that permit the use of labor-saving technology, mainly mechanization, for skilled and unskilled labor.

Over the past two decades, the LSCS has witnessed both a decline in employment of total labor and a gradual shift toward more seasonal employment. Some analysts (Chavunduka 1982) have noted that declining rates of employment in commercial agriculture are an inevitable outcome of a developing economy, for declining rates of employment are the expected course of evolution as mechanization increases labor productivity. Agricultural employment does tend to decline when opportunities for labor employment in the off-farm sector increase substantially. As off-farm employment opportunities rise and nonfarm wages increase, economic pressures build for substituting unskilled labor with mechanization.

It is debatable, however, whether Zimbabwe has reached a point of high labor demand in the nonfarm sector. High levels of unemployment in the economy suggest that opportunity costs of labor in nonfarm occupations are low, and that the siphoning effect of labor out of agriculture is weak. Under these circumstances, predictions of the decline of the LSCS and its inability to absorb labor are premature. An alternative argument reasons that the LSCS has significant potential for labor absorption, but that market policies have dampened labor demand and hiring. Given existing problems of unemployment, increasing labor demand deserves high priority. Yet, if indeed commercial farms are being indirectly taxed, a second set of important issues arises. By improving the viability of the sector, land utilization increases and land prices rise, exacerbating government attempts to acquire land for resettlement.

The history of labor employment in Zimbabwe identifies three unique periods in recent times. The preindependence period of 1975 to 1979 was marked by war and the general effects of the unilateral declaration of independence (UDI). While the fight for independence, on the one hand, resulted in a general decline of agricultural activity and a reduction in labor demand and supply, UDI, on the other hand, resulted in trade sanctions that restricted Zimbabwe's ability to import capital equipment. UDI also brought about a period of rapid economic growth in the manufacturing sector, with a shift in resources toward industries aimed at import substitution. Over the 1973-80 period, total cropped area in the LSCS declined from 605.4 to 574.8 thousand hectares (Annex E), and the total number of farm and forest employees, from 301.5 to 271.3 thousand workers (table 6.6). Total land in the LSCS changed very little between 1969 and 1979 (table 3.1, p. 15, and table 5.1, p. 62), indicating that these reductions were a function of an economic decline in agriculture rather than a shrinkage in total landholdings in the sector. Despite these uncertainties, however, cropped area per worker remained relatively constant at 1.9-2.0 hectares; the ratio of seasonal to permanent employees stayed in the fairly narrow range of 0.22 to 0.33; and real agricultural wages rose at a relatively gradual and modest rate, from Z$31.4 to Z$35.8.

TABLE 6.6

Employment indicators, large-scale commercial sector

YEAR	TOTAL FARM AND FOREST EMPLOYEES (persons)	CROPPED[a] AREA PER EMPLOYEE (ha/worker)	RATIO OF[b] SEASONAL TO PERMANENT EMPLOYEES	NOMINAL AG. WAGE RATE[c]		REAL AG. WAGE RATE[d]	
				Actual (Z$/mth)	Minimum (Z$/mth)	Actual (Z$/mth)	Minimum (Z$/mth)
I989	247,154		.8I		I16	-	
I988	227,626	2.20	**.66**		100	-	36.2
I987	2I9,987	2.20	.60		**85**	**-**	32.9
I986	-	**-**	**-**		85	-	37.0
1985	2I4,24I	2.53	.45		75	-	37.3
I984	2I6,905	2.45	.34	**98.1**	65	53.0	**28.6**
I983	2I6,0I3	2.54	.40	**88.4**	55	57.4	35.7
I982	220,228	2.66	.35	**76.6**	50	6I.2	**39.9**
I98I	242,I49	**2.48**	**-**	62.0	30	**54.8**	26.5
I980	27I,291	2.I2	-	38.0	30	38.0	30.0
I979	286,825	I.89	.24	34.3	-	35.8	
1978	283,731	1.99	.22	29.3	-	**34.6**	
I977	295,139	I.95	.24	**26.8**	**-**	**34.8**	
I976	307,225	**I.84**	.31	24.2	-	35.2	
1975	303,903	1.94	.33	2I.3	-	**34.5**	
1974	3II,9I3	I.97	.33	I8.3	-	32.6	
I973	30I,512	2.0I	.32	**16.5**	**-**	31.4	

a. Cropped area from Annex E.
b. Ratio of seasonal to permanent employees is calculated from data in Annex **H.**
c. Total earnings per annum divided by total employees in agriculture, forestry, and fishing sector [Zimbabwe, *Quarterly Digest of Statistics* (Harare: Central Statistics Office, v.d.) converted to a monthly basis.]
d. Nominal wages adjusted for inflation using the low-income consumer-price index *(Quarterly Digest of Statistics).*

The second period, starting in 1980, marked a period of the new socialist government's coming to power. Trade sanctions were eliminated. From 1980 to 1984, the economy was extremely buoyant. This period of reconciliation, following years of war, should have increased labor-use intensity in the LSCS, resulting in higher levels of labor absorption. But two major acts of labor legislation-the Minimum Wages Act and the Employment Act of 1980-imposed countervailing forces to increased labor utilization. The Minimum Wages Act instituted higher minimum wage rates for all sectors in the economy. The Employment Act

of 1980 provided for minimum wages, collective bargaining, and greater rights of workers in the workplace. Further, any employer wishing to fire an employee is required to apply to the Minister of Labor for exemption. "The inability to fire means the inability to hire" is a common theme proclaimed by commercial farmers and the business community alike (personal conversations). Cropped area declined from 574.8 thousand hectares in 1980 to 541.1 thousand hectares in 1984. Total farm and forest employees in the LSCS declined from 271.9 to 214.2 thousand workers over the same period.

At least part of the decline in cropped area and labor force during this second period can be attributed to the downsizing of the LSCS due to the resettlement program. Of the total 2,743.3 million hectares acquired for resettlement through 1988/89, only 2,365.0 thousand hectares were acquired prior to 1985/86. However, since a large portion of this land is purported to have been abandoned or underutilized, this downsizing should have resulted in minor labor displacement. Also, the increase in the ratio of cropped area per worker, from 2.1 in 1980 to 2.5 by 1985, suggests that mechanization played an important role in expanding the productivity of workers (by increasing the numerator) and/or in substituting for labor (decreasing the denominator). Finally, nominal wages in agriculture increased 67 percent between 1980 and 1982. The effect of higher real wages is examined shortly. But it is worthwhile noting that while real wages paid increased 61 percent between 1980 and 1982, the real minimum wage increased only 33 percent, suggesting that rapid growth in real wages of more highly paid skilled and unskilled workers in the agricultural economy was also occurring. Whether this was due to increasing labor productivity or rising opportunity costs in the nonfarm sector is difficult to ascertain.

The third period, 1986 to 1990, can be characterized by acute foreign exchange shortages, rising unemployment, and the unknown but significant increase of Mozambican refugees entering the agricultural work force. The impact of the latter on displacing Zimbabweans is difficult to gauge due to poor data, but two impacts can be theorized from the influx of migrants: (a) an increased proportion of seasonal to permanent employees; and (b) an increase in total labor utilization on farms. The results in table 6.6 are consistent with these hypotheses. From 1985 to 1988, cropped area per worker declined from 2.5 to 2.2 hectares per worker, indicating more intensive use of labor. The ratio of seasonal to permanent employees increased from 0.45 to 0.81. The difficulty of acquiring spare parts and machinery, due to tight allocations of foreign exchange to agriculture, would also have tended to increase total labor employment, other things being equal, but should have had little effect on the mix of permanent and seasonal laborers. Thus, the shift toward seasonal workers seems to reflect in part the higher use of Mozambican migrants and in part the lagged consequences of employment legislation enacted in 1980 (i.e., inability to fire). Since 1985, real minimum agricultural wage rates have tended to stagnate or decline slightly.

The interplay between the political and economic forces engendered in the employment issue has important implications for land utilization. The shift toward a higher mix of seasonal to permanent labor has important implications for workers' income security. The following general model was estimated with OLS regression, assuming a linear functional form, to examine the relationship between employment legislation and labor employment:

(6.1) $L = (w/p, I, M, X_i \text{ or } GDP, P_d$

where w/p = real agricultural wages calculated as nominal wages actually paid in the Lscs, adjusted for inflation using the consumer price index for lower-income urban families *(Quarterly Digest of Statistics);* time series, 1973 to 1988 (Z$/year/worker);

I = dummy variable indicating enactment of employment legislation, I = 1 for 1980,... 1988, 0 otherwise;

M = value of farm machinery imports adjusted for inflation using the consumer price index for lower-income urban families *(Quarterly Digest of Statistics) (Z$);*

X_i = area of the $_{J\sim}$ crop, including cereals, industrial crops, tree crops, and vegetables in 000 hectares;

GDP = gross domestic product in agriculture, adjusted for inflation using the consumer price index for lower-income urban families *(Quarterly Digest of Statistics)* (000,000 Z$); and

P_k = dummy variable: 1 for Manicaland, Mashonaland, Matabeleland, and Midlands; 0 for Masvingo.

Equation *6.1* estimates the relationship between total demand for labor in the LSCS and real wage rates (w/p), the effect of employment legislation since its enactment in *1980 (I),* real value of machinery imports (M), gross domestic product in agriculture *(GDP),* and cropped area (X_i). Crop area serves two functions in the model: it captures labor-generating activities and the effect of crop production on the derived demand for labor, and it controls for the downsizing of total land area in the LSCS.[18] Four different models were estimated, the results of which are included in Table *6.7.*

Model A is intended to examine the substitution effects between on-farm machinery demand and employment. Unfortunately, data only on machinery imports were immediately available for this study, and then only for the years *1978* to 1987 (1986 missing). Regression results are thus based on a nine-year time series. Statistical results are not significant, but signs seem intuitively correct. For every marginal (1 ha) increase in total crop area, total labor demand increases by 0.2 workers. The impact of minimum wage legislation has been minimal due to the erosion of real wage rates over time (employment declines by 110 workers

18. If the shrinkage of land area in the Lscs involved mainly the acquisition of abandoned farms or idle lands, then crop area would remain unaffected and resettlement would have minimal effect on farm labor employment. Conversely, if downsizing involved a substantial loss of crop area (which does not appear to have been the case from Annex E.1), then X_i would control for that effect in estimating the impact of labor legislation on farm employment.

for every dollar increase in the real wage rate). However, employment legislation enacted in 1980 is shown to have had a profound impact on employment, reducing labor employment by 32,987 workers nationwide. Results for machinery show a negligible effect on labor demand.

TABLE 6.7

Relationship between labor demand and employment policy, large-scale sector

	MODEL A	MODEL B	MODEL C	MODEL D
Constant	217,607'	259,317'	329,316''	20,228'
Total crop area	.198			
Machinery imports	.0094			
Agriculture GDP		58.9		
Cereal crop area			.034	.377*
Industrial crops area			-.365	0.223''
Horticulture crops area			15.3`	**6.48***
Vegetable crops area			-4.70	3.78'
Real wage rate	-109.6	12.6	-36.0	
1980 labor legislation (dummy = 1, 1980-88)	-32,987	-73,686'	-58,077'	**-8,474'**
Manicaland				**4,788**
Mashonaland				-9,185"
Matabeleland				-9,292'
Midlands				-12,371'
Number of observations	9	13	13	71
R^2	.937	.917	.917	.965

* Significant at the 1% confidence level.

** Significant at the 5% confidence level.

In model B, gross domestic product in agriculture is included to examine the effect of economic activity in agriculture on employment in the LSCS. The GDP times series, from 1975 to 1988, was deflated by the GPI for lower-income urban households. The variable for real wages in agriculture has a positive sign but does not significantly affect labor employment. For every 1 million increase in real GDP, labor employment in the LSCS increases by 59 workers, but results are insignificant. However, the dummy variable for

employment legislation is shown to have reduced employment by 73,686 workers, significant at the 1 percent level.

Using aggregate GDP as an indicator of economic activity has the problem that GDP includes all economic activity in agriculture across sectors (LSCS, SSCS, communal, and resettlement). Model C uses cropped area planted in the LSCS as a proxy for economic activity to capture the derived demand for labor in agriculture. The time series includes data from 1973 to 1988 (1986 missing). As crop area expands, more labor is demanded in the sector. Results indicate that for every 1-hectare increase in cereals area, labor demand increases by 0.03 persons, and tree crops, by 15.3 workers. Results for vegetables and industrial crops show a reduction of total labor of 4.7 and 0.4 workers, respectively, for each hectare planted. These results are surprising since vegetables, cotton, and tobacco are labor intensive, but results are not significant. Employment legislation, again, has a profound impact on employment, having caused a reduction of 58,077 workers since 1980, significant at the 1 percent level. However, for every Z$1 increase in real wages, employment drops a negligible 36 workers, consistent with estimates in other models.

Model D uses provincial data to increase the degrees of freedom in the statistical analysis. Observations include yearly data from 1973 to 1988 for five provinces. While models A, B, and C are national models, model D is regional. Dummy variables for provinces help control for regional variations. Wage rates are excluded because data on actual wages paid are unavailable at the regional level. Area variables represent the area of various crop categories within each province. Statistical results are highly significant. Each hectare of cereals increases labor demand by 0.38 persons, vegetables by 3.77 persons, industrial crops by 0.22 persons, and tree crops by 6.48 persons. Employment legislation enacted since 1980 has reduced total labor employment by 8,474 workers on average per province.

Inflation has tended to erode minimum wages over time to such an extent that real wages by 1988 were only slightly higher than in 1980. Also, the minimum-wage-rate variable is highly correlated with the employment-legislation variable. It is not surprising, therefore, that real wage rates in the model show only a negligible impact on employment. The dummy variable for employment legislation, on the other hand, has a profound and highly significant effect on reducing labor demand. It is possible that the employment variable is picking up trends that are implicitly occurring over time. Model C was re-estimated with a time variable included to help control for this possibility. Coefficients changed only marginally; the effect of the dummy variable for employment legislation is a 60,364 reduction in total labor.

It would be difficult to conclude from this analysis that the employment legislation of 1980 and subsequent amendments have not adversely affected employment in the LSCS. Indeed, results suggest that the legislation has reduced employment by somewhere around 58.1 to 73.7 thousand workers. These results present an obvious dilemma, however. Removing restrictions on the ability to fire labor should increase employment and land utilization. Yet, a more viable LSCS also will exacerbate government efforts to acquire land for resettlement.

6.6 SUMMARY

A number of important trends in land use have occurred in the LSCS and communal sectors during the 1980s. A general downward trend in total land area in the LSCS has been under way due to the resettlement program. Despite this decline, industrial crops have been increasing both in nominal terms and as a percentage of crop mix. A sharp decline in maize in the LSCS has been counterbalanced by **a** strong growth in maize area in the communal sector.

As the 1970s was a decade of strong growth in productivity in the LSCS, the 1980s marked the diffusion of technology to the communal sector. Growth in maize production in communal areas was primarily a function of improved market access that enhanced production incentives and provided market opportunities. Changes in land use in the LSCs primarily reflected changes in real prices and growth in productivity.

A sharp upward spike in labor costs in 1980 also influenced farm labor employment and land use patterns in the LSCS. Labor costs and hiring practices are fundamentally influenced by the minimum wage (what firms must pay for labor) and restrictions on labor use (e.g., higher costs associated with firing bad workers or with loss of flexibility to downsize the work force in times of cyclical downturns in the economy). While minimum wage legislation sharply drove up wage costs in the early 1980s, inflation had eroded real wages to near pre-1980 levels by the end of the decade. Consequently, minimum wage legislation was found to have had negligible effect on labor demand by large-scale commercial farms. However, other restrictions imposed by employment legislation, specifically restrictions on firing labor, were found to have had a profound adverse impact on farm employment.

This analysis further raises a number of fundamental issues: (1) To what extent has government market interventions distorted optimal land use? (2) Given the predominance of maize in the cropping systems of communal area farmers and growers in resettlement schemes, what are the prospects for improving income from maize production? (3) Which sectors hold a comparative advantage in crop and livestock production? These questions are addressed in the next chapter.

Chapter 7

RATES OF PROTECTION AND COMPARATIVE ADVANTAGE

Three important studies by Masters (1990), [19] Morris (1988), and Woldu (1990) have attempted to measure the effect of government pricing and macro policy on the economics of land use and on implicit levels of taxation and subsidization of primary commodities. Each study estimates rates of protection and the comparative advantage of selected commodities in Zimbabwean agriculture. Although empirical assumptions and time frames vary among studies, the final outcomes are consistent and complementary.

7.1 NOMINAL AND EFFECTIVE RATES OF PROTECTION

The nominal rate of protection coefficient (NPC) measures the absolute level of financial (distorted) prices in the economy relative to import and export parity equivalents (i.e., border prices). The effective rate of protection (EPC) measures the combined effect of distortions in both commodity and input markets. Financial prices, either the price producers receive or that consumers pay, may be distorted by quotas, tariffs, subsidies, or taxes on goods crossing international borders. They may also be affected by official marketing operations, restrictions on interregional trade, and taxes or subsidies that influence interregional input and commodity trade flows. Border prices are also distorted from a global perspective because of commodity interventions by major producers and consumers elsewhere in the world. For small countries like Zimbabwe, however, which are unable to modify prices by exerting market power, world prices must be considered as a given for the foreseeable planning horizon. Nominal and effective rates of protection are estimated in equations 7.1 and 7.2.

(7.1) $$NPC_k = \frac{P_k}{P_k^b}$$

19. This chapter draws heavily on the work of Will Masters, from the MLARR, who developed the crop budget models and who collected the data used to estimate rates of protection, private and social indicators, and domestic resource costs referred to so extensively in this paper. Any misrepresentation of the model or misinterpretation of results, however, remain the sole responsibility of the author.

(7.2) $$EPC_k = \frac{(P_kQ_k - \sum w_i X_i)}{(P_k^b Q_k - \sum w_j^b X_j)} \quad \text{for } j = 1,\ldots n \text{ inputs}$$

where P_k = financial price of the k^m commodity;

P_k^b = economic border price of the k^m commodity;

Q_k = output of the k^m commodity;

w_i = financial price of the i^t input;

w_p^b = opportunity cost (for nontradables) or economic border price (for tradables) of the input; and

quantity of the?' input x used in the production of the kth commodity.

An NPC less than 1 indicates that producers of the commodity are being taxed; greater than 1 means they are being subsidized. Having an NPC and an EPC less than 1 indicate that producers of the commodity overall are being taxed after considering the combined effect of policies in both output and input markets. Having an NPC less than 1 and an EPC equal to 1 means that producers are being taxed in the commodity market, but overall are being just compensated by input subsidies. Having an NPC less than 1 and an EPC greater than 1 means that producers are being taxed in commodity markets, but subsidized input prices result in net positive subsidization of producers of the commodity overall.

Official prices in Zimbabwe are usually fixed on a cost-plus margin basis and administered according to a pan-seasonal pricing system. Woldu's (1990) analysis in table 7.1 shows that border parity prices, calculated on the basis of the official exchange rate, were roughly equivalent to producer prices of maize, wheat, sorghum, and tobacco, indicating neutral commodity price policy; and below producer prices of groundnuts and cotton, implying positive production incentives. The NPC for soyabeans (.90), on the other hand, suggests that output is implicitly taxed. Woldu points out, however, that the official exchange rate in Zimbabwe was overvalued by about 30 percent at the time of his study, malting export prices for tobacco and cotton more expensive, and making imports (e.g., for wheat, spare parts, etc.) cheaper than would otherwise be the case. If the exchange rate were valued at its true opportunity cost, the analysis indicates that commodity prices of cereals were covertly taxed in 1988 by 16-24 percent; cotton, 16 percent; tobacco, 23 percent; and soyabeans, 29 percent.

TABLE 7.1

Nominal and effective rates of protection

	MZ	WT	SG	SF	SB	GN	CT	TB
Nominal rates of protection (NPCS)								
Woldu (1988):								
NPc	.98	.99	1.03		.90	1.20	1.19	1.00
ANPC'	.80	.76	**.84**		.71	.95	**.84**	.77
Masters (1989):								
Lscs	.92	.68		1.00	.75	.69	.82	
Communal	.94		1.00	1.00		.99	.79	
Morris:								
(1984)	.62	.84						
(1985)	**.88**	.97						
(1986)	1.20	1.16						
Effective rates of protection (EPCs)								
Woldu (1988):								
Irrigated (Lscs)	.31	1.22			.02	1.48	.40	.70
Rain-fed (Lscs)	.54				.30	.45	.39	.44
Rain-fed (communal)	.76					.13	.52	
Masters (1989):								
Irrigated (Lscs)		.63						
Rain-fed (Lscs)	2.09			-3.07	**.84**	.69	1.05	
Rain-fed (communal)	1.13		1.22	1.10		1.05	**.84**	

MZ = maize; WT = wheat; SG = sorghum; SF = sunflower; SB = soyabeans; GN = groundnuts; CT = cotton; and TB = tobacco.

a. NPC is calculated at the official exchange rate; ANPC, at the estimated shadow exchange rate.

Source: Mathewos Woldu, "Agricultural Pricing Policy in Zimbabwe" (Emena Region, Technical, Agriculture Division, January 1990); Will Masters, unpublished data, Ministry of Lands, Resettlement and Rural Development, Government of Zimbabwe, Harare, 1990; and Michael L. Morris, "Comparative Advantage and Policy Incentives for Wheat Production in Zimbabwe," CIMMYT Economics Working Paper no. 88/02 (Harare: International Maize and Wheat Improvement Center, 1988).

In Will Masters's (1990) collection, official producer prices are reported for the 1989 cropping season. Border prices are calculated as the long-term price of a commodity, that is, average international price (1980-1988) converted by the 1989 official exchange rate. With regard to large-scale producers, output prices of wheat are effectively taxed 32 percent; groundnuts, 31 percent; soyabeans, 25 percent; cotton, 18 percent; and maize, 8 percent. Communal prices are some unknown weighted average of prices received via official market sales and prices received from sales on the private market to neighbors and local shops. These

weighted prices are generally higher than the official prices received by large-scale producers, reflected in the higher nominal rates of protection. Maize prices in communal areas appear to have been only slightly taxed in 1989, while cotton is heavily taxed at about the same rate as large-scale producers (21%)." Pricing of sorghum, sunflower, and groundnuts indicates relatively neutral incentives.

Although producers are generally taxed implicitly in the commodity market, input subsidies result in overall positive production incentives for certain crops. By also taking account of input prices at their opportunity costs, Woldu's (1990) analysis for 1988 indicates that positive production incentives existed for irrigated wheat and groundnuts, while government policies heavily discriminated against maize, cotton, and tobacco. The EPC of .02 for soyabeans indicates that financial profits were nearly zero. Masters's (1990) estimates of EPCs for 1989 shows that once economic prices of inputs are considered, rain-fed production of maize and cotton in the LSCS received positive production incentives (EPC = 2.09 and 1.05, respectively), while soyabeans and groundnuts were effectively taxed overall. In the communal sector, on the other hand, all commodities with the exception of cotton (.84) received positive production incentives, indicated by EPCs of 1.13 for maize, 1.22 for sorghum, 1.10 for sunflower, and 1.05 for groundnuts.

7.2 PRIVATE AND SOCIAL PROFITABILITY INDICATORS

Private profitability is calculated by valuing inputs and output at their financial prices. Social profitability measures tradable products and inputs at their world equivalent prices, converted at the shadow exchange rate.[21] Social profitability indicators thus remove commodity-specific price and macro-policy distortions.

The three studies in table 7.2 calculate private profitability per hectare under rain-fed and irrigated conditions. Tobacco is the most profitable crop by far, based on either private or social prices in all studies. Irrigated cotton is the next most profitable crop, followed by irrigated and rain-fed groundnuts. While soyabeans in 1986 were only modestly profitable, by 1988 and 1989 they had become the third most profitable crop, followed generally by wheat then maize. The negative return for sorghum implies that production of this crop under rain-fed conditions is either not profitable in the LSCS or only marginally so in the communal sector. In communal areas, groundnuts appear to be consistently profitable; results for cotton and maize are mixed between the Woldu (1990) and Masters (1990) studies.

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20. The fact that communal farmers report an average sale price slightly lower than large-scale producers suggests that transport differentials are being capitalized into the sale price.

21. Woldu (1990) estimated that the exchange rate was 30% overvalued in 1988; Masters (1990) estimated that by 1989, it was overvalued by 50%.

TABLE 7.2

Private and social profitability indicators

	MZ	WT	SG	SF	SB	GN	CT	TB
				Morris (1986)				
Irrigated **(PP)**	177	178			144	170	751	2,783
Irrigated (se)	679	682			255	385	1,550	8,703
Rain-fed **(PP)**	122				93	82	259	852
Rain-fed (se)	315				159	201	637	5,137
				Woldu (1988)				
Lscs: irrigated (PP)	128	325			12	590	618	4,640
Lscs: irrigated (se)	204	266			630	400	815	6,659
Lscs: rain-fed (PP)	99		-32		158	74	-28	2,394
Lscs: rain-fed (se)	7		**188**		**684**	354	-203	5,422
CA: rain-fed (PP)	75					225	**48**	
CA: rain-fed (sP)	95					465	-27	
				Masters **(1989)**				
Lscs: irrigated (PP)		**588**						
Lscs: irrigated (se)		2,667						
Lscs: rain-fed (PP)	143			-3	114	107	296	
Lscs: rain-fed (se)	557			**184**	875	1,582	1,383	
CA: rain-fed (PP)	45		-111	-19		45	169	
CA: rain-fed **(s^P)**	209		**-53**	**86**		212	**652**	

MZ = maize; w r = wheat; SG = **sorghum; SF = sunflower; SB** = soyabeans; GN = groundnuts; CT = cotton; and TB = tobacco.
PP = private profitability; sP = social profitability.

Source: Mathewos Woldu, "Agricultural Pricing Policy in Zimbabwe" (Emena Region, Technical, Agriculture Division, January 1990); Will Masters, unpublished data, Ministry of Lands, Resettlement and Rural Development, Government of Zimbabwe, Harare, 1990; and Michael L. Morris, "Comparative Advantage and Policy Incentives for Wheat Production in Zimbabwe," CIMMYT Economics Working Paper no. 88/02 (Harare: International Maize and Wheat Improvement Center, 1988).

A number of points are worth highlighting. First, with few exceptions, the ranking of profitability of crops has remained relatively constant over time: tobacco followed by cotton, groundnuts or soyabeans, wheat, then maize. Second, since tobacco is nearly 4-8 times more profitable than cotton, and cotton is again several times more profitable than cereals, these crops are likely to retain their ranking for the foreseeable future. Third, price and market policies sharply reduced the social profitability of all crops in the latter half of the 1980s under both irrigated and rain-fed conditions. The net difference between private and social

costs equals the net effect of government policy (ND = PP - SP). A positive difference (ND < 1) implies that government policies on the whole favored production of the crop by making it more profitable than it otherwise would have been. A negative difference (ND > 1) implies that government policies discriminated against the production of that crop. Results of table 7.2 indicate that the government discriminated against all crops in the latter part of the 1980s.

7.3 DOMESTIC RESOURCE COSTS

The domestic resource cost ratio (DRC) measures the efficiency of domestic use of resources—land, labor, capital, and water—in terms of foreign exchange:

$$DRC_k = \frac{(w; F,)}{P_k Q_k - w_j^b T_j)} \quad \textit{summed across all i and j inputs} \qquad (7.3)$$

where P_k^b = economic border price of the commodity;

Q_k quantity of the k^{d_1} commodity;

▪ opportunity cost of the t^h primary factor of production;

F_i quantity of the $e^{|}$ primary factor of production;

w_j^b ▪ world price equivalent of the tradable input; and

T_j quantity of thet tradable input.

A positive DRC between 0 and 1 indicates that the value of domestic resources used in production is less than the value of the foreign exchange earned or saved. Thus, a country has a comparative advantage in the production of that good. A positive DRC greater than 1 indicates that the value of domestic resources used in production exceeds the value of foreign exchange earned or saved, suggesting that the country does not hold a comparative advantage in that good. A negative DRC implies that resources are being wasted (i.e., more foreign exchange is used in production of a commodity than it is worth).

Results by Morris (1988) suggest that under normal rainfall conditions, Zimbabwe enjoys a comparative advantage in wheat, cotton, and tobacco, all with DRCS less than 1 (table 7.3). With regard to wheat, for example, Z$0.28 of domestic resources are required to save Z$1.00 of net foreign exchange. For cotton and tobacco, Z$0.62 and Z$0.59 of resources are needed to *earn* Z$1.00 in foreign exchange. Under drought conditions, however, water becomes the limiting factor because water is insufficient for both summer and winter irrigation. The high private and social returns to tobacco suggest that irrigating tobacco makes the best economic use of resources. If any water is left over after all available tobacco land has been utilized, the opportunity cost of water decreases to what it is worth in the next most profitable use (i.e., in maize and cotton cultivation). The DRC analysis then indicates that

Zimbabwe has a comparative advantage in irrigated maize (DRC = .72) and cotton (DRC = .76), once tobacco lands have been fully exploited. Both the Morris (1988) and Masters (1990) studies indicate a comparative advantage in wheat as long as water is abundant. However, once water is scarce and water prices are assigned to the next most profitable use, wheat represents an inefficient use of resources.

Under rain-fed conditions, commercial farmers hold a comparative advantage in all goods relative to the rest of the world. The DRC for soyabeans is .22; groundnuts, .24; cotton, .25; maize, .36; and sunflower, .58. With the exception of sorghum, communal farmers also show a comparative advantage relative to the rest of the world. However, **DRCS** for the communal sector indicate that it is relatively less efficient than the LSCS in the production of maize, sunflower, groundnuts, and cotton.

Inherent in these DRCS, however, is the problem that production systems and yields vary according to differences in ecological region. Unfortunately, two intractable problems are experienced in estimating DRCS by ecological zone. First, the crop budgets prepared by the Commercial Farmers Union and National Farmers Union, which are the basis of the Woldu (1990) and Masters (1990) studies, do not give a breakdown of input use by natural region. Second, detailed data on input use are not reported in official statistics, despite the fact that fertilizer data are collected.[22]

TABLE 7.3

Domestic resource cost ratios

	MZ	WI'	MG	SF	SB	GN	CT	TB
				Morris (1986)				
Normal conditions	2.12	.28			4.93	**4.06**	.62	.59
Drought scenario	.72	1.56			1.51	2.42	.76	**.15**
				Masters (1989)				
Lscs: irrigated		.11						
Lscs: rain-fed	.36			**.58**	.22	.24	.25	
Communal: rain-fed	.51		1.23	.78		**.59**	.33	

Source: Will Masters, unpublished data, Ministry of Lands, Resettlement and Rural Development, Government of Zimbabwe, Harare, 1990; and Michael L. Morris, "Comparative Advantage and Policy Incentives for Wheat Production in Zimbabwe," CIMMYT Economics Working Paper no. 88/02 (Harare: International Maize and Wheat Improvement Center, 1988).

22. These data could presumably be estimated from the original data if they were accessible from Cso.

DRCS in table 7.4 are calculated using the budget models estimated by Will Masters (1990) with several modifications: (1) Yields for the LSCS by natural region are 1988 yields taken from CSO data; yields in NRs I through IV are assumed to be nonirrigated; the high yields observed for region V suggest that crops had been irrigated. (2) Yields for the communal areas are assumed to be three-year averages reported by DERUDE for resettlement farmers (1984-86 cropping seasons) in Annex J. Cusworth (1990) reports elsewhere that yield data for resettlement farmers are quite comparable to those of communal area farms. (3) Irrigated treatments are 6.5 (1,000 m^3) of irrigation water/hectare for wheat; maize, 2.4; sunflower, 2.4; soyabeans, 2.4; groundnuts, 5.28; and cotton, 6.24 (Morris 1988). No comparable crop budget models were available for tobacco or livestock.

TABLE 7.4

Domestic resource costs by natural region

	MZ	WI'	MG	SF	SB	GN	CT	l
				LSCS: irrigated				
NR I		-4.34						
NR II		.11						
NR III		.11						
NR Iv		.20						
NR v	.73	.24		8.05	.18	.10	.26	
				LSCS: rain-fed				
NR I	1.11			-.27	.20	.37	.35	
NR II	.58			-.40	.22	.15	.19	
NR III	.96			-.36	.20	.17	.26	
NR Iv	4.01			-.38	-.57	.28	.21	
				Communal: rain-fed				
NR I	1.15		1.08	**.84**		3.45	.19	
NR II	.47		.38	.46		.7	.19	
NR III	.75		.96	.49		.75	.24	
NR Iv	2.35		1.77	.56		**.48**	.47	
NR v	-3.30		1.91	2.78		2.17	8.50	

Based on these data, the LSCS shows a strong comparative advantage in the production of irrigated wheat in all regions except NR I. DRCS of .10 for groundnuts, .18 for soyabeans, .26 for cotton, and .73 for maize also indicate comparative advantage relative to the rest of the world given the average rainfall and yields in 1988. However, under drought situations, one would apply limited water to tobacco, first, followed by groundnuts, soyabeans, then cotton in NR V.

In the rain-fed sector, NR I appears to hold a comparative advantage in soyabeans (.20), cotton (.35), and groundnuts (.37), and a comparative disadvantage in maize (1.11) and

sunflower (-.27). DRCS for NR II suggest a comparative advantage first in groundnuts (.15), followed by cotton (.19), soyabeans (.22), then maize (.58). In NR III, groundnuts (.17) again appear to make the best use of land, followed by cotton (.26) and soyabeans (.20). The DRC of .96 for maize indicates only a slight comparative advantage. The LSCS is relatively inefficient in the production of all crops (for which DRCS were calculated) in NR IV. Crops in NR V are primarily irrigated.

Based on average yields for the 1984-86 season, communal area farms show a strong comparative advantage in cotton (.19) and sunflower (.84), and a comparative disadvantage in maize, mhunga, and groundnuts relative to the rest of the world. In NR II, communal farmers are relatively efficient producers of cotton (.19) groundnuts (.27), mhunga (.37), sunflower (.46), and maize (.47). While large-scale farms in NR II appear to be more efficient producers of groundnuts (.15 vs. .27), given current technology, communal farmers appear to be relatively more efficient producers of sunflower (.46 vs. -.40) and maize (.47 vs. .58). Similar patterns hold for NR III. Both large-scale and communal farmers hold a comparative advantage in cotton, groundnuts, and maize compared with the rest of the world. But communal farmers appear to be relatively more efficient producers of sunflower (.49 vs. -.36) and maize (.75 vs. .96). The LSCS is relatively more efficient in groundnut production (.17 vs. .48). Soyabeans and maize appear to be inefficient uses of land in NR IV. Both sectors continue to hold a comparative advantage in cotton and groundnuts, though farms in the LSCS appear to be relatively more efficient producers. All crops appear to be inefficient users of resources in both sectors in NR V, unless irrigated.

7.4 SUMMARY AND IMPLICATIONS

Price policy has established appropriate economic incentives for producers by aligning producer prices with border parity prices (at the official exchange rate). However, because official exchange rates are overvalued, the private profitability of all crops is sharply reduced, resulting in taxation of producers. Disincentives are fairly widespread because social profitability exceeds private profitability for all crops. Yet, since all prices are taxed uniformly, resource allocation and crop mix do not seem to be grossly distorted.

Although government policies have discriminated against producers on output prices, certain crops have been more than compensated through input subsidies. Current price policy provides overall net subsidies to commercial producers of irrigated wheat and groundnuts and rain-fed maize and cotton. Farmers receive substantial subsidies on both credit and tradable inputs (fertilizers and chemicals). The LSCS is the major beneficiary of these subsidies, though small net subsidies are also received on nearly all crops in communal areas.

Results of the DRC analysis for NRs II and III suggest that the LSCS holds a comparative advantage in tobacco, groundnuts, and soyabeans. Communal farmers appear to have a comparative advantage in maize and sunflowers. Both groups tend to be nearly equally efficient in cotton production. It is clear from chapter 6 that both sectors have been moving in the direction of their comparative advantage. For the LSCS, cropping patterns have been

shifting away from maize toward industrial crops. For the communal sector, cropping patterns have been shifting toward maize and cotton.

A number of policies affect the prices paid by farmers for purchased inputs. Import tariffs and sales taxes exert upward pressure on input prices. But these are more than offset by an overvalued exchange rate, which makes imports appear cheaper in local currency, and exports, more expensive. Still, given that the exchange rate is estimated to be overvalued by 50 percent, there has been considerable incentive to substitute capital imports for land and labor.

While minimum wage-rate policy had a substantial influence on profitability in the early 1980s, real minimum-wage rates have now eroded to near pre-1980 levels due to inflation. Nominal wage rates are higher than in the communal sector, but this in part reflects the higher marginal value of labor from industrial crop (versus cereal) production. Employment legislation in chapter 6 was shown to have profoundly decreased labor demand on farms. This implies a real cost for hiring new people (given employer uncertainties whether or not those hired will prove to be good workers), but does not affect the cost of already hired employees.

Agricultural credit policy—specifically, the provision of AFC credit at rates several points lower than formal lending institutions—have reduced borrowing costs and shifted incentives toward the utilization of capital-intensive technology. LsCS farmers, who receive about 80 percent of the credit provided by the AFC, are the main beneficiaries. Tight foreign-exchange allocations to agriculture have helped dampen the substitution of capital machinery for labor. But current donor programs to supplement foreign exchange will almost certainly exacerbate the decline in labor employment in the LSCS, all else being equal.

Comparative advantage is dynamic, constantly changing with investment in human capital, agricultural research, and extension. Rates of growth in yields in the communal sector will continue to converge toward the slower rates in the LSCS as the diffusion of technology spreads. Communal farmers now hold a comparative advantage in maize production. But due to record stock levels, slow export demand and scarce foreign exchange in surrounding SADACC countries, and transport constraints (internally and externally), production from communal areas will continue to place downward pressure on maize prices. As long as its comparative advantage holds, a continuing decline in LSCS maize production is expected.

Under the current situation of transport bottlenecks, there is a high economic rent to scarce transport capacity. Until rents decline, economic incentives will be biased toward the production of commodities with high value per unit of volume in transport (e.g., tobacco, cotton, fruits, and vegetables) and against commodities with low value per unit of volume (e.g., grain). As transport costs rise, grain producers will find themselves increasingly at a disadvantage relative to other commodities. Thus, while the communal sector's comparative advantage in maize production is apparent, the long-term prospects of a maize-based economy to drive income growth is not encouraging.

Chapter 8

LAND UTILIZATION IN THE LARGE-SCALE COMMERCIAL SECTOR

8.1 BACKGROUND

Many attempts have been made to estimate the extent of land utilization in the LSCS. A 1960 study, cited by Cliffe (1986), estimated that only 24 percent of total arable land in the sector was cultivated, and that the cattle herd operated at only 35 percent of potential stocking rates. The sector's substantial contribution to agricultural production and export earnings mask a number of inefficiencies (Riddell 1978a, 1978b). Riddell notes that over 60 percent of commercial farms in 1975/76 were not profitable enough for income-tax payments; only 15 percent of the potentially arable land was actually cultivated. A 1982 study by Hawkins Associates for the World Bank presents an opposite view. It found that the utilization of net arable land ranged between 58 and 128 percent in five of the six intensive conservation areas they assessed in the country's main cropping region.[23]

A study by Weiner et al. (1985) tried to untangle some of these apparent contradictions. It calculated rates of land utilization for 14 districts and 3 provinces of Mashonaland, which incorporate most of NR II and some of NR III. Based on 1981/82 cropped area, only 24.7 percent of arable land in Mashonaland West, 33.3 percent of Mashonaland Central, and 14.9 percent of Mashonaland East were actually cultivated in crops. Even after making the very conservative estimate that 20 percent of the arable land is needed for squaring of fields, construction of roads and homesteads, and pockets of inaccessible land, and that another 15 percent is needed for mechanical conservation measures (contouring, waterways), land utilization increased to only 36, 49, and 22 percent, respectively. Further, none of the district-level data came even remotely close to the efficiency rates reported in the Hawkins Associates (1982) study, raising serious doubts about their validity.

A more recent study by the World Bank (1986) divided commercial areas into grazed, cropped, fallow, and unusable land. Actual stocking rates of livestock were then compared with safe stocking rates recommended by AGRITEX for grazing areas. It concluded that of the 12.7 million hectares in commercial areas, only 1.0 million hectares of truly surplus land would be available for additional livestock grazing, most of that in NR V. Also, only 549,000 hectares out of 3.0-3.5 million hectares of potentially arable land were used for crop cultivation, with the remainder used mainly for livestock grazing. Rather than representing an inefficient use of resources, the study argues that a number of factors have helped make livestock a lucrative enterprise on this arable land: (1) restrictions until recently on Africans' ability to purchase land in European areas; (2) the low purchasing power of Africans; (3)

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23. An "intensive conservation area" is an administrative boundary within the commercial farming area.

tribal lands in communal areas being off-limits to commercial farmers; (4) restrictions on purchases and sales in the land market; (5) absence of a formal leasing market; (6) the sharp increase in minimum agricultural wage rates since independence; and (7) a shortage of capital equipment brought about by the acute rationing of foreign exchange to the agricultural sector. These market imperfections have tended to keep land prices low by limiting demand for arable land, thus increasing incentives for extensive (i.e., livestock) farming systems.

Since the work of Weiner et al. (1985) in 1981/82, four fundamental forces have continued to dramatically shape land-use patterns and thus land utilization:

- The LSCS has declined from 15.0 million hectares in 1979 to 11.2 million hectares by 1988, a 26.6 percent decline. Some unknown but sizable area of this land comprised abandoned farms with high rates of underutilization.

- As a result of pricing policy, there has been a dramatic shift in cropping patterns away from cereals toward industrial and specialty crops. These crops are less land intensive, requiring higher inputs of labor per unit of area.

- Total labor employed on farms has declined from 286,825 permanent and casual farm employees in 1979 to 227,626 employees by 1988, a 20.6 percent decline.

- The number of beef and dairy cattle has declined from 2.2 million head in 1980 to 1.8 million head by 1988; cattle numbers in NRs I and II have declined only marginally.

Item (1) should in general have led to increased aggregate land utilization by removing abandoned and inefficient farm enterprises from the sector. However, items (2) through (4) would tend to decrease land utilization in the aggregate depending on the magnitude of changes involved. Moreover, changes in land redistribution and land-use patterns have not been uniform across either provinces or natural regions. Accordingly, a number of fundamental issues arise. The first is concerned with the extent of utilization of arable land for crop agriculture. The second is concerned with stocking rates of livestock and the extent of underutilization of grazing land. The third is concerned with whether using livestock for arable land constitutes an economically efficient use of resources.

8.2 LAND UTILIZATION

8.2.1 CROP PRODUCTION ON ARABLE LAND

Assessing potential arable land normally requires detailed soil surveys and/or farm plans because of the wide variation in geological formations and soil types in Zimbabwe. Because land utilization is so central to proposals for land redistribution, a number of authors have recommended that regular studies on land use be undertaken, and that a better data base

be established, beyond simple national and regional aggregations (Chavunduka 1982; Cliffe 1986). While AGRITEX has continued its work on assimilating farm plans, the work is not sufficiently advanced to permit either ready access to data or immediate analysis.

Two somewhat dated studies have tried to estimate the area of arable land. As mentioned earlier, the Weiner et al. (1985) study estimated total arable land from a 10 percent sample frame of farm plans compiled by the Ministry of Agriculture over a 3-year period prior to 1981, when the study was conducted. Amble land was estimated for three provinces, Mashonaland East, Mashonaland Central, and Mashonaland West. The most comprehensive study, however, is the now famous work of Vincent, Thomas, and Staples (1962), who conducted a detailed agro-ecological survey of then-Rhodesia from 1950 through 1956. This exhaustive survey estimated, in detail, the amount of arable land by natural region.

Column A in table 8.1 shows total area of land by province and natural region as of 1988 (CSo). Only the three provinces in Mashonaland are selected to take advantage of the data on arable land from the Weiner et al. (1985) study. Column B contains estimates of arable land. For the three provinces of Mashonaland, data from Weiner et al. (1985) are used, adjusted downward to reflect land acquired for resettlement.' For natural regions, percentage arable land in column C[25] is adapted from detailed data reported in Vincent, Thomas, and Staples (1962, p. 107).

Column D reports crop area by province and natural region for the 1988/89 cropping season. Only 19 percent of gross arable land in Mashonaland East was planted in crops, 24 percent in Mashonaland West, and 34 percent in Mashonaland Central. Comparable figures in Weiner et al. (1985) were 15, 25, and 33 percent, respectively, for 1981, showing only marginal changes in land utilization between 1981 and 1988, the higher utilization in Mashonaland East being the exception.

Estimates of cropping efficiency in NRs II and III are generally higher than provincial totals because all three Mashonaland provinces contain sizable areas of NR IV, which has a very low rate of land utilization (measurement differences are partly responsible as well). Based on the percentage arable land figures taken from Vincent, Thomas, and Staples (1962) in column E, 40 percent of the gross arable land in NR I was cultivated, 36 percent in NR II,

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24. Arable land in 1988 was assumed to have the same proportion to total land as in 1981, the time of the Weiner et al. (1985) study.

25. Arable land, according to Vincent, Thomas, and Staples (1962), is "land which has adequate depth of soil for satisfactory plant growth, and which can safely be cultivated using normal rotations, cultural practices, and protection methods. This definition excludes certain areas of potentially arable land. For example, much of the land in NR I is not classified as arable because of excessive slope. Yet this land is quite suitable for forestation and for orchards and plantation crops. Land in Nrs IV and V is also potentially arable with irrigation, but would require large capital investment in land.

TABLE 8.1

Efficiency of arable land use for crop production

	TOTAL AREA (000 ha)	ARABLE LAND (000 ha)	ARABLE LAND (%)	CROP AREA[d] PLANTED (000 ha)	CROPPING EFFICIENCY (%)	NET ARABLE LAND (000 ha)`	NET CROPPING EFFICIENCY (%)	ADJUSTED CROP AREA (000 ha)	ADJUSTED CROPPING EFFICIENCY (%)
	A	B	C=B=A	D	E=D=B	F	G=D=F	H	I=H=F
Mashonaland West	**1,886.0**	760.6'	40.3	184.6	24.3	650.3	**28.4**	270.2	**41.6**
Mashonaland Central	732.6	307.3'	**41.9**	105.4	**34.3**	262.7	**40.1**	152.7	**58.1**
Mashonaland East	957.8	522.1'	54.5	97.6	**18.7**	**446.4**	**21.9**	139.1	31.2
NR I[b]	202.2	27.9	**13.8**[6]	11.7	39.7	23.9	**49.0**	12.1	50.6
NR II	3,686.9	1,047.1	**28.4**	379.1	36.2	895.3	42.3	556.0	62.1
NR III	2,405.4	574.9	23.9	**48.4**	**8.4**	491.5	**9.9**	**74.9**	15.2
NR IV	2,429.1	10.1°	0.0	8.9	**88.1**	10.1	**88.1**	10.2	**101.0**
NR V	**2,489.7**	102.5°	0.0	52.3	51.0	102.5	51.0	53.1	**51.8**

a. From Dan Weiner et al., "Land Use and Agricultural Productivity in Zimbabwe," *Journal of Modern African Studies* 23 (1985): 252-85, less land acquired for resettlement, assuming that 1988 totals contain the same proportion of arable and nonarable land as in 1981.

b. Percentages for natural regions are adapted from V. Vincent, R.G. Thomas, and R.R. Staples, *An **Agricultural** Survey of **Southern** Rhodesia: Part I, **Agro-Ecological Survey*** **(Harare: Ministry** of Lands, **Agriculture** and Resettlement, 1962), p. 107.

c. Arable land is irrigable land times a cropping intensity of 2.

d. Crop area in 1988/89 (Central Statistics Office).

e. Arable land less 10% for squaring of fields, tree lines, roads, homesteads, and pockets of inaccessible land, and less 5% for mechanical conservation measures.

f. Crop area adjusted to include recommended fallow rotations.

and 8 percent in NR III. The amount of arable land in NRs IV and V is zero (column C) because rainfall is too low and variable. Data for arable land in column B are thus area under irrigation times two for double-cropping. Data in column E report fairly high rates of utilization, at 88 and 51 percent for NRs IV and V, respectively.

As was earlier pointed out in the Weiner et al. (1985) study, however, these calculations are misleading because not all arable land is available to farmers. Column F in table 8.1 provides a figure for net arable land which makes the following adjustments:

- arable land in column C is reduced by 10 percent to account for land lost due to squaring of fields, tree lines, and construction of roads and homesteads, and for pockets of land that are inaccessible; and
- a further reduction of 5 percent is made to account for land lost for mechanical conservation measures, contouring, access roads, and artificial waterways.

The Weiner et al. (1985) analysis, in order to remain consistent with Ministry of Agriculture plans, used the figures of 20 and 15 percent, respectively, to cover the above losses. But it later points out that these figures are themselves policy recommendations based on commercial farming systems. While commercial farms may require surplus land for squaring of fields and inaccessible pockets, these areas may be quite suitable for small-scale agriculture. Estimates of net arable land in table 8.1 are thus less conservative than those in Weiner et al. Using net arable land in column F, cropping efficiency increases to between 22 and 40 percent in Mashonaland, and to between 10 and 49 percent in NRs I, II, and III.

Actual cropped area ignores two factors in determining rates of land utilization: (1) certain crops such as wheat are irrigated under double-cropping systems and thus result in double accounting of crop area; and (2) certain crops, principally tobacco, require grass fallow according to AGxITEX recommendations. The first overstates the area of crops actually planted. The second underestimates the effective amount of land required for sustainable crop yields. To account for double-cropping and the need for fallowing the system, crop area in column H is adjusted by the formula:

$$X \quad (1+a_u) * X_a \quad \textit{for all i crops in region j} \tag{8.1}$$

where X_{ij}^a adjusted area of crop i in region j;

a_{ij} ley or discount factor for crop i in region j derived from Annex I; and

X_{ij} = actual area of crop i in region j.

As shown in Annex I, 3 hectares of grass are recommended for every hectare of tobacco, resulting in a ley factor of 3. Maize requires 3 hectares of grass for every 2 hectares of maize on light soils but no rotation on heavy soils. Assuming that 50 percent of soils are heavy and 50 percent light, the ley factor is 3 hectares of grass for every 4 hectares of maize,

giving a ley factor of 0.75. A discount factor of -1.0 is assigned to wheat because it is generally double-cropped (i.e., two crops per year, one wheat, followed or preceded by another) and thus its area is already accounted for by other crops. A discount factor of -1.0 is also indicated for fodder crops. Aside from the issue of the economic profitability of forages compared with crop production, fodder crops can be substituted for grass fallow in the tobacco and maize rotations. Finally, other crops are assumed to be cultivated under 100 percent cropping systems for lack of more detailed data on type and frequency of rotations. The ley factor for these other crops has thus been set at 0.0.

After making these adjustments for double-cropping and fallow, cropping efficiency in column I increases to 31 percent in Mashonaland East, 42 percent in Mashonaland West, and 58 percent in Mashonaland Central. In NRs I and II, cropping efficiency increases to 51 and 62 percent, respectively, while cropping efficiency in NR III is 15 percent. Although land utilization has increased from a decade ago, approximately 40-50 percent of the arable land in the LSCS in NRs I and II, respectively, remains unutilized for crop production. Arable land in NR III remains grossly underutilized at only 15 percent.

While these data are imperfect, it would be difficult not to reach the conclusion that there is a large area of unutilized land in NRs I, II, and III that could potentially be redistributed without depressing commercial crop production and exports. [26] But crop production represents only one facet of agriculture. Livestock is also an important industry, raising two fundamental issues: whether stocking rates on remaining arable land and on grazing land indicate full utilization of grazing areas, and whether grazing livestock on arable land in NRs I, II, and III makes the most economical use of resources.

8.2.2 UTILIZATION OF GRAZING LAND

Use of grazing land for extensive livestock production is examined in table 8.2. Grazing land in column E is calculated as total area in column A, less cropped area in column C (minus planted fodder crops), less unusable land in column D (estimated at 20% of total land area). Livestock units in column F were estimated from 1988 numbers of cattle, sheep, and goats, and the conversion factors of 0.7 LU for each head of beef or dairy cattle and 0.15 LU for each head of sheep and goats. Unfortunately, livestock numbers are known with some certainty only at the provincial level. Numbers of livestock units by natural region are thus adapted from national totals and regional percentages reported by the World Bank (1986). Regional results should be viewed with caution since the methodology for estimating livestock numbers by region is unclear from the World Bank report and data are somewhat dated. Given that more accurate regional numbers become available, results can be updated accordingly.

Potential grazing area per livestock unit in column G is compared with three grazing strategies: column H is the optimal stocking strategy recommended by AGRITEX to permit

26. This of course depends crucially on the process used to redistribute land (see ch. 9).

TABLE 8.2

Grazing land efficiency

	TOTAL AREA (000 ha)	CROP AREA PLANTED (000 ha)	CROP AREA LESS FODDER (000 ha)	UNUSABLE LAND (000 ha)	GRAZING AREA (000 ha)	LIVESTOCK UNITS (000 LU)	GRAZING AREA/LU (ha/LU)	LOW RISK STOCKING STRATEGY (ha/LU)	MODERATE RISK STOCKING STRATEGY (ha/LU)	HIGH RISK STOCKING STRATEGY (ha/LU)
	A	B	C	D	E=A-C-D	F	G=E=F	H	I	J
Manicaland	760.7	43.6	40.0	I52.1	568.6	67.5	**8.4**			
Mashonaland	3,576.5	387.7	343.2	7I5.2	2,5I8.I	570.9	4.4			
Midlands	I,689.I	I8.I	I5.6	337.8	1,335.7	215.8	6.2			
Masvingo	2,406.7	41.8	40.7	48I.3	**I,884.7**	153.5	I2.3			
Matabeleland	2,780.4	9.4	**6.8**	556.I	2,217.5	254.4	8.7			
NR I	202.2	II.7	I0.5	40.4	I5I.3	23.3	6.5	3-4	2	1
NR II	**3,686.9**	379.2	334.I	737.4	2,6I5.4	545.3	4.8	3-4	2	I
NR III	2,405.5	**48.4**	43.3	48I.I	1,88I.I	295.7	6.4	**6-8**	3-4	2
NR IV	2,429.I	**8.9**	6.2	485.8	1,937.I	296.6	6.5	8-I0	4-5	3
NR V	2,489.7	52.4	52.2	497.8	I,939.7	I0I.2	19.2	10-I5	**5-8**	**4**
National	II,2I3.4	500.6	446.3	2,242.5	**8,524.6**	1,262.1	**6.8**			

sustainable use of resources with ample capacity for drought years; column I is a moderately risky strategy, enabling higher stocking rates considered by some to be more efficient use of pasture (this stocking strategy would probably require some destocking in drought years); and column J is a very risky strategy enabling very high stocking rates in ample rainfall years, but requiring extreme destocking in poor rainfall years. Columns I and J are included to present the arguments of critics that AGRITEX-recommended stocking rates are too low. Conversely, strategy J is probably too optimistic.

Based on recommended stocking rates, the herd in NR I could be grazed on about half of the grazing area, indicating surplus grazing land. But the surplus area represents only about 75,000 hectares. Stocking rates in NR II (4.8) are not greatly out of line with the recommended stocking rate of 3.5 hectares/LU. However, assuming that regional data are valid, approximately 700,000 hectares of grazing land could be counted as surplus (2,615.4 - 3.5 x 545.3). Stocking rates for NRs III and IV appear to be optimal with perhaps some overstocking in NR IV. Significant understocking appears to exist in NR V. Based on recommendations of 15 hectares/LU, about 420,000 hectares of residual land is available.

Overall, about 1.2 million hectares could potentially be considered surplus. If the more risky stocking rates in column I are considered, perhaps 2.4 million hectares are available. But it remains controversial whether these more liberal estimates can be considered optimal. Because of the high capital investment, time requirements for building a herd, and frequency of drought, strategy J appears far too optimistic.

8.3 SUMMARY AND IMPLICATIONS

A central issue in the land policy debate concerns the amount of land either idle or underutilized in the LSCS. Redistributing land that is currently being utilized would entail the prospect of production losses if commercial farmers are more efficient or productive, however defined, than settler farmers. However, if sizable amounts of unutilized land exist in the LSCS, then the possibility arises of redistributing this idle land to settler farmers and increasing aggregate output from the resettlement sector without disrupting commercial farm production. Perceptions are pervasive, among government officials, that a sizable amount of unutilized land does exist, reinforcing demands for an expanded resettlement program.

Using crude and aggregate data, this chapter has tried to estimate the area of unutilized land in the LSCS by starting with estimates of arable land and crop area, then making the following corrections: (1) calculating net arable land available to farmers, deducting areas lost to squaring of fields, tree lines, roads, homesteads, artificial waterways, and mechanical conservation measures; and (2) adjusting cropped area for double-cropping and required fallow.

Based on this analysis, approximately 50 percent of the arable land in NR I and 40 percent of the arable land in NR II are not being fully utilized for crop production (crops and fallow). In area terms, unutilized arable land in NRs I and II amount to 351.1 thousand

hectares, and total land area (including nonarable and arable land) of 1,497.2 thousand hectares. The latter figure is most relevant since farms acquired by the government would include arable, grazing, and waste land. If NR III is considered also, an additional 416.8 thousand hectares of arable land, or 2,039.8 thousand hectares of total land, could be acquired for resettlement without sacrificing commercial crop output and/or exports.

While idle land could conceivably be resettled with minimum adverse impacts on large-scale commercial producers, current targets being proposed by government are calling for the resettlement of 6.0 million hectares. Important issues thus arise about the relative efficiency of commercial versus resettlement production. Yield comparisons for maize in Annex J indicate that commercial farmers obtain maize yields 2-3 times higher than the communal sector. Acquiring and resettling land beyond the 3.5 million hectares above raise fundamental concerns about the impacts of resettlement on food security and export crop production. The weak comparative advantage of communal farmers in maize production and their comparative disadvantage in industrial crop production highlight these concerns (see ch. 7).

The above estimate of 3.5 million hectares of unutilized land implicitly assumes that communal crop production is a more efficient land use than livestock production. No evidence either for or against this assumption is presented in this report. This issue is of fundamental importance to the analysis of land use and resettlement, but was beyond the scope and resources of this study. If it is shown in subsequent studies that commercial livestock production is more efficient than either settler crop or livestock production, then the data in table 8.2 suggest that only 1.2 million hectares of grazing land (some arable plus nonarable land) are underutilized assuming low-risk stocking rates, and 2.4 million hectares given risky stocking rates. Sixty-five percent of this land is located in NRs I and II.

Questions concerning appropriate policies to identify and acquire land for resettlement are the focus of the following (final) chapter.

Chapter 9

POLICY CONSIDERATIONS

9.1 BACKGROUND

After a decade of resettlement, land distribution in Zimbabwe is still highly skewed. About 4,660 farmers in the commercial sector control 29 percent of the nation's land area, located mainly in the highest rainfall zones. More than 1 million families remain in overcrowded communal lands on 42 percent of the nation's land area, located mainly in the poorest rainfall zones.

Low productivity and natural resource degradation from overcrowding in communal areas are fueling demands for land redistribution. Yet, any radical redistribution of land risks undermining production and export earnings. The LSCS sector provides employment for over 225,000 farm laborers and produces 68 percent of the nation's gross agricultural output, 82 percent of crop sales, 94 percent of marketed livestock offtake, and 50 percent of export earnings. The two most pressing problems currently confronting the government—high unemployment and acute shortages of foreign exchange—depend crucially on how the resettlement process is handled and on the confidence of the commercial farming community. In the past, land has been acquired by the government on a willing buyer-willing seller basis under the provisions of the recently expired (April 1990) Lancaster House Constitution. Critics argue that this provision has hampered the acquisition of the best land because of collusion among sellers and high land prices, and/or has resulted in an inadequate supply of land coming to market.

The currently skewed land distribution and the need to alter it are common ground among virtually all who have considered these issues and would not be challenged by any of the participants in the public policy discussions in Zimbabwe. The issues instead concern how fast and how far rectification can and should go and what mechanisms might work best to achieve it. Given the disparities in landholdings and the cultural barriers impeding the flow of land among sectors, resettlement is the best policy option for achieving both economic growth and stability in the long run. The most crucial issues hinge on the process used to acquire land, select settlers, and settle them on the acquired land.

How great a need still exists today? So far, 53,968 families have been settled on roughly 26 percent of the LSCS land that existed in 1979, 60 percent of these coming from the communal areas. Government's target is 162,000 families; if present proportions hold, another 40 percent of the LSCS land would be required. The government's target figure of 162,000 families seems to have no very clear basis, but other estimates are higher. Bratton (1990) indicates that only a small portion of the real need has been met. He estimates that

180,000 households are truly landless, mostly households of young men, while 150,000 households are near landless, a total of nearly 42 percent of the total agricultural population. Landlessness figures which include young men who are farming their fathers' land may, however, overstate the need. The more modest figure of between 6 and 12 percent of the peasant population being without land is probably a better indication (MLGRUD 1987).

About 150,000 families have registered for the resettlement program in various provinces (MLARR 1986); it is not clear whether this figure includes the members of the 200 registered cooperative societies who are waiting for land in the model B schemes. These numbers of registered applicants for land are probably our best guide because they reflect not just some inchoate need, but households ready and willing to resettle.

These numbers will be swollen to the extent that the commercial farms taken will have labor forces which must somehow be accommodated in resettlement schemes. This extent is difficult to gauge because statistics on the labor force in the LSCS are in terms of laborers rather than households, and because the choice of land acquisition strategies (e.g., acquisition of underutilized land or block acquisition of whole farms) could dramatically affect the numbers of laborers who would be released from commercial agriculture.

9.2 1992 LAND LEGISLATION

The Constitution of Zimbabwe, Amendment Bill no. 11, was passed by Parliament in December 1990, and the Land Acquisition Bill, in March 1992. Under the 1992 Land Act, 6.9 million hectares would be acquired by the government from the LSCS. [27] Of this amount, 5.0 million hectares would be added to the resettlement sector, expanding its size from 3.3 million hectares to 8.3 million hectares, and 1.9 million hectares would be added to the state farm sector, increasing its size from 0.5 million hectares to 2.4 million hectares. Land allocations in the communal and small-scale commercial sectors would remain unchanged at 16.3 million hectares and 1.2 million hectares, respectively. Only land in "designated" areas will be acquired. The government has stated its intent to concentrate first on acquiring underutilized land, and only after these farms have been acquired will it begin acquiring more intensively utilized farms. [28] More resources will be provided to the Rural State Land Office

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27. Zimbabwe's total land area is 39,070.0 thousand ha. In 1988, the communal sector comprised (in 000 units) 16,355.0 ha; the Lscs, 11,213.4 ha; the Sscs, 1,238.7 ha; resettlement areas, 3,290.0 ha; state farms, 500.0 ha; parks and wildlife areas, 4,978.1 ha; and "other" land, 1,494.8 ha. Masoka (1993) states that 6.3 million ha will be acquired from the Lscs, but resettlement will receive 5.0 million ha, and the state sector, 1.9 million ha, for a total of 6.9 million ha. No explanations are offered for the source of the additional 0.6 million ha.

28. See Masoka (1993). Despite government's stated intent to keep "efficient" farms on the land, the provision of one farm per individual and the government's desire to establish large-scale resettlement schemes would eventually compel the government to purchase significant numbers of intensively utilized farms. This problem could be circumvented if large "pockets" of underutilized

and the Farm Management Section of the MLARR to strengthen their capacity in carrying out land inspections to detect land underutilization and absentee landlordism." To facilitate the government's acquisition of land, the new land policy stipulates state control of land prices, limits on number of farms and farm size, and the "designation" of areas for land acquisition and resettlement. The government asserts that the target of 6.9 million hectares can be acquired and redistributed without reducing agricultural output and export earnings.

9.3 LAND UTILIZATION AND COMPARATIVE ADVANTAGE

Current proposals to resettle 110,000 families on 6.9 million hectares of land without causing significant economic destabilization would appear to be unrealistic.

First, 3.5 million hectares of land can be considered underutilized in NRs I, II, and III only if crop production is more "efficient" than livestock grazing or wildlife management. To the author's knowledge, there are no studies on Zimbabwe that either support or refute this argument. Should livestock represent an economically efficient use of land, then only 1.2 million hectares would be underutilized assuming low-risk stocking rates, and 2.4 million hectares assuming risky stocking rates.

Second, while available data suggest that between 1.2 and 3.5 million hectares of land are potentially underutilized, these aggregate figures disguise two important variations: the underutilized land is spread over many farms (each farm has a core area of utilized land with other land that is less intensively utilized); and not all farmers are equally efficient. Acquiring and redistributing the underutilized "pieces" would have a positive impact on aggregate production. However, acquiring and redistributing entire farms within a "designated" area would have important output implications, either positive or negative depending on the comparative advantage of resettlement farmers relative to the commercial farmers being displaced.

The domestic resource cost (DRC) coefficient measures the comparative advantage of a group or region for a given commodity based on foreign exchange earnings or savings relative to domestic resources spent. DRC coefficients computed for NRs II and III (see ch. 7)

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land containing no operating farms could be designated. However, as Roth (1990) points out, these pockets have already been largely absorbed into the resettlement program.

29. Unlike Masoka (1993), who feels that criteria can be designed to measure land underutilization, the proposed criteria—output value/hectare, livestock offtake, speculation, and derelict lands—would be empirically intractable, time consuming, and very costly to implement. Commercial farms now voluntarily provide data on land use and production. The above criteria would encourage farms to overstate land use and production in data reporting. The existence of truly derelict land is in practice very difficult to measure, and nearly impossible to prove in the courts; e.g., the presence of grassland might mean either idle land, ley fallow, grazing for livestock, soil conservation, or land reserved for future use.

indicate that the LSCS holds a comparative advantage in tobacco, groundnuts, and soyabeans, and communal farmers, in maize and sunflower. Both groups tend to be nearly equally efficient in cotton. Both sectors also appear to be exploiting their comparative advantage. Cropping patterns in the LSCS have been shifting away from maize toward industrial crops. For the communal sector, cropping patterns have been shifting toward maize and cotton. Unfortunately, a DRC analysis of the resettlement sector has not been undertaken. However, average maize yields on resettlement schemes in higher rainfall zones are one-third to one-fourth those achieved in the LSCS, and one-half those in the communal sector (see Annex J). While yields are an unsatisfactory proxy for profitability, the data do at least raise a concern about output effects.

Many structural problems have contributed to the low productivity of resettlement schemes, including past selection of settlers lacking farm management skills and experience, permits of occupations that confer only temporary use rights, poor access to agricultural research and extension, and poor access to input and commodity markets. Also, enough consideration has not been given to the importance of social cohesion in the communal sector in promoting growth and equity, the difficulty of achieving this cohesion in resettlement areas with settlers taken from around the country, the inability of the government properly to expand input distribution and marketing services at the scale of resettlement experienced in the last decade, and inappropriateness of AGRITEX extension advice to small farming systems. These problems imply that benefits to resettlement will require a much longer time horizon than originally planned. They further suggest that the learning curve of both settlers in schemes and the government in implementation of resettlement programs are much flatter than originally believed.

All else being equal, an overvalued exchange rate makes imports appear cheaper in local currency, and exports appear more expensive. The provision of AFC credit at rates several points lower than formal lending institutions has reduced borrowing costs primarily for large-scale farmers. Both policies combined are biasing investment toward capital-intensive technology. Tight foreign exchange allocations to agriculture have helped in the past to dampen imports of capital goods (farm machinery, spare parts) and the substitution of capital machinery for labor. Devaluing the exchange rate will increase the export competitiveness of tobacco, cotton, and beef, and increase the price of wheat imports. Largescale producers will be the major beneficiaries to the extent that higher prices are passed on to producers. Higher cotton prices will benefit communal farmers.

The policy establishing minimum wages adversely affected profits in the large-scale sector in the early 1980s. However, by 1989, due to inflation real minimum wage rates had eroded to near pre-1980 levels. Nominal wage rates are higher than in the communal sector, but this in part reflects the higher marginal value of labor in industrial crop production. Employment legislation, on the other hand, has profoundly decreased labor demand on commercial farms by driving up the cost of permanent labor. Restrictions on firing have shifted incentives to hiring seasonal labor. Both the reduction of the work force and the shift to seasonal labor have had adverse consequences on farm workers' income and employment stability. Current programs to increase allocations of foreign exchange to agriculture will

further exacerbate the substitution of capital for labor on farms, unless provisions in the Employment Act are modified.

Given the current transportation bottlenecks posed by the deteriorating quality of the transport fleet and infrastructure, and the foreign exchange constraints affecting imports of equipment, tools, and parts, there is a high economic rent to scarce transport capacity. Economic incentives are shifting toward commodities with high value per unit of volume in transport—e.g., tobacco, cotton, fruits, and vegetables—and against commodities with low value per unit of volume—e.g., grain. Producers of higher value crops bid up transport rates. As transport costs rise, grains and cereals are increasingly at a disadvantage relative to other commodities.

Prospects for maize producers, especially communal and resettlement farmers, are not bright. Stock levels of maize in 1989, just prior to the drought, had reached record levels. Due to slow export demand in neighboring countries and transport constraints, the government had had no other recourse but to dampen nominal increases in maize prices, as demonstrated by the real decline in maize prices over the 1980s. Unless domestic or export demand increases, and barring droughts that would bring stocks down to more affordable levels, production from communal areas will continue to place downward pressure on maize prices. Maize production in the large-scale sector will continue to decline. Although the communal sector's comparative advantage in maize production seems assured, the long-term prospects of a maize-based economy continuing to drive income growth is not encouraging.

Real growth in income in agriculture over the next decade will come from strategic crops other than maize, specifically, tobacco, cotton, dairy, horticulture crops, and oilseeds. Improvements in management and access to processing facilities will be essential to increase smallholder participation in these enterprises. Model A schemes as they are currently designed are not suited to developing higher-value crops. Greater attention will need to be given to model B schemes that give smallholders, through collective action, the means to acquire greater economies of scale in processing and marketing, or to model C schemes involving a nucleus estate that provides the technical management, central processing, and marketing expertise. Unfortunately, both model B and model C schemes have poor track records.

It would be unfair to suggest that settlers have not been provided with sufficient support services without applauding the remarkable achievement of settling 3.2 million hectares of land over the decade. The fact remains that government has its limits. If services cannot be provided due to limited resources, and models B and C are constrained by lack of skilled manpower and capital, incentives shift to getting people on the land as soon as possible. The model A accelerated scheme is most relevant to this end. Since communal farmers receive an economic gain in the form of a superior land endowment, they should pay compensation accordingly. Payment will act to both supplement resettlement costs and help allocate limited supplies of resettlement land among the communal population. Good farmers who have been made destitute by chance or other circumstances can still be accommodated by reserving some portion of land for resettlement on a no-fee basis.

Given the available evidence, the acquisition and resettlement of 6.9 million hectares in "designated" schemes would have the following consequences:

- Livestock production and exports would fall sharply unless resettlement livestock production and marketing prove equally competitive with the LSCS.
- Resettlement would lower agricultural productivity on land now intensively utilized, at least in the short run; these losses may or may not be offset by the increased production on currently underutilized land.
- Smallholders lacking capital and markets for higher-value crops would tend to shift cropping patterns toward lower-value maize and oilseeds.
- The displacement of commercial farmers would precipitate a decline in the marketing network, especially for marketing skills and information.
- The government would be unable to provide production and marketing services on par with the private sector operations displaced.

9.4 OPTIONS FOR LAND ACQUISITION

There are a number of bases on which compulsory acquisition of land could be expanded and costs of the program controlled. The first is simple utilization of the existing provision of the Land Acquisition Act, with its current or an amended definition of underutilization. This would become more feasible once the constitutional requirement on remittances of compensation is deleted, as should and will certainly happen. The underutilization criterion is supported by the Joint Presidents' Agricultural Committee (1990, p. 3), but the arguments made earlier against a tax which targets underutilized land apply here as well: the difficulty of definition and application, and the marginal and scattered nature of the land which would be subject to compulsory acquisition. Other alternatives include the imposition of a ceiling on landholdings, a restriction on the number of landholdings per household or person, and a ceiling on land prices paid.

9.4.1 CONTROLS ON NUMBER OF FARMS AND FARM SIZE

Land ceilings have been a classic land approach, utilized extensively in Asian and Latin American reforms. A ceilings approach has one major advantage over a program of compulsory acquisition targeted on underutilized land. The Land Acquisition Bill stipulates one farm per individual or company unless exemptions are justifiable. [30] This policy also calls for government to fix minimum and maximum farm sizes for different agro-ecological

30. This policy can be contravened by registering farms in the names of different members of the family or kin.

regions and farm typologies. AGRITEX has conducted a study of minimum farm sizes for various activities in the commercial and small-scale sectors by natural regions (Chaonwa 1989). Such studies reflect AGRITEX's technocratic approach to farm planning and land redistribution. Ceilings on farm ownership and size are appealing to government administrators. They provide a predictable yardstick for determining whose land should be taken and they are easy to legislate. Once set, they provide clear guidelines for subdividing farms. Perceptions that a strong inverse relationship exists between farm size and efficiency give them further an economic rationale. Unfortunately, virtually no research on the economics of farm size has been undertaken in Zimbabwe.

Economic efficiency is concerned with how certain elements of the profit function vary with land size. Of primary importance is the relationship between total farm size and costs, in particular, average costs per unit of land area. Rising average costs with increasing farm size suggest diseconomies to scale; falling average costs suggest economies to scale. Lacking information on costs, data on farm revenue would be illuminating. A positive relationship between revenue per hectare and farm size would provide weak evidence against diseconomies to scale. Unfortunately, data on neither farm revenues nor farm costs could be located for this study.

The relationship between crop yields and size of crop area planted can be estimated from CSo data. Since prices are pan-seasonal and pan-territorial, crop yields are also a good proxy for revenue. This relationship is illustrated for maize, wheat, sorghum, flue-cured tobacco, cotton, and soyabeans in figure 9.1. With the exception of sorghum, all crops show a positive relationship between crop area planted and yields. A strong positive trend is indicated for cotton and wheat, providing weak evidence against the argument that larger farms are more inefficient. The obvious problem remains that large farms may have rising economies for certain crops, yet are inefficient overall (e.g., crop area is less than 100 hectares while individual farms average 1,402 hectares per farm and companies, 3,885 hectares per farm). This hypothesis was untestable given available data.

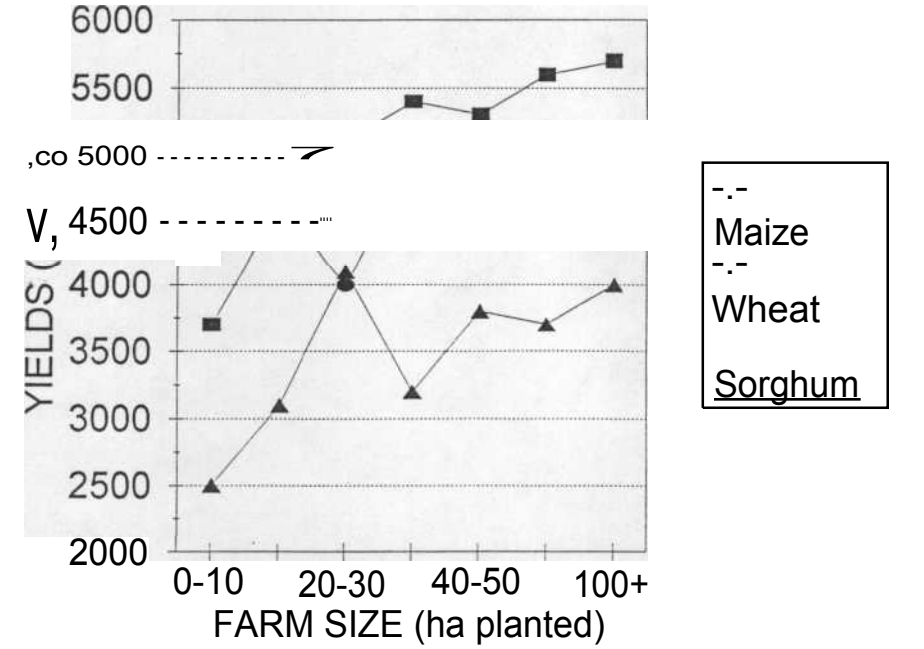
Even if one could conclude that diseconomies exist in the LSCS, restrictions on the number and size of farms should be avoided for the following reasons:

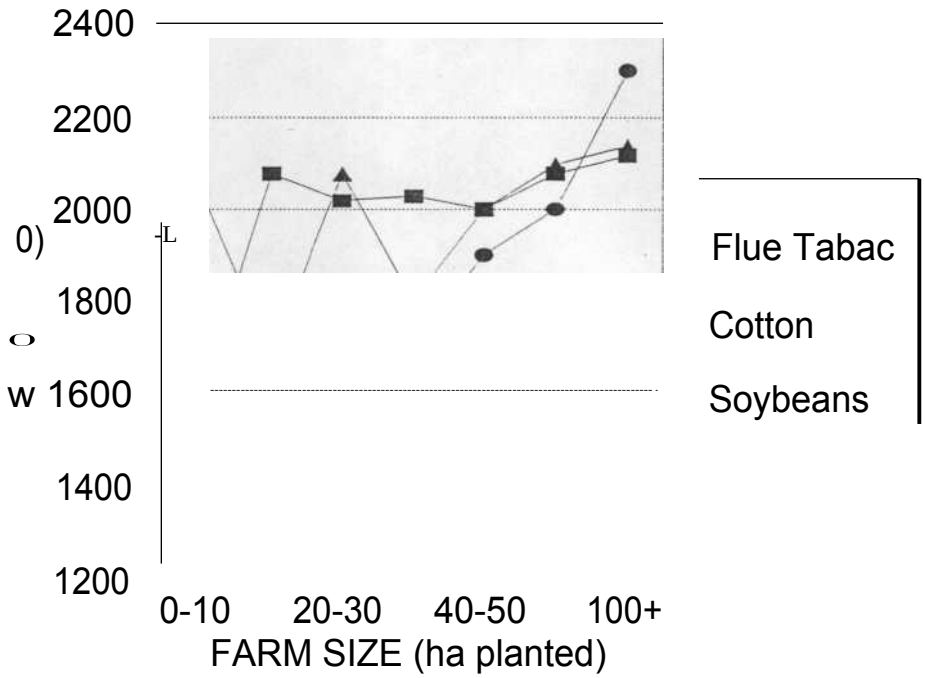
- Policies delimiting allowable farm-size categories create institutional rigidities that increase the cost of adapting to changing market conditions. Small- to medium-size farms often prefer to have multiple parcels of land in different locations and with different soil-quality characteristics (lowland, upland) to "hedge" against ecological risk. Controls on the number or size of farms prevent smaller commercial farmers from acquiring land in a timely manner for inheritance or from expanding in a timely manner to take advantage of entrepreneurial skills and farming opportunities.

- Policies aimed at limiting the number and size of farms would force the poorest quality land onto the market, exacerbating government attempts to acquire higher quality land for resettlement. Further, it is not clear what

FIGURE 9.1

Relationship between crop yields and crop area planted





process government would use to redistribute farms divested from multiple farm holdings, given its emphasis on large-scale and consolidated resettlement.

- Economies to scale are dynamic, changing with prices and technological innovation. Declining relative prices of mechanization increase incentives for farm size expansion and industry consolidation. Increased incentives for tobacco and tree crop production increase incentives for more intensive use of capital and labor per unit of land area and for smaller farm size. Changing returns in livestock agriculture from pricing policy affect herd adjustments and grazing land utilization. The notion of setting land sizes to achieve minimum or maximum returns is based on fixed price ratios and constant technology, while historical data on land use demonstrate that both the LSCS and the communal sector are highly price responsive.

- Not all farmers are equally efficient. Land-size ceilings that are set too high protect or miss smaller, inefficient farms. Set too low, they discriminate against larger, efficient producers. Since most farms are partially utilized, forced divestiture of multiple farms (beyond the one allowed) and land in excess of farm-size ceilings would displace high-yielding commercial production on some land.[31] Government policy should seek to encourage keeping "efficient" farmers in agriculture, regardless of size, and discriminate against the "inefficient" producer or land speculator. Controls on number of farms and land ceilings tax the efficient and inefficient alike.

- Ceilings force those farmers affected to designate land in an amount under the ceiling to be retained. This process of choice can be complicated and delay implementation. Also, where corporate ownership of land is extensive, it is difficult to "pierce the corporate veil" and include shares of interest in land in ceilings calculations so as to deal equitably among owners. If the corporations are largely closely held family corporations, the problems will not be so great; if they are conglomerates of diverse investors, including, for instance, other corporations, the difficulty will be much greater.

- The land acquired would be scattered and involve the less intensively developed portion of larger holdings. This disadvantage is at the same time an advantage. Both the underutilization and ceilings approaches, because they affect the less intensively developed areas of farms, would have less of an

31. Mandating one farm per individual raises the unanswered question of which farms to divest. Normally, the government would allow the farmer to choose. For a farm exceeding the maximum size allowable, subdivision according to current laws would be permitted only as long as the excess land is itself a viable farm (for emerging black commercial farmers) or can be consolidated into a resettlement scheme. The government may thus feel compelled to acquire the largest farms if these conditions do not hold.

impact on intensive production of export crops, which cannot easily be produced in the resettlement sector, and displace much less wage labor.

9.4.2 CONTROLS ON LAND PRICES

The 1990 Amendment to the Lancaster House Constitution stipulates payment of a "fair price" for land acquired for resettlement. According to government, soaring land prices no longer reflect the productive potential of agricultural land. To determine a fair price, the government will continue negotiations with farmers using professional land valuation officers of the Ministry of Public Construction and National Housing. Instead of paying compensation promptly, as stipulated in the old constitution, the new policy stipulates payment in a "reasonable" period, opening the door for staggering of payments.

As long as high-price inflation persists, investors are given the incentive to preserve wealth in land rather than keeping money in bank deposits, which yielded low or negative real rates of return in the 1980s. The analysis of implicit land values calculated on the basis of crop profitability indicated that land prices did not appear to be greatly distorted from the value of land in agricultural use. The analysis further suggests that government pricing policy is being capitalized into land values. The problem remains that not all land is fully utilized, and such land has lower use value. But restrictions on subdivision prevent underutilized portions from being sold and land prices of such areas from falling in the land market.

Arguments are also made that land value should be based on purchase price of plus investments made in the land. Besides more practical problems of how to measure the value of investments, this argument ignores two fundamental relationships. First, inflation erodes the purchase price of any asset over time. Selling land at its purchase price at a future date in an inflationary climate would result in a loss in real terms to the landowner. Landowners would be more reluctant to sell land; in the aggregate there would be a reduction in land offered for sale on the market. Second, land investments increase costs, but demand for land should determine what the investment is worth. Otherwise, the government or other investors are forced to pay for the investment mistakes of others.

Prices can vary considerably, even within a natural region. Land prices tend to increase with better location to markets and urban centers, better soils and access to water, higher rainfall, and rising profitability of the land investment. Prices tend to decline with poorer soils, more arid land, and declining profitability. Psychic costs and benefits associated with rural lifestyles are also important but in practice immeasurable. Inflation has an important effect on land prices over time. The ability of the government to perform a better job than the land market in determining land prices is slim, and the risk of doing worse is high.

Clearly, there are differences of opinion between commercial farmers and government over what constitutes a fair price for land. The fact that government has been dissatisfied with past offers implies a felt need to impose a ceiling on land prices, at least in certain situations. The Land Acquisition Bill shifts economic power from the land seller to the government.

Under the former system, the government acted as buyer of first resort and declined the opportunity to purchase land if prices were too high. Under the new policy, the government has the power to "force" sales at predetermined land values. While government has emphasized its intent to be flexible and to negotiate with farmers, one senses a desire to decouple land values from prices determined by market supply and demand. Land assessments in market economies are usually pegged to market prices. The criteria to be used by real estate assessors are far from clear.

Unless sales are coerced, ceilings on land prices will have five principal outcomes:

- The government will have a higher demand for land than will realistically come to market (redistributing 6.9 million hectares would thus require some compulsion to sell).

- Incentives for land improvement will decline. Investment returns are derived from its use and liquidation value to meet future financial uncertainties. Controls on land prices would lessen the expected conversion value of the fixed asset into a financial asset, thus reducing returns on investment.

- The collateral value of agricultural land in designated areas would decline, thereby decreasing the supply of credit in agriculture.

- At any effective land-price ceiling, sellers have the incentive to sell marginal lands and keep land with higher use value or intrinsic qualities.

- Urbanization tends to increase the value of land above its use value in agriculture. Basing agricultural land only on its value in agricultural production would prevent an adequate supply of land from coming to market for nonfarm uses.[32]

9.4.3 DESIGNATED AREAS FOR LAND ACQUISITION AND RESETTLEMENT

Government has long seen the major drawback of the willing buyer-willing seller approach as its inability to control the location of the land acquired and to acquire land in blocks of sufficient size. A figure representing government's sense of how large is large enough has not been seen, but if a typical resettlement scheme is to accommodate 500 families, and a settlement of 52,000 families has required 3,387,614 hectares of land, or about 65 hectares per household, then 500 families require very roughly 32,000 hectares, more than ten times the size of the average LSCS farm. Government's rejection of many farms consisting of several thousand hectares of good land offered by willing sellers has been justified on the ground that these farms are too small for effective administration as a resettlement scheme.

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32. See Roth (1992) for price trends in South African farmland.

The block approach was defined by government and incorporated into the draft of the Land Acquisition Act which was submitted to Parliament before the seriousness of the constitutional impediment became clear. An Interministerial Land Identification Advisory Committee was set up at that time to select large blocks of land on the basis of certain criteria, including availability of water and suitable soils, and to give advice to a Land Selection Committee, which recommends acquisitions to the minister. Agreements of sale were then to be negotiated with each of the farms within the block. When an agreement was reached on price, each farm was to be acquired. As presented in the "Intensive Settlement Policies and Procedures" (MLRRD 1985, p. 11), there is no explicit element of compulsion, and so the scheme might have met constitutional requirements. But without compulsion, such an approach is clearly unworkable. Some, indeed most, of the holders in the blocks could refuse to sell.

According to government, controlling the number and size of farms to acquire land would result in the acquisition of pieces of farms on scattered farm units. The government feels strongly that large resettlement schemes are required to spread the costs of infrastructure development—access roads, dip tanks, boreholes, staff housing, clinics, and schools—over a greater number of settlers. By "designating" lands, the government is seeking to acquire blocks sufficient in size to establish large-scale resettlement schemes. While the government in the past has tried to acquire land in large blocks of upward of 6,000 hectares to achieve these economies of scale, most of the large farms and blocks of underutilized lands have already been acquired. In 1988, only 1,267.3 million hectares remained on farms in excess of 4,000 hectares in the higher rainfall zones of Manicaland and Mashonaland. Only 855.7 thousand hectares remain if farms greater than 6,000 hectares are considered. Most of the largest farms are located in Masvingo and Matabeleland in NRs IV and V.

Designating areas would involve the immediate set-aside of blocks of land (e.g., > 30,000 ha) for resettlement. Their location would be determined by government. Commercial farmers with land in a designated block would be given a fixed time horizon (e.g., 10 years) to sell to the government.[33] Landholders with farms outside the designated areas are assured that their land will not be claimed by government in the future. Commercial farmers within the designated areas will be able to acquire farms in other areas with guarantees that they will not be asked to move again. Commercial farms may not immediately sell out, yet the increased certainty of knowing that land for resettlement will be available at a future date will help soften political demands for immediate large-scale resettlement. While certainty is a major benefit, the policy has severe shortcomings:

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33. According to Masoka (1993), the government will let "efficient" farmers stay on the land and live side-by-side with the settlers to avoid output losses. But this intent is contravened by provisions mandating maximum farm sizes and one farm per individual. It has yet to be seen how efficient farmers will be distinguished from the inefficient. The current proposed criteria—underutilized land, derelict land, and speculation—seem too vague to confer genuine security to commercial farmers living in designated areas.

- Smaller farms could be acquired then later pooled to form a block. But it would be highly unnatural for contiguous parcels in a large area to be put up for sale on the market at the same time. Holding parcels for long periods of time entails significant opportunity and holding costs by the government.

- Commercial farmers within designated areas have incentives to accelerate depreciation of fixed-place investment (by curtailing maintenance), to divest assets, and to mine the land of its natural resources unless there are expectations of full compensation.

- Commercial fanners living in designated areas disproportionately bear the policy cost. Sellers must incur the transactions' cost of reallocating wealth from land to other assets (stocks, agribusiness, etc.). Land prices in undesignated areas would be driven sharply higher due to the added demand of farmers exiting designated areas and to the reduced supply of land in the LSCS, resulting in a loss of purchasing power of those being displaced. [34] Conversely, commercial farms outside designated areas receive a windfall gain as farm-asset values increase. The staggering of payments would further reduce the sale price to the seller because of inflation, unless government raises the purchase price to take future inflation into account or it makes the payment in the form of long-term bonds at competitively determined market rates.

- It is questionable whether, after selling out, large-scale farmers would acquire land elsewhere in NRs II, III, and IV. Once uprooted from their homes, the transaction cost of moving out of agriculture has already been incurred. Capital would need to be reallocated to homesteads, farm buildings, utilities, tobacco barns, and land improvements. The decision to reinvest will depend heavily on family circumstances (age, children) and on alternative investment and employment opportunities outside of agriculture.

- The policy does not discriminate against inefficient farmers. For the policy to achieve its outcome of redistributing 5.0 million hectares, most farmers in a designated area would have to liquidate their landholdings. The losses in farm output under the designated area approach are thus higher than under quasi-land market options.

- Rather than achieving a more integrated agricultural sector, the government runs the risk of developing enclaves geographically separated from the commercial sector, and dependent on government for support services. Possibilities for diffusion of technology and improved management skills from

34. Farmers selling land to the government would receive a price pegged to its use value in agricultural production. However, the price they must pay to buy land outside the designated areas would be market determined and in theory higher due to the same white farming population's bidding for a reduced supply of agricultural land in the Lscs.

large-scale producers to settler farmers are weakened by large-scale resettlement. Despite a commendable effort at redistributing land since 1980, the government has done a less than exemplary job at providing infrastructure on schemes and at improving settlers' access to research, extension, and markets. The removal of commercial farmers from designated areas increases the burden of government to provide these services.

- Current resettlement policies ignore the large population of laborers on commercial farms. By establishing facilities only for resettlement populations, the plan disregards potential economies of scale in locating public schools and clinics according to the total population. Costs per settler may increase, but the social cost is lower once school and health costs are spread over settlers and the families of farm workers combined. Resettlement costs can be recovered through taxation. Those large-scale producers currently providing good education and health care would incur no additional cost (higher taxes are offset by lower education costs). Commercial farms providing poor care would incur higher costs. Overall, the quality of education and health comes under greater public scrutiny and standards.

Once government policies are cast toward the social development of farm laborers and settlers alike, most of the justification for large block development is weakened. Possibilities would be opened for acquiring and settling smaller parcels of land. Between April 1986 and September 1989, land offers totaling 1.15 million hectares were rejected because either the price was too high and/or the farm size was too small. The mean sizes of these farms were in excess of 1,000 to 2,000 hectares. Such farms, had they been acquired, would have permitted a substantial increase in the size of the resettlement sector. A 1,000-hectare farm would be quite adequate for settling 50 families at 20 hectares per farm. This small-scale resettlement model would enable smallholders to take advantage of already existing physical infrastructure around commercial farms; resettlement based on model A accelerated schemes would enable immediate settlement of settlers on the land; there is greater possibility for diffusion of technology from commercial farmers to settlers; and possibilities are opened for commercial farms in the vicinity of resettlement areas to play the role of a nucleus estate under the model C construct.

9.4.4 LAND TAX

Land taxation has long been considered an optimal way of raising revenues from agriculture; bringing about redistribution of land and wealth, chiefly from large- to smallholders; and inducing more efficient land utilization. An agricultural land tax can be based either on the value of land or on the size of individual landholdings. Chelliah (1986) has correctly noted that the land asset is price inelastic; an increase or decrease in its price will not significantly affect market transactions in the aggregate. But it does affect the very inefficient users, who, because of lack of resources to invest in land, may have no other opportunity but to sell. A well-functioning land market would provide them with the chance to exit agriculture.

Governments generally prefer fixed taxes per unit of land area because they are easier to administer. Taxes based on area do not affect incentives to increase output per unit of land. Producers, however, prefer income taxes or taxes levied per unit of output because taxes vary proportionately with drought and other uncertainties that affect yields. Following are several tax considerations.

A fixed property tax is preferable to an income tax in redistributing wealth since income taxes are zero if land is idle. However, requiring individuals to pay both high property taxes and high income taxes is unreasonable and potentially regressive against agriculture. One option is to make income taxes deductible from property tax payments.

A land tax lowers land values accruing to the landlord, thus decreasing capital asset value. Owners of larger farms (assuming they are relatively inefficient) will tend to sell, particularly if tax rate structures are progressive, and costless subdivision enables downsizing of property. Because land prices are highly price inelastic, any increase in land taxes is capitalized in lower land prices.

Inefficient producers are most affected. Efficient producers must pay higher taxes, but inefficient producers investing the least resources in agriculture are affected the most negatively. A tax forces either use of the land to generate income to pay the tax or lease of the land for the same purpose. Otherwise, threat of tax foreclosure forces sale of land on the market.

Large-scale commercial farms already pay taxes to rural councils, which use revenues for executing, maintaining, or operating roads and bridges within the council area. The Rural Councils Act makes provisions for four different types of levy, only two of which can be imposed at the same time: a rural tax, a special rural tax, a rural rate, and a special rural rate. In urban areas of the council, an urban rate and a special urban rate may also be levied. Hence, a land tax on commercial farms is not without precedent.

Given these considerations, the following recommendations are made with regard to tax policy:

- Tax rates should be levied to help raise revenue for resettlement; however, any taxes levied should be carefully coordinated with the Rural Councils to avoid excessive taxation.

- The tax base should be broadened to avoid excessive taxation of the commercial sector. A head tax imposed on communal areas through district councils. A land tax would be difficult to assess because of communal grazing. Tax rates should be high enough to cover administrative costs and to generate sufficient revenue. Tax revenues should be spent in improving infrastructure in communal areas. Federal resources would be freed for reallocation to resettlement programs.

- Any consideration to raising land taxes should involve a thorough evaluation of general taxes in Zimbabwe. Zimbabwe's current tax structures already are some of the highest in the world.

- Previous studies (Chelliah 1986) have recommended taxes on the basis of rated value of output. Given the precedent established in the rural councils and the unnecessarily complicated nature of output taxing schemes, it is recommended that a progressive land tax be levied per unit of land area.

- Powers will need to be widened to allow tax revenues to be spent on education and health, beyond simple road and bridge development.

Some of the proposals, such as a legislative recommendation discussed in the ministry in the early 1980s, specifically target unutilized or underutilized land and impose a frankly punitive tax, in this case, 20 percent of the value of the land annually. The approach suffers from the difficulty of defining and monitoring utilization. As Moyo (1987, p. 173) suggests, in debates about underutilization it is usually not the facts which are in dispute. It is generally acknowledged that only roughly 5 percent of the land in large-scale commercial farms is under cultivation at any given time. But there are vast differences in assumptions, interpretations, and definitions. Different assumptions about the extent of arable land (which differs with farming technology), necessary fallow, land required for conservation measures, and the like, make vast differences in conclusions. So do definitions: does underutilized mean unprofitably utilized or not used as profitably as might be the case if resettled?

A tax targeted on underutilized land has the further disadvantage of lack of control of what comes on the market; the pieces of land forced onto the market would likely be of lesser potential and widely scattered. If a definition of underutilization similar to that in the Land Acquisition Act were used, it is questionable whether much land would be affected.

An obvious alternative is a land tax which is not so directly targeted on underutilized land, but simply based on the assessed value of land. Such a tax would be to the disadvantage of those who were not using land productively, targeted or not. Its impact on productive landholders could be reduced or even canceled out by allowing the land tax to be offset against the income tax, as proposed by Green (1985) and endorsed by Cliffe (1986, p. 88). The World Bank's land subsector study (1986, p. 25) endorses a land tax as a stimulant to the land market. Such a tax has also been recommended as a means of reducing land prices, both because an asset encumbered by a financial obligation is worth less and because significant amounts of land forced onto the market at the same time could even more substantially lower land prices. Such a tax could be used as a source of revenue for government to allow it to purchase the land which the tax pushes onto the market, attacking the problem from both ends (Bratton 1990). There are some obvious trade-offs among these objectives; Green's setoff against income taxes would not be so useful for a land tax conceived as a major revenue-earner to finance land acquisitions, nor would it be very helpful in the case of a tax which was intended to force divestiture of underutilized portions of farm operations which are relatively profitable overall.

The case for a land tax was discussed in the Chavanduka report (1982, p. 165), but it was concluded there that an equitable and efficient land tax would be expensive to initiate and administer. More recently, a thorough review of Zimbabwe's tax system (Commission of Inquiry into Taxation 1986, pp. 228-36) considered again the case for a land tax. It noted that a land tax that is less than the rental value of a given piece of land is an efficient way of raising revenues since it does not penalize productivity. It is not the proper way, the report continues, of obtaining relatively fertile land for resettlement since the land to be first offered would be that whose yields could not meet labor and other variable costs and the tax. Because utilization is so difficult to evaluate, no tax based on extent of utilization could be recommended. But the commission concluded that a land tax is needed to raise revenue and to mitigate inequalities in the distribution of good quality land. The report suggests that a mild progressiveness, based on the rated value of output, would be justified. The consultant considers that such an assessment might pose difficulties in assessment and penalize productivity. The redistributive objective might be better served by progressiveness based simply on area of land held.

A further issue concerns the destination of revenues from a land tax. Some proponents recommend the tax as a means of generating revenue for land acquisition by government. But Zimbabwe already has a land tax: the development levies and rates by which rural district councils finance their activities and local infrastructure. Both the Chavanduka report (1982, p. 238) and the Commission of Inquiry into Taxation (1986, p. 236) conclude that the appropriate niche for a land tax in the national system of taxation is the generation of revenues to support local government and its activities. This conclusion is supported by experience elsewhere: a relatively simple land tax can be assessed and administered effectively by local government with quite modest capabilities in financial administration, partly because the asset taxed is immovable and local.

There is need to coordinate subdivision policy with any land tax which is calibrated to force land onto the market. Patterns of utilization on commercial farms are very uneven, the typical case being an intensively utilized farm core together with a large area in far less intensive uses. A land tax will likely incline an owner to dispose of the less intensively utilized portion of his farm. Only if subdivision is permitted will this be possible. If subdivision is not permitted, the tax incentives to sell off less intensively utilized land are undermined by requiring simultaneous loss of a more profitable asset.

More information would be needed about the economics of the commercial farms to work out exactly how such a tax might be framed and the level of the tax. It cannot be emphasized too strongly that the effectiveness of this tax approach will depend on getting the level of the tax right. But several parameters can be suggested for consideration: such a tax should not be imposed on "underutilized" land but on all land; it should be progressive with area of land rather than on some other basis; it should be locally administered; the first call on revenues from the tax should be the expenses of local government, though other revenue produced might be used to fund land acquisitions; and a liberalization of subdivision policy would be needed to allow the tax to have its desired redistributive effect.

Such a tax could be utilized as an adjunct to either a willing buyer-willing seller program or a compulsory acquisition program. In the former case, government would continue to purchase land and distribute it, but presumably at a somewhat suppressed price and with coming onto the market from which to choose. In the latter case it would simply be used to lower land prices. As will be suggested later, there are reasons why a compulsory acquisition approach should not be placed on the underutilized land criterion. Imposition of such a tax would require legislation but not a constitutional amendment.

9.4.5 SUMMARY AND IMPLICATIONS

The pros and cons of the various approaches can be summarized as follows.

Any approach which relies upon a determination of underutilization, whether a tax/land market or a compulsory acquisition approach, is likely to become seriously bogged down in disputes over interpretation and produce extended uncertainty as to impact. A land tax on all the holding (and all holdings) would provide much greater certainty as to impact, as would a ceilings approach which allows the owner to select the portion to be retained.

All the above options, however, would tend to produce land for resettlement which is scattered and consists of less intensively developed portions of existing farms. While this would make resettlement administration and provision of services more complex and possibly more costly, it would at the same time minimize the problem of LSCS farm-wage labor, which is concentrated on the more intensively utilized portions of farms which would not be affected.

Compulsory acquisition of whole farms in large blocks would produce better quality land under more complex, intensive use and management patterns, would provide a high level of predictability once announced, and would simplify and possibly reduce the costs of resettlement administration and provision of services. It would, however, exacerbate the LSCS farm-wage labor problem.

Any imagined advantage of acquiring whole operational farms should also be discounted, given that model B, intended for LSCS management in that case, has performed so poorly. On the other hand, the problem of LSCS farm-wage labor seems to be one of the most critical facing the resettlement program, and the acquisition of whole farms would greatly intensify this problem.

Imposing tighter regulations on the land market would release land for resettlement. Commercial farmers in the aggregate would suffer welfare losses. Settler farms would be the direct beneficiaries of the land transfer. Land released for resettlement would likely be smaller parcels, widely dispersed. Government costs are low once ceilings are set. A number of limitations, however, make them intractable from the standpoint of implementation. Determining appropriate levels of ceilings or prices is extremely difficult and the risks and costs of incorrectly setting levels prohibitively high. Land ceilings exacerbate producers' flexibility to respond to changing economies of scale on the upside. Changing prices and

technology, which in turn alter economies to scale, greatly confound attempts to establish ceilings. Controls on land prices will reduce the flow of land onto the market, and fixed-place investment in land will tend to decline. In the case of both ceilings on land areas and prices, farmers have the incentive to rid themselves of the worst farms. Both policies indiscriminately affect both efficient and inefficient producers alike.

Designating areas for resettlement has different aims, principally to achieve economies to scale in resettlement, that run counter to the expected effects of tighter regulations on the land market. Land ceilings and to a lesser extent controls on land prices would result in smaller farms with the poorest quality land being sold on the market, or the most marginal lands being sold off (if subdivision is possible and the cost low). Both result in many dispersed areas of land available for acquisition. Designating large areas (60,000+ ha each) would achieve economies to scale given current modes of resettlement, but engenders two problems. The policy discriminates against the efficient and inefficient producers alike within the designated area and provides a windfall gain to commercial producers living outside the area. By establishing enclaves of settlers of such large magnitudes, the possibility for integration of smallholder agriculture with commercial agriculture is retarded. Further the "economics of scale" rationale for designated areas is based only on the settler population, and ignores the population of commercial farm workers in the establishment of schools, clinics, and so forth.

As a counter to the above proposals, this paper recommends relaxing restrictions on the land market to ease the flow of land resources from the commercial sector to the resettlement sector. Available evidence indicates that real land prices offered by commercial landowners are not excessively high once inflation and the profitability of agriculture are taken into account. Further, the large number of "offers" of sale of land to the government indicates that the market is sufficiently robust. However, restrictions against the subdivision of farms, allowing smaller portions to be sold off, present a major barrier to the downsizing of the LSCS and to the release of land for resettlement. A land tax (all land)/land market measure, progressive with the size of the holding, coupled with a continued willing buyer-willing seller program ought to be imposed to help pay for land acquisition and to facilitate sale of land by the most efficient producers. A better functioning land market combined with taxation leaves the decision of who exits agriculture (through the decision of sale) to current landowners, provides the flexibility to farms of downsizing by selling off underutilized portions, and further discriminates against the most inefficient of producers. However, while taxation can help provide revenue for land acquisition and drive down the cost of acquired land, donor support will still be needed to help finance land acquisition costs and support for the resettlement program.

9.5 LAND TENURE REFORM

9.5.1 COMMUNAL SECTOR

The priority need, and precondition, for any tenure reform in the communal areas which will result in other than more confusion is the establishment of an effective institutional *framework* at community level for development and land administration.

- ► Basic legislation to define the roles and powers of the WADCOS and VIDCOs is needed. For purposes of land administration, the VIDCO should be the critical institution. The objective should be to create an effective local institution (a more effective VIDCO), empower it with respect to management of its land resources, and link it to MLARR in a relationship in which MLARR plays an advisory and supportive rather than a planning role.

- ► The VIDCOS should be given legal capacity and made more democratic by having their entire membership elected.

- ► To empower the VIDCOs, title to the land should be transferred to the VIDCOs from the state.

So far as substantive *rules of tenure for arable land* are concerned:

- ► Customary rules can be retained for most arable land, but freehold should be available where the VIDCO decides that it is appropriate for the community as a whole, in which case MLARR should carry out the process of demarcation and registration of title on a systematic basis, or on application by an individual landholder for his parcel or parcels for a particular purpose, in which case the applicant shall bear the legal and survey costs.

- ► The changing attitude toward *transactions* in land in communal areas should be legally recognized, the permissible limits of transactions established, and the enforceability of such contractual relationships affirmed through an amendment to the Communal Lands Act. Research should precede such legislation to establish de facto norms.

- ► The single most urgent *need of women* with respect to access is creation of a legal framework for widows which gives them a secure right to a portion of their late husband's land during their own lifetime. A law on transactions should allow a VIDCO to refuse an application to sell based on the wife's objections, both for transactions under the customary system and for sales where full private ownership has been instituted.

Land use planning should be confined to a pilot basis in a variety of areas and should not be expanded until some positive results—economic results—are evident. VIDCOs should

be able to veto any proposed land use plan in whole or in part, and only on adoption by the VIDCO should any plan be implemented.

- Attempts at *villagization* should be dropped and replaced by a "magnet" strategy whereby social services are provided at a central site and households allowed to judge the balance of costs and benefits involved in a move to that site.

- Attempts at *consolidation of arable land* are in most cases likely to produce less efficient land use than current opportunistic strategies. It should be undertaken only where a special case can be made for it, as for a community irrigation project.

- Land use planning should focus on demarcation of village areas and consolidation and *demarcation of the grazing commons.* The emphasis should be on institutional development, with grazing associations being given much more adequate constitutions, legal personality, and title to grazing commons.

Dispute settlement would need to be handled differently in a system in which ownership rights emerged and in which the legal validity of transactions was recognized. Provision should eventually be made for land disputes to be taken into the court system. This might involve restoring the power to hear certain categories of land disputes (e.g., inheritance disputes) to the local and primary court system.

9.5.2 COMMERCIAL SECTOR

- Government needs to reexamine its assumptions about scale and modernization of agriculture and adopt a much more flexible approach to subdivision. Such a liberalization of the land market should produce positive impacts on land distribution and on production.

- A transition to a state leasehold system would achieve little and has some very real dangers based on the potential for favoritism and arbitrariness within such systems.

- There is a need to examine the state of titles in the SSCS sector, and if the system has lost contact with the reality of landholdings in the sector, systematic adjudication and redeeding may be necessary. If so, a legal basis for the process would need first to be established.

- The system of land development levels is salutary and should be maintained.

- There is a need for a new marital property regime for freehold owners in which a husband and wife can own land jointly and make decisions regarding it jointly, and in which the widow shares in the inheritance.

9.5.3 RESETTLEMENT SECTOR

9.5.3.1 Model A schemes

- The residential and arable permits should be converted to a limited ownership, which is perpetual and inheritable but cannot be subdivided except with the consent of the scheme; which can be leased; which can be utilized as security for credit with consent of the scheme; and which can be sold but only after a substantial period, say twenty years.

- These permits should be jointly allocated to husband and wife and be inheritable by the survivor for his or her lifetime.

9.5.3.2 Model B schemes

If MLARR wishes to continue to promote this model, it should limit the number of these schemes; accept that a significant degree of subsidization of their operations is likely to be necessary; and monitor carefully their economic performance under different regimes. Those regimes should include property rights for the cooperatives and more effective constitutions under an improved cooperative law, and must necessarily emphasize institutional redesign rather than heavier subsidization through machinery, training, and management assistance. Large investments may increase productivity per hectare and intensiveness of land use, but they are likely to worsen the economic performance of the cooperatives and make it impossible to replicate them on a significant scale.

Until more efficient cooperative production models have demonstrated their worth, subdivision of operating farms acquired into model A settlement schemes must be accepted and other means found of conducting functions (not usually production) which need to be done on a larger scale. Government should seek to utilize input-supply, marketing, and multipurpose cooperatives to perform on that larger scale those functions which they have elsewhere demonstrated themselves capable of performing.

- A new cooperative law is required to provide an adequate framework for cooperative production enterprises and to protect the interests of members as they enter and leave the cooperative.

- Membership should be recruited primarily from displaced commercial farm labor.

- The cooperatives should be given ownership of their land and be responsible for regulating distribution and use of land among their members.

- The cooperatives should have the right, if they so desire, to dissolve themselves and distribute the land in ownership among their members, on terms similar to those envisaged above for model A schemes, and create other

cooperative forms to meet nonproduction needs such as input purchase and marketing.

In both model A and model B schemes, common pasture management should generally be organized on the same basis as in the communal land communities. Where individualization of pasture is possible given rainfall and other resource endowments, it should be pursued.

9.5.3.3 Model C schemes

- Options to purchase contained in leases should be honored where these exist.
- The Zunde model appears to have little potential because it would attempt to entrust vastly complicated management tasks to a cooperative, which has little ability in this area.
- An alternative which deserves consideration is individualization of most production coupled with use of the Chinese production responsibility system for the core estate and particular nonproduction tasks in the larger operation.

9.5.3.4 Model D schemes

- The objective should be the actual integration of the former freehold land into the landholding on the communal area community by merger with that community's land or, in case of several communities, by deeding the land to them jointly, subject to an agreement among the communities on coordinated use.

9.5.3.5 ARDA projects

- Unprofitable schemes should, if capital-starved, be made the subject of joint ventures with the private sector which can supply the capital and management skills needed.
- Unprofitable schemes whose problems cannot be met in this manner should be converted to settlement schemes.
- Where options to purchase exist in contracts, the exercise of the option should be permitted, even in irrigation situations, where coordination in fanning activities can be achieved through water user associations. Again, the production responsibility system could provide a useful model for the core estate.

9.6 AGRARIAN STRUCTURE IN A POSTREFORM LAND TENURE SYSTEM

The great danger for Zimbabwe's land tenure system in the long term is that it will continue to be largely state administered, generating an ever-larger bureaucracy, never making the transition from reform to a postreform situation, and never allowing MLARR to turn its full attention to the many other urgent needs of agricultural development. On the other hand, government will have a continuing and legitimate concern about land distribution and agrarian structure.

In classic market economies, the agrarian structure is the product of land markets operating upon some original pattern of distribution established by simple appropriations of land by individuals and/or allocations of land by the community or state. Through the operation of the land market, agrarian structure changes with other transformations in the economy as development proceeds. Sizes of units increase or decrease and distributions change depending on changes in relative factor prices and other economic changes. Interventions in land markets are not at all unusual to manage change. In most socialist systems, by contrast, agrarian structure is stipulated by planners, with the stipulations modified as necessary as other circumstances change, to achieve the objectives of public policy.

Zimbabwe, as part of its colonial heritage, has acquired a stipulated agrarian structure. The colonial state intervened to acquire large areas of the best land in the country for European settlement. That a colonial power whose internal economy relied heavily on market mechanisms should have put such a stipulated system in place may be a little surprising, but it is only a particular case of a more general phenomenon: market forces in colonial Africa were founded upon an elaborate base of legal and administrative compulsion (Seidman 1968). In Zimbabwe, a large-scale agriculture was created for settlers, and to serve it, the state developed extension and marketing institutions which effectively interfaced with that agriculture. African landholdings were restricted to reserves on which crowding, a low level of technology, and restricted market access created a pattern of small peasant holdings producing primarily for their owners' family consumption.

A basis was thus created upon which land markets could have begun to operate, but two public policies led the colonial government to dramatically restrict the operation of a land market. First, lines of racial segregation of landholding hardened over time, excluding Africans from the land market in the freehold areas. Second, when opportunities to participate in that market did exist, a preoccupation with maintaining a scale of operation which could provide a certain standard of living prevented the subdivision of large farms. Smaller holdings became available for Africans only in the small African Purchase Areas—again a stipulated, segregated, tenure sector, which has become today's "Small Commercial Farm Sector." This structure of agriculture and others like it in eastern and central Africa have proved durable. The stark dualism within the land tenure systems of the former settler colonies—LSCS, SSCS, communal, resettlement—has been difficult to erase or even blur.

Zimbabwe's program of resettlement seeks to restipulate the country's agrarian structure. Government has approached the problem of an unacceptable structure of agriculture as a historical imbalance to be redressed by direct intervention to reallocate land. Government is planning the emerging agrarian structure through its decisions about which lands to purchase and which to reject, and how to distribute the lands purchased.

The reform seeks to break up some of the very large units into smaller units through resettlement, and to this extent the structural change sought is consistent with current economic thinking on scale in agriculture. In another sense, however, the structural changes sought in the Zimbabwean reform do not accord with current economic thinking. Explanations of the prosperity of many of the Asian countries which underwent land reforms in the years after World War II now stress that the reforms created "unimodal" rather than "bimodal" distributions of land, thereby distributing increased income from agriculture so as to generate domestic demand for new goods and services and creating a new stimulus for industrial growth (Johnston and Clark 1982). Zimbabwe's reform of its agrarian structure is primarily a shifting of the boundaries between tenure sectors, creating a resettlement sector in which scale and farming system resemble those in the communal areas. The size of the large-scale commercial farm sector is reduced but the agrarian structure remains almost as strongly bimodal as before.

The reform is a further stipulation of agrarian structure, with no role for the market to blur sharp boundaries in recognition of the diversity of agricultural opportunities and their different implications for scale. In terms of scale, little or no middle ground is created.

Moreover, reform will tend to stretch indefinitely into the future, so long as there are no market mechanisms in place which adjust agricultural structure to meet new needs. Instead of finite reform, government is liable to be drawn into second-guessing again and again the needs created by economic change and adjusting and readjusting agrarian structure to meet those needs. This is not desirable. Reform in its very nature implies the upsetting of established expectations. Its objective should be to establish a new equilibrium within which predictability exists, rather than continuing uncertainty. Reform objectives need to be achieved, the reform program brought to closure, and the new interests secured.

Here the question of the mechanisms for adjusting agrarian structure and appropriate tenure for farmers in the different sectors come together. Particular tenures include specifications as to the marketability of land. Freehold tenure is a readily alienable interest and so "contract" (the market) can act as the basic mechanism for determining agrarian structure. Policymakers in Zimbabwe need to consider how to bring the reform to closure, and whether markets in land rights can play an increasing role in adjusting agrarian structure to meet new needs over time.

There are a number of suggestions made in the course of this paper concerning stronger individual and group rights in land, implying a relaxation of direct state control over this resource. Taken together, they can give some sense of the shape of a post-reform tenure system for Zimbabwe and the means of arriving at that point.

- A land tax would act as a continuing stimulant to a land market which tended to favor more efficient producers.

- A loosening of government controls on subdivision would allow transactions to adjust scale to meet the need for diversity of scales for various crops and farming systems.

- In the commercial areas: ownership of land for the local communities; legalization of leasing and borrowing; and the option for communities to deed to their members ownership of land and, with it, the right to transfer that ownership, subject to community controls for the benefit of household members.

- In the model A schemes, ownership for settlers, but only alienable after perhaps 20 years.

- In the model B schemes, ownership of land for the cooperatives, with the authority to confer land rights up to and including ownership on their members, possibly with a restriction on sales similar to that suggested in model A schemes.

- In model C and ARDA nucleus/outgrower schemes, use of leaseholds with options to purchase and redesign of core operations on the production responsibility model.

The scene would then be set for a land market, which would diversify scale and blur distinctions between the tenure sectors, gradually to begin operation.

Policymakers express understandable concerns about the impact of a land market on land distribution, but these are exaggerated. The present large scale in the LUCS sector is a social and historical artifact, not the product of economic competition among farms of different scale. A land market will almost certainly break up those large holdings gradually, especially if there is a significant land tax (if government does not insist upon holding them together with prohibitions of subdivision). The possibility of accumulation on the market of very large holdings in the communal areas seems unlikely, given the nature of this land and its limited potential. Some degree of concentration might occur in these areas, what critics might refer to as "kulakization" or more neutrally "peasant differentiation," but this should be seen as part of a positive process. In the long term, there are complementarities between differentiated households, as that in which a farmer with enough land to allow him to purchase a tractor provides mechanized draft through tractor rental to households which farm less because they are labor-short or rely on other sources of income. A similar process of modest differentiation should be expected and accepted in the resettlement schemes with individual holdings of arable land.

Will landlessness be increased by a land market? It is not the market which may produce landlessness but the economics of population and land. The market merely provides a mechanism whereby a seller may take capital out of farming with him. His departure may not be affected by whether he can sell or not. In countries in Africa with very dense populations and substantial landlessness, such as highland Ethiopia, Lesotho, and central Kenya, people become landless primarily through their leaving their inheritance to their siblings and seeking opportunities elsewhere. It is not clear that the presence of a market accelerates this creation of landlessness significantly, as opposed to simply providing a different mechanism.

Finally, land markets can be regulated to reduce the creation of landlessness. Some possibilities have already been suggested. The most effective regulation, however, will come less directly through measures such as taxation, subdivision policy, and sound policies against subsidization of mechanization, all of which should favor smaller-scale producers and promote a continued broad distribution of land assets.

ANNEX A

Area in Parks and Wildlife Sanctuaries, 1988

LOCATION	AREA (ha)
National parks	
Victoria Falls	2,340
Zambezi	56,011
Matopos	42,400
Chizarira	191,000
Gona re zhou	505,300
Matusadona	140,700
Chimanimani	17,110
Mana Pools	219,600
Kazuma Pan	31,300
Hwange	1,465,100
Nyanga	33.000
Total	2,703,860
Botanical reserves	
Pioneer	38
Tolo River	44
South Camp	26
Chisekera Hot Springs	95
Mawari Raphia Palm	34
Tingwa Raphia Palm	290
Haroni Forest	20
Rusitu Forest	150
Sebakwe Acacia Karoo	60
Sebakwe Great Dyke	165
Sebakwe Mountain Acacia	53
Mazowe	46
Bunga Forest	495
Vumba	42
Total	1,558
Botanical gardens	
National botanic	67
Vumba	200
Ewanrigg	286
Total	553

Sanctuaries	
Manjinji Pan	300
Chimanimani Eland	**1,800**
Mbaze Pan	40
Mushandike	12,900
Tshabalala	1,100
Nyamanyetsi	2A80
Total	**18,620**
Safari areas	
Tull	**41,600**
Chete	**108,100**
Island 52	4
Chipinge	26,100
Malapati	15,400
Chirisa	171,300
Hartley 'A'	44,500
Sibilobilo	4,400
Charara	169,200
Hurungwe	289,400
Doma	94,500
Umfurudzi	76,000
Dande	52,300
Chewore	339,000
Sapi	118,000
Deka	51,000
Matetsi	295,500
Total	1,896,304
Recreational parks	
Chibwatata	10
Lake Kariba	287,200
Kavira	50
Ngezi	**5,800**
Umfuli	12,700
Lake Robertson	11,200
Chinhoyi Caves	120
Manjirenji	3,400
Bangala	2,700
Sebakwe	2,600
Robert Mcllwaine	6,180
Umzingwane	1,233
Kyle	16,900
Lake Matopos	2,900
Lake Cunningham	4,172
Total	357,165

ANNEX B

Number and Area of Farms in the Large Farm Commercial Sector, by Province, for 1979, 1984, and 1988

B!. Number and area of farms in the commercial sector, 1979

SIZE (ha)	MANICALAND		MASHONALAND NORTH		MASHONALAND SOUTH		MATABELELAND		MIDLANDS		VICTORIA		ALL PROVINCES	
	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
0-200	306	23,478	93	9,514	439	32,419	264	**18,989**	159	12,609	63	**7,665**	1,324	**104,674**
200-400	117	31,452	61	18,583	146	42,743	62	17,219	38	**9,994**	21	**5,814**	**445**	**125,805**
400-600	**66**	32,035	134	**66,598**	145	71,007	**46**	22,475	43	21,780	12	6,281	**446**	220,176
600-800	51	35,078	157	**109,598**	151	103,934	24	16,754	34	23,443	8	**5,580**	425	**294,387**
800-1000	57	50,391	163	145,343	123	**107,906**	24	21,253	36	31,997	20	**18,026**	423	**374,916**
1000-2000	179	**249,109**	**489**	681,113	405	**569,186**	122	172,367	137	202,065	**40**	**57,349**	1,372	1,931,189
2000-4000	110	305,102	253	**678,410**	214	578,377	123	356,330	144	**413,926**	61	**171,446**	905	**2,503,591**
4000-6000	32	155,190	**48**	**241,493**	**49**	239,213	**57**	**280,967**	78	382,179	25	**124,693**	**288**	1,423,735
6000-8000	10	**68,002**	16	108,732	24	164,817	38	**267,447**	36	**204,806**	18	**120,425**	142	**974,229**
8000-10,000	**9**	**79,904**	12	102,587	11	**99,176**	37	331,038	19	**170,482**	12	**105,038**	**100**	**888,225**
10,000+	15	755,322	8	113,378	8	135,736	108	**2,930,348**	37	**740,569**	**66**	**2,047,936**	242	6,223,289
Total	**952**	**1,285,063**	I,434	**2,275,349**	1,7I5	**2,I44,5I4**	**905**	**4,435,I87**	**761**	**2,253,850**	**346**	**2,670,253**	**6,I13**	**15,064,216**

Source: Central Statistics Office.

B2. Number and area of farms in the commercial sector, 1984

SIZE)	MANICALAND		MASHONALAND WEST		MASHONALAND EAST		MASHONALAND CENTRAL		MATABELELAND NORTH		MATABELELAND SOUTH		MIDLANDS		MASVINGO		ALL PROVINCES	
	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
0-200	322	**23,919**	70	5,807	427	29,063	19	1,231	179	12,658	120	8,792	214	17,202	**59**	**6,530**	1,410	105,202
200-400	105	29,201	**45**	**14,186**	106	30,801	15	**4,532**	**48**	**13,623**	41	11,246	**54**	**14,566**	20	6,042	**435**	124,197
400-600	61	**29,286**	106	**54,091**	**96**	**46,875**	**45**	22,476	25	**12,659**	30	14,223	**46**	22,813	7	3,728	**415**	206,161
600-800	**39**	26,506	122	**83,169**	79	54,401	**44**	**31,189**	12	8,173	26	17,902	31	**21,503**	10	6,797	**363**	**249,640**
800-1000	**43**	**38,638**	114	101,637	52	**46,128**	**63**	**56,413**	**9**	**7,965**	14	12,071	29	**26,758**	20	17,828	**346**	**307,438**
1000-2000	109	**151,834**	**351**	**485,315**	234	**333,728**	177	**247,849**	**53**	**73,945**	61	**83,605**	131	**186,216**	42	**61,390**	1,156	**1,624,882**
2000-4000	73	203,151	200	**549,589**	104	**278,542**	117	**305,938**	55	150,420	57	**163,035**	105	**302,260**	37	**103,698**	748	**2,056,633**
4000-6000	12	**56,964**	50	**247,544**	29	**136,697**	12	**58,231**	23	116,811	20	**91,908**	**54**	270,241	22	110,974	222	1,089,370
6000-8000	12	80,057	27	**188,885**	8	54,205	3	19,905	15	**97,323**	17	**119,580**	27	**189,090**	17	**116,978**	126	**866,023**
8000+	10	**219,346**	29	**328,042**	**3**	**48,634**	3	52,662	45	793,200	65	1,800,318	**45**	**837,104**	**64**	**1,764,134**	**264**	**5,843,440**
Total	**786**	**858,902**	1,114	**2,058,265**	1,138	**1,059,074**	**498**	**800,426**	**464**	**1,286,777**	**451**	**2,323,690**	**736**	**1,887,753**	**298**	**2,198,099**	**5,485**	**12,472,986**

Source: **Central** Statistics Office.

B3. Number and area of farms in the commercial sector, 1988

SIZE)	MANICALAND		MASHONALAND WEST		MASHONALAND EAST		MASHONALAND CENTRAL		MATABELELAND NORTH		MATABELELAND SOUTH		MIDLANDS		MASVINGO		ALL PROVINCES	
	No. I	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
0-200	192	15,379	**58**	**4,739**	**294**	21,476	15	1,033	115	**8,849**	81	**6,466**	**149**	12,154	**43**	5,040	**947**	**75,136**
200-400	79	21,287	**44**	13,115	91	**26,378**	11	3,352	31	8,232	35	**9,687**	57	**16,084**	19	**5,865**	367	104,000
400-600	**49**	23,113	108	**54,336**	**89**	42,773	41	**20,696**	25	12,255	24	**11,389**	**44**	21,871	12	5,911	**392**	**192,344**
600-800	**35**	**24,246**	129	**89,148**	73	50,123	**44**	31,215	9	6,200	17	12,008	35	**24,192**	14	9,705	**356**	**246,837**
800-1000	**38**	**33,115**	111	**98,920**	**69**	**61,465**	**64**	**57,538**	**6**	**5,329**	16	**13,915**	30	**26,246**	**14**	**12,539**	**348**	**309,067**
1000-2000	**96**	**133,841**	328	**454,745**	212	**299,944**	177	**247,905**	**39**	**55,577**	57	81,078	115	164,022	**39**	**53,931**	**1,063**	**1,491,043**
2000-4000	**64**	**173,166**	182	**497,109**	108	**295,902**	104	273,778	**36**	**98,666**	50	**143,089**	95	**274,115**	**34**	**97,337**	**673**	**1,853,162**
4000-6000	12	**55,797**	40	**194,194**	21	**99,463**	12	62,190	17	87,902	18	**89,985**	**44**	**214,701**	18	**89,473**	182	**893,705**
6000-8000	7	47,151	23	**162,238**	**6**	**38,820**	2	13,611	9	**63,444**	18	127,625	19	**131,966**	15	102,184	**99**	**687,039**
8000+	**9**	**233,579**	28	**317,492**	1	21,487	1	21,310	37	**646,159**	**49**	1,292,585	**43**	**803,759**	**65**	2,024,682	233	**5,361,053**
Total	**581**	**760,674**	1,051	**1,886,036**	**964**	**957,831**	**471**	**732,628**	**324**	**992,613**	**365**	**1,787,827**	**631**	**1,689,110**	**273**	**2,406,667**	**4,660**	**11,213,386**

Source: Central Statistics Office.

ANNEX C

Area and Settlers in Resettlement Schemes

	MODEL **A**	MODEL **AA**[a]	MODEL **B**	MODEL C	MODEL **D**
Manicaland:					
Number of schemes	2I	2	I9	3	
Mean scheme size (ha)	23,359	3,541	I,620	4,3I6	-
Minimum size (ha)	I,I35	I,996	85I	5I0	-
Maximum size (ha)	I20,I26	**5,086**	4,657	7,000	-
Total # settlers	I2,457	**II4**	1,4I2	508	
Mean # settlers	593	57	74	**I69**	-
Mashonaland:					
Number of schemes	29	3	43		I
Mean scheme size (ha)	23,385	I,620	I,460		260,000
Minimum size (ha)	3,033	1,475	346		260,000
Maximum size (ha)	76,795	I,709	3,962		260,000
Total # settlers	13,946	I40	3,876		4,462
Mean # settlers	48I	47	90		4,462
Matabeleland:					
Number of schemes	I3	7	3		
Mean scheme size (ha)	25,545	I5,6I8	3,I66		
Minimum size (ha)	3,035	1,7I3	2,568		
Maximum size (ha)	78,965	50,728	3,857		-
Total # settlers	3,I8I	362	5I	-	
Mean # settlers	245	52	I7		-
Midlands:					
Number of schemes	I7	2	I3	-	
Mean scheme size (ha)	24,211	2,I90	2,634		
Minimum size (ha)	6,4I6	I,899	I,272	-	
Maximum size (ha)	65,503	2,48I	5,232		
Total # settlers	6,872	47	995		-
Mean # settlers	**404**	24	77	-	
Masvingo:					
Number of schemes	I8	5	**4**	-	
Mean scheme size (ha)	2I,675	2,365	1,I63		
Minimum size (ha)	2,926	1,285	93I	-	
Maximum size (ha)	78,434	5,566	I,576	-	-
Total # settlers	5,232	143	I70		-
Mean # settlers	29I	29	**4**		-
Total:					
Number of schemes	**98**	I9	82	3	I
Minimum size (ha)	I,I35	I,285	346	5I0	260,000
Maximum size (ha)	I20,I26	50,728	5,232	7,000	260,000
Total # settlers	**4I,688**	**806**	6,504	508	4,462

a. Model A accelerated.

ANNEX D

Growth Rates in Crop Production

Dl. RATES OF GROWTH IN CROP AREA, NATIONAL

	CROP AREA			AREA GROWTH RATES	
	1973-75 (ha)	**1979-81 (ha)**	**1987-88 (ha)**	**1973-80** (%)	**1979-88** (%)
Cereals'	329,937	284,669	194,235		**-4 2**[b]
Barley	3,337	5,977	4,759	0.8	0.2
Maize	270,014	240,667	145,790	-4.3[6]	-5.5[b]
Sorghum	9,893	7,532	4,738	-5.0	-3.7
Wheat	26,362	**34,478**	38,949 6.9c	`	0.9
Industrial[s]	162,941	177,162	190,636	3.4[b]	0.8
Tobacco (flue)	54,603	52,939	54,103	2.3	0.0
Coffee	4,013	6,531	8,533	6.0[6]	**4.4'**
Cotton	80,394	70,097	59,350	0.2	-1.6
Soyabeans	12,429	36,946	54,501	26.1'	4.2°
Sunflowers	3,748	1,821	7,904	-9.8°	**18.7'**
Groundnuts	4,802	**4,084**	5,032	-5.9	0.6
Dry beans	2,914	1,095	2,321	-15.1[0]	**8.8**
Vegetables	7,872	5,035	7,900	-7.5[b]	4.5
Fodder crops	86,049	64,020	55,534	4.9[b]	-1.7[6]
Fruit trees	5,844	3,939	**4,882**	**-7.3'**	**2.4**

a. Missing munga, rapoka, and other minor cereals.
b. Significant at 5% level.
c. Significant at 10% level.
d. Missing sugarcane, tea, and other minor industrial crops.

D2. RATES OF GROWTH IN CROP PRODUCTION, NATIONAL

	PRODUCTION			PRODUCTION GROWTH RATES	
	1973-75 (tons)	1979-81 (tons)	1987-88 (tons)	1973-80 (%)	1979-88 (%)
Barley	13,717	33,001	24,724	7.1	-1.1
Maize	1,216,124	1,122,894	594,472	-4.0	-5.3
Sorghum	13,534	19,832	12,864	4.2	-1.9
Wheat	102,142	163,641	202,097	10.2'	2.1
Tobacco (flue)	72,196	96,553	113,482	7.3'	2.0
Coffee	2,516	7,359	10,972	20.3'	6.9'
Cotton	119,674	131,244	125,282	2.9'	0.3
Soyabeans	20,536	79,572	113,011	35.4'	
Sunflowers	1,866	1,146	5,084	-7.9	17.5'
Groundnuts	6,463	11,191	14,743	6.5	1.4
Dry beans	1,031	547	1,947	-11.3'	15.0'

a. Significant at 5% level.
b. Significant at 10% level.

D3. RATES OF GROWTH IN CROP YIELD, NATIONAL

	YIELD			YIELD GROWTH RATES	
	1973-75 (tons)	1979-81 (tons)	1987-88 (tons)	1973-80 (%)	1979-88 (%)
Barley	4,110	5,520	5,200	6.3	-1.3
Maize	4,500	4,670	4,080	0.3	0.3
Sorghum	1,370	2,630	2,720	9.7'	1.9
Wheat	3,870	4,750	5,190	3.1'	1.2'
Tobacco (flue)	1,320	1,820	2,100	4.9'	
Coffee	630	1,130	1,290	13.5'	2.3
Cotton	1,490	1,870	2,110	2.7	1.9'
Soyabeans	1,650	2,150	2,070	7.4'	-0.2
Sunflowers	500	630	640	2.1	-1.0
Groundnuts	1,350	2,740	2,930	13.2'	0.9
Dry beans	350	500	840	4.5	5.7

a. Significant at 5% level.

D4. RATES OF GROWTH IN CROP AREA, MANICALAND

	CROP AREA			AREA GROWTH RATES	
	1973-75 (ha)	**1979-81** (ha)	**1987-88 (ha)**	**1973-80** (%)	**1979-88** (%)
Cereals'	14,588	13,762	11,828	-3.9	-1.8
Barley	329	173	19	[b]	-32.6'
Maize	13,250	6,901	4,398	-14.2'	-4.5
Sorghum	78	142	95	16.0	-2.0
Wheat	1,150	6,709	7,317	34.8`	0.6
Industrial[s]	14,910	17,388	19,218	2.3	1.3[c]
Tobacco (flue)	5,991	4,241	3,718	-2.7	-2.1
Coffee	3,902	4,952	6,456	2.9'	4.1'
Cotton	3,693	5,765	7,237	3.1	3.8'
Soyabeans	129	1,982	975	56.7'	-11.0°
Sunflowers	291	89	203	-21.6'	7.2
Groundnuts	459	69	165	-35.2'	13.4
Dry beans	217	85	182	-14.8°	9.0`
Vegetables	1,163	614	824	-10.6	1.7
Fodder crops	10,001	3,338	3,039	-15.3'	-1.4
Fruit trees	1,609	1,310	2,061		5.7

a. Missing munga, rapoka, and other minor cereals.
b. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.
c. Significant at 5% level.
d. Significant at 10% level.
e. Missing sugarcane, tea, and other minor industrial crops.

D5. RATES OF GROWTH IN CROP PRODUCTION, MANICALAND

	PRODUCTION			PRODUCTION GROWTH RATES	
	1973-75 (tons)	1979-81 (tons)	1987-88 (tons)	1973-80 (%)	1979-88 (%)
Barley	1,071	771	104		-29.8'
Maize	**46,858**	26,930	14,716	-14.5'	-4.1
Sorghum	61	173	216	19.3	7.1
Wheat	4,002	27,689	30,598	41.0'	0.4
Tobacco (flue)	8,225	7,205	7,877	0.5	1.4
Coffee	2,509	5,580	8,182	16.3'	6.1'
Cotton	6,538	12,099	15,217	3.0	**4.8**
Soyabeans	239	4,766	2,273	63.0'	-11.8'
Sunflowers	139	39	115	-20.9'	9.1
Groundnuts	494	162	286	-32.9°	18.1
Dry beans	61	58	434	-2.2	21.1°

a. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.
b. Significant at 5% level.

D6. RATES OF GROWTH IN CROP YIELD, MANICALAND

	YIELD			YIELD GROWTH RATES	
	1973-75 (tons)	1979-81 (tons)	1987-88 (tons)	1973-80 (%)	1979-88 (%)
Barley	3,260	4,460	5,590		4.2
Maize	3,540	3,900	3,350	-0.3	0.4
Sorghum	780	1,220	2,290	2.9	9.3
Wheat	3,480	4,130	4,180	4.6'	-0.2
Tobacco (flue)	1,370	1,700	2,120	3.3°	3.5'
Coffee	640	1,130	1,270	13.1'	1.9
Cotton	1,770	2,100	2,100	-0.1	0.9
Soyabeans	1,850	2,400	2,330		-0.9
Sunflowers	480	440	560	0.9	1.7
Groundnuts	1,080	2,330	1,740	3.6	4.2
Dry beans	280	690	2,390	14.r	11.2

a. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.
b. Significant at 5% level.
c. Significant at 10% level.

D7. RATES OF GROWTH IN CROP AREA, MASHONALAND

	CROP AREA			AREA GROWTH RATES	
	1973-75 (ha)	**1979-81 (ha)**	**1987-88 (ha)**	**1973-80** (%)	**1979-88** (%)
Cereals°	247,353	243,401	164,426	-2.6'	4.2'
Barley	1,610	3,570	2,278	[d]	**4.4**
Maize	229,982	214,226	128,739	-3.6'	-5.6'
Sorghum	7,303	6,406	3,794	-2.3	-4.4'
Wheat	9,531	21,578	29,616	19.4'	3.7
Industrial'	124,705	141,627	161,900	4.5'	1.6
Tobacco (flue)	48,373	48,573	50,060	2.8	0.1
Coffee	68	1,348	1,667	**d**	5.2
Cotton	57,247	53,568	47,039	1.2	-1.0
Soyabeans	11,373	32,184	51,736	25.3'	**5.5'**
Sunflowers	2,257	1,099	6,255	-12.0°	22.9'
Groundnuts	2,908	3,788	4,563	2.0	0.3
Dry beans	2,186	764	1,639	-15.7'	7.6
Vegetables	4,711	3,001	5,533	-8.5'	6.3
Fodder crops	64,695	52,699	45,275	-3.4'	-1.7'
Fruit trees	2,504	1,766	2,133	-6.3'	2.1

a. Missing munga, rapoka, and other minor cereals.
b. Significant at 5% level.
c. Significant at 10% level.
d. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.

D8. RATES OF GROWTH IN CROP PRODUCTION, MASHONALAND

	PRODUCTION			PRODUCTION GROWTH RATES	
	1973-75 (tons)	**1979-81 (tons)**	**1987-88 (tons)**	**1973-80** (%)	**1979-88** (%)
Barley	6,492	19,245	11,152		-6.7
Maize	**1,089,884**	1,019,844	536,975	-3.7	-3.9
Sorghum	8,345	17,739	11,071	10.5	-2.5
Wheat	41,647	111,493	162,487	22.3[6]	4.6
Tobacco (flue)	63,734	89,204	105,063	**8.1**[6]	2.1
Coffee	67	1,579	7,792		21.5[6]
Cotton	77,555	94,324	95,566	5.1[6]	1.5
Soyabeans	18,777	69,412	106,992	34.9[6]	5.2[6]
Sunflowers	1,164	777	3,938	-8.6	19.7[6]
Groundnuts	4,348	10,545	13,741	13.3[6]	1.3
Dry beans	740	368	1,199	-11.0	14.2[6]

a. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.
b. Significant at 5% level.

D9. RATES OF GROWTH IN CROP YIELD, MASHONALAND

	YIELD			YIELD GROWTH RATES	
	1973-75 **(tons)**	**1979-81 (tons)**	**1987-88 (tons)**	**1973-80** (%)	**1979-88** (%)
Barley	4,030	5,390	4,900		-2.5[6]
Maize	4,740	4,760	4,170	-0.1	1.8
Sorghum	1,140	2,770	2,920	13.0[6]	1.9
Wheat	4,370	5,170	5,490	2.4[6]	0.1[6]
Tobacco (flue)	1,320	1,840	2,100	5.1[6]	1.9[6]
Coffee	980	1,130	4,680		15.5
Cotton	1,350	1,760	2,100	3.8[6]	2.6[6]
Soyabeans	1,650	2,160	2,070	7.7[6]	-0.3
Sunflowers	520	710	630	3.9	-2.6
Groundnuts	1,500	2,780	3,010	11.1[6]	1.0
Dry beans	340	480	730	5.6°	6.2

a. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.
b. Significant at 5% level.
c. Significant at 10% level.

D10. RATES OF GROWTH IN CROP AREA, MATABELELAND

	CROP AREA			AREA GROWTH RATES	
	1973-75 *(ha)*	1979-81 *(ha)*	1987-88 *(ha)*	1973-80 *(%)*	1979-88 *(%)*
Cereals°	8,681	7,481	3,880	-2.0[6]	**-8.5[6]**
Barley	28	0	132		
Maize	6,753	5,137	2,437	**4.6[6]**	**-9.4[6]**
Sorghum	**882**	268	413	-18.7[6]	**4.4**
Wheat	1,037	2,076	**898**	**18.3[6]**	-11.1[6]
Industrial"	1,091	1,263	1,704	11.7[6]	1.8
Tobacco (flue)	1	0	0	°	
Coffee	0	0	2	c	
Cotton	573	685	1,345	8.7	**9.4[6]**
Soyabeans	63	**588**	125	100.9[6]	-28.2'
Sunflowers	**110**	153	179	5.8`	-1.7
Groundnuts	366	117	54	-17.3°	-13.2
Dry beans	55	67	**57**	2.2	°
Vegetables	743	736	713	1.9	1.8
Fodder crops	5,147	3,156	2,494	**-8.1[6]**	-3.1[6]
Fruit trees	580	432	**482**	**-5.8[6]**	0.4

a. Missing munga, rapoka, and other minor cereals.
b. Significant at 5% level.
c. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.
d. Missing sugarcane, tea, and other minor industrial crops.
e. Significant at 10% level.

D11. RATES OF GROWTH IN CROP PRODUCTION, MATABELELAND

	PRODUCTION			PRODUCTION GROWTH RATES	
	1973-75 (tons)	1979-81 (tons)	1987-88 (tons)	1973-80 (%)	1979-88 (%)
Barley	72	0	614	a	a
Maize	22,089	20,557	9,052	-0.4	-9.6'
Sorghum	882	369	637	-13.5[b]	11.7
Wheat	4,079	7,335	3,789	16.2[b]	-9.3[b]
Tobacco (flue)	2	0	0	a	a
Coffee	0	0	2	a	a
Cotton	1,001	1,894	3,592	19.1'	9.5'
Soyabeans	87	1,156	152	110.9'	-30.3'
Sunflowers	43	67	109	10.1	5.0
Groundnuts	545	368	109	-9.1	-17.9
Dry beans	18	26	32	9.8	a

a. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.
b. Significant at 5% level.

D12. RATES OF **GROWTH IN CROP YIELD, MATABELELAND**

	YIELD			YIELD GROWTH RATES	
	1973-75 (tons)	1979-81 (tons)	1987-88 (tons)	1973-80 (%)	1979-88 (%)
Barley	2,570	0	4,670	a	a
Maize	3,270	4,000	3,710	4.4	-0.3
Sorghum	1,000	1,380	1,540	6.4	7.0
Wheat	3,930	3,530	4,220	-1.8	2.0
Tobacco (flue)	2,000	0	0	a	a
Coffee	0	0	1,000	a	a
Cotton	1,750	2,760	2,670	9.6[b]	0.1
Soyabeans	1,380	1,970	1,220	5.0	-3.0
Sunflowers	390	430	610	4.0	6.9
Groundnuts	1,490	3,150	2,010	9.9'	-5.4
Dry beans	340	390	560	7.4	a

a. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.
b. Significant at 5% level.

D13. RATES OF GROWTH IN CROP AREA, MIDLANDS

	CROP AREA			AREA GROWTH RATES	
	1973-75 (ha)	1979-81 (ha)	1987-88 (ha)	1973-80 (%)	1979-88 (%)
Cereals'	19,657	15,155	10,974	-5.8[6]	-3.5
Barley	527	2,011	2,335	24.3	15.9
Maize	15,546	11,678	7,781	-6.8[6]	**-4.4[6]**
Sorghum	1,133	624	150	-9.3	-14.3°
Wheat	2,803	2,183	709	-0.9	-14.9
Industrial('	4,738	3,100	3,601	-1.5	1.2
Tobacco (flue)	207	127	176	-11.6[6]	
Coffee	0	12	189		°
Cotton	2,728	2,028	624	-2.4	-12.9[6]
Soyabeans	388	1,288	1,398	23.4[6]	0.1
Sunflowers	673	356	1,010	-2.5	11.6
Groundnuts	842	70	206	-35.0[6]	12.8
Dry beans	140	99	56	-6.8	-8.7
Vegetables	378	254	246	I·	-1.7
Fodder crops	4,208	3,789	2,591	-3.4	-5.6[6]
Fruit trees	141	63	116	-14.1[6]	6.7

a. Missing munga, rapoka, and other minor cereals.
b. Significant at 5% level.
c. Significant at 10% level.
d. Missing sugarcane, tea, and other minor industrial crops.
e. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.

D14. RATES OF GROWTH IN CROP PRODUCTION, MIDLANDS

	PRODUCTION			PRODUCTION GROWTH RATES	
	1973-75 (tons)	1979-81 (tons)	1987-88 (tons)	1973-80 (%)	1979-88 (%)
Barley	2,252	12,121	12,854	32.2	14.8
Maize	43,176	43,538	27,330	-1.6	-3.8
Sorghum	1,163	1,368	231	1.9	-17.3'
Wheat	12,072	10,162	3,609	-0.5	-14.1
Tobacco (flue)	206	161	270	-7.1	[b]
Coffee	0	14	252	[b]	[b]
Cotton	2,968	3,552	1,110	4.8'	-12.6`
Soyabeans	549	2,568	3,254	32.1°	1.3
Sunflowers	281	153	713	-1.6	17.3
Groundnuts	779	81	556	-28.2[c]	20.8
Dry beans	48	40	18	-3.4	-14.8

a. Significant at 10% level.
b. Significant at 5% level.
c. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.

D15. RATES OF GROWTH IN CROP YIELD, MIDLANDS

	YIELD			YIELD GROWTH RATES	
	1973-75 (tons)	1979-81 (tons)	1987-88 (tons)	1973-80 (%)	1979-88 (%)
Barley	4,270	6,030	5,510	6.4	-1.0
Maize	2,780	3,730	3,510	5.5	0.7
Sorghum	1,030	2,190	1,550	12.3'	-3.5
Wheat	4,310	4,660	5,090	0.3	1.0
Tobacco (flue)	1,000	1,270	1,540	5.0'	
Coffee	0	1,140	1,330		
Cotton	1,090	1,750	1,780	7.3'	0.4
Soyabeans	1,410	1,990	2,330	7.1[b]	1.1
Sunflowers	420	430	710	1.0	5.1
Groundnuts	930	1,160	2,170	10.6	7.1
Dry beans	340	400	310	3.7	-6.7

a. Significant at 10% level.
b. Significant at 5% level.
c. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.

D16. RATES OF GROWTH IN CROP AREA, MASVINGO

	CROP AREA			AREA GROWTH RATES	
	1973-75 (ha)	1979-81 (ha)	1987-88 (ha)	1973-80 (%)	1979-88 (%)
Cereals'	17,230	4,496	3,108	**-17.8**[6]	-5.0
Barley	1,063	0	0		
Maize	4,482	2,492	2,435	-11.6[6]	-0.1
Sorghum	497	108	289	-28.2[6]	17.8[6]
Wheat	11,896	1,932	385	-20.6[6]	-20.2[6]
Industrial('	15,393	9,391	4,045	-3.4	-10.1[6]
Tobacco (flue)	32	66	300	17.9`	
Coffee	44	**141**	220	-6.4	18.9
Cotton	14,149	8,202	3,105	-4.1	-11.2[6]
Soyabeans	496	801	268	17.2[6]	**-14.1**[6]
Sunflowers	**416**	283	258	-7.6[6]	
Groundnuts	228	53	45	-32.r	-1.1
Dry beans	249	76	390	**-18.6**[6]	16.1
Vegetables	334	106	592	**-14.1**[6]	26.9
Fodder crops	1,901	**881**	1,475	-10.1'	5.9
Fruit trees	1,010	241	97	-20.0[6]	-11.3[6]

a. Missing munga, rapoka, and other minor cereals.
b. Significant at 5% level.
c. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.
d. Missing sugarcane, tea, and other minor industrial crops.
e. Significant at 10% level.

D17. RATES OF GROWTH IN CROP PRODUCTION, MASVINGO

	PRODUCTION			PRODUCTION GROWTH RATES	
	1973-75 (tons)	1979-81 (tons)	1987-88 (tons)	1973-80 (%)	1979-88 (%)
Barley	3,830	0	0	_[a]	_[a]
Maize	14,116	10,980	6,399	-8.0	-6.2
Sorghum	507	201	709	-21.3	26.9[6]
Wheat	40,339	6,962	1,615	-19.7[6]	-20.0[6]
Tobacco (flue)	30	85	545	25.2[6]	[a]
Coffee	38	159	197	-5.6	17.4
Cotton	32,811	19,428	6,799	-6.2[6]	-11.9[6]
Soyabeans	913	1,670	341	21.8[6]	**-18.4**[6]
Sunflowers	240	208	211	-6.1	-9.4
Groundnuts	296	30	52	**-38.4**[6]	
Dry beans	159	72	472	-16.6	23.3

a. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.
b. Significant at 5% level.

D18. RATES OF GROWTH IN CROP YIELD, MASVINGO

	YIELD			YIELD GROWTH RATES	
	1973-75 (tons)	1979-81 (tons)	1987-88 (tons)	1973-80 (%)	1979-88 (%)
Barley	3,600	0	0	_[a]	_[a]
Maize	3,150	**4,410**	2,630	4.0	-6.1
Sorghum	1,020	1,870	2,460	9.6	7.7
Wheat	3,390	3,600	4,200	1.1	0.3
Tobacco (flue)	950	1,290	1,820	6.2	
Coffee	**880**	1,130	900	0.9	-1.3
Cotton	2,320	2,370	2,190	-2.2	-0.7
Soyabeans	1,840	2,080	1,270	3.9	-5.0
Sunflowers	580	740	820	1.6	-1.2
Groundnuts	1,300	570	1,170	-9.2	
Dry beans	640	950	1,210	2.4	6.2

a. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.

ANNEX E

Cropping Patterns in the Large-Scale Commercial Sector

El. LAND USE IN THE LARGE-SCALE COMMERCIAL SECTOR
(in hectares)

YEAR	CEREAL CROPS	INDUSTRIAL CROPS	FODDER CROPS	TREE CROPS	OTHER	TOTAL
1970	277,847	148,581	30,706	5,626	87,153	549,313
1971	293,309	143,626	29,403	5,538	82,573	**554,449**
1972	333,029	149,642	24,581	5,841	82,207	595,300
1973	325,039	168,947	23,424	6,189	81,762	605,361
1974	313,626	199,997	16,877	5,983	77,592	614,085
1975	285,193	208,317	15,711	5,359	76,015	590,595
1976	271,085	191,531	18,756	5,228	79,835	566,435
1977	286,974	199,197	14,723	4,752	68,834	574,780
1978	263,074	215,769	12,919	4,275	67,463	563,500
1979	246,368	216,671	12,382	4,864	62,684	542,169
1980	271,969	226,583	11,189	3,663	61,428	574,832
1981	345,832	181,989	11,067	4,005	56,982	599,875
1982	320,447	197,888	11,440	3,679	51,556	585,010
1983	264,537	214,468	13,673	3,543	52,204	548,425
1984	233,946	225,796	13,673	4,062	54,445	531,922
1985	258,885	212,643	12,748	3,415	53,359	541,050
1986						
1987	186,738	230,247	14,185	4,051	49,577	**484,798**
1988	202,776	228,409	11,978	5,710	51,681	500,554

Source: *Cso Statistical Yearbook,* for 1970-1983; "Crop Production of Large Scale Commercial Farms," for 1984 and 1985; and Cso, for 1987 and 1988.

E2. Historical area and production of principal crops, large-scale commercial sector (in 000 units)

HARVEST YEAR	MAIZE		SORGHUM		WHEAT		GROUNDNUTS		SOYABEANS		COTTON		COMTEE			TOBACCO FLUE + BURLEY	
	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Prod. area	Unprod. area	Prod.	Area	Prod.
1973	282.2	793.0	20.5	25.6	21.3	83.9	4.1	4.4	8.2	8.8	70.5	109.7	1.8	2.3	1.6	48.8	68.9
1974	279.5	1,580.7	6.5	10.6	26.0	97.1	5.0	6.7	11.4	21.8	88.4	124.9	2.6	1.3	2.6	58.5	73.6
1975	248.3	1,274.6	2.6	4.4	31.7	125.5	5.4	8.3	17.7	31.1	82.4	124.4	3.0	1.1	3.4	65.4	84.4
1976	226.9	1,219.2	5.8	15.3	32.7	141.1	4.3	9.6	24.5	44.3	57.7	107.7	3.8	0.7	4.9	65.9	108.3
1977	235.1	1,152.2	5.5	14.5	41.9	164.3	3.1	6.3	24.0	46.6	74.6	115.2	3.6	0.9	4.3	57.1	83.8
1978	207.8	1,114.6	6.8	15.6	44.8	202.8	2.5	5.8	34.5	69.4	86.1	129.0	3.9	1.1	5.0	55.4	83.1
1979	199.4	721.9	7.5	18.9	34.3	153.0	3.2	7.5	39.6	83.6	77.0	130.2	5.0	-	-	60.1	107.3
1980	227.7	910.7	6.8	16.3	32.6	154.6	3.8	10.7	40.8	89.4	74.9	145.6	6.3	-	-	63.7	119.8
1981	294.8	1,736.0	8.4	24.3	36.6	183.4	5.2	15.4	30.5	65.8	58.4	118.0	8.3	-	-	39.3	69.1
1982	270.4	1,143.6	7.1	16.9	37.3	191.9	4.8	14.3	48.0	88.5	52.3	104.8	5.0	4.0	6.1	45.4	88.2
1983	235.2	601.8	5.1	7.2	21.5	111.0	3.0	8.5	54.5	78.6	59.9	111.1	7.0	2.3	8.2	46.0	93.2
1984	205.0	694.6	8.8	17.6	16.9	83.8	2.0	5.4	53.5	88.4	72.2	145.3	7.3	1.4	10.0	49.6	115.8
1985	205.0	1,112.5	13.9	53.1	35.1	174.3	1.9	4.4	40.4	84.4	70.3	155.0	7.0	1.7	9.2	51.0	104.6
1986	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1987	140.6	506.6	5.7	14.4	36.1	189.8	4.9	13.0	57.4	107.9	58.6	122.6	6.7	1.8	10.6	56.3	119.9
1988	151.0	682.4	3.8	11.4	41.8	214.4	5.2	16.4	51.6	118.1	60.1	127.9	6.5	2.1	11.3	54.3	I12.7

Source: "Crop Production of **Large-Scale** Commercial Farms," for 1973 to **1985, and** Central Statistics Office, for **1987 and 1988.**

ANNEX F

Cropping and Livestock Producer Prices

Fl. CROP PRICES PAID TO PRODUCERS, 1980 TO 1989
(in Z$/mt)

YEAR	MAIZE[a]	SORGHUM[a]	WHEAT[a]	COTTON[a]	GROUNDNUTS[a] (unshelled)	SOYABEANS[a]	SUNFLOWERS	TOBACCO[b] (flue)	COFFEE[b]
1979	**60.3**	75.7	1I4.6	**344.0**	360.0	I46.3	I27.3		
I980	89.0	**97.8**	I34.7	363.0	362.0	I59.6	I45.5	795	2,200
I98I	II9.I	I04.7	I73.4	380.0	398.5	I69.5		I,827	1,5I2
I982	II9.6	I05.2	I86.8	497.0	426.2	I99.I		I,677	I,738
I983	II9.6	I09.0	219.7	493.0	451.7	256.9	245.8	**1,886**	2,I47
I984	152.I	I33.5	249.0	550.0	506.9	285.9	276.7	2,066	**2,988**
I985	178.9	I7I.8	283.7	646.0	706.3	3I9.0	314.6	**2,684**	3,868
I986	I77.9	I73.I	298.8	722.0	673.0	336.4	332.0	3,I33	5,479
I987	179.4	I45.5	329.3	740.0	**936.6**	382.9	373.8	2,I79	2,983
I988	I93.2	156.8	362.I	788.0		**416.4**	4I9.2	3,935	2,894
1989	2I3.0	217.I	396.8	858.0		43I.3	443.6		

a. Prices for maize, sorghum, wheat, cotton, groundnuts, soyabeans, and sunflower are official producer prices. From Will Masters, unpublished data, Ministry of Lands, Resettlement and Rural Development, Government of Zimbabwe, Harare (1990), for 1980 and earlier; and GMB annual reports, for I98I and later.

b. Prices for tobacco and coffee are the average weighted price paid to producers by marketing authorities *(Quarterly Digest of Statistics,* I990, pp. 38, 39).

MILK PRICES PAID TO PRODUCERS OF ANIMALS AND

YEAR	CATTLE (Z$/head)	SHEEP (Z$/head)	PIGS (Z$/head)	MILK (WHOLE) CONSUMPTION (Z$/ton)
1975	118.2	8.6	25.6	100.1
1976	112.6	12.5	26.3	102.7
1977	120.3	13.5	26.8	103.9
1978	115.9	11.2	26.5	116.0
1979	138.3	12.7	34.5	143.5
1980	168.2	16.8	44.3	175.1
1981	210.4	21.3	55.7	215.8
1982	283.6	31.4	62.4	276.6
1983	287.3	38.6	57.8	306.9
1984	320.6	33.3	78.2	348.8
1985	324.6	31.5	93.6	390.4
1986	377.2	36.3	99.9	398.3
1987	497.0	40.9	116.4	398.1
1988[b]	480.1	36.3	114.4	392.3

a. Weighted average price paid to producers by marketing authorities *(Quarterly Digest of Statistics,* 1990, pp. 40, 41).
b. Through 30 June 1988.

ANNEX G

Communal Area Cropping Patterns

G1. HISTORICAL AREA AND PRODUCTION OF PRINCIPAL CROPS
(in 000)

HARVEST YEAR	MAIZE		RAPOKO		SORGHUM		MHUNGA		GROUND-NUTS		BEANS		COTTON	
	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area'	Prod.	Area	Prod.	Area	Prod.
I970	6II	246	53	59	I99	65	I76	**55**	245	30	33	I3	I4	I7
I97I	672	455	35	5I	240	I37	I9I	73	2I6	16	32	I2	I8	I6
I972	**665**	555	30	47	240	I20	202	IIO	22I	17	27	8	30	27
I973	**475**	I45	**69**	56	122	23	225	I09	200	24	30	II	26	I3
I974	725	470	-	-	275	I50	-	-	290	I87	42	I2	62	55
I975	725	435	76	38	2I0	105	44I	I46	310	I10	40	I8	54	40
I976	760	550	120	8I	235	I20	**456**	165	325	173	-	-	35	28
I977	600	400	I41	87	90	36	497	I9I	275	130	35	II	35	22
1978	700	450	35	1I	120	57	254	83	200	101	43	8	41	31
I979	600	420	I50	58	76	30	233	**88**	240	I00	1I	4	20	15
I980	900	600	I47	**6I**	I20	**66**	293	I00	I75	67	-	-	I5	12
198I	I,000	1,000	-	-	200	100	-	-	300	I00	-	-	**59**	**45**
1982	I,100	595	-	-	200	50	-	-	240	**95**	-	-	5I	27
I983	I,050	285	-	-	280	**44**	-	-	180	23	-	-	**65**	**33**
1984	I,136	454	-	-	156	37	-	-	144	19	-	-	100	70
1985	I,018	I,558	-	-	2II	76	-	-	II8	6I	-	-	I30	IIO
I986	1,074	1,348	-	-	I50	**66**	-	-	I60	**64**	-	-	**II4**	**99**
I987	943	5I8	I09	40	**I64**	38	I87	56	I77	55	-	-	I38	83
I988	I,036	1,450	I20	84	206	I60	237	184	197	106	-	-	I61	137
1989	920	I,062	II6	**44**	15I	62	**I64**	90	160	72	-	-	153	123

Source: **Data for maize, sorghum, groundnuts, beans, and cotton, for I970-I984, are from the *1987 Statistical Yearbook*, and for I984-I989, from the Cso Crop Forecasting Committee. Data for mhunga and rapoko, for 1970-I980, are from Masters (I990).**

G2. COMMUNAL AREA CROPPING PATTERNS

	MAIZE	RAPOKO	SORGHUM	MILLET	GROUND-NUTS	COTTON	SUN-FLOWER	To-BACCO	BEANS	OTHER
1984/85:										
Manicaland	52.0	2.4	**9.5**	**26.5**	**6.4**	I.2	**0.4**	**0.0**	0.2	1.4
Mashonaland Central	**65.0**	2.1	**0.9**	1.4	2.7	25.7	**0.8**	**0.4**	0.1	1.1
Mashonaland East	**62.9**	1.6	**0.9**	**24.8**	**5.3**	**0.9**	2.5	**0.0**	0.2	**0.9**
Mashonaland West	**58.0**	**0.9**	**8.6**	0.2	2.6	26.1	2.6	0.1	**0.0**	**0.8**
Mashonaland North	**60.2**	**0.0**	23.2	13.7	**0.5**	**0.6**	1.4	**0.0**	0.2	**0.0**
Mashonaland South	30.9	0.2	28.2	**28.0**	10.3	**0.0**	0.2	**0.0**	2.2	**0.0**
Midlands	**56.5**	**6.4**	**6.0**	3.7	5.3	**18.6**	2.4	**0.0**	0.1	1.0
Masvingo	**49.0**	**10.0**	15.3	**19.0**	**5.0**	**0.5**	0.1	**0.0**	0.1	1.0
1985/86:										
Manicaland	36.3	2.1	2.2	20.2	**35.9**	0.7	0.3	**0.0**	0.1	2.2
Mashonaland Central	67.5	1.9	**0.8**	**0.4**	**4.8**	22.3	1.1	0.3	0.2	**0.8**
Mashonaland East	60.1	4.3	**0.9**	18.1	11.0	**0.8**	2.9	**0.0**	**0.4**	1.6
Mashonaland West	67.7	1.5	1.0	0.2	5.4	**18.6**	2.9	0.2	1.2	1.2
Mashonaland North	**48.6**	**0.0**	20.4	27.4	**0.4**	0.5	1.2	0.0	1.5	**0.0**
Mashonaland South	37.6	0.3	27.5	17.0	I0.2	**0.0**	0.2	0.0	1.8	**5.4**
Midlands	62.2	4.1	**4.6**	4.5	7.0	14.1	2.0	**0.0**	0.2	1.3
Masvingo	52.6	11.5	**8.9**	12.6	12.0	0.2	**0.6**	**0.0**	0.2	1.5

Source: Zimbabwe, "National **Household Survey of Communal Areas. "**

G3. Communal area cropping patterns by natural region, 1986-1989

	MAIZE	RAPOKO	SORGHUM	MILLET	GROUND-NUTS	COTTON	SUN-FLOWER	VEGETA-BLES	BEANS	FRUIT	OTHER	FALLOW	ALL CROPS
						(hectares)							
NR I	**14.5**	**0.9**	**0.0**	1.4	0.1	0.7	**0.0**	**0.0**	0.1	0.2	3.7	3.6	25.3
NR **IIa**	211.2	4.1	3.4	2.6	**10.6**	**29.0**	7.4	3.5	1.8	2.9	19.7	129.5	425.5
NR IIb	**109.8**	**5.9**	2.8	11.2	11.3	2.6	**10.0**	**4.4**	1.7	**0.9**	13.7	**74.6**	**248.9**
NR IIb, III	**54.6**	1.2	3.7	**0.5**	4.1	**39.4**	**6.6**	**0.0**	0.1	**0.0**	7.0	24.1	141.3
NR III	226.4	11.3	16.2	**32.0**	17.6	**49.1**	17.3	2.1	1.0	2.1	37.3	138.4	**550.5**
NR III, N	35.4	**0.0**	6.2	9.1	2.9	**4.4**	2.3	-	**0.0**	**-**	**6.8**	**18.6**	**93.4**
NR IV	**674.4**	**55.8**	142.2	318.6	**90.5**	**87.4**	**60.7**	12.0	4.2	**8.8**	177.7	**499.0**	2,131.6
NR IV, V	9.3	**3.0**	15.7	27.1	2.0	2.1	1.1	-	0.1	-	**6.7**	**16.5**	**83.5**
NR V	**94.8**	7.3	135.7	72.2	**9.4**	12.5	11.2	**0.4**	0.2	**0.8**	20.1	147.1	511.8
National	**1,430.4**	**89.5**	326.0	474.7	**148.4**	227.1	116.6		9.3		292.7	1,051.4	4,211.8
						(percentages)							
NR I	67.1	4.2	**0.0**	**6.5**	**0.5**	3.2	**0.0**	**0.0**	0.5	**0.9**	17.1		
NR **IIa**	71.3	1.4	1.2	**0.9**	3.6	**9.8**	2.5	1.2	**0.6**	1.0	6.7		
NR IIb	**63.0**	3.4	1.6	**6.4**	**6.4**	1.5	**5.7**	2.5	1.0	**0.5**	7.9		
NR IIb, III	**46.6**	1.0	3.2	**0.4**	3.5	33.6	**5.6**	**0.0**	0.1	**0.0**	**6.0**		
NR III	**54.9**	2.7	3.9	7.8	4.3	11.9	4.2	**0.5**	0.2	**0.5**	9.1		
NR III, **IV**	47.3	**0.0**	8.3	12.2	3.9	**5.9**	3.1	-	**0.0**	**-**	9.1		
NR N	41.3	3.4	8.7	19.5	5.5	**5.4**	3.7	0.7	0.3	**0.5**	**10.9**		
NR N, V	13.9	**4.5**	23.4	**40.4**	3.0	3.1	1.6	-	0.2	-	**10.0**		
NR V	**26.0**	2.0	37.2	**19.8**	2.6	3.4	3.1	0.1	0.1	0.2	**5.5**		
National	45.3	2.8	10.3	15.0	4.7	7.2	3.7		0.3		9.3		

Source: **Calculated** from **district-level data, AGIUPEX Crop Production Section** (Will Masters, **unpublished data,** Ministry of Lands, Resettlement and Rural Development, Government of Zimbabwe, Harare, 1990). Crop percentages are calculated on the basis of crop area, excluding fallow, to remain consistent with table G.1.

G4. RATES OF GROWTH IN CROP AREA, COMMUNAL AREAS, NATIONAL

	CROP AREA			AREA GROWTH RATES	
	1970-72 (000 ha)	1978-80 (000 ha)	1987-89 (000 ha)	1970-80 (%)	1979-89 (%)
Maize	649	733	966	2.0	2.2
Sorghum	226	111	174	-_83a'	3.8
Rapoko	39	105	115 13.Oa	'	-2.8'
Mhunga	190	260	196	5.8	-3.4
Cotton	21	25	151	1.6	25.0'
Groundnuts	227	205	178	-0.7	-3.9
Beans	31	27	b	**-4.0**	b

a. Significant at 5% level.
b. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.

G5. RATES OF GROWTH IN CROP PRODUCTION, COMMUNAL AREAS, NATIONAL

	PRODUCTION			PRODUCTION GROWTH RATES	
	1970-72 (000 mt)	1978-80 (000 mt)	1987-89 (000 mt)	1970-80 (%)	1979-89 (%)
Maize	419	490	1,010	5.3	9.0
Sorghum	107	51	87	-6.6	5.0
Rapoko	52	43	56	-2.1	-1.2
Mhunga	79	90	110	4.2	1.1
Cotton	20	19	114	-1.1	26.5'
Groundnuts	21	89	78	19.9'	-1.3
Beans	11	6	b	-7.1	b

a. Significant at 5% level.
b. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.

G6. RATES OF GROWTH IN CROP YIELD, COMMUNAL AREAS, NATIONAL

	YIELD			YIELD GROWTH RATES	
	1970-72 (kg/ha)	1978-80 (kg/ha)	1987-89 (kg/ha)	1970-80 (%)	1979-89 (%)
Maize	649	668	1,046	3.3	6.7
Sorghum	473	459	500	1.8	1.1
Rapoko	1,333	410	487	-13.4	1.7
Mhunga	416	346	561	-1.5	4.6
Cotton	952	760	755	-2.6	1.3
Groundnuts	93	434	438	20.8[a]	2.7[b]
Beans	355	222		-3.2	

a. Significant at 5% level.
b. Indicates too few nonzero observations to permit the calculation of reasonably reliable growth rates.

ANNEX H

Employment in the Large-Scale Commercial Sector

H1. EMPLOYMENT IN THE LARGE-SCALE COMMERCIAL SECTOR

YEAR	OWNERS, PARTNERS, OCCUPIERS	TOTAL FARM AND FOREST EMPLOYEES	PERMANENT EMPLOYEES	SEASONAL EMPLOYEES	TOTAL MALE WORKERS (%)	TOTAL FEMALE WORKERS (%)
1989	5,560	247,154	136,860	110,294	74.0	26.0
1988	5,281	227,626	137,154	90,472	76.7	23.3
1987	4,264	219,987	137,746	82,241	77.2	22.8
1986						
1985	5,163	214,241	147,842	66,399	79.0	21.0
1984	4,934	216,905	162,325	54,580	79.8	20.8
1983	5,091	216,013	154,738	61,275	79.5	20.5
1982	5,206	220,228	164,044	56,184	80.3	19.7
1981	4,859	242,149				
1980	4,926	271,291				
1979	4,932	286,825	230,523	56,302	76.8	23.2
1978	5,534	283,731	232,137	51,594	77.7	22.3
1977	6,109	295,139	237,435	57,704	77.2	22.8
1976	6,211	307,225	233,873	73,352	75.6	24.4
1975	6,317	303,903	229,213	74,690	76.0	24.0
1974	6,163	311,913	233,766	78,147	76.5	23.5
1973	6,418	301,512	228,511	73,001	77.4	22.6

H2. PERMANENT FARM AND FOREST EMPLOYEES BY PROVINCE

(as of September 30)

YEAR	MANICA-LAND	MASHONA-LAND	MATABELE-LAND	MIDLANDS	MASVINGO	TOTAL
			Permanent employees			
1989		-		-		136,860
1988	17,282	90,511	7,745	6,205	15,411	137,154
1987	-					137,746
1986						
1985	18,696	97,368	8,251	6,423	17,104	**147,842**
1984	23,118	99,797	10,732	6,593	22,085	162,325
1983	20,244	97,759	10,576	6,887	19,272	154,738
1982	22,166	101,793	11,498	8,098	20,489	164,044
1981					-	
1980					-	
1979	35,708	147,557	15,385	10,523	21,350	230,523
1978	35,378	143,915	16,898	11,502	24,444	232,137
1977	35,872	142,895	18,512	11,729	28,427	237,435
1976	33,821	141,335	18,939	11,576	28,202	233,873
1975	34,548	137,296	18,279	11,838	27,252	229,213
1974	37,159	138,776	18,232	12,057	27,542	233,766
1973	37,752	134,704	18,071	12,018	25,966	228,511
			Seasonal or casual employees			
1989						110,294
1988	29,396	50,109	3,077	2,542	5,348	90,472
1987						82,241
1986				-		
1985	18,363	40,086	3,047	2,365	2,533	66,399
1984	15,153	34,663	1,388	1,955	1,421	54,580
1983	17,583	35,962	3,085	1,790	2,855	61,275
1982	13,650	33,991	2,594	2,087	3,862	56,184
1981				-		-
1980				-		
1979	8,645	38,130	2,528	2,520	4,479	56,302
1978	8,216	34,309	2,011	2,741	4,317	51,594
1977	8,786	39,593	2,582	3,065	3,678	57,704
1976	11,593	49,315	3,488	4,068	**4,888**	73,352
1975	9,512	51,746	3,238	3,950	6,244	74,690
1974	10,225	52,760	2,708	4,516	7,938	78,147
1973	11,741	49,706	2,784	3,384	5,386	73,001

ANNEX I

Crop Adjustment Factors

Using cropped area to estimate the extent of land utilization ignores two factors: (1) certain crops such as wheat are irrigated under double-cropping systems and thus result in double accounting; and (2) certain crops, **principally tobacco, require grass** fallow **according** to AGRITEX **recommendations.** The first overstates the area of crops actually planted. The second points out the need of a fallow component to ensure sustainable crop yields in the longer run.

AGRITEX recommends the following crop rotations for tobacco and maize:

	Rotation	Conditions
1.	Groundnuts, maize, maize, followed by 3-year grass fallow.	NR II, light soils
2.	Maize, tobacco, followed by 3-year grass fallow.	NR II, light soils, tobacco rotation
3.	Cotton, soyabeans, and maize (100% cropping)	NR II, **heavy soils**
4.	Cotton, maize, maize, followed by 3-year grass fallow.	**NR** III, heavy soils

While it is not possible to determine accurately the area of light and heavy soils by region or the extent of crop rotations planted, these theoretical rotations give broad guidelines for establishing fallow requirements under sustainable resource use (table I.1). For example, 3 hectares of grass are recommended for every 1 hectare of tobacco, resulting in a ley factor of 3. For every 2 hectares of maize, 3 hectares of grass are required on light soils, but none is required on heavy soils. Assuming that 50 percent of soils are heavy and 50 percent light, 3 hectares of grass are needed on average for every 4 hectares of maize, giving a ley factor of 0.75. A discount factor of -1.0 is assigned to wheat because it is generally double-cropped, and thus its crop area is already accounted for in other crops. A discount factor of -1.0 is also indicated for planted pasture. Aside from the issue of the economic profitability of grass compared with crop production, planted pasture is deducted from crop area since it can be substituted for grass fallow in the tobacco and maize rotations. Finally, other crops are assumed to be cultivated under 100 percent cropping systems for lack of more detailed data on type and frequency of rotations.

I1. LEY OR DISCOUNT FACTORS FOR ADJUSTING CROPPING AREA

	TOBACCO[a]	MAIZE[a,b]	WHEAT	FODDER CROPS	OTHER CROPS
Mashonaland West	3.0	.75	-1.0	-1.0	0.0
Mashonaland Central	3.0	.75	-1.0	-1.0	0.0
Mashonaland East	3.0	.75	-1.0	-1.0	0.0
Natural region I	3.0	.75	-1.0	-1.0	0.0
Natural region II	3.0	.75	-1.0	-1.0	0.0
Natural region III	3.0	1.5	-1.0	-1.0	0.0

a. The weight of 3 means 3 ha of grass fallow for every 1 ha of tobacco.

b. Assuming 50% light soils (3 ha grass fallow for every 2 ha maize) and 50% heavy soils (100% cropping) in NR II, for a ratio of 3:4. In NR IN, on light soils, 3 ha of grass is recommended for every 2 ha of maize.

ANNEX J

Crops Yields in ReSettlement and Large-Scale Sectors by Natural Region

J1. CROP YIELDS IN RESETTTLEMENT AND LARGE-SCALE SECTORS BY NATURAL REGION (in kg/ha)

		MZ	WI	MG	SF	SB	GN	CT	TB
Large-scale sector'									
1988	NR I	3,904	2,000		333	2,413	1,769	1,533	2,235
	NR II	4,647	5,482	1,220	743	2,280	3,200	2,199	2,070
	NR III	4,026	**5,410**	2,170	648	2,410	2,973	1,780	2,022
	NR IV	3,757	3,858	1,380	696	630	2,070	2,017	2,000
	NR V	4,315	3,572	-	1,927	2,730	4,667	2,019	**1,864**
Resettlement'									
1986	NR I	677	-		168		60	1,101	-
	NR II	1,207	2,580	187	520	387	322	1,221	1,648
	NR III	927	2,211	339	392	713	347	746	1,282
	NR IV	256		192	279		172	**556**	
	NR V	308		263	199		**168**	**228**	
1985	NR I	2,204	600		500	333	222		
	NR II	2,585	2,740	**1,834**	698	**1,168**	826	1,087	2,094
	NR III	2,021	2,185	**850**	893	511	519	1,152	**894**
	NR IV	1,344	4,747	432	834	**438**	548	552	
	NR V	596		547	89		75	**48**	
1984	NR I	342	-	500		-	77		
		1,814	766	2,022	463	406	413	**984**	825
	NR III	1,141	2,465	465	**430**	559	242	903	3,000
	NR IV	794	1,000	363	**294**	296	181	531	
	NR V	125	-	121		-	239	250	-

MZ = maize; wr = wheat; MG - mhunga; SF = sunflower; SB = soyabeans; GN = groundnuts; CT = cotton; and TB = tobacco.

a. From Central Statistics Office.

b. Means yields were calculated from two data files compiled by DERUD; area by natural region for each scheme from the data file "settlers.wrk"; and crop area and production from "Crop8485.wrk," "Crop8586.wrk," and "Crop8687.wrk." If a scheme fell into more than one natural region, calculations assumed that area and production were distributed proportionally to the area of scheme falling in each region. The majority of schemes, however, fell into one natural region only.

REFERENCES

AMA (Agricultural Marketing Authority). 1985. *Economic Review of the Agricultural Industry of Zimbabwe.* Harare: AMA.

Amin, N., and J.T. Chipika. 1990. "The Differentiation of the Peasantry in Zimbabwe: Some Implications for Land Redistribution." Paper prepared for Conference on Land Policy in Zimbabwe after Lancaster (ZAL), 13-15 February 1990, at Harare International Conference Center.

Barnes, Grenville. 1990. "A Comparative Evaluation Framework for Cadastre-based Land Information Systems (CLIS) in Developing Countries." LTC Research Paper, no. 102. Madison: Land Tenure Center, University of Wisconsin, March.

Berry, R. Albert, and William R. Cline. 1979. *Agrarian* ***Structure and Productivity in Developing*** *Countries.* Baltimore: Johns Hopkins University Press.

Binswanger, Hans P., and Miranda Elgin. 1988. "What Are the Prospects for Land Reform?" Latin America and the Caribbean Region Series, Internal Discussion Paper, Report no. IDP-21. Washington, D.C.: World Bank.

Bratton, Michael. 1990. "Ten Years After: Land Redistribution in Zimbabwe." In *Agrarian Reform and Grassroots Development: Ten Case Studies,* edited by Roy L. Prosterman, Mary N. Temple, and Timothy M. Hanstad; pp. 265-291. Boulder, Colo.: Lynne Rienner Publishers.

Bratton, Michael. 1993. "Land Redistribution, 1980-1990." In *Beneath the Surface of Zimbabwe's Agricultural Revolution,* edited by M. Rukuni and E.K. Eicher. Draft. Harare: Department of Agricultural Economics and Extension, University of Zimbabwe. Forthcoming, University of Zimbabwe Press.

Bruce, John W. 1986. "Land Tenure Issues in Project Design and Strategies for Agricultural Development in sub-Saharan Africa." Madison: Land Tenure Center, University of Wisconsin, March.

Bruce, John W. 1989. "The Variety of Reform: A Review of Recent Experience with Land Reform and the Reform of Land Tenure, with Particular Reference to the African Experience." Paper prepared for Conference on Human Rights in a Post-Apartheid South African Constitution, at Columbia University, New York, 25-28 September 1989.

Bruce, John W. 1990a. "Legal Issues in Land Use and Resettlement." Background paper prepared for World Bank Agricultural Sector Memorandum. Washington, D.C.: World Bank, October.

Bruce, John W. 1990b. "Land Policy and State Farm Divestiture in Mozambique." Madison: Land Tenure Center, University of Wisconsin, April.

Bruce, John W., and Paula Harrell. 1989. "Land Reform in the People's Republic of China, 1978-1988." LTC Research Paper, no. 100. Madison: Land Tenure Center, University of Wisconsin, December.

Carter, Michael. 1984. "Identification of the Inverse Relationship between Farm Size and Productivity." *Oxford Economic Papers,* no. 36, pp. 131-145.

Carter, Michael R., Keith D. Wiebe, and Benoit Blarel. 1990. "Land Titles, Tenure Security, and Agricultural Productivity: Theoretical Issues and an Econometric Analysis of Mediating Factors in Njoro Division, Kenya." Revised. Madison: Land Tenure Center, University of Wisconsin.

Chaonwa, W. 1989. "Summary of Recommendations in Respect of Agrarian Reform and Subdivision Criteria." Harare: AGRITEX, Agricultural Management Services Branch, July.

Chavunduka, G.L. 1982. *Report of the Commission of* ***Inquiry*** *into the* ***Agricultural Industry*****. Harare: Government Printers.**

Cheater, Angela P. 1978. "Small-scale Freehold as a Model for Commercial Agriculture in Rhodesia-Zimbabwe." *Zambezia 5:* 117-127.

Cheater, Angela P. 1982. "Formal and Informal Rights to Land in Zimbabwe's Black Freehold Areas: A Case-Study from Msengezi." *Africa* 52(3): 77-91.

Cheater, Angela P. 1984. *Idioms of Accumulation: Rural Development and Class* ***Formation among*** *Freeholders in Zimbabwe.* Gweru, Zimbabwe: Mambo Press.

Cheater, Angela P. 1988. "The Ideology of 'Communal' Land Tenure in Zimbabwe: Mythogenia Enacted?" Forthcoming, *Africa.*

Cheater, Angela P. 1990. "Socio-Cultural Dimensions of 'Customary' Land Tenure in Zimbabwe." Paper prepared for Conference on Land Policy in Zimbabwe after Lancaster (ZAL), 13-15 February 1990, at Harare International Conference Center.

Chelliah, Raja J. 1986. *Report of the Commission of* ***Inquiry into Taxation.*** **Harare: Government** Printer, April.

Chimedza, Ruvimbo. 1988. "Women's Access to and Control over Land: The Case of Zimbabwe." Paper, no. 10/88. Harare: University of Zimbabwe, Department of Agricultural Economics and Extension.

Cliffe, Lionel. 1986. "Policy Options for Agrarian Reform in Zimbabwe: A Technical Appraisal." Rome: Food and Agricultural Organization, February.

Cousins, Ben. 1987. "A Survey of Current Grazing Schemes in the Communal Lands of Zimbabwe." Harare: University of Zimbabwe, Centre for Applied Social Sciences, September.

Cousins, Ben. 1990a. "Property and Power in Zimbabwe's Communal Lands; Implications for Agrarian Reform in the 1990s." Paper prepared for Conference on Land Policy in Zimbabwe after Lancaster (ZAL), 13-15 February 1990, at Harare International Conference Center.

Cousins, Ben. 1990b. "Livestock Production and Grazing Rights in Communal Lands and Resettlement Schemes in Zimbabwe." Paper submitted to World Bank Agricultural Sector Mission, June.

Cusworth, John. 1990. "Land Resettlement." Background paper prepared for World Bank Agricultural Sector Memorandum. Washington, D.C.: World Bank.

Cusworth, John, and Judy Walker. 1988. "Land Resettlement in Zimbabwe: A Preliminary Evaluation." Evaluation Report, no. EV 434. London: Overseas Development Administration, September.

Duggan, W.J. 1980. "The Native Land Husbandry Act of 1951 and the Rural African Middle Class of Southern Rhodesia." *African Affairs 79:* 227-240.

Feder, Gershon, Tongroj Onchan, Yongyuth Chalamwong, and Chira Hongladarom. 1988. *Land Policies and Farm Productivity in Thailand.* Baltimore: Johns Hopkins University Press.

Funnell, D.C. 1982. "Changes in Farm Incomes and the Rural Development Program in Swaziland." *Journal of Developing Areas* 16: 271-290.

Gaidzanwa, R.B. 1988. "Women's Land Rights in Zimbabwe: An Overview." RUP Occasional Paper, no. 13. Harare: University of Zimbabwe, Department of Rural and Urban Planning, August.

Green, R.H. 1985. "Parameters, Permutations and Political Economy, Zimbabwe." Paper for Conference on Economic Policies and Planning under Crisis Conditions, sponsored by Economics Department, University of Zimbabwe, in Harare.

Hawkins Associates. 1982. "Investigation in the Intensity of Land Utilization in Selected Farming Areas of Zimbabwe." Washington, D.C.

Holleman, J.F. 1952. *Shona Customary Law*. Cape Town: Oxford University Press.

Johnson, R.W.M. 1968. "The Economics of African Agriculture in Southern Rhodesia." Ph.D. thesis, University of London.

Johnston, Bruce F., and William C. Clark. 1982. *Redesigning Rural Development: A Strategic Perspective.* Baltimore: Johns Hopkins University Press.

Johnston, Bruce F., and Peter Kilby. 1975. *Agriculture and Structural Transformation, Economic Strategies in Late-Developing Countries.* New York: Oxford Univesity Press.

Joint Farmers' Unions. 1990. *Commercial Agriculture in Zimbabwe, 10th Anniversary Edition.* Harare: Modern Farming Publications, Agriculture House.

Joint Presidents' [of Commercial Farmers Union, National Fanners Association of Zimbabwe, and Zimbabwe National Farmers' Union] Agricultural Committee. 1989. *Commercial Agriculture in Zimbabwe 1989-1990.* Harare: Modern Farming Publications.

Joint Presidents' Agricultural Committee. 1990. "Report on Resettlement, Distribution and Utilization of Agricultural Land in Zimbabwe." Harare, March.

Kinsey, B.H. 1982. "Forever Gained: Resettlement and Land Policy in the Context of National Development in Zimbabwe." ***Journal of the International African Institute*** *52:* 92-113.

Lele, Uma, and Manmohan Agarwal. 1989. "Smallholder and Large-scale Agriculture in Africa: Are There Tradeoffs between Growth and Equity." MADIA Discussion Paper, no. 6. Washington, D.C.: World Bank.

Levi, J., and M. Haviden. 1982. *Economics of African Agriculture.* London: Longmans.

LTC (Land Tenure Center). 1990. "Security of Tenure in Africa: Agenda and Briefing Papers" / A Presentation to the Agency for International Development: Findings of a program of comparative research and their policy and programmatic implications, Washington, D.C., 19-20 April 1990. Madison: Land Tenure Center, University of Wisconsin.

Maboreke, Mary. 1990. "The Gender Dimensions of the Land Question in Zimbabwe." Paper prepared for Conference on Land Policy in Zimbabwe after Lancaster, held 13-15 February 1990, at Harare International Conference Center.

Masoka, N. 1993. "A Land Reform Policy and Strategy for Zimbabwe." In *Beneath the **Surface** of Zimbabwe's Agricultural Revolution,* edited by M. Rukuni and C.K. Eicher. Draft. Harare: Department of Agricultural Economics and Extension, University of Zimbabwe. Forthcoming, University of Zimbabwe Press.

Massell, B.F., and R.W.M. Johnson. 1966. *African Agriculture in Rhodesia: An Econometric Study*. Report, no. R-443-RC. Santa Monica, Calif.: Rand Corporation.

Masters, Will. 1990. Unpublished data, Ministry of Lands, Resettlement and Rural Development, Government of Zimbabwe, Harare.

MLARR (Ministry of Lands, Agriculture and Rural Resettlement). 1986. "Communal Lands Development Plan: A 15 Year Development Strategy." Harare, February.

MLARR (Ministry of Lands, Agriculture and Rural Resettlement). Monitoring and Evaluation Unit. 1988. "Model B Cooperative Resettlement Schemes, Baseline Survey and Technical Appraisal." First Draft. Harare, November.

MLGRUD (Ministry of Local Government, Rural and Urban Development). Department of Rural Development. 1987. "Report on the National Symposium on Agrarian Reform in Zimbabwe" / [held in] Nyanga, Zimbabwe, 19-23 October 1987. Draft. Harare.

MLRRD (Ministry of Lands, Resettlement and Rural Development). 1985. "Intensive Resettlement Policies and Procedures." Revised. Harare: MLRRD, April.

Morris, Michael L. 1988. "Comparative Advantage and Policy Incentives for Wheat Production in Zimbabwe." CIMMYT Economics Working Paper, no. 88/02. Harare: International Maize and Wheat Improvement Center.

Moyo, Sam. 1987. "The Land Question." In *Zimbabwe: The Political Economy in Transition, 1980-1986,* edited by Ibbo Mandaza, pp. 165-202. Harare: Jongwe Press.

Moyo, Sam, and Tor Skalnes. 1990. "Land Reform and Development Strategy in Zimbabwe: State Autonomy, Class and the Agrarian Lobby." Paper prepared for Conference on Land Policy in Zimbabwe after Lancaster, held 13-15 February 1990, at Harare International Conference Center.

Munasirei, D.K. N.d. "Methodology for the Assessment of Land-Use in Zimbabwe." Harare.

Murombedzi, James C. 1990. "'Communal' Land Tenure and Common Property Resource Management. An Evolution of the Prospects for Sustainable Common Property Resource Management in Zimbabwe's 'Communal' Areas." Paper prepared for Conference on Land Policy in Zimbabwe after Lancaster, held 13-15 February 1990, at Harare International Conference Center.

National Farmers Association of Zimbabwe. 1989. "Proposals for Land Reform and Distribution Policy." Draft. Harare: NFAZ, November.

Norman, Dennis. 1990. "Experience of Land Reform in Zimbabwe." Paper presented to Rural Land Workshop, 9-11 March 1990, sponsored by Institute for a Democratic Alternative for South Africa.

Palmer, Robin. 1977. *Land and Racial Domination in Rhodesia.* Berkeley: University of California Press.

Pankhurst, Donna, and Susie Jacobs. 1988. "Land Tenure, Gender Relations, and Agricultural Production: The Case of Zimbabwe's Peasantry." **In** *Women and Land: The African Experience,* edited by Jean Davison, pp. 202-227. Boulder, Colo: Westview Press.

Place, Frank, Peter **B.** Hazell, and Lawrence J. Lau. 1990. "An Econometric Analysis of the Relationship between Land Rights and Agricultural Productivity in sub-Saharan Africa." Paper presented to Conference on Rural Land Tenure, Credit, Agricultural Investment and Farm Productivity in subsaharan Africa, in Nairobi, Kenya, 4-8 June 1990.

Ranger, Terance. 1985. *Peasant Consciousness and Guerrilla War in Zimbabwe.* London: Leslie Besant.

Ranger, Terance. 1988. "The Communal Areas of Zimbabwe." Paper presented at Symposium on Land and African Agrarian Systems, University of Illinois at Urbana-Champaign, 10-12 April 1988.

Riddell, James C., and Carol Dickerman et al. 1986. "Country Profiles of Land Tenure: Africa 1986." LTC Paper, no. 127. Madison: Land Tenure Center, University of Wisconsin, April.

Riddell, Roger C. 1978a. *The Land Problem in Rhodesia: Alternatives for the Future.* Harare: Mambo Press.

Riddell, Roger. 1978b. *The Land Question.* London: Catholic Institute for International Relations.

Rohrbach, David Deems. 1988. "The Growth of Smallholder Maize Production in Zimbabwe: Causes and Implications for Food Security." Ph.D. thesis, Agricultural Economics, Michigan State University.

Rohrbach, David D. 1989. "The Economics of Smallholder Maize Production in Zimbabwe: Implications for Food Security." Msu International Development Paper, no. 11. East Lansing: Michigan State University, Department of Agricultural Economics.

Roth, Michael. 1990. "Analysis of Agrarian Structure and Land Use Patterns in Zimbabwe." Background paper prepared for World Bank Agricultural Sector Memorandum. Washington, D.C., World Bank, October.

Roth, Michael. 1993. "A Critique of Zimbabwe's 1992 Land Act: Quasi-market versus Non-market Options for Land Reform." In *Beneath the Surface of Zimbabwe's Agricultural Revolution,* edited by M. Rukuni and C.K. Eicher. Draft. Harare: Department of Agricultural Economics and Extension, University of Zimbabwe. Forthcoming, University of Zimbabwe Press.

Seidman, Robert B. 1968. "Land and Economic Development in Independent, English-Speaking, sub-Saharan Africa." In *Africa and Law,* edited by Arthur Schiller, pp. 3-74. Madison: University of Wisconsin Press.

Scoones, Ian, and Ken Wilson. 1989. "Households, Lineage Groups and Ecological Dynamics: Issues for Livestock Development in Zimbabwe's Communal Lands." **In** *People, Land and Livestock: Proceedings of a Workshop on the Socio-Economic Dimensions of Livestock Production* ***in the*** *Communal Areas of Zimbabwe,* edited by Ben Cousins, pp. 17-122. Harare: Centre for Applied Social Sciences, University of Zimbabwe.

Sunga, S. et al. 1990. "Farm Extension Baseline Survey Results." Harare: Zimbabwe Institute of Development Studies.

Tshuma, L., and K. Makamure. 1990. "The Legal Framework." Paper prepared for Conference on Land Policy in Zimbabwe after Lancaster, held 13-15 February 1990, at Harare International Conference Center.

UNICEF (United Nations Children's Fund). 1984. *Situation Analysis of Women and Children.* Harare: UNICEF and Government of Zimbabwe.

Ushewokunze, C.M. 1990. "Land Redistribution and Challenges of Development." Paper prepared for Conference on Land Policy in Zimbabwe after Lancaster, held 13-15 February 1990, at Harare International Conference Center.

Vincent, V., R.G. Thomas, and R.R. Staples. 1962. *An Agricultural Survey of Southern Rhodesia: Part I, Agro-Ecological Survey*. Harare: Ministry of Lands, Agriculture and Resettlement.

Weiner, Dan, Sam Moyo, Barry Munslow, and Phil O'Keefe. 1985. "Land Use and Agricultural Productivity in Zimbabwe. *Journal of Modern African Studies 23:* 252-285.

Weinrich, A.K.H. 1975. *African Farmers in Rhodesia: Old and New Peasant Communities in Karangaland.* London: Oxford University Press.

Whitlow, Richard. 1988. "Land Degradation in Zimbabwe." Harare: University of Zimbabwe, Geography Department.

Whitsun Foundation. 1978. "A Strategy for Rural Development and Whitsun Data Bank No. 2: The Peasant Sector." Harare: Whitsun Foundation, October.

Windmill. 1990. Unpublished data, compiled by Windmill (Pvt.), Ltd., Harare, Zimbabwe.

Woldu, Mathewos. 1990. "Agricultural Pricing Policy in Zimbabwe." Emena Region, Technical, Agriculture Division, January.

World Bank. 1989. *African Economic and Financial Data.* Washington, D.C.: World Bank, September.

World Bank. Southern Agriculture Division. Eastern and Southern Africa Projects Department. 1986. *Zimbabwe Land Subsector Study*. Report, no. 5878-Zlm. Washington, D.C.: World Bank, 30 September.

Zimbabwe. 1985. *Main Demographic Features of the Population of Zimbabwe.* Harare: Central Statistics Office, June.

Zimbabwe. 1986. *First Annual Survey of Settler Households in Normal Intensive Model* ***A Resettlement*** *Schemes.* Harare: Ministry of Lands, Agriculture and Rural Resettlement, Monitoring and Evaluation Section, Central Planning Unit, September.

Zimbabwe. 1987. *1987 Statistical Yearbook*. Harare: Central Statistics Office.

Zimbabwe. 1989. *Main Demographic Features of Masvingo.* Harare: Central Statistics Office, various months. [Also published for Mashonaland Central, Mashonaland East, Mashonaland West, Midlands.]

Zimbabwe. V.d. *Crop Production of Large Scale Commercial Farms.* Harare: Central Statistics Office, various issues.

Zimbabwe. V.d. *Quarterly Digest of Statistics.* Harare: Central Statistics Office, various issues.

Zimbabwe. Commission of Inquiry into Taxation. 1986. "Report of the Commission on Taxation." Harare.

Zimbabwe. Department of the Surveyor-General. 1984. *Zimbabwe Natural Regions and Farming Areas: Boundaries as at 1st July 1983.* 2nd ed. Harare: Surveyor-General.

Zimbabwe National Farmers' Union. 1987. "Settlement of Qualified Farmers in Resettlement Areas." Harare: ZNFU.