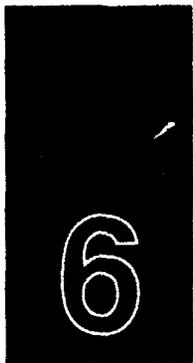


12750
February 1994



DISCUSSION PAPER

South African Agriculture:

Structure, Performance and Options for the Future



THE WORLD BANK
SOUTHERN AFRICA
DEPARTMENT

FILE COPY

INFORMAL DISCUSSION PAPERS
ON ASPECTS OF THE
ECONOMY OF SOUTH AFRICA

PREVIOUS WORLD BANK PAPERS ON SOUTH AFRICA

Previously published in the World Bank series of informal discussion papers on South Africa:

Levy, B. January 1992. "How Can South African Manufacturing Efficiently Create Employment? An Analysis of the Impact of Trade and Industrial Policy".

Kahn, B., Abdel, S. and Walton, M. May 1992. "South Africa: Macroeconomic Issues for the Transition".

Fallon, P. October 1992. "An Analysis of Employment and Wage Behavior in South Africa".

Southern Africa Department, May 1993. "An Economic Perspective of South Africa".

Belli, P., Finger, F., Ballivian A., August 1993. "South Africa: A Review of Trade Policies".

Riley, T., November 1993. "Characteristics of and Constraints Facing Black Businesses in South Africa: Survey Results".

Southern Africa Department, November 1993. "South Africa: Paths to Economic Growth" (Digest).

In addition, a number of technical and seminar papers prepared by World Bank staff and South African counterparts in key sectors have been discussed in the country.

FOREWORD

This discussion paper is the sixth in a series of informal studies on different aspects of the South African economy prepared by staff members of the World Bank and South African associates. The studies have been discussed with a wide range of South Africans and have benefited from South African ideas and inputs. The Bank's study program aims to support the ongoing effort by South Africans across the institutional spectrum to understand the weaknesses and potential of their economy, and identify options that may be available in a post-apartheid era. These options focus on creating equitable and sustainable economic growth and improving the distribution of assets and income.

The purpose of this report is to analyze the performance of South Africa's agriculture sector and to outline the strategic options for improving the overall structure and performance of the sector, especially in terms of income growth, job creation and increased equity. This report concentrates mainly on the large farm sector, because of its dominance in terms of area and output and because of the lack of information on agriculture in the homelands.

The conclusions that emerge from the analysis in this report depict the agricultural sector in South Africa as one that is dominated by large-scale producers and has been able to produce large volumes of output--achieving national food self-sufficiency for most commodities. This achievement has, however, come at a considerable financial and efficiency cost. The sector has been, and to some extent continues to be, characterized by significant policy distortions that have resulted in less-than-optimal levels of efficiency in many parts of the sector, e.g., average farm size is too large, ownership of rural assets, most notably land, are highly skewed, many farmers tend to use too much capital equipment and too little labor. This performance, combined with the active suppression of black farming, means that the agricultural sector has underperformed in terms of its contribution to national income, exports, and employment creation.

The combination of problems within the agricultural sector and the need for a redistribution of land and support services in the name of greater social justice, make a compelling argument in favor of a restructuring of the rural economy. Such a restructuring would encourage greater efficiency in the agricultural sector as a whole and would actively support the market-based redistribution of land and necessary support services to those injured under apartheid.

Southern Africa Department
The World Bank
February 1994

Copyright © 1994
The World Bank
1818 "H" Street, N.W.
Washington, D.C. 20433, U.S.A.

The views expressed in this paper are those of the authors and should not be attributed to the World Bank, to affiliated organizations, or to members of its Board of Executive Directors or the countries they represent.

ACKNOWLEDGEMENTS

This report was prepared by a team led by Robert E. Christiansen (Task Manager) and Rogier van den Brink. Especially extensive and valuable contributions were made by J. van Zyl, N. Vink, M. Mbongwa, H. Binswanger. Numerous other people made contributions, including: C. Blignaut and the staff at the Department of Agriculture, D. Cooper, M. de Klerk, G. Donovan, P. Fallon, B. Njobe, K. Treu, J. van Rooyen, L. Sibisi and the staff at the DBSA, to name only a few. Particularly useful background reports were prepared by M. Roth, H. Dolny and K. Wiebe, and the Oxford Food Studies Group. Without the help and guidance of these people and many others, this report would not have been completed. Despite the contributions of others, responsibility for the contents of this report and any remaining errors is the team's alone.

ABBREVIATIONS AND ACRONYMS

AMS	Aggregate Measure of Support
BTT	Board on Tariffs and Trade
DFB	Deciduous Fruit Board
EEC	European Economic Commission
GDP	Gross Domestic Product
LSU	Livestock Unit
SAAU	South African Agricultural Union
SACGA	Southern African Cane Growers Association
SADC	Southern African Development Community
SAM	Social Accounting Matrix
SARB	South Africa Reserve Bank
SASMAL	South African Sugar Millers Association Limited
SECOSAF	Secretariat of the Economic Community of Southern Africa
TFP	Total Factor Productivity

TABLE OF CONTENTS

Executive Summary	i
Chapter 1: Role of Agriculture in the Macroeconomy	1
Introduction	1
Macroeconomic Performance	2
Agriculture's Contribution to the Economy	9
Chapter 2: Structure, Resource Endowment, and Performance of the Agricultural Sector	21
Structure	22
Resource Endowment	28
Performance	35
Chapter 3: Evolution of the Contemporary Agrarian Structure	44
Introduction	44
Farming in 19th Century South Africa	45
The Situation at the Turn of the Century for the African Farmer	46
Agrarian Development: 1910-1947	47
1910-1947: Protection of White Agriculture	51
1948: Apartheid and the Rural African Household	53
Conclusions	60
Chapter 4: Marketing and Pricing	61
Introduction	61
Overview of Major Marketing Schemes	62
Role of Farmer Cooperatives	65
Performance of the Various Marketing Schemes	65
Concentration in the Marketing and Processing Structure	80
Marketing Structures in the Homelands	81
Marketing Margins	85
Self-Sufficiency and Exports	86
Conclusions	89
Chapter 5: Efficiency of Agricultural Production	91
Introduction	91
Price Efficiency	94
Scale Efficiency	112
Technical Efficiency	122
Efficiency Issues in the Homelands	129

Chapter 6: Farm Profitability	132
Declining Farm Revenues	133
Increasing Farm Costs	135
Cost-price Squeeze	136
Financial Indicators of Profitability	138
Debt Burden and Farm Lending Policies	142
Financial Assistance to Farmers	146
Chapter 7: Directions for the Future	150
Overview	150
Efficiency and Equity Issues in Agriculture	153
Options for Rural Restructuring	154
Conclusion	157
References	158
Annex 1	171
Annex 2	176
Annex 3	188

TABLES, FIGURES, AND TEXT BOX

Tables

1.1	Growth Rates in Real GDP and other Real Indicators	4
1.2	Total Factor Productivity Growth Before and After 1973: South Africa and Other Countries	5
1.3	Selected Sectoral Multipliers (direct and indirect effect) According to the Production Structures for the Years 1978, 1981 and 1985	11
1.4	Composition of GDP since 1911, by sector (%)	12
1.5	Employment, Economically Active Population	14
1.6	The Growth in Budgeted Expenditure, 1979-1989	18
2.1	Land Use and Population	24
2.2	Crop Production Potential and Present Cultivation of White-Owned Farmland . . .	30
2.3	Arable Land and Population Density by Region	32
2.4	Water Resources	33
2.5	Real Growth in Agriculture - 1950 to 1990	35
2.6	Composition of Agricultural Gross Value	37
2.7	Gross Value of Agricultural Production in the Homelands of South Africa	41
2.8	Absolute Value of Commercial and Subsistence Agricultural Production in the Homelands and its Contribution as a Percentage of GDP, 1985	42
2.9	Migrant and Commuter Earnings Compared with Agricultural Earnings, 1985 . . .	43
3.1	African Populations on Various Classes of Lands, 1916	48
3.2	Land Areas by Land Tenure Systems in the Union of South Africa	49
3.3	Land Quotas Delimited by the 1936 Act	49
3.4	Allotment of Agricultural Holdings During 1916	53
3.5	Target African Areas (ha) Designated by the Commission	55
3.6	Quota and Non-Quota Land (ha), 1 January 1976	56
3.7	Non-Quota Land	57
3.8	Quota Land as of 31 December 1990	57
3.9	Black Out-Migration from the White Rural Areas, 1980-1985	60
4.1	Marketing schemes: Percentage composition of the gross value of agricultural products - 1990	64
4.2	Welfare Effects of Price Distortions for South African Maize Production	66
4.3	Domestic Prices and Export Realization for White and Yellow Maize, 1986 to 1990	67
4.4	The Aggregate Measure of Support (AMS) for Maize in South Africa	68
4.5	Gross Wheat Producer Prices and Mean World Prices	71
4.6	Price Stabilization Measures in Controlled Areas	74
4.7	Concentration in the Livestock and Meat Industry	75
4.8	Sucrose and Cane Prices: 1982 to 1991	78
4.9	Total Cane/Sugar Production: 1981 to 1990	78
4.10	Market Involvement of Rural Households	82
4.11	Producers' Share of Consumer Value	85
4.12	Average Production and Consumption of Selected Agricultural Commodities in South Africa, 1985-1990	87
4.13	Difference between South African Producer Prices and the World (Reference) Price for Major Crops	88
5.1	Real Land Prices, Real Capital Formation, Long-Term Debt, and Arrears	99

5.2	Annual Earnings in the Farm and Non-Farm Sectors at 1985 Constant Prices . . .	101
5.3	Comparative Sectoral Increases in Real Wages, 1972-1983	102
5.4	Agricultural Wage Income of Black People on White Farms, 1970-1987	103
5.5	Labor Employment, Wages and Productivity	104
5.6	Wage Increases and Variations in Contract Labor by Region	106
5.7	Distribution of Harvesting Methods in the Western Transvaal, 1968-1981	108
5.8	Average Farm Sizes in the World, 1970	115
5.9	Factor Intensities in Agriculture, 1988	117
5.10	Land Market Transactions and Prices, Republic of South Africa	119
5.11	Output, Input, TFP, Labor and Land Productivity Indices	123
5.12	Annual Average Growth Rates by Period, 1947-1991	124
5.13	Average Shares in Revenue and Costs and Annual Growth Rates, 1947-1991 . . .	127
6.1	Gross Revenues in Agricultural Subsectors	133
6.2	Price and Volume Indices of Selected Agricultural Product Categories	135
6.3	Price and Volume Indices of Farming Requisites	136
6.4	Average Annual Growth Rates in Certain Prices and Quantities, 1960-1990	137
6.5	Fertilizer Prices: Percent Rise on Previous Year	137
6.6	Income and Expenditure, Assets and Liabilities of Agriculture, 1970-1991	139
6.7	Agricultural Financial Indicators	140
6.8	Real Land Prices, Real Capital Formation, Long-Term Debt, and Arrears	141
6.9	Commercial Farm Debt in RSA by Creditor: 1970-1990	144
6.10	Farmers' Debts at the 33 Cooperatives Producing 90% of all Grain in the Republic of South Africa--Before and After the 1991/92 Drought . . .	148

Figures

1.1	GDP Growth (1960-1991)	3
1.2	Total Factor Productivity - Agricultural Sub-Sectors (1947-1990)	13
5.1	Primary Inputs (1947-1991)	95
5.2	Capital Inputs (1947-1991)	96
5.3	Intermediate Inputs (1947-1991)	97
5.4	Total Factor Productivity, Output and Input (1947-1991)	125
5.5	TFP, Labor and Land Productivity (1947-1991)	126
5.6	Agriculture Output (1947-1991)	128
5.7	Agriculture Inputs (1947-1991)	128
6.1	Real Net Farm Income, Total Factor Productivity and Agricultural Terms of Trade (1947-1991)	138

Text Box :

What is the Relation between Farm Size and Efficiency?	113
--	-----

EXECUTIVE SUMMARY

Introduction

- 1. Agriculture in South Africa is widely regarded as a highly sophisticated and successful sector. Among the evidence cited in support of this view is the fact that South Africa is self-sufficient with respect to most of its major agricultural commodity requirements. At the same time, the sector's small and declining share of GDP (4.7% in 1990 compared to 12% in 1960) is interpreted as indicating a pattern of secular decline of agricultural production that is consistent with a normal pattern of economic growth and development. Consequently, it is often assumed that agriculture's future contribution to GDP--in terms of employment and income--will continue to diminish. It is in this context that agriculture's role in a growth strategy for a new South Africa is typically regarded by policy makers--both in and out of government--as diminishing and overshadowed by expected growth in the industrial and services sectors.**
- 2. The dominant form of agricultural production in South Africa is the white-owned, large-scale farm--accounting for 90% of the value added and owning 86% of the agricultural land. The large-farm sector is commercially-oriented, capital-intensive, and generally produces a surplus. In contrast, the farming sector in the homelands is unable to meet the subsistence needs of the homeland population, with the result that the homelands are net food importers.**
- 3. The current dominance of the large farm model of production is largely the result of more than a century of policy induced distortions. Initially, the focus of agricultural policy was to reduce and then eliminate competition for white-owned farms from black farmers. Having achieved this during the first half of this century by confining black agriculture to the overpopulated homelands, agricultural policy has more recently concentrated on providing direct financial support to the large-scale farming sector.**
- 4. The central question that needs to be answered--and the one that defines the purpose of this report--is whether or not South Africa's past agricultural strategy has been successful in terms of its ability to produce agricultural goods efficiently and equitably. The results of this analysis will have a clear impact on the development options for the rural economy in a new South Africa. If the past strategy is found to be effective in terms of either of these objectives (efficiency and equity), then it only needs to be modified to meet the needs of a newly enfranchised electorate, e.g., if large farms are efficient, then only the ownership of these farms would be an issue. However, if the present strategy is neither efficient nor equitable, then it will be necessary to reformulate the entire strategy with the objective of restructuring the rural economy.**
- 5. The hypothesis that emerges from this report indicates that agriculture's present low share of GDP is not the result of a normal development pattern, but instead is a consequence of widespread policy distortions introduced by decades of government intervention combined with the dominant historical role of the mining sector in the economy. These interventions were guided--in large measure--by the general political and economic philosophy of white domination--apartheid. Some of these distortions are not peculiar to agriculture, but characterize the entire economy, e.g., high capital-intensity of production in the presence of widespread unemployment. Nonetheless, it is true that agriculture has been and remains**

subject to policy distortions that have been especially far reaching. As a consequence of the incentive structure created by policy distortions, agriculture's structure, characteristics, and most notably, its performance are in sharp contrast with what would be expected given its resource endowment.

6. The purpose of this report is to analyze the performance of South Africa's agriculture sector and to outline the strategic options for improving the overall structure and performance of the sector, especially in terms of income growth, job creation and increased equity. This report concentrates mainly on the large farm sector, because of its dominance in terms of area and output and because of the lack of information on agriculture in the homelands. This summary is intended to provide the reader with the highlights of the chapters along with the implications of the analysis for strategic options for agriculture and the rural economy.

The Role of Agriculture in the Macroeconomy

7. In 1989, South Africa's GDP was US\$80.4 billion, with 13% of GDP derived from services, 45% from industry, 26% from manufacturing, 11% from mining, and 5% from agriculture. For the same year, the total value of South African agricultural production was approximately US\$7.2 billion or about half again as large as that of the entire SADC region.¹ Employment in agriculture in 1990 was approximately equivalent to 761,000 full-time workers and accounts for about 10% of total wage employment. In addition, about 17 million blacks—40% of the black population of South Africa—reside in rural areas, with more than 13 million of this number concentrated in the homelands.

8. The themes that characterize agriculture's role in the broader economy can be summarized as follows. Agriculture's present limited role in the economy can be explained by the dominance of the mining sector, the skewed distribution of natural resources in favor of a white minority, the adoption of highly capital-intensive agricultural technology, the reduction of employment accompanying the adoption of this technology, and the objective of achieving self-sufficiency in major agricultural commodities.

9. The salient features of the macroeconomic environment that have affected agriculture can be summarized in four main points.

- i. Declining growth and productivity. In most sectors, policies favored a capital-intensive production pattern. The increased investment in capital intensity, however, did not generate sufficient growth with the consequence that the total productivity of the economy declined during the last two decades. This contributed to the slow growth of net GDP in recent years, e.g., 1.03% per year during the 1986-91 period. As a result, the macroeconomic environment facing agriculture was an especially unfavorable one.

¹ In 1989, South Africa produced more than the combined total of the SADC countries for a number of basic agricultural products including maize, wheat, sunflower seed, and sugar. The value of South Africa's agricultural exports is broadly equal to the value of total SADC country agricultural exports (in 1988 US\$1.40 billion for the SADC countries and US\$1.46 billion for South Africa). Nonetheless, it is estimated that the total area under arable and permanent cropland in South Africa is only slightly more than half that of the SADC countries combined. Unlike most SADC countries, South Africa is self-sufficient in cereals production and, between 1980 and 1989, produced surpluses of such basic food crops as maize, wheat, rye, dry beans, grain sorghum, groundnuts, soybeans, oats, and barley.

- ii. **Increasing unemployment and unequal income distribution.** Investment in capital intensity combined with policies that created homelands as labor reserves with the objective of keeping labor costs relatively low contributed to very high unemployment levels and political tensions. Labor-segregation policies resulted in a relatively unskilled labor force and an extremely unequal distribution of income, services, and demand. These forces have been instrumental in causing agriculture to move away from reliance on the relatively plentiful factor--labor.
- iii. **An inward-looking policy framework.** The government has created an incentive structure that encourages production for the domestic sector, rather than for international markets. Public sector policy strongly supported domestic producers through tariffs, quotas and other barriers. As a result, many producers--including in agriculture--are restricted to comparatively high-cost domestic sources of supply that reduces international competitiveness.
- iv. **Public sector investment programs.** Public sector investment was used as a means of compensating for declines in private sector investment. These investments have, however, often been undertaken with little regard to the social rate of return.

10. The single most important factor in explaining the decline in growth is the lack of total productivity growth in the economy. The absence of significant growth in productivity, in turn, stems from the capital-intensive, inward-looking growth path chosen for the economy. Comparing South Africa's total factor productivity growth with that of a number of comparable developing countries, Chapter 1 demonstrates that South Africa consistently under-performs. Over the period 1950-73, South Africa's total factor productivity shows near-zero growth, i.e., 0.2% per year. Over the period 1973-1984, total factor productivity becomes negative, i.e., -0.5% per year. Over the period 1981-1988, total factor productivity declined by 1.1% per year.

11. The low productivity growth that characterized the macroeconomy was also evident in the agriculture sector as a whole, although not to the same extent. Between 1947 and 1991, the total factor productivity of South African agriculture increased by 1.26% per year--a rate that is relatively modest by international standards. This overall pattern, however, masks the substantial differences in productivity growth between the main agricultural sub-sectors. The export-oriented and inherently labor-intensive horticultural sub-sector grew at 2.42% annually over the 1947-1991 period, whereas the livestock and fieldcrop sub-sectors both recorded productivity growth of only 0.77% per year over the same period.

12. Agricultural policies in South Africa were closely intertwined with general economic, social and political policies. The policy environment that accounts for much of the observed performance can be divided into three parts. The beginning of the first phase was marked by the Land Act of 1913. During this phase--which lasted until 1940--the basic institutional framework of a dualistic agrarian structure was set up. The second phase--consisting of the postwar era prior to 1980--saw the transformation of the sector into a highly mechanized and capital-intensive farm structure. The third phase constituted the policy reform and structural adjustment process embarked upon since the early 1980s.

Structure, Resource Endowment, and Performance of the Agricultural Sector

13. South African agricultural production dwarfs that of the rest of Southern Africa. Despite a relatively limited natural resource base, its agricultural economy has reached high production levels in a wide range of agricultural commodities compared to other countries in the region. In this regard, the sector's performance is consistent with one of its objectives--self-sufficiency. This impressive performance is based on a resource endowment that--while not generous--is highly varied allowing for considerable variation in commodity production. The ownership of this resource endowment, however, is extremely skewed--the legacy of racially-based policies.

14. Agriculture occupies an important position in the South African economy in terms of production levels and as a supplier of inputs to the agro-processing sector. Agriculture's share of GDP, however, has declined from around 20% in the 1920s to 4.7% in 1991 and its growth in the past 40 years has been uneven, averaging 2.5% in real terms since 1950, with rapid growth in the 1970s bracketed by slower growth in the 1960s and 1980s.

15. Some 95% of the value of agricultural production in South Africa originates in the large-scale, commercial sub-sector. Over the past 30 years, the composition of agriculture by gross value has moved in favor of horticultural products and, to a lesser extent, livestock. Horticultural commodities have generally been more buoyant than the field crops, with a rise in the total contribution to sectoral value of production from 14.4% in 1980/81 to 20.9% in 1990/91. Strong growth in the horticultural sector has been shown in particular by commodities destined for export, notably fruits, but wine and vegetables have also risen sharply. The share of field crops peaked at 48.5% in 1980/81 and fell to 34.2% in the following decade.

16. Land distribution in South Africa is among the most highly skewed in the world. Four centuries of conquest, occupation, annexation, land acquisitions and transfers, land purchases, and consolidation have resulted in a land distribution which is comparable in its inequality to those of many Latin American countries that often experienced a similar history of European conquest and settlement. What sets South Africa apart from the rest of the world, however, is the relative emptiness of much of its rural landscape--except for some high-potential areas along the eastern seaboard. In most of the country, rural villages, settlements, scattered farms and homesteads of farm laborers such as those found in the rural areas of Europe, Latin America, Asia, and elsewhere in Africa are rare.

17. Approximately 86% of agricultural land is held by 67,000 mostly white, large-scale farmers, supporting a rural population of 5.3 million. Consequently, the large-scale farming areas--the platteland--have a very low population density (about 16.2 hectares of agricultural land per rural resident). In contrast, a rural population of about 13.1 million resided in the homelands in 1988, on an area of 17.1 million hectares. Thus, 29% of South Africa's rural population (mostly farm workers and their dependents) lived on nearly 86% of the agricultural land, while 71% of its rural population lived on the remaining 14%.

18. Government aid to the two sectors has been unequal and variable. The ratio of total government expenditure for white and black agriculture before the World War II was about 179 to 1 and around 14 to 1 in the 1950s. By the 1980s, this ratio increased to around 4 to 1. In 1987, the 14 Departments of

Agriculture had a combined budget of R2.1 billion, of which R1.7 billion was allocated to white agriculture. Moreover, large-scale, commercial farmers obtain 96.7% of all transfer payments in the budget.

19. The homelands today are over-crowded, poverty-stricken and lack infrastructure comparable to the white farming sector, despite some attempts at development. Their economic significance as a reservoir for surplus labor has intensified over time. In 1951 less than 5 million blacks lived in the homelands. This number peaked at 14 million in 1985 and declined to 13.1 million in 1988. These changes resulted from the resettlement policies pursued by the government, in particular between 1960 and 1983, when millions of blacks were relocated to the homelands. Well over half of household income in the homelands is today derived from repatriated migrant earnings and pensions. Agricultural production is estimated to meet only 16% of the population's food requirements and constitutes at most 10 to 20% of household income.

20. The first impression that emerges from an overview of the agriculture sector in South Africa—as it stands today—is of a set of structures that has been very successful in producing large volumes of commodities. The volume of production relative to neighboring countries and the high level of food self-sufficiency all confirm this impression. What is less apparent, however, are the highly artificial means that have been employed to establish and maintain these agricultural structures. Understanding the discriminatory mechanisms and contrivances that have been used to create the dominant elements of the sector is essential to understanding the options available to the sector for the future.

Evolution of the Agrarian Structure

21. Given the dominance of the large-farm model in South Africa, it is sometimes assumed that this model is more efficient than the alternatives—most notably small-scale, labor intensive production. Not only does international evidence argue against this presumption, but the historical experience in South Africa does as well. In fact, one of the most telling lessons to emerge from the South African experience is the success of small-scale, commercial black farmers during the mid to late 19th century. The most convincing evidence of this success can be found in the unusual measures taken to discriminate against these farmers.

22. African family farming in the latter half of the 19th century was viable and able to meet the agricultural needs of urban and industrial markets that developed around the major mining centers. Given relatively undistorted markets for land, labor, inputs, and outputs, African farmers progressively adopted new farming technologies, expanded into new farming industries, and competed with settler farming in domestic and in certain export crops markets. Critical to this success was the inability of a weak state to intervene in the factor markets and the implicit support for African farming from land companies and big landowners who earned rents from African tenant farmers. These conditions encouraged African farmers to accumulate capital, wealth, and farming skills.

23. The formation of the Union of South Africa in 1910 led to the creation—over time—of a policy environment characterized by the suppression of African farming and its eventual isolation from 20th century mainstream agriculture. With its main objective being to turn African farmers to laborers and

channel them to white farms, mining and manufacturing--the apparatus of the Union of South Africa was stronger and richer than state formations of the earlier period. In addition, the land companies and big landowners who had previously frustrated earlier policies to curtail African farming, were now either included as part of the new policy environment, or their leverage was reduced relative to that of the mining industry and settler farmers. What was damaging African farming was not only the legislative and administrative measures that were levelled against it but, more importantly, the systematic closing of all avenues--whether these were land, input and outputs markets, or credit--except the labor market to African farmers to accumulate capital, wealth and farming skills.

Agricultural Marketing and Pricing

24. The suppression of small-scale black farmers was complemented by the extensive support systems provided to the large-scale farming enterprises. Perhaps the most effective form of support to the large-scale farms has been the pricing and marketing systems. In essence, the combination of controlled input and output prices along with single-channel marketing systems for the majority of agricultural commodities have restricted competition and provided large-scale farmers with an income guarantee. During the 1980s, efforts to liberalize the pricing and marketing system have introduced more competition--and contributed to the rise in bankruptcies among large-scale farmers--but also must be regarded as incomplete.

25. The bulk of agricultural products in South Africa are marketed under schemes set up in terms of the Marketing Act of 1968. The original promulgation of this Act in 1937 was closely related to other legislation, including the Co-operative Societies Acts, the Land Acts and the Land and Agricultural Bank Act. As of the early 1990s, about two-thirds of the value of farm produce was marketed under the Marketing Act.

26. The Marketing Act is enabling legislation that applies to all products listed in its schedule. It provides for the promulgation of subordinate legislation called "Schemes", where a Scheme is instituted for a product or group of products, and a Control Board is set up to administer it. Each Scheme empowers the relevant Board to carry out the normal administrative functions and also empowers it to carry out specific functions that influences the marketing of the product. The Marketing Act provides for four main types of schemes, tailored to the specific characteristics of the commodity in question. These include:

single-channel fixed price schemes. Producers are legally obliged to market their products through the Board or its appointed agents and prices are fixed for each season. The major domestic crops such as maize and winter grains (wheat, barley and oats) fall into this category.

single-channel pool schemes. Producers market their products through a pool conducted by the Boards which pays on receipt of the product. Supplemental payments are made when the final realization of the pool, after deduction of pool expenses, is known. Crops facing relatively elastic demand, e.g., export crops, fall in this category.

surplus-removal schemes (also called price support schemes). Producers sell their produce on an

open market, although they are often subject to stringent quality controls that could restrict domestic competition. The Board intervenes when prices drop below a fixed minimum price by purchasing surplus supplies for distribution and resale at a later date. Schemes include those for red meat.

supervisory schemes. The Board acts in a supervisory capacity and as a mediator in the arranging of price and purchase contracts between producers and buyers. Products include canning fruit and cotton.

27. The opportunity costs of the current marketing system include, among other things, the development of a relatively concentrated sector aimed at specific market segments. By catering exclusively to large-scale commercial farmers, this system prevented both the development of black farming and the development of informal marketing systems which could have created substantial black employment. Also, by focussing on marketing of high quality, first world agricultural produce, jobs were lost in marketing of lower quality produce, both domestically and for export.

28. Current trends in marketing are going from a controlled, cost-plus pricing system to a more market-oriented system (removal of domestic controls, reduction of protective measures, and reduction of tariffs). Given the prominence of high levels of concentration in the agriculture and food processing sector, the establishment of clear policy guidelines setting out Government's objectives and policy instruments is a high priority. Three alternative policy approaches can be distinguished:

laissez-faire: under this policy the Government would adopt a passive attitude towards concentration, hoping that the possible benefits from economies of scale and competitiveness on international markets would outweigh the potential costs from monopolistic pricing. In recent decades policy has been rather close to laissez-faire.

active anti-trust approach: under this policy the mandate and powers of the Competition Board would be substantially increased with a view to actively reducing the existing levels of concentration through forced divestment of holdings by the major firms. In practice implementation of this policy approach is likely to prove difficult because the Government will continue to lack sufficient information to pursue a legal approach to anti-trust and because forced sales of subsidiaries are likely to lead to purchases of divested firms by the existing conglomerates rather than by new entrants to the market and the unemployment implications of possible closures induced by an active anti-trust policy would be politically difficult to accept.

the indirect approach through deregulating the economic environment: under this third approach Government would not actively attempt to break up the dominant firms; rather it would seek to promote changes in the economic environment which over time will remove the economic basis for concentration and reduce barriers to entry for potential competitors. Adoption of this approach requires recognition that the problem of concentration cannot be resolved in a short period, but that over a longer period the presence of actual competition or the threat of potential competition can be the most effective instrument in combatting the adverse aspects of concentration.

Efficiency of Agricultural Production

29. Agriculture in South Africa has consistently produced surpluses, and as a result is typically regarded as an efficient sector. In recent years, however, the financial problems experienced by many farmers—largely as a result of drought and policy changes—have caused some important sub-sectors in agriculture to be seen as inefficient. The issue of large farm efficiency in South Africa is critical to the development of a strategy for the rural economy. If, as some argue, the large-farm model is a valid one—characterized by economies of scale—then a strategy that consists largely of removing existing policy distortions would increase the efficiency of the sector as a whole and further changes would be unnecessary in terms of increasing efficiency. If, however, there are no significant economies of scale associated with large-farm production models, simply reforming policy will only yield a portion of the potential efficiency gain. The balance of the efficiency gain could only be achieved by restructuring—through downsizing existing farm units—the present farming sector.

30. Unfortunately in South Africa, a direct comparison of efficiency between the large-scale and small-scale farm sectors is difficult if not impossible, because black owned, small-scale farms have all but disappeared. Ample historical and international evidence suggests, however, that when compared to small-scale farms many large-scale farming enterprises in South Africa, as elsewhere in the world, are inefficient with respect to profits, employment and output generated per unit of capital invested.

31. The move towards larger farms in South Africa was strongly associated with farmers' adoption of mechanization, which was facilitated and strengthened by subsidized interest rates, tax breaks, and the support of output prices above border parity. Yet in spite of massive additional financial assistance to farmers, the profitability of agriculture remained low. By 1984, an estimated 22,700 farmers (33% of the total) had debt burdens beyond the critical level. Most of these farmers were concentrated in the Transvaal and Orange Free State—the regions where mechanization of monocropped cereals had been pushed to economically sub-optimal levels and exposed farmers to high risk levels.

32. The policy objectives that justified these interventions were twofold—food self-sufficiency and maintaining income levels for large-scale commercial farmers. Agricultural production in South Africa increased at a rate of over 3% annually over the last four decades, while the population increased at an average rate of 2.8%. Moreover, the social objective of maintaining incomes for large-scale farmers at levels comparable to the incomes in the urban sectors seems also to have been obtained for at least some farmers. From 1970/71 to 1991, total net farm income increased in real terms from R2,728 million to R3,469 million, but with significant fluctuations throughout the period and a considerably skewed distribution.

33. The findings of this report with regard to the three major types of efficiency examined are as follows:

Price efficiency. The agricultural sector experienced a policy-induced shift toward a large-scale, capital-intensive farm technology, heavy reliance on intermediate inputs, and toward less dependence on labor. This reflects farmers' rational reaction to the prevailing structure of incentives, in particular, taxation and financial assistance programs. In other words, most individual farms were efficiently run given the prevailing structure of incentives. Although the

price of the input bundle associated with the prevailing technology is one element in the structure of incentives faced by farmers, it has not always been the dominant one. Prior to 1973, large-scale farmers display considerable price efficiency. However, starting in the mid-1970s farmers demonstrated less responsiveness to changes in relative input prices. This seems to have been the result of a combination of financial assistance programs, tax incentives, and technical improvements that outweighed input price changes. In effect, farmers responded to a distorted set of incentives that induced a different production technology than that which would have prevailed in a more market oriented regime.

Scale efficiency. The same set of policy distortions that affected price efficiency also created incentives for the emergence of large-scale farms. As a result, prior to the end of the 1980s, there was an increasingly concentrated agrarian structure in South Africa. In the grain sector for instance, the results of this report indicate that once the effects of the distorted incentive structure are removed, a wide range of farm sizes (above approximately 100 hectares) are efficient with respect to scale—in other words, a larger farm is not necessarily more efficient than a smaller farm. The crucial factor in determining the greater efficiency of a large farm over a small farm is managerial expertise. For South African farms covered by official statistics and smaller than approximately 100 hectares, there is empirical evidence to suggest that small-scale farms use resources more intensively than large farms. However, whereas little evidence exists on the efficiency of black, small-scale farming in South Africa, international experience indicates that in an undistorted policy environment small farms are often at least as efficient as their large-scale counterparts provided the working capital constraint is removed.

Technical efficiency. Trends in technical efficiency can be grouped into three distinct periods. First, improvements in the technical efficiency of South African agriculture were virtually absent during the 1950s and early 1960s. During this period, agricultural production increased through an expansion in cultivated area, supported by the introduction of tractors. Second, modest, but significant, gains in technical efficiency appeared in the late 1960s and continued during the 1970s. These gains are associated with the intensification of agriculture during this period including the introduction of high yielding varieties. Also during this period the relationship between labor and machinery changed from a complementary one during the period of area expansion to one of substitution, especially as a result of the mechanization of the harvesting process in cereal farming. Third, substantial growth in technical efficiency was recorded after 1983, as farmers adjusted capital inputs to changes in the structure of investment incentives. For the post-war period as a whole, however, the trends in technical efficiency differed substantially by sub-sector with livestock and field crops performing well below the average, while the export-oriented and labor-intensive horticulture sub-sector showed dramatic increases in technical efficiency.

34. Hence, the picture of South African agriculture that emerges from this analysis of efficiency is a varied one, but one for which several important sub-sectors can be characterized by: (i) a gradual deterioration of price efficiency which in effect shows that farmers were compensated for the implied loss of efficiency through other channels; (ii) scale efficiencies that are the result of a combination of a distorted policy environment and managerial ability; and (iii) uneven improvements in technical efficiency that are modest by international standards and differ markedly by sub-sector.

35. The policy distortions that have given rise to the social inefficiencies that characterize large parts of the agricultural sector (e.g., subsidized interest rates, favorable credit regimes and tax concessions on agricultural investment) are not particularly difficult to reverse. Over the past decade, a wide range of policy changes in the general direction of greater market orientation have been introduced and have affected both agricultural inputs and outputs. The impact of these changes has varied considerably by subsector: debt-free producers of some export commodities have benefited, while profits for others, notably the grain producers, have fallen. For the sector as a whole the capital-intensity of production declined throughout the 1980s and employment increased through 1987. More recently, however, employment has again declined. Although the cause for this recent decline is unclear, it may be due to political uncertainty over the future of white-owned farms, extensification of agriculture in marginal cropping areas, and the financial deterioration of the sector.

Farm Profitability

36. The ultimate test of efficiency and financial sustainability of any enterprise, however, is the response of large-scale farmers to the withdrawal of the preferential policy treatment. If as the structure of incentives (e.g., prices of inputs and outputs, taxes, and/or marketing systems) changes, farmers are unable to respond adequately and ensure their profitability, this constitutes a reliable indicator of their inefficiency in an undistorted policy environment.

37. Since the early 1970s, agriculture in South Africa has been exposed to a cost-price squeeze that reduced farm profitability. This was compounded during the 1980s by: (i) unfavorable weather conditions; (ii) reduction of farm subsidies; (iii) liberalization of marketing policies that often resulted in lower real producer prices; (iv) and higher capital costs due mainly to higher interest costs. The failure of many firms to respond to the changing price environment (recall the finding above of only modest price efficiency) meant that many farms continued to rely on the established, capital-intensive production methods. Given the variable agro-climatic conditions to which South African farming is exposed, the continued reliance in important subsectors on mechanized, monocropped farming also entailed a higher exposure to climatic risk and increased the volatility of farm profits.

38. As a result, the debt burden carried by many farmers escalated to unsustainable levels, in particular those in the summer rainfall areas (e.g., wheat and maize growers). Although real farm debt reached its highest level in 1985 and has declined since then, the financial position of many farmers has continued to deteriorate, as illustrated by a continuing increase in the debt-asset ratio. Moreover, the ratio of short-term debt to total debt increased considerably. Higher capital costs, tighter credit standards, fewer farm subsidies, and the growing unsustainability of the debt burden should have positive effects on labor employment in the sector and force less efficient farmers into foreclosure. However, the government continued its attempts to aid the sector financially and when the 1992 drought occurred, substantial amounts of debt which had been accumulated during the 1980s were effectively written off through a massive recapitalization effort targeted to grain producers and totaling R3.4 billion.

39. In summary, the decline in farm profitability since the early 1970s and the evidence regarding the efficiency of large-scale farms suggests that, from the perspective of society, many parts of the agriculture sector have operated inefficiently. It is important to stress that this does not necessarily mean that

individual farmers are poor managers or not responsive to the prevailing structure of incentives, but instead it means that the policy environment faced by farmers has resulted in inefficient performance of the sector as a whole. The realization of the adverse impact of the policy environment on efficiency and the economy contributed to the agricultural policy reforms that were begun in the early 1980s and which have led to some improvement in efficiency.

40. As noted earlier, a critical element of an evaluation of the efficiency of the sector is the role that the scale of operations plays in farm efficiency. The evidence presented in this report suggests that scale economies have existed in South African agriculture, but they stem from the distortions introduced through the policy environment. Hence, if the bias toward large-scale farms was eliminated from the policy environment, the cost advantage enjoyed by large-scale farms would likely disappear. This conclusion must, however, be treated with caution, because there is tremendous variability of production models across the agriculture sector. Therefore, it would be incorrect to argue that a smaller scale of operations would be appropriate for all subsectors. Nonetheless, it is probably the case that cost structures are either neutral with respect to scale or that diseconomies of scale would exist if policy distortions are removed. Consequently, it is possible to assert that a combination of international evidence with regard to farm size and recent South African experience suggest that a smaller scale of operations in many agricultural sub-sectors would be at least as efficient as the larger scale farms once the policy distortions are eliminated.

Options for the Future

41. This report argues that while the agricultural strategy pursued in South Africa has achieved its two main objectives—food self-sufficiency and acceptable income levels for white farmers—it has done so by distorting the policy environment and causing society to pay a considerable financial and social cost. Quite apart from the racial consequences of this policy environment, society has been deprived of a greater contribution to GDP that a more efficient and dynamic agricultural sector would provide. At this point in time, the agriculture sector remains in a state of uncertainty. Nearly a decade ago, the financial cost of the agricultural strategy became sufficiently burdensome, that a limited liberalization was introduced. This policy change, along with adverse weather conditions, had the effect of exposing farmers to a more exacting and market-oriented environment. As a result, profits declined and debt increased in many parts of the sector. This result is a telling one, because it suggests that many elements of the large-farm sector are not efficient under the new policy environment.

42. The problem of inefficiency in many parts of the large-farm sector, however, must be examined in the context of two salient features of contemporary South Africa. First, the present highly inequitable distribution of resources—most notably land—is not sustainable. International experience demonstrates that economies with a land distribution similar to South Africa's are prone to a pattern of civil disorder and violence. In Zimbabwe a fairly substantial, but poorly designed land reform program has made only limited contributions to output and employment growth, and left the land issue as an unresolved political and economic liability. Most other dualistic countries have fared much worse. Chile, Colombia, El Salvador, Guatemala, Nicaragua, Mozambique, Peru and Angola have suffered prolonged periods of up to forty years of unrest and civil war. Strong peasant support for revolutionary forces indicates that this was closely related to these countries' delay or inability to effectively redistribute land to a large number

of beneficiaries. These prolonged periods of conflict have resulted in capital flight, economic stagnation or decline, social and political disintegration, and untold human suffering. Second, majority rule in South Africa is imminent.

43. The combination of weaknesses in the old strategy, inequities in the distribution of and access to resources, and political change means that quite apart from issues of inefficiency in the large-farm sector, the inequity of the present land distribution will necessitate a major rural restructuring including land reform. In light of international experience and the present circumstances in rural South Africa, the conclusion of this report is that there are few development options for agriculture and the rural economy available to a new Government in South Africa.

44. One option is to continue liberalizing the present policy environment, while leaving the present structure of agriculture production units largely unchanged. The process of ongoing liberalization would include: (i) further reform of the input and output marketing system; (ii) efforts to reduce the concentration in the agro-processing sector; (iii) revision of land sub-division guidelines; and (iv) restructuring of the present agricultural credit system. Continued liberalization along these lines will likely result in more bankruptcies among large-scale farms, the expansion of small-scale farming (especially near urban areas), expansion of the horticultural sector, and contraction of cereal and livestock production. Although the appeal of a more efficient agricultural sector through continued liberalization is clear, the drawback to this option is that changes in the operation and ownership of the large farm sector are likely to be very slow. The chief reasons for this are: (i) in an environment of uncertainty over land ownership, few large-scale farmer will be willing to make the investments necessary to respond to the new policy environment; and (ii) few of those who were disfranchised under apartheid will have the resources needed to gain access—either through lease or purchase—to land currently held in the large-scale farm sector. Hence, while this option offers some increased efficiency, it is only a partial gain because such an option essentially accepts a large-farm structure which—as this report demonstrates—is inefficient in many critical subsectors. Further, the pace of change is likely to be unacceptably slow.

45. A second option would be to expand the first focus of the first option to include a rural development strategy for the homelands that would feature upgrading of agricultural support services and investing in improved physical and social infrastructure. This has the advantage of continuing the process of policy liberalization and of concentrating public sector resources on some of the most obvious victims of apartheid. Such an option would be likely to contribute to a significant expansion of agricultural production in the homelands, but one that is limited to those few areas in the homelands with good agricultural potential. An obvious drawback to this approach is that—given the fragile condition of many of these areas—any effort to intensify agricultural production in the homelands is likely to have undesirable environmental consequences. A further problem with this option is that while it seeks to address the poverty in the homelands, the efficiency gains are incomplete and the problem of distributional inequity remains largely unaddressed.

46. A third option builds on elements of the two options described above—continued policy reform and investment in the homelands—and in addition supports a redistribution of agricultural land in the large-farm sector. A redistribution of agricultural land would achieve three critical objectives: (i) reduce uncertainty experienced by current owners thereby encouraging those who continue farming to invest; (ii) address the present inequitable distribution of land use; and (iii) encourage, if the redistribution

mechanism is properly designed, those with the greatest interest in land use to gain access to and use land efficiently. This latter objective would lead to a more dynamic rural economy and to greater employment and income creation among low-income groups than would either of the first two strategic options.

47. The specific objectives of a land redistribution program would be to address the inequitable distribution of land and to encourage the efficient use of agricultural land. In order to achieve these objectives, it is essential that there be agreement on the precise objectives and methodology of the land redistribution program. International experience indicates that the salient elements that characterize a successful land reform program are that:

- i. market-assisted land redistribution programs tend to perform better than those administered and operated by the public sector;
- ii. the role of the public sector in a land redistribution program centers on ensuring adequate supplies of land in the market and monitoring the overall operation of the program;
- iii. criteria for participation are necessary and must be discussed and agreed in advanced;
- iv. welfare objectives can be met by including a grant component in the program;
- v. a matching grant scheme that forces participants to use some of their own resources in order to gain access to land will help to assist in self-selection of participants and encourage the productive use of land;
- vi. the grant elements of the program are essential in order to accomplish a redistribution of assets and to ensure that beneficiaries emerge from the program with a net increase in their asset position and low debt/asset ratio as a means of ensuring viability and sustainability of their enterprises;
- vii. in addition to addressing the fundamental issue of social justice, these options are likely to significantly increase net rural employment and ensure that the cost of the program is very reasonable;
- viii. a redistribution program will not be able to provide land for everyone and the program will need to be complemented by a rural safety net and by programs for urban groups, and
- ix. although the discussion concentrates on agriculture and small farmers these are not the limits of the program. It is envisioned that the program will be a vehicle for supporting a wide range of land use activities, including trading activities, and small-scale enterprises.

48. Finally, it is important to consider another set of consequences of the present agricultural strategy-its environmental costs. The present overcrowded homelands are endowed with a generally poor resource base and are under considerable population pressure that has led to significant environmental

degradation. In the large-farm sector, the combination of capital intensity, heavy reliance on chemical inputs, and intensive use of marginal lands has also resulted in significant environmental damage. By eliminating the policy distortions and supporting a reallocation of land resources, this strategic option will significantly reduce the incentives for this type of environmental degradation.

CHAPTER 1: ROLE OF AGRICULTURE IN THE MACROECONOMY

Introduction

1.1 The importance of the macroeconomic environment to agricultural performance is well-recognized and the experience of South Africa is no exception to this rule. What is striking about South Africa, however, is the extent to which macroeconomic and sectoral strategies have encouraged large-scale, capital-intensive farm models, thereby defying the economy's comparative advantage, i.e., plentiful supplies of inexpensive labor. This choice of a strategy is, of course, a consequence of forcing economic policy to conform to an especially pernicious social policy. This chapter argues that agriculture's current role in the South African economy reflects not only the dominant role of the mining sector in the economy and the series of distortions that typified both sectoral and macroeconomic policy, but also the subordination of agricultural policies to social policy--apartheid.

1.2 The salient features of the macroeconomic environment that have affected agriculture can be summarized in four main points.

- a. **Declining growth and productivity.** In most sectors, policies have favored a capital-intensive production pattern. The increased investment in capital intensity, however, did not generate sufficient growth with the consequence that total productivity of the economy declined during the last two decades. This has contributed to the slow growth of net GDP in recent years, e.g., 1.03% during 1986-91. As a result, the macroeconomic environment facing agriculture has been an especially unfavorable one--chiefly because slow growth in the economy translated into low demand for agricultural products.
- b. **Increasing unemployment and unequal income distribution.** Investment in capital intensity combined with policies that created homelands as labor reserves with the objective of keeping labor costs relatively low has contributed to high unemployment levels and political tensions. These labor-segregation policies resulted in a relatively unskilled labor force and an extremely unequal distribution of income, services and demand. These forces have been instrumental in causing agriculture to move away from reliance on a relatively plentiful factor--labor.
- c. **An inward-looking policy framework.** The government has created an incentive structure that encourages production for the domestic sector, rather than for international markets. Public sector policy has strongly supported domestic producers through tariffs, quotas and other barriers. As a result, many producers--including those in agriculture--have been insulated from international competition, thereby reducing incentives to improve efficiency and distorting measures of comparative advantage.
- d. **Public sector investment programs.** Public sector investment has been used as a means of compensating for declines in private sector investment. These investments have, however, often been undertaken with little regard to the social rate of return.

1.3 The impact of social and macroeconomic policy choices on agriculture has been profound and has resulted in comparatively large, capital intensive, and--in many cases--inefficient agricultural enterprises. Although the agriculture sector has been able to achieve self-sufficiency for most commodities, this has only been possible as a result of an interventionist and distorted policy environment. Consequently, agriculture has not been a source of growth in either employment or income for the economy as a whole.

1.4 This chapter is divided into two main parts. The first examines South Africa's macroeconomic performance by analyzing trends in income growth, productivity, and unemployment, growth strategies and public sector investment expenditures and the second examines agriculture's contribution to the macroeconomy.

Macroeconomic Performance

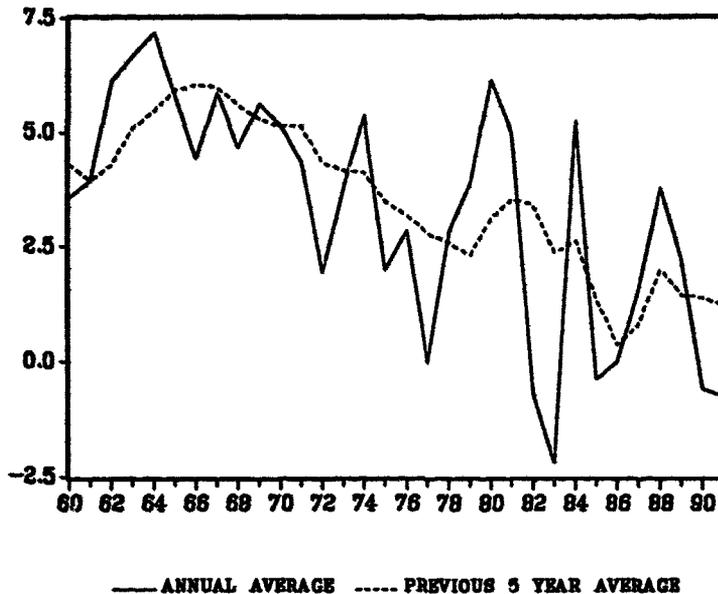
1.5 South Africa has a per-capita income of around USD 2,500 per year--the highest in sub-Saharan Africa. Per-capita income for whites is about USD 9,250--similar to countries such as Ireland, Israel, and Spain--while per-capita income for blacks is only about USD 975--similar to levels found in middle-income countries in Africa such as Cameroon and Côte d'Ivoire. Moreover, economic growth has declined over the last three decades, while unemployment has increased to unsustainable levels. Declining growth seems not to have been the result of a decline in investment, instead, it was the result of the low productivity of the investments. As economic decline became apparent, public investment attempted to compensate for the low productivity of private investment, but with an increasingly limited effect on productivity and growth.

Declining Income Growth and Productivity

1.6 Starting in the 1970s, growth of the South African economy was characterized by two interrelated structural trends. First, after a period of substantial growth in GDP following the Second World War and continuing into the late 1960s, an increasingly volatile downward trend in growth rates is evident (Figure 1.1). Second, the overall capital-intensity of the economy increased, while labor-absorption declined. The substitution of capital for labor brought little gain in productivity in the main productive sectors of the economy, and total productivity of the economy therefore stagnated in the 1980s.

Figure 1.1: GDP Growth (1960-1991)

**ANNUAL AND 5-YEAR AVERAGE GROWTH RATES
(PERCENTAGES)**



Source: World Bank, 1993.

1.7 **Trends in GDP² and Productivity.** Between 1946 and 1991 GDP growth at factor cost averaged 3.9% per year. But around this trend there is a cycle of accelerating growth rates between 1946 and 1971, followed by rapid deceleration and increasing volatility between 1971 and 1991. In real GDP, growth rates decline from 3.49% (for the period 1971-75) to 1.03% (for the period 1986-92) (Table 1.1). In 1990 and 1991, real GDP fell by 0.6% and by an estimated 2.1% in 1992. Further, with population growth around 2.6% per year, both GDP and GDI per capita have fallen throughout the 1980s.

² Some modification of the figures on GDP and employment are needed to take account of the existence of an informal economy. While there is general agreement that it has grown in recent years, there is considerable uncertainty about its size. One recent estimate suggests that in 1990, it amounted to 8% of GDP, provided employment for about three million people, and represented one mechanism for income distribution to lower income groups (Roukens de Lange, 1990).

Table 1.1: Growth Rates in Real GDP and other Real Indicators
(percent per year)

	1961-65	1966-70	1971-75	1976-80	1981-85	1986-92
GDP	5.94	5.15	3.49	3.13	1.36	1.03
GDI	4.62	5.81	6.39	4.02	0.03	0.27
Private Consumption	4.62	6.00	5.08	2.64	2.65	1.97
Employment	3.18	2.53	2.41	1.42	0.07	-0.23

Notes: 1) Gross Domestic Income (GDI) -- real GDP adjusted for movements in the external terms of trade.
2) Employment-- wage and salaried employment including domestic servants.

Sources: South African Reserve Bank (SARB) National Accounts Data Base.
SARB Quarterly Bulletin, September 1992.
South African Labor Statistics 1992. Central Statistical Service.

1.8 What factors explain this steady decline in income? External shocks such as the fall in the gold price and international sanctions cannot fully account for it. Since 1971, the overall terms of trade have moved in favor of South Africa. The oil-price shock was matched by a bigger increase in gold prices³. However, non-gold terms of trade have declined by 60% since 1960, with most of the latter decline having occurred in manufacturing.

1.9 Neither can the underperformance of the economy be explained by structural rigidities in the formal economy. Basic economic relationships show that the key aggregates, such as exports, imports, and investments, are highly sensitive to relative prices (Kahn, Senhadji, and Walton, 1992). Moreover, even the most narrow view of the labor market--i.e., taking apartheid's extreme labor market segmentation as given--also indicates that employment and wage behavior in the formal, white sector is quite consistent with relative price movements (Fallon, 1992). Further, savings have exceeded investment for most of the period. Fiscal deficits do not seem to be crowding out private investment, and the private corporate sector has had a net savings surplus over and above investment since 1972.

1.10 The single most important explanation of the decline in macroeconomic growth is the lack of significant productivity growth, stemming from the choice of a capital-intensive, inward-looking growth strategy. Comparing South Africa's total factor productivity growth⁴ with that of several comparable developing countries (Table 1.2) shows South Africa a consistent underperformer (Moll, 1991). Over the period 1950-73 South Africa's total factor productivity shows near-zero growth (0.2% per year). Over

³ As the world's leading producer of gold, South Africa benefitted substantially from the large increases in the gold price during the 1970s. From 1971 to 1975 alone, the dollar price of gold increased by 470%.

⁴ Total factor productivity (TFP) is a measure of output growth which cannot be ascribed to growth in inputs such as labor and capital. It is usually associated with technological change. Changes in output are compared with a weighted average of changes in inputs used. The inputs weights are usually calculated as the shares of total incomes received by labor, capital, and other inputs.

the period 1973-1984 factor productivity becomes negative (-0.5% per year), and over the period 1981-1988, it declines by 1.1% per year (Moll, 1990 quoted in Kahn *et al.*, 1992).

Table 1.2: Total Factor Productivity Growth Before and After 1973: South Africa and Other Countries

	Growth Rates (% per annum)				
	GDP	Employment	Labor Quality	Capital Stock	TFP
	1950 - 73				
Korea	7.5	3.1	1.6	5.9	2.8
Taiwan	9.3	4.3	1.6	7.7	3.5
Japan	9.3	1.6	0.6	8.0	5.5
Argentina	3.8	1.4	0.8	3.5	1.4
Brazil	6.8	2.8	1.3	6.2	2.1
Chile	3.7	1.1	0.6	3.1	1.6
Mexico	6.4	2.5	1.5	6.1	1.9
South Africa	4.6	2.4	1.4	5.5	0.2
	1973 - 84				
Korea	7.4	2.5	2.4	10.8	1.4
Taiwan	7.6	3.4	2.5	10.0	1.2
Japan	3.7	0.6	0.5	3.4	2.0
Argentina	0.7	0.9	1.3	3.2	-1.6
Brazil	4.3	3.9	1.8	8.4	-2.0
Chile	1.2	1.7	1.0	1.7	-0.9
Mexico	4.6	3.5	1.4	6.8	-0.6
South Africa	3.3	1.5	1.6	4.9	-0.5

Sources: (i) South Africa: modified from Terence Moll, "Output and Productivity Trends in South Africa: Apartheid and Economic Growth" (Phd thesis, Cambridge, 1990), pp. 110-114; (ii) other countries: Angus Maddison, *The World Economy in the 20th Century* (Paris, 1989) pp. 81, 91.

1.11 Increasing Capital Intensity. Public investment, i.e., government investment in the 1960s and parastatal investment in the 1970s and first half of the 1980s, accounts for most of the increase in capital intensity of the economy. However, the increases in investment are associated with declining productivity of capital and appear as a long-term secular increase in the capital-output ratio of the economy since the 1960s. Gross capital formation as a percentage of GDP has consistently been at very high levels compared to international standards. Gross fixed investment (public and private) as a proportion of GDP stayed above 20% for most of the period after 1971, and peaked in 1976 at 28%. After 1976 it declined precipitously to a low of 18% in 1987, punctuated only by a short upturn in 1980-1982. During those two years there was an increase in the capital-output ratios in the private sector from around 1.6 to 2.2 and in the public sector from 4.0 to 6.0. The initial difference in absolute levels can be explained by the inherently larger infrastructure component of public investment. However, the sudden increase of the public capital output ratio in the 1970s, concurrent with a decelerating growth in GDP, points to

considerable overinvestment of the public sector in excess capital-intensive, infrastructural capacity, e.g., in energy, transport, communications, and water. The justification for such excess capacity was found in the perceived strategic importance of these investments (e.g., the massive investments made in the manufacturing of chemicals and in a coal-to-oil synthetic fuels program in order to reduce dependence on international markets⁵) and to provide a range of services for the exclusive benefit of the white population.

1.12 The increase in capital intensity in the private sector reflects a public sector policy objective—keeping the cost of capital low compared to the cost of labor. The cost of capital was kept low through negative real interest rates until 1984, the extension of a long-term-foreign-exchange-rate cover to enterprises and the overvaluation of the exchange rate, which lowered the domestic cost of machinery imports. At the same time, the real cost of labor increased substantially. First, real wages of white, skilled labor increased substantially during the 1960s when rapid GDP growth was associated with skilled (white) labor shortages and a sharp increase in the wages of white workers which outstripped any increase in labor productivity and coincided with growing unemployment among unskilled black laborers. This outcome reflected substantial labor market imperfections, primarily the segmentation of labor markets into white and black labor, and the resulting induced scarcity of white skilled labor. Second, while black formal unemployment nearly doubled between 1970 and 1991 (from 27% to 53%), the interracial wage gap at comparable skill levels narrowed from about 90% to 14% (largely as a result of increased activity of labor unions); and black wages increased considerably in real terms. During the 1980s, however, significant real increases in black wages in the formal sector came to a halt.

1.13 Since 1985, the increase in the capital-output ratio has slowed because of a large decline in investment, rather than an increase in output. The weakening of investment since 1985 resulted from a substantial drop in parastatal investment, an increase in political uncertainty, and, more fundamentally, a lack of aggregate demand in the economy after a long period of basically unproductive public investment. The lack of aggregate demand basically reflects the fact that the bulk of purchasing power is concentrated in the hands of a small minority, whose incomes have been growing very slowly because of the slow growth of the economy and the increasing tax burden on households.⁶

Increasing Unemployment and Distributional Inequalities

1.14 The capacity of the economy to absorb labor has been declining since the 1960's, and growth in total employment deteriorated since the 1970s. Black unemployment in the formal sector is currently estimated at 53%. Against the background of decline in black employment, the extremely unequal distribution of income and social services between the black and white population has created a highly dualistic society.

⁵ The government is (or was) directly involved in the production of goods and services that were deemed of strategic importance through, *inter alia*, the following public corporations: ISCOR (Iron and Steel Industrial Corporation—privatized in 1989), SASOL (South African Coal, Oil, and Gas Corporation), FOSCOR (Phosphate Development Corporation), ARMSCOR (Armaments Corporation of South Africa), SATS (South African Transport Services), and ESCOM (Electricity Supply Commission).

⁶ Taxes on individuals (income tax, taxes on transfers, interests and dividends, and GST/VAT taxes) have increased from 3.3% of GDP in 1966/67 to 9.9% in 1980/81 to 15.1% in 1990/91. Taxes on corporations have stayed approximately constant around 5-6% of GDP.

1.15 Employment. With the slowdown in economic growth came a decline in employment, masked, however, by differences among the sectors. Total employment has declined since the late 1980s; formal sector employment is now estimated to be less than half of the labor force. However, government employment increased through 1992, while manufacturing sector employment declined from 1990.

1.16 There is considerable controversy about employment statistics. The time series presented in Table 1.1 in Annex 1 (registered unemployment) is closely linked with formal sector employment. As apartheid has acted to segment populations into formal and informal employment streams, the registered series (A-C) is a reasonably accurate indicator of unemployment among whites, but is less so for coloreds and Asians, and much less so for the black population. Nonetheless, the existing data may be indicative of a number of broad trends.

1.17 Formal unemployment over the period 1975-88, based only on persons reporting joblessness, increased from 0.2 to 1.1% for whites, from 0.6 to 2.0% for coloreds, and from 0.9 to 3.2% for Asians (columns A-C, Table 1.1 in Annex 1). Unemployment figures based on population surveys—which are also to question—however, (columns D-F) show that it tended to rise throughout the 1980s, peaking in 1986-87 at 15 and 27% for black males and females, 11 and 16% for Asian males and females, and 13 and 16% for colored males and females. Women experience sharply higher rates of unemployment than men. Unemployment is particularly serious among younger age groups. Males less than 25 years of age represented 44% (62%, females 62%) of the total unemployed among coloreds, 68% (57%) for Asians, and 36% (34%) for blacks.

1.18 Distribution of income and social services. There are serious income inequalities between and within population groups in South Africa. Although interracial income inequalities have declined in recent years, declining labor absorption capacity and high labor force growth rates have dampened per capita income gains. A recent estimate puts 44.8% of the overall population below the poverty line, while less than 50% of the labor force have formal sector jobs (Bureau of Market Research, unpublished information). In 1987, per capita incomes of whites were on average 9.5 times higher than those of blacks. Whites' share of property incomes was around 75%. Gini coefficients are among the highest found anywhere in the world—0.69 for aggregate income in 1980, 0.82 for farm-land ownership in 1989, and a manufacturing sector Gini coefficient of 0.82 in 1982.

1.19 Poverty is worst in the rural areas, with no apparent difference between the incidence of poverty in the rural areas of the Republic of South Africa and the homelands. In both areas, the percentage of blacks living in poverty is approximately 68%. In the urban areas, the percentage of blacks living in poverty is about 32%, with a low of 25% in the metropolitan areas (Urban Foundation, 1991; Central Statistical Service, unpublished family surveys).

1.20 The unequal distribution of income is mirrored in the discriminatory provision of social services. For instance, the white urban areas rank among the top four or five countries in the world in terms of per-capita spending on infrastructure; but taken as a whole, the urban areas have worse facilities than in countries with similar per-capita income. In the main urban area (the Pretoria-Witwatersrand-Vereeniging, or PWV area), nearly 70% of black households do not have direct access to water, and about 50% live in structures built of impermanent materials. In education, public expenditure per pupil was over four times higher for whites than for blacks, and lower for blacks in the homelands than for

those in the white rural areas. Electricity is provided to virtually all white households, but only to about 20% of black households.

Industrialization via Import-Substitution

1.21 At the end of the Second World War, South Africa's starting point in terms of human resources, infrastructure, technology, administrative capacity, exploitable physical resources (gold, coal, etc.), financial and monetary services, and supply of low-wage labor compared favorably to that of other developing countries in purely economic terms; but the country embarked on a costly, capital-intensive, import-substituting growth path of industrialization. Thus, South Africa failed to exploit its comparative advantage, which would have pointed to the development of labor-intensive exports of manufactured products; instead, through import-substitution of capital and intermediate goods it followed a capital-intensive rather than a labor-intensive production pattern.

1.22 In large measure because of this choice, South Africa's post-war export performance has been very poor. Its share of world manufactured exports fell by more than half between 1955 and 1985, from 0.8% to 0.3%. During that period the value of world manufacturing exports grew by 11.3% per year, while the corresponding growth rate for South Africa was below 8%. Its share of total developing country manufacturing exports fell even more steeply--from 12.6% in 1955 to under 2% in 1985 (Moll, 1991).

1.23 For the forty years up to the 1980s, South Africa's strategy of import-substituting industrialization reflected a devotion to protectionism, whose instruments included quotas, tariffs, exchange controls, and subsidies (van Zyl and Groenewald, 1988). International sanctions provided further justification for maintaining protection, and making so-called strategic investments. After 1972, quotas were increasingly replaced by tariffs, and the process accelerated after 1983. Despite substantial liberalization of trade in the last decade, the system is still subject to frequent change, is overly complex with a very wide range of tariff levels, and displays a considerable anti-export bias (Fallon *et al.*, 1993).

1.24 To a considerable extent, this policy can be ascribed to the response of government and markets to the dominance of the buoyant foreign exchange earnings from mining over the years. South Africa was not immune to the Dutch Disease that has affected other economies with strong primary export sectors; a comparatively high valuation of the currency was countered by intensified protection of domestic industry against low-cost imports. Large parts of domestic industry received prices that were either directly administered according to a cost-plus formula (e.g., fertilizers) or kept above world market levels through tariffs and quotas which restricted imports (e.g., diesel engines). Mining continues to predominate in South Africa's exports (although with considerable annual variation) with gold alone typically providing 30-50% of total merchandise exports. Agricultural products provided 10% of non-gold exports (R4 billion in 1990).

Public Investment and Expenditures

1.25 The decline of the South African economy in the 1980s could have happened earlier, but was effectively preempted by the counter-cyclical investment behavior of the public sector during the 1970s. This stabilized the economy by generating short-run demand, but, given the nature of the investments

made, did not improve the productivity of the economy in the long run.

1.26 Until the late 1970s the growth path relied heavily on investments, in particular public investments, i.e., by the government and the parastatals. Between 1960 and 1976 the share of public investment in GDP increased from 8 to 15%. After 1976 it started a long decline to 7% in 1990. Until that year nearly half of gross fixed investment was undertaken by the public sector, which accounted for less than a quarter of GDP⁷. However, there is almost no relationship between investment to GDP ratios and growth rates over longer periods for the economy as a whole and in its key sub-sectors, i.e., mining, agriculture, energy, gas, and water, etc. As already shown, total factor productivity has been historically low and has declined in recent years. In manufacturing, total factor productivity declined for more than a decade after 1972 and recorded only very modest gains after 1983 (World Bank, 1993).

1.27 As a percentage of GDP, total public expenditures (government consumption and investment, and investment by public corporations and economic enterprises) increased from 31.3% of GDP in 1978-82 to 37% in 1992. Public consumption expenditure has increased even faster--from 70.3% of total public expenditure to 89% in 1992. This increase did not lead to a significant expansion of public services to the non-white majority of the population, but rather improved the quantity and quality of services to the white minority.

Agriculture's Contribution to the Economy

1.28 Agriculture is widely regarded in South Africa as a highly sophisticated and efficient sector, and its small share of GDP (4.7% in 1991) is seen as evidence of a steady decline of agricultural production consistent with a normal pattern of economic growth. This section argues, however, that agriculture's current role in the South African economy reflects not only the dominant role of the mining sector in the economy and the series of distortions that typified both sectoral and macroeconomic policy, but also the subordination of agricultural policy to social policies-- apartheid. Some of the distortions are not peculiar to agriculture, but characterize the entire economy, e.g., high capital-intensity of production accompanied by widespread unemployment. At the same time, agriculture's growth in productivity--while modest by international standards--has been better than that characterizing the economy as a whole. A dramatic consequence of the combination of increased capital intensity and relatively favorable productivity increases has been a very low contribution by agriculture to overall employment in the economy.

1.29 The impact of the strategic decision to cast agriculture in the role of support sector has been far-reaching. Agriculture is generally characterized by constant returns to scale and an inverse relation between farm size and productivity. In South Africa, however, a minority of white farmers were supposed to own and use more than 87% of the agricultural land, make the economy self-sufficient in basic agricultural commodities, and earn income levels comparable to the urban sectors.

1.30 As a result, the agricultural sector followed a particularly distorted growth path, at least through the mid-1980's, and the present profile of the sector is very similar to that of the economy as a whole.

⁷ In manufacturing, about 30% of investment has been undertaken by the public sector. In 1986, before the denationalization of some public corporations, about 60% of the total capital stock was owned by the public sector. Even of the non-government capital stock, more than 25% belongs to public corporations, a ratio that was as low as 8% in 1960.

The sector as a whole is characterized by:

- a. a tendency to assess agriculture's importance to the economy in terms of its contribution to other sectors rather than directly to GDP;
- b. declining share of GDP and low productivity of non-export oriented subsectors;
- c. increasing capital-intensity and declining employment;
- d. domestic orientation of the agricultural sector (except for horticulture) -- i.e., towards assuring national self-sufficiency in basic agricultural commodities;
- e. public expenditures on agriculture that displayed a willingness on the part of the public sector to provide subsidies to large-scale agriculture to ensure its financial success;
- f. agricultural policies designed to eliminate competition from small-scale black farmers and to insure factor and input supplies, output marketing channels, and a price structure that guarantees the profitability of the farm.

The Importance of Sectoral Linkages

1.31 Agriculture's current and future importance to the economy lies to a large extent in the sectoral linkages that exist, rather than in the direct contribution of agricultural production to GDP. In terms of forward linkages, agriculture has supplied raw materials for an expanding number of agricultural processing industries that create output and jobs (381,000 in 1976 according to van Zyl *et al.*, 1987).

1.32 Agriculture also creates a derived demand for goods and services through backward linkages. From 1987 to 89, farmers spent R365 million for packing materials, R862 million for fuel, R938 million for fertilizers, and R701 million for dips and sprays. They further invested R926 million in tractors, machinery, and implements, and another R671 million in fixed improvements (fencing, buildings) (Abstract of Agricultural Statistics, 1992).

1.33 Van Zyl *et al.*, (1987), using input-output matrices for the years 1978, 1981 and 1985, have attempted to quantify the impact of changes, direct and indirect, in agricultural production and prices on other sectors in the economy produced by both forward and backward linkages among sectors (Table 1.3). Agriculture has consistently among the highest employment/production and employment/capital multipliers, and a low income/production multiplier (not shown). More generally, the sectoral multipliers, presented in Table 1.3, demonstrate the decline in employment linkages in all sectors that has resulted from increased capital intensity.

1.34 For a given increase in agricultural output, the agricultural sector would thus experience the greatest gain in labor employment, but the rise in income would be comparatively low. This largely reflects historically depressed agricultural wages. The parameters are useful for short-term forecast and for understanding inter-sectoral linkages. The model suggests that a 10% increase in agricultural output

because of rainfall or technical change would affect total GDP by 1.23%.⁸

Table 1.3: Selected Sectoral Multipliers (direct and indirect effect) According to the Production Structures for the Years 1978, 1981 and 1985

Sector	<u>Δ Employment</u> <u>Δ Production</u> (laborers per R million)			<u>Δ Employment</u> <u>Δ Capital</u> (laborers per R million)		
	<u>1978</u>	<u>1981</u>	<u>1985</u>	<u>1978</u>	<u>1981</u>	<u>1985</u>
Agriculture	244.1	136.8	100.9	101.7	65.1	36.0
Gold Mining	189.6	88.3	51.1	111.5	58.9	28.4
Fertilizer & Pesticide Industry	133.1	64.6	43.2	63.4	35.9	19.6
Agricultural Machinery	127.9	58.8	43.9	98.5	58.8	33.8
Electricity, steam & gas	94.2	56.1	29.2	18.5	10.0	4.5
Construction	263.1	140.6	82.8	154.8	93.7	51.8
Trade	140.1	78.2	46.5	82.4	48.9	27.4
Transport	122.7	73.7	45.2	30.7	19.4	10.3
Services	27.7	16.3	6.4	12.0	7.1	2.9

Source: van Zyl et al., 1987.

Declining share of GDP and low productivity of non-export oriented subsectors

1.35 Over the past century South Africa's economy has slowly changed from one dependent on mining and agriculture to a broadly diversified manufacturing and services economy. Agriculture, forestry, and fishing, which represented 21.0% of GDP in 1911, declined to 4.7% in 1991, growing at rates consistently below the average growth of the economy (Table 1.4). Mining and quarrying fell from 27.7% to 10.4% over the same period. Manufacturing, which represented only 4.0% of Gross Domestic Product (GDP) in 1911, rose to 24.9% of all economic activity in 1991. In other categories of economic activity, the finance, insurance and real estate sector grew rapidly in the 1960s, but has since tended to move with the general economy.

1.36 However, the above pattern of a declining share of agriculture cannot be interpreted as a totally

⁸ Initial results of a recent analysis based on a 1988 Social Accounting Matrix (SAM) paint a somewhat different picture. In the SAM analysis—which considers additional rounds of spending, whereas an input-output analysis only considers interaction between production activities—agricultural production exhibits some of the lowest employment multipliers of the entire economy. However, important agribusiness products such as food, leather and textiles rank very high in terms of employment generated (Eokert, internal DBSA memorandum, 1993). An analysis that used a 1985 input-output matrix and focussed on backward and forward linkages found that the backward linkages of agriculture compared very favorably to backward linkages of non-agricultural activities in terms of income and employment generated. Forward linkages of agriculture compared less favorably to other sectors. However, agribusiness as a sector—forward and backward linkages of agricultural production combined—made substantial contributions to the economy: it contributed 15% to total value added and 26% to total employment (van Seventer, Faux, and van Zyl, 1992).

normal pattern of economic growth. First, in contrast to the normal pattern of development under which industrialization proceeds by extracting agricultural surplus, South African agriculture has been a net recipient of the surpluses generated by the mines (Brand, 1969; Merle Lipton, 1985); throughout the 20th century, white farmers have benefitted from substantial financial resource transfers in order to maintain their viability and to ensure farm income levels comparable to urban levels. Second, international comparisons suggest that South Africa's agricultural share of GDP and, in particular, employment is rather low even compared to other economies in roughly the same category of economic development--i.e., the class of middle-income economies (Lipton and Lipton, 1993). Whereas the low share of agriculture in GDP is partly the result of the dominance of the mining sector, its low share in total employment is mainly the result of the existence of the very skewed land-ownership distribution and production activities dominated by ranching and large-scale, mechanized farming.⁹

Table 1.4: Composition of GDP since 1911, by sector (%)

	Agriculture, Forestry, Fishing	Mining & Quarries	Manufacturing	Commerce, Catering, Services	Other*	Total
1911	21.0	27.7	4.0		47.3	100
1920	22.2	18.3	7.3	15.6	36.6	100
1930	14.2	15.6	9.4	15.1	45.7	100
1940	12.7	18.7	12.4	13.9	42.3	100
1950	17.7	13.5	16.4	14.0	38.4	100
1960	12.4	13.7	20.5	14.2	39.2	100
1970	8.1	10.0	23.2	15.1	43.6	100
1980	7.0	22.0	21.7	11.7	37.6	100
1990	5.0	10.7	25.6	13.5	45.2	100
1991	4.7	10.4	24.9	13.5	46.5	100

Note: Namibia excluded from 1984.

* Includes: electricity, gas, water, construction, transport, storage, communication, finance, real estate, business services, community, social and personal services.

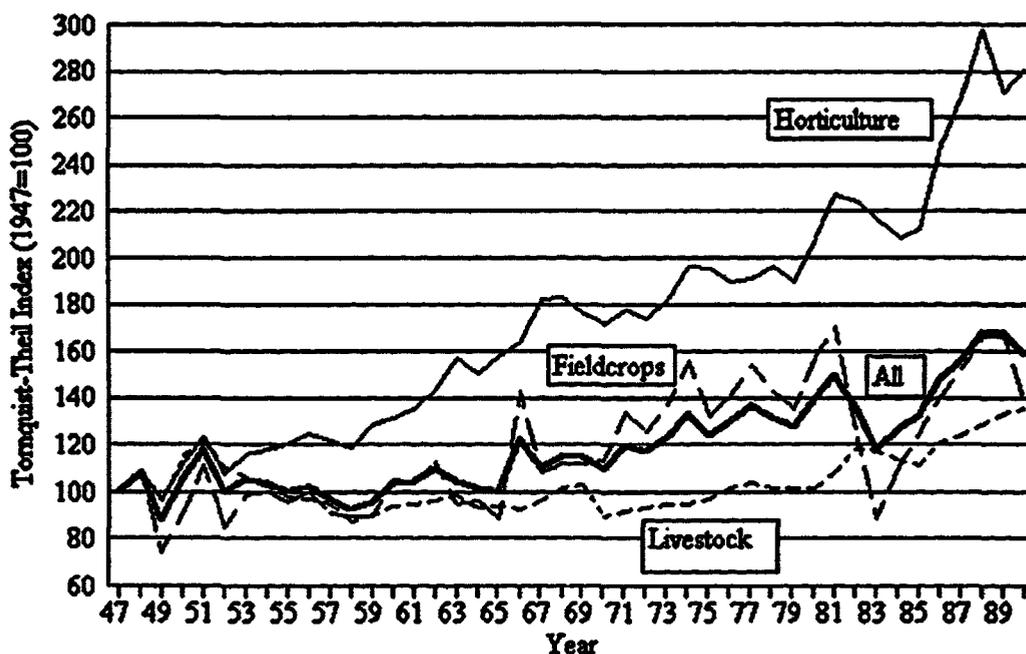
Source: Abstract of Agricultural Statistics, p. 81; RSA 1992 (a); Table 75.

1.37 The low productivity growth that characterized the agricultural economy was also evident in the

⁹ South Africa's doubly compressed agricultural sector compares with those in countries such as Jordan, Uruguay, and Venezuela--countries with similarly skewed land-ownership distributions and highly capital-intensive (Jordan) or land-extensive agricultural sectors (Uruguay and Venezuela). Jordan's agriculture provides around 8-9% of GDP and employment. Its natural resource base is weak: 91.5% of the land area receives less than 200 mm of rainfall. However, agriculture is highly capital-intensive, land ownership is highly skewed, and many farms are non-owner operated and rely heavily on agricultural guestworkers (World Bank, 1990). Uruguayan agriculture provides 11-12% of GDP and employment. The sector is dominated by large-scale, extensive livestock production and arable land is substantially underutilized. Sharecropping is a significant feature of the cropped areas, while an increasingly marginalized rural population presents growing economic and social problems (World Bank, 1988). Venezuelan agriculture provides 5-6% of GDP and employment. Land ownership remains very concentrated due to an ineffective land reform program. Over 80% of the land is owned by 7% of the landholders who mainly use the land for grazing purposes (World Bank, 1992).

main agricultural sub-sectors. From 1947 to 1991, total factor productivity (TFP) of South African agriculture increased by 1.08% per year—a relatively low rate by international standards. This aggregate, however, masks substantial differences among the sub-sectors. Over the same period, TFP in the export-oriented and inherently labor-intensive horticultural sector grew at 2.38% annually, whereas the more inward-looking and capital-intensive livestock and fieldcrop sectors both recorded very low annual productivity growth of only 0.70 and 0.72% respectively over the same period. From 1985 to 1991 aggregate TFP growth of agriculture accelerated to 2.85% per year as a result of policy reforms that increased the cost of capital relative to labor and considerably slowed down non-labor input growth (Thirtle, Sartorius von Bach and van Zyl, 1993).

Figure 1.2: Total Factor Productivity-Agricultural Sub-Sectors (1947-1990)



Source: Thirtle *et al.*, 1993.

Increasing Capital-intensity and Declining Employment

1.38 The increased capital intensity of agriculture was accompanied by a decline in employment in the last two decades. Agricultural employment increased over the period 1951 to 1970 by almost 65%, then declined over the period 1970 to 1991 by 60% (Table 1.5). Thus while agriculture continues to make an important contribution to total employment, its share is declining. In 1951, it provided employment for nearly 33% of the economically active population, and 31% in 1970. By 1991, however, agriculture

employed less than 14% of the economically active population. However, these data exclude the TBVC areas and the unrecorded employment on white-owned smallholdings¹⁰.

Table 1.5: Employment, Economically Active Population
('000)

Year	Agriculture, Forestry, & Fishing	Mining & Quarrying	Manufacturing	Commerce & Finance	Services	Other	Not Employed or Not Classifiable	Total Economic Population
1951	1,509	510	502	328	1,074	468	202	4,593
1960	1,687	615	644	643	1,137	509	486	5,721
1970	2,482	680	1,026	898	1,596	861	571	8,114
1980	1,306	836	1,465	1,298	2,005	969	810	8,689
1985	1,180	743	1,380	1,281	1,965	1,067	1,076	8,692
1991	1,005	680	1,260	1,663	2,339	985	2,282	10,215

Note: Table excludes TBVC areas.
South African Statistics, 1990, p. 7.5.
South African Statistics, 1992, p. 7.7.

1.39 Since 1970, mechanization has also caused a reduction in employment, while rapid wage growth in the non-farm sector has pulled workers off farms. Although farm employment increased from 1983 to 1987 because of higher real costs for machinery, high debt loads, and reduced farm subsidies, it has resumed its decline, possibly as a result of increasing political uncertainty.

1.40 Capital output ratios in agriculture are twice as high as in manufacturing, with little apparent economic justification. The increased capital intensity in agriculture, concurrent with a substantial displacement of labor after 1970, started with the introduction of tractors after the Second World War. Since the late 1960s, a number of other stimuli, including administered producer prices for inputs and outputs, further increased agriculture's capital-intensity, resulting for instance in heavy investments in combine harvesters in the main grain producing areas. Negative real interest rates for agricultural loans, coupled with double digit inflation, appeared in the early 1970s and largely explain the over-investment in agricultural capital throughout the 1970s and early 1980s. This pattern of agricultural development ran counter to the overall factor endowment of the economy and appears to have been costly in economic terms (e.g., de Klerk, 1983). Furthermore, in some of the main agricultural sub-sectors, the pattern of over-capitalization without efficiency gains has contributed to the insolvency of a substantial number of farms under the weight of debt service.

1.41 Favorable taxation of agriculture constituted an important distortion in the policy environment affecting agriculture. The absence of a land tax or capital gains tax attracted investment from the non-farm sector. High inflation since 1970 also made investment in rural real estate attractive for investors,

¹⁰ The latter are estimated to number 53,000 and cover 0.8 million ha. Around 30,000 smallholdings are used for residential purposes.

and tax incentives associated with accelerated capital write-off rules provided further incentives. The introduction in 1970 of a 100% capital write-off provision in the year of purchase was an important motivator in the rapid spread of combine harvesters (de Klerk, 1983). Different tax arrangements for different subsectors within agriculture created intrasectoral distortions, e.g., between livestock and game farming, and between forestry and sugar production. The effective ring-fencing¹¹ of parts of agriculture in the recent past has again changed the tax incentive structure.

1.42 Negative real interest rates constituted one of the most important mechanisms to stimulate agricultural investment. Adoption of preferential interest rates for the agricultural sector as an active instrument of monetary policy has had important implications for agriculture, principally through the direct impact on the cost of capital and, but also indirectly through the costs of manufactured inputs. Moreover, starting as far back as 1970, long-term interest rates for land have been substantially subsidized by the Government¹².

Domestic Orientation

1.43 The import-substitution strategy had a profound impact on South African agriculture. One of the main objectives of the sector, to reduce external dependence in basic agricultural commodities, was largely achieved by the 1980s. Agricultural production increased at a rate of 3.1% annually between 1955 and 1986, while population increased by an average rate of 2.8% (van Zyl *et al.*, 1987). Self-sufficiency in aggregate availability of the major domestically consumed agricultural commodities (i.e., maize, wheat, dairy products, vegetables, potatoes, and sugar) was attained, while considerable domestic surpluses—in spite of periodic droughts—in such crops as wheat, maize, and sugar were available for export. However, protection from international competition lowered the efficiency of important agricultural sub-sectors, and the domestic orientation of large parts of the sector amplified the negative impact of declining GDP growth in the 1970s and 1980s through its impact on demand. The growth of aggregate demand for farm products was also considerably moderated by declining per capita incomes¹³. Moreover, in spite of the

¹¹ Ring-fencing refers to tax provisions that do not allow tax payers to reduce their taxable income in one activity by deducting investments made in another activity in which more favorable tax rates apply. The absence of such provisions often made agricultural investments attractive to investors.

¹² Three interest rate time series from 1965 to 1990 are presented in Table 1.4 in Annex 1. Each series is given in nominal and real terms (nominal rate less the inflation rate). The lending rate (D) is the cost of short- to medium-term financing to the private sector. The government bond yield (E) is the cost of long-term government borrowing. The Land Bank long-term interest rate (F) is the rate of interest on long-term loans to farmers, principally for the purchase of farm land. Presumably, the Land Bank should not be a better guarantor of credit than the government itself. Hence, one would expect the Land Bank rate to exceed, or at best equal, the Bond rate. Since 1970, however, long-term interest rates for land have received fairly substantial subsidization by the Government, as reflected in a comparison of columns E and G.

Table 1.5 in Annex 1 shows the trends in real interest rates charged to farmers by three of the main sources of farm credit—the Land Bank, the agricultural cooperatives and the commercial banks—in the period since 1955. While these rates were positive up to 1972, they remained below the inflation rate for the next decade, i.e., when the inflation rate moved into double digit figures. Between 1985 and 1987 real rates were again negative, and have been positive since that time. The effect of these interest rate policy changes can also be seen in the movements in land prices in this period.

¹³ However, the decreasing interracial wage gap may have offset this trend somewhat, given the higher income elasticity of demand for food of the poorer, i.e., black, segments of the general population.

aggregate food self-sufficiency achieved in production, there is little evidence of increased food security for poor, black households.

1.44 Agricultural exports have traditionally contributed between 5 and 10% of South Africa's total export earnings¹⁴--not to be discounted, but a relatively small share. Moreover, exports of domestic surpluses of maize, wheat, and sugar, often incur losses, given prevailing world market prices. The main domestic deficits are in red meat and oilseeds, which have to be imported on a regular basis, along with a significant proportion of agricultural inputs (especially chemicals and machinery).

1.45 Tight protection against foreign competition, in conjunction with other government interventions such as the controlled and largely monopolistic system of marketing boards and subsidies on inputs and interest rates, has also contributed to distortions in the sector. In agriculture, protection of the domestic sector was generally through quota restrictions (now replaced by tariffs) administered under the large number of monopoly marketing systems. The reduction of some of these distortions during the 1980s has exposed the financial and economic weakness of parts of the sector.

1.46 The exception to the domestic orientation of South African agriculture is the horticulture sub-sector, which holds an international comparative advantage in production. Its inherent labor-intensity may have prevented an exaggerated replacement of labor by capital. In addition, the horticultural sub-sector benefitted greatly from the currency depreciation of the 1980s. In particular, when international sanctions caused a stagnation in the quantity of horticultural exports their value increased substantially because of concurrent sharp devaluations of the Rand.

1.47 The direct impact of exchange rate variation on agriculture depends on the degree to which (a) inputs used are imported, or, if locally manufactured, have an import content, and (b) output is tradable or affected by the prices of tradable goods. It is important, in this respect, to recognize that there are substantial variations among the various agricultural subsectors, based on prevailing production technologies, marketing arrangements, and crops grown. In the context of South African agriculture, real currency depreciation will increase the relative profitability of producers of tradable goods (e.g., horticulture), but tend to exacerbate the cost/price squeeze for producers of those commodities which are not generally tradable or are only traded when there is a domestic surplus. Moreover, depreciation is likely to be an effective instrument to reduce the foreign exchange content of agricultural production systems, especially if strengthened by changes in import protection for farm inputs.

Public Expenditures

1.48 Before the Second World War, significant public investment in the agricultural sector was often

¹⁴ Time series data reporting trends in agriculture's share in foreign trade, are not yet regularly published in official bulletins. Data on imports of production inputs (fuel, chemicals, machinery, and equipment) are also not readily available in time series form. It is therefore difficult to analyze whether agriculture is an efficient user of foreign exchange. In the 1960s, the agricultural sector in South Africa appeared to be a relatively efficient user of foreign exchange, compared with other sectors. One estimate (apparently not more recently updated) found that agriculture used R0.13 worth of imports to produce R1.00 of output, compared with R0.73 for textiles, and R0.64 for machinery sectors (Brand and Tomlinson, 1966). However, it is doubtful whether such relative efficiency of foreign exchange use has continued until now.

justified by what was referred to as the "poor white problem". Substantial financial assistance was provided to white farmers in order to keep their incomes in line with incomes in other sectors of the economy. After the Second World War, the general import-substitution strategy provided an additional rationale for public assistance to agriculture. The objective of attaining self-sufficiency in basic agricultural commodities assumed even stronger strategic importance when threats of boycotts and sanctions emerged in the 1970s and 1980s.

1.49 In the 1980s, real public expenditures on agriculture amounted to about 1.2 billion Rands per year (1985 terms). Table 1.6 shows trends in budgetary expenditure on agriculture from 1979 to 1989. The totals represent the combined budgets of the various departments of agriculture, including the homeland departments, but reflect a narrow definition of agricultural spending. In real terms, public expenditures declined in recent years because of tighter budget constraints being experienced, the high budgetary cost of exporting surplus grains at a loss, and the relative decline of the political power of white farmers. However, the downward trend must be interpreted with caution, because a sometimes unknown proportion of expenditure was moved off-budget in this period. In addition, certain budgetary expenditures occur at irregular intervals and are difficult to assign to one particular year. For instance, the 1992 government budget included about R2.85 billion in guarantees and loan write-offs for the commercial sector. Moreover, subsidies granted for certain agricultural commodities are difficult to apportion to producers alone, since consumers also benefit from subsidies. Such subsidies averaged R370 million per year from 1985/86 to 1991/92 (Abstract of Agricultural Statistics, 1992, p.112). While budgetary expenditure on black agriculture in the homelands increased during the period under consideration, a very small proportion represented transfers to farmers; more than 95% of these funds were absorbed as administrative costs (Vink and Kassier, 1991).

Table 1.6: The Growth in Budgeted Expenditure, 1979-1989

Year	Total Agriculture (real)	Total White Agriculture (real)	Total Black Agriculture (real)
1979	785,130,197	636,558,114	148,572,083
1980	1,005,186,491	830,514,451	174,672,040
1981	983,493,870	795,944,649	187,549,221
1982	998,875,232	790,514,140	208,361,092
1983	1,326,134,968	1,095,133,593	231,001,375
1984	1,538,051,591	1,253,082,558	279,657,405
1985	1,478,765,538	1,200,347,000	266,073,538
1986	1,116,495,578	833,789,207	262,799,119
1987	1,548,339,178	1,234,704,430	293,939,033
1988	1,225,377,126	840,874,517	359,010,974
1989	981,802,742	613,672,085	347,650,836
Average Annual Increase	2.3%	-0.4%	8.9%

Source: de Klerk, 1991.

Agricultural Policies

1.50 This discussion of agriculture in the economy shows that the sector's limited role is mainly the result of the dominance of mining, the skewed availability of natural-resources in favor of the white minority, the high capital-intensity of the agricultural technology used, the reduction of employment that accompanied the adoption of this technology, and the domestic orientation of the sector that resulted from the objective of achieving self-sufficiency in major agricultural commodities at the expense of other economic considerations. These features are, in turn, the results of the implementation during the past century of several highly interventionist agricultural policies that were closely intertwined with the country's general approach to the economy, society, and politics. (Chapter 3 discusses this history in some detail.)

1.51 In the 20th century, agricultural policies moved through three distinct phases.

1. From the Land Act of 1913 to 1948. During this phase the basic institutional framework of a dualistic agrarian structure was established.
2. From 1948 to the 1980s. This phase—with the introduction of the tractor and other machinery—saw the transformation of the sector into a highly mechanized and capital-intensive farm structure.

3. From the structural changes of the 1980s to the present. This phase was marked by the move toward deregulation of financial and agricultural markets and toward a more open political economy, e.g., in 1991, the Land Act and related legislation were scrapped.

The third and current period has been characterized by the following developments:

- a. a general move to more market-related interest and exchange rates;
- b. an administered decline in the real producer price of key commodities such as maize and wheat;
- c. an extensive deregulation of control under the Marketing Act, leading, e.g., to the first voluntary dissolution of a Control Board in 1993¹⁵;
- d. a reduction of public financial assistance to commercial farmers;
- e. changes in tax policies, including phasing tax write-offs over three years instead of one, thus reducing the implicit subsidy on capital investment;
- f. increasing pressure to apply farmworkers the same labor legislation as in non-farm sectors, resulting in the application of the Basic Conditions of Employment Act to farm workers in May 1993;
- g. the scrapping of the Land Acts and other related legislation and regulations in 1991, following the publication of the government's White Paper on Land Reform and the resulting public debate;
- h. changes, throughout this period, in the policy approaches to agricultural development in the homelands away from a top-down, estate-farm bias; and
- i. initiation of the process of amalgamating the 14 existing ministries of agriculture into a single department.

1.52 Thus since the early 1980s there have been many macroeconomic and sector-level policy reversals, including scrapping of the major racially-defined land laws, reduction of subsidies on agricultural interest rates and public financial assistance, decline of administered producer prices and deregulation of marketing environment. These have set in motion a series of structural changes in the sector, whose aggregate outcome is not yet clear. The impact on farmers has varied according to region and commodity. While significant growth in agricultural productivity has accompanied the structural changes in the past decade, the effects of policy changes on employment are ambiguous. Moreover, the highly-distorted ownership structure in agriculture has remained in place.

¹⁵ The Banana Board, later followed by the Egg Board, Chicory Board and Rooibos Tea Board, and since then, potatoes and dry beans.

1.53 The economic reforms have made the agricultural sector more flexible, but lack of progress in related sectors may negate many of its benefits. This disjunction from policy in other parts of the economy is a distinguishing feature of the deregulation of agriculture in South Africa. For instance, marketing policy adjustments in industries which either provide inputs to farmers or process and distribute farm products have only recently become part of the agenda of reform. Financial policy reforms in agriculture started the process of adjustment in the sector; but while interest rates are now largely set by market forces, exchange rate reform came to an end in 1985 when the financial Rand was reintroduced. It can be argued, therefore, that fiscal policy during the 1980s—including moving substantial agricultural expenditures off-budget and the management of the fiscal deficit—hurt the economy as a whole, and the farm sector in particular.

1.54 The lack of a comprehensive and coordinated strategy of economy-wide reforms has thus created or left in place a number of distortions in the agricultural economy. First, deregulation of the marketing system has resulted in a rapid growth in informal marketing, exposing the inefficiencies of the formal marketing system. Although the extent of these markets is not yet known, official data already show a sustained decline in the absolute volume of officially recorded sales of food. Second, the continuation of regulation in input supply, processing, and distribution has created further distortions in the farm sector. Because of the still overly rigid marketing environment, the sharp drop in real producer prices for some key commodities has not been matched by similar movements in retail prices. The sustained increases in retail prices had an adverse impact on efforts to squeeze inflation out of the economy and have hurt consumers. Similarly, the lack of trade reform and competition in the input supply industries has squeezed farmers' profit margins. Even the highly lucrative fruit export industries will find their margins under threat if exchange rate movements and deregulation of input suppliers is not attended to. Third, inflexible resource and product markets in agriculture make rural restructuring all the more difficult. Despite the efforts at reform, the legacy of past policies is such that the sector remains highly capital intensive and has not been able to fulfill its potential in terms of employment creation.

CHAPTER 2: STRUCTURE, RESOURCE ENDOWMENT, AND PERFORMANCE OF THE AGRICULTURAL SECTOR

2.1 South African agricultural production dwarfs that of the rest of Southern Africa. Despite a relatively limited natural resource base, its agricultural economy has reached high production levels in a wide range of agricultural commodities compared to that of other countries in the region. Such high performance can be directly attributed to its sectoral endowment: a wide variety of natural resources and agro-climates; the quality of farm management, extension, and research; and a century of investment in agriculture *per se*, as well as in rural and agricultural infrastructure.

2.2 However, the ownership of this resource endowment is extremely skewed--the legacy of centuries of racially-based policies. The white, commercial farmers own and farm virtually all of South Africa's agricultural lands, have subsidized access to water resources, receive a range of direct and indirect subsidies and tax concessions and massive financial assistance, benefit from a highly-developed rural infrastructure, and are supported by an elaborate service sector which includes banks, co-operatives, marketing boards, research institutes, and extension services. On the other hand, the homelands into which the rural black population has been driven are often so overcrowded that commercial agriculture is frequently infeasible. However, cattle--historically an important capital asset for blacks--continues to be of considerable importance: one third of South Africa's herd can be found in the homelands. A small minority of the inhabitants of the homelands farm small areas of land, mostly at below-subsistence levels and with only usufruct rights. Many of these farmers are women or elderly persons who have only limited institutional support and are poorly served by agricultural, transport, communications, health, and water supply services. This seems to be the intended effect of a century of policies designed to provide cheap labor for both the industrial and the agricultural sectors.

2.3 South Africa prides itself on having developed exceptional human resources--in terms of the skills of its farmers and research, extension, and cooperative structures--to compensate for what is commonly assumed to be a relatively fragile and poor natural resource endowment. Closer analysis, however, reveals a somewhat different picture. Three points need to be made with regard to South Africa's natural resource base:

- a. Although South Africa's resource endowment is limited, it is also highly varied, a fact that can be regarded as an important resource for the sector;
- b. International comparisons show that agriculture's low contribution to the overall economy of South Africa cannot be explained by the presumed limitations of its natural resource base; and
- c. Current patterns of natural resource use have resulted from the particular structure of incentives--i.e., property rights, prices, and institutional arrangements. The incentive structure likely to prevail in a post-apartheid South Africa will show that many current natural resource uses are highly inefficient.

2.4 This chapter documents the endowment and impressive production performance of agriculture in South Africa. It is important to acknowledge not only the volume of agricultural output but also the impressive institutional support mechanisms that have been available to large-scale white farmers. Among the central challenges facing a new government will be to design a rural restructuring program that can address equity issues in the ownership and access to resources in the rural economy, while ensuring that the production potential of the sector is maintained and productivity, income and employment are increased. At the same time, a strategy for reorienting the present organizational institutions to the requirements of a restructured rural economy must also be examined.

Structure

2.5 Land distribution in South Africa is among the most highly skewed in the world. Four centuries of conquest, occupation, annexation, Trust land acquisitions and transfers, land purchases, and consolidation have resulted in a land distribution which is comparable in its inequality to those of many Latin American countries that often experienced a similar history of European conquest and settlement. What sets South Africa apart from the rest of the world, however, is the relative emptiness of much of its rural landscape—except for some high-potential areas along the eastern seaboard. In most of the country, rural villages, settlements, scattered farms and homesteads of farm laborers such as those found in the rural areas of Europe, Latin America, Asia, and elsewhere in Africa are rare. Approximately 86% of agricultural land (85.8 million hectares) is held by 67,000 mostly white farmers, supporting a rural population of 5.3 million. Consequently, the white rural areas—the platteland—have a very low population density (about 16.2 hectares of agricultural land per rural resident). Conversely, the level of urbanization in South Africa's formerly white areas is relatively high—certainly by African standards. Around 74.5% of the population of the Cape, Natal, Transvaal and the Orange Free State live in the urban areas (Table 2.1).

2.6 By contrast, a rural population of about 13.1 million resided in the homelands in 1988, on an area of 17.1 million hectares. Thus 29% of South Africa's rural population (mostly farm workers and their dependents) lived on nearly 86% of the agricultural land, while 71% of its rural population lived in the remaining 14%.

2.7 Agriculture in South Africa is completely dominated by the largely white-owned, commercial sector, which produces 89.8% of the value added on its 86% of the agricultural land. The white farming sector is commercially-oriented, capital-intensive and generally produces a surplus. In contrast, the farming sector in the homelands is unable to meet the subsistence needs of the homeland population, with the result that the homelands are net food importers from the white sector. Income from agricultural production in the homelands constitutes no more than 20% of household income. (For example, in Kwazulu, remittances, pensions, and other income transfers account for more than 80% of homeland household incomes (Bekker, Cross, and Bromberger, 1993)). Thus, the homelands should be viewed as labor reserves—not even as the subsistence sector of a highly dualistic agricultural system. Note, however, that as a share of value added in the private sector of the homelands, agriculture plays a substantial role.

2.8 A range of services provided by specialized private sector service institutions, the Land Bank,

Agricultural Marketing Boards, Cooperatives, and research institutions, aided by a strong political lobby, supports commercial agriculture. Subsidies, tax concessions, and tariff protection have also long benefited the sector. Smallholder farming, on the other hand, operates in an environment mainly devoid of these services and subsidies. These farmers have restricted access to support services and opportunities. Decisions on labor allocation, production programs, livestock farming, and choice of technology are largely governed by household economics and risk-minimizing strategies involving part-time farming.

2.9 Government aid to the two sectors has been unequal and variable. According to Lipton (1977), the ratio of total government expenditure for white and black agriculture before the Second World War was about 179 to 1, around 14 to 1 in the 1950s, and 2 to 1 in the 1970s. However, according to Vink and Kassier (1991), this ratio again worsened to around 4 to 1 during the 1980s. In 1987, the 14 Departments of Agriculture¹⁶ had a combined budget of R2.1 billion, of which R1.7 billion was allocated to white agriculture¹⁷. Moreover, white farmers obtained 96.7% of all transfer payments in the budget.

2.10 Despite this massive public assistance, substantial numbers of commercial farmers face financial difficulties because of recurrent droughts, over-capitalization, high debt burdens, surplus production, a cost-price squeeze, and over-intensive or inappropriate cropping systems. At the same time, the black small farmer faces problems related to extreme population pressure on very limited land, lack of access to markets, insecure and restrictive land rights, an overstocked and damaged land base, and the lack of infrastructure, water supplies, transportation networks, financial support, and research and extension services (Lipton, 1977; van Zyl and van Rooyen, 1990).

2.11 One indicator of the severity of the land shortages in the reserves is given by the ratio of arable land to rural population. Only in the case of two homelands did the ratio exceed .20 arable hectares/resident—KaNgwane (.25) and Bophuthatswama (.27). Five of the homelands registered .10 arable hectares/resident or less. By way of contrast, the ratio in the white areas ranged from 1.37 hectares/resident in Natal to 2.87 hectares/resident in the Cape. The extreme densities recorded in the homelands severely constrain agricultural development potential in these areas, and also accentuates their role as basically labor reserves.

¹⁶ As of April 1993, South African farmers are served by 11 Departments of Agriculture, down from 14.

¹⁷ The gross value of agricultural production was R13.4 billion in the same year.

Table 2.1: Land Use and Population

	1988 Total Surface Area (km ²)	Rainfed Arable Land (% of total)	Total Rainfed Area (km ²)	Irrigated Arable Land (% of total)	Total Irrigated Area (km ²)	Total Arable Land (%)	Total Arable Land (km ²)	1988 Urban Population ('000)	Rural Population ('000)	Rural pop as % of total population	Arable Land Per Rural Resident (ha/capita)
Cape	642,467	4.52	29,040	1.10	7,067	5.62	36,107	4,815	1,256	79.3	2.87
Natal	55,407	15.85	8,782	3.59	1,989	19.44	10,771	1,771	785	69.3	1.37
Transvaal	223,490	20.35	45,480	3.14	7,018	23.49	52,498	7,757	2,210	77.8	2.38
O.F.S.	127,292	28.80	36,660	0.79	1,006	29.59	37,666	1,249	1,093	53.3	3.45
Subtotal	1,048,656	11.44	119,962	1.63	17,079	13.07	137,041	15,592	5,344	74.5	2.56
Kwazulu	36,074	-	-	-	-	10.00	3,607	1,104	3,630	23.3	0.10
Gazankulu	7,484	6.40	479	1.70	127	8.10	606	29	640	4.3	0.09
Kwandebele	2,208	-	-	-	-	15.41	340	36	327	9.9	0.10
KaNgwane	3,917	12.30	482	17.10	670	29.40	1,152	67	462	12.7	0.25
Lebowa	22,137	0.60	133	15.10	3,343	15.60	3,453	154	2,310	6.3	0.15
Qwaqwa	1,040	-	-	-	-	18.00	187	34	228	13.0	0.08
Subtotal	72,860	-	-	-	-	12.83	9,346	1,424	7,597	15.8	0.12
Bophutswana	40,011	-	-	-	-	10.81	4,325	294	1,580	15.7	0.27
Ciskei	8,100	-	-	-	-	8.30	672	278	512	35.2	0.13
Transkei	43,654	-	-	-	-	4.67	2,039	168	2,877	5.5	0.07
Venda	6,807	0.62	42	10.35	2,873	10.97	747	18	490	3.5	0.15
Subtotal	98,572	-	-	-	-	7.90	7,783	758	5,459	12.2	0.14
Grand Total	1,220,088	-	-	-	-	12.64	154,170	17,774	18,400	49.1	0.84

Sources: a. DBSA, 1990, A Regional Profile of The Southern African Population, pp 25-68.

b. Data on total surface area and arable land are taken from DBSA, 1991, An Inter-Regional Profile, p. 34.

Agrarian Structure in the White Commercial Sector

2.12 Before describing the agrarian structure in the white commercial sector, an important caveat needs to be made. Reliable data on farm size exist only for 67,000 large-scale, predominantly white-owned farm units. Such units are situated outside municipal boundaries and may actually consist of more than one farm, e.g., two farms in the same district. In the following, most of the descriptions of the white commercial farm sector will focus on these farm units, since only limited information exists on the estimated 56,000 smallholdings within municipal boundaries. These holdings comprise a total area of 800,000 hectares with an average holding size of 14 hectares.

2.13 In 1988, a total of 67,000 farmers in the white commercial sector controlled 85.8 million hectares of land and employed 1,144,700 casual and permanent workers. These farms, along with rural businesses, supported a total rural population of 5.3 million people.

2.14 Within the white commercial sector, a considerable concentration of landholdings exists, which has been increasing over time. In 1988, a total of 22,190 owners with holdings exceeding 1,000 hectares and representing 33% of the commercial farming population held 84% of the land area in the commercial sector, earned 50% of the gross income and 64% of the farm profit, made 44% of the capital expenditures, and owed 46% of the total debt. Such concentration is partly due to the Sub-division of Agricultural Land Act of 1970¹⁸ and the Agricultural Credit Act of 1966, which have provisions for the consolidation of what are defined as non-viable small farming units into viable units. The definition of a viable unit is a farm size that would permit the owner to obtain a full-time, farm income level that is comparable to income levels in the urban sectors. While such legislation has built a floor under farm sizes and has been supported by state programs to consolidate land into such viable holdings, little has been done to reduce the possession of the largest operators. Notably, there is an absence of any form of rural land taxation in all but one province.

2.15 Number of farms. The number of farms in the mainly white commercial sector increased from 81,432 in 1921 to 119,556 in 1952, before declining to 59,960 by 1983. From 1983 to 1988, the total number of farms increased slightly to 67,010. According to Hattingh (1986, translation by Viljoen), the shrinkage in number of farming units accelerated between 1950 and the early 1980s; beginning in 1950 when the number of farming units declined at an average annual rate of 0.9%. The rate was 1.4% in the 1960s, 2.4% in the 1970s, and 2.9% in the first half of the 1980s. All provinces experienced substantial consolidation of farmland into fewer and fewer farming units: between 1955 and 1988, the number of farming units in the Orange Free State fell by 53%, in the Cape province by 41%, in Natal by 41%, and in Transvaal by 39%.

2.16 Total farm area. The amount of land held (owned or leased) by the commercial sector has risen and fallen in line with the trend in the number of farming units, but at a more moderate rate—from 82.8 million hectares in 1930 to 91.4 million hectares in 1964, gradually declining thereafter to 85.8 million hectares by 1988 (Annex 2, Table 2.1). The increase from 1930 to 1950 is attributed to the opening of

¹⁸ Sub-division of a holding is only permitted with ministerial approval.

"new, unoccupied" agricultural lands for farming purposes through State resettlement programs (Joubert and Groenewald, 1974). Causes for the contraction of the sector since the 1960s are less clear, although contributing factors include Trust land acquisitions, State acquisition for parks and reserves, and losses to industry, public works, and urban expansion.

2.17 **Farm size.** As the reduction in the numbers of farming units outpaced the decline in the size of the commercial sector, the size of farming units has tended to increase over the past 30 years. Nationwide, farm sizes increased from 738 hectares/farm in 1953 to 1,280 hectares/farm in 1988 (Annex 2, Table 2.1). Over the same period, farm sizes increased from 1,284 to 2,194 hectares/farm in Cape province, 471 to 998 hectares/farm in the Orange Free State, 403 to 629 hectares/farm in Transvaal, and 390 to 609 hectares/farm in Natal.

2.18 With consolidation has come a greater concentration of land and wealth in the hands of fewer people. The data in Annex 2, Tables 2.2 and 2.3, showing the number and area distribution of farms, are not directly comparable between periods prior to 1962 and after 1978, since the former farm-size classes were originally in morgen and the latter are in hectares. In 1950, farms greater than 2,000 morgen (1713 hectares) represented 9.7% of the total number, and accounted for 55.8% of the total land area. By 1988, farms greater than 2,000 hectares in size (18.8%) held 69.2% of the total land area in the commercial sector. At the opposite end of the spectrum, farms of less than 100 morgen (86 hectares) in 1950 represented 29.7% of the farms but occupied 0.9% of total land area, while in 1988, farms of less than 100 hectares represented 22.0% of the total number and only 0.8% of the land area. The middle 60.6% of farms (100 to 2000 morgen, i.e., 86 to 1713 hectares, which constitute the middle farming class) held 43.3% of the land in 1950. By 1988, this middle group (100 to 2000 hectares) held about the same share of the total number of farms (59.2%) but held less of the total land area (30.1%).

Agrarian Structure in the Homelands

2.19 The homelands today are over-crowded, poverty-stricken and lack infrastructure comparable to the white farming sector, despite some attempts at development. Their economic significance as a labor reservoir and dumping ground for surplus labor has intensified over time. In 1951 less than 5 million people (30%) of South African blacks lived in the homelands; this number peaked at 14 million in 1985 (almost 57%—Halbach 1988) and levelled off at 13.1 million in 1988. These changes resulted from the resettlement policies pursued by the government, in particular between 1960 and 1983, when millions of blacks were relocated to the homelands (Marcus, 1989). Some analysts argue that the effect has been functional urbanization (Corbett, 1987), i.e., households dependent on migrant earnings living in dormitory settlements or border towns. Well over half of household income in the homelands is today derived from repatriated migrant earnings and pensions. Agricultural production is estimated to meet only 16% of the population's food requirements (Huntley *et al.*, 1989:54) and constitutes on average less than 20% of household income, and at best 40 % (Bembridge, 1986a:78; Cobbett, 1987; Bekker, Cross and Bromberger, 1992).

2.20 Only a minority of households produce for commercial purposes. Most depend on non-farm incomes for their livelihoods. Coetzee (1988) found that nearly 69% of farmers in KaNgwane were net buyers of maize. Over 95% of the farmers in the Gcumusa ward of KwaZulu were net maize buyers (in Vink and Kassier 1990). In KaNgwane, 20% of the farmers produced nearly 89% of the maize crop.

In Gcumisa ward of KwaZulu, 20% of the farms produced nearly 98% of maize.

2.21 In 1985, 8.4 million blacks in the homelands or around 60% of all blacks in the homelands lived below the poverty line, as defined by the Minimum Living Level of the Bureau of Market Research of the University of South Africa (Bekker, Cross and Bromberger, 1993). Slightly higher incidences of black rural poverty—in the homelands, but also in the rural areas of the Republic of South Africa—are reported by the (unpublished) Family Surveys of the Central Statistical Service. Simkins (1991) puts this proportion even higher—at 84%.

2.22 The agrarian structure of the homelands seems to be highly inegalitarian and inflexible,¹⁹ although no reliable figures exist. A substantial proportion of households are landless, and cattle ownership seems to be very unequally distributed; but only case study material is available on resource distribution in the homelands. For example, Stewart and Lyne (1988) provide information on the distribution of land holdings for two sites in Gcumisa Ward of KwaZulu; for 132 farmers within the Natal Mistbelt, which is well suited to agricultural production; and for a strata of 61 farmers in the hot, dry bushveld where expected crop yields are low. In both areas more than 80% of the households in their survey had arable land allocations of less than 1.5 arable hectares, and less than 20% of the households had more than 1.5 hectares. Unfortunately, no data are presented on the amount of land area in the > 1.5 hectares category as a percentage of the total land area, to permit an assessment of the extent of land concentration. In Cobbett's sample of KwaZulu farms, around 90% of the farms had 5 hectares or less of cultivated land in two sites near white farming areas, although again it is difficult to say what proportion of total area was represented by farms in excess of 8 hectares (Annex 2, Table 2.4).

2.23 Rural households in the homelands fall into four basic categories in terms of resource access and commercial orientation (Nicholson and Bembridge, 1991). These are:

- a. Resource-poor households, comprising about 562,000 families (31%) who have no arable land or grazing rights;
- b. Smallholders, comprising about 1.03 million households (56%), who operate at and below subsistence levels, and who usually do not sell produce;
- c. Progressive small-scale farmers, comprising about 238,100 (13%) households, who adopt some technology and who sell produce and/or livestock some of the time; and
- d. Market oriented commercial farmers, comprising about 3,100 households (0.2%), who make a living from farming.

¹⁹ The so-called communal tenure, which, in the homelands of South Africa, is in reality a state-designed system which has lost the flexibility of truly communal systems found throughout most of sub-Saharan Africa. In the homelands, individual residential and arable areas are allocated by tribal, i.e., government officials, while intra-communal exchange of plots is severely constrained. In some areas, however, some form of traditional tenure persists; and individual holdings are passed down through male inheritance, but pasturage is communal.

Resource Endowment

2.24 Currently, forests, national parks and reserves sometimes occupy arable land of the highest potential. In the Eastern Transvaal, for example, forests occupy about 20% of high-potential arable land. Moreover, in several regions, cultivation could be significantly expanded on currently unused arable land or arable land that is used for grazing (e.g., in Natal and the Eastern Transvaal). At the same time, however, in other regions price supports and subsidies have expanded environmentally and economically unsustainable production patterns onto lands more suitable for a mixed crop-livestock farming system.

Topography, Rainfall, and Climate

2.25 South Africa lies within the southern temperate zone between 22° and 35°S and enjoys a wide variety of agro-climates, potentially enabling it to grow a wide range of crops. Although local exposure to the variability of rainfall is high, the variety of agro-climates and the extent to which correlation between agro-climates is also variable insures the country as a whole rather well against major national crop failures caused by droughts or floods. To be sure, even South Africa's relatively wide variety of agro-climates cannot insure against severe regional droughts--such as the one that affected the entire Southern Africa region in 1992.

2.26 About 31% of South Africa's surface area is level to gently undulating, while 19% is steep, rocky, and mountainous. The high Drakensberg escarpment rises steeply from the east and south-east, slopes gradually to the west coast, and encircles a vast interior plateau. Except for a narrow coastal belt at a mean altitude of less than 300 m, a narrow table land in the south at an elevation of some 450 m, and the interior of the Cape province ("Great Karoo") with an altitude of 600 to 900 m, the major part of the country has an elevation ranging from 1,200 to 1,800 m.

2.27 Three important rainfall areas influence cropping patterns in South Africa:

- a. a summer (November to February) rainfall area which covers the interior (86% of the country);
- b. a winter rainfall area with a mediterranean climate in the south-western part of the country (11% of the country); and
- c. an all-year-round rainfall area along the south coast (3% of the country).

2.28 Rainfall decreases from east to west, from about 1,000 mm east of the Drakensberg escarpment to less than 100 mm on the arid west coast. Average mean rainfall is 511 mm per annum. Over 61% of the area receives less than this mean, and 21% receives less than 200 mm--the lower limit for rainfed crop cultivation. Only 10% of the area receives in excess of 750 mm. Precipitation varies widely from year to year. Droughts are experienced regularly, and floods are not uncommon. Poor distribution of rainfall among years and regions makes crop production risky in the less-humid regions.

Nature Conservation

2.29 Nature conservation areas, both public and private, roughly equal the area of the homelands. Total area under conservation is estimated at around 16 million hectares, or 13% of the total land area of South Africa. About 11 million hectares of these areas are privately owned and used for ecotourism and game farming. South Africa's 229 nationally protected areas (state forests, parks, and reserves) occupied around 5 million hectares or 4% of the total land area in 1991. The relative size of the nature conservation area under public ownership is not uncommon when compared to other countries in the world. However, in terms of the absolute number of protected areas, South Africa's number is much higher than for other middle income economies. Of all the low-income countries, only China and India—with a considerable larger landmass—have a higher absolute number (World Bank, World Development Report, 1992, Table 33:282-83).

2.30 South Africa is well-known internationally for its high levels of biodiversity and the high quality of the management of the numerous and large conservation areas that currently exist. However, these natural resources are managed for the benefit of the white minority, with local black communities largely excluded from either management or use. Of even greater concern is the emerging tendency to incorporate high-potential farm land into nature conservation areas (public and private), possibly in order to "protect" them from any future land reform programs.

Arable Land in the White Commercial Sector

2.31 Lack of complete and reliable data on land use make it difficult to assess the availability of idle land. However, the conventional wisdom is that arable land is to varying degrees generally fully utilized, albeit with varying degrees of efficiency. Nonetheless, there is considerable scope exists for horizontal expansion of agriculture on high-quality arable land. Schoeman and Scotney (1987) assess the agricultural potential²⁰ of the white areas and compare 1986 cropping areas with the surface computed for potentially suitable lands. They estimated that the land suitable for crop production (in the predominantly white areas) represents only 13.5% of the surface area of South Africa. While 14.3 million hectares of land are theoretically suitable for crop production, only 12.9 million were cultivated in 1986. There also appears to be ample room for such expansion in the Transvaal (3.1 million hectares available versus 2.2 million cultivated). Such uncultivated arable land, of course, is often either under forest or pasture; and expansion would necessarily entail substitution of crop cultivation for these old uses.

2.32 At the same time, however, there is a pressing need to reduce cultivation in other regions of the country, viz. the Winter Rainfall region (1.8 million hectares cultivated versus 1.5 million hectares available) and the Orange Free State (1.7 million cultivated versus 1.0 million hectares available). As

²⁰ Agricultural potential is a difficult concept to measure because of wide differences in views over what is sustainable in the long-term, and of what constitutes efficient resource management. The work of Schoeman and Scotney (1987) represents one of the first attempts to measure agricultural potential for the white areas of the RSA by integrating climate, soils and topography (slope) factors. Using data on crop performance, soils and rainfall, they qualitatively construct a map (1:2.5 million scale) of the RSA, delimiting four domains of agricultural potential: high, medium, low, and unsuitable. High-potential land is regarded as all areas with favorable climate, soils and terrain, where actual or potential performance of crops ranks high compared with crop performance nationwide. Lands were considered unsuitable for dryland production if limitations were perceived in one or more of the factors. The results of their study are summarized in Table 2.2.

a result of past incentive structures, the use of marginal land for crop production is widespread. This is the case of the expansion of monocropped, mechanized maize and wheat cultivation in the Western Transvaal and the Orange Free State.

2.33 The suitability of land for dryland crop cultivation is highest in the Highveld (51.3%) and Natal (35.1%), and lowest in the Orange Free State (5.0%) and the Karoo (0.1%). Of the total land area estimated to have some potential for cultivation (14,268,700 hectares), 21.9% is of high potential, 49.1% is of medium potential, and 29.0% is of low potential. Of the total surface area in the white sector (105,373,400 hectares), high quality land represents only 3.0%, and medium quality land 6.6%. Most of the high-potential land is situated in the Eastern Transvaal and Natal, and medium-potential land in the Highveld. Two-thirds of the low potential arable land is in the Northern Cape, Orange Free State, and West Transvaal. The Transvaal and the Orange Free State contain the highest fraction of arable land in the white areas (23.5% and 29.6% respectively). Only 5.6% of land is considered arable in Cape Province. Comparable figures for the homelands were not computed by Schoeman and Scotney.

Table 2.2: Crop Production Potential and Present Cultivation of White-Owned Farmland
('000 hectares)

	Total Area	High	Medium	Low	Land with Crop Potential	1986 Cropping Patterns
Transvaal	15,249.0	1,198.6	890.0	1,042.8	3,131.4	2,202.0
Natal	5,832.1	1,539.4	440.0	70.0	2,049.4	933.5
Highveld	11,585.9	190.0	4,440.5	1,316.4	5,946.9	5,678.2
Free State	20,482.3		68.0	946.0	1,014.0	1,683.6
Winter Rainfall	13,800.0		912.0	582.8	1,494.8	1,800.0
Eastern Cape	5,400.0	194.4	241.2	176.6	612.2	426.3
Karoo	29,060.0		10.0	10.0	20.0	192.0
Other land	3,964.1					
Total	101,409.3	3,122.4	7,001.7	4,144.6	14,268.7	12,915.6

Notes: Planted pastures are excluded from the definition of cropped land.
Other land is mainly constituted by National Parks.

Source: Schoeman and Scotney, 1987.

2.34 Similar conclusions are arrived at by other studies (McKenzie, Weiner and Vink, 1989). Using the development regions classification as proposed by the Development Bank of Southern Africa, Regions E (Natal, KwaZulu, and Northern Transkei) and F (Eastern Transvaal, KaNgwane and part of Simdlangentsha district of KwaZulu) account for 90% of all high potential and 22% of all medium potential land, while only 2% of all crop land is of low potential. Cropping intensities are, however, only 62 and 55% in Regions E and F respectively. Substantial lateral cropping expansion could take place on high and medium potential land.

2.35 There also seems to be ample scope for substituting more extensive for more intensive land use. The size of a possible lateral expansion in high potential land--theoretically about 2.5 million hectares--is

reported to be limited, however, because large areas of high-potential land fall within nature reserves which make up some 24% (Region E) and 31% (region F) of the total area.

2.36 Moreover, Schoeman and Scotney (1987) report findings of a study conducted by the Department of Agriculture and Water Supply for Region F (1985) which indicate that 20% of high-potential land is presently under forests. Priority areas designated for future afforestation in the districts of Ermelo, Piet Retief, and Wakkerstroom also largely consist of high-potential agricultural land.

Arable Land Use in the Homelands

2.37 Given the legacy of past racially-based policies, the resource endowment of the homelands is recognized to be poor by design. Reliable arable land use data for the homelands are scarce and often contradictory. The total arable land available in the homelands per capita is estimated to vary from 0.08 hectares in Qwaqwa to 0.27 in Bophuthatswana (Table 2.3). Nonetheless, it is sometimes argued that a large proportion of arable land in the homelands is currently underutilized. An estimated 20 to 30% of the area allocated as arable land is left uncultivated every year. Van Rooyen and van Zyl (1990) note, however, that very little arable land is unutilized in the subsistence farming areas. Whatever arable land in the subsistence areas is not being utilized for cropping purposes, they claim, is heavily stocked with cattle—at rates between 20 to 55% higher than in commercial areas.

2.38 Moreover, although these areas generally receive abundant rainfall, steep terrain reduces the amount of arable land contained within them. In some cases land allocated for cropping purposes in subsistence areas is in fact not arable, or is of low quality. Bophuthatswana, Lebowa, KwaZulu, and Transkei appear to occupy most of the presumably arable land, but most of what is in the first two is of low production potential. It was previously thought that Transkei contained a significant share of arable land; but recent research indicates that only 50% of the arable land is of moderate to high potential, the balance being very marginal with a high erosion propensity under crops (van Rooyen and van Zyl, 1990).

2.39 Land degradation, especially on non-arable areas under crops, has also reduced the quantity and quality of land over large areas. A study of the agricultural potential of Ciskei concluded that cultivated areas had been demarcated or retained in regions that were unsuited for crop production because of inadequate rainfall, inferior soils, or excessive slopes. An assessment of actual land allocation patterns suggests that only KaNgwane and Bophuthatswana still have arable land available for cost-effective crop production (van Rooyen and van Zyl, 1990).

2.40 The combined effect of extreme land pressure and restrictions on rental and sale under the traditional tenure arrangements have caused the renting out of land to others to be a risky proposition. At the same time, the homelands constituted until recently the only places where Africans could legally own rural real estate.

2.41 Finally, the underutilization of some homeland agricultural land merely suggests that the profitability of agriculture in the homelands is relatively low and the opportunity cost of household labor high. It can be argued that this is exactly what the policy-induced incentive structure was supposed to bring about and that it has made the homelands exactly what they were meant to be—cheap labor pools for other sectors of the South African economy.

Table 2.3: Arable Land and Population Density by Region

Per Resident (ha/res)	1988 Total Surface Area (km ²)	Rainfed Arable Land (percent)	Irrigated Arable Land ^a (percent)	Total Arable Land (percent)	1988 Urban Population (000) (per)	1988 Rural Population (000) (per)	Rural Arable Land (per capita)
	A	B	C	D	E	F	A*D/F
Cape	642,467	4.52	1.10	5.62	4,815	1,256	2.87
Natal	55,407	15.85	3.59	19.44	1,771	785	1.37
Transvaal	223,490	20.35	3.14	23.49	7,757	2,210	0.54
O.F.S.	127,292	28.80	0.79	29.59	1,249	1,093	2.38
Kwazulu	36,074	--	--	10.00	1,104	3,630	.10
Gazankulu	7,484	1.70	6.40	8.10	29	640	.09
Kwandebele	2,208	--	--	15.41	36	327	.10
KaNgwane	3,917	17.10	12.30	29.40	67	462	.25
Lebowa	22,137	15.10	0.60	15.60	154	2,310	.15
Qwaqwa	1,040	--	--	18.00	34	228	.08
Bophutswana	40,011	--	--	10.81	294	1,580	.27
Ciskei	8,100	--	--	8.30	278	512	.13
Transkei	43,654	--	--	4.67	168	2,877	.07
Venda	6,807	10.35	0.62	10.97	18	490	.15
Total	1,220,088	--	--	12.64	17,774	18,400	.43

a. DBSA, 1990, *A Regional Profile of The Southern African Population*, pp 25-68.

b. Data on total surface area and arable land is taken from DBSA, 1991, *An Inter-Regional Profile*, p. 34.

Grazing Land

2.42 Livestock production systems in the commercial areas are based on large-scale, extensive ranching models. Consequently, livestock production takes place on specialized ranches, where cattle is grazed on fenced-in areas. Such rangeland production makes up 81% and 87% of the farm land in the commercial areas and the homelands respectively. "Carrying capacity" in this model depends to a large extent on local rainfall and varies from 2 to 5 hectares per Livestock Unit (LSU) in the high rainfall areas to more than 30 hectares per LSU in the dry areas of the Cape province.

2.43 The concepts of carrying capacity and overstocking, however, imply a degree of accuracy and objectivity that has not always been matched by empirical evidence. Consequently, such concepts have come under critical scrutiny in recent years. In South Africa, some estimates of carrying capacity point to overstocking in certain regions, e.g., in the Karoo, under the current systems. The total area covered by natural "veld" (grasslands) amounts to about 81 million hectares (including all parks and conservation areas). Of this area, 0.3% is in very good condition, 13.2% in good condition, 76.3% in fair condition, 10% in poor condition and 0.2% in a very poor condition. Currently the natural veld in South Africa can

"carry" about 8.1 million LSU. If veld conditions were to be improved through better veld management, approximately 8.8 million LSU could be carried in South Africa. However, about 13.3 million LSU are now kept in South Africa—one third of them in the overcrowded homelands. According to these estimates, South Africa's grazing resources are therefore over-utilized by about 55%.

2.44 Stocking rates in the developing areas often exceed current definitions of carrying capacity by more than 100%, leading to productivity losses and environmental damage. Although stocking rates in the homeland are high, they have been relatively stable over long periods of time; it has therefore been suggested that some sort of equilibrium seems to have been established.

Water Resources

2.45 Annually renewable water resources for South Africa are not high. Over the period 1970-87 they amounted to 51 km³, or 2244 m³ per capita per year. Table 2.4, however, lists several countries which are in a similar range of average per capita water availability, but are generally not regarded as poor agricultural performers. However, such comparisons should be interpreted with care, since they do not take rainfall variability into account.

Table 2.4: Water Resources

	Annual Withdrawal of Internal Renewable Water Resources (1970-87) (km ³)	As a Percentage of Total Water Resources (percent)	Total Annual Water Resources (1970-87) (km ³)	Population 1970-87 Average (millions)	Per capita total annual water resources (1970-87) (m ³)
South Africa	9.2	18	51.11	22.77	2244
Denmark	1.4	11	12.73	5.054	2518
France	40.0	22	181.82	54.95	3309
Germany	41.2	26	158.46	61.68	2569
Poland	16.8	30	56.00	35.59	1573
Spain	45.3	41	110.49	38.59	2863
China	460.0	16	2875.00	995.67	2888
India	380.0	18	2111.11	620.92	3400
Korea	10.7	17	62.94	35.91	1753
Peru	6.1	15	40.67	20.74	1960

Source: World Bank. World Development Report 1992. Table 33, page 282-283.

2.46 Surface runoff constitutes 85% of the total supply of water, and 15% comes from underground supplies. It is estimated that about 60% of available water can be economically exploited at the present

time. However, actual withdrawal of internal, renewable water resources²¹ over the period 1970-87 was 9.2 km³ per year, or only 18% of the total of 51 km³. Total per capita use was 404 m³ of which 339 m³ was for industrial and agricultural use, and 65 m³ for domestic purposes (World Bank, World Development Report 1992, Table 33, p.283). While the above figures refer to national averages, they do not reflect the very high variability in regional distribution of water resources. For example, Natal occupies less than 7% of South Africa's surface area, but has 40% of its available water.

2.47 Agriculture is the largest user of water, consuming as much as 50% of total demand. In 1981--the latest year for which data were available at the district level--824,000 hectares were irrigated, or 5.9% of the 14.3 million hectares with crop potential²². In 1988, 230,000 irrigated hectares were in government water schemes, 300,000 hectares were controlled by irrigation boards, and 70,000 hectares were in the homelands. According to the Department of Agriculture, the total area under irrigation in South Africa today is 1.2 million ha.

2.48 In the past, commercial farmers have benefitted from substantial amounts of public assistance with respect to investments in water control. Moreover, property rights to water have exactly mirrored land distribution, creating serious negative externalities and inequalities between agriculture and other water uses (e.g. drinking water for local communities). Current water use patterns, such as the irrigation of pasture land, reflect the low user cost of water to commercial farmers. Since irrigation infrastructure, even in the homelands, is typically designed for large-scale users, important efficiency-gains may be realized by adapting existing infrastructure for smaller-scale use.

2.49 Past investments in irrigation infrastructure represent an important asset for the future, provided the allocation of water is made more equitable and efficient through the redefinition of public and private property rights to water and the movement towards a water pricing system that reflects the scarcity value of water in its various uses (e.g., as drinking water) to all users (e.g., poor consumers in both urban and rural areas).

Financial Resources

2.50 White farmers have access to finance capital through a variety of institutions--the most important of which are the Land and Agricultural Bank, the agricultural cooperatives (which fulfil an agency role for the Land and Agricultural Bank), and the commercial banks. Total farm debt of white farmers amounted to 13.6 billion Rand in 1988, up from 1.4 billion Rand in 1970 (Christodoulou and Vink, 1990, Table 1, p.3). The Land and Agricultural Bank and the agricultural cooperatives together hold nearly half of this debt. White farmers have been able to borrow at subsidized interest rates from these institutions, and their interest rates have been negative in real terms for virtually the entire 1970-1990 period (see Chapter 1). Until recently, black farmers in the homelands did not have access to these financial services. Substantial amounts of public finance is regularly used to recapitalize financially-stressed farmers. For instance, in the 1992 budget R2.4 billion was allocated for loan-write offs on guaranteed loans. Another

²¹ Annual withdrawal refers to the average annual flows of rivers and underground waters that are derived from precipitation falling within the country.

²² This compares to 33% in Asia.

R1 billion was set aside for drought-relief, which included some debt-relief.

2.51 White farmers also receive a wide range of subsidies. For example, in 1988/89, 4,124 subsidy applications from white farmers were successful in securing a total of 682 million Rand, including R121 million for input purchases, R104 million for drought relief, R88 million for flood disaster subsidies, R75 million for stockfeed purchases and incentives, and R52 million on debt consolidation (Vink and Kassier, 1990, Table 3). Farmers in the homelands, equally affected by floods and droughts, get little such assistance. Subsidies used in the administered pricing schemes for agricultural commodities constitute transfers to both producers and consumers, but it is difficult to determine the producer share in these subsidies. In 1988 a total of R583 million was spent to subsidize a variety of agricultural outputs and inputs (Abstract of Agricultural Statistics, 1993). By 1992, however, this total had declined to R165 million.

Performance

2.52 Agriculture occupies an important position in the South African economy in its own right and as a supplier of inputs to the agro-processing sector. But its share of GDP has declined from around 20% in the 1920s to 4.7% in 1991 (Table 1.3); and its growth in the past 40 years has been uneven, averaging 2.5% in real terms since 1950, with rapid growth in the 1970s bracketed by slower growth in the 1960s and 1980s (Table 2.5).

Table 2.5: Real Growth in Agriculture - 1950 to 1990

Period	Average Annual Growth Rate
1950 - 1960	3.1%
1960 - 1970	1.6%
1970 - 1980	5.8%
1980 - 1990	1.4%

Source: Derived from National Accounts

International Trade

2.53 Christodoulou and Vink (1990) report the following self-sufficiency indices for the various commodity groups for the period 1980-89 in South Africa:

Field Crops:	134
Horticultural Crops:	152
Animal Products:	97
Total:	130

2.54 Some 25% of the total production of field crops during the period 1980-89 was available for export—roughly 30% of the total value of field crop production; and, as noted above, more than one-third

of the annual horticultural production is also available for export.

2.55 South Africa has participated significantly in international trade in agricultural commodities in recent decades (Annex 2, Tables 2.5 and 2.6). There is no clear trend in import volume, but they are rather limited in both volume and value, reflecting the high degree of self-sufficiency attained in most major food commodities; and annual totals are much affected by the cereals balance. Intermittent importation of cereals is required during periods of drought, and wheat is often needed to supplement domestic production. Coffee and tea are imported to supplement domestic production, and in most years the country imports red meat. Exports grew in volume during the 1970s but declined during the 1980s, largely reflecting reduced availability of exportable cereal surpluses, mostly due to the drought.

2.56 In the international fruit market South Africa, as a southern hemisphere producer, is well situated to meet the winter season demand in Europe. The major areas of export growth have been deciduous fruits, citrus, and sub-tropical fruits; these continued to grow during the 1980s, in spite of sanctions. Exports are growing rapidly in the 1990s. With a continuing favorable exchange rate and removal of economic sanctions on South Africa, rapid growth of fruit exports is anticipated and orchards expansion has been proceeding for several years. However, substantial concentration in fruit marketing could stifle future growth of the sector.

2.57 Grain exports, however, are likely to be substantially reduced compared to the past two decades, as the area allocated to cereals is reduced to reflect declining profitability and pricing policy reforms.

Agricultural Production in the White, Commercial Sector²³

2.58 Some 95% of the gross value of agricultural production in South Africa, as reported in official statistics, originates in the predominantly white commercial subsector. Over the past 30 years the composition of agriculture by gross value has moved in favor of horticultural products and, to a lesser extent, livestock. Using the threefold classification of field crops, horticulture, and livestock, the broad shifts are illustrated in Table 2.6 below. Horticultural commodities have generally been more buoyant than the field crops, with a rise in the total contribution to sectoral value of production from 14.4% in 1980/81 to 20.9% in 1990/91. Strong growth in the horticultural sector has been shown in particular by commodities destined for export, notably fruits, but wine and vegetables have all risen sharply. The share of field crops peaked at 48.5% in 1980/81, but fell to 34.2% in the following decade.

²³ Although the quality of agricultural statistics in South Africa compares favorably to many other countries in the world, a number of deficiencies remain. First, information on area cultivated in the commercial sector under-reports total area cultivated, as official area data are unavailable for certain crops and land uses (such as horticulture, vegetables, forages, and fallow). Second, areas cultivated for key growth sectors—horticultural crops and vegetables—are not reported in official statistics. Third, data on agricultural activities in municipal areas on smallholdings are not reported in annual statistics of the Department of Agriculture, but do figure in census reports by the Central Statistical Service. These shortcomings should be kept in mind throughout the report.

Table 2.6: Composition of Agricultural Gross Value

	1960/61	Share (%)	1970/71	Share (%)	1980/81	Share (%)	1990/91	Share (%)
Field Crops	365	42.6	700	46.7	3402	48.5	7422	34.2
Horticulture	126	14.7	259	17.3	1010	14.4	4529	20.9
Animal Products	365	42.6	541	36.1	2599	37.1	9767	45.0
Total	856	100.0	1500	100.0	7011	100.0	21718	100.0

Source: Abstract of Agricultural Statistics (1992)

2.59 Since 1965 total cultivated area (based only on principal field crops) has fluctuated between 8.5% and 9.7% of the total land area comprising the commercial sector (Annex 2, Table 2.7)—short of the 12.64% of agricultural land considered arable. The difference can be attributed to non-field crops (e.g., fruit trees, vines, vegetables, planted pasture, forests, and forages)²⁴, land set aside for fallow rotations and conservation, and idle land. Over the past 10 years, there has been a marked decline in the area devoted to maize (Annex 2, Table 2.7). Conversely, there has been a marked increase in the area devoted to oats and sunflowers.

2.60 Field Crops. Of the field crops, only wheat had growth in yields that approximated the 1970 to 1989 population growth rate (2.9%); maize yields grew at an average annual rate of only 0.7%, reflecting slow technical change. The strongest long-term annual yield growth has taken place in the production of barley (8.3%), soya beans (6.6%), cowpeas (3.7%), wheat (2.9%), tobacco (2.6%), and dry beans (2.3%). Annex 2, Table 2.8 shows the trends in growth rates for the period 1970-1989.

2.61 Maize. The technical efficiency of maize production—in terms of higher and more stable physical yields—seems not to have improved; and the area under maize declined as a result of policy measures which have decreased the profitability of maize production and stimulated a movement away from crop production in marginal areas. The economic costs of failing to improve the technical efficiency of maize production are considerable. Maize occupies more land than any other crop in South Africa, representing 44% of the area of principal field crops. Moreover, maize constituted some 75% of total grain production and 64% of the value of field crops; 56% of human grain consumption was of maize products, and maize was by far the most important animal feedstock (Groenewald, 1989).

2.62 Annex 2, Table 2.9 summarizes the area planted, production, and yield in white farming areas for the period 1981/82 to 1990/91. Both the area planted and the yield have declined over the past decade (by 2.7 and 1.6% per annum respectively) as a result of the declining profitability of maize production and because of drought, creating a decline in production of 4.3% per annum. The Land Conversion Scheme, which subsidized the conversion of marginal crop land to perennial pastures, considerably strengthened this trend.

²⁴ The Abstract of Agricultural Statistics provides area data on principle field crops, but not for fruit trees, vines, vegetables, planted pasture, forests and forages.

2.63 Given the instability of physical yields, export volumes have also been highly erratic (Annex 2, Table 2.10). Note, however, that given the high domestic protection and subsidies, exports of maize occur as a means of surplus removal and constituted financial losses to the industry.

2.64 Wheat. Wheat, on the other hand, is another fieldcrop that has shown improvement in technical efficiency. Wheat yields have increased at an average annual rate of 2.9% since 1970 and reached a peak of 1.8 tons/hectares in 1987/88. Yields in 1989/90 were 1.1 tons/hectares. In 1991/92, 2.2 million tons were produced on 1.4 million hectares, at an average yield of 1.6 tons/hectares. The area planted in wheat has remained steady in South Africa since the early 1970s, at about 2 million hectares, or 22% of the total area of principal field crops. Total production grew at an average annual rate of 2.6% during the 1970s and 1980s, reaching a peak of 3.5 million tons in 1988/89, mainly due to growth in yields. Much of these increases in yields/hectares may have been caused by the increased cultivation of wheat under irrigation.

2.65 Oats. Yields declined at an annual rate averaging 5.9% during the 1970s and 12.9% during the 1980s, from about 260 kg/ha in the early 1970s to 61 kg/ha by 1989/90. After remaining relatively stable at around 400,000 hectares throughout the 1970s, the area planted to oats rose at a rate of 5.5% per year during the 1980s, reaching 690,000 hectares in 1989/90 (about 10% of the total area devoted to principal field crops). Yields declined at a faster rate than the expansion of area, suggesting that oats are being targeted to marginal lands (relative to wheat or maize). Production fell at an annual rate of 5.9% over the period, from a high of 121,000 tons in 1970/71 to an average of about 50,000 tons per year in the late 1980s. Approximately 42,000 tons were produced in 1989/90. In 1991/92, 31,000 tons were produced on 811,000 hectares, an average yield of 38 kg/ha.

2.66 Sunflower. Yields have fluctuated from year to year around a constant trend level of about 0.9 tons/hectares, but no significant trend can be distinguished. The area planted to sunflower has grown significantly in recent years, to about 8% of the total area under principal field crops. It increased from 185,000 hectares in 1970/71 to 520,000 hectares in 1989/90, representing an average increase of 8.7% per year in the 1970s, slowing to 4.4% per year in the 1980s. Production of sunflower seeds increased from 138,000 tons in 1970/71 to 559,000 tons per year in 1989/90, an average of 11.3% per year. Most of this production increase came from area expansion. Yields in 1989/90 averaged 1.1 tons/hectare. In 1990/91, 587,000 tons were produced on 575,000 hectares, an average yield of 1 ton/hectare.

2.67 Sugarcane. Yields have remained relatively constant during the past two decades, averaging 48.6 tons/hectares over the period, and 49.5 tons/hectares in 1989/90. The area devoted to sugarcane increased by about 20% over the 1970s, reaching a level of 400,000 hectares by the early 1980s. About 375,000 hectares were planted to sugarcane in 1989/90, representing more than 5% of total field crop area. Total production grew from 15.2 million tons per year in the early 1970s to 18.2 million tons per year by the mid-1980s—a growth rate averaging 1.3% per year—mainly because of expanding the area. A total of 18.6 million tons were produced in 1989/90; and in 1991/92, 19.7 million tons were produced on 380,000 hectares, for an average yield of 51.8 tons/hectares.

2.68 Horticultural Products. The volume of horticultural production nearly doubled between 1970 and 1989, rising at an average rate of 2.8% per year. Moreover, there has been a major recovery of confidence in the industry since 1989, resulting from a combination of the lifting of sanctions and the

strengthening of export earnings with the depreciation of the currency. New plantings are now intensively under way, promising a major increase in production in the coming years. South Africa is Africa's dominant supplier of fresh and processed horticultural products to the European Community, accounting for over half of such exports from Africa to the EC.

2.69 The volume of output of all horticultural products increased by 25% between 1985 and 1991, in contrast to a widely fluctuating growth in field crop output and a 15% increase in livestock production. Citrus production contributed most to this horticultural increase, rising by 60%. Other increases were noted in deciduous fruits (12%), subtropical fruits (16%) and vegetables (30%). Over this same period horticultural products increased from 16.2% of the gross value of farm output to 20.9%, and field crops declined from 43.3% to 34.2%.

2.70 The three main categories of fruit (deciduous, citrus and subtropical) also experienced significant increases in export volumes over the past few years. After declining from 468,000 tons in 1978, the volume of citrus exports increased from 300,000 tons in 1985 to 372,000 tons in 1990. Deciduous fruit exports have increased from 256,000 tons in 1978 to 336,000 tons in 1990 (296,000 tons in 1985). The value of all fruit exports increased from R1 billion in 1986 to R1.6 billion in 1990, while fruit imports amounted to R83 million in 1990.

2.71 Animal Products. The total volume of output of animal products grew by more than 50% between 1970 and 1989, reflecting an average increase of 2.6% per year.

2.72 Cattle. Moderate increases in cattle production have been associated with low improvements in yield, given the relatively static herd, which has numbered between 7.0 million head and 8.8 million in South Africa, excluding the homelands, and between 10 and 12 million head in the whole country between 1960 and 1990.

2.73 Cattle numbers grew at an average annual rate of 1.9% during the 1970s, from 7.9 million in 1970/71 to 9.3 million in 1977/78, and have decreased moderately since then, to 8.8 million in 1991/92. The number of cattle slaughtered increased at an average rate of 3.6% per year during the 1970s, from 1.7 million in 1970/71 to 2.7 million in 1979/80. Roughly 2.3 million cattle were slaughtered in 1990/91. Total production of beef and veal rose from 449,000 tons in 1970/71 to 711,000 tons in 1979/80, representing an average annual increase of 4.3%. About 634,000 tons were produced in 1990/91.

2.74 Pigs. Pig production has shown similar mediocre gains, averaging 892,000 the 1970 and then increasing at 1.5% per year during the 1980s, to 1.2 million by 1989/90. The number of pigs slaughtered averaged 1.4 million per year between 1970/71 and 1979/80 and then grew at an annual rate of 1.7% over the 1980s. Some 2.2 million pigs were slaughtered in 1990/91. Pork production followed a similar pattern, averaging 89,000 tons per year during the 1970s and then growing at 2.0% per year during the 1980s. Approximately 134,000 tons were produced in 1990/91.

2.75 Sheep and Goats. Sheep and goat numbers have fallen slowly over the past two decades, from an average of 33.2 million animals during the 1970s to an average of 31.6 million animals in the following decade, representing a decline averaging 0.4% per year. Sheep and goats numbered 31.1 million (of which 28.6 million were sheep) in 1991/92. The number of sheep and goats slaughtered has

fluctuated around an average of 7.1 million animals per year, with 9.1 million animals slaughtered in 1990/91. Total production of mutton has averaged 179,000 tons since 1970/71, with 188,000 tons produced in 1990/91.

2.76 Poultry. A strong increase in technical efficiency has increased poultry production in South Africa rapidly over the past two decades. Some 558,000 tons of poultry were slaughtered in 1990/91, nearly five times as much as in 1970/71. Most of the increase came during the 1970s, when poultry slaughtered increased at an average rate of 11.5% per year.

2.77 The concurrent slow growth in the technical efficiency of cattle production has resulted in a decline in red meat consumption over the past 20 years in favor of more efficiently produced white meat (Annex 2, Table 2.11). Although the overall level of meat consumption has remained at about 40 kg/cap, this total conceals a fall in per capita red meat consumption from 40 kg to 25 kg, while consumption of white meat (poultry) has risen from under 2 kg to around 15 kg. As a result, the poultry industry has witnessed a 10-fold increase in the volume of production over the past three decades. These important shifts in consumption and production relate to:

- a. the reduction in relative real costs of white meat under intensive poultry production;
- b. the increase in the relative real price of red meat partly attributable to the monopolistic marketing structure which increased marketing margins;
- c. the increasing share of the population represented by the lower income (black) group; and
- d. the increase in parallel, and therefore unrecorded markets.

Agricultural Production in the Homelands

2.78 The analysis of land use in the homelands is hampered by data problems. Reliable and complete information on area and yield data for the homelands and so-called independent states are completely lacking, which precludes any real analysis of the effects of policy changes. Table 2.7 presents available production data for the homelands.

Table 2.7: Gross Value of Agricultural Production in the Homelands of South Africa

Area (1985/86 Data)	Field Crop Production (R'000)	Horticultural production (R'000)	Livestock Production (R'000)
Total South Africa	2,583,600	2,100,900	4,690,800
KwaZulu	147,620	49,442	65,955
Qwaqwa	464	479	5,288
Lebowa	27,714	1,230	18,706
Gazankulu	2,833	3,358	5,044
KaNgwane	11,636	740	715
KwaNdebele	5,824	1,004	2,125
Transkei	45,040	61,862	98,436
Bophuthatswana	37,555	1,231	20,575
Venda	4,070	13,776	9,301
Ciskei	1,622	10,416	50,808

Sources: Development Bank of Southern Africa, internal data and 1987; Republic of South Africa, 1991; and van Rooyen, Fenyes, and van Zyl, 1987.

2.79 Only a small proportion of agricultural production in the homelands reaches commercial markets (van Rooyen, Fenyes, and van Zyl, 1987). In the past, many of the marketing boards and other control bodies restricted access to markets through the use of quotas or permit systems. In recent years, however, such restrictions were progressively removed; and there is considerable evidence of substantial growth in informal markets. Commercial production in the homelands accounts for just over 3% of the total GDP of these areas, while non-market or subsistence production accounts for slightly more than 7%. During the period 1970 to 1985, there was a marked real increase (190%) in the value of commercial agricultural production, from R56.2 million to R163 million, which was attributable to investments undertaken by the various parastatal development corporations, as well as private sector investments (particularly in KwaZulu). The net value of all agricultural production was on average about R240 per household per year in 1985 (Christodoulou and Vink, 1990) (Table 2.8).

Table 2.8: Absolute Value of Commercial and Subsistence Agricultural Production in the Homelands and its Contribution as a Percentage of GDP, 1985

Territory	Commercial (R'000)	GDP (percent)	Subsistence (R'000)	GDP (percent)	Total GDP (R'000)	Agricultural Value Per Household 1/
Ciskei	2,964	0.7	16,600	3.9	424,174	157
Transkei	26,700	2.0	137,000	10.1	1,359,200	327
KwaZulu	75,000	7.1	133,000	12.5	1,061,768	285
Venda 2/	9,141	4.6	17,100	8.7	196,675	341
Lebowa	12,000	2.2	33,000	6.1	539,928	125
Gazankulu	3,540	1.5	20,310	8.8	229,350	231
Bophuthatswana	22,400	1.9	30,000	2.6	1,162,650	183
Kangwane	8,500	7.9	9,100	8.5	107,540	235
KwaNdebele	800	1.5	1,500	2.9	52,500	48
Qwaqwa	2,000	1.8	1,990	1.8	110,260	114
Total	163,045	3.1	399,600	7.6	5,244,045	240

Notes: 1/ Calculated by dividing total agricultural production by the number of households.

2/ 1984 figures.

Source: Cobbett 1987.

2.80 As of 1985, agriculture in the homelands employed roughly the same number of people as the commercial sector—i.e., 1.1 million (van Rooyen, Fenyés, and van Zyl, 1987). In the homelands, however, very few farmers can rely only on agriculture for a livelihood. Quality of life is to a large extent a function of access to off-farm sources of income. Non-agricultural earnings and, in particular, migrant earnings and remittances and pensions are a far more substantial source of income for households in the homelands than earnings from agriculture (Cobbett 1987; see Table 2.9). The statistics clearly indicate that with the exception of Transkei, Venda, and to a lesser extent Gazankulu, earnings from agriculture per household are marginal in these territories. Although the value of agricultural production is greatest in KwaZulu, the high total population hides its relative importance.

Table 2.9: Migrant and Commuter Earnings Compared with Agricultural Earnings, 1985

Territory	Total Migrant and Commuter Earnings (R'000)	Total Agricultural Earnings (R'000)	Aggregated Household Earnings (R'000)	Actual Household Earnings	Agricultural Earnings as percent of Household Earnings
Ciskei	449,625	19,564	294,464	2,356	6.6
Transkei	1,588,423	163,700	524,180	1,048	31.2
KwaZulu	3,028,582	208,000	2,384,339	3,266	8.7
Venda	205,790	26,241	114,833	1,491	22.8
Lebowa	1,121,126	45,000	617,783	1,716	7.3
Gazankulu	307,168	23,850	151,970	1,475	15.7
Bophuthatswana	1,671,247	52,400	962,227	3,353	5.4
Kangwane	382,180	17,600	253,825	3,384	6.9
KwaNdebele	361,651	2,300	174,952	3,645	1.3
QwaQwa	258,093	3,990	96,078	2,745	4.2
Total	9,373,886	562,645	5,574,651	2,381	10.1

Notes:

1/ These figures combine a monetary value for subsistence production with the value of commercial production.

2/ Calculated by adding one third of migrant earnings (assumed to be remitted in cash and in kind) plus all the commuter earnings plus the value of total agricultural earnings to give an aggregated household earning.

3/ Calculated by dividing the total number of households by the aggregated household earnings.

4/ Calculated by dividing total agricultural earnings by aggregated household earnings.

Source: Cobbett 1987

2.81 Beyond the problems related to insecure and fragmented land rights, non-viable and small farm units, overstocking and the deterioration of the land, smallholder farmers face lack of support infrastructure, water supplies, transportation networks, financial support, and extension and research services. Institutions presently providing farm credit are not always properly geared to providing credit to beginning farmers, smallholders and part-time farmers; and research to address problems of technology in South African agriculture has largely been geared to the needs of large-scale full-time owner-operators.

CHAPTER 3: EVOLUTION OF THE CONTEMPORARY AGRARIAN STRUCTURE

Introduction

3.1 The dual structure of agriculture in South Africa and the comparatively low productivity of small African farms described in the previous chapters is not the result of genuine economies of scale in the large farm sector, but of decades of government that was policy guided—in large measure—by the general political and economic philosophy of white domination known as apartheid. The results of these policies include distortions in land and labor markets, output and input markets, infrastructure, agricultural credit and services, and the creation of large-scale white farms. This outcome is not unique to South Africa, but is common to colonial and post-colonial societies in most of Africa and Latin America.

3.2 This chapter has two themes. The first is that African family farming was viable and successful in responding to the increased demand for agricultural products emanating from the mining centers in the latter half of the 19th century. During that period, African owner-operated or tenant farming proved to be as efficient as large-scale settler farming based on hired labor. African farmers adopted new agricultural technologies, entered new industries, and outcompeted large-scale settler farming in some of the emerging agricultural markets. Moreover, the ineffectiveness of colonial government to intervene in agricultural markets on behalf of settlers, combined with the reluctance of manorial estate²⁵ owners—who relied on African tenant farmers for the operation of their farms—to support anti-African agricultural policies, resulted in a situation in which African farmers were able to accumulate agricultural capital, wealth, and farming skills.

3.3 The second theme is that the formation of a stronger, richer and unified settler state in 1910—the Union of South Africa—ushered in a policy environment which suppressed and isolated African farmers from mainstream agriculture in order to facilitate their transformation into rural and urban laborers. The leverage of manorial estate owners—who previously frustrated farming policies aimed at constraining African tenancy—was greatly eroded by the mining industry and junker estate²⁶ farmers. The process by which the transformation of African farmers to laborers was effected involved the progressive closure of African access to most markets (land sale and rental, agricultural capital, inputs and outputs), the exception being a racially-segmented labor market. Currently, African agriculture is associated with the economy of the homelands, where it represents only a minor part of total income and in general fails to provide even the basic subsistence needs of the population.

²⁵ A manorial estate is an area of land allocated temporarily or as a permanent ownership land holding to a manorial lord who has the right to tribute, taxes, or rent in cash, kind or in corvée labor of the peasants residing on the estate. Manorial estates can be organized as haciendas or as landlord estates. A hacienda is a manorial estate in which part of the land is cultivated as the home farm of the owner and part as the family farms of serfs, usufructuary-right holders, or tenants in exchange of rent in kind, labor or cash. Landlord estates are cultivated entirely by tenants (Binswanger *et al.*, 1993:1). South Africa's manorial estates were associated with settler landlords and land companies.

²⁶ A junker estate is a large land holding which produces a diversified set of commodities operated under a single management with hired labor. Laborers receive a plot of land to use for a house and garden farming (Binswanger *et al.*, 1993:1).

Farming in 19th Century South Africa

3.4 The agrarian economy of South Africa in the mid-19th century consisted of large-scale white farms with hired labor, manorial settler estates with indigenous tenant farmers, and free indigenous farming on black-owned land. There were two main geographic subsectors: coastal and interior farming. Coastal farming—made up of all three types of farms—produced horticulture, livestock, and crops, and exported, wool, wine, and fruit to Europe. Interior farming, mainly by indigenous farmers, raised livestock and crops for home consumption and marketed the surplus. The land tenure arrangements of these farms varied from communal land ownership to private or state land ownership (both with numerous forms of tenancy, most often quitrent). Trade within and between the interior and coastal areas was dominated by livestock, hides, and ivory in exchange for guns, ammunition, textiles, and transport equipment.

3.5 The discovery of diamonds in the 1870s and gold in the 1880s in the interior changed interior farming system and the South African economy and state completely. Large and rapidly growing urban and industrial population centers sprung up around mining areas, creating substantial markets for agricultural products. The subsequent supply response from African farmers confirmed for South Africa what has been observed elsewhere in the world with respect to the viability and efficiency of family farming over large-scale farming based on hired labor at low levels of technology²⁷. Numerous studies²⁸ confirm the efficiency of African family farming during the 19th century in response to the growing demand for agricultural products from the mining areas.

3.6 With simple technology and plentiful land, labor was the most critical factor in the success of farming. However, the relative inefficiency of large settler farming implied low profitability, and the resulting difficulty of offering wages sufficient to attract indigenous labor away from their own farms. This led to labor shortages for the settler farmers in some regions of the country.

3.7 Between 1850 and 1870 African farmers supplied the major towns of the English colony of Natal with grain and exported the surplus to the Cape. In 1860, over 83% of the nearly half million hectares of white-owned land was farmed by African tenants. Their accumulation of capital and wealth caused the Native Affairs Commission (1852-3) to comment that Africans were becoming wealthy, independent, and difficult to govern.

3.8 Many settler farmers agreed with this view, because they were unable to compete with African farmers, who produced higher grain yields per hectare and cultivated more land than they did. The settlers argued that labor shortages kept them from competing effectively with the African farmers who had technology, equipment, farming skill, and little or no need to work on settler farms.

²⁷ Family farming is based on family labor and includes sharecropping, cash rent and labor tenant farming, and independent farming. Large farming, on the other hand, is based on externally acquired labor which includes slave, indentured, or wage labor.

²⁸ Bundy, 1979; Trapido, 1975; Morris, 1976; Keegan, 1986; Beinart, 1982; Wilson, 1971; Lacey, 1982. This section relies heavily on Bundy (1970).

3.9 African farming was widespread both within and outside of settler manorial estates in the Transvaal and the Orange Free State. In 1870 the Transvaal set aside 240,000 hectares of treaty areas plus an additional 496,000 hectares as African locations. However, the big landlords and land companies continued to enter into various tenancy arrangements with African farmers, and by the end of the century, half of the Africans lived on privately-owned settler lands despite a wide range of anti-squatter laws.

3.10 Short of labor, the large settler farmers persuaded the colonial government to intervene on their behalf by: (i) limiting African competition in the market place; and (ii) setting up native reserves of tiny pieces of land to create an artificial land shortage in order to force African farmers to seek work on manorial farms. To this end, various measures were used including livestock, hut, and poll taxes; road rents; location, vagrancy, and pass laws; and confinement to the reserves. These measures, while successful in constraining African owner-operated farming, did little to reduce competition among manorial estates for African tenant farmers. Obviously the estates offering African farmers better tenancy conditions received more tenants. In response to settlers' request to reduce such competition, the state then intervened in the land rental market and sought to reduce the number of rent-paying African tenant farmers on manorial estates.

3.11 When their problems seemed insoluble, some settler farmers in Queenstown (Cape Colony) proposed that African farming be abolished altogether. But a group of white merchants whose well-being depended on marketing African produce campaigned successfully to have this proposal rejected. They argued that settler communities elsewhere in the country which had adopted such measures ended up in a depressed economic condition, because Africans were better farmers than the white settlers and represented a substantial share of purchasing power in the local economy. They warned that the forcible removal of African farmers from the land and replacing them with a small number of settlers would result in economic disaster for business and the white urban community in general.

The Situation at the Turn of the Century for the African Farmer

3.12 After the discovery of diamonds and gold, British imperial interests, had compelling economic reasons to bring the Transvaal and the Orange Free State under control in a federation. The British attempts to take control of the Boer states ultimately resulted in the Boer War, beginning in 1899—a bitter and divisive conflict from which Britain emerged the victor in 1902.

3.13 During this period many Africans, especially in the Transvaal and the Orange Free State bought land as individuals and in groups as land syndicates. Missionaries were often used as "fronts," because buying land was difficult for Africans. Land buying was given a boost during the brief post-war period of British rule (1902-1910). Africans were allowed to convert their labor tenancies to sharecropping or fixed-rent (cash) tenancies, or to purchase land outright. No exact information is available regarding the amount of land bought during this period²⁹, but some settlers speculated that Africans would succeed in buying back all the land they had lost during the colonial wars (Plaatje, 1987). By 1904, of a total of 900,000 African households, 49% (438,000) lived on white manorial estates as tenants on haciendas,

²⁹ One estimate is that by 1900, around 250,000 acres had been bought by black farmers in the Transvaal alone.

where they received cultivation and grazing rights from the resident owner in exchange for their labor; or squatters on landlord estates, where they paid rent to the non-resident owner in cash or in shares of the crop. Twenty percent (180,000) leased state land, 14% (130,000) farmed their own private land, 11% (123,000) were on government locations, and only 6% (50,000) were hired laborers.

3.14 African farmers achieved their success not in an ideal competitive market or a supportive policy environment, but in a hostile society determined to undermine it. A series of levies and fees imposed on Africans between 1903 and 1905 forced them to pay higher income taxes than whites. Restrictive taxes and laws already passed in the 19th century were strengthened by the 1908 Natives Tax Act which imposed twice as much tax on sharecroppers and other fixed rent-paying squatters as on labor-tenants in an effort to reduce the attractiveness of the former types of tenancy which were more profitable to the black tenants than the labor-tenancy contracts. Measures to remove squatters by force were also undertaken in 1909 and 1910. Tenants were also increasingly forced to sell off or remove their allegedly excess cattle, i.e. all cattle other than the cattle that the tenants used to plow the fields. Measures were taken to restrict Africans from the profitable rural transportation sector.

3.15 The state, however, did more than hinder black farming; white farmers received substantial support from the government in the form of subsidies, grants, and other aid for fencing, dams, houses, veterinary and horticultural advice, subsidized rail rates, special credit facilities, and tax relief during the period 1890-1908. In 1908, the Transvaal Director of Agriculture declared that during the past twenty years more money had been spent per head of South Africa's white farming population than in any other country in the world (de Kiewiet, 1942:260).

3.16 Despite all of these efforts to restrict African farming either to the reserves or manorial estates and to subsidize white farmers, the black farmers continued to maintain a competitive edge in the market place. The chronic labor shortages on white farms were intensified by the emergence of the mining and manufacturing industries with their massive labor demands.

Agrarian Development: 1910-1947

3.17 The Union of South Africa was formed as a dominion of the British Empire in 1910. At this time there were nearly six million people living in South Africa. More than two thirds of these were Africans, more than a quarter whites, about a tenth coloreds, and a very small number of Asians. The South African Party, representing landlord and mining interests, headed the first government. One of the goals of the new government was to ensure adequate supplies of labor to the mines. To achieve this objective, numerous restrictions were imposed on African farmers, thereby forcing them to serve as a much needed source of labor in other sectors, but chiefly mining. Many of the manorial estate owners who had been supportive of African farmers in the past and had often prevented hostile government policies were co-opted and became part of the new social order.

Table 3.1: African Populations on Various Classes of Lands, 1916

	Reserve Lands	Mission Lands	Native-owned Lands	Crown Lands	European Farms		Total Population	
					Occupied by Africans	Occupied by Europeans	Rural	Urban
Cape	1,149.4	24.3	39.3	12.5	7.6	240.4	1,473.5	128.0
Natal	479.8	44.6	39.3	37.1	85.6	357.9	1,044.1	37.9
Transvaal	283.2	24.0	40.4	71.5	232.1	408.6	1,059.9	322.5
O.F.S.	17.2	1.8	4.7	-	-	279.4	303.0	48.8
Union	1,929.6	94.6	123.7	121.1	325.2	1,286.3	3,880.5	537.2

Source: Beaumont Commission Report, 1916.

3.18 **The Land Acts.** "Awakening on Friday morning, June 20, 1913, the South African native found himself, not actually a slave, but a pariah in the land of his birth."³⁰ On that date, the Native Land Act No. 27 drew a firm line between white and black landholding, prohibiting each from "entering into any agreement or transaction for the purchase, hire or other acquisition...of any such land (in the area allotted to the other) or of any right thereto, interest therein, or servitude thereover". The Land Act of 1913 segregated Africans and Europeans on a territorial basis by establishing codified native reserves, referred to as "scheduled areas". Independent black agriculture and cattle-raising could now only be undertaken in the native reserves. About 7.8% of the country's farm land was in the "schedule" for the reserves. This became the only area where African subsistence farming could legally be conducted. The Act was specifically designed to end both landlord and hacienda manor estate farming which relied on various forms of tenancy and to establish in its place large land-holding companies (junker estates) which would operate under a single management with hired labor. Laborers would receive a plot of land for use only for house and garden farming.

3.19 The Act defined natives as members of an aboriginal race or tribe of Africa and prohibited them from renting, buying, or otherwise acquiring land outside the reserves without the approval of the Governor General. It also excluded freehold, mortgaging, and land sale rights within the reserves and stipulated further that no person other than a native could acquire land rights within these reserves, except sites for trade or business, without state approval.

3.20 In 1916, after the Land Act was put into effect, about 50% of rural Africans lived on the reserves, 2% on mission lands, 3% on native owned lands, 3% on state lands, 8% on landlord estates, and 33% on haciendas. Of the total population, 12% lived in urban areas (Table 3.1). Afrikaners were the white majority in rural areas, while the English were dominant in the towns and cities. Table 3.2 shows the ownership and occupation of lands in 1916.

³⁰ Sol Plaatje (1982), First Secretary General of the African National Congress.

Table 3.2: Land Areas by Land Tenure Systems in the Union of South Africa
(hectares)

Native reserves	9,538,300
Mission reserves	460,000
Native-owned lands	856,100
Crown lands occupied	805,100
EOL: Occupied by Europeans	90,314,000
EOL: Occupied by Africans	3,550,900
Vacant Crown land, reserves and other	17,002,400
Total:	122,526,800

Note: EOL: European-Owned Land occupied either by (1) Europeans; or (2) Africans.

Source:

a. Report of the Beaumont Commission, 1916, pp. 3 and 4.

b. 1990 South African Statistics, p 26.2; and DBSA, South Africa: An Inter-Regional Profile, pp. 34. Excludes Walvis Bay.

3.21 The Beaumont Commission was appointed under provisions of the Land Act to organize the reserves. The Commission reported that the scheduled land was only sufficient for approximately half of the Native population and recommended that further land be released to the reserves to ensure territorial segregation and specified the areas which should be added.

3.22 As Table 3.2 indicates, the reserves were limited to 7.8% of the total land area. Outside the reserves natives owned only 0.7% of the land and lived in state and European-owned lands (another 3.6%); thus the total land for native use was 12.1%. Yet the white population strongly opposed the Beaumont Commission's recommendation for an increase of the reserves. Consequently, the situation remained unchanged until 1936, when the Native Trust and Land Act, No. 18 was passed establishing the Native Land Trust. The Trust released the recommended 6,209,858 hectares (quota land) to the original 1913 scheduled reserve areas (non-quota land) increasing the size of the reserves to 13.7% of the country (Table 3.3 for the breakdown of this land).

Table 3.3: Land Quotas Delimited by the 1936 Act

	Area (hectares)	Percent
Transvaal	4,306,643	69.4
Cape Province	1,384,156	22.2
Natal	450,536	7.3
Orange Free State	68,523	1.1
Total	6,209,858	100.0

Source: Bantu Trust and Land Act No. 18 of 1936.

3.23 Other measures undertaken to support the Land Acts included the Native Administration Act of 1927 which introduced yet another encroachment by the state on the indigenous tenure system. The Governor General (the State President today) was imposed on Africans as their 'traditional' Chief with decisive powers on African land matters. African chiefs were reduced to salaried officers of the government.

3.24 The need of a cheap supply of labor also led to several new government acts. The Masters and Servants Act of 1911 and 1932 tightened the grip of junker estate managers on farm workers: it prohibited breaking contracts, changing employers, or assigning of family members to other employers. The Native Regulation Act of 1911 was modified and used to register with a labor bureau all African male and female workers over the age of 16 seeking work. Once registered as farm workers, they could not switch to industrial employment (United Nations, 1976). The Prison Act allowed estate farmers to serve as wardens on African prison farms and have the benefit of cheap prison labor.

3.25 African farmers were not allowed to join state-sponsored marketing cooperatives or farmers unions. Without membership in these organizations it was difficult to secure credit, market output, or obtain research and extension services. Moreover, outside these agricultural institutions little independent activity was permitted by law. (See Chapter 4.)

3.26 The combination of all these measures began to erode the development of African farming, and by the 1920s increasing population pressure caused African households in the reserves to spend 60% of their income on food. Infant mortality increased and signs of malnutrition began to surface. Landlord estates relying on African tenants, however, managed to survive the Land Acts for some time. In 1925 they still accounted for 4.5 million acres with fixed-rent or sharecropping tenants. But as these changed into junker estates, African tenant farming declined. Tenant shares became smaller and smaller, and labor tenancy contracts became longer and stricter (Morris, 1976). By gradually destroying tribal institutions and closing many income earning opportunities--the exception being labor markets--the capital, wealth, farming skills, and information base that African farmers had accumulated over generations began to wither away.

3.27 The planned transformation of the agrarian structure from haciendas to junker estates did not resolve the problem of low profitability or labor shortages for large-scale farming. African owner-operated farming was effectively eliminated, but landless farmers often chose to work in the mines, in new manufacturing industries, or in towns, rather than on junker estates, which almost from the beginning were notorious for their low wages and bad working conditions.

3.34 When the 1932 worldwide recession hit on top of these repressive labor measures, the flow of workers from the farms to urban areas became a deluge. Between 1936 and 1951, the largest single source of newly urbanized African people was the white rural sector. Five times as many Africans came from white farms as from the reserves. Ever increasing amounts and kinds of state support were required to keep junker estate farming alive.

1910-1947: Protection of White Agriculture

3.28 The white farming subsector experienced a completely different treatment from that of its African counterpart. The support system for white farmers, already long in place, was strengthened substantially to enable the effective occupation and use of the land that was set aside for white ownership only. The Land and Agricultural Bank of South Africa (the Land Bank) was established in 1912 to give loans to farmers who did not have access to commercial banks. The Cooperative Societies' Act of 1922 began the cooperative movement, and the Agricultural Marketing Act of 1937 created marketing schemes and control boards to administer them (see Chapter 4 for details). Research and extension services as well as the necessary infrastructure were provided to ensure the success of white farming. Between 1910 and 1935, eighty-seven Acts were passed in the Union Parliament rendering permanent assistance to farmers, financed directly and indirectly by the revenues from the mining sector. Between 1910 and 1936, the State spent £112,000,000 from revenue and loan funds on agriculture. Between 1932 and 1936 alone, the operations of the Land Bank and the direct expenditure by the government on behalf of the white farmers amounted to £20,428,092. On export subsidies alone, a total of nearly £11,000,000 was spent between 1931 and 1937 (de Kiewiet, 1942:253-261).

3.29 White Land Settlement. Whereas the Natives Land Act of 1913 restricted African access to land, the Land Settlement Act of 1912 standardized the acquisition, exchange, and disposal of state lands for white settlement. The terms and conditions of the Act were updated in the Land Settlement Amendment Act of 1917 and many subsequent amendments. These acts established the procedures by which white settlers could apply for state and privately owned lands.³¹ The Minister of Lands was empowered on the recommendation of the Land Board (a counterpart of the Land Trust), to allot state lands and to use public funds appropriated by parliament to buy privately-owned land for sub-division into suitable agricultural holdings for white farmers.

3.30 The size of the farms acquired ranged from large cattle ranches to smallholdings for market gardens. The Land Board prepared a report on the holdings; if the results were favorable, the land was surveyed, divided into farms, appraised, and advertised. Listings of farms would be published from time to time in the Government Gazette and local newspapers, with particulars of the land offered, the governing Land Acts, the terms and conditions of the lease or purchase, and when and how to apply. Applicants could obtain farms by leasing for five years (renewable) with option to buy or by transfer of land purchased especially for them.

3.31 Leased. The applicant had to be of good character and at least 18 years old, possess qualifications sufficient for utilizing the land, and intend to occupy, develop, and work the holding. The land was initially leased for five years. No rents were charged the first year; in the next two years, 2% of the value of the land was charged and 3.5% the fourth and fifth years. The Minister could extend the lease for a further five-year period at a rental of not less than 4% of the land value. The option to purchase

³¹ These amendments among others include the Land Settlement Acts Further Amendment Act No. 28 of 1920 and No. 21 of 1922; the Land Settlement Laws Further Amendment Act No. 26 of 1925; The Land Settlement (Amendment) Act No. 6 of 1928, No. 1 of 1931, No. 57 of 1934, No. 47 of 1935, and No. 45 of 1937; the Land Settlement Relief Act No. 25 of 1931; and the Land Settlement Act No. 21 of 1956.

the holding, by paying the purchase price over a period of 20 years, could be exercised at any time with the Minister's consent, subject to fulfillment of the conditions of the lease. Installment payments amounted to about 7.33% of the purchase price per year, which included interest at 4% with the residual applied to principal (1916 Year Book).

3.32 By 1941, the conditions for leasing had become more generous. No rent was payable the first two years; the other charges remained almost identical. The option to purchase was extended to 65 years although the purchaser had to pay installments of at least £25 per year. Reduced rent and interest applied in certain semi-arid areas.

3.33 Purchased. The government set a maximum price for the agricultural holdings of £1,500 which included survey fees, transfer costs, and two years of accrued interest. The government loan was to be no more than 80%. The buyer was required to pay 20% down to purchase the land, with no further payment for the next two years; the repayment schedule for the next 18 years was in six-month installments of 7.85% of the remaining balance. Four percent of this was interest, the rest principal. (1916 Year Book).

3.34 By 1941, the government would loan up to £2,250 of the price, and the repayment period was increased to 65 years. By 1956, this was increased to £5,150 and the purchaser's down payment was reduced to 10%.

3.35 Both mechanisms for obtaining land required personal occupation, mandated care of improvements and trees, specified additional land improvements amounting to 10% of the value of the holding within the first five years, and prohibited sub-letting, mortgaging, or transfer without permission. Leases were subject to cancellation in situations of non-compliance with provisions in the Acts. The 1956 Resettlement Act further strengthened residency requirements on the holdings, but permitted the Minister to grant exemptions for a temporary period on recommendation of the Land Board.

3.36 Although the Land Settlement Act of 1912 was the standard bearer, the allotment of state land to whites for agricultural or pastoral purposes was also implemented under many earlier acts. Table 3.4 provides an overview of the various leases and purchases granted under these acts in 1916 (1916 Year Book). Between 1910 and 1936, about 700 farmers per year were settled, supported by massive state subsidies.

Table 3.4: Allotment of Agricultural Holdings During 1916

	No. of Holdings	No. of Settlers	Area (hectares)	Amount (£)	Rent (£)
Land Settlement Act, 1912	141	210	168,636	110,053	-
Crown Land Disposal Ordinance (Transvaal).	123	134	90,557	58,215	-
Crown Land Disposal Ordinance 1903 (Transvaal).	26	26	21,414	10,654	-
Act 15 of 1887 (Cape): Sales	12	13	4,356	993	-
Act 26 of 1891 (Cape): Leases	24	25	19,291	-	523
Act 26 of 1891 (Cape): Sales	2	1	7,621	395	-
Natal Proclamation	36	35	28,711	13,026	53
Irrigation Settlement Act 31 of 1909	22	22	120	3,353	-
Act 13 of 1908 (OFS): Leases	3	7	2,085	-	145
Total Land Alienated	389	473	322,791	196,689	721

Source: South Africa Official Year Book 1916.

3.37 In addition to help in acquiring land, loans were made to help white farmers obtain stock, seeds, equipment, and other items needed to develop their farm. Permanent improvements such as drilling operations could also be funded and the cost added to the rent or purchase price of the land. These advances could not exceed £250 (£500 by 1941). Short and medium-term loans were also available to lessees through the Land Bank for fencing, construction of dipping tanks, and other improvements.

3.38 One result of this period of strong government support was the growth of the number of white farms from 81,432 in 1921 to a peak of 119,556 in 1952.

1948: Apartheid and the Rural African Household

3.39 In 1946, the African population living in the reserves had dropped from 50% in 1916 to 40%. The Social and Economic Planning Council reported that the quality of the reserve lands was deteriorating, and the 1948 Fagan Commission found that many Africans were becoming permanent inhabitants of the towns.

3.40 Campaigning on a platform of more rigid racial separation for blacks and power and wealth for whites, especially Afrikaners, the National Party came to power in the 1948 election. The previous government, although adhering to segregation, had tried to address African land grievances in a conciliatory spirit; the new government abandoned all such pretenses. The new "apartheid" went further

than previous segregation policies by also segregating African ethnic groups from one another and forcing them to live in separate tribal areas.

3.41 The objectives of the new policy were to: (i) facilitate white political control by dividing African natives along tribal and ethnic lines; (ii) protect the white working class from African competition through various discriminatory laws; (iii) further racial segregation so as to preserve the whites' cultural identity; and (iv) reduce the cost of development of industrial regions (Cobbett, 1987). Unstated objectives were to retain the black agrarian structure established by the Land Acts, to continue white land settlement, and to advance the white agrarian economy by establishing large commercial farms. These farms would differ from junker estates in that the main supply of labor would be migrant workers. African farmers from the homelands would provide it. These objectives were largely achieved. Under apartheid, the old agrarian economy dominated by junker estates was transformed into a new agrarian economy based on large commercial farms³².

3.42 Constitutional Framework. The Native Authorities Act of 1951 and the Promotion of Bantu Self-Government Act No. 46 of 1959 artificially created eight national units out of the Pedi, Sotho, Tswana, Swazi, Tsonga, Venda, Xhosa, and Zulu ethnic communities. The boundaries for these "national units," not surprisingly, coincided with the reserve boundaries as defined by the Land Acts. The Transkei became the first self-governing homeland in 1963. Nine other homelands followed.

3.43 In 1970, the Bantu Homelands Citizenship Act was passed making every African in the Republic a citizen of some homeland. The Bantu Affairs Administration Act of 1971 transferred control over Africans, regardless of where they lived, from white local authorities to Bantu Affairs Administration Boards. The Bantu Laws (Amendment) Act of 1972 justified forced resettlements of African people and stated that "a Bantu tribe, community, or individual could be removed from where they lived without any recourse to Parliament, even if there was some objection to the removal."

3.44 These Acts gave the government the right to banish to a homeland any Africans considered "redundant" in urban or white areas and then abrogated their constitutional right to belong to the Republic of South Africa.

3.45 The Commission for the Socio-Economic Development of the Bantu Areas within the Union of South Africa of 1954, known as the Tomlinson Commission, placed the ultimate size of the homelands at about 17 million hectares (Table 3.5). This included a) the original scheduled land from the 1913 Land Act; b) the land recommended to be added to the homelands at that time by the Beaumont Commission, but actually not released until 1936 (quota land); c) other land acquired by the Trust; land owned by blacks prior to 1936; and d) "black spots," isolated small areas of land occupied by Africans but located outside of the homelands and of land planned for the homelands.

3.46 The Land Acts had long attempted to consolidate the "black spots" by eliminating some that were "poorly situated," i.e., in white areas, and combining others to make them into homelands. The

³² A large ownership holding which produces several different commodities operating under a single management with a high degree of mechanization using a few long term hired workers who may reside on the farm and seasonally hired workers who do not reside permanently on the farm (Binswanger *et al.*, 1993:1).

elimination of the spots, however, meant that the land area had to be subtracted from the amount available for the homeland.

Table 3.5 Target African Areas (ha) Designated by the Commission

Scheduled black areas (1913)	9,190,101
Released black areas (1936)	5,815,460
Balance of quota land outstanding (1955)	1,630,692
Land Owned by blacks situated outside scheduled and released black areas (i.e., black spots) (1955)	161,593
Total	16,797,846

3.47 The Tomlinson Commission of 1954 was concerned that the quality of the land in the reserves could not support the 500,000 African families living in these areas. The Commission proposed a drastic cut in the number of families in the homelands and a series of Betterment or Closer Settlement Schemes to stop soil degradation through land use planning, relocation of people and livestock, stock-culling, fencing, contour ploughing, water conservation, and erosion control. It also urged the Trust to hasten the process of buying the outstanding quota land. By March 1967, however, the Trust had only managed to buy five million hectares of quota land; 1.3 million hectares was still outstanding.

3.48 In 1968 the administration of the Native Land Trust was handed over to the Department of Bantu Affairs. This removed the acquisition of land and its allocation from the agenda of the 1936 Land Act and placed it within the agendas of the homeland and industrial development policies. This essentially meant the resettlement of African people in homelands and a further allocation of land only if the homelands opted for independence. Table 3.6 describes in detail the land situation of the homelands in 1976.

3.49 Although the stated basis for the exchange of holdings was the quality of land, i.e., an African farmer should be resettled on land equal to his former holding; in practice this was not the case. Much of the land released for the homelands, often bits on noncontiguous scrubland, certainly did not meet any quality-of-land standard.

3.50 The relocation of Africans to the homelands from white rural and urban areas, African owned areas, and from one place to the other within the homelands was never voluntary. The Surplus People Project has estimated that 3.5 million people (predominantly Africans) were forcibly resettled between 1960 and 1980 for various reasons: eviction of black tenants and "redundant" workers from white farms (32.1%), intra-city removals due to the Group Areas Act³⁵ (23.7%), homeland consolidation and clearing of black spots (19.1%), urban relocation from white areas to homelands (19%), removal of informal and unauthorized urban settlements (3.2%), relocation due to development schemes (0.7%), politically motivated removals (1.4%), and other factors (0.9%).

³⁵ The Group Areas Act of 1959 designated all of South African land for the exclusive use of one racial group or another.

Table 3.6: Quota and Non-Quota Land (ha). 1 January 1976

	Quota Land ¹				Non-Quota Land ²				Total ³
	(a) Trust vested	(b) Trust acquired	(c) Black acquired	Total ³	(d) Black owned prior to 31/8/36	(e) Black acquired after 31/8/36	(f) Trust vested	(g) Trust acquired	
Transvaal:									
Lebowa	278,503	1,081,361	230,922	1,590,786	222,325	455	414,767	39,824	677,371
South Ndebele	560	69,143	4,902	74,606	530	-	-	-	530
Gazankulu	387,711	215,933	7,907	611,551	18,350	-	44,483	-	63,013
Swazi	151,529	114,001	4,028	269,558	5,167	-	27,336	2,088	34,591
Bophuthatswana	49,185	657,304	129,955	836,445	506,489	18,619	139,800	15,177	680,082
Venda	347,489	101,071	5,862	454,422	17,271	-	177,807	700	195,778
Kwazulu	3255	51,060	-	54,315	-	-	13,843	-	13,843
Total	1,218,232	2,289,873	383,576	3,891,683	770,312	19,074	818,036	57,789	1,665,211
Cape Province:									
Ciskei	53,966	115,462	2,867	172,295	32,282	1,661	729,662	11,969	775,575
Transkei	5,239	143,766	9,031	158,036	84,471	3,551	3,482,708	24,893	3,595,623
Bophuthatswana	74,833	495,523	11,986	582,343	25,552	4,433	1,386,481	194,911	1,611,377
Total	134,038	754,751	23,884	912,674	142,305	9,645	5,598,851	231,773	5,982,575
Natal:									
Kwazulu	48,022	355,372	17,847	421,240	138,945	1,854	2,604,016	7,209	2,752,023
Orange Free State:									
Bophuthatswana	-	53,972	1,993	55,965	26,903	723	20,725	59,878	87,409
Qwaqwa	-	5,417	-	5,417	-	-	42,827	42,827	48,244
Total	-	59,389	1,993	61,382	26,903	723	63,552	102,705	121,612
Grand Total	1,400,292	3,459,385	427,300	5,286,979	1,078,465	31,296	9,054,455	308,298	10,502,514

Source: Department of Bantu Administration and Development. Unpublished data.

1. Quota Land

- (a) Trust vested land: Government land in the release areas (Act. No. 18 of 1936) which was vested in the Trust in terms of Section 6(1)(b).
 (b) Trust acquired land: Land acquired by the Trust since 1936 outside the scheduled black areas (Act No. 27 of 1913).
 (c) Black acquired land: Land acquired by blacks in 1936 outside the scheduled black areas, which are situated in released areas and adjoining them or adjoining scheduled black areas.

2. Non-Quota Land

- (d) Black owned land on 31/8/36: Land owned by blacks prior to the Bantu Trust and Land Act, No. 18 of 1936.
 (e) Black acquired since 31/8/36: Land acquired by blacks in scheduled black areas.
 (f) Trust vested land: government land in scheduled black areas which was vested in the Trust
 (g) Trust acquired land: Land acquired by the Trust in scheduled black areas.

3. Due to rounding two figures to nearest hectare the sum of figures may differ slightly from the figures actually given in the total column.

The Situation Today

3.51 South African whites voted narrowly in October 1960 to adopt a new constitution and make the country a republic, which was established as of May 31, 1961. The Republic subsequently withdrew from the British Commonwealth. Racial strife increased, leading to international financial sanctions and to a reassessment of apartheid by moderate political leaders. Part of that reassessment was to decide what can constitute a viable and sustainable basis on which to build a new agrarian structure.

3.52 The land owned by the Trust prior to the 1936 Land Act and the amount of land owned and acquired by blacks and the SADT Fund from 1936 to 1990 are set out in Tables 3.8 and 3.9. A total of 10,442,437 hectares of non-quota land was made available under the 1913 Act. The area of quota land acquired by the Trust by the end of 1990 was 7,203,166 hectares, 72.5% coming from land acquired by the Trust, 21.0% from state land, and 6.5% from land purchased by blacks.

Table 3.7: Non-Quota Land

	Land Owned by Blacks 31/8/36 (ha)	Non-Quota Land Acquired by Blacks after 31/8/36 (ha)	State Land Vested in the Trust (ha)	Non-Quota Land Acquired by the Trust (ha)	Total (ha)
Transvaal	748,754	19,074	818,042	74,338	1,660,208
Cape Province	141,148	9,824	5,514,404	264,389	5,929,765
Natal	135,757	1,877	2,598,657	13,468	2,749,759
Orange Free State	26,727	723	63,552	11,703	102,705
Total	1,052,386	31,498	8,994,655	363,898	10,442,437

Source: Department of Development Aid, 1990 Annual Report, p. 15.

Table 3.8: Quota Land as of 31 December 1990

	State Land Vested in the Trust (ha)	Land Acquired by the Trust (ha)	Land Acquired by Blacks (ha)	Total (ha)
Transvaal	1,249,050	3,213,274	414,134	4,876,458
Cape Province	195,252	1,323,260	28,869	1,547,381
Natal	66,617	492,135	20,587	579,339
Orange Free State	253	197,742	1,993	199,988
Total	1,511,172	5,226,411	465,583	7,203,166

Source: Department of Development Aid, 1990 Annual Report, p. 15.

3.53 The present agrarian structure has been systematically worked out since the turn of the century. By the end of the 1980s, the African family farming sector had all but been eliminated, and African peasants had been transformed into wage workers on large farms, in mines, and in secondary industries.

Nearly 90% of the agricultural land was in white areas supporting a total rural population of 5.3 million people, more than 90% of whom were Africans. The remaining agricultural land was in the homelands and supported over 13 million people. Originally the homelands were justified as areas where Africans would do subsistence farming; today up to 80% of some household incomes comes from migrant earnings and pensions.

3.54 In 1916, every African except those on State (Crown) and European owned and occupied lands owned at least four hectares. By 1990 the individual holdings had dropped by 75%, to one hectare per person. This happened mainly because of the phenomenal population growth in the reserves, whose area has remained relatively static over the period. Today most homelands are peripheral, over-crowded, and poverty-stricken and lack comparable infrastructure, despite some family farmer support development programs. Genuine developmental strategies were frustrated by the overwhelming problems of these areas. Although the proportion of state spending for agriculture in the homelands increased in the 1980s, only a very small amount represented actual transfers to farmers. State spending for services for Africans is also lower in the homelands than in the white rural areas.

3.55 Land tenure in the homelands. Communal tenure in the homelands is officially defined by the Proclamation R188 of 1969 as "unsurveyed land" or "permission to occupy". Under this Proclamation, a male person holds rights to various land allotments for residential use, arable farming, and grazing. Land access is usually by virtue of membership to a community, not through sale, lease, or rent. Only men are entitled to inherit land rights. People do not legally own their residential and arable allotments. Rather they are allowed the right of occupation and cultivation subject to conditions stipulated by the homeland authorities (de Wet, 1987).

3.56 According to Murray (1970), approximately 15% of the land in the homelands is held on freehold or conditional (quitrent) title. But African freeholds rarely belong to a single entrepreneur who farms using either family, hired laborers or tenants. Most freehold purchases were undertaken by extended families or syndicates. These farms are heavily populated by descendants of the original purchasers and extended clientele. Today they are more peri-urban in nature than rural farmlands. Many freeholders have become landlords to residential tenants. Freeholds once represented a "progressive ideal" of an area where Africans could lead a life-style without government interference. There has been a steady erosion of those ideals. Class differentiation and conflicts have emerged. In some freehold areas of Natal landlords collect their rents under armed guard (Cross, 1990:22). In other areas, patron-client relationships are exploited to further political disputes. Violence in Natal's tenancy areas is exacerbated by "politicized local patron-client followings controlled by warlords (Cross, 1990:22). Pockets of black freehold areas have also been involved in the state's relocation policy. Property has been expropriated and the occupants resettled.

3.57 Betterment planning. Bembridge (1986b) estimated that about 70% of South African black rural areas are officially under "betterment planning". Betterment planning is South Africa's attempt at villagization, i.e. planned village land use. Before 'Betterment', people lived in clusters of homesteads, along hills or ridges, with their fields near rivers and streams. They grazed their cattle on the hills and in the forests, or further from home. With 'Betterment' they changed to new fields and to new residential areas. The new land use system was inflexible; people found themselves with smaller fields and gardens than before; had to walk greater distances to fetch fuel, water and thatching grass (de Wet, 1987). This

was accompanied by very unpopular stock culling measures triggering peasant resistance to 'Betterment' in the 1940s and 1950s throughout the homelands (Cross, 1990).

3.58 Migrant Labor. More than a century of contract-wage labor in the mining and the commercial farming sectors, and more recently in the manufacturing and service sectors, have perpetuated migrant labor in South Africa. Until the mid-1980s, workers who left the rural areas to seek better opportunities in towns were prevented by law from taking their families with them. The removal of these influx control measures has meant that black workers have theoretically been permitted to sell their labor and settle where they please within the confines of the group areas. Cyclical rural-urban migration has thus become a way of life in South Africa, where the majority of rural households are better viewed as members of dislocated urban communities (Nattrass and May, 1986).

3.59 Data provided by Halbach (1988) demonstrate the pervasiveness of migrant labor in the South Africa economy. In 1982, almost 60% of the black workers in South Africa were non-resident, or working in urban South Africa only temporarily. Lacking important manufacturing, mining and agricultural industries, the homelands have become primarily transfer and service economies—labor reserves for the rest of the economy. Social discrepancies exist between households with and without migrant earnings, with and without land, and with and without pensions, which have led to a steady worsening of income distribution within the homelands (Simkins, 1984).

3.60 Demographic studies indicate that the rural areas outside the homelands (i.e., the white commercial farming areas) were the main source of out-migration in the 1980s.³⁴ Net out-migration from white rural areas from 1980 to 1985 was 1.6 million (Table 3.9), while net in-migration into the metropolitan areas for the same time period was only around 900,000. Metropolitan in-migration includes those from homelands and white commercial farming areas. Thus, the homelands' population increased as a result of natural population growth as well as in-migration from white commercial farming areas. A significant portion of the out-migration from white rural areas resulted from apartheid policies. For example, 180,000 people scattered throughout the Orange Free State and classified as "unemployed" were sent to Botshabelo—an artificially-created settlement with no economic base now housing three quarters of a million people.

³⁴ Simkins C., 1990, estimates the black rural population outside the homelands as 3.8 million in 1983, of which 3.4 million resided on white farms.

Table 3.9: Black Out-Migration from the White Rural Areas, 1980-1985

	Net Outmigration (persons)	Percentage Drop in Population 1980-85 (%)
Orange Free State	220,000	2.4
Eastern Cape	110,000	4.1
Natal	530,000	8.9
Eastern Transvaal	400,000	5.4
Northern Transvaal	210,000	7.5
Others	140,000	-
Total	1,610,000	

Source: Simkins, C., 1990, derived from an analysis of South African Statistics, 1986.

Conclusions

3.61 Two important lessons emerge from this chapter regarding the evolution of the contemporary agrarian structure in South Africa. The first is that some African farmers either on their own land or as tenants on manorial European settler estates were able to successfully respond to the needs of new and rapidly growing markets which arose around industrial mining and urban population centers in the latter half of the 19th century. Not only did commercial African farmers participate in certain product markets, some also effectively competed against large settler farming based on hired labor. This rise of African commercial farming took place under conditions of relative land abundance, weak and ineffective government interventions, and relatively undistorted markets. Under those conditions, some African farmers accumulated a significant stock of capital, wealth, farming skills and experience.

3.62 The second lesson is that the development and prospects of African farming and rural development were crippled by a long list of government policies, including, but not restricted to, creating an artificial land shortage for African farmers; proscribing their participation in the sales and rental markets; confining their access to land to the reserves; excluding them from credit markets; blocking them from output markets; denying them access to marketing cooperatives and farmers' unions; refusing them extension services and access to public sector investments; subjecting them to rigid and authoritarian state and state-made communal land tenure systems; forcing them onto the labor market via extortionary taxes and levies; and forcibly resettling millions to densely populated reserves (homelands). The decline of African farming implied a gradual loss of agricultural capital, wealth, and farming skills and experience. Farming ceased to be a window of entrepreneurial opportunity and managerial and technical development for Africans.

CHAPTER 4: MARKETING AND PRICING

Introduction

4.1 More than 75% of agricultural products in South Africa are sold under controlled marketing schemes set up under the Marketing Act of 1968³⁵ or related legislation. In 1990, poultry, meat, fresh vegetables, and fresh fruit for sale on the domestic market were among 23% that was uncontrolled. A complicated regulatory framework was created mainly, it appears, to protect commercial farmers from domestic and international competition. The 22 control boards and other marketing institutions that were established—with 15 still in existence—use a wide variety of control mechanisms, including:

- production quotas;
- quality restrictions;
- price controls;
- monopoly marketing channels;
- restrictive licensing;
- import quotas;
- producer price subsidies for outputs and inputs (e.g., pan-territorial pricing); and
- consumer price subsidies for major staple crops.

4.2 In the commercial farm sector, producers play a dominant role in the institutions that control and implement the various marketing schemes for controlled commodities. The marketing arrangements in the homelands are more varied and complicated than in the commercial farm sector, but the small-scale producers have very limited roles in the institutions that exercise control.

4.3 Significant economic costs have resulted from the distortions introduced in the marketing and pricing environment in South Africa, which have:

- generally benefitted producers and harmed consumers;
- been partly responsible for the high degree of concentration found in marketing and processing which may harm both producers and consumers;
- harmed the poorest strata of South Africa's population in particular, because there is only a small subsistence sector in the economy with the result that the homelands are net-importers of food from the commercial sector;
- generally not benefitted small-scale homeland producers, although informal marketing channels may have compensated for this somewhat; and
- prevented the development of a more employment-intensive marketing and processing structure.

4.4 Since the early 1980s the government has attempted to reduce the excessive and costly public

³⁵ The original promulgation of this Act in 1937 was closely related to other legislation, such as the Co-operative Societies Acts, the Land Acts and the Land and Agricultural Bank Act, as shown in Chapters 1 and 3.

support for the current marketing arrangements; as a result there has been a considerable amount of deregulation: several control schemes were abolished; some domestic quantity and licensing restrictions were lifted; certain import quotas were replaced by tariffs; price controls on milk, butter, cheese, bread, flour and maize meal were lifted; bread subsidies were discontinued; direct producer price support for maize was withdrawn; cost-plus pricing for several major commodities (e.g., maize) was replaced by more market-oriented pricing mechanisms; and certain restrictions placed on cooperative marketing were lifted.

4.5 The impact of these reforms has been uneven and awaits further analysis. Agricultural producer prices of most commodities have fallen in real terms, yet consumer prices have increased. The resulting increase in marketing margins poses somewhat of an enigma, caused in part by input cost inflation--the result of deregulated output markets without concurrent deregulation in input, processing, and distribution markets. Other causes include declining productivity in the food chain, the withdrawal of consumer and producer price control and supports, and relatively slow increases in competition in deregulated industries because of their high levels of concentration. Moreover, the bulk of farm produce is still marketed under controlled systems that regulate and reduce domestic competition and protect domestic producers from international competition. The inefficiencies of the system are exposed not only by the increasing marketing margins of the official system, but also by the rise in parallel-market activities--a phenomenon which is relatively new to South African agricultural markets.

Overview of Major Marketing Schemes

4.6 The Marketing Act³⁶ is an enabling act that applies to all products listed in its schedule. It provides for the promulgation of subordinate legislation called "schemes", which are instituted for a product or group of products; and a Control Board is set up to administer each. The scheme empowers the relevant Board to carry out normal administrative functions, as well as specific functions which may influence the marketing of the product to which it applies. These specific functions are derived from sections 52 to 80 of the Act, which state that a Board may exercise such powers with the approval of the Minister. Through enabling clauses in the Marketing Act, the Boards are funded by levies on the produce handled. Despite the wide range of authorities provided in the Act, most schemes use only a few powers which allow:

- a. buying a product at an approved price (surplus removal schemes, section 56 of the Act);
- b. prohibiting the sale of produce except through the relevant Board (single channel schemes, section 64);
- c. fixing or influencing the price of produce (section 60);
- d. controlling the import or export of products; and

³⁶ This discussion is based on section 1.3 of the Kassier Report (1993).

- e. imposing or using levies and special levies (sections 41 to 46)³⁷.

4.7 The Marketing Act provides for four main types of schemes, tailored to the specific characteristics of the commodity covered. These include:

- a. single-channel fixed price schemes. Producers are legally obliged to market their products through the Board or its appointed agents, and prices are fixed for each season. Major domestic crops such as maize and winter grains (wheat, barley and oats) fall into this category.
- b. single-channel pool schemes. Producers market their products through a pool conducted by the Boards who pay advance payments on receipt of the product. Deferred payments are made when the final realization of the pool, after deduction of pool expenses, is known. Crops facing relatively elastic demand, e.g., export crops, fall in this category (Table 4.1).
- c. surplus-removal schemes (also called price support schemes). Producers sell their produce on an open market, although often subject to stringent quality controls which could restrict domestic competition. The Board intervenes when prices drop below a fixed minimum price by purchasing surplus for distribution and resale at a later date (Table 4.1). A dairy scheme was legally suspended at the end of 1992.
- d. supervisory schemes. The Board acts in a supervisory capacity and as a mediator in arranging price and purchase contracts between producers and buyers. Products include canning fruit and cotton.

4.8 In 1990/91, some two thirds of the gross value of agricultural production was marketed under the Marketing Act. In addition, products such as wine (the Ko-operatiewe Wijnbouwers Vereniging Act); sugar (Sugar Act); and lucerne hay, wattle bark, and ostrich products (the Co-operatives Act) are regulated by other legislation, making up some 10% of the value of farm products. Uncontrolled products include most fresh vegetables (4.6%), fresh fruit for sale on the domestic market (1.8%), and poultry meat (14% of gross value of agricultural production). In addition, there exists an array of marketing arrangements in the various homelands. Table 4.1 summarizes the coverage of schemes by type as of the late 1980s.

³⁷ Under the Marketing Act, the SAAU can impose a levy on certain marketed output, even on uncontrolled outputs. This has sometimes led to the anomaly that black farmers, by paying SAAU fees on uncontrolled products, were effectively financing the SAAU.

Table 4.1: Marketing schemes: Percentage composition of the gross value of agricultural products - 1990

Scheme/Product	Percent of Agricultural Value
<u>Single-Channel Fixed Price</u>	
Maize	12.87
Winter Cereals	4.54
<u>Single Channel Pool</u>	
Oilseed	3.09
Leaf Tobacco	1.86
Chicory	0.04
Buckwheat	0.0
Lucerne Seed	0.04
Deciduous fruit	5.04
Citrus fruit	2.33
Dried fruit (including nuts)	0.49
Bananas	0.65
Rooibos tea	0.02
Wool	3.13
Mohair	0.39
<u>Surplus disposal schemes</u>	
Grain sorghum	0.33
Dry beans	0.71
Potatoes	2.88
Slaughtered stock	16.58
Eggs	3.71
Milk and butter fat	7.18
<u>Supervisory and price regulation</u>	
Canning apricots, peaches and pears	0.39
Cotton	0.55
<u>Control in terms of section 84A</u>	
Karakul pelts	<u>0.00</u>
TOTAL	66.83
<u>Control in terms of other legislation</u>	
Sugarcane	4.60
Lucerne hay	1.88
Wattle bark	0.22
Wine	2.99
Ostrich products	<u>0.45</u>
TOTAL	10.14
<u>Uncontrolled products</u>	
Fresh vegetables	4.56
Fowls slaughtered	12.33
Sub-tropical fruit (excluding bananas)	0.41
Other uncontrolled products	5.73

Notes: The following schemes were recently dissolved: single-channel pool schemes—banana, chicory, rooibos tea and wool; surplus disposal schemes—dried beans, eggs, and potatoes. Wool and milk are currently controlled under supervisory schemes.

Source: Adapted from Abstract of Agricultural Statistics (1992)

Role of Farmer Cooperatives

4.9 The controlled marketing environment is generally dominated by producer organizations. Farmer cooperatives play a major role in the marketing of both crops and livestock and in the supply of agricultural inputs. There are three major types of cooperatives in the commercial agricultural sector:

- a. Regional or geographical cooperatives—locally based organizations that undertake input supply and general commodity handling and also provide credit to their members, using the Land Bank as their major source of funds.
- b. Specialized cooperatives, formed around the marketing of a single commodity, such as wool, citrus, deciduous fruit, or tobacco.
- c. Central cooperatives, combining several cooperatives on either a regional or a commodity basis, to pool buying power for agricultural inputs or to provide central marketing for commodities such as meat, citrus etc.

4.10 The Marketing Act confers effective monopoly powers to the farmer cooperatives. They are appointed as sole agents of the control boards for marketing winter grains (wheat and barley) under the single-channel fixed price schemes. They enjoy similar monopoly privileges for deciduous fruit (Unifruco), citrus (the Citrus exchange), and tobacco. The Co-operatives Act, the Wine and Spirit Control Act, and other legislation also confer monopoly powers in the marketing of commodities such as ostrich products and wine.

4.11 The position of the cooperatives in the marketing chain is further strengthened by their representation in the South African Agricultural Union, which advises the Minister on producer representation on all the Control Boards. This has resulted in substantial cross-representation on the boards of cooperatives, Control Boards, and in some instances processing and distribution companies.

4.12 There have been some recent legislative reforms to increase the economic flexibility of the cooperatives, which are financially strapped. For instance, the volume of business a cooperative can undertake with non-members was increased from 5 to 49% of total business volume and voting power has been tied more closely to volume of the individual's business with the cooperative.

Performance of the Various Marketing Schemes

4.13 The potential for competition from small-scale farmers, traders, and international markets has always been a significant concern for South African agriculture. Monopolies in the marketing systems act as formidable barriers against new participants in agricultural markets. Arguably, they assist many

participating farmers, often preventing bankruptcy and an exit from the market. The pages that follow describe the marketing systems for the most important farm commodities and assess the effects of recent policy reforms.

Single Channel Fixed Price Schemes

4.14 Maize. Maize occupies an important position in South African agriculture. During the 1980s over 40% of the area under cultivation was planted to maize, which constituted some 75% of total grain production, 64% of the value of field crops, 56% of human grain consumption, and by far the bulk of animal feed (Groenewald, 1989). Reduction of implicit and explicit producer price subsidies during the policy reforms of the 1980s resulted in a steady decline of area planted to maize. Area planted declined by about 1.5% per year through the 1980s and yields are highly erratic. Maize production is particularly vulnerable to drought, as can be illustrated by the 1992 crop year when the total crop fell to 2.2 million tons from 6.8 million tons in the previous year. Current estimates of the 1993 crop are in the order of 8.1 million tons.

4.15 The Maize Board maintains a pan-territorial or unitary pricing system at the producer level for its purchases of maize, which are largely undertaken by primary cooperatives in the production area. The cooperatives have over many years established a comprehensive network of physical silo facilities in the commercial farming areas. Over 98% of the purchases are in bulk form.

4.16 The general impact of the maize marketing system has been to raise domestic producer and consumer price relative to the world markets. Wright (1992) estimates the nominal protection coefficient for yellow maize (the major traded maize commodity) at between 1.2 and 2.8 during the period 1986 to 1990. The resulting rise in domestic production was overshadowed by the welfare losses for consumers and Maize Board revenues and foreign exchange earnings in excess of R500 million per year on both white and yellow maize. These losses exceed by a wide margin the associated producer welfare gains on the order of R380 million per year, implying a substantial deadweight loss. Table 4.2 summarizes the estimated transfers between maize consumers and producers for the period 1986-90.

Table 4.2: Welfare Effects of Price Distortions for South African Maize Production
(Million Rand)

Year	Welfare Gain in Maize Production		Welfare Gain in Maize Consumption	
	White	Yellow	White	Yellow
1986	255	263	-358	-310
1987	564	507	-573	-522
1988	634	479	-613	-597
1989	564	239	-517	-549
1990	206	178	-554	-595

Source: Wright, 1992

4.17 The system has also strong adverse income distribution effects for producers, since only 20% of the 15,000 registered commercial producers account for 80% of deliveries.

Table 4.3: Domestic Prices and Export Realization for White and Yellow Maize, 1986 to 1990
(Rand per ton)

Year	Producer Price		Export Realization	Consumer Price Yellow
	White	Yellow		
1986	240.4	225.3	187.8	285.3
1987	258.0	246.0	168.3	288.0
1988	260.0	255.0	326.8	295.0
1989	264.0	259.0	327.6	333.0
1990	302.7	302.7	317.0	360.0
1991	357.6	357.6	356.2	419.0
1992	455.0	455.0		475.0

Source: Department of Agriculture, 1993

4.18 Maize is produced primarily for the domestic market. White maize is an important staple in the South African diet, and is not generally available elsewhere in the world for import. Before 1987, the producer price was frequently set above export parity, generating exportable surpluses which needed to be sold at a loss. Consequently, export volumes have been highly erratic. By the late 1980s the Maize Board had built up a substantial deficit on the export stabilization fund.

4.19 The system was reformed beginning in May 1987. Before 1987, the Minister of Agriculture set the producer prices of maize. As of 1987/88 the Minister made the Board responsible for setting its maize buying price taking into account the long-term interests of the industry. In practice, pre-planting maize prices are made known to the producer. Pan-territorial pricing is still followed, but the board no longer has the power to carry over surpluses or losses arising from exports. The Board cannot make use of loans to finance a particular marketing year. Since 1987, then, the producer price has essentially been operated as a pooled price based on actual performances.

4.20 The principal effect of the pricing reforms of 1987 has been to compel the maize industry to meet the costs of losses arising in any season within the cost and price structure for that season. In other words, there is now virtually no scope for inter-year price stabilization through reserve stock management. Given the requirement to balance the books each year, the producer pricing mechanism is clearly influenced by the procedures used for determining the Board's selling prices. The Board faces a relatively inelastic domestic demand for white maize for human consumption, but a highly elastic domestic demand for yellow maize as a feedstock with a range of substitutes. The Board uses its monopoly power in the domestic market to charge "what the market is able to absorb" in the long-term interests of producers of maize. In practice this has meant relatively rapid price increases for white maize compared to yellow. In the period from 1986 to 1991 the white/yellow Board selling price ratio moved from parity to 1.1.

Table 4.4: The Aggregate Measure of Support (AMS) for Maize in South Africa

Description	Unit	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91
I. Level of Production	Ton	8,295,325	8,320,814	7,353,361	7,014,264	12,035,253	8,708,774
II. Producer Price	Rand	271	275	290	298	301	352
III. Value of Production	Rand	2,244,466,085	2,288,140,642	2,132,254,089	2,091,302,812	3,622,972,211	3,066,794,764
IV. Direct Payments	Rand	366,246,681	221,569,862	333,190,955	171,307,932	176,548,575	91,225,266
V. Adjusted Value of Production	Rand	2,610,712,766	2,509,710,504	2,465,355,044	2,262,610,744	3,795,520,785	3,158,020,030
VI. Policy Transfers							
A. Market Price Support	Rand	-21,117,371	618,310,696	494,938,535	-459,991,897	-348,780,798	-299,849,701
(World Reference Price)	Rand	273	201	223	364	330	387
B. Direct Payments	Rand	366,246,681	221,569,862	333,100,955	171,307,932	172,548,575	91,255,266
C. Reduction of Input Costs	Rand	10,011,912	10,372,679	68,461,882	47,891,690	56,126,333	52,779,931
D. General Services	Rand	104,608,680	100,031,925	114,167,109	141,019,011	117,391,005	110,204,078
VII. Total AMS	Rand	459,749,902	950,276,162	1,010,668,482	-99,773,264	-2,714,886	-45,710,926
VIII. Unit AMS	R/t	55.42	114.20	137.44	-14.22	-0.23	-5.25
IX. Percentage AMS	%	17.61	37.86	40.99	-4.41	-0.07	-1.45

Notes: producer price: net producer price received plus marketing costs and administration costs of the Maize Board.
direct payments: government payments to maize producers, except (IV) and (VI B) for loan and interest subsidies.
market prices support: difference between domestic producer price and world reference price multiplied by total production.
reduction in input costs: government subsidies on transport, fertilizers, and fuel.
general services: share of budgets of Departments of Agriculture benefitting maize production.

Source: van Heerden and van Zyl, 1993.

4.21 The time series of maize prices at the producer level and the Maize Board's selling price are set out in Table 4.4. In real terms, after remaining fairly steady for 15 years between 1970 and 1985, maize producer prices fell by one third in the latter 1980s. This coincided with the elimination of explicit subsidies from the government budget to the Maize Board and the emergence of a substantial positive real marketing margin in the Maize Board's price structure.

4.22 Recent trends in the Aggregate Measure of Support (AMS)³⁸ (Table 4.4) illustrates the decline in transfers from consumers and taxpayers to producers. The decline is the result of the combined effect of a reduction in direct payments by the government to producers (excluding subsidies on loans and interest) and relative increases of the world reference prices as estimated by the authors. Although these results differ from Wright (1992) because of methodological differences, it can be concluded that transfers from consumers to producers have declined in recent years. This analysis of van Heerden and van Zyl (1992) shows the sharp decrease in the AMS since the change in maize marketing in 1987/88--the AMS declined from R 137.44/t (40.99%) in 1987/88 to R -14.41/t (-4.41%) in 1988/89.

4.23 With the widening of the price gap between the Board's buying and selling prices the single-channel marketing system has come under pressure. In recent years the Board has permitted an increasing level of direct transactions, and modifications have been made to the levy structure to accommodate these changes. As it stands, the system provides a major incentive to use maize on-farm as a feedstock rather than selling it to the Board and incurring the levies. Likewise it has provided an incentive for large users of yellow maize as feedstock to invest in maize production³⁹.

4.24 The shift in control instruments used in the maize marketing system has already affected farmers in a number of ways. In the absence of safety nets or other exit options, many producers, especially marginal production areas, found themselves in financial difficulties (see Chapters 2 and 5), despite a noticeable shift to low-input production systems. The expectation is that production will generally shift eastward into higher-potential areas and that this trend will be strengthened as the unitary pricing system comes under pressure if current GATT negotiations are successful. A more open trade regime in Southern Africa and the rest of the world will induce further changes to regional patterns of production. The lack of effective protection against dumping and the high degree of concentration in input supply, processing, and distribution industries will also need to be addressed.

4.25 Wheat and other winter cereals. Wheat is grown in two major areas of the Republic - in the Western Cape (the Southern and Western areas, and to a lesser extent in the north-eastern districts); and in the eastern and western parts of the Orange Free State. Total production of wheat under irrigation in the past decade has varied from a low of 1.4 million MT in 1980/81 to 3.5 million MT in 1988/89. The Cape Province growing areas produce an average of some 850,000 MT, or 40% more than the region requires. Surpluses are sent overland to the main milling centers in the OFS and PWV areas. Other

³⁸ The Aggregate Measure of Support (AMS) is based on the producer subsidy equivalent, and measures transfers from consumers and taxpayers to producers.

³⁹ It is reported that the largest commercial producer of maize is the leading poultry producer. According to the Board's informal estimates on-farm retention are of the order of 0,8 to 1,0 million tons and still rising. Given the incentives to avoid the levies it is likely that the official statistics understate the true volume of maize production in the country.

winter cereals such as barley and oats also fall under the Wheat Board.

4.26 The Board's allocation system aims to meet the quality requirements of the millers, with the result that each miller receives wheat from at least five different areas. Under this system the into-mill cost of wheat grain is approximately equalized for all wheat millers, irrespective of location, by selection of the sources for each mill. Millers bear the actual rail cost from the supplying silo, but the allocation system aims to equalize the average cost for each miller. Cape producers benefit from the allocation system operated by the Board, as a unitary price system is followed.

4.27 Wheat imports are purchased by the Board on behalf of the government and sold at the domestic selling price. Imports of wheat are restricted through quantitative controls—possible because the importer is treated as a producer for purposes of control of internal marketing. Imported wheat must match the qualities available domestically. This limits the potential sources of imports, for example creating a bias against Argentine and in favor of Australian or Canadian wheat.

4.28 The wheat milling industry is significantly concentrated, with six major operators. This concentration is, moreover, more marked at the regional level with only two or three operators competing in several parts of the country (two operators in Western Cape; three in Durban and Eastern Cape, whereas all six operate in the PWV area). The number of bakeries has increased substantially since the deregulation measures of March 1991.

4.29 The marketing system for wheat has created substantial inefficiencies. The relatively small role of external trade has permitted the Board to set producer prices at levels substantially above world prices (Table 4.5) with local prices between 11 and 46% in excess of mean world prices in the period 1980 to 1987. On the other hand, the Board was able to protect domestic consumers from the sharp rises in world prices in 1984 and 1985.

Table 4.5: Gross Wheat Producer Prices and Mean World Prices

Year	Gross Producers Price (Grade B1)	World Market Price (US No 2 Dark)	Producers/World Ratio
1980	208.7	180.2	1.16
1981	234.2	189.6	1.23
1982	286.8	196.1	1.46
1983	266.8	241.4	1.11
1984	290.0	325.3	0.89
1985	315.3	376.0	0.83
1986	364.2	292.4	1.25
1987	391.6	302.0	1.30
1988	341.2	352.5	0.97
1989	368.4	368.3	1.00
1990	493.3	342.7	1.44
1991	591.5	363.5	1.63
1992	692.2	394.4	1.76

Source: Groenewald, 1989; Department of Agriculture, 1992; Abstract of Agricultural Statistics, 1993.

4.30 Nieuwoudt (1983) estimated that the consumer and producer share of the bread subsidy was 71% and 29%, respectively over the period 1948-1981. With his estimates of demand and supply elasticities, he calculated that if the 1980/81 subsidy of R162 million on bread were terminated, the consumer price (in the absence of imports) would increase by 27%, leading to a fall in the consumption of bread by 5.2% or 88,000 tons. However, since in reality wheat could be imported at a lower cost than the domestic producer price, he concluded that South African wheat producers gained more and consumers less from the subsidy than these estimates would indicate.

4.31 More recent estimates by the Department of Agriculture show that prices for wheat continue to be substantially above world market prices. In 1991/92 wheat could have been imported at R434 per ton (CIF Durban from Argentina), and sold in the PWV area for R509. However, the minimum selling price for domestically produced wheat was R625 at the start of the season—23% above import parity—and increased by R8 per month during the remainder of the season—to around 40% above import parity by the end of the season. Since imported wheat is also of higher quality and the selling price for a comparable grade was R744, consumers effectively paid 46% over import parity at the start of the season.

4.32 A significant deregulation of the wheat milling and baking industries took place in March 1991, resulting in substantial increases in consumer prices. Under these reforms prices of milled products and their derivatives were decontrolled. At the same time, after over four decades, the subsidy on bread was finally removed. Maximum retail prices were then R1.20 per white loaf (subsidy granted: R3.27 per loaf) and R1.05 per brown and whole wheat loaf (subsidies granted: R7.88 and R5.52, respectively). White bread (but not brown) became subject to domestic VAT (at 10%) in September 1991. From that date, the Wheat Board, according to officials, ceased to use its controls on the registration of bakeries in a

restrictive way and now requires registration only for statistical purposes. Following deregulation, the price of a loaf of white bread increased by nearly 50 % between November 1991 and November 1992, with nearly a third of the price increase attributable to an increase in baker's margins. The expected effect--an increase in competition at the bakery level which would lead to a reduction in consumer prices--is only recently beginning to be felt.

4.33 The prospects for area expansion in wheat production in South Africa are limited, with the possible exception of production under irrigation. This is generally also true for the rest of the subcontinent, which, like South Africa, faces a growing demand for wheat products as incomes increase. Policy instruments to manage this emerging deficit in wheat production will have to be applied with extra care in the future. The unitary price system for wheat is also expected to be dismantled within the next few years both for efficiency reasons and to conform to GATT requirements on domestic subsidy systems. This will place pressure on wheat producers in the Cape and some shift in the locus of production out of Cape province, with an expansion in the OFS growing areas, can be expected. In addition, further liberalization of the exchange rate may make locally produced wheat substantially more competitive relative to imports.

Single-channel Pool Schemes

4.34 This section will focus primarily on deciduous fruits, given their relative importance in terms of output and export volume. Citrus marketing, also an important export sector, is organized similarly.

4.35 Deciduous fruit. Deciduous fruits--principally apples, table grapes, pears, peaches, and apricots--are grown in the Western Cape, though peaches are also grown in the OFS and Transvaal. Two-thirds of the crop is for export (largely to Europe) and generates 85% of the revenues. Deciduous fruit, along with citrus and wool, count among the farm commodities in which South Africa has a clear natural comparative advantage for international trade. The sub-sector is supported by a highly developed production and marketing system. Consequently, recent performance and future prospects of these exports are good and have improved with the lifting of international sanctions and the devaluation of the Rand.

4.36 A one-channel pool scheme is administered for deciduous fruit on a weekly and/or cultivar basis. Advance payments at approved prices are made to producers; and once all the fruit has been sold and exporting costs have been deducted, final payments are made. No price control is applicable on exports; products are sold on the world market.

4.37 Export marketing of deciduous fruit has been a private monopoly of the Universal Frustrate (Cooperative) Ltd. (Unifruco), which in 1988 took over many of the functions of the Deciduous Fruit Board (DFB)⁴⁰. The Board comprises eight members, all of whom are representatives of producers of deciduous fruit. Historically, and by comparison with other Marketing Boards, there has been little direct intervention by Government in the DFB, which has always had a strong commercial orientation. Entry

⁴⁰ The replacement of the public monopoly of DFB (it continues nominally in existence for legal reasons, although with only one employee) by Unifruco occurred in part to allow more flexible internal management and remuneration and in part to distance the marketing of fruit from the South African public sector, whose organizations were a particular focus of sanctions from the US Congress.

to the export market is reportedly unrestricted for any grower able to achieve the high standard of grading demanded (only Class I fruit is exported), as Unifruco is obliged to accept all fruit of this grade offered. The establishment of Unifruco has had the effect that levies decreased, especially those covering administrative expenses.

4.38 Unifruco sells in the export market on behalf of its members, deducting all market-related costs and passing the residual to members. It operates on a break-even basis, but makes a profit on non-market activities, principally a return on its fixed and liquid assets, and other trading. Its administrative expenses are financed through a commission which amounted to 2.5% of gross sales in 1990. In addition to its market-related services to its members, Unifruco provides a first payment to members which it finances through borrowing on domestic and foreign markets.

4.39 Domestic marketing of deciduous fruit is relatively uncontrolled, although producers have to apply for a permit from the Board. Trade is subject to charges of 8.5% when sold in municipal markets and 1.5 to 2.0% when sold directly by the producer to the trade. There is also a grading system laid down by the DFB and now by Unifruco, that is enforced through inspectors. The extent of direct (or farm gate) sales, and therefore of total domestic consumption is not fully known, as reporting depends on the producer, who has some financial incentive not to do so correctly.

4.40 The merits of the single channel for the export market are strongly defended by the industry on the grounds that: (i) there are economies of scale in overseas marketing and promotion; (ii) promotion of the Cape brand image has consolidated a major market niche for South African fruit; (iii) this has been reinforced by the ability of Unifruco to enforce rigorous quality standards; and (iv) Unifruco has been able to control its costs and marketing margins. The latter have narrowed over time, in contrast to those for other commodities. The highly successful record of this export industry so far, by comparison with its southern hemisphere competitors, suggests there is some basis for this view, although the Kassier Committee reported reservations about the high degree of cross representation between the boards of Unifruco and the DFB, where the latter body grants export licenses to the different markets served.

4.41 There are also opportunity costs inherent in restricting access to export markets by setting very high quality standards. Whereas South African fruits currently sell at a quality premium in European markets over their competitors (e.g., Chile), the imposition of such high quality standards prohibits entry into the market by producers who would want to market a lower quality product and are willing to accept a lower price. Such opportunity costs will increase if a more varied range of producers emerges in the context of a less distorted agricultural economy and a new South Africa.

4.42 An interesting case study in the current process of deregulation of the agricultural marketing system is presented by the dissolution of the Banana Board in early 1993. In this case, the assets of the Board were transferred to a new cooperative, Subtropico. The existing producer interest in these assets was converted to a transferable shareholding, while shares are held in reserve for new producers. A further case in point is the considerable pressure from certain lobby groups to deregulate the wool marketing system, as extensively reported in the agricultural press.

Surplus-removal Schemes

4.43 Meat. Livestock and related products constitute over 45% of agricultural output and are produced throughout South Africa. The national cattle herd amounts to over 10 million head (including TBVC areas) plus 1 million pigs, 30 million sheep and 2.5 million goats. Table 4.6 summarizes the level of slaughtering in 1989/90. Apart from cyclical changes, the cattle population has been broadly stable since the 1960s, while the annual off-take has increased from around 1.5 million head in 1960 to over 2 million head in the 1980s.

4.44 The Meat Scheme relates to all producers and importers of slaughter animals and all persons dealing in the trade with slaughter animals, meat, offal, hides, and skins. In times of over-supply, as during the drought in the early 1980s, the percentage of animals offered for sale which are purchased by the Meat Board under its surplus-removal mandate can reach substantial levels, e.g., 9.58% in 1983. However, the more recent direct interventions have been minimal (Table 4.6).

Table 4.6: Price Stabilization Measures in Controlled Areas

Year	Cattle slaughtered	Purchases by Meat Board	Percent
1985	1,455,909	36,972	0.25
1986	1,377,333	1,357	0.10
1987	1,212,369	3,641	0.30
1988	1,094,729	1,087	0.10
1989	1,130,846	782	0.07
1990	1,346,645	2,922	0.22

Source: Food Studies Group, 1992.

4.45 An extensive and complicated control system was in operation to regulate the market in meat until early in 1993 (Sunnyside Group, 1991). The market was segmented into controlled and uncontrolled areas, with the former including all the major urban areas.⁴¹ In the controlled areas meat had to be slaughtered at Abacor abattoirs and ownership transferred at compulsory auctions on the hoof. The flow of meat slaughtered in uncontrolled areas into controlled areas was regulated by the Board.

4.46 The scheme was highly inflexible and created effective barriers to entry. Meat prices have recently increased faster than those of other foods, despite a decline in producer prices as farmers sold off stock in the drought. Producer prices are erratic, and substantial seven-year cycles exist related to rainfall, supply and price expectations (Lubbe, 1990). The producer's share in the consumer price decreased from 62% in 1974 to 48.5% in 1990. Per capita consumption of red meat decreased from 40.6

⁴¹ In practice the extent of implementation of the control system, from which statistics on slaughtering derive, is uncertain. It is reported, for example, that there are substantial flows of live animals into the black townships especially of sheep and goats, which are slaughtered on unregistered premises. In addition the extent of on-farm slaughtering is not well documented. Farmers are permitted to slaughter up to 8 head of cattle per month without registration, and it may be that extensive supply to local markets prevails, especially in the Platteland. The demand statistics may, accordingly, be significantly underestimated.

kg in 1955/56 to 25.78 kg in 1989/90 (Directorate of Agricultural Trends, 1990).

4.47 The meat marketing and processing structure is characterized by a few large dominant firms and the absence of free choice for producers, traders, and consumers. For instance, in 1990, the top three firms appointed as abattoir agents for marketing held 84.04% of the market share of cattle and 94.41% of the pig market. In the abattoir industry itself, one firm (ABACOR) held 64.95%⁴², while the top three firms held 88.17% of the market in 1989/90. In the processing industry, one firm had a 45.64% market share in 1988/89 (Lubbe, 1991:256). Table 4.7 illustrates the market share of the three major firms in each of the stages of marketing and processing. A commission into the price discovery process in the red meat industry (RSA, 1989) found that the three major firms were favored under existing restrictive regulations and that the system of controls and trade barriers had tended to stimulate and protect vertical and horizontal integration.

Table 4.7: Concentration in the Livestock and Meat Industry
(Percent of market share)

Market Function	Firm A	Firm B	Firm C	Shares of the Big Three Firms Combined
Tanneries	24.8	8.0	46.4	79.2
Hides and Skins	40.0	21.0	23.0	84.0
Retail non-controlled	4.3	1.8	6.9	13.0
Retail Controlled	2.4	2.6	8.0	13.0
Wholesale Non-Controlled	6.9	4.7	8.2	19.8
Wholesale Controlled	12.0	7.4	18.7	38.1
Primary demand-Beef	7.2	10.8	20.0	38.0
Processing meat	45.6	3.5	17.4	66.5
Abattoirs - Cattle	20.5	13.6	39.6	73.5
Agents - Cattle	50.6	18.5	15.0	84.1
Feedlots Capacity	21.4	20.0	5.5	46.9

Source: Lubbe, 1991

4.48 Nieuwoudt (1985) estimated the welfare costs of the quota scheme in the beef industry. Using a supply elasticity of beef at 0.8, he calculated that a 5% supply restriction from the calculated equilibrium position would lead to a deadweight welfare loss of approximately R 3.2 million. The decrease in supply would lead to a 6.5% increase in the retail price in controlled areas and a 6.5% decrease in uncontrolled areas. Quota rents in the beef industry were estimated at R 81 million, or approximately R52 per animal. The quota system was recently repealed.

⁴² Currently estimated at 41%.

4.49 The increase in the relative price of red meat with respect to white meat (poultry) seems directly responsible for the secular decline in red meat consumption over the past 20 years (Annex 2, Table 2.11). While the overall level of meat consumption has remained in the region of 40 kg/cap this total conceals a fall in per capita red meat consumption from 40 kg to 25 kg, while consumption of poultry has risen from under 2 kg to around 15 kg per capita. As a result, the poultry industry has witnessed a 10-fold increase in the volume of production over the past three decades.

4.50 Recently (January 1993) reforms have been introduced aimed at liberalizing the meat industry. The system of control of the flow of animals from uncontrolled to controlled areas exercised by the Meat Board was abolished. Each abattoir is now responsible for controlling the inflow of animals to its pens; however, local authorities decide on the hygiene standards for meat brought into their areas of control. Given the inspection fees and the continued implementation of the existing health and hygiene regulations (which are arguably too stringent) the extent to which recent changes will increase competition is questionable.

4.51 Grain sorghum. Before 1986 the marketing of grain sorghum was administered by the Maize Board as part of the summer grain scheme. After 1986, the autonomous Grain Sorghum Board has administered a surplus removal scheme. The adjustment in the sector on both production and consumption since this change has been dramatic. Grain sorghum is mainly produced by commercial farmers in the Transvaal and Orange Free State. The area planted declined from 314,000 hectares in 1986/7 to 135,000 hectares in 1991/2, while the share of animal feed consumption in total consumption declined from more than 67% to about 15% (Abstract, 1993). The share of human consumption increased constantly from the 1960s to 1980, then declined through 1987 before rising to around 85%—or 200,000 tons—by 1992. Most human consumption is in the form of sorghum beer (56% of total consumption and 78 of human consumption in 1992). During the drought in 1992, about 190,000 tons of the total market requirement of 250,000 tons were imported.

4.52 The Board operates a surplus removal scheme. Because the Board has no physical control over the production or marketing of grain sorghum, the producers are free to negotiate the best prices for their products. The Board, however, announces prices at which it is prepared to buy grain sorghum from producers who cannot obtain more profitable prices in the trade. These floor prices are normally announced for a fixed period, in practice when the major portion of the crop is delivered.

4.53 In pursuance of the intention and spirit of the surplus-removal scheme, it is the policy of the Board to allow the marketing of grain sorghum to flow through the normal trade and to purchase only the actual surplus under its floor price scheme. To a great extent, the Board has reached this objective in its four years of existence, since its purchases under the floor price scheme never exceeded around 18% of total production.

Marketing Under Special Legislation

4.54 Sugar. The main cane growing areas are in Natal and Kwazulu with smaller areas in the Eastern Transvaal scheduled to expand in the future with the erection of two new dams. The cane sector includes both estates linked to mills and individual growers. At present there are some 41,000 growers cultivating 378,000 hectares. These supply cane to 17 mills. Most cane is currently cut by hand, and according

to industry estimates some 141,000 people are employed. Ninety percent of the area under cane is rainfed.

4.55 The production and marketing of sugar cane, sugar and associated products is regulated under the Sugar Act of 1936, which established the South African Sugar Association and granted the industry statutory powers. The Act provides for an agreement to regulate the affairs of the industry, binding on all those who grow sugar cane and produce sugar and associated products. The main provisions of the Sugar Industry Agreement cover quantitative control over production by means of quota allocations to growers, regulation of the supply of cane to the mills, administration of a two-price pool system relating to domestic and export sales proceeds, cost responsibility for the transportation of cane from farms to mill, disposal of sugar exports, pooling of proceeds from sale of sugar and molasses and application of the revenue sharing formula between growers and mills, determination of the sucrose content of cane, and imposition of levies to cover the costs of administration by SASA.

4.56 The SASA includes representation of the growers through the South African Cane Growers Association (SACGA) and the millers through South African Sugar Millers Association Ltd (SASMAL). The two organizations are equally represented on the SASA Council. The SACGA represents all growers other than those who also mill. Individual growers are represented on SACGA through their constituent growers organizations. There are currently 23 member organizations of growers in SACGA, representing some 41,000 individual growers.

4.57 The prime functions of the SACGA are to represent growers in SASA and to monitor the application of the revenue-sharing formula. This involves annual determination of cane production costs and continuous monitoring of the grower/miller division of proceeds. SASA also takes responsibility for promotional programs and sugar industry research; it operates its own installations, including the Bulk Sugar Export Terminal, the Bagged Sugar Export Warehouse, the Bulk Sugar Depot in Germiston, the Experiment Station, and the Industrial Training Centre.

4.58 Overall welfare losses associated with the sugar scheme are estimated in a simulation model by Ortmann (1986). He estimates that under the single-price sugar policy which had been in operation until April 1985, the welfare losses were approximately R17.3 million. With the ensuing policy of a split-pool scheme in 1985/6 these social costs were estimated to have reduced to R11.5 million. Table 4.8 below summarizes the prices paid for sucrose (and cane equivalent) before and after the introduction of the two pool pricing system in 1985/86. Table 4.9 summarizes the final destination and utilization of cane and sugar for the period 1981/82 to 1990/91.

Table 4.8: Sucrose and Cane Prices: 1982 to 1991
(Rand per Ton)

Season	Sucrose		Cane	
1982/83		172.33		22.16
1983/84		244.75		30.18
1984/85		192.64		23.64
	A Pool	B Pool	A Pool	B Pool
1985/86	236.64	103.11	31.07	13.54
1986/87	298.90	162.06	38.26	20.74
1987/88	299.68	132.97	35.96	15.96
1988/89	339.10	257.93	42.76	32.52
1989/90	387.32	358.92	51.01	47.27
1990/91	436.19	362.09	56.31	46.75
1991/92*	468.00	258.00	60.80	33.55

* Estimate

Note: the two pool pricing system was introduced in 1985/86.

Source: South African Sugar Association

Table 4.9: Total Cane/ Sugar Production: 1981 to 1990
(Million MT)

Season	Cane Crushed	Sugar Produced		
		Total	National Market	International Market
1981/82	19.5	2.055	1.213	0.842
1982/83	19.3	2.125	1.181	0.944
1983/84	13.4	1.377	1.145	0.232
1984/85	22.4	2.690	1.307	1.062
1985/86	18.8	2.117	1.203	0.914
1986/87	18.3	2.013	1.269	0.744
1987/88	21.1	2.190	1.240	0.938
1988/89	19.9	2.168	1.348	0.819
1989/90	18.6	2.137	1.239	0.898
1990/91	18.1	2.038	1.314	0.713

Source: South African Sugar Association

4.59 Before 1990 the quota system for the delivery of cane operated in favor of the commercial growers. Anomalies occurred, such as the fact that small growers with low transport cost to mill were

excluded in some cases from delivering to their nearest mill, while established growers at greater distance had preferential access to quotas. This was reinforced by a transport subsidy system which created a uniform transport tariff that did not discriminate on the basis of distance and in some instances this supported cane haul distances of 70-90 kilometers. Under this system small growers nearer the mill subsidized more distant commercial growers.

4.60 Recent changes in the system for regulating supply to the mills have favored the expansion of the smallholder subsector. These changes are leading to a rapid expansion of smallholder area under cane, with the number of small growers expected to rise to 55,000 over the next 5 years. Under the new arrangements, introduced in April 1990, smallholders (defined as those producing less than 150 tons of sucrose per two years) growing within 30 kilometers of a mill require no quota for mill delivery and are guaranteed the higher A pool price for their sucrose. During the past decade the expansion of the operations of the Small Growers Financial Aid Fund, which provides financial support for the establishment and growing of cane by smallholders has also provided a stimulus to smallholder planting.

4.61 Farmer representation in SACGA has traditionally been based on tonnage of cane produced, with the effect that commercial growers dominated the SACGA board. Recently a new representation structure was introduced whereby each mill has a local grower council with equal representation of small and commercial growers. The Board of Directors of the SACGA has been enlarged from 37 to 60 with equal smallholder and commercial grower representation.

4.62 Wine. The bulk of South Africa's wine production comes from the winter rainfall region of the Western Cape, which is also a large producer of table grapes. The total planting of vines is 99,700 ha, more than 80% of which is planted to wine grape varieties. Wine farmers deliver their crop to wine cooperatives or directly to wholesalers, or they make and bottle wine themselves (estate wineries). Until 1992 wine was produced on a quota basis, with the quota granted by the KWV, the controlling body for the industry. This cooperative sets minimum prices for good (table) wine and buys up surplus production, mostly for distillation. The directors of the KWV are elected from the various regions by farmer members. The KWV also provides advertising, research and extension services to members. Production quotas were suspended in 1992.

4.63 Guaranteed prices for low-quality surplus production resulted in an incentive structure that rewarded volume at the expense of quality. The gross volume of grapes pressed has increased from 1,037 million tons in 1981/82 to 1,379 million tons in 1991/92, and by value from R212,920,000 to R750,000,000 over the same period. The total production of wine has increased from 772 million liters in 1980/1 to 970 million liters in 1991/2. In the former year most wine produced was used for distilling purposes (418 million liters, compared to 354 million liters for table wine). By 1991/2, however, this had changed to 516 million liters for table wine and 457 million liters for distilling, mostly as a result of the lifting of sanctions and the resulting increase in exports. The effects of the suspension of quotas are not yet clear, but would probably include both an expansion of the total area planted to vines and a further substitution of the lower quality high yielding varieties by noble cultivars.

Concentration in the Marketing and Processing Structure

4.64 The extensive regulation of marketing in South Africa has contributed—along with the exchange control regime, skewed income distribution, and other factors—to the concentration found in South African marketing and processing (Sunnyside Group, 1991; Competition Board, 1992; Elliott, 1992; Groenewald, 1990; Lubbe, 1991; Wright, 1992). An assessment of concentration in marketing and processing also needs to take into account the regional pattern of market structure. In several industries, such as wheat milling, the number of participants at the national level is moderate, but this hides effective concentration in two or three companies within individual provinces.

4.65 The growth of concentration in South African agricultural marketing and processing can be attributed to a number of factors:

- a. single-channel marketing systems;
- b. economies of scale in marketing and processing;
- c. the absence of effective anti-trust legislation;
- d. international competition; and
- e. imperfections in financial capital markets.

4.66 The presence of single-channel marketing systems for many crops and products has tended to promote concentration in marketing and processing:

- a. in marketing, through the creation of statutory monopolies or oligopolies, either in the form of the control boards themselves, or through monopoly or near-monopoly agency arrangements, such as those prevailing for the cooperatives to market cereal crops; and
- b. in processing, through the economies of scale created by the single-channel marketing schemes. This has encouraged the formation of concentrated purchasing arrangements in the agro-processing industries. In some cases, this has occurred through preferential application of control schemes and registration requirements, and in other cases through more purely market mechanisms. In the livestock industry, for example, concentration in the abattoir industry has been favored by the operation of the quota control system under the meat scheme. The presence of strong vested interests on the control boards has tended to lead to collusive arrangements favoring the emergence of dominant companies.

4.67 A second factor generating increased concentration is the economies of scale, generally captured by the larger firms operating in certain sub-sectors, e.g., poultry production, where the company with a dominant market share established extremely efficient, low-cost production systems in the 1980s.

4.68 Imperfect financial capital markets have tended to increase concentration through mergers and acquisitions, particularly during the 1980s. These were often precipitated by the threat of bankruptcy

facing firms; the process was accelerated by the concentrated control over liquid funds exercised by the larger business groups. The government has in general not opposed acquisitions and mergers where the alternative was seen as bankruptcy for the acquired company. The level of merger activity was closely linked to overall macroeconomic conditions, notably the stagnation of real incomes which occurred over the past decade.

4.69 International competition has also favored concentration in certain sub-sectors. Compared to the major developed countries, the South African market is somewhat small. As a result, firms which are large in relation to the local economy are in fact relatively small compared to their international competitors; this has created a problem in industries with significant economies of scale, as well as a conflict between international competitiveness and domestic competition policy. In these industries there is understandably pressure for Government to permit "rationalization" of industries to improve international competitiveness. These arguments apply in industries such as fertilizer, chemical feedstocks, and--within agricultural processing--to malting and milling.

4.70 Government policy toward competition is established in the Maintenance and Promotion of Competition Act of 1979, an enabling act which provides for the establishment of the Competition Board as an investigative and advisory body to the government⁴³. The impact of the Competition Board in the agricultural sector, has, however, been limited. In many of the areas where the Competition Board might be expected to be most active, e.g., the marketing control boards and the cooperatives acting as their agents, it is excluded by definition (one Act cannot overrule another Act). The Board lacks teeth in the form of penalties and is obliged to pursue deregulation as the means for removing restrictive practices arising out of the implementation of the Marketing Act. It also possibly lacks the political will to deal effectively with the large conglomerates which dominate South African industry and commerce.⁴⁴

Marketing Structures in the Homelands

4.71 As the homelands gained authority over agricultural marketing issues, they introduced varying forms of control that emulated the existing structures in commercial agriculture and the policy of food self-sufficiency. The four TBVC states and Lebowa created separate marketing boards. This led to general problems, mostly in terms of barriers to movement of commodities across borders internal to South Africa. The administrative costs of such control measures was also high, as discussed in Chapters 1 and 2.

4.72 In general the yields from the small farm plots in the homelands are poor, and very little of the production is marketed. Food crops form the bulk of crop production in all homeland areas, and each

⁴³ Its membership is half elected and half ex-officio. The ex-officio membership was enlarged in the mid 1980s to facilitate investigation of agricultural sector industries by the inclusion of the Chairman of the Cooperative Council and the Chairman of the National Marketing Council.

⁴⁴ In addition it is usually difficult to prove collusion even where there is strong circumstantial evidence. The recent investigation of the Competition Board into the fertilizer industry is a case in point. The study concluded that collusion was suspected, but could not be proven.

area is in deficit in most years. Some maize meal is likely to be brought to households by migrants workers as remittances in kind. Traders bring in food to make up the shortfall in effective demand.

4.73 An important feature of agriculture in the homelands is the extent to which households are involved in the market, whether for the disposal of surplus, or in order to make up for food deficits. Various estimates have been made of the market participation of smallholders. The table below gives a market participation profile of rural households in KaNgwane and the Gcumisa ward of KwaZulu.

Table 4.10: Market Involvement of Rural Households

Crop	Market involvement			% of total prodn marketed	Sales concentration		
	Net buyers	No net sales or buys	Net sellers		% of total sales		
	% of households			%	50%	70%	80%
KaNgwane (n = 394)							
Maize	68.7	7.4	23.9	62	2.8	7.4	11.2
Groundnuts	81.7	4.6	13.7	52	3.0	6.1	8.6
Dry beans	96.1	0.3	3.6	-	0.1	1.3	1.5
Yuco beans	95.9	0.0	4.1	66	1.0	1.8	2.5
Kwa Zulu (n = 153)							
Maize	95.2	0.1	4.7	49	0.5	1.3	2.4
Beans	84.0	6.2	9.8	54	3.0	6.0	9.2
Potatoes	93.6	3.3	3.1	40	1.6	2.6	3.6

Source: J. van Zyl and J. van Rooyen, 1990b

4.74 The data indicate the low levels of sales, and the high relative sales of the few households that do sell food (e.g., that 2.8% of households in KaNgwane are responsible for 50% of maize sales). Conversely, nearly all households purchase basic food staples.

4.75 Much of the grain production by small producers is milled locally through service milling. Grain sales can go in many directions from a homeland producer: to mills or traders, to homeland marketing boards where they exist, directly to the South African marketing boards, to local informal sales, and, in small amounts (for it is illegal under the regulations of the South African) to informal sales or gifts to people outside the homeland, such as migrant husbands travelling to urban areas on a monthly basis.

4.76 Similarly there are few sales for livestock despite heavy stocking rates in all the homelands. Although cattle are seldom used for ploughing, they still have value beyond the market, in terms of milk, dung for manure or burning, and asset holding and appreciation. No homeland marketing boards control meat sales, but there were regulations on abattoirs and butchers.

4.77 By contrast with commercial farming areas, roads are often poor, markets are distant, and marketing information is scanty. Within the homelands the poor road system leads to isolated markets and the development of monopolistic and monopsonistic marketing conditions. There is little information on market demand and market requirements outside the local area, but the marketing boards in the TBVC areas and Lebowa attempt to provide this information and protect producers against the marketing boards

set up by the large farm sector.

4.78 Another problem can be in reaching and dealing with the South African marketing boards for products produced for markets outside the homelands. Furthermore, even where South African marketing boards are not involved, it is difficult to break into the white marketing structures outside the homelands, e.g., for horticulture, where vertical integration among producers, distributors, and retailers is exceptionally strong.

4.79 The five marketing boards in the homelands either set marketing controls or regulate the marketing of the following products:

- | | |
|------------------------|--|
| Bophuthatswana: | Statutory controls: maize, oilseeds, wheat.
Sorghum: sets floor price
Eggs: registration of producers
Cotton: Single registered agent |
| Ciskei: | No statutory regulations now (previously dairy, poultry, wool, mohair, wattle). |
| Lebowa: | Statutory controls: maize, wheat
Meat: registration of butchers,
Milk, eggs, poultry: registration and inspection |
| Transkei: | Wool: single channel with basic sorting before export.
Bread: registration of bakers, subsidization of bread price.
Meat and meat products: registration of butchers.
Hides and skins: now private agent appointed (recently decontrolled). |
| Venda: | No statutory controls on marketing. Sets floor prices. Marketing by the Northern Transvaal Cooperative. |

4.80 The boards have to operate within the context of poor border controls and dominant South African boards. Therefore, products move in and out of the homelands with relative ease, and this sets limits on prices. No board, for instance, can charge a very high marketing levy, or all farm produce that is not sold informally will pass out of the homeland into the formal South African system. This phenomenon appears to have inculcated an exceptional degree of realism among board staff in the homelands. Where statutory controls exist, all boards claimed to ignore informal sales (and the loss of tax income thus incurred).

4.81 Nevertheless, the existence of the borders, the dispersion of tracts of homeland, and the statutory controls on movements often have the effect of interfering with regional trade, and increasing the distances over which goods travel to consumers, thus also increasing the marketing margins. In other instances, even when there are homeland regulations which favor entrepreneurial development—e.g., for dairies in Bophuthatswana—farmers may be so far from homeland markets and so near to other South African

markets that they would have to produce for the latter and therefore follow the South African regulations, whose stringency makes entry extremely difficult.

4.82 The boards, like others concerned with agricultural production in the homelands, tend to pursue self-sufficiency, sometimes at the cost of more rational food production and marketing and often at direct cost to consumers, who lose when restrictions on "imports" push up local producer prices.

4.83 In the case of export products (e.g., wool from Transkei and Ciskei, subtropical fruits from Venda) the homeland marketing boards provide the link with the South African boards which export the products, often providing transport and some grading *en route* in return for a levy. Prices are set in the world market. The marketing boards attempt to ensure that the products meet export requirements.

4.84 The boards are financed in varying proportions by government grant, levies on handling, and, in the case of Bophuthatswana, interest on the accumulation of levy income over the last ten years. Levies often appear to be set at the same levels as those of the South African boards, regardless of the actual costs of the homeland board's operations. Some boards charge levies on products that are passed to the South African market, so that the farmer essentially pays a double levy, as with livestock in Bophuthatswana, which has caused ongoing friction with the South African board.

4.85 The Lebowa Marketing Board, on the other hand, uses its profits from charging the same levy as the South African Maize Board to provide a higher price to farmers by giving them a rebate; it is also able to provide some subsidy to transporters and cooperatives. It sells produce at the same price to local millers as the South African Maize Board, but is assured of sales due to its geographic advantage (Northern Transvaal as a region must import from further south). Effectively its operations thus reduce prices to the millers, relative to the prices of the S.A. Maize Board, but not relative to an uncontrolled price.

4.86 In the other five homelands, without marketing boards, regulations on marketing tend to follow those of the South African Boards unless the homeland has enacted new legislation. KwaZulu for instance has been developing its own legislation on the utilization and processing of food. It would appear that the homeland legislation is often better suited to local conditions than that of the South African boards and therefore tends to keep down handling and processing costs, thus benefiting, for instance the producers and consumers of meat products.

4.87 However, the South African boards tend to take advantage where they can from marketing in the (non-TBVC) homelands, such as in attempting to obtain levies on maize sold by KaNgwane farmers to neighboring Swaziland. Such activities appear to provide cause for irritation in the homelands. The Lebowa Marketing Board has successfully taken the Maize Board to arbitration in order to prevent Lebowa farmers being forced to pay levies on maize marketed outside the homeland.

4.88 The Secretariat of the Economic Community of Southern Africa (SECOSAF) provides the forum for discussion and negotiation of difficulties between South Africa and the TBVC areas. In late 1990 SECOSAF set up a committee to examine grievances of the homeland governments against practices of the South African boards. Such items as the prohibition of the transport of bananas from Venda to Bophuthatswana that did not necessarily meet the standards of the South African Banana Board were

negotiated successfully (they can be transported in sealed vehicles). Thus, while low-income consumers in Bophuthatswana can now purchase less than perfect but cheaper bananas, low-income consumers outside the TBVC areas cannot, including those in the other homelands.

Marketing Margins

4.89 Trends in marketing margins can be analyzed by determining the producer's share of consumer value. Table 4.11 provides data on the producers' share of what the consumer pays for grain, meat, fats and oils, dairy products and eggs, vegetables, fruit, sugar, and for agriculture as a whole. From Table 4.11 it is evident that there has been a sharp increase in marketing margins over the last decade. This has resulted in higher increases in food prices than in other consumer prices.

Table 4.11: Producers' Share of Consumer Value
(%)

Year	Total	Grain	Meat	Fats and oils	Dairy and eggs	Vegetables	Fruit	Sugar
1974	55.2	41.6	26.0	38.5	69.7	34.2	31.0	43.4
1975	53.8	42.0	57.0	40.1	70.7	34.5	31.8	61.8
1976	53.0	42.7	56.8	40.7	68.4	32.0	34.2	62.4
1977	48.9	40.1	54.4	39.2	60.4	29.5	36.9	41.5
1978	46.9	34.2	52.8	36.5	58.7	31.0	35.2	34.0
1979	48.9	35.6	53.5	38.1	62.5	33.5	35.9	37.1
1980	53.0	41.6	59.3	39.7	66.2	34.1	35.9	45.0
1981	52.6	40.7	59.1	37.5	56.6	30.5	37.2	41.0
1982	51.3	38.0	55.5	38.0	67.3	30.7	36.8	38.5
1983	49.0	36.1	52.0	35.2	65.3	31.8	34.6	44.5
1984	48.1	33.7	52.7	35.6	64.6	26.6	35.5	38.3
1985	48.8	33.8	54.5	32.3	63.5	29.2	36.8	32.5
1986	47.5	33.1	51.6	33.0	62.3	30.1	36.7	33.2
1987	48.3	31.0	54.7	38.8	61.7	32.7	35.8	27.5
1988	46.4	28.5	51.5	39.4	61.5	31.5	33.0	25.5
1989	46.4	24.7	51.2	35.9	65.5	27.5	35.0	27.9
1990	43.1	25.0	48.2	37.3	56.7	29.4	31.4	29.0
1991	42.0	25.0	50.7	37.9	48.9	29.0	33.2	26.9

Source: Directorate of Agricultural Economic Trends, Department of Agriculture, Abstract of Agricultural Statistics, 1993.

4.90 An analysis of marketing margins in the food chain between 1980 and 1991 by the Board on Tariffs and Trade (BTT, 1992) indicated a price divergence of five percentage points per annum between the producer price index for farmers and consumer food prices. The price divergence of 5 percentage points per annum can be broken down into the following components:

- a. Input cost inflation (3.0 percentage points);
- b. declining productivity in the food chain (1.0 percentage points);

- c. price and supply stabilization (0.5 percentage points);
- d. withdrawal of state subsidies (0.3 percentage points); and
- e. lifting of price controls (0.2 percentage points).

4.91 According to the BTT (1992), salaries and wages contribute up to 30% of expenditures on food. Inflationary price increases in wages and salaries at each level in the food chain have contributed significantly to the consumer food price inflation. Each level—i.e., primary storage and distribution, food manufacturing and wholesale distribution, and the retail level—contributed approximately equally to the total added inflation in the food chain. The BTT's analysis of the structure and concentration in the food chain concluded that:

- a. the retailing of most food items is only moderately concentrated: about 45% of food is sold through 890 hypermarkets and supermarkets, the majority of whose outlets belong to four groups, while many other outlets account for the rest;
- b. at the primary production level the growing of most foodstuffs is well dispersed;
- c. an analysis of the food processing and distribution levels indicates a fairly high degree of concentration: the joint turnover of the six largest food groups is equivalent to 57% of the value of processed foodstuff production in South Africa; and
- d. it is at the primary level of storage and distribution that concentration tends to be biggest and that artificial barriers to entry exist.

4.92 The introduction of the VAT has had a short-term impact on food price inflation. In comparison with the position before VAT, food inflation in April 1992 increased by 6.8 percentage points as a result of the change in the tax base. The sharp increase in food price inflation since the third quarter of 1991, reaching a high of 30.4% in July 1992, is mainly the result of the drought and the short-term effects of the introduction of VAT. However, the food price inflation rate without these disturbances is estimated at 15%, which is still higher than both the non-food rate of inflation and the rate of increase in farm gate prices.

Self-Sufficiency and Exports

4.93 The marketing policies described above resulted in a high degree of overall food self-sufficiency in South Africa; the production of commodities was well in excess of domestic consumption. The positive supply reaction was often created by high levels of domestic protection against lower-priced world market imports. However, at the resulting high domestic price levels, domestic markets often did not clear, and surplus production was exported at a loss. Table 4.12 provides the relevant aggregate data.

Table 4.12: Average Production and Consumption of Selected Agricultural Commodities in South Africa, 1985-1990

Commodity	Imports	Exports	Production (1000 ton)	Consumption		SSI***
				Total*	Human**	
Wheat	94	449	2.612	2.262	2.119	115.50
Maize (white & yellow)	484	1.689	7.422	6.127	2.615	121.10
Potatoes	5	8	1.042	1.039	872	100.30
Vegetables	4	27	1.739	1.717	1.545	101.30
Sugar	63	863	2.044	1.258	1.258	162.50
Beef	81	16	579	644	639	89.90
Mutton, goat's meat & lamb	14	1	182	195	193	93.30
Pork	1	2	110	109	108	100.90
Chicken	3	0	521	524	519	99.40
Eggs	0	3	181	178	169	101.70
Deciduous & subtropical fruit	0	466	1.37	897	808	152.30
Dairy products	35	58	2.34	2.321	2.321	101.00
Sunflower seed oil	14	1	84	96	85	87.50
Citrus fruits (fresh & processed)	0	426	706	278	278	254.00

* Available for use = Opening stock + Production - Closing stock + Imports - Exports

** Net human consumption = Available for use - Other uses - Losses, and further adjusted for extraction rate

*** SSI (self-sufficiency index) = Total production / Total consumption x 100

Source: Food balance sheets of the Directorate of Agricultural Economic Trends of the Department of Agriculture (as processed)

4.94 Table 4.12 shows total production, surplus production for the export market, and the degree of self-sufficiency of South Africa with respect to major agricultural commodities during the period 1985 to 1990. The following characteristics emerge.

- a. South Africa is self-sufficient in all the important staples. In spite of the periodic droughts experienced during the 1980s, South African agriculture still succeeded in producing surpluses. Staple crop production can therefore drop (in total) before South Africa becomes a net importer of these products on a regular basis. However, some individual commodities in this group are imported on a net basis (e.g., oilseeds).
- b. In horticultural production, particularly fruit, South Africa is not only self-sufficient, but to a large degree dependent on earnings from the export market. The situation is more favorable than that of crop production.
- c. In contrast to crop and horticultural products, red meat has a self-sufficiency index of lower than 100. This implies that South Africa did not produce enough red meat during

the years 1985 to 1990 to meet domestic requirements. These shortages were supplemented by imports from, among others, Namibia, Botswana and some European countries.

4.95 Red meat, coffee, rice, vegetables, animal fats, and vegetable oils are the most important food products imported. The total gross value of agricultural production in South Africa was almost R15,000 million in 1987, and food imports amounted to about R1200 million. Food exports in the corresponding period amounted to about R2400 million.

4.96 Pricing policy played a substantial part in achieving a situation of surplus production and exports. Table 4.13 shows the difference between domestic producer prices and world (reference) prices for a number of major commodities. This suggests that it is possible to import a number of products (admittedly only in certain years) below the domestic cost of producing these products—e.g., meat products and wheat. On the other hand, domestic transport costs also play a role, and help to isolate the South African interior markets: total transport costs of imported maize to the major South African market (PWV-area) amount to roughly R220.00 per ton—R95.00 per ton for shipping and R125.00 for rail transport from the port of entry. Moreover, these transport costs work in reverse when commodities are exported, often rendering the export of low-value, high-volume commodities unprofitable. At the same time, it must be recognized that the over-valuation of the Rand has significantly influenced agricultural trade patterns. If a new government is able to operate an exchange policy that does not overvalue the currency, many of South Africa's agricultural commodities will become more competitive.

Table 4.13: Difference between South African Producer Prices and the World (Reference) Price for Major Crops

Product	R/t	World (Reference) price		Producer price	
		1989/90	1990/91	1989/90	1990/91
Maize	R/t	330	385	301	352
Wheat	R/t	375	336	457	503
Sorghum	R/t	271	294	231	250
Soyabeans	R/t	698	723	591	608
Groundnuts	R/t	2,662	4,349	1,076	784
Sunflower	R/t	864	858	692	656
Beef	R/t	4,380	4,597	5,493	5,401
Sheep (EEC)	R/t	4,251	4,620	6,599	6,122
Pig (EEC)	R/t	3,426	4,085	3,479	3,628

Source: Unpublished data obtained from the Department of Agriculture.

4.97 Terms of trade are important in indicating the international competitiveness of a country. South African agriculture has been experiencing a weakening terms of trade. Domestic double-digit inflation, while major trading partners experienced single-digit inflation, undermined competitiveness on world markets. Some analysts believe that the competitiveness of agriculture has improved recently because the Rand exchange rate decreased faster than inflation had since 1983. However, if the weakening of the exchange rate is such that the rise in costs (via imported inputs or higher costs to domestic input suppliers) outweighs export price increases, the competitive position will weaken (Liebenberg & Groenewald, 1990).

4.98 The terms of trade of South African agriculture decreased for nine consecutive years since 1974; then partly recovered in 1984 and 1985, only to fall back again. This decrease was strongly influenced by lower prices for agricultural products in international markets and higher prices for most imports. Exchange-rate changes were not able to realize more than short-term improvements. Thus economic pressure on agricultural exports is increasing.

Conclusions

4.99 Clearly many parts of agriculture in South Africa have been protected for many years. This is true for producers and for the marketing and processing activities. This has resulted in a large transfer from consumer to producer and a highly concentrated processing sector with the associated monopolistic profits. The one part of the sector that has been exposed to international competition--horticulture--has performed very well. The production of these crops is inherently labor-intensive, and the scope for substitution is very low. The sector is rapidly growing and has given RSA an international comparative advantage, with considerable scope for expansion.

4.100 One of the opportunity costs of the current marketing system has been the development of a relatively concentrated sector aimed at specific market segments. By catering exclusively to white farmers, it prevented the development of either black farming or informal marketing systems which could have created substantial black employment. At the same time, by emphasizing the marketing of high quality, first-world agricultural products, it lost or did not create jobs in marketing of lower quality produce for either export or domestic consumption.

4.101 Current trends in marketing appear to be moving in the right direction--from a controlled, cost-plus pricing system to a more market-oriented one (removal of domestic controls, reduction of protective measures, and tariffication). Given the high levels of concentration in the agriculture and food processing sectors, the establishment of clear policy guidelines setting out Government's objectives and policy instruments is a high priority. Three alternative policy approaches can be distinguished:

- a. laissez-faire: Under this policy the Government would adopt a passive attitude towards concentration, hoping that the possible benefits from economies of scale and competitiveness on international markets will outweigh the potential costs from monopolistic pricing. In recent decades policy has been rather close to laissez-faire.
- b. active anti-trust approach: Under this policy the mandate and powers of the Competition Board would be substantially increased, with a view to reducing the existing levels of concentration through induced or forced divestment of holdings by the major firms which dominate particular industries. In practice, implementation of this policy approach is likely to prove difficult: the Government will continue to lack sufficient information to pursue a legal approach to anti-trust; given the concentration of liquid funds in the economy, forced sales of subsidiaries are likely to lead to purchases of divested firms by existing conglomerates rather than by new entrants to the market, and the unemployment implications of possible closures induced by an active anti-trust policy would be politically difficult to accept. Finally, the existing conglomerates can and will exercise strong

financial leverage to maintain their position if threatened.

- c. **an indirect approach to the economic environment through deregulation:** Under this third approach, government would not actively attempt to break up the dominant firms, but would seek to promote changes in the economic environment which, over time, would remove the economic basis for concentration and reduce barriers to entry for potential competitors. Promising areas for this type of approach include continued tariffication (which replaces administrative control over imports by a market mechanism), deregulation of legislated monopolies and restrictive agency agreements, active enforcement of competition policy against restrictive practices by firms in the sector, and the removal or reduction of regulatory barriers to entry into the informal trade. To adopt this approach requires recognition that the problem of concentration cannot be resolved in a short period, but that over a longer period the reality or threat of competition can be the most effective instrument in combatting the adverse aspects of concentration.

4.102 Concentration has important implications for the policy of deregulation: in the extreme case deregulation may involve the substitution of a public monopoly (which is in theory fully accountable to public scrutiny) by a private monopoly with statutory powers. This is highly undesirable.

4.103 Assistance in marketing to homeland farmers is an integral part of agricultural development, but it is not clear that this need is met by the current operations of homeland marketing boards. The major argument for their continuation is that they provide a mechanism for defending the interests of some relatively smaller producers against both the South African boards and a highly concentrated distribution system. The South African boards were set up by white producers in their own interests and show, at the very least, a bias toward large farmers, e.g., in the encouragement or requirement of bulk handling. Mechanisms will continue to be required for bulking the produce of small farmers, as well as to negotiate with the boards and/or with distributors, even in a deregulated environment.

4.104 Income elasticities demonstrate that there is substantial expansion room in domestic markets for higher-value food products if the income of lower-income groups increases. This implies that a development strategy aimed at raising the incomes of the poor, of whom a large proportion reside in rural areas, will have positive effects on the demand for food.

CHAPTER 5: EFFICIENCY OF AGRICULTURAL PRODUCTION

Introduction

5.1 In order to analyze the broad subject of efficiency of South Africa's agricultural sector, this chapter examines several dimensions of the efficiency issue. As a starting point and to gain a perspective on the subject, a number of general remarks about efficiency need to be made. First, efficiency presupposes the existence of an objective, e.g. maximizing profits or maximizing output. It is only against such an objective that it is possible to evaluate the activities of an economic unit, and ask whether or not there are less costly ways to attain the objective. Second, the evaluation of economic efficiency does not question the basic rules that govern economic activities--e.g., the existence of a certain distribution of property rights and a set of prices created by markets and government intervention. Hence, this examination of efficiency makes no judgement about the merits of the present distribution of land and other resources in South Africa. Third, efficiency can be evaluated from the perspective of an individual entrepreneur, in which case it is called private or financial efficiency, or from the wider perspective of society, when it is called social or economic efficiency. The difference in perspective is important. For instance, an individual may be efficiently maximizing profits given the basic rules that govern their economic environment, whereas society seeks to create remunerative employment for as large a number of its citizens as possible. One can imagine situations in which the individual's behavior can be deemed privately efficient and socially inefficient at the same time. Moreover, since society can decide to change some of the basic rules that govern the economic behavior of the individual, behavior can be efficient given the "old" rules of the game, but inefficient given the "new" rules of the game. In the context of South Africa, such distinctions are important. In the past, farmers may have efficiently reacted to a set of rules--including distorted price-signals--which were related to society's objectives at that time (e.g., subsidizing capital in order to attain food self-sufficiency). In the future, such rules may change and what was socially efficient in the past may prove inefficient in the future.

5.2 Large-scale agriculture in South Africa has consistently produced surpluses, and as a result has typically been regarded as an efficient sector from a self-sufficiency perspective. In recent years, however, the persistent financial problems experienced by many farmers--largely as a result of drought and policy changes--have caused some important subsectors in agriculture to be seen as financially inefficient. Moreover, given the high unemployment levels in the economy, agriculture's current contribution to employment is below its potential. The issue of large farm efficiency in South Africa is critical to the development of a strategy for the rural economy. If, as some argue, the large-farm model is a valid one--characterized by economies of scale--then by removing existing policy distortions it will be possible to improve the financial efficiency of the sector as a whole. If, however, there are no significant economies of scale associated with large farm production models, simply reforming policy will only yield a portion of the potential efficiency gain. The balance of the efficiency gain could only be achieved by restructuring--through downsizing--the present farming sector.

5.3 The dominant model of agricultural production in South Africa is that of the large-scale farm based on capital intensive production techniques and relatively extensive land use. While recognizing that the question of whether an enterprise is efficient can be answered in several ways, the central questions to be answered in the context of South Africa are whether or not economies of scale exist and, if so, what

are the sources of these economies?

5.4 Unfortunately in South Africa, a direct comparison of efficiency between the large-scale and small-scale farm sectors is difficult if not impossible, because black owned small-scale farms have all but disappeared. Ample historical and international evidence suggests, however, that when compared to small-scale farms many large-scale farming enterprises in South Africa, as elsewhere in the world, are inefficient with respect to profits, employment and output generated per unit of capital invested.

5.5 The move towards larger farms in South Africa was strongly associated with farmers' adoption of mechanization, which was facilitated and strengthened by subsidized interest rates, tax breaks, and the support of output prices above border parity. Yet in spite of massive additional financial assistance to farmers, the profitability of agriculture remained low. By 1984, an estimated 22,700 farmers (33% of the total) had debt burdens beyond the critical level (SAAU, 1984). Most of these farmers were concentrated in the Transvaal and Orange Free State—the regions where mechanization of monocropped cereals had been pushed to economically sub-optimal levels and exposed farmers to high risk levels.

5.6 The policy objectives that justified these extensive interventions were twofold—food self-sufficiency and maintaining income levels for large-scale white farmers. Agricultural production in the RSA increased at a rate of over 3% annually over the last four decades, while the population increased at an average rate of 2.8% (van Zyl *et al.*, 1987). The social objective of maintaining incomes of full-time white farmers at levels comparable to the incomes in the urban sectors seems also to have been obtained for at least some farmers. From 1970/71 to 1991, total net farm income increased in real terms from R2,728 million to R3,469 million, but with significant fluctuations throughout the period and a considerably skewed distribution.

5.7 In order to analyze the efficiency of large-scale farming in South Africa, this chapter examines three dimensions of efficiency in agricultural production.

- a. **Price efficiency.** Given a certain output level, could one choose a different mix of inputs and achieve a reduction in costs?
- b. **Scale efficiency.** If one could expand all variable inputs proportionally, thereby producing more output, could one reduce average costs of production? The answer to this question is often formulated as increasing, constant, or decreasing returns to scale.
- c. **Technical efficiency.** Given a certain output level, can one reduce costs by using less of all inputs? The answer to this question is often linked to technological improvements and growth in physical yields.

5.8 **Price efficiency.** The agricultural sector experienced a policy-induced shift toward a large-scale, capital-intensive farm technology, heavy reliance on intermediate inputs, and toward less dependence on labor. This reflects farmers' rational reaction to the prevailing structure of incentives, in particular, taxation and financial assistance programs. Although the price of the input bundle associated with the prevailing technology is one element in the structure of incentives faced by farmers, it has not always been the dominant one. Prior to 1973, large-scale farmers display considerable price efficiency.

However, starting in the mid-1970s farmers demonstrated less responsiveness to relative input price changes. This seems to have been the result of a combination of output price distortions, financial assistance programs, tax incentives, and technical improvements that offset input price changes. In effect, farmers responded to a distorted set of incentives that induced a different production technology than that which would have prevailed in a more market oriented regime.

5.9 Moreover, given an excess supply of African labor in the wider economy, the pattern of agricultural development chosen was not price-efficient from an economy-wide perspective. During the 1980s, partial liberalization of credit and output markets, along with tax reforms and periods of severe drought, changed many of these incentives and seemed to have reversed some of the above trends.

5.10 **Scale efficiency.** The same distorted incentive structure that affected price efficiency also created incentives for large-scale farms. As a result, prior to the end of the 1980s, there has been an increasingly concentrated agrarian structure in South Africa. The results of this chapter indicate that a wide range of farm sizes (above 100 hectares) are efficient with respect to scale--in order words, a larger farm is not necessarily more efficient than a smaller farm. The crucial factor in determining the greater efficiency of a large farm over a small farm is managerial expertise. For farms smaller than approximately 100 hectares, there is little empirical evidence on scale economies from South Africa, however, international experience indicates that in an undistorted policy environment small farms are often at least as efficient as their large-scale counterparts, provided the working capital constraint is removed.

5.11 **Technical efficiency.** Trends in technical efficiency can be grouped into three distinct periods. First, improvements in the technical efficiency of South African agriculture were virtually absent during the 1950s and early 1960s. During this period, agricultural production increased through an expansion in cultivated area, supported by the introduction of tractors after the Second World War. Second, modest, but significant, gains in technical efficiency appeared in the late 1960s and continued during the 1970s. These gains are associated with the intensification of agriculture during this period. Also during this period the relationship between labor and machinery changed from a complementary one during the period of area expansion to one of substitution, especially as a result of the mechanization of the harvesting process in cereal farming. Third, substantial growth in technical efficiency was recorded after 1983, as farmers adjusted capital inputs to changes in the structure of investment incentives. For the post-war period as a whole, however, the trends in technical efficiency differed dramatically by subsector with livestock and field crops performing well below the average, while the export-oriented and labor-intensive horticulture subsector showed dramatic increases in technical efficiency.

5.12 Hence, the picture of South African agriculture that emerges from this analysis of efficiency is a varied one, but one for which several subsectors can be characterized by: (i) a gradual deterioration of price efficiency which in effect shows that farmers were compensated for the implied loss of efficiency through other channels; (ii) scale efficiencies that are the result of a combination of a distorted policy environment and managerial ability; and (iii) uneven improvements in technical efficiency that are modest by international standards and differ markedly by sub-sector.

5.13 The policy distortions that have given rise to the inefficiencies that characterize large parts of the agricultural sector (e.g., subsidized interest rates and tax concessions on agricultural investment) are not particularly difficult to reverse. Over the past decade, a wide range of policy changes in the general

direction of greater market orientation have been introduced and have affected both agricultural inputs and outputs. The impact of these changes has varied considerably by subsector: debt-free producers of some export commodities have benefited, while profits for others, notably the main grain producers, have fallen. For the sector as a whole, however, the capital-intensity of production has been declining throughout the 1980s and employment was increasing through 1987. More recently, however, employment has again declined. Although the cause for this decline is unclear, it is likely due to political uncertainty over the future of white-owned farming.

Price Efficiency

5.14 Intervention in the markets for the main factors of production for more than a century have produced a highly segmented market structure. In agriculture, factor market segmentation produced a situation of relative land abundance for a minority of white farmers, who could draw on an excess supply of black labor at very low wages relative to the rest of the economy. The resulting factor-price structure which faced white farmers before 1970 can succinctly be characterized as relatively inexpensive land and labor.

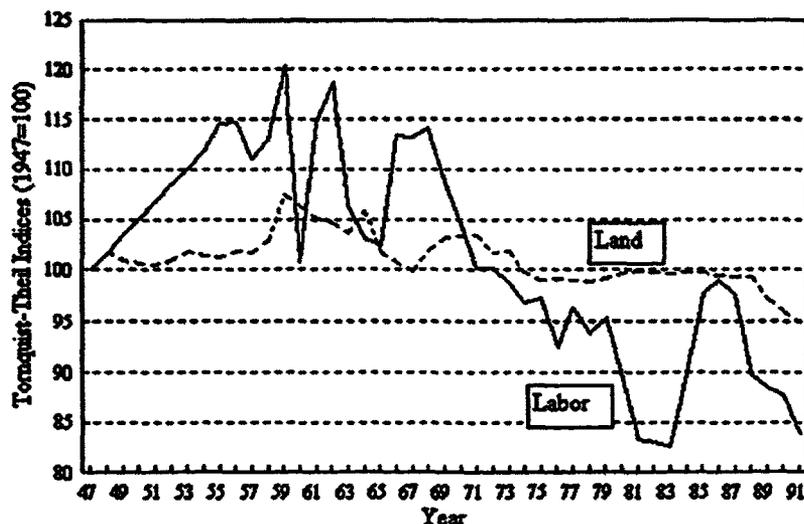
5.15 Such factor market segmentation needs to be taken as a given in judging the price efficiency of the white farming sector. Price efficiency—the rational response of a profit-maximizing farmer to price signals—will be gauged in terms of the prices that farmers actually faced, even though these were largely the outcome of institutional arrangements which sought to suppress price-setting mechanisms predicated on free and competitive markets.

5.16 Figure 5.1 shows the aggregate land and labor quantity indices in commercial agriculture for the period 1947 to 1991. Initially, the land index grew as cultivated area was being expanded through increased mechanization. It grew at 0.3% a year until about 1960 and then began a slow decline of about 0.25% per annum for the rest of the period. The labor index grew rapidly until 1959, at 1.3% per annum, then wavered until the late 1960s, before beginning a decline at 1.18% a year, from 1968 to 1980. Then there are three particularly bad years, followed by a recovery in the mid 1980s which took labor use back to the level of the early 1970s. However, since 1986 labor use has declined precipitously for reasons which await further analysis, but may very well be related to changes in the political economy.

5.17 Prior to 1970, the cultivated area increased, particularly in maize production in the summer rainfall areas⁴⁵, as oxen were progressively replaced by tractors. Larger areas could be managed and labor use initially increased, partly because of the greater utilization of fertilizer and improved seed varieties (Payne, van Zyl and Sartorius von Bach, 1990). After 1970, however, the substitution effect of mechanization dominated, especially with the introduction of the combine harvester, which sharply reduced labor demand at harvest time.

⁴⁵ The summer rainfall areas followed the pattern in the winter rain regions, where the expansion of the cultivated area was largely complete by 1947.

Figure 5.1: Primary Inputs (1947-1991)



Source: Thirtle *et al.*, 1993

5.18 The period 1960 to 1983 can be characterized as one of substitution of machinery for labor induced by a policy environment which included cheap credit (negative real interest rates) and tax breaks for agriculture, allowing capital equipment to be written off entirely in the year of purchase. The Pass Laws contributed to this trend, especially after severe enforcement began in 1968. By the end of the drought period of 1981-3 the credit and tax concessions had been largely eliminated, the gold price plummeted, and the Rand was devalued. These events led to a dramatic reversal of the historical trend, as cheap labor was substituted for expensive capital⁴⁶. However, the increased use of labor between 1983 and 1987 proved ephemeral. Labor use declined rapidly after 1987, probably due to changes in the political arena.

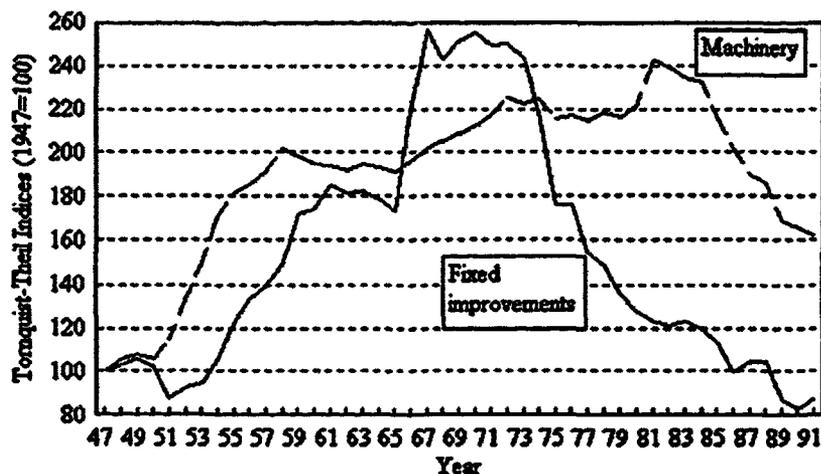
5.19 Figure 5.2 looks at trends in capital inputs. The machinery input index grew at 7.57% a year until 1958, then at 0.76% until 1981; since then it has fallen 4.56% a year. This leaves little doubt that the relative price change that occurred in the early 1980s was enough to cause a movement away from machinery, as farmers were forced to become more competitive and efficient in their use of capital. Similarly, the series for fixed improvements shows the effects of policies that influenced the real cost of capital⁴⁷. That series grew rapidly until about 1967 (4.82% per annum up to 1970) and since 1970 has

⁴⁶ Van Zyl (1986) showed that the elasticities of substitution in South African agriculture were very low, a factor he attributed to inflexibility borne of lack of competition. Had this study been done a few years later, so that this reversal could be picked up, the results might be different.

⁴⁷ Note that the series pertains to improvements to land and buildings, but does not include land values.

been falling at 5.47% per annum. The clear decline since 1976 can at least in part be attributed to the ending of subsidies on farm construction, especially on housing construction for hired labor.

Figure 5.2: Capital Inputs (1947-1991)



Source: Thirtle *et al.*, 1993

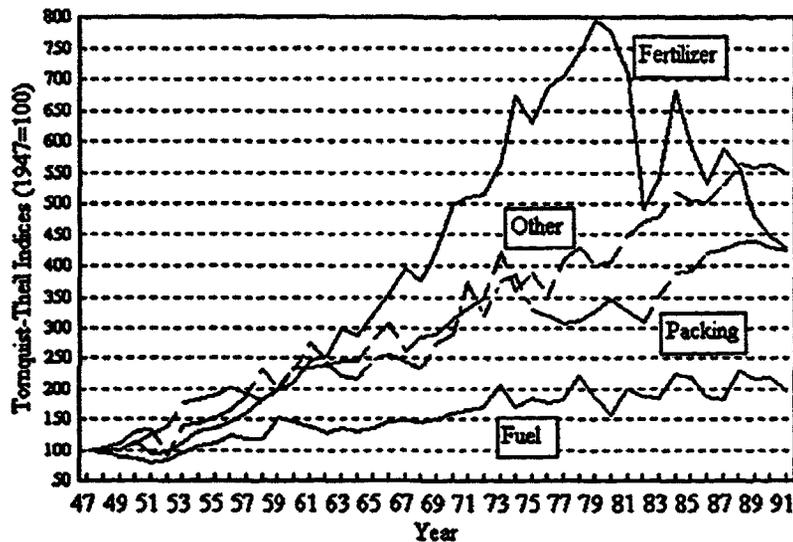
5.20 Intermediate inputs (dips and sprays, fertilizers, packing, fuel, etc.) appear in Figure 5.3. This index grew at 5.3% per annum until 1978 and then began to fall slowly over the rest of the period. There was tremendous growth in the use of dips and sprays, which grew at 9.74% until 1972, then at 20.56% until 1980, before beginning to fall at 1.83% per year over the rest of the period. This increase was so enormous that Figure 5.3 is reproduced without dips and sprays, so that the movement of the other series can be seen more clearly. Packing, fuel and "other" inputs recorded slow growth. However, fertilizer—a substitute for land—grew at a rate of 7.73% per annum up to 1979, before declining by over 4% a year for the remainder of the period.

5.21 In conclusion, the overall trends in the use of inputs were the following:

- (i) two decades of declining labor use up to 1991, interrupted by a sharp, but apparently temporary, reversal in the mid 1980s;
- (ii) increasing use of machinery up to the early 1980s, followed by a decline throughout the remainder of the decade;
- (iii) increasing use of intermediate inputs (in particular pesticides and fertilizers) up to the early 1980s, followed by stagnation for the remainder of the decade.

These broad trends will be related to relative price changes with respect to land prices, labor costs, and the costs of mechanization.

Figure 5.3: Intermediate Inputs (1947-1991)



Source: Thirtle *et al.*, 1993

Land prices

5.22 The 1913 and 1936 Native Lands Acts effectively segmented the land ownership market to the exclusive benefit of white farmers, who were subsequently subsidized in their effective occupation and use of the land by a wide range of state-sponsored incentive programs, including direct subsidies for land purchases and land improvements. The restriction of access by Africans to white-owned land through tenancy (sharecropping, fixed rent, and labor tenancy) has a similar long legislative history. Since the beginning of the century a series of laws undermined the profitability of tenancy and facilitated the conversion of black farmers into farm laborers. Tenancy arrangements continued to resurface under various disguises throughout the country, but by the 1970s black tenancy had been largely extinguished (see Chapter 3).

5.23 Market prices of rural land are determined by the value of land as an asset in the portfolio of an investor—the net present value of all mutually non-exclusive profit streams, which includes, but is not restricted to, the value of agricultural profits. Thus, in considering the land price, one must distinguish between the market price and the price as determined by the agricultural value only.

5.24 Van Wyk (1967) compared average market prices of land in which the Land Bank was involved (1912-1965) and of all rural transfers (1927-1964), on the one hand, and average agricultural value as estimated by the Land Bank (1912-1965), on the other. His study shows that:

- a. Between 1912 and 1941, the increase of land values—both market and agricultural—was gradual and consistent;
- b. Since 1941, purchasers throughout the period paid considerably more for land than the agricultural values would indicate. For example, in 1960, the average Bank valuation was R20/hectare, but purchases financed by the Land Bank averaged R27/hectare. In 1950, the average valuation was R27/hectare, while the average purchase price was R40/hectare; and
- c. Since 1951, the difference between market price and agricultural value increased.

5.25 There is considerable evidence to support the hypothesis that rural land investment strategies were significantly influenced by declines in the cost of capital, as measured by the real interest rate on rural land mortgages. The influence of trends in agricultural profitability (on investment in rural land), which declined since the mid-1970s, seems less pronounced. For instance, whereas Behrmann and Collett, in an econometric analysis of farmland prices in South Africa between 1933 and 1966, find a positive correlation between the increases in real land prices and increases in farm profitability, they attribute the rapid increase in market prices after 1962 to a highly elastic reaction to the sharp drop in interest rates.

5.26 Van Schalkwyk and Groenewald (1992) attempted to measure the effect of land quality characteristics on land prices from 1976 to 1988.⁴⁸ However, while quality differences among irrigated, rainfed, and grazing land were statistically significant, the arability index was not found to be a significant factor. Instead, real debt load per hectare was found to have a high positive correlation to land prices.

5.27 Whereas land prices rose gradually in real terms from 1970 until the early 1980s, they generally declined strongly afterwards (Table 5.1). Real land prices in the summer rainfall region (column A) fell by 45% from their peak between 1981 and 1990, in the cattle grazing areas by 37% from their peak in 1976 to 1990 (column C), and in sheep grazing areas by 28% from their peak in 1980 (D).

⁴⁸ Pooled, provincial, cross-section data were used from the respective agricultural censuses of 1976, 1981 and 1988.

Table 5.1: Real Land Prices, Real Capital Formation, Long-Term Debt, and Arrears.

	Real Land Price Indices				Real Capital Fixed Improvements (R million)	Formation, Machinery & Implements (R million)	Real Value of Mortgage Loans to Farmers (R million)	Real Value Loans for Land Purchases (R million)	Land Bank: Percent of Capital Owed in Arrears	
	SR	WR	CG	SG					Interest (%)	Capital (%)
	A	B	C	D	E	F	G	H	I	J
1990	66	82	92	90	344.0	388.7	263.4	157.3	6.40	1.41
1989	68	78	86	88	372.7	524.2	322.8	206.3	5.75	1.47
1988	73	76	85	87	345.9	536.6	297.5	198.5	5.45	1.60
1987	79	87	78	89	360.6	410.5	299.8	178.5	5.62	1.63
1986	85	80	103	95	360.9	488.6	357.2	184.2	4.55	1.22
1985	100	100	100	100	388.4	663.5	508.6	218.3	2.76	0.94
1984	114	97	100	107	414.2	737.9	656.6	245.1	1.94	0.95
1983	118	89	118	98	452.4	895.2	965.2	246.1	2.03	0.96
1982	121	76	116	84	582.8	1,131.9	266.3	140.1	1.26	0.92
1981	121	70	106	118	572.3	1,723.8	389.4	262.2	0.74	0.74
1980	105	59	113	125	568.5	1,294.4	365.5	265.5	1.14	1.06
1979	97	67	96	101	544.3	899.0	302.7	182.2	1.64	1.48
1978	100	77	103	102	556.3	961.8	231.5	143.7	1.64	1.48
1977	114	88	137	88	529.5	1,058.0	178.7	105.5	1.62	1.42
1976	103	83	145	91	581.9	1,056.7	204.4	125.0	1.49	1.27
1975	116	90	143	102	641.3	1,345.6	261.9	179.7	1.25	0.99
1974	105	81	115	100	655.6	961.5	275.6	208.8	1.21	1.15
1973	101	77	111	95	693.3	888.5	227.8	166.5	1.64	1.28
1972	103	78	102	104	645.0	846.0	176.6	113.8	1.85	1.24
1971	107	85	85	111	571.6	920.9	313.8	163.3	1.92	1.12
1970	102	69	88	108	542.7	813.8	470.7	148.6	2.06	1.13

SR = Summer rain region; WR = winter rain region; CG = cattle grazing region; and SG = sheep grazing region. The real price indices for land is calculated as the nominal land price index divided by CPI and adjusted to make 1985=100. The real value of fixed improvements is calculated as nominal expenditures on fixed improvements divided by the price index for "materials for fixed improvements" and adjusted to constant 1985 Rand (1985=100) (Abstract of Agricultural Statistics 1992, p. 85, 97). Real fixed investment in tractors, machinery and implements equals the nominal investment divided by the price index for machinery and implements and adjusted to equal 1985 constant Rand (Abstract, p. 85,97). Percent of Land Bank long-term debt in arrears is taken from Table F.2, Appendix F.

5.28 Van Schalkwyk and van Zyl (forthcoming) undertook the most comprehensive study of South African land prices to date, covering the period between 1955 and 1990. The following conclusions emerge from their work.

- a. Real land prices were positively related to lagged inflation, suggesting that investments in land were partially made as a hedge against inflation; and

- b. real land prices rose as real interest rates decreased to negative levels during the 1970s; correspondingly, real land prices decreased as interest rates increased to more normal levels in the 1980s;
- c. real land prices followed the trends in real returns per hectare closely, except for most of the period after 1983 when land prices and real returns per hectare followed opposite trends; and
- d. real land prices were positively related to real debt per hectare except for the period between 1980 and 1985, when real debt-load rose while land prices plummeted.

5.29 Van Schalkwyk and van Zyl point to fact that as real interest rates on credit from commercial sources increased in the early 1980s, farmers responded by gaining increased access to Land Bank credit which was on soft terms and was managed by their own cooperatives. Consequently, during the period 1979-1985 real debt per hectare was allowed to increase rapidly as land prices fell and, as a result, solvency rates declined precipitously.

5.30 On balance, it appears that prior to 1980 land prices were mainly influenced by the high profitability and the highly subsidized interest rates offered to farmers. The steady decline in farm profitability, combined with higher real interest rates, are mainly responsible for the decline in real land prices during the 1980s. In terms of price efficiency, these trends suggest that a large part of the increase in real land prices from the 1960s until the early 1980s reflected farmers' very reasonable reaction to the decline in the cost of capital. Thus farmers were price-efficient as agricultural entrepreneurs and as investors in rural real estate, taking advantage of the Land Bank's preferential and subsidized access to low-interest mortgages for farmers. However, during the 1980s, the declining profitability of the capital-intensive farming methods used by the farmers seems to have been compensated by increased access to soft credit from the Land Bank which was managed by and extended through the agricultural cooperatives. In such a situation it is difficult to assess to what extent farmers were behaving in a price-efficient manner, given the increased likelihood for opportunistic behavior under a system in which demand and supply of credit are no longer separable.

Labor Costs

5.31 The segmentation of labor markets came about through a long series of legislative efforts similar to the legal distortions introduced in the land and capital markets. It attempted to solve what was referred to as the labor problem of the white commercial farming sector by means other than simply increasing wages in order to attract laborers. The inability to use wages to attract black labor reflects fundamentally on the unprofitability of large-scale settler farming. In general, legislation enacted attempted to reduce competition between employers by increasing the transaction costs of labor mobility between the agricultural and non-agricultural sectors, and between agricultural employers. For instance, the concepts of masters and servants in the common law and a series of legislative actions from 1911 onward (Chapter 3) strengthened the ability of white farms to retain farm workers and prevented farm workers from breaking contracts, changing employers or allowing family members to enter contracts with other potential employers. The fact that the labor problem continued to affect large-scale farming is demonstrated by the fact that until 1993, labor laws affecting other sectors of the economy were not applicable in agriculture.

5.32 The economic impact of the above and other legislation was extreme labor market segmentation. It ensured a supply of labor to white farmers at wages well below those in the urban sectors. White farmers basically became local monopsonists in the labor market and were able to set wages for black labor at very low levels. A substantial black wage gap between manufacturing and mining, on the one hand, and agriculture, on the other, was the result⁴⁹ (Table 5.2). For example, in 1975, it was estimated that the per capita income of Africans in the four large metropolitan areas was 3 times that of Africans living in the white rural areas (Wilson and Ramphela, 1989). In 1989, African poverty—measured by the percentage of the African population living below the poverty line—was also much higher in the white rural areas (well above 60%), than in the large metropolitan areas (24.3%).

5.33 Such wage gaps provided powerful incentives for blacks to migrate illegally to urban areas. Influx control was at best a sieve, but did little to reduce the gap between rural and urban wages. Conversely, illegal migration of blacks to the urban areas may have prevented the gap from growing even further, given that trends in average annual earnings of all races exhibit strong similarities across sectors.

Table 5.2: Annual Earnings in the Farm and Non-Farm Sectors at 1985 Constant Prices

	Agriculture			Manufacturing			Mining		
	Total	Blacks	Others	Total	Blacks	Others	Total	Black	Others
1988	793	—	—	9,559	6,061	13,543	6,962	—	—
1987	816	—	—	9,215	5,664	13,294	6,577	—	—
1986	821	—	—	9,270	5,492	13,593	6,427	—	—
1985	794	—	—	9,644	5,607	14,252	6,595	—	—
1984	—	—	—	9,950	5,829	14,728	6,757	4,628	22,614
1983	956	743	1,837	9,842	5,776	14,568	6,594	4,440	21,927
1982	—	—	—	9,636	5,637	14,898	6,606	4,386	22,652
1981	—	—	—	9,418	5,462	14,161	6,378	4,236	22,391
1980	965	—	—	10,423	5,925	15,768	6,921	4,526	24,792
1975	707	524	1,609	8,289	4,347	13,163	5,405	3,024	23,752
1969	483	354	1,191	7,169	3,325	11,669	3,264	1,157	20,292
1965	579	434	1,365	6,453	3,069	10,472	2,906	1,101	17,075
1960	483	364	1,126	5,685	2,420	9,545	2,706	1,063	15,175
1957	415	326	941	5,481	2,333	9,259	2,733	1,089	14,578

Source: Roth *et al.*, 1992.

Others: Whites, Coloreds and Asians.

5.34 However, there is considerable evidence of a widening of the black wage differential between the

⁴⁹ Some of the difference can be attributed to cost-of-living differentials, and, in agriculture, to the exclusion of in-kind remittances that are difficult to completely capture in salary or wage measures. However, such adjustments are unlikely to explain the full extent of the gap.

farm and non-farm sectors between 1972 and 1983 (Simkins, 1990). From 1972 to 1983 real wage levels in the mining sector rose rapidly⁵⁰ (Table 5.3), while manufacturing, starting from a higher base, came in a distant second. Up to 1983, the real wage gains in agriculture were considerably lower than in most other sectors. Wage trends in agriculture were roughly comparable to those in the equally less-organized trading sector. A growing wage gap between the farm and non-farm sectors has also been found by Merle Lipton (1985:388, table). Table 5.2 shows that the wage of black farm workers of R364 per annum in 1960 was a mere 15% of that of black workers in manufacturing and 34% of that of black mine workers. By 1969, black farm workers earned 10% and 30% of what black workers were earning in manufacturing and mining respectively, but by 1980 only 9% and 14% of what workers in manufacturing and mining were receiving. The situation had not changed much at the end of the 1980s.

Table 5.3: Comparative Sectoral Increases in Real Wages, 1972-1983

Sector	Percent Increase in Real wages (%)
Agriculture	26
Mining	254
Manufacturing	65
Trade	21
Government and private service	52

Source: Simkins, C., 1990, derived from an analysis of South African statistics, 1986.

⁵⁰ The extraordinary increase in mining wages (254%) can be attributed to the very low base from which they started, the gold price spike in the late 1970s, unionization and the decision of the Chamber of Mines to attract more labor from inside South Africa after the withdrawal of the very large Malawian Mine Labor contingent by Banda in 1973.

Table 5.4: Agricultural Wage Income of Black People on White Farms, 1970-1987

	Total Wages^a Paid to Farm Workers (R million)	Wages per^a Regular and Domestic Worker (R/year)
	(1985 constant prices)	
1987	811.0	1,017
1986	895.5	1,092
1985	924.2	1,120
1983	903.5	1,232
1981	878.8	1,276
1980	876.7	1,169
1979	905.2	1,169
1978	890.6	1,114
1976	866.2	1,076
1975	859.9	1,010
1974	800.2	927
1972	768.2	961
1971	736.0	876
1970	788.2	858

Source: Simkins, C., 1990, Table 3, derived from an analysis of Agricultural Censuses and Surveys.

Note a/: Wages must be interpreted with caution because of high payments in kind.

5.35 The increase in real wages of black farm laborers and of all farm laborers (i.e., all races) seems to have been matched by a comparable rise in labor productivity (of all races of farm laborers)—at least for the period for which data on black farm wages exist, i.e., 1957 to 1988 (Tables 5.2 and 5.4)⁵¹. In other words, real wage increases for black farm workers seem to have been justified in terms of productivity increases. Van Rooyen and van Zyl (1991) estimate that labor productivity has actually risen faster than real total remuneration per farm laborer. Such differential trends are probably the result of labor market segmentation, but also of the relative decline of bargaining power of black farm laborers, who are excluded from the labor-relations legislation governing other sectors of the economy.

⁵¹ There is some also evidence of racial differentiation in relative wage increases, at least for the period 1957 to 1969, when real wages of black farm laborers increased by a moderate 8.6%, but real wages of other races increased by 26.6 ton/hectare

Table 5.5: Labor Employment, Wages and Productivity

	Total Farm Workers (000)	Ratio of Casual to Permanent Workers	Productivity per Worker (Real Value Output/Worker)(Rands) ^a
1988	1,144.8	0.74	11,722
1987	1,273.9	0.78	9,673
1986	1,270.6	0.73	9,351
1985	1,245.1	0.71	9,183
1983	1,056.6	0.72	9,999
1981	1,069.1	0.73	10,816
1980	1,152.8	0.72	10,311
1979	1,226.5	0.77	9,709
1978	1,196.9	0.76	9,013
1977	1,169.0	0.63	8,762
1976	1,184.3	0.73	8,684
1975	1,331.0	0.85	6,829
1974	1,344.9	0.89	6,842
1973	1,354.2	0.86	7,323
1972	1,389.3	0.89	6,099
1971	1,516.0	1.03	6,106
1969	1,609.0	0.94	4,591
1965	1,161.7	0.39	5,719
1964	1,122.1	0.48	5,869
1962	1,642.6	0.88	3,918
1961	1,544.8	0.80	3,869
1960	1,348.3	0.78	4,376
1959	1,728.9	1.00	-
1958	1,605.5	0.97	-

Source: Roth *et al.*, 1992

a. Gross value of agricultural production divided by the producers' price index of agriculture goods (Abstract of Agricultural Statistics) divided by the total number of workers (permanent and casual) employed in agriculture regardless of race (South African Statistics 1990).

5.36 In spite of the moderate and apparently labor productivity-related wage trends, farm employment declined in absolute numbers, starting in the early 1970s (Table 5.5)²². This came at a time when the volume of field crop production grew at an annual rate of 4.7% and total agricultural production grew at 3.9% over the period 1970-1980. Agriculture is the only sector in the economy to experience such an absolute decline in employment during a time of output expansion, concurrent with growing numbers of unemployed black labor in the wider economy.

²² Regional data on the number of workers on farms in the commercial sector are extremely limited, and effectively available for only a few years. Data are sometimes, but not always, desegregated into permanent and casual workers within regions. Fairly complete data on the number of farm employees are available by race and sex (up to 1969) in the Abstract of Agricultural Statistics, and by permanent and casual workers for most years in the South African Statistics.

5.37 Additionally, the ratio of seasonal to permanent workers has declined since 1970, from 1.03 in 1971 to 0.74 by 1988. The sharp decrease in casual workers in 1964 and 1965 corresponds with the promulgation of the Bantu Laws Amendment Act of 1964. Whether the number of casual workers indeed actually declined, or whether farmers stopped reporting them or started calling them permanent for reporting purposes would be difficult to ascertain. Marcus (1989) points to an increasing trend of using women and children as a temporary labor force.

5.38 Labor productivity, defined as the real value of gross agricultural production per worker (permanent and casual), rose steadily from 1960 through 1980 before levelling off in the 1980s (Table 5.5). From 1970 to 1985, labor productivity increased by 5.2% per year during 1970-1985, for a total of 84% (van Zyl *et al.*, 1987).

5.39 The stagnation in labor productivity in the 1980s is matched by a stagnation in real farm wages, as well as an economy-wide stagnation and decline in the 1980s; average real annual earnings (average for all races) fell disproportionately in agriculture: from R965 to R793 between 1980 and 1988. They fell only from R10,423 to R9,559 in the manufacturing sector and from R6,921 to R6,962 in mining. Given the concurrent long-term growth in unemployment, the increased bargaining power of unionized black labor outside of agriculture seems to have lessened the effects of the general economic crisis on real wages in the non-agricultural sectors. The effects of extreme labor-market segmentation on the ability of farm workers to organize seems to have aggravated the economic crisis for them. As Table 5.5 shows, the real wage in agriculture fell to below 1975 levels by 1987.

5.40 However, there seem to be important regional and subsectoral differences with respect to wage trends in agriculture. The devaluation of the Rand from \$1.29 in 1980 to \$0.46 in 1985 benefitted the sub-sectors which were export-oriented. In particular, deciduous fruit, mainly concentrated in the Western Cape, increased its profitability and technical efficiency and translated this into higher employment and higher wage rates. In Table 5.6, employment differences between regions in 1985 and regional wage trends between 1980 and 1985 are examined. The Western Cape (Region A) has the highest male/female ratios, the highest percentage of full-time equivalent jobs, the highest farm labor wages, the only substantial real wage increase, and the only increase in employment between 1980 and 1985. On the other hand, the Northern Cape/Karoo (Region B), the Orange Free State (Region C) and the Western Transvaal (Region J), have all experienced a drop in real wages and a moderate decline in employment between 1980 and 1985.

Table 5.6: Wage Increases and Variations in Contract Labor by Region

Region	Males per 100 females in 1985	Full-time equivalent (% of 1985 population)	1985 Wage Rate (R/year)	Wage Increase 1980-85 (%)	Employment Increase (%)
A	613	37.6	2,131	17	4
B	140	22.0	1,000	-23	-1
C	110	20.2	998	-15	-1
D	105	22.7	1,227	1	-1
E	121	-	1,303	0	-
F	154	17.0	1,357	7	-2
G	124	21.9	942	5	-4
J	168	12.8	1,056	-19	-11

Sources: Simkins (1990), Agricultural Censuses and surveys.

5.41 Labor market segmentation also caused an artificial scarcity of white laborers, thus increasing the relative price of skilled, mainly white, labor. Moll (personal communication) found that there were hardly any black farm managers in the Western Cape (wheat/sheep mixed farms), Northern Orange Free State, and Western and Southern Transvaal (maize farms). The tradition of black farm managers seems mainly to exist in the deciduous fruit sector in the Cape, where white owners often employ black foremen. The reasons for this seem to be that the scope for the substitution of machinery for labor is much more limited in horticulture than in grain farming, that Cape land owners are more enlightened, and that the export orientation forces the subsector to remain efficient.

Cost of Mechanization

5.42 The explanation for the decline in farm employment after 1970 can be found in two related factors. First, the relative profitability of agriculture vis-a-vis the other sectors of the economy started to decline, making it increasingly difficult for farmers to compete with urban wages. Second, although the process of mechanization started after the Second World War, it was only after 1970 that an absolute displacement of labor by capital took place. The various pieces of legislation seeking to prevent black farm labor from leaving the farm were accompanied by a strong trend of labor substitution through mechanization, which began to reduce farm labor demand after 1970.

5.43 After World War II commercial agriculture saw a rapid increase in mechanization. Two periods can be distinguished. First, until 1970, the increase in mechanization led to area expansion and output growth. Labor followed this expansion as a complementary factor. Second, after 1970 area expansion stagnated and output continued to grow, but labor was replaced by capital and farm employment declined in absolute numbers. There is considerable evidence to suggest that the second change was not price efficient, but led to under-use of labor and over-use of tractors and harvesters.

5.44 In 1981 the Land Bank's long-term real interest rate, at a negative 8.2%, encouraged farmers to

invest in durable assets (machinery and equipment). Tax provisions allowing farms to write off 100% of capital costs against taxes in the year of purchase further lowered the cost of capital. Overvalued exchange rates favored imports of machinery for a sector that attempted to maximize the production of nontradables. Apparently, the combined effect on the cost of capital was to lower the relative price of equipment and machinery to such an extent that it became profitable to replace low-wage farm labor with even cheaper capital. This is a remarkable trend, given the already low wages of black labor in agriculture and the existence of excess supply of unskilled black labor in the economy as a whole.⁵³

5.45 The mechanization of labor in the maize-growing areas of Western Transvaal is described in detail by de Klerk (1985) for the period 1968-81 (Table 5.7). Farm operations which used to be done almost completely by hand (e.g. planting, reaping, transporting, threshing, bagging, and gleaning) were increasingly mechanized⁵⁴ and methods for handling, transporting, and delivering the crop to the cooperative depots became more mechanized as well. Since the early 1960s cooperatives have invested millions in bulk handling and storage facilities. Bulk harvesting by combine, with transfer directly to a truck or trailer eliminates, much seasonal labor. By 1968, 55% of the maize crop was already being delivered in bulk, and by 1977 virtually the entire crop was reaching silos in the same way (de Klerk 1985). Fertilization and weeding were also mechanized. Chemical weed control was not nearly as widespread as mechanical harvesting in 1968. Only 15% of the area planted with crops was being sprayed with weed killers in that year. By 1981 weed killers were being used on roughly 95% of the total crop surface (de Klerk, 1985).

5.46 When asked to explain their shift to mechanized harvesting, farmers mentioned the following factors in descending order of importance: (1) labor is unavailable; (2) combine harvesting is quicker; (3) labor is unreliable; (4) combine harvesting is cheaper; (5) combine harvesting is easier to control; (6) bulk handling has made combine harvesting easier; and (7) wages have become too high (de Klerk, 1985). Hence, the urban-rural wage gap—reflecting the uncompetitiveness of white agriculture vis-a-vis the other sectors of the economy—caused a labor shortage in white agriculture. When the costs of mechanization were artificially lowered, white farmers were given another solution for the labor problem: substitution of mechanization for workers.

⁵³ It should be noted, however, that effective labor costs in agriculture may have increased during the later 1970s and 1980s beyond the modest nominal wage increases because of increasing tensions in labor relations and the general political environment.

⁵⁴ Planting once done by large teams of seasonal workers is now done by farmers using a few workers with tractors and planting equipment. Once maize harvesting begins, almost all farms hire seasonal workers for reaping, threshing, bagging, or gleaning. Two harvesting methods are still practiced: (1) reaping by hand and threshing mechanically (hand harvesting); and (2) reaping and threshing with the same machine. Until the 1950s, all maize was reaped by hand by teams of workers. Combine-harvesters, which appeared in South-Africa in the 1950s, presented farmers with the choice of mechanized harvesting techniques using tractor pulled harvesters. Self-propelled combines were introduced in the 1960s. Even with mechanical harvesting, seasonal workers are still universally hired for gleaning (collecting the sacks of heads left behind by the combine). However, the combine has replaced manual reaping, transport and threshing.

Table 5.7: Distribution of Harvesting Methods in the Western Transvaal, 1968-1981

	Harvesting by Hand (% farms)	Mechanized Harvesting (% farms)	Hand and Mechanized Harvesting (% farms)
1968	81	16	3
1973	54	38	8
1977	11	81	6
1981	5	89	6

Source: de Klerk, 1983.

5.47 Mechanization affected farming systems in the various agro-climatic zones of South Africa in different ways: In the grain-producing areas it is associated with a reduction in farm employment after 1970. Maize and wheat together account for about 60% of total cropped area. Payne, van Zyl, and Sartorius von Bach (1990) examined trends in farm employment by maize and wheat farms from 1945 to 1987 in the five major commercial grain production areas of South Africa: North-Western Free State, Western Transvaal, and the Transvaal Highveld in the summer rainfall areas, and Ruens and Swartland in the winter rainfall areas. They found that the number of employees per 1,000 hectares under cultivation rose significantly in the summer rainfall regions from 1945 to 1970, while it remained constant in the winter rainfall areas over the same period. However, the number of employees declined over the period 1970-87 in all areas. The real value of total remuneration (cash plus kind) per farm laborer increased in all areas from 1945 and 1970; but although it also increased in the summer rainfall areas from 1970 to 1987, it decreased in the winter rainfall areas.

5.48 In the summer rainfall areas (mainly maize), a large expansion in cultivated area occurred from 1945 to 1970, mainly due to the substitution of tractors for animal-powered technology. This period witnessed an increase in the number of farm employees (per 1000 hectares under cultivation) and in real machinery investment (per hectare under cultivation), indicating a complementary relationship between machinery and labor. With higher production from area expansion and higher yields (from technical change) came an increased demand for farm labor, especially for harvesting. However, between 1970 and 1987 the number of employees declined; and machinery investment increased, indicating a substitution of capital for labor in production. A rapid expansion of maize harvesting technology after 1970 also hastened a shift in the substitution of capital for labor and a decline in employment (de Klerk, 1983). As indicated in Table 5.7 only 16% of farms in the Western Transvaal used some form of mechanized harvesting in 1968, but by 1977 81% of farmers were using it, and by 1981, 89%.

5.49 In the winter rainfall areas (mainly wheat) much of the area expansion occurred before 1945. From 1945 to 1970, the number of employees (per 1000 hectares cultivation) stayed fairly constant, while real investment in machinery (per hectare under cultivation) increased significantly. Between 1970 and 1987, however, real investment in machinery stayed constant; but the number of workers declined.

Price Efficiency of Mechanization after 1970

5.50 South African agriculture makes sub-optimal use of labor. Subsidized low interest rates and

various tax breaks have encouraged excessive substitution of capital for labor (Bell and Padayachee, 1984; Biggs, 1982; de Klerk, 1991). Additionally, labor-saving technology has been extensively promoted by South Africa's farm machinery industry and seems also to have been adopted by farmers in an effort to imitate North American and West European agriculture. Such capital/labor substitution has resulted in declining capital efficiency (Volkskas Bank, 1991).

5.51 Consequently, mechanization in South Africa appears to have exceeded the optimum level defined by the relationship of relative factor prices and the marginal rate of substitution between capital and labor. Overmechanization—use of machinery beyond its economic optimum—has been widely documented for South African agriculture (e.g. Brotherton and Groenewald, 1982; van Rooyen, 1973; Hancke and Groenewald, 1972). Several studies have found that the most productive and profitable farm enterprises had the least real investment in machinery and equipment per hectare (Viljoen and Groenewald, 1977; Janse van Rensburg and Groenewald, 1987). The use of tractors has been so extensive that their productivity appears to be zero (van Schalkwyk and Groenewald, 1992).

5.52 Similar findings are reported by van Zyl (Farmer's Weekly, September 11 and 18, reporting on Herman van Schalkwyk's M. Com. dissertation at the University of Pretoria)⁵⁵. The study found that a straightforward substitution of labor for capital would lead to increased production and that labor was not only under-used, but also underpaid.

5.53 Over-mechanization was found in nearly all regions. Except for the arid Karoo region (which relies heavily on irrigation for the limited planting that takes place), the results indicated that tractors were applied up to a point where their marginal productivity has become zero or, in the summer rainfall cropping region and the grazing regions of Natal, negative. This suggests considerable over-mechanization for large parts of the country as a result of subsidized low interest rates. Moreover, two of the regions with negative marginal productivity also had the highest rate of farm insolvency.

5.54 Labor was underused and underpaid in all regions. Its marginal productivity was found to be positive in all regions, suggesting general under-use; and because marginal-product values were consistently higher than marginal costs, labor appears to be substantially underpaid—most probably because of the labor market segmentation achieved under influx control.

5.55 The switch to mechanization in maize and wheat production during the 1970s also entailed a switch to monocropping; but large-scale, rainfed, monocropping of grains in the South African agro-climate is high-risk production. A shift toward rainfed monocropped farming normally implies an increased risk exposure for the producers; with price-efficient, risk-adverse farmers, such higher risks should mean low adoption rates. However, South African maize producers—and to a lesser extent wheat,

⁵⁵ Data used were from the Agricultural Census Reports of 1976, 1981, and 1988 to which regional Cobb-Douglas production functions were fitted. The dependent variable used an approximate measure of productivity, i.e. regional gross farm income deflated by the index of agricultural producer prices. Estimated coefficients were then used to evaluate whether marginal value products equal marginal cost for the various inputs used. Five homogeneous regions were distinguished: Natal; summer-rainfall cropping region, consisting mainly of the maize triangle; Cape coastal areas; Karoo—an arid to semiarid region including the largest part of the Cape Province and Western and Southern Orange Free State; and the grazing region—the Cape north of the Orange River and Northern Transvaal grazing areas.

have developed a pattern of expectations based on the government's willingness to guarantee output prices and provide financial assistance during drought years. Indeed, farmers expect that if a drought occurs, those who are hit hardest will receive the highest financial subsidies. Technically, insolvent farmers often receive loans at subsidized negative real interest rates, while successful farmers pay commercial rates. In recent studies, van Zyl (1989) and Brand *et al.* (1991) showed that a more open agricultural marketing system would cause maize production to move east, toward places with higher and more stable rainfall patterns.

5.56 Using data from the Western Transvaal, Janse van Rensburg and Groenewald (1987) compared grain farmers who did poorly with those who did relatively well in the drought years following record maize production in 1980/81 and found that those who did poorly had spent more than others on fertilization per rand of maize earnings and had invested more per hectare in machinery, equipment, and fixed improvements.

5.57 In the policy environment of the 1970s and early 1980s there was little incentive for farmers to switch to less risky production patterns. Again, although one expects farmers to act rationally, i.e., price-efficiently, there is substantial evidence that many of them did not. Moreover, from an economy-wide perspective the shift to high-risk, monocropped systems under rainfed conditions is probably very price-inefficient; and there are good reasons to believe that this price inefficiency has contributed substantially to an accelerating and unsustainable spiral of indebtedness.

5.58 The characteristics of financially insolvent farmers confirm the inefficiencies associated with the over-investment in capital-intensive production prompted by subsidized credit. Fuller and Darroch (1988) use discriminant analysis to identify factors distinguishing farms with a high debt ratio from those with a low debt ratio in the summer crop producing regions, i.e. the Transvaal and the Orange Free State⁵⁶. Their findings indicate that higher debt levels were significantly associated with seven factors—in descending order of importance:

- a. the ratio of medium-term to total assets (.593), indicating that high debt users tended to over-invest in medium-term assets, mainly equipment and livestock;
- b. the subsidized credit to total liabilities ratio (.380), indicating that farmers with larger amounts of credit from the Land Bank, Agricultural Credit Board, and Cooperative Credit tend to be higher debt users—reflective of the effect of interest rate subsidies;
- c. off-farm income (-.374), implying that non-farm earnings help substitute for credit;⁵⁷

⁵⁶ Farmers having ratios above 40% were defined as high debt users, while those below 10% were classified as low debt users. The low debt group represents farmers with sufficient liquid reserves to meet cash flow shortfalls. The high debt group describes farmers who face protracted financial stress and heavy debt repayment schedules. The SAAU sent out 43,122 surveys in its 1983 questionnaire, 11,080 of which were returned. The Fuller and Darroch sample extracted 937 (447 low debt and 490 high debt) summer crop producers from this larger sample.

⁵⁷ Thus negative relationship has an important stabilizing effect, and indicates opportunities for debt reduction through non-farm and part-time activities.

- d. the achievement of a standard 10 education or higher (.334), implying that better educated farmers tend to acquire higher debt loads;**
- e. age of 36 years or older (-.258), implying that older farmers tend to have less debt;**
- f. the profitability ratio, defined as net farm income to total assets (-.245), indicating that higher farm incomes help substitute for credit; and**
- g. the debt servicing ratio, defined as interest plus capital repayments to gross farm income (-.229), implying that debt loads tend to decline as interest costs become onerous, or as repayments reduce the debt load.**

5.59 In summary, there is considerable evidence to support the hypothesis that the reduction of farm employment in the commercial sector during the 1970s was relatively price-inefficient, even from a narrow perspective. It was certainly not price-efficient from an economy-wide perspective. The substitution of capital for labor in agriculture seems to have been primarily induced by extreme segmentation of land, labor, and capital markets.

Recent Trends in Price Efficiency

5.60 In the second half of the 1980s, the government withdrew a number of explicit and implicit price subsidies (van Zyl, 1991; Brand *et al.*, 1991):

- a. Farmers were exposed to somewhat higher interest rates and considerably devalued exchange rates;**
- b. Budgetary allocations to farmers declined by more than 50% in real terms since 1987;**
- c. The real producer price of important commodities such as maize and wheat declined by 50% since the mid-1980s;**
- d. Controlled marketing and processing systems were progressively deregulated since the late 1980s; and**
- e. Favorable taxation has been changed, reducing the implicit subsidy. For instance the writing off of capital purchases in one year has been changed to three years.**

5.61 A relatively price-efficient reaction seems to have followed. The capital-intensity of production fell, and farm employment initially rose steeply (Figure 5.1) in the late 1980s. Similar policy changes affected a few other sectors of the economy as well, particularly small business. As a result, these sectors went through a period of adjustment, marked mainly by a rapid reduction in the capital-intensity of production. Looking at the sectoral composition of the disinvestment that took place, we see that agriculture led the way. During the period 1983-87, agriculture disinvested at an annual rate of 15.9%,

significantly above the economy-wide rate of 6.5% per year.⁵⁸

5.62 The relative price-efficiency of the farmers' response is also reflected in recent changes in cropping patterns. They have shifted away from low-profit maize and groundnuts to higher-value specialty crops (horticultural crops and vegetables). Howcroft (1992) estimates that the adoption of a free domestic market for all cereals would bring reductions in the area under cultivation to maize and wheat of 13.4 and 19% respectively.

5.63 In horticulture, the price efficiency of supply response to the devaluations and the sanctions of the 1980s are illustrated by the following trends:

- a. an 81% growth of exports from 1981 to 1984, followed by three years of sanctions-related stagnation (the industry reports that perhaps one-quarter of overseas market sales were lost), and then by strong growth from 1987 to the present; and
- b. a 161% rise in the volume of production for export from 1981 to 1992, compared to a 64% rise in production for the domestic market (the latter possibly subject to under-recording).

5.64 Before the adjustment policies of the 1980s were implemented, the price efficiency of South African agriculture relative to the U.S.A. was found to be low, in particular with respect to the flexibility to respond to changes in the prices of inputs such as machinery (van Zyl and Groenewald, 1988). However, in a later study of elasticities of substitution between agricultural inputs, Sartorius von Bach and van Zyl (1991) found that the price efficiency of South African agriculture has improved in recent years because of an increase in farmers' ability to substitute among inputs in response to changing market conditions. They attribute this progress to the easing of policies that restricted labor mobility and controlled the prices of agricultural commodities. However, increased political risks may negatively interfere with the recent improvements in price efficiency of the sector.

Scale Efficiency

Evidence

5.65 Agriculture is generally characterized by constant returns to scale, and the higher efficiency of family labor compared to wage labor has often established an inverse relation between farm size and efficiency in production (see text box). International research has generally not found evidence of any more than a minimum increase in returns to scale for the crops that occupy more than 90% of South Africa's cultivated area (i.e. maize, wheat, oats, sunflower, sugarcane, and groundnuts).⁵⁹

⁵⁸ However, de Klerk (1991) argues that some of the apparent reduction in capital intensity may be a statistical aberration caused by changes in valuation methods.

⁵⁹ Economies of scale in *processing*, not in production *per se*, exist in sugarcane, while the coordination problem of running sugar mills all year up to capacity may spill over into the organization of production.

5.66 In South Africa farm sizes began to increase in the 1950s and continued to increase until the 1980s. After steadily increasing until 1971, black farm employment began to decline. Consequently, it can be argued that scale efficiencies appeared after 1950, and in particular after 1970, and were a main factor behind the steady decline of employment in agriculture. Hence, agriculture was the only major sector of the economy that experienced an absolute decline in employment between 1951 and 1985—despite the fact that wages were rising at a slower rate in agriculture than in other sectors. This history suggests that in South Africa, a number of interventions in the markets for land, labor and capital produced a structure of incentives which induced the scale efficiencies, in particular since the 1970s.

5.67 From the beginning of the century until the 1950s the number of farms and the total area cultivated increased, but the average farm size declined. After 1950 this trend is reversed; and farm size grew consistently, accelerating in the 1970s before levelling off in the late 1980s. Because the cultivated area

What is the Relation Between Farm Size and Efficiency?

There exists compelling international evidence that the relationship between farm size and the efficiency of resource use is an inverse relation—as farm size increases, efficiency declines. Numerous studies provide empirical evidence at the micro-level of the existence of such a relation, which is basically due to higher efficiency of family labor as compared to hired labor, in combination with commonly observed imperfections in credit and land rental markets (Binswanger, Deininger, and Feder, forthcoming). For example, in the Muda River region of Malaysia, Berry and Cline (1979) found that the value added per unit of invested capital for the second smallest farm size group exceeded that of the largest farm group by 65%. In another study by Berry and Cline (1979) for the Northeast of Brazil, social profits were 23 to 150% higher for the second smallest farm size groups (10 to 50 ha) than for the second largest and the largest farm size groups (200 to 500 ha) in a majority of zones that did not specialize in plantation crops. Rosenzweig and Binawanger's (forthcoming) analysis of ICRISAT data from ten villages in a semi-arid region of India showed that smaller farm size groups had higher profits per unit of wealth than larger farm size groups, despite great differences in access to farm inputs and in vulnerability to risk. The authors found that only in the riskiest of environments did the advantage of the poorer and smaller farmers nearly disappear.

A World Bank study on the higher efficiency of small versus large farms in Kenya, reports the following results ("Kenya: Growth and Structural Change", 1983). The study—using 1973/74 data—found that output per hectare was 19 times higher and employment per hectare was 30 times higher on holdings under 0.5 hectare than on holdings over 8 hectares. At the national level, this meant that a 10% reduction in average farm size would increase output by 7% and employment by over 8%.

Similar results are reported for many other countries (Binswanger, Deininger, and Feder, forthcoming). Even in a modern, "high-tech" environment such as can be found in Wisconsin farming in the US, Chavas and Aliber (1993) found virtually no scale economies in dairy production, and the very limited initial scale economies they observed were attributable to lumpiness of certain inputs.

Evidence is also available at the macro-level, but only in terms of physical yields—an imperfect indicator of efficiency. Prosterman and Riedinger (1987), using data from 117 countries covering more than 90% of the world's population, show that 11 of the top 14 countries in terms of grain yields per hectare are countries in which small-scale, family farming is the dominant mode of production.

However, studies by Feder (1985) and Carter and Kalfayan (1989) demonstrate that the existence of market imperfections which tend to favor larger farms (e.g. capital and insurance markets) may negate the inverse relationship between farm size and productivity. In particular, Carter (1993) finds that certain financial market disadvantages may render small farms non-competitive. Hence, whereas the small-scale farming strategy holds considerable promise from an efficiency perspective, this does not mean that its implementation is easy or can afford to ignore critical policy issues, such as resolving the usually constrained access of small farmers to credit markets.

remained the same, the number of farms declined—from 116,848 units in 1950 to 62,084 units in 1990 (Abstract of Agricultural Statistics, SADA, 1993). The pattern seems to continue until the late 1980s, although there is some evidence of an increasing differentiation in farm sizes below the 100-hectare minimum which (in some areas) defines a farm in official statistics⁶⁰.

5.68 The reduction in the number of farming units shows an accelerating trend, beginning in 1950, when there were 116,848 farming units (Hattingh, 1986). This number declined at an average rate of 0.9% from 1950 to 1960 (1960: 105,859 units), by 1.4% in the 1960s (1971: 90,422 units), by 2.4% in the 1970s (1981: 64,430 units), and by 2.9% in the first half of the 1980s. There was a slight rise to 67,010 units by 1988, followed by a decline to 62,084 by 1990 (Abstract of Agricultural Statistics 1992). The process leading to fewer and larger farms was apparently nation-wide. All provinces experienced substantial consolidation of farmland. From 1955 to 1988, the number of farming units in the Orange Free State fell 53%, in Cape Province 41%, in Natal 41%, and in Transvaal 39 ton/hectare.

5.69 Average farm size increased from 738 ha/farm in 1953, to 867 hectares in 1960, to 988 hectares in 1971, and to 1,339 hectares in 1981, but declined to 1,280 ha/farm in 1988. The increase in average farm sizes was a nation-wide process, too. From 1955 to 1988, average farm sizes by province increased from 1,284 to 2,663 ha/farm in the Cape province, 471 to 998 ha/farm in the Orange Free State, 403 to 629 ha/farm in Transvaal, and 390 to 609 ha/farm in Natal. As can be seen from these data (which do not include the market gardens around the major metropolitan areas (Brand *et al.*, 1992), the national average farm size hides significant regional variations. In 1988 the median farm size was about 500 hectares, with farms in the high-potential areas significantly smaller. Such qualifications should not distract, however, from the fact that large-sale farms dominate South African agriculture, and that the average size of these farms is extraordinary by international standards (Table 5.8).

⁶⁰ The decline in the number of farming units may mask an increase in the proportion of small farming units (mainly in peri-urban areas). The extensification of land ownership seems to have been fueled by land transfers from the middle farming class. Many of the farmers that used to comprise the middle farming class either left agriculture or expanded their farm (Roth *et al.*, 1992).

Table 5.8: Average Farm Sizes in the World, 1970

Country or continent	Average operational farm size (ha/farm)
South Africa--total	988
Natal	523
Transvaal	473
Orange Free State	724
Cape	1,765
Africa (excl. South Africa)	2.9
North America	161
Europe	7.6
Latin America	47
Asia	2.3
World	14.1

Source: UN Food and Agriculture Organization (1981)
Republic of South Africa (1993), Abstract of Agricultural Statistics

Notes: Countries used in calculations are the following.

- Africa:** Algeria, Angola, Botswana, Cameroon, Central African Republic, Chad, Congo, Gabon, Ghana, Côte d'Ivoire, Kenya, Lesotho, Liberia, Libya, Malawi, Reunion, Sierra Leone, Swaziland, Tanzania, Togo, Zaire, Zambia.
- North America:** Canada, USA.
- Europe:** Austria, Belgium, France, West Germany, Italy, Malta, Netherlands, Norway, Poland, Portugal, Sweden, United Kingdom.
- World:** Also includes Eastern Europe and Oceania (not shown). Oceania includes *inter alia* Australia (1,997 ha/farm) and New Zealand (302 ha/farm).

5.70 At present, there is mixed evidence for the existence of scale efficiencies in South African's commercial farm sector:

- a. The distribution of gross farm income is highly unequal: In 1983, 0.9% of the farmers earned 15.9% of the total gross farm income; 5.8% earned 38%, and 27.5% earned 72.8%;
- b. Nieuwoudt (1990) cites statistics indicating that 28% of South Africa's farming sector supplies 75% of its gross farm output;
- c. Hattingh (1986) reports evidence of a direct relationship between farm size and efficiency in sheep farming in the Karoo and in cattle ranching in northwestern Transvaal. Hattingh also reports that efficiency increased between small and medium-sized irrigated farms at Vaalharts and dryland grain farms in the Orange Free State, before decreasing again on the larger farms (size ranges are not specified);

- d. Analyzing the Department of Agriculture's Production Cost Surveys, Moll (1988) finds no significant economies of size⁶¹ both in maize-cattle regions (Western Transvaal, North-West Orange Free State and the Transvaal Highveld) and in wheat-sheep regions (Swartland). Using retabulated 1983 census data, however, Moll finds economies of size but only in the maize areas and for 50-300 hectare range.

5.71 Conversely, there exists empirical evidence from South Africa to suggest an inverse relation between farm size and efficiency. In 1988, 50% of farming units owning only 7% of the farmland, with farm sizes of less than 500 hectares, were responsible for 43% of gross income, 23% of net farm income, 36% of capital investment, and 33% of farm debt (Brand *et al.*, 1992). Christodolou and Vink (1990), based on data obtained from the Central Statistical Service which also covered the existing smallholdings in municipal areas, come to the following conclusions (Table 5.9):

- a. the gross margin per hectare was R1514 for small farms (below 500 ha), R87 for middle farms (500-1000 hectares), and R36 for farms above 1000 hectares. Moreover, small farms employed 632 workers per 1,000 hectares, compared to 27 and 29 workers per 1,000 hectares for middle and large farms respectively;
- b. the cash wage per 1,000 hectares paid by small farms was on average R1,189, compared to 13 cents and 7 cents paid by middle and large farms respectively;
- c. farmworkers earned 16% of the gross income of small farms, but only 10 and 9% of the gross income of middle and larger farms;
- d. smaller farms' total farm expenditures were nearly R5,000 per hectare, whereas middle and larger farms spent only R177 and R55 per hectare respectively.

⁶¹ Moll measures economies of size (all factors but operator labor changing) as opposed to economies of scale (all factors changing).

Table 5.9: Factor Intensities in Agriculture, 1988

Farming unit size groups (ha)	Gross Margin (R/ha)	Employees (No./1000 ha)	Cash wage per worker (R/1000 ha)	Wages as % of gross income (%)	Current expenditures (R/ha)
< 2	5,096.77	2,779.6	10,534.31	16.4	28,210
4	3,421.24	1,082.6	469.13	17.1	8,160
9	2,517.84	673.5	84.56	15.3	3,133
19	614.38	379.7	25.78	21.4	1,283
49	986.41	335.3	6.49	14.0	1,942
99	384.23	172.9	2.94	16.8	840
199	344.41	133.6	1.35	17.3	680
299	170.83	84.9	0.99	16.4	424
499	91.45	45.8	0.35	12.5	277
999	87.55	27.1	0.13	10.2	177
1,999	74.55	17.7	0.08	10.1	117
4,999	38.46	7.8	0.05	9.6	56
9,999	18.06	3.0	0.07	8.6	25
10,000+	11.71	1.4	0.11	8.6	21
Total:	50.11	14.3	0.01	11.6	91

Source: Christodoulou and Vink, 1990, based on data provided by the Central Statistical Service.

5.72 Much of the evidence on scale efficiencies in South African agriculture cited above should be interpreted with extreme care because data were not standardized for differences in land quality or for the particular commodity mix of farms, and in some cases inappropriate analytical methods were followed. In order to address these deficiencies, Chavas and van Zyl (1993) used non-parametric methods⁶² to determine scale efficiencies in seven major farming regions of South Africa—Swartland, Rûens, Transvaal Highveld, Western Transvaal, Eastern Orange Free State, Northwestern Orange Free State, and the Vaalharts irrigation area. Individual farm data for the period 1976 to 1989 were supplied by the Department of Agricultural Development's Directorate of Agricultural Economics.

5.73 A wide range of farm sizes in both extensive and intensive commercial farming seem to be scale efficient, depending on how farmers organize their specific variable and fixed input mix, as well as the combination of outputs they produce. In this respect, many relatively small farms in both rainfed and irrigation agriculture are scale efficient, but a rather larger number of other relatively small farms seem to be scale-inefficient. Given the available data, Chavas and van Zyl (1993) could not investigate scale efficiency on farms below 10 hectares in the irrigated area (Vaalharts) and below approximately 100 hectares in the other areas.

5.74 The comparative efficiency of black, small-scale farming versus white, large-scale farming is very difficult to assess. More than a century of policy interventions has suppressed the profitability of black farming in order to protect white farmers from black competition and to assure the white farm sector of

⁶² The methodology used is described in detail by Chavas and Aliber (1993).

low-wage labor. The only areas where black farming was condoned were the homelands. Given their location, lack of infrastructure, and support services, generally poor soils, and extreme population pressure, it would be unfair to compare small-scale farming in the homelands with farming in the white areas.

5.75 Nonetheless, a few cases exist in which black, small-scale farmers were given access to support structures roughly comparable to those of their white colleagues. The two case studies presented here, in both of which small-scale, black farmers equalled or outperformed larger, white farms, come from tea and sugar farming (van Zyl and Vink, 1992).

5.76 In the tea industry the case study illustrates that "mini-farming" (where an individual leases a small area planted to tea from a tea estate and is remunerated according to the quantity of acceptable tea produced) shows an increase in yields, income, and profitability of both the estate renting out the land and the mini-farmers. Compared to ordinary pluckers, mini-farmers obtained yields on their 0.5 hectares plots averaging 23% more than what the large estate obtained.

5.77 The same applies to the sugar-cane case study in the Eastern Transvaal, where black smallholders obtained 116.8 tons/hectare on their plots of 7.1 hectares (on average), while large-scale white farmers adjacent to these smallholders obtained 102.9 tons/hectare on 68.6 hectares (on average). Total costs amounted to R3,286/hectare for the smallholders and R 3,448/hectare for the large-scale farmers (unpublished data from representative samples gathered by the University of Pretoria). Both these case studies confirm that with the same support structures small-scale farming is at least as efficient as large-scale farming in these specific areas and types of farming.

Land Transactions

5.78 Land transactions constitute an important mechanism to capture scale efficiencies. Since 1965, between 7,561 and 14,889 deeds, and between 3.1 million to 5.5 million hectares of rural immovable property, have been transferred annually (Table 5.10). The total area of transfers has remained remarkably constant at around 4% of the total surface area in the commercial sector.

5.79 The average size of land transfers has risen over time. The number of transfers dropped in the 1980s, both nationally and for most size categories; but there does not appear to be a corresponding drop in the total area transferred.⁶⁵ Particularly in the upper size ranges of the market for rural land, transfers have remained relatively constant in number while areas transferred have increased.

5.80 Transactions involving smaller parcels dominated: Of the 8,852 parcels transferred in 1990/91, 26.8% were less than 19 hectares in size, 26.7% between 20-99 hectares, 17.9% between 100-299 hectares, 10.4% between 300-499 hectares, 9.4% between 500-999 hectares, 5.1% between 1000-1999 hectares, and 3.6% above 2000 hectares. However, the frequency of recorded deed transfers of the smallest parcels is declining in relative terms, which may suggest that progressively more transfers are taking place off the record.

⁶⁵ Note that 1981-82 was the best maize season ever.

5.81 Transactions involving larger parcels, however dominated the total area transferred. Of the 3.2 million hectares of land transferred in 1990/91, 0.6% were parcels less than 19 hectares in size, 3.2% between 20-99 hectares, 9.2% between 100-299 hectares, 11.2% between 300-499 hectares, 18.1% between 500-999 hectares, 19.5% between 1000-1999 hectares, and 38.3% above 2000 hectares.

Table 5.10: Land Market Transactions and Prices, Republic of South Africa

	Total No. of Transfers (No.)	Total Area of Transfers ('000 ha)	Ave. Size of Parcels Transferred (ha/parcel)	Percent of Farm Area (%)	Ave. Land Price/ha (R/ha)
1990-91	8,852	3,235.2	365.5	-	798.1
1989-90	10,146	4,159.4	410.0	-	614.4
1988-89	10,132	4,206.3	415.1	4.90	496.5
1987-88	8,436	3,470.4	411.4	4.04	427.8
1986-87	7,561	3,166.9	418.8	3.69	375.0
1985-86	7,818	3,079.7	393.9	3.57	364.4
1984-85	9,437	3,543.4	375.5	-	361.6
1983-84	9,642	3,477.6	360.7	4.04	336.7
1982-83	9,414	3,453.3	366.8	-	258.6
1981-82	13,544	5,269.2	389.0	6.10	237.1
1980-81	14,889	5,519.8	370.7	-	199.7
1979-80	10,406	3,924.1	377.1	-	145.7
1975-76	10,857	3,297.8	303.7	3.86	136.0
1970-71	13,123	3,482.9	265.4	-	82.0
1965-66	11,399	3,599.1	315.7	4.10	47.6

Source: Roth *et al.*, 1992

5.82 Another land transaction facilitating the capturing of economies of scale is rental. In 1963 total leased land represented only 13.1% of total land area; but in 1988 rented, leased, and share-cropped land represented 19.5% of the total surface area, with considerable regional variation: 26.9% in the Orange Free State, 22.9% in Transvaal, 17.3% in the Cape, and 15.7% in Natal. Hattingh and Herzberg (1980) found that those who lease land are mainly farmers who already own some.

5.83 Moreover, although the official statistics point to a relatively high rental rate of nearly 20% of total area, in fact most rentals are between the older and younger generations of the same white family. Such rental arrangements are de facto pension schemes, and the proportion of genuine rentals can be as low as 5%. It has been suggested that the low rate of genuine rentals at least partly reflects owners' fear that renters will "mine" and destroy the fragile land.

Causes of Scale Efficiency

5.84 The official definition of a viable farm in terms of size has had a profound negative effect on the

relative profitability of farms smaller than the viable size. Given the high levels of official assistance and subsidies to farmers, the viability definition became almost a self-fulfilling prophecy, because under the Agricultural Credit Act all farms below the viable size were excluded from assistance. Moreover, under the Subdivision of Agricultural Land Act of 1970 it is not possible to subdivide an existing title deed without ministerial approval. Permission is granted only with proof that a reasonable net farm income can be obtained with "average" management. The subjectivity of this requirement, together with the lending criteria of the official funding agencies, precludes systematic empirical analysis of small farms in South Africa. Yet it is interesting to observe that despite the lack of assistance for small farmers, official record deed transfers show that the prices of small parcels of land increased more rapidly than the prices of large parcels since the 1960s.

5.85 Ironically, the benchmark for determining farm viability--farm size--has changed over time; during the 1960s and 1970s, expansion and mechanization were considered the solution to remain competitive with non-farm incomes. However, in the 1980s, the high debt loads from capital and land purchases reduced farm profitability and decreased returns to capital-intensive investment. Thus many farms once thought to be viable by the criteria set in the 1970s were exposed as unviable in the financial crisis of the 1980s.

5.86 Farmers themselves seem to view consolidation of farms as a rational economic reaction capturing economies of scale. For instance, Moll (1988) reports that of 55 farmers surveyed in Bredasdorp and Malmesbury regions who had bought land during the previous decade, 35 (or 64%) indicated that they had done so partly to take advantage of size economies.

5.87 De Klerk (1991) attributes the process of farm consolidation to technical change, viz. mechanization. Consolidation has generally also caused a reduction in farm employment, because the new mechanized farm did not need to employ all of the workers from the more labor-intensive smaller farms that were acquired. While seasonal workers bore the brunt of mechanization, permanent workers were most directly affected by consolidation (de Klerk, 1985).

5.88 Sartorius von Bach, van Zyl, and Koch (1992) constructed an index of managerial ability based on indicators such as budgeting and the keeping of records and found it to be highly correlated with both farm size and total farm income. By evaluating Cobb-Douglas production function coefficients with the managerial ability index included as an input, the authors found significantly increasing returns to scale among 34 farmers in Vaalharts Irrigation Area. When managerial ability is excluded from the regression, however, results indicate constant returns to size. The same pattern holds true for a sample of 100 farmers in Northeastern Orange Free State.

5.89 Groenewald (1991) suggests that even beyond the indivisibility of capital and managerial inputs, economies of scale may result from scale efficiencies induced by the existing agricultural marketing system through volume discounts on the purchase of inputs and volume premiums on the sale of outputs.

5.90 Roth *et al.* (1992) econometrically tested a number of models explaining the reduction in the number of farms between 1972 and 1988. They found the number of farms to be positively correlated with the ratio of real machinery costs to real gross revenue, but negatively correlated with the ratio of farm requisites (mainly non-labor inputs) to output prices. This suggests that scale efficiencies in

agriculture are strongly associated with a decline in machinery cost and an increase in the profitability of non-labor inputs. Both correlations suggest that the appearance of scale efficiencies in South African agriculture is rooted in the policy distortions that led to the reduction of the real cost of capital in the agricultural sector.

5.91 Chavas and van Zyl (1993) found a highly significant negative correlation between farm size efficiencies and debt burden, while size efficiency and managerial ability were positively correlated. The results show that the issue of scale efficiency is a complex one and is influenced by a variety of factors, of which managerial ability—the basic indivisible input in agriculture—seems to be dominant. A whole range of farm sizes in both extensive and intensive commercial farming was found to be scale efficient, depending on how farmers organize their specific variable and fixed input mix, as well as the combination of outputs they produce. Their results are consistent with the findings of Sartorius von Bach and van Zyl (1992), who conclude that better managers have larger farms. It should be noted, however, that small farms will in general require less sophisticated management than large farms, which would explain why Chavas and van Zyl found efficient farms in all size categories. On the other hand, these results can be interpreted to mean that farm size is not really the central, but rather managerial ability.

Future Scale Efficiency

5.92 The continued removal since the mid-1980s of the distortions brought about by price policies and legal constraints is likely to bring about a more normal pattern of scale efficiency in agricultural production. Given international experience, an inverse relation between farm size and efficiency should slowly emerge; but the current ownership-structure is likely to act as a constraining factor for the efficient restructuring of farm production. The structural bias against small-scale farming (black and white) carries high opportunity costs in terms of productivity and employment foregone.

5.93 In 1991 the racially-biased land acts—responsible for a century of segmented land-markets—were repealed. Because of imperfections in the credit market, however, the entry of new African farmers through self-financed land purchases will be limited because of their obvious poverty. Conversely, increased profitability of small-scale farming as a result of the removal of policy distortions may create an agrarian structure characterized by widespread tenancy—as existed before the adoption of mechanized farming methods. Such a return to tenancy, however, would considerably reduce investment incentives to black farmers, both in fixed farm capital as well as in residential housing and other infrastructure. Moreover, given South Africa's fragile soils, such a strategy entails significant environmental risk.

5.94 Although higher capital costs make capital-intensive farming less attractive in the intermediate run, the changing political landscape may make it difficult for farmers to return to the labor-hiring practices that supported the sector for the two centuries before mechanization. Thus it may well be that the exodus of workers away from farms will be difficult to reverse completely under the current agrarian structure.

Technical Efficiency

Total Factor Productivity

5.95 Thirtle, Sartorius von Bach, and van Zyl (1993) undertook the most recent and comprehensive analysis of total factor productivity growth of South African agriculture. Indices of total factor productivity (TFP) measure aggregate output per unit of aggregate input, providing an indication of the technical efficiency of agricultural production. Thirtle, Sartorius von Bach, and van Zyl (1993) calculated a TFP index for South African agriculture for the period 1947-91⁶⁴ (Table 5.11). There have been no previous attempts to measure TFP at the national aggregate level; but regional productivity was econometrically estimated by van Schalkwyk and Groenewald (1992), and productivity of grain-farming was calculated by van Zyl (1990).

5.96 From 1947 to 1991 total factor productivity (TFP) increased by 1.26% per year—a modest but significant rate by international standards. There was basically no TFP growth until 1965, then 2.15% until 1981 and fairly rapid growth of 2.88% per annum since 1981. The TFP growth for the 1981-1991 period was the result of policy reforms that increased the cost of capital relative to labor and slowed down non-labor input growth considerably.

5.97 However, aggregate TFP growth masks substantial differences in productivity growth among the three agricultural sub-sectors. The export-oriented and inherently labor-intensive horticultural sector grew at 2.42% annually over the entire 1947-1991 period, whereas the more inward-looking livestock and fieldcrop sectors both recorded a very low productivity growth of only 0.77% per year over the same period.

⁶⁴ The methodology followed is perhaps closest to that of Ball (1985) and Thirtle and Bottomley (1992). Thirtle *et al.* (1993) explain changes in the TFP index through the determining variables, such as the stock of knowledge (accumulated research capital, generated by past research expenditures), extension services and farmer education. The basic argument is that research and development generates technology, extension diffuses it and that better educated farmers are better at screening new technology, so they adopt faster and also adapt technology, so adding an element of on-farm technology generation. But, for South Africa, international technology transfer may also be important and the influence of the weather is considerable.

Table 5.11: Output, Input, TFP, Labor and Land Productivity Indices

Year	Output	Input	TFP	Labor Prod	Land Prod
47/48	100	100	100	100	100
48/49	110	102	108	108	108
49/50	104	118	88	100	103
50/51	114	108	106	109	114
51/52	121	102	118	113	120
52/53	112	112	100	104	111
53/54	129	123	105	117	126
54/55	134	129	104	120	132
55/56	135	135	100	118	133
56/57	141	139	102	123	139
57/58	138	142	97	124	135
58/59	143	154	93	126	139
59/60	150	158	95	125	139
60/61	161	155	104	159	151
61/62	172	166	104	150	164
62/63	178	163	109	150	170
63/64	172	165	104	161	166
64/65	179	176	102	174	169
65/66	183	185	99	179	180
66/67	227	186	122	201	226
67/68	201	182	110	178	201
68/69	208	187	115	182	204
69/70	220	191	115	202	213
70/71	227	207	110	217	220
71/72	257	211	122	257	249
72/73	243	205	118	243	239
73/74	252	203	124	255	247
74/75	272	199	137	281	273
75/76	265	205	129	273	268
76/77	279	211	132	302	281
77/78	299	213	140	310	302
78/79	299	226	132	319	303
79/80	311	231	135	326	313
80/81	317	226	140	352	318
81/82	343	228	151	411	343
82/83	307	224	137	370	308
83/84	276	234	118	334	277
84/85	310	242	128	345	311

85/86	315	231	136	322	315
86/87	319	218	146	323	321
87/88	336	214	157	344	338
88/89	360	210	171	401	362
89/90	370	206	180	418	380
90/91	360	215	168	411	375
91/92	342	213	161	409	360

Source: Thirtle *et al.* (1993)

5.98 Output growth has been consistently high, with the exception of the 1983 and 1991 drought years (Figure 5.4). Over the entire period 1947-91, the output index grew by nearly 350%—a rate of 3% per annum. The quantity index of inputs more than doubled, growing at 1.8% a year. However, the aggregate hides the fact that inputs grew at over 2.5% per year until 1979, but since then have been falling at 0.9% per year (Table 5.12). The combination of output growth and input reduction explains the growth of TFP over the past decade.

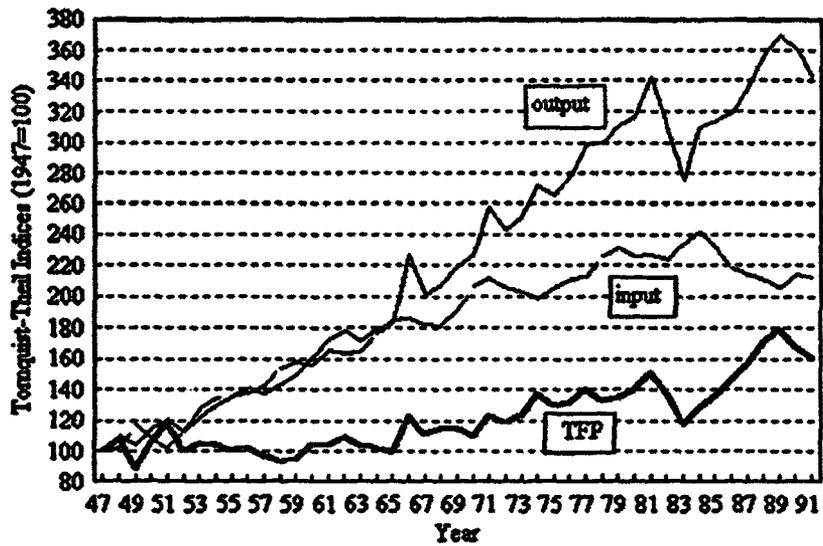
Table 5.12: Annual Average Growth Rates by Period, 1947-1991
(%)

Output	Input	TFP	Labor	Land
1947-91 3.02	1947-91 1.79	1947-91 1.26	1947-91 3.60	1947-91 3.13
	1947-79 2.52	1947-65 0.00		
		1965-81 2.15		
	1979-81 -0.90	1981-91 2.88		

Source: Thirtle *et al.* (1993)

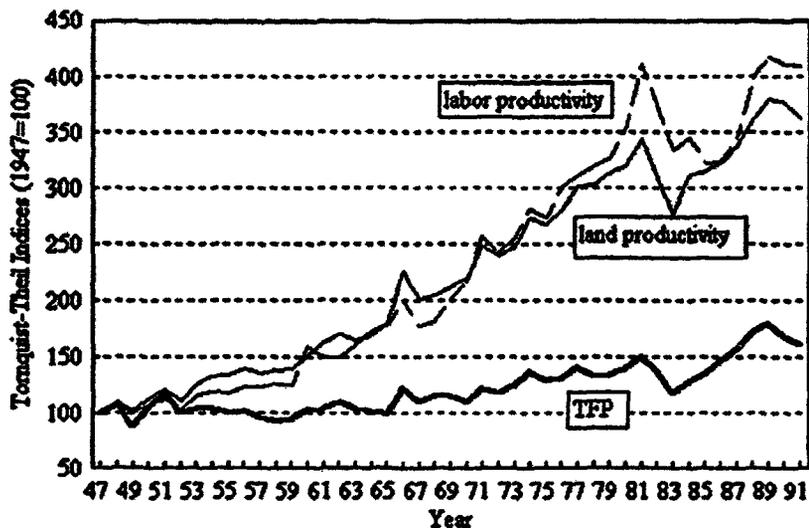
5.99 Over the 1947-1991 period, the partial productivity index for labor grew at 3.6% a year, and land productivity increased at 3.13% per annum. Labor and land productivity increases confirm that productivity growth with respect to the primary factors is higher than TFP growth because of the substitution of non-farm inputs for labor and land (Groenewald, 1964). This result can be seen most clearly in Figure 5.5.

Figure 5.4: Total Factor Productivity, Output and Input (1947-1991)



Source: Thirtle *et al.*, 1993

Figure 5.5: TFP, Labor and Land Productivity (1947-1991)



Source: Thirtle *et al.*, 1993

5.100 Output growth in horticulture outpaced both fieldcrops and livestock (Table 5.13 and Figure 5.6). Livestock output showed the least growth. For 1947-1991, growth rates for crops, horticulture and livestock were 3.06%, 4.20%, and 2.39% a year, respectively. The increasing importance of horticulture is not a recent phenomenon. Groenewald (1965) noted a similar trend for the period 1945/6 to 1962/3. The effects of serious droughts, as in 1983, are clearly shown in the fieldcrop index; irrigated horticulture is less affected; and the livestock index declines, but with a lag--since the damage to herds hits productivity later.

Table 5.13: Average Shares in Revenue and Costs and Annual Growth Rates, 1947-1991
(%)

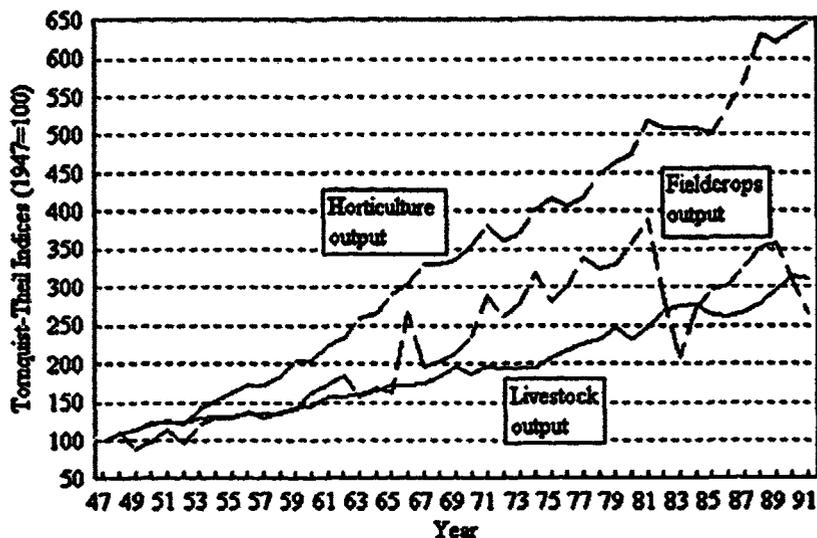
Item	Share	Change	Growth	Specific Sub-Periods of Interest
OUTPUTS:				
Crops	42	40 to 35	3.06	1990/1 used for Share Change
Horticulture	16	16 to 22	4.20	
Livestock	42	44 to 43	2.39	
INPUTS:				
Labor	23	36 to 15	-0.58	1947-59 = 1.30, 1962-80 = -1.18
Land	9	7 to 9	-0.10	1947-59 = 0.30, 1959-91 = -0.25
INTERMEDIATE	33	28 to 33	4.20	1947-78 = 5.30, 1978-91 = -0.19
Packing	13	16 to 10	3.02	
Fuel	26	33 to 25	2.09	
Fertilizer	28	24 to 20	4.73	1947-79 = 7.73, 1979-91 = -4.29
Dips & Sprays	10	3 to 16	10.02	1947-72 = 9.74, 72-80 = 20.56, 80-91 = -1.83
Other	24	23 to 29	3.94	
CAPITAL	35	28 to 35	1.67	1947-83 = 2.53, 1983-91 = -3.79
Improvements	15	22 to 10	-0.12	1947-70 = 4.82, 1970-91 = -5.47
Machinery	47	50 to 38	1.10	1947-57 = 7.57, 57-81 = 0.76, 81-91 = -4.56
Animals	39	28 to 52	3.10	

Source: Thirtle *et al.* (1993)

5.101 Table 5.13 also reports the average shares in total costs of the inputs⁶⁵, the change in cost shares over the full period, and the average annual growth rates. The overall position is clear in Figure 5.7, which compares four aggregate inputs—land, labor, capital, and intermediate inputs—with the total input series, shows that intermediate inputs and capital inputs have been substituted for the primary inputs. The cost share of labor in production tumbled from 36% to 15%, and the growth rate of labor over the period was a negative 0.58% per annum. Land has held its cost share, but shows no quantity growth. Thus, virtually all of the total input growth is accounted for by the rapid increase in intermediate inputs (4.2% per annum) and capital goods (1.67%).

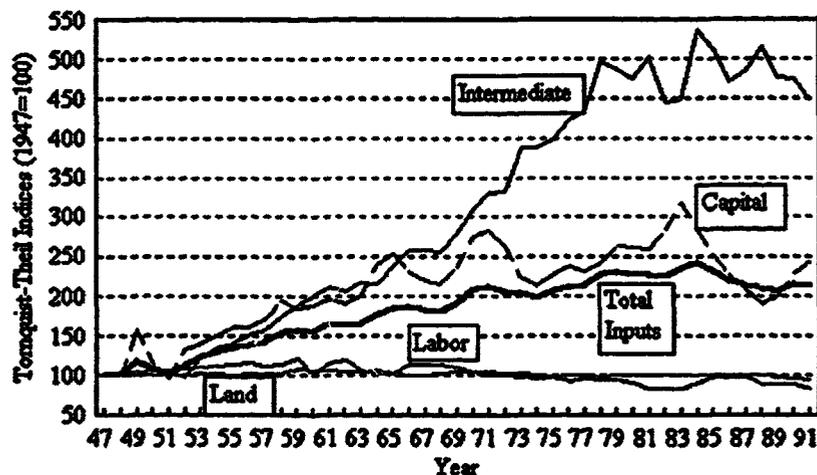
⁶⁵ Note that the shares of labor, land, intermediate and capital inputs sum to 100%. Within the intermediate and capital categories, the shares of inputs again sum to 100%.

Figure 5.6: Agriculture Output (1947-1991)



Source: Thirtle et al., 1993

Figure 5.7: Agriculture Inputs (1947-1991)



Source: Thirtle, et al., 1993

5.102 This general trend obscures the period-by-period differences. Intermediate inputs grew at over 5% per annum before 1978, but declined at 0.19% a year since then; capital inputs increased at 2.53% p.a. until 1983 and since then have decreased at 3.79% a year.

5.103 The growth rate in TFP is greater than would be expected on the basis of van Zyl's (1990) preliminary study of productivity in grain production; this shows the importance of horticulture to the agricultural sector. The rapid growth of productivity since 1983 is in agreement with the regional econometric study by van Schalkwyk and Groenewald (1992), which found evidence of substantial growth in some regions since 1981, reflecting the increasing competitive pressures and the removal of price distortions caused by credit, tax and macroeconomic policies.

Efficiency Issues in the Homelands

5.104 The poor natural resource base and the continuous build up of demographic pressure since the beginning of this century through the racially segmented land markets have made the homelands "functionally urban" or "rural dormitories". Given these conditions, future migrants from rural to urban areas are expected to come from the homelands; but even steady out-migration from these areas will not exceed population growth (Urban Foundation Report, 1990).

5.105 It is difficult to get a grip on efficiency issues in the homelands; the existing data base is very weak and probably underestimates the importance of agriculture, even though it is extremely constrained by the overcrowded and poor resource base. For example, official estimates of homeland yields are consistently lower than case study data (e.g., Cairns and Lee, 1990:85,91).

5.106 However, the available case-study material does suggest that relatively few farmers are engaged in agriculture full-time in the homelands. According to Nicholson and Bembridge (1991), the majority of households in South Africa's homelands does not have enough land to provide for subsistence needs. Thus most rural households engage in farming only part-time, and most of their output is kept for consumption at home.

5.107 Nonetheless, a substantial amount of arable land seems to go uncultivated each year (Tapson, 1985; Benso, 1981; Lenta and Maasdorp, 1988). Three main reasons explain this paradox:

- a. The portion left uncultivated is in fact heavily populated with livestock. Investment in livestock is a very profitable, even under overcrowded conditions. The Native Lands Act of 1913 explicitly forbade black tenants on white land to keep any cattle in excess of what was needed to plow the white owner's land. The only place for Africans to keep livestock, then, is in the homelands. Even with such restrictions in place and the extreme land pressure in the homelands, blacks continue to own over one third of South Africa's national herd.
- b. Because crop cultivation returns little profit, it is unable to attract labor, given existing opportunity costs of labor.

- c. A significant portion of "arable" land is in fact not arable (McKenzie, Weiner, and Vink, 1989).
- d. Transaction costs in the land market are high, because selling, purchasing, and renting land is technically illegal.

5.108 The profitability of crop cultivation seems to have been declining because of the worsening terms of trade. While family farmers in the homelands almost quadrupled maize output from 1970 to 1990, the terms of trade of inputs such as fertilizers and tractors declined by between 40 to 60% in the same period (Duncan *et al.*, 1992). Nevertheless, homelands production increases in maize, beans, sorghum, and groundnuts are outpacing the commercial areas. When partial relaxation of restrictions on black farmers occurred, smallholder production in sugar and cotton increased, as well as market gardens in vegetables (Ardington, 1990; Wheeler and Ortmann, 1990).

5.109 Several studies have also explored the relationship between farm size and efficiency in the homelands, where farms are in general much smaller than those in the commercial sector. Nieuwoudt (1991) notes that small farmers may use land much more intensively than do larger farmers. Latt and Nieuwoudt (1988) used data on 140 households in Umbumbulu district of KwaZulu to conduct a discriminant analysis of input use. They found that farms of less than 1 hectare applied inputs much more intensively than farms larger than 1 hectare; thus they suggested that smaller farms may maximize returns to land (their scarce resource), while larger farms maximize returns to labor or capital.

5.110 Moreover, even in comparison with the commercial sector, homeland agriculture is sometimes found to be more efficient. Case study material shows that in dryland cotton smallholders in KwaZulu are more viable than large farmers (Wheeler and Ortmann, 1990:251). These trends are also confirmed by the two case studies mentioned earlier where small farmers, given the same support structures in tea and sugar farming, have done as well or outperformed larger farms (van Zyl and Vink, 1992).

5.111 In a study of 60 farmers in Gazankulu, half of whom were identified by extension staff as commercially-oriented, Nicholson and Bembridge found that "commercial farmers" cultivate more land than "typical subsistence farmers" (12.2 hectares versus 2.3 hectares), own more cattle and equipment, are better educated, and are more likely than their neighbors to keep records. Similar findings are reported for Transkei (Bembridge 1991a), KwaZulu (Bembridge 1991b, Wheeler, and Ortmann, 1990, Nieuwoudt and Vink, 1989) and Lebowa (Coetzee). The authors of these latter studies also note the importance of income from non-agricultural sources, such as wage employment, in providing working capital for the purchase of seeds, fertilizers, and other production inputs.

5.112 Given the relatively equitable distribution of land holdings in the homelands and the lack of rights to buy or sell land, much of the increase in operational holdings by successful farmers represents formal or informal acquisition of temporary use rights held by others. Such transfers of temporary use rights may be consistent with improvement in efficiency, because they combine idle land with surplus labor and other factors. Such transfers are currently limited by the extreme population pressure under which the tenure arrangements operate. Landholders fear they will lose long-term rights to their land if they permit others to use it.

Technical Efficiency of Agriculture in the Homelands

5.113 Although data on production are generally available, the lack of data on area and yield makes analysis of trends in technical efficiency in most of the homelands impossible. Such data are available, however, for Lebowa (see separate section in Annex 3); they indicate relatively higher rates of growth in yields for most of the major crops from 1981 to 1989, compared with commercial areas. Moreover, in the TBVC ("independent") states production of maize, dry beans, sorghum, and groundnuts appears to be outpacing the commercial sector. Unfortunately, lack of area data precludes analysis of determinants of this production growth. Physical yield data are discussed in Annex 3.

CHAPTER 6: FARM PROFITABILITY

6.1 As demonstrated in earlier chapters, the growth path followed by many parts of South African agriculture was characterized by large-scale, capital-intensive production methods. Chapter 5 examined the efficiency of this strategy by analyzing three different types of efficiency and concluded that the apparent scale efficiency of large farms is due primarily to the preferential policy treatment accorded these enterprises. The ultimate test of efficiency and financial sustainability of the enterprises, however, is the response of large-scale farms to the withdrawal of this preferential policy treatment. If the structure of incentives (e.g., prices of inputs and outputs, taxes, and/or marketing systems) changes, farms are unable to respond adequately and ensure their profitability, this constitutes a reliable indicator of their inefficiency in an undistorted policy environment.

6.2 Since the mid-1970s, agriculture in South Africa was exposed to a cost-price squeeze that reduced farm profitability. This was compounded during the 1980s by: (i) unfavorable weather conditions; (ii) reduction of farm subsidies; (iii) liberalization of marketing policies that often resulted in lower real producer prices; (iv) and higher capital costs due mainly to higher interest costs. The failure of many firms to respond to the changing price environment (recall the finding in Chapter 5 of only modest price efficiency) meant that many farms continued to rely on the established, capital-intensive production methods. Given the variable agro-climatic conditions to which South African farming is exposed, the continued reliance on mechanized, monocropped farming also entailed a higher exposure to climatic risk and increased the volatility of farm profits.

6.3 As a result, the debt burden carried by many farmers, in particular those in the summer rainfall areas (i.e. wheat and maize growers), escalated to unsustainable levels. Although real farm debt reached its highest level in 1985 and has declined since then, the financial position of many farmers has continued to deteriorate, as illustrated by a continuing increase in the debt-asset ratio. Moreover, the ratio of short-term debt to total debt increased considerably. Higher capital costs, tighter credit standards, fewer farm subsidies, and the growing unsustainability of the debt burden should have positive effects on labor employment in the sector and force less efficient farmers into foreclosure. However, the government continued its attempts to aid the sector financially; and when the 1992 drought occurred, substantial amounts of debt which had been accumulated during the 1980s were effectively written off through a massive recapitalization effort targeted to grain producers and totaling R3.4 billion.

6.4 The implication of the downward trend in farm profitability and the resultant accumulation of debt as a result--in large measure--of the changing policy environment, suggests that many of the large-scale farms are financially inefficient. To the extent that this inefficiency is caused by size, it argues for a strategy that encourages a down-sizing of agricultural enterprises. This conclusion must, however, be treated with caution. There is tremendous variability in across the agriculture sector due among other factors to managerial ability, and it would be incorrect to argue that a smaller scale of operations would be appropriate for all subsectors. At the same time, a combination of international evidence with regard to farm size and recent South African experience suggest that a smaller scale of operations in many agricultural sub-sectors would be at least as efficient as the larger scale farms once the policy distortions are eliminated.

Declining Farm Revenues

6.5 Farm revenues, reflecting the combined effects of output price and quantity changes, showed that aggregate gross farm revenues increased up to 1980, but declined slowly during the next decade (Table 6.1). For each of the major sub-sectors, the following trends emerge:

- a. Real gross revenues from fieldcrops rose steadily from 1960 through 1980, then stalled or declined through the 1980s, falling 44% between 1980 and 1990;
- b. Real gross revenues for animal products also rose steadily from 1960 to 1980, but stagnated during the 1980s; and
- c. Real gross revenues for horticultural products rose gradually until 1980. The horticultural sector was the only major sector to exhibit modest real growth in the 1980s.

Table 6.1: Gross Revenues in Agricultural Subsectors
(R million, constant 1985 terms)

	Gross Value of Field Crops	Gross Value of Horticulture Crops	Gross Value of Animal Products	Gross Value of Farm Output
1990	3,646	2,224	4,795	10,665
1989	4,095	2,271	5,126	11,492
1988	5,041	2,169	5,630	12,840
1987	4,343	2,191	5,289	11,822
1986	4,416	2,104	4,870	11,391
1985	4,580	2,101	4,752	11,433
1984	5,522	2,071	5,159	12,752
1983	4,427	1,985	5,016	11,428
1982	4,520	1,956	5,055	11,531
1981	5,305	2,124	5,372	12,801
1980	6,565	1,953	5,017	13,535
1975	4,245	1,785	4,142	10,172
1970	3,743	1,383	2,891	8,018

Source: Abstract of Agricultural Statistics, 1992, pp. 79, 82.

6.6 Producer prices of most major agricultural commodities and of some agricultural inputs in South Africa were highly regulated and controlled until the mid-1980s. This applies specifically to cereals, red meat, sugar, wine, and to machinery, fertilizer, fuel, and electricity. Producer price movements, therefore, do not necessarily reflect relative demand and supply conditions, but rather incentives to increase or decrease production. Given such price regulation, international markets are basically used to

dispose of domestic surpluses or to compensate for deficits.

6.7 Producer prices of agricultural commodities increased in real terms during most of the 1970s, but declined during the 1980s (Table 6.2). During the 1980s field crops experienced the worst decline in real prices—a 32% decline from 1980 to 1990. Price trends for animal and horticultural products showed less marked declines.

- a. The real producer price index of field crops increased modestly from between 1970 and 1980, fluctuated in a fairly tight range from 1980 through 1984, and then fell to three-quarters of its 1970s value by 1990.
- b. The real producer price index of horticultural crops experienced a brief upturn in the 1970s, dropped sharply between 1980 and 1981, stagnated between 1981-88, and fell moderately thereafter.
- c. The real producer price index of animal products increased between 1970 and 1980 and then gradually declined throughout the 1980s.

6.8 High producer prices induced rapid expansion of output during the 1960s and 1970s, but aggregate output was relatively stagnant throughout the 1980s. The fall in real producer prices during the 1980s led to stagnant agricultural growth and a contraction of output for fieldcrops. Additionally, a series of regional droughts in 1983, 1984, and 1986⁶⁶ reduced output volumes, especially of field crops. The Land Conversion Scheme, which subsidized the withdrawal of crop land and the establishment of perennial pastures during the latter part of the 1980s and early 1990s, further contributed toward this trend.

- a. The volume index for fieldcrop production rose substantially from 1960 to 1980, however, from 1980-2 to 1988-90, the three-year index declined slightly.
- b. During the 1980s, the volume of animal production index increased slightly, while horticulture crops experienced a significant rise in volume of production.

⁶⁶ Abnormal and fluctuating natural conditions (drought, floods and frost damage) have depressed yields in the summer rainfall cropping areas. In large parts of the extensive stock grazing areas in the Eastern Cape, serious drought coincided with a collapse of wool, mohair, and meat prices. See Annex 6 for data of rainfall.

Table 6.2: Price and Volume Indices of Selected Agricultural Product Categories

	Field Crop Indices			Horticultural Crop Indices			Animal Product Indices			Aggregate Indices		
	NP	RP	VP	NP	RP	VP	NP	RP	VP	NP	RP	VP
1990	155	.76	101	190	.93	117	179	.88	109	170	.83	107
1989	136	.77	126	159	.89	124	177	.99	102	157	.88	115
1988	125	.81	107	154	.99	116	171	1.10	99	149	.96	105
1987	118	.86	102	142	1.03	109	143	1.04	98	132	.96	101
1986	110	.93	98	122	1.03	102	115	.97	96	114	.96	98
1985	100	1.00	100	100	1.00	100	100	1.00	100	100	1.00	100
1984	98	1.14	77	85	.99	103	91	1.05	103	94	1.09	92
1983	86	1.12	68	82	1.07	95	81	1.05	101	83	1.08	86
1982	71	1.03	101	75	1.09	104	78	1.13	97	74	1.07	100
1981	61	1.02	138	63	1.06	96	75	1.25	87	66	1.11	110
1980	58	1.12	112	63	1.21	95	60	1.15	91	59	1.14	100
1975	31	1.06	95	40	1.36	80	31	1.06	75	33	1.12	84
1970	18	.98	71	22	1.20	67	16	.83	66	18	.97	68
1965	16	.99	52	20	1.25	55	15	.93	57	16	1.02	54
1960	15	1.03	47	16	1.14	43	13	.91	51	15	1.01	48

NP = nominal price index; RP = real price index (NP/CPI); VP = volume index.

Source: Abstracts of Agricultural Statistics, 1992, pp. 88, 89.

Increasing Farm Costs

6.9 The analysis of production volumes and prices in agriculture indicates that real gross revenues in the agricultural sector grew during the 1970s, but declined during the 1980s. Because profits comprise both revenues and costs, as well as the associated quantities, trends in input prices and volumes should also be considered. Table 6.3 presents time series data on price and volume indices associated with all farm requisites, including machinery and implements, fixed improvements, and intermediate goods. The real price of all farm requisites increased by about 34% during the 1970s, but was basically stagnant during the 1980s.

- a. Real input prices of machinery and implements increased steadily over the period 1970-1990, while the volume of these inputs increased from 1960 to 1981, but have decreased steadily since then;
- b. Real input prices of fixed improvements increased considerably throughout the period, but the quantity index shows a rapid and sustained decline after 1983; and
- c. Real prices of intermediate inputs increased from 1970 to 1980, then dropped somewhat, but remained fairly constant throughout the 1980s. Real expenditures on intermediate

goods and services increased rapidly from 1960 through the mid-1980s, but have trended downward since then.

Table 6.3: Price and Volume Indices of Farming Requisites

	Machinery ^a and Implements			Fixed Improvements			Intermediate ^b Goods			All Farming Requisites		
	NP	RP	VOL	NP	RP	VOL	NP	RP	VOL	NP	RP	VOL
1990	236	1.16	70	215	1.05	68	181	.89	101	198	.97	89
1989	212	1.19	73	187	1.05	75	163	.91	106	177	.99	94
1988	175	1.13	82	161	1.03	83	135	.87	110	147	.95	101
1987	152	1.10	86	141	1.03	89	121	.88	98	130	.95	94
1986	128	1.08	93	124	1.05	87	116	.97	93	119	1.01	92
1985	100	1.00	100	100	1.00	100	100	1.00	100	100	1.00	100
1984	81	.94	115	86	1.00	110	85	.99	106	84	.98	108
1983	71	.92	122	76	.99	126	81	1.05	98	78	1.01	107
1982	62	.91	127	65	.94	123	71	1.04	99	68	1.00	108
1981	52	.88	129	57	.95	126	61	1.03	107	59	.98	114
1980	46	.89	113	51	.98	135	56	1.07	106	53	1.02	111
1975	24	.82	110	25	.86	146	26	.88	95	25	.86	117
1970	14	.73	117	14	.72	156	15	.78	69	14	.76	125
1965	12	.75	101	12	.78	134	14	.85	51	13	.80	94
1960	11	.75	100	11	.78	124	13	.93	43	12	.86	83

NP = nominal price index; RP = real price index (NP/CPI); VOL = volume index.

a. Tractors, lorries, implements, and irrigation equipment.

b. Fertilizer, fuel, farm feed, dips and sprays, packing material, and maintenance and repair work.

Source: Abstracts of Agricultural Statistics, 1992, p. 96.

Cost-price Squeeze

6.10 Since 1973 agriculture has been characterized by a cost-price squeeze which accelerated during the 1980s (Table 6.4). While the government provided substantial supports in the form of consumer subsidies on wheat (bread), maize, grain sorghum, dairy products, fertilizers, stock feed, and transport rebates from 1980 to 1986, such subsidies fell sharply in real terms in the late 1980s. Since 1987 the growth of output prices has slowed to well below the rate of domestic inflation, as a result principally of policies bringing domestic prices into line with lower border parity prices. No similar trend in farm input prices has occurred, however, which suggests that the liberalization of recent years has affected input prices less than output prices. The increases in input prices relative to commodity prices were also not fully counteracted by increases in total factor productivity.

Table 6.4: Average Annual Growth Rates in Certain Prices and Quantities, 1960-1990 (%)

Period	Consumer prices		Producer prices of ag products	Prices of farming requisites	Land prices	Farming debt
	All items	Food				
1960-68	2.4	2.7	2.4	1.2	5.9	*
1968-73	6.0	6.7	10.4	5.6	6.1	7.8
1973-90	13.5	14.8	11.6	16.8	12.5	15.0
1960-1990	9.0	9.9	8.9	10.3	9.5	*

* Not available
 Source: van Zyl (1991)

6.11 There have, however, been sharp differences between various types of inputs. There is evidence, for example, that the rise in fertilizer prices has moderated recently (Table 6.5), with the following percentage annual rises being recorded. In part this is likely to reflect the lower demand for these inputs.

Table 6.5: Fertilizer Prices: Percent Rise on Previous Year

Year	% Rise on Previous Year
1985	33.4
1986	15.2
1987	-0.4
1988	23.9
1989	19.6
1990	7.3
1991	11.0

Source: Adapted from RSA 1992 (a), table 94.

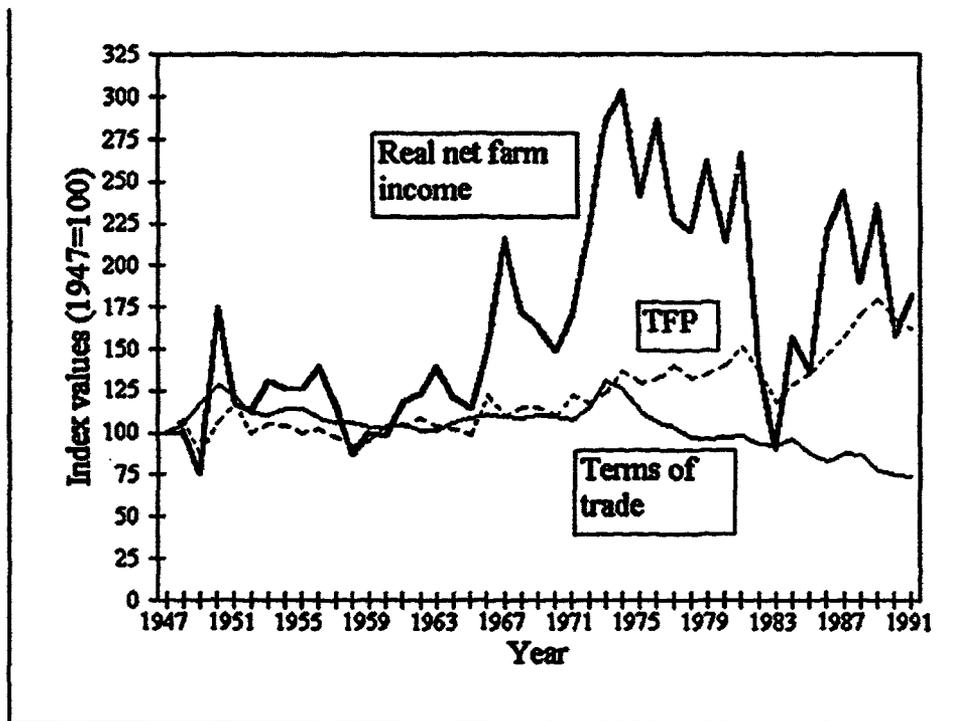
6.12 Groenewald (1982, 1986) attributes the steady increase in the real costs of farm machinery and implements to the existence of monopolies in the farm-input manufacturing sector and to tariff protection of local industries. Since World War II, South Africa has followed a policy of industrialization, based on import substitution and actively promoted by protective measures such as import controls and tariffs; the resulting distortions were passed on to farmers. The increase in real input prices has been linked to the protection of the domestic farm-input manufacturing sector from international competition. For example, the fertilizer industry benefitted from fixed pricing based on a certain yield on capital, reducing incentives for efficiency or capital saving. It was estimated that farmers paid an extra R272 million for inputs in 1982 because of these policies. Crop farmers were particularly hard hit, however, farm outputs were also protected from competition and there is some evidence that on balance farmers as a group have

gained more from protection of outputs than they have lost from protection of inputs (Stadler *et al.*, 1983)⁶⁷. It was estimated in 1982 that the cost of intermediate inputs (cattle feed, fertilizer, fuel) was 6.9% higher than it otherwise would have been under tariff-free international trade.

Financial Indicators of Profitability

6.13 Post-war trends in real net farm income go through two distinct periods. The first period, up to the mid 1970s, is characterized by gradual improvements in net farm income. The second period, from the mid 1970s until 1991, sees a reversal of this trend. Real net farm income declines, although the trend is characterized by strong year-to-year fluctuations. The declining trend of net farm income is the result of two countervailing forces. Whereas technical efficiency—as measured by total factor productivity (TFP)—improves, it is insufficient to compensate for the increasing cost-price squeeze—as measured by the terms of trade in agriculture (see Figure 6.1).

Figure 6.1 Real net farm income, total factor productivity and agricultural terms of trade (1947-1991)



Source: adapted from van Zyl, van Schalkwyk and Thirtle, 1993.

⁶⁷ This evidence is, however, inconclusive and should be interpreted with caution as export realization instead of import parity was used as measure of agricultural protection.

6.14 As indicated in Table 6.6, real net farm income before interest payments gradually declined throughout the 1980s, from a high of R5.6 billion in 1981 to R3.5 billion by 1991⁶⁸. The gradual deterioration in the real gross value of farm output, combined with steady real costs of intermediate inputs and fluctuating other costs, has resulted in very unstable real farm incomes throughout most of the 1980s. Real net farm income (defined here as real gross farm income minus real expenditures on intermediate goods and services, salaries, wages, rents, and depreciation) generally increased during the 1970s, but trended downwards until 1985 because of an increase in real input costs and because of a rapid increase in interest payments. Net farm income showed no consistent trend afterward, but declined in 1991.

Table 6.6: Income and Expenditure, Assets and Liabilities of Agriculture, 1970-1991

	1970	1975	1980	1981	1983	1985	1987	1988	1989	1990	1991
1. Real gross farm income	6,765	9,636	11,333	11,880	9,237	9,270	9,946	9,888	10,841	9,924	8,998
Real expenditure:											
2. Int. goods, services	2,235	3,081	4,264	4,445	4,422	4,144	3,806	3,879	4,102	3,972	3,802
3. Salaries, wages, rent depreciation	1,802	1,558	1,709	1,798	2,323	1,661	1,784	1,755	1,840	1,796	1,727
4. Net farm income (1-2-3)	2,728	4,997	5,360	5,637	2,492	3,465	4,356	4,254	4,899	4,156	3,469
5. Interest payments	396	456	622	911	1,393	1,698	1,198	1,094	1,311	1,300	1,182
6. Net farm profit (4-5)	2,332	4,541	4,738	4,726	1,099	1,767	3,158	3,160	3,588	2,856	2,287
7. Real value of capital assets	49,209	57,735	55,066	49,455	47,029	42,067	36,153	35,047	37,524	33,861	29,561
8. Real short-term debt	2,112	2,388	3,214	3,652	5,232	6,069	5,069	4,433	4,622	4,284	4,028
9. Real total debt	7,497	6,816	7,397	8,092	9,610	11,118	9,649	8,740	8,462	7,784	7,055
CPI (1985=100)	18.7	29.4	51.9	59.8	77.1	100.0	137.7	155.4	178.2	203.8	237.0
Annual Inflation	5.1	13.5	13.8	15.2	12.4	16.3	16.1	12.9	14.7	14.4	16.3

Real values are nominal revenues, expenditures, profits, assets and debt divided by the Consumer Price Index. Nominal values are taken from de Klerk, "The accumulation crisis in agriculture," pp. 200, 201; and personal conversations with the Department of Agricultural Economics, 1992. Short term debt is loans from commercial banks and agricultural cooperatives.

⁶⁸ Gross income in Table 5.6 includes profit repayments on international transactions in maize and wheat (excluded in Table 5.7). Otherwise, the source of data is the same for the two sets of estimates.

6.15 However, once interest payments are deducted from net farm income in Table 6.6, trends in the resulting real net farm profit exhibit dramatic swings. From a peak of R4,700 million in 1981, net farm profit plummeted to R1,100 million by 1983 before gradually reviving to a range of R2,300-R3,600 million between 1987 and 1991. Thus during the 1980s interest payments seem to explain most of the volatility in net farm profits. Real interest payments totalled R396 million in 1970 and R622 million in 1980, implying an annual increase of about 4.6%. However, from 1980 to 1985, real interest payments rose by 173%, to R1,698 million, at an annual rate of 10.6%. After 1985 interest payments fell in real terms to R1,182 by 1991.

6.16 Liquidity governs the capacity to repay short-term debts. A close proxy for farm liquidity is the ratio of net farm profit to short-term debt. As indicated in Table 6.7, this ratio fell by 68% from 1975 (1.9) to 1991 (0.6), indicating both the downward decline in farm earnings and the rise in debt servicing needs for short-term debt. Trends in financial profitability are illustrated in Table 6.7 by the net rate of return on assets (the ratio of net farm income to the value of capital assets) and on equity (the ratio of net farm profit and equity—equity being the difference between debt and the total value of assets). The net rate of return on assets and on equity increased between 1970 and 1980, decreased dramatically between 1980 and 1985, and improved and remained constant at around 11 to 12% between 1987 and 1991. The reason for the upturn in the late 1980s is related to the falling capital-output ratio after 1983.

6.17 The decline in returns between 1980 and 1985, together with a move to more market-oriented interest rates, constrained the supply of capital for agricultural investment. The capital-output ratio declined from 5.1 in 1983 to 3.3 by 1991, and the real value of capital assets fell by nearly half between 1980 and 1991 (from R55.1 billion to R29.6 billion).

Table 6.7: Agricultural Financial Indicators

	1970	1975	1980	1981	1983	1985	1987	1988	1989	1990	1991
Net return on assets (%) (4/7)	5.5	8.7	9.7	11.4	5.3	8.2	12.0	12.1	13.1	12.3	11.7
Net return on OE (%) [6/(7-9)]	5.6	8.9	9.9	11.4	2.9	5.7	11.9	12.0	12.3	11.0	10.2
Nominal net worth (R b)	7.8	15.9	24.7	22.7	28.9	30.9	36.5	40.9	51.8	53.1	53.3
Real net worth (R b) (7-9)	41.7	50.9	47.7	41.4	37.4	30.9	26.5	26.3	29.1	26.1	22.5
Debt burden (%) (9/7)	15.2	11.8	13.4	16.3	20.4	26.4	26.7	24.9	22.6	23.0	23.9
Short term debt (%) (8/9)	28.2	35.0	43.4	45.1	54.4	54.6	52.5	50.7	54.6	55.0	57.1
Avg interest rate (ANIR) (5/9)	5.3	6.7	8.4	11.3	14.5	15.3	12.4	12.5	15.5	16.7	16.8
Avg real interest (ARIR)	0.2	-6.8	-5.4	-3.9	-2.1	-1.0	-3.7	0.4	0.8	2.3	0.5
NFP/STDBT ratio (6/8)	1.1	1.9	1.5	1.3	0.2	0.3	0.6	0.7	0.8	0.7	0.6
Capital-output ratio (7/1)	7.3	6.0	4.9	4.2	5.1	4.5	3.6	3.5	3.5	3.4	3.3

OE = owner's equity. ARIR = Average nominal rate of interest less rate of inflation. NFP = net farm profit. STDBT = short-term debt.

6.18 The largest part of this decline resulted from falling land prices since around 1983 (itself an indication of declining profitability) and declining real net investment in fixed improvements and machinery since 1984 (Table 6.8). The aggregate decline in land prices also masks important regional

differences. The decline in land prices, and hence profitability, is most marked for the summer rainfall areas, followed by the winter rainfall areas. Given the predominance of mechanized maize and wheat cultivation in the former and the importance of horticultural production in the latter, these trends confirm the hypothesis that the inward-looking, capital-intensive subsectors lack the efficiency of the export-oriented, labor-intensive sub-sectors, once certain policy distortions are gradually removed, as they were in the 1980s.

Table 6.8: Real Land Prices, Real Capital Formation, Long-Term Debt, and Arrears

	Land Price Indices				Real Capital Fixed Improvements (R million)	Formation, Machinery & Implements (R million)	Real Value of Mortgage Loans to Farmers (R million)	Real Value Loans for Land Purchases (R million)	Land Bank: Percent of Capital Owed in Arrears	
	SR	WR	CG	SG					Interest (%)	Capital (%)
	A	B	C	D	E	F	G	H	I	J
1990	66	82	92	90	344.0	388.7	263.4	157.3	6.40	1.41
1989	68	78	86	88	372.7	524.2	322.8	206.3	5.75	1.47
1988	73	76	85	87	345.9	536.6	297.5	198.5	5.45	1.60
1987	79	87	78	89	360.6	410.5	299.8	178.5	5.62	1.63
1986	85	80	103	95	360.9	488.6	357.2	184.2	4.55	1.22
1985	100	100	100	100	388.4	663.5	508.6	218.3	2.76	0.94
1984	114	97	100	107	414.2	737.9	656.6	245.1	1.94	0.95
1983	118	89	118	98	452.4	895.2	965.2	246.1	2.03	0.96
1982	121	76	116	84	582.8	1,131.9	266.3	140.1	1.26	0.92
1981	121	70	106	118	572.3	1,723.8	389.4	262.2	0.74	0.74
1980	105	59	113	125	568.5	1,294.4	365.5	265.5	1.14	1.06
1979	97	67	96	101	544.3	899.0	302.7	182.2	1.64	1.48
1978	100	77	103	102	556.3	961.8	231.5	143.7	1.64	1.48
1977	114	88	137	88	529.5	1,058.0	178.7	105.5	1.62	1.42
1976	103	83	145	91	581.9	1,056.7	204.4	125.0	1.49	1.27
1975	116	90	143	102	641.3	1,345.6	261.9	179.7	1.25	0.99
1974	105	81	115	100	655.6	961.5	275.6	208.8	1.21	1.15
1973	101	77	111	95	693.3	888.5	227.8	166.5	1.64	1.28
1972	103	78	102	104	645.0	846.0	176.6	113.8	1.85	1.24
1971	107	85	85	111	571.6	920.9	313.8	163.3	1.92	1.12
1970	102	69	88	108	542.7	813.8	470.7	148.6	2.06	1.13

SR = Summer rain region; WR = winter rain region; CG = cattle grazing region; and SG = sheep grazing region. The real price indices for land is calculated as the nominal land price index divided by CPI and adjusted to make 1985=100. The real value of fixed improvements is calculated as nominal expenditures on fixed improvements divided by the price index for "materials for fixed improvements" and adjusted to constant 1985 Rand (1985=100) (Abstract of Agricultural Statistics 1992, p. 85, 97). Real fixed investment in tractors, machinery and implements equals the nominal investment divided by the price index for machinery and implements and adjusted to equal 1985 constant Rand (Abstract, p. 85,97). Percent of Land Bank long-term debt in arrears is taken from Table F.2, Appendix F.

Debt Burden and Farm Lending Policies

6.19 The above trends illustrate a decline in profitability that caused severe cash-flow problems in agriculture (van Zyl and van Rooyen, 1990). Liquidity problems have affected the financial standing of commercial agriculture in three ways: (i) debt loads increased; (ii) loan arrears mounted; and (iii) sequestrations increased.

6.20 Since the mid-1970s the real total debt of farms in the commercial sector has increased substantially. The real net worth of farming has declined since the mid-seventies and after 1980 the farm debt became financially unsustainable because of a steady erosion of real net farm income. However, based on data in Table 6.7, the average debt burden (total debt/value of capital assets) would appear reasonable. It increased from 15.2% of assets in 1970 to 26.7% in 1987, before declining to 23.9% by 1991. These data, however, do not take into account important regional differences. The SAAU (1984) conducted a study of the financial conditions of farmers in 1983⁶⁹ and found that:

- a. about 15,200 farmers or 22.4% of the total number (slightly above the 20.4% reported in Table 6.7) had critical debt burdens in 1983, based on SAAU's criteria. These farms were largely concentrated in the Transvaal and the Orange Free State (de Klerk, 1991); and
- b. the most damaged subsectors were summer crops (52% of farms beyond the critical level), and winter crops (22.6%).

By the end of 1984, these estimates were expected to have grown to 22,700 farmers (33% of the total), with 65% of summer crop farmers and 38% of winter crop farmers beyond the critical level.

6.21 Moreover, the decline in farm profitability seems also to have caused a substitution of short-term for long-term debt from 1970 until the mid-1980s. The ratio of short-term to total debt increased from 28.2% in 1970 to 54.6% in 1985, and peaked in 1991 at 57.1%.

6.22 The evolution of the debt-burden is closely linked to the lending policies which prevailed in the agricultural sector. A number of credit sources are open to farmers, including: (i) the Land Bank;⁷⁰ (ii) the Agricultural Credit Board;⁷¹ (iii) agricultural cooperatives;⁷² (iv) commercial banks and other private

⁶⁹ Based on prevailing economic circumstances in that year, the SAAU calculated the critical debt burden for several of the largest subsectors: 16.7% for summer crops; 34.1% for winter crops; 10.2% for red meat; 17.2% for milk; and 14.2% for wool.

⁷⁰ The Land Bank is a statutory body established to provide for the credit needs of farmers. The bank advances money to farmers, agricultural cooperatives, control boards established under the provisions of the 1968 Marketing Act, and statutory agricultural institutions. Long-term loans are granted to farmers against mortgage of land or the registration of a charge against land. Short and intermediate term loans are granted in terms of section 34 of the Land Bank Act.

⁷¹ The Agricultural Credit Board was established by an Act of Parliament in 1966 and is administered by the Department of Agricultural Development. Up to around 1983, credit by the Board was provided only to white commercial farmers, after which credit services were minimally extended to Indians, coloreds and blacks.

sector financial institutions; and (v) private individuals.

6.23 Short-term credit is generally provided by the commercial banks and cooperatives, while the Land Bank is the primary supplier of long-term credit for land purchases. The Agricultural Credit Board is the lender of last resort to insolvent or nearly insolvent farms (Table 6.9).⁷³

6.24 At the end of 1991, total debt owed by individual farmers totalled R16,489 million. However, these figures cover only direct financing to farmers. The Land Bank also extends credit to cooperatives enabling them to grant credit to their members and to purchase production and farming requirements. At the end of 1990 cooperatives owed the Bank R6,023 million under cash credit advances, including an amount of R3,780 million (indirect credit to farmers) owed by members to the cooperatives. If direct and indirect channels are aggregated, the Land Bank is the largest lender to farmers. Combining credit in both direct and indirect channels, the Land Bank's financing to farmers in 1991 amounted to R7,813 million, or 45.6% of total debt outstanding in the agricultural sector (Land Bank data).

6.25 According to Land Bank policy, it does not extend credit beyond the assessed collateral of farm property, which is valued on a production rather than a market basis. As land represents the largest part of farm capital assets, trends in real land prices have an important bearing on the farm sector's debt-carrying capacity; and as indicated in Table 6.8, real land prices fell in most of the country in the 1980s. However, issuance of long term mortgage credit by the Land Bank (G) spiked upward in the early to mid-1980s, before it fell through 1990.

⁷² The Agricultural Cooperatives are regarded as the farmers' own independent business organizations. As of 1991, there were roughly 245 primary cooperatives with 1,300 branches throughout the country. These cooperatives supply their members with most producer goods such as seed, fertilizer, fuel, repair services, credit and extension services. They also handle most members' produce. There are also 41 central cooperatives that provide the primary cooperatives with specific farming requisites, services such as processing and marketing of agricultural products, and insurance services for crops and short-term damage. Cooperative turnover amounted to R20,929.2 million in 1989. Of this total, produce accounted for R15,340 million, farming requisites R4,720.5 million, and services R868.7 million (1991 Year Book).

⁷³ The Land Bank and Agricultural Credit Board distinguishes among three types of farms in assessing end-users of credit services: category one farms are those that are well off financially and are very sound commercially (blue-chips); category two farms have medium financial standing; and category 3 farms are those that have poor financial earnings and are insolvent or nearly so. Commercial banks tend to lend to category one operations. The Land Bank services categories one and two. The Agricultural Credit Board is the supplier of last resort for category three farms.

Table 6.9 : Commercial Farm Debt in RSA by Creditor: 1970 - 1990
(Millions of Rands)

Year	Land Bank		Commercial Banks		Agriculture Cooperatives		Agricultural Credit Board		Private Persons		Other Financing Institutions		Other Debt		Total Loans Outstanding
	Loans Outstanding	Market Share	Loans Outstanding	Market Share	Loans Outstanding	Market Share	Loans Outstanding	Market Share	Loans Outstanding	Market Share	Loans Outstanding	Market Share	Loans Outstanding	Market Share	
1991	3,512	21%	5,116	31%	4,300	26%	1,168	7%	1,243	8%	348	2%			
1990	3,441	22%	4,950	31%	3,780	24%	1,013	6%	1,155	7%	1200 <2>	8%	324	2%	15,864
1989	3,149	21%	4,650	31%	3,587	24%	972	6%	1,072	7%	1350 <2>	9%	301	2%	15,082
1988	2,924	22%	3,478	26%	3,412	25%	921	7%	999	7%	1500 <2>	11%	280	2%	13,513
1987	2,808	22%	3,355	26%	3,224	25%	789	6%	940	7%	1500 <2>	12%	264	2%	12,881
1986	2,649	21%	3,437	28%	3,081	25%	684	6%	890	7%	1,420	11%	251	2%	12,413
1985	2,338	21%	3,315	30%	2,754	25%	549	5%	792	7%	1,128	10%	241	2%	11,119
1984	1,923	20%	2,969	31%	2,234	24%	443	5%	720	8%	1,000	11%	207	2%	9,496
1983	1,331	18%	2,254	30%	1,780	24%	309	4%	670	9%	881	12%	185	2%	7,410
1982	989	17%	1,600	28%	1,368	24%	247	4%	634	11%	775	13%	174	3%	5,787
1981	856	18%	1,055	22%	1,130	23%	202	4%	601	12%	833	17%	162	3%	4,840
1980	676	18%	802	21%	867	23%	180	5%	580	15%	612	16%	122	3%	3,840
1979	592	18%	691	21%	654	20%	164	5%	486	15%	523	16%	108	3%	3,220
1978	537	19%	620	22%	556	19%	156	5%	452	16%	453	16%	95	3%	2,871
1977	508	19%	560	21%	462	18%	150	6%	415	16%	426	16%	86	3%	2,608
1976	479	21%	485	21%	344	15%	150	7%	369	16%	393	17%	77	3%	2,299
1975	429	21%	455	23%	247	12%	151	8%	327	16%	324	16%	70	3%	2,005
1974	390	22%	384	21%	198	11%	149	8%	292	16%	311	17%	63	3%	1,787
1973	368	21%	373	22%	159	9%	155	9%	290	17%	318	18%	62	4%	1,726
1972	360	24%	275	18%	146	10%	160	11%	235	15%	291	19%	50	3%	1,518
1971	346	24%	272	19%	128	9%	154	11%	232	16%	279	19%	50	3%	1,462
1970	296	21%	282	20%	113	8%	136	10%	243	17%	287	20%	45	3%	1,403

Source: DOA, Department of Agricultural Economic Trends, Abstract of Agricultural Statistics, 1992

<1> Includes discount houses, merchant banks, other monetary institutions, insurance companies, pension funds, trust companies, non-monetary banks and trust assets, participation mortgage bonds, other financial institutions.

<2> DOA estimate.

6.26 Interest rates. Starting as early as 1973, the Land Bank began significantly subsidizing long-term credit in agriculture. Real interest rates were positive (0.9 to 4.2%) between 1965-70, then turned negative for a 15 year period starting with the upturn in the rate of inflation in the early 1970s. Real interest rates fell from -0.4% in 1971 to -6.5% in 1975, then declined to -4.0 to -4.2% between 1976 and 1978, before again dropping to a low of -8.2% in 1981. Trends in real interest rates over the 1980s changed significantly—from 1982 to 1984 and from 1987 onward represent the only periods in more than two decades that agriculture faced positive real interest rates. Total debt levels began to shrink in the latter part of the 1980s as these real interest rates began to rise.

6.27 The real interest rate represents an important element of the cost of capital. The lower the rate, the greater the incentive for capital-intensive investment—also including investments in land. Throughout most of the 1970s low and subsidized real long-term rates offered substantial incentives to borrow for purchases of durable equipment, fixed improvements, and land. This was supplemented by short term off-shore borrowing in the early 1980s, ahead of the sharp fall in the exchange rate.

6.28 Tax legislation. Another important factor which reduced the cost of capital substantially was a change in tax legislation in 1977, which made farm equipment purchases cheaper by permitting farmers to write off the full cost of machinery and implements against taxable income in the year of purchase (de Klerk 1991). This situation changed again in 1989 with farmers allowed to depreciate machinery purchases only over three years like other businesses—50% in the year of purchase, followed by 30% and 20% in subsequent years. Estimates of the value of the preferential tax treatment to farmers vary. One source puts the value at R117 million in 1983/84. Another source indicates that income tax concessions to farmers amounted to 70 % of their theoretical tax bill in 1981-84 (Lamont, 1990, quoted in Vink and Kassier, 1992).

6.29 Financial assistance. The government intervened in the 1980s, and continues to do so in the early 1990s, by providing "cheap" credit and debt-relief to insolvent or near-insolvent farmers through the Financial Assistance Schemes of the Department of Agricultural Development, managed by the Agricultural Credit Board. In 1993, around 17,000 farmers benefitted from such assistance. If such farmers are also the most inefficient—which seems a reasonable assumption—such a policy only adds to the financial unsustainability of the sector. Preferential financial assistance included schemes for:

- a. **Debt consolidation.** Farmers who did not qualify for commercial credit could consolidate their debt at a nominal interest rate of 8% (1991 rate) with a loan period of 15-20 years. In the same year, the Land Bank's long-term nominal interest rate was 16.1%. Annual disbursements for consolidating debt increased rapidly from R9.2 million in 1981/2 to R106.1 million by 1988/9 for an accumulated total of R522.5 million in 1991.
- b. **Means of crop production.** Crop production credit to farmers who as a result of adverse farming conditions cannot acquire short-term credit elsewhere increased from R6.9 million in 1981/82 to R124.0 million by 1988/9, for an accumulated total of R833.6 million. In 1991, the nominal interest rate was 8%, compared to a commercial rate of 21%.

- c. Interest subsidy schemes. There is a special drought assistance scheme for producers of winter grain and summer crops. The terms in 1991 were 5.5% for 5 to 10 years. The accumulated total from 1981 to 1991 stood at 1,077.8 million.

6.30 **Arrears.** In spite of the generous financial assistance offered to insolvent farmers, loan arrears on interest owed mounted in the late 1980s as the farm financial crisis worsened. Interest arrears on long-term loans granted by the Land Bank remained relatively constant from 1970 through 1984, but increased from 1.94% of interest owed in 1984 to 6.4% in 1990. The Land Bank's capital arrears have remained relatively constant at 1-1.5% from 1970 until 1991.

6.31 However, as outlined above, insolvent or near-insolvent farmers are directed to the Agricultural Credit Board which manages the Financial Assistance Schemes. In 1993, the Agricultural Credit Board reported that 64 % of the 17,000 farmers served by the schemes were in arrears. Total arrears amounted to R1.4 billion, and most of it was owed by grain farmers. Such arrears were down considerably from pre-1992 levels, when the government injected R2.6 billion in debt-relief to grain farmers. This reflects the government's policy to keep farmers on the land by, e.g., rolling over debt, infusing new capital, and delaying foreclosures on property.

6.32 **Sequestrations.** Insolvencies in agriculture remained relatively constant during the 1960s and 1970s (between 40 and 118 per annum). In 1985 the total rose to 141, in 1986 to 243, and in 1987 to 317, before declining to 261 in 1988, 201 in 1989, and 267 in 1990 (South African Statistics 1990). The relatively constant level of sequestrations in the 1980s, combined with the increase in short-term debt since 1983, seems to suggest that the financial sector is essentially pursuing a strategy aimed at keeping farmers on the land. Such a strategy may be fuelled by the fear that additional liquidations would further depress real estate prices; but it also seems reasonable, given expectations that government will continue to bail out insolvent farms.

Financial Assistance to Farmers

6.33 The fundamental lack of profitability in many parts of the farm sector would have produced substantial declines in farm incomes, particularly during the 1980s, had it not been for massive state aid carried out under the Financial Assistance Schemes of the Department of Agricultural Development (1991)⁷⁴. Moreover, massive drought relief support in 1992 (a total of R3.4 billion) provided the sector with a substantial financial injection. This assistance was given because of the government guarantee received by agricultural financial institutions during the late 1980s. The 1992 recapitalization concentrated government financial support of agriculture in one year, but should be seen as continuing over a much longer period.

6.34 During the 1980s, the state granted financial assistance in one form or another to some 27,000 (about one-third) of the country's white farmers (1991 Year Book).

⁷⁴ Information is provided in Annex 4.1 on the number of loans, actual disbursements of loans, and subsidies granted to commercial farms under the financial assistance schemes for the RSA, and for farms in the designated areas (Land Bank data through 30 November 1991).

- a. Direct financial assistance to farmers over the period 1981/82 to 1991/92 (Nov. 30) amounted to R1,728.1 million; and
- b. Subsidies to farms over the same period amounted to R2,353.6 million.

6.35 Given the mid-period estimate of the number of all farms in the sector (65,880 in 1985), the average loan assistance amounted to R26,231 per farm; and subsidies averaged R35,726 per farm (1981-91 assistance). These programs, among other things, provide loans (at subsidized interest rates, e.g., 8% in 1991), as well as subsidies for the following:

- a. interest of R1,077.8 million;
- b. means of crop production--22,472 loans for R852.4 million;
- c. consolidation of debt--8,104 loans totalling R558.2 million and subsidies of R99.6 million;
- d. disaster and drought relief--3,397 loans for R88.1 million and subsidies of R540.6 million;
- e. flood assistance--1,163 loans for R10.9 million and subsidies of R271.3 million;
- f. conversion of marginal lands--subsidies of R133.7 million;
- g. purchase of agricultural lands--845 loans for R104.6 million;
- h. emergency drought schemes--subsidies of R104.6 million;
- i. interest subsidies on Land Bank loans in designated areas--R46.8 million;
- j. allocations of state land--925 loans for R41.0 million;
- k. safeguarding of residents--subsidies of R36.6 million;
- l. water works--555 loans for R25.6 million;
- m. soil conservation works--805 loans for R18.1 million;
- n. water quota subsidies--R15.9 million;
- o. purchase of livestock--440 loans for R10.4 million;
- p. production cost subsidies--R6.4 million;
- q. improvements--153 loans for R3.8 million;

- r. purchase of implements and vehicles--121 loans for 1.5 million; and
- s. sinking of bore holes--150 loans for R0.4 million.

6.36 The 1992/93 "drought relief" program.⁷⁵ The structural decline of farm profitability since the early 1980s was accompanied by a worsening debt burden (real total debt with respect to the real value of capital assets) and an increase in the role of short-term debt, both in absolute, real terms and in relation to net profits (Table 6.7). An important component of such short-term credit fell under a carry-over scheme for farm debt which was guaranteed by the government. This program was initially introduced as a temporary measure after the 1982/83 drought, but became a permanent feature and escalated after the 1991/92 drought when the guarantee required from the government rose from an initial R800 million in 1983 to R1.4 billion in 1991, and finally to R2.4 billion in 1992.

6.37 The carry-over debt program applied to grain producers in the summer and winter rainfall areas. An investigation by the Department of Agriculture into the debt position of farmers estimated that the 33 cooperatives responsible for 90% of grain production in the country held a substantial proportion of members' total debt in the form of carry-over debt. The study also found that before the drought 28% of the members had debt burdens exceeding the 50% limit above which cooperatives do not extend production credit to farmers, this ratio had risen to 45% after the drought.

Table 6.10: Farmers' Debts at the 33 Cooperatives Producing 90% of all Grain in the Republic of South Africa--
Before and After the 1991/92 Drought

Debt of members	Before the drought		After the drought	
	R billion	R/ha	R billion	R/ha
Carry-over debt	1.4	218	2.4	375
Total debt	3.6	561	4.9	766
Share of carry-over debt	39%		49%	

Source: Rimmer, 1993, citing Ministry of Agriculture and of Agricultural Development (1992:4).

6.38 The total financial aid package was based on the above study and amounted to R3.4 billion, consisting of R2.4 billion of debt-relief and R1.0 billion of drought relief. For the 6.4 million hectares covered under the scheme, the debt-relief program included R375/hectare to farmers (of which R175 was a subsidy to be applied against debt carry-over and R100, on a sliding-scale, to crop damage) and R640 million to cooperatives, also as a subsidy to be applied against debt carry-over. The homelands were included in the remaining R1 billion--R543 million for drought relief, nutritional aid, overdraft facilities, and other financial assistance. Not all of these funds, however, have been disbursed.

6.39 In effect, the 1991/92 drought relief program constituted a substantial recapitalization of the least

⁷⁵ This section is based on Martin Rimmer, "Debt relief and the South African drought relief programme: an overview", Land and Agriculture Policy Centre, Policy Paper 1, 1993.

efficient sub-sectors of the agricultural sector. It seems clear that land prices have been shored up temporarily and that the financial position of the Land Bank and the agricultural cooperatives has been given temporary relief. At the same time, however, the drought program helped to keep some of the labor employed in the sector. The recapitalization does not, however, influence the structural inefficiencies of significant parts of the agricultural sector, in particular the grain producing areas; and it is likely that a similar, but possibly shorter, cycle of debt accumulation and subsequent crisis may now set in.

CHAPTER 7: DIRECTIONS FOR THE FUTURE

Overview

7.1 This report has analyzed the current condition of the agriculture sector in South Africa from a number of different perspectives—its role in the macroeconomy, structure and endowments, historical development, marketing performance and policies, various aspects of sectoral efficiency, and the financial profitability. In this chapter, a short review of the main themes emerging from these chapters is presented followed by an assessment of some strategic options for the future.

Macroeconomy

7.2 Over the last three decades, the macroeconomic performance of South Africa has been marked by declining growth. At present, the economy is characterized by capital-intensive production patterns, however, this capital intensity has been unable to generate economic growth and is unlikely to be a source of growth in the future. Rather, this capital intensity was associated with and contributed to declining growth, rising unemployment, and relatively insignificant growth in productivity. Apartheid, and the segregated labor markets it produced, created a situation in which modest growth of wages for the employed could co-exist with increasing unemployment.

7.3 The inward-looking policy framework adopted by the government is partly to blame for this disappointing performance. Public sector policy strongly supported domestic producers through tariffs, quotas and other barriers. As a result, many producers—including those in agriculture—have been insulated from international competition and the need to increase productivity and re-allocate resources to their most efficient use. Public sector investments—seemingly in an effort to compensate for sluggish private sector investments—were often undertaken without regard to the social rates of return.

In this context, it is not surprising that agriculture's growth path has also been distorted—characterized by a declining share of GDP, increasing capital-intensity, and declining employment. Agricultural policies were aimed at assuring national self-sufficiency in basic agricultural commodities, while ensuring a price structure that aimed to guarantee the profitability of the large-scale farming enterprise. These policies were supported by public expenditures in agriculture that resulted in significant subsidies to large-scale agriculture in order to ensure its financial success.

Structure and History

7.4 Production in the agriculture sector is dominated by comparatively large, capital intensive farms. These farms, which are mainly white-owned and account for more than 86% of the agricultural land, make the economy self-sufficient in basic agricultural commodities and generate income levels for its owners that are comparable to the urban sectors. As part of the effort to achieve this structure, the homelands were used as sources of labor while black commercial agriculture was suppressed in order to minimize competition and increase the supply of inexpensive labor.

7.5 The current conditions of agriculture and the rural economy of South Africa cannot be assessed without an understanding of the historical forces that contributed to them. After the initial period of

European settlement, the profitability of white farming was gradually increased through a series of policy interventions that spanned more than a century. Initially, the main objective of these interventions was to solve the difficulties that many European settlers had in attracting African labor by reducing the relative profitability of independent African farming. This process involved interventions in several agricultural markets (land sales and rentals, capital, labor, inputs, outputs, research and extension), and gradually transformed black farmers from independent producers into wage laborers on white farms and in the non-agricultural sectors of the economy. Those without the possibility or wherewithal to find employment in the white-controlled sectors of the economy found themselves joining rapidly expanding labor reserves.

7.6 In contrast to the income levels earned by white, large-farm owners, the standards of living among blacks living in rural South Africa are very low. A recent estimate puts 45% of the overall population below the poverty line with the worst poverty found in the rural areas. There is no apparent difference between the incidence of poverty in the rural areas of the Republic of South Africa and the incidence of poverty in the homelands. In both areas, about two-thirds of blacks live in absolute poverty. In the urban areas, the percentage of blacks living in poverty is about one-third.

Marketing

7.7 The agricultural marketing system—which has been an important element in defining the agricultural policy environment in South Africa—has been largely dominated by producer interests. It has been characterized by a complex network of marketing regulations, arguably in an effort to accommodate specific producer interests almost on a crop-by-crop basis. An important characteristic of the existing marketing environment is the high degree of concentration and regulation found in marketing and processing.

7.8 The marketing environment is also characterized by a prominent domestic orientation in the case of foodcrops and livestock products where domestic producers have benefitted from a wide variety of protectionist policies mostly in the form of quantitative import controls and protective tariffs. Further, the combination of controlled input and output prices along with single-channel marketing systems for the majority of agricultural commodities have restricted competition and provided large-scale farmers with an income guarantee. An exception should be made here for certain export-oriented crops such as can be found in the horticultural sub-sector. In general, the impact of the domestic orientation of marketing and processing arrangements has been to benefit producers at the expense of consumers. The welfare implications of the agricultural marketing environment for both the urban and the rural poor have tended to be negative.

7.9 Since the early 1980s, the government has attempted to introduce market oriented reforms in the marketing arrangements with the result that a considerable, but uneven amount of deregulation has been achieved. As a consequence, agricultural producer prices of most commodities have fallen in real terms, yet consumer prices have increased. The resulting increase in marketing margins is, at least, partly caused by remaining distortions in agricultural markets and possibly the result of deregulated output markets without concurrent deregulation in input, processing, and distribution markets.

Production Efficiency

7.10 Given the protection that agriculture received from international markets and the considerable influence producers had in the determination of producer prices, it is often difficult to analyze whether producers allocated their resources in the most efficient way. Considerable empirical evidence exists, however, to suggest that in response to the prevailing structure of policy incentives—South African farmers made less-than-optimal use of labor and employed capital beyond its economic optimum. Moreover, given the inability of the sector to adapt its input bundle to the cost-price squeeze that has characterized the sector now for two decades, one could argue that there has been a gradual deterioration of price efficiency due mainly to increased emphasis on non-price incentives by the government.

7.11 Internationally, agriculture is generally characterized by constant or declining returns to scale. In South Africa, however, the secular trend towards larger and fewer farms seems to suggest the existence of increasing returns to scale. In large measure, this trend is not caused by genuine economies of scale, but is the result of a policy environment that favored the establishment and viability of farms that were large enough to sustain a full-time white farmer at income levels comparable to those in the urban sector. This is essentially a social policy objective that may carry high economic cost, since the available evidence for South Africa does not indicate that increasing returns to scale exist. Compelling international evidence on the efficiency of small-scale farming, combined with the existing empirical evidence for South Africa, moreover, suggests that important efficiency gains can be obtained from a down-sizing of farm size in significant parts of the agricultural sector.

7.12 Undoubtedly, South African agriculture has demonstrated improvements in technical efficiency that on average are modest by international standards, but compare favorably to other sectors in the economy. These gains, however, have been uneven within the sector with some sub-sectors achieving significant gains in productivity while others have been disappointing. Moreover, the combination of increased technical efficiency and capital intensity has exacerbated the slow growth of employment levels in the economy.

Financial Profitability

7.13 Since the early 1970s, agriculture in South Africa has been exposed to a cost-price squeeze that has reduced farm profitability. This was compounded during the 1980s by: (i) unfavorable weather conditions; (ii) a reduction of farm subsidies; (iii) liberalization of marketing policies that often resulted in lower real producer prices; and (iv) higher capital costs due in part to higher interest costs. Due to the prevailing structure of non-price incentives many farms did not respond to the changing price environment with the result that they continued to rely on the established, capital-intensive production methods. Given the variable agro-climatic conditions to which South African farming is exposed, the continued reliance on mechanized, monocropped farming also entailed a higher exposure to climatic risk and increased the volatility of farm profits.

7.14 As a result, the debt burden carried by many farmers escalated to unsustainable levels during the 1980s, in particular for farms in the summer rainfall areas (i.e. wheat and maize growers). The financial position of many farmers has continued to deteriorate, as illustrated by a continuing increase in the debt-asset ratio. At the same time land prices have declined. Higher capital costs, tighter credit standards,

fewer farm subsidies, and the growing unsustainability of the debt burden should have positive effects on labor employment in the sector and force less efficient farmers into foreclosure. However, the government continued its attempts to aid the sector financially, and farmers who could no longer obtain credit at commercial rates have had access to publicly-financed soft credit programs and debt-relief measures. For example, in response to the 1992 drought, substantial amounts of debt accumulated during the 1980s, was written off through a drought relief program totaling R3.4 billion.

Efficiency and Equity Issues in Agriculture

7.15 In summary, it is clear that the main theme to emerge from this report is that the agricultural policies of the past several decades have created a sector that is characterized by numerous distortions. These distortions have led to inefficiencies in many parts of the sector. The policy reforms of recent years have exposed many of the more inefficient farmers to market pressures with the result that many farms presently face bankruptcy. At the same time, it is clear that many parts of the agriculture sector operate very efficiently and that many of the large-scale farmers are competent managers who deal exceedingly well with an uncertain agro-climatic environment, but who are faced with an increasingly harsh sectoral policy environment. Hence, the picture of large-scale farming that emerges from this report is an uneven one in terms of efficiency and performance in recent years. This has led to a situation in which the future of the sector is uncertain in terms of what constitutes an appropriate set of objectives and, in turn, policy environment.

7.16 Although the question of the efficiency of large-scale farming is an important one for the future of the sector, it is not the only factor that needs to be considered when formulating strategic options for the future. Even if it could be demonstrated that all parts of the sector were highly efficient, there remains the undeniable need for a land reform program as a matter of addressing an issue of social justice, specifically the skewed distribution of land and asset ownership in the rural economy. International experience in this regard indicates that the present highly inequitable distribution of resources in South Africa—most notably land—is not sustainable. Although international experience is not an infallible guide to the future, it clearly suggests that economies with a distribution of land similar to South Africa's are prone to a pattern of civil disorder and violence.⁷⁶ Such prolonged periods of conflict typically result in capital flight, economic stagnation or decline, and possibly social and political disintegration. Hence, when examining strategic options for the growth and development of the rural sector, one is confronted with three looming realities: (i) a large-scale agricultural sector with a mixed history of performance and which is going through a difficult structural adjustment; (ii) the need for a meaningful redistribution of rural assets—the most important of which is land; and (iii) the imminent change in government.

7.17 Hence the broader issue is to design a strategy for South African agriculture and the rural economy that will achieve greater distributional equity, improve the operational efficiency of the sector,

⁷⁶ In Zimbabwe a fairly substantial, but poorly designed land reform program has made only limited contributions to output and employment growth, and left the land issue as an unresolved political and economic liability. Most other dualistic countries have fared much worse. Chile, Colombia, El Salvador, Guatemala, Nicaragua, Mozambique, Peru and Angola have suffered prolonged periods of up to forty years of unrest and civil war. Strong peasant support for revolutionary forces indicates that this was closely related to these countries' delay or inability to effectively redistribute land to a large number of beneficiaries.

increase the level of employment and foster growth that is both economically and environmentally sustainable?

Options for Rural Restructuring

7.18 The combination of racially based distortions in the old rural strategy, inequities in the distribution of and access to resources, and imminent political change require that choices be made about the nature of a new strategy in order to ensure that it will serve the needs of a much broader constituency. In light of international experience and the present circumstances in rural South Africa, the conclusion that emerges from this report is that there are few strategic options for agriculture and the rural economy available to a new Government in South Africa.

7.19 One option is to continue liberalizing the present policy environment, while leaving the present structure of agriculture production units largely unchanged. The process of ongoing liberalization would include: (i) further reform of the input and output marketing system, (ii) efforts to reduce the concentration in the agro-processing sector, (iii) revision of land sub-division guidelines, and (iv) restructuring of the present agricultural credit system. Continued liberalization along these lines will likely result in more bankruptcies among large-scale farms, the expansion of small-scale farming (especially near urban areas), the further expansion of the horticultural sector, and contraction of cereal and livestock production. Although the appeal of a more efficient agricultural sector through continued liberalization is clear, the drawback to this option is that changes in the ownership pattern of the farming sector—and especially the large farm subsector—are likely to be very slow. The main reasons for this are that: (i) in an environment of uncertainty over land ownership, few large-scale farmers will be willing to make the investments necessary to respond to the new policy environment; and (ii) few of those who were disfranchised under apartheid will have the resources needed to gain access—either through lease or purchase—to land currently held in the large-scale farm sector. Hence, while this option offers some increased efficiency, it is only a partial solution to the problem at hand because it essentially accepts a large-farm structure which—as this report demonstrates—is inefficient in many critical subsectors and highly inequitable in the distribution of assets.

7.20 A second strategic option would be to expand the focus of the first option to include a rural development strategy for the homelands that would feature upgrading of agricultural support services and investing in improved physical and social infrastructure. This has the advantage of continuing the process of policy liberalization and of concentrating public sector resources on some of the most obvious victims of apartheid. Such an option would be likely to contribute to a significant expansion of agricultural production in the homelands, but one that is limited to those comparatively few areas in the homelands with good agricultural potential. An obvious drawback to this approach is that—given the fragile condition of many of these areas—any effort to intensify agricultural production in the homelands is likely to have undesirable environmental consequences. A further problem with this option is that while it seeks to address the poverty in the homelands, the efficiency gains are incomplete and the problem of distributional inequity remains largely unaddressed. In addition, this options does nothing for the significant number of disenfranchised citizens that reside and/or are employed in the large-farm sector.

7.21 A third strategic option builds on elements of the two options described above—continued policy

reform and investment in the homelands—and in addition supports a redistribution of agricultural land in the large-farm sector. A clearly formulated policy of redistribution of agricultural land would achieve three critical objectives: (i) reduce uncertainty experienced by current owners thereby encouraging those who continue farming to invest; (ii) address the present inequitable distribution of land access; and (iii) encourage, if the redistribution mechanism is properly designed, those with the greatest interest in land use to gain access to and use land efficiently. This latter objective would lead to a more dynamic rural economy and to greater employment and income creation among low-income groups than would either of the first two strategic options. Hence, it is the third strategic option that merits further elaboration, especially its redistributive elements.

Overview of Land Reform Options

7.22 The starting point for developing a set of land reform options is an examination of experience in this area. Among other things, the lessons of international and South African experience demonstrate that a successful land reform program needs to: (i) be implemented expeditiously in order to avoid a combination of bureaucratic inertia, legal challenges, and the power of present landowners (generally the elite) that are likely to render the program ineffective; (ii) be politically acceptable and legitimate in order to forestall efforts to reverse the reform in the future; (iii) have a clear role for the public and private sectors defined in such a way that beneficiaries can exercise as much choice as possible—programs that have relied entirely on the public sector in the belief that the sector is the only one capable of maintaining integrity, delivering services, determining needs, and managing the process have been failures in most instances; and (iv) be part of a clearly articulated broader strategy of economic growth.

7.23 At the outset, it needs to be recognized that where pressure exists for a land reform program there are three basic methods for landless people to gain access to land in any country: (i) invasion; (ii) restoration; and (iii) redistribution. Where either restoration or redistribution fail to provide land, invasion is often seen as the only option available to the landless population. A continuation of land invasions would present a new South African government with an exceedingly difficult problem. It would mean that the credibility of existing legal institutions will have been undermined because of their inability to implement effectively the land restitution and redistribution processes. Consequently, people who have invaded land are unlikely to respond to court orders to vacate and forced evictions may become necessary. Given the recent history of South Africa, however, it is highly unlikely that a new government will be able to carry out such evictions without causing massive political alienation. In order to avoid large-scale land invasions, an effective program of land restoration and redistribution is necessary.

7.24 The land restoration (or land claims) process involves the return—by means of an administrative or adjudicative process—of specific parcels of land to individuals or communities who were unjustly removed in pursuance of racially based land legislation or policies. The land redistribution process involves providing access to land for selected groups or individuals and supplying them with the necessary support services to use that land effectively.

7.25 Assuming that a equitable and effective land restoration process (e.g., land claims court) will be implemented, the remaining issue is the design and implementation of a redistribution process. One of the central tensions in designing the desired land redistribution model is between the desire to address welfare and asset transfer objectives through the redistribution of land and the need to promote the

productive use of agricultural land. It is often the case that those individuals who qualify for land or assistance under welfare objectives of a land redistribution program, have little experience in agriculture or related land use activities. In contrast, the most experienced and well-qualified farmers typically do not qualify to receive land under welfare objectives. Hence, designing a program to address one of these objectives will often compromise the other objective.

7.26 Although both of these objectives can be accommodated within a single program, in order to do so it is essential that there be agreement on the precise objectives and methodology of the land redistribution program. Among the salient elements that characterize a successful program are that:

- a. market-assisted land redistribution programs tend to perform better than those administered and operated by the public sector;
- b. the role of the public sector in a land redistribution program centers on ensuring adequate supplies of land in the market and monitoring the overall operation of the program;
- c. criteria for participation are necessary and must be discussed and agreed in advanced;
- d. welfare objectives can be met by including a grant component in the program;
- e. a matching grant scheme that forces participants to use some of their own resources in order to gain access to land will help to assist in self-selection of participants and encourage the productive use of land;
- f. the grant elements of the program are essential in order to accomplish a redistribution of assets and to ensure that beneficiaries emerge from the program with a net increase in their asset position and low debt/asset ratio as a means of ensuring viability and sustainability of their enterprises;
- g. in addition to addressing the fundamental issue of social justice, these options are likely to significantly increase net rural employment and ensure that the cost of the program is very reasonable;
- h. a redistribution program will not be able to provide land for everyone and the program will need to be complemented by a rural safety net and by programs for urban groups, and
- i. although the discussion concentrates on agriculture and small farmers these are not the limits of the program. It is envisioned that the program will be a vehicle for supporting a wide range of land use activities, including trading activities, and small-scale enterprises.

Conclusion

7.27 As stated at the outset, the purpose of this report is to analyze the forces that have contributed to the current state of the agricultural sector in South Africa and to begin the process of identifying some strategic options for the future. The major conclusion of the report is that significant changes in the structure, ownership, and operation of the agriculture sector are necessary in order to address the serious problems of efficiency and equity. The analysis and options set forth in this report are intended to serve as the basis for discussion and debate within South Africa on the lessons of history and policies for the future. In South Africa, this debate is essential for the success of any strategy, because as has been stressed many South Africans, the process is as important as the product.

REFERENCES

- Ardington, A.J. "Private sector and other possible initiatives in promoting rural development." *Development Southern Africa* 7 (Special issue) (October, 1990), pp. 603-614
- Ball, V.E. "Output, Input and Productivity Measurement in US Agriculture, 1948-79." *American Journal of Agricultural Economics*, Vol. 67, No. 3, (1985) pp. 475-86.
- Ball, J. "Small is Beautiful The Key Concept for Successful Irrigation Development." *Development Southern Africa*, Vol. 4, No. 2 (May, 1986).
- Beaumont, W.H., S.W. Burger, W.R. Collins, W.E. Stanford, and C.H. Wessels. Report of the Natives Land Commission. Vol 1. (Cape Town: Cape Times Ltd., Government Printers, 1916)
- Beinart, W. "The Political Economy of Pondoland, 1860-1930." (Cambridge University, 1983).
- Bekker, S., C. Cross, and N. Bromberger. "Rural Poverty in South Africa: A 1992 study using secondary sources." (Durban: University of Natal, 1992).
- Bell T. and V. Padayachee. "Unemployment in South Africa: Trends, Causes and Cures." *Development Southern Africa* 1(3 & 4) (November, 1984).
- Bembridge, T.J. "Characteristics of small-scale farmers in the Transkei". *Social Dynamics*, Vol. 2, No. 2 (1986a).
- _____. "An Overview of agricultural and rural development in less developed areas of Southern Africa," *Development Southern Africa*, Vol. 3, No. 1 (1986b).
- _____. "The Practice of Agricultural Extension: A Training Manual." (Halfway House: Development Bank of Southern Africa, 1991).
- _____. "Practical Guidelines for Agricultural Extension Workers: A Field Manual." (Halfway House: Development Bank of Southern Africa, 1991).
- _____. "Crop Farming System Constraints in Transkei: Implications for Research and Extension." *Development Southern Africa*, Vol. 4, No. 1 (February, 1991), pp. 67-152 .
- Berry, R.A. and W.R. Cline, *Agrarian structure and productivity in developing countries*. (Geneva: International Labor Organization, 1979).
- Biggs, F.P. "Aspects of Combining Capital and Labour in South Africa, with Special Reference to the Modern Agriculture." Unit for Future Research, Report No. 82/4 (Stellenbosch: University of Stellenbosch, 1982)

- Binswanger, H.P., K. Deininger, and G. Feder, "Power, distortions, revolt and reform in agricultural land relations," in T.N. Srinivasan and J. Behrman (Eds.), *Handbook of Development Economics*, Vol. III, forthcoming.
- Binswanger, Hans and K. Deininger, "South Africa Land Policy: The Legacy of History and Current Options," *World Development*, Vol. 21, No. 9 (Oxford: September, 1993).
- Brand, S. S., N.T. Christodoulou, C.J. Van Rooyen and N. Vink "Agriculture and Redistribution: A Growth with Equity Approach." (Halfway House: Development Bank of Southern Africa, Corporate Communications Division., 1992)
- Brand, S. S. and F.R. Tomlinson "Die plek van die landbou in die Suid-Afrikaanse Volkshuishouding." *South African Journal of Economics*, Vol. 34 (1966) pp. 26-49.
- Brand, S. S. "A Critical Evaluation of the Existing Development Agencies and Their Role During the Reconstruction and Transition Period: Is There a Need for Reconstruction?" (Durban: Annual Convention of Association of Black Accountants of Southern Africa, 1966)
- _____. "The Contributions of Agriculture to the Economic Development of South Africa Since 1910" (D.Sc. dissertation. Pretoria University, 1969).
- Brotherton, I.A. and J.A. Geoenewald. "Optimal Organisation of Developed Irrigation Farms in the Malelane-Komatipoort Area." *Development Southern Africa*, Vol. 7, No. 1 (1982).
- Bundy, C. "The Rise and Fall of the South African Peasantry." (Berkeley and Los Angeles: University of California Press, 1979).
- Bureau of Market Research. "Personal Income of the RSA-TNVC Countries by Population Group and Magisterial District." (Pretoria, 1989). Paper prepared for the Finance 2000 Workshop, May 27-28, 1993. Photocopy, (Madison: University of Wisconsin).
- Cairns, R.I., and J.D. Lee. 1990. *Development Southern Africa*, Vol. 7, No. 1 (February, 1990), pp. 77-104.
- Carter, M.R., . "Does it Take More than Liberalization to Generate Broadly Based Growth? Financial Markets and the Microdynamics of Agrarian Growth Transformation." Photocopy. (Madison, WI: Department of Agricultural Economics, University of Wisconsin, 1993).
- Carter, M.R. and J. Kalfayan, "A General Equilibrium Exploration of the Agrarian Question," photocopy (Madison, WI: Department of Agricultural Economics, University of Wisconsin, 1989).
- Chavas, J.P. and Aliber, Michael. "An Analysis of Economic Efficiency in Agriculture: A Nonparametric Approach." Photocopy (Madison, Wisconsin: College of Agricultural and Life Sciences, 1993)

- Chavas, J.P. and J. van Zyl. 1993. forthcoming
- Christodoulou, N.T. and N. Vink. 1990. "The Potential for Black Smallholder Farmers Participation in the South African Agriculture Economy." Paper presented at the Conference on Land Reform and Agricultural Development, Nowick Park Initiative, United Kingdom.
- Cobbett, M. "The Land Question in South Africa: A Preliminary Assessment." Presented at Workshop on the South African Agrarian Question. (Witwatersrand: University of Witwatersrand: May 24-26, 1987).
- Cross, C. "Land Tenure in Black Rural Areas: Social and Political Underpinnings." Paper presented to Idasa Workshop on Rural Land Tenure, Botsrivier, Cape (March 1990).
- Data Research Africa. "Micro-Enterprises in Rural Areas of South Africa." Results of a Survey on Farm and Non-farm Enterprises in Bophuthatswana, Kwazulu, and Transkei." Report prepared by Leanne Lickin, Mike Lyne and Julian May.
- de Kiewiet, C.W. *A History of South Africa--Social and Economic*. (London: Oxford University Press, 1942).
- de Klerk, M. J. (ed.) "The Accumulation Crisis in Agriculture." In *South Africa's Economic Crisis*, Stephen Gelb, (Cape Town: David Philip, 1991).
- de Klerk, Michael J. (ed.) *A Harvest of Discontent: The Land Question in South Africa*. (Cape Town: Institute for Democratic Alternatives in South Africa, 1991).
- _____. "The Labour Process in Agriculture: Changes in Maize Farming in South Africa During the 1970's." *Social Dynamics*, Vol. 11, No. 1 (1985) pp. 7-31.
- _____. *Technological Change and Employment in South African Agriculture: The Case of Maize Harvesting in the Western Transvaal, 1968-1981*. Unpublished M.A. (Economics) dissertation. (Capetown: University of Capetown, 1983) pp. 195-234.
- Development Bank of Southern Africa, . "An Inter-Regional Profile." (Halfway House, 1991).
- _____. "A Regional Profile of The Southern African Population." (Halfway House, 1990).
- _____. "An Inter-Regional Profile." (Halfway House, 1990).
- de Wet, C. "Land Tenure and Rural Development: Some Issues Relating to the Transkei/Ciskei Region," *Development Southern Africa*, Vol. 4, No. 3 (1987).
- Duncan, A. and Jones, S., "Agricultural Marketing and Pricing Reform: A Review of Experience," *World Development*, Vol. 21, No. 9 (Oxford: September, 1993).

- Dushmanitch, V.Y. and M.A.G. Darroch. "An Economic Analysis of the Impacts of Monetary Policy on South African Agriculture." *Agrekon*, Vol. 29, No. 4 (1990) pp. 269-283
- Elliott, M.B. 1992. Personal communication.
- Fallon, P.R. "An Analysis of Employment and Wage Behavior in South Africa." Informal discussion papers on aspects of the economy of South Africa; Paper no. 3. (Washington, D.C.: Southern Africa Department, World Bank, 1992).
- Feder, G. The Relation between Farm Size and Farm Productivity: the Role of Family Labor, Supervision, and Credit Constraints," *Journal of Development Economics*, Vol. 18, 1985, pp. 297-313.
- Fenyés, Tom and Johan van Rooyen, 1985. "South African Agriculture and Migrant Labor." Philip L. Martin (ed.) Migrant Labor in Agriculture: An International Comparison (Washington, D.C.: Giannini Foundation of Agricultural Economics, University of California and the German Marshall Fund of the United States).
- Food and Agriculture Organization (FAO), Production Yearbook, (Rome, 1989).
- Food Studies Group. "Agricultural Marketing and Pricing in South Africa." Draft. (Oxford: International Development Centre, University of Oxford, 1992)
- Fuller, K.G., and M.A.G. Darroch. "Factors Associated with Credit Use by Summer Crop Producers in the Transvaal and Orange Free State." Proceedings: Annual Conference of the Agricultural Economies Association of Southern Africa (1988) pp. 336-344.
- Groenewald, J.A. "Returns to Size and Structure of Agriculture: A Suggested Interpretation." *Development Southern Africa*, Vol. 8, No. 3 (August, 1991) pp. 329-342.
- _____. "Review of the Report of the Committee of Enquiry into Alternative Marketing Arrangements for Maize." *Development Southern Africa*, Vol. 6, No. 4 (November, 1989).
- Groenewald, J.A. and G.F. Liebenberg. "Die RSA-Landbouuilvoet." *Agrekon*, Vol. 29, No. 3 (Pretoria, 1990) pp. 178-184.
- Groenewald, J.A. and J.P.F. du Toit. "Some Features of Livestock Farming in Bophuthatswana." *Development Southern Africa*, Vol. 4, No. 2 (1983) pp. 225-242.
- Halbach, A.J. "The South African Homeland Policy and Its Consequences: An Evaluation of Separate Development." *Development Southern Africa*, Vol. 5, No. 4 (1988) pp. 508-526.
- Hattingh, H.S. "Skewe Inkomeverdeling in die Landbout se Uitdaging aan Landboubelaid," *Agrekon* (Pretoria: 1986). Translated by Viljoen, M.F..

- Hattingh, H.S., and A. Herzberg. "Ownership or Leasing of Agricultural Land: Production Economic Aspects." *Agrekon*, Vol. 19, No. 2 (Pretoria: 1980).
- Howcroft, J. R. 1992?. "An Economic Analysis of Alternative Market Scenarios for Wheat in South Africa." Photocopy.
- Jaffee, S. "Agricultural Diversification and Trade in SADCC Countries." Photocopy. (Washington, D.C.: Southern Africa Department, World Bank, 1991).
- Janse van Rensburg, B.D.T. and J.A. Groenewald. "The Distribution of Financial Results Between Farmers During a Period of Agricultural Setbacks: Grain Farmers in the Western Transvaal, 1981/82." *Agrekon*, Vol. 26, No. 1 (Pretoria: 1987) pp. 13-19.
- Joubert, J. and J.A. Groenewald. 1974. "Land Tenure Systems in White South African Agriculture: The Importance of Different Systems." *Agrekon*, Vol. 13, No. 3 (Pretoria: 1974) pp. 3-9.
- Kahn, B., Senhadji, A., and Walton, M. "South Africa: Macro-economic Issues for the Transition," mimeo (2nd draft), January, 1992.
- Kassier, W.E. *et al.*, "Report of the Committee of Inquiry into the Marketing Act," known as *The Kassier Report*, (Stellenbosch: 1992)
- Keegan, T. Rural transformations in industrializing South Africa: The Southern Highveld to 1914. (Johannesburg: Ravan Press, 1986).
- Lacey, M. "Working for Boroko: The Origins of a Coercive Labour System in Southern Africa." (Johannesburg: Raven Press, 1982).
- Levy, B. "How Can South African Manufacturing Efficiently Create Employment? An Analysis of the Impact of Trade and Industrial Policy." (Washington, D.C.: World Bank: Southern Africa Department, 1992).
- Lenta, G. and G. Maasdorp, "Limit Factors on Food Production in the Homelands," in C.R. Cross and R.J. Haines (eds.), Towards freehold? Options for land and development in South Africa's black rural areas. (Cape Town: Juta and Co., 1988).
- Liebenberg, G.F. and J.A. Groenewald. "Die RSA-Landbouuilvoet." *Agrekon*, Vol. 29, No. 3 (Pretoria: 1990) pp. 178-184.
- Lipton, Merle. "South Africa: Two Agricultures?" in F. Wilson *et al.* (eds.) *Farm Labour in South Africa* (Cape Town: David Philip, 1977).
- _____. *Capitalism and Apartheid* (Totowa, NJ: Rowman & Allanheld, 1985).

- Lipton, M. and M. Lipton. "Some Policy and Institutional Factors Affecting the Impact of Agriculture on the Poor: Lessons for South Africa from Experience Elsewhere." *World Development*, Vol. 21, No. 9 (Oxford: September, 1993).
- Lipton, Michael. *Why People Stay Poor*. (London: Temple Smith, 1977).
- Lodge, T. "Perceptions of Agrarian Issues in Black Politics." *Development Southern Africa*, Vol. 7 (Special issue) (October, 1990) pp. 483-494.
- Louw, A.H. "'n Perspektief op die aanbod van voedsel in Suid-Afrika met spesiale verwysing na voedselsekerheid. Unpublished M.Sc.(agric) dissertation, (Pretoria: University of Pretoria, 1990)
- Louw, A.H. and J. Van Zyl. "'n Perspektief op voedselselfvoorsienendheid as 'n determinant van voedselsekerheid." *Agrekon*, Vol 30, No. 3 (Pretoria: 199) pp. 129-138.
- Lubbe, W.F. "Normalising Competition in Agricultural Marketing-the Case for Red Meat in South Africa." *Agrekon*, Vol. 30, No. 4 (December, 1991) pp. 253-259.
- _____. "Alternatives for Privatization and Deregulation." *Report to Sunnyside Group*. (mimeo). (1990).
- _____. "The Decomposition of Price Time Series Components of the Red Meat Industry for Efficient Policy and Marketing Strategies." *Agrekon*, Vol. 29, No. 4 (Pretoria: December, 1990) pp. 296-304.
- Maddison, A. *The World Economy in the 20th Century*, (Paris, 1989) pp. 81, 91.
- Maize Board. 1991. *Annual Report*. Annexes. (No publishing information).
- Marcus, T. "Restructuring in Commercial Agriculture in South Africa, Modernising Super-Exploitation." Dr. Govan Mbeki Fund (Amsterdam: University of Amsterdam, 1986).
- McKenzie, C.C., D. Weiner, and N. Vink. "Land Use, Agricultural Productivity and Farming Systems in Southern Africa." Unpublished research report. Development Bank of Southern Africa (Halfway House: 1989)
- Moll, P.C. "Models of Land Reform." *Development Southern Africa*, Vol. 7 (Special Issue) (October, 1991) pp. 441-50 .
- _____. "The Rationality of Farm Size Growth: An Example from 'White' South Africa." *European Review of Agricultural Economies*, Vol. 16, No. 3 (1989) pp. 345-357.
- _____. "Economies of Size in "White" South African Agriculture: Implications for Land Reform." Unpublished paper (Cape Town: University of Cape Town, 1988).

- Moll, T. "Output and Productivity Trends in South Africa: Apartheid and Economic Growth." PhD thesis, (Cambridge: Cambridge University, 1990) pp. 110-114.
- . "Did the Apartheid Economy Fail?" *Journal of Southern African Studies*, Vol. 17, No. 2 (June, 1991) pp. 271-291.
- Moolman, J.H. "Historical Perspective - the Process of Occupation.", and "Consolidation." (Chapters I and 4 of unidentified ms.).
- Morris, M.L. "The Development of Capitalism in South Africa Agriculture: Class Struggle in the Countryside." *Economy and Society*, Vol 5, No. 3 (1976) pp. 292-343
- Nicholson, C.A., and T.J. Bembridge. "Characteristics of Black Commercial Farmers in Gazankulu." *South Africa Journal of Agricultural Extension*, Vol. 7, No.17. (1991).
- Nieuwoudt, W.L. 1990. "Efficiency of Land Use." *Agrekon*, Vol. 29, No. 4 (Pretoria: December, 1990) pp. 210-215.
- . "Farm Household-Economies and Increased Earnings from Traditional Agriculture: Implications to Southern Africa." (mimeo) (Unpublished paper, 1988).
- . "An Economic Analysis of Demand and Policies in the Beef Industry." *Agrekon: Biannual Journal on Agricultural Economics*, Vol. 24, No. 2 (Pretoria: Department of Agriculture, October, 1985).
- . "An Economic Analysis of demand and supply functions for wheat (bread) in South Africa, 1948-1981." *Agrekon: Biannual Journal on Agricultural Economics*, Vol. 22, No. 2 (Pretoria: Department of Agriculture, October, 1983).
- Nieuwoudt, W. L., and N. Vink. "The Effects of Increased Earnings from Traditional Agriculture in Southern Africa." *South African Journal of Economics*, Vol. 57, No. 3 (1989) pp. 257-269.
- Ortmann, G.F. "Impact of Available Policy Options on Consumer Welfare." *Agrekon: Four-Monthly Journal on Agricultural Economics*, Vol. 25, No. 2 (Pretoria: Department of Agriculture, June, 1986) pp. 42-44.
- Payne, N. L., J. van Zyl, and H. J. Sartorius von Bach. "Labour-Related Structural Trends in South African Commercial Grain Production: A Comparison Between the Summer and Winter Rainfall Areas, 1945-1987." *Agrekon*, Vol. 29, No. 4 (Pretoria: 1990) pp. 407-416.
- Plaatje, Sol. *Native Life in South Africa*. (London: Longman, 1987).
- Prosterman,, Roy L. and Jeffrey M. Riedinger. *Land Reform and Democratic Development*. (Baltimore and London: The Johns Hopkins University Press, 1987).

- Rosenzweig, M.R. and H.P. Binswanger, "Wealth, Weather Risk and the Composition and Profitability of Agricultural Investments," *Economic Journal* (forthcoming).
- Roth, M., H. Dolny, and K. Wiebe. "Employment, Efficiency and Land Markets in South Africa's Agricultural Sector: Opportunities for Land Policy Reform" draft (Madison: Land Tenure Center, May 21, 1992).
- Roukens de Lange, A., 1990. "Use of the Social Accounting Matrix in Investigating the Informal Sector of the South African Economy." Institute for Futures Research, University of Stellenbosch, mimeo.
- Sartorius von Bach, H. J. and J. van Zyl. "Comment: Returns to Size and Structure of Agriculture - A Suggested Interpretation." *Development South Africa*, Vol. 9, No. 1 (February, 1992) pp. 75-79.
- Sartorius von Bach, H. J., J. van Zyl, and B. H. Koch. "Managerial Ability and Economies of Size in South African Agriculture: Empirical Evidence for Structural Adjustment." Paper presented at the annual conference of the South African Society of Agricultural Extension, Bloemfontein, May 5-7, 1992.
- Schoeman, J.L. and D.M. Scotney. "Agricultural Potential as Determined by Soil, Terrain and Climate." *South African Journal of Science*, Vol 86 (1987) pp. 395-402.
- Simkins, C. "Financing Rural Development." *Development Southern Africa* 7(Special issue) (October, 1990) pp. 591-601.
- _____. "Black Population, Employment and Incomes on Farms Outside the Homelands Revisited." Paper presented to IDAKSA Rural Workshop, (Capetown: March, 1990).
- _____. "What Has Been Happening to Income Distribution and Poverty in the Homelands." *Development Southern Africa*, Vol. 1, No. 2 (1984).
- South African Agricultural Union (SAAU). Die Finansiële Posisie van Boere in die R.S.A. (Pretoria: SAAU, 1984).
- South Africa (Republic of). "Labour Statistics: Employment and Salaries and Wages Wholesale, Retail and Motor Trade and Hotels: September 1991." Statistical News Release, February 11, 1992. (Pretoria: Central Statistical Service, 1992).
- _____. *Abstract of Agricultural Statistics* (Pretoria: Central Statistical Service, 1993)
- _____. *South African Statistics, 1992* (Pretoria: Central Statistical Service, 1993).
- _____. *Abstract of Agricultural Statistics* (Pretoria: Central Statistical Service, 1992).

- ____. "An Investigation into the Price Mechanism in the Food Chain," Board on Tariffs and Trade, Report No. 3273 (Pretoria: Department of Agriculture, 1992)
- ____. *Directorate of Agricultural Economic Trends* (Pretoria: Department of Agriculture, 1992)
- ____. "Investigation into Restrictive Practices that Exist or May Arise in the Supply and Distribution of Fertilizer to Bona Fide Farmers" and "Whether an Agreement Between Indian Ocean Fertilizer (PTY) LTD, AECI Limited, AECI Opencast Services (PTY) LTD and Ktnoch Fertilizer LTD Gave Rise to an Acquisition and, if so, Whether Such Acquisition is Justified in the Public Interest," Competition Board, Report No. 31. (1992).
- ____. *South African Statistics, 1992* (Pretoria: Central Statistical Service, 1993).
- ____. *Annual Report*. Pretoria: Department of Development Aid, 1990).
- ____. *Directorate of Agricultural Trends*. (Pretoria: Department of Development Aid, 1990).
- ____. *Annual Report*. Pretoria: Department of Development Aid, 1989).
- ____. *Census of Letting to Own Fixed Property, 1986*, Report No. 83-02-01 (Pretoria: Central Statistical Service, 1989).
- ____. *Commission of Enquiry into the Red Meat Price Discovery Process*. (Pretoria: Report of Government Printer, 1989)
- ____. *Agricultural Survey* (Pretoria: Central Statistical Service, 1988).
- ____. *Census of Agriculture* (Pretoria: Central Statistical Service, 1983).
- ____. *Census of Agriculture* (Pretoria: Central Statistical Service, 1972).
- ____. *Census of Agriculture* (Pretoria: Central Statistical Service, 1963).
- ____. *Census of Agriculture* (Pretoria: Central Statistical Service, 1953).
- ____. Department of Bantu Administration and Development. Central Statistical Service. Pretoria. (unpublished data)
- South Africa (Union of). "Land Survey, Tenure and Occupation," in Official Year Book of the Union. No. 22 (Pretoria: The Government Printing and Stationary Office, 1956) pp. 493-514.
- ____. "Land Survey, Tenure and Occupation," in Official Year Book of the Union, No. 22 (Pretoria: The Government Printing and Stationary Office, 1941) pp. 623-644.

- _____. "Land Survey, Tenure and Occupation," in Official Year Book of the Union, No. 1 (Pretoria: The Government Printing and Stationary Office, 1916) pp. 357-376.
- South African Reserve Bank. *South Africa's National Accounts*. (Pretoria: June, 1991).
- _____. *Quarterly Bulletin*. Various years/issues. Pretoria.
- South African Sugar Association.
- Stadler, J.J., J.P. van der Heever, and J.A. Lombard. "The Costs, Advantages and Financing of Protection in South Africa: the Influence of Protection on Agriculture." First interim report; in Afrikaans. Research Report no. 17. (Pretoria: University of Pretoria, Bureau for Economic Policy and Analysis, 1983)
- Stewart, D.A. and M.C. Lyne. "Socio-Economic Characteristics of the Rural Population in Gcumisa Ward, KwaZulu." *Development Southern Africa*, Vol. 5, No. 2 (May, 1988) pp. 186-195.
- Sunnyside Group. 1991. "The Red Meat Industry: Assessment and Recommendations." Photocopy.
- Tapson, D. R. "The Agricultural Potential of the Homelands: Problems and Prospects," in H. Giliomee and L. Schlemmere (eds.), Up Against the Fence (1985).
- Thirtle, C. and P. Bottomley, Total Factor Productivity in UK Agriculture, 1967-90, *Journal of Agricultural Economics*, Vol. 43, Nol, 3 (1992) pp. 381-400.
- Thirtle, C. H. Sartorius von Bach, and J. van Zyl. Explaining Total Factor Productivity Growth in South African Commercial Agriculture, 1947-91, Working Paper (93/02) (Pretoria: University of Reading, Department of Agricultural Economics and Management, March 1993).
- _____. "Explaining Total Factor Productivity Growth in South Africa Commercial Agriculture, 1947-91." Working Paper, (Reading: University of Reading, Department of Agricultural Economics and Management, 1993).
- Trapido, S. "Landlord and Tenant in a Colonial Economy: The Transvaal. 1880-1910." *Journal of Southern African Studies*, Vol 5, No. 1 (1978) pp. 26-58.
- United Nations. Centre Against Apartheid, Department of Political and Security Council Affairs. Land Tenure Conditions in South Africa. (Rome: 1976)
- United States Department of Agriculture. 1990. Economic Research Service, internal data.
- van Heerden, W.R. and J. van Zyl. "The Aggregate Measure of Support for Maize in South Africa, 1985/86 to 1990/1." Photocopy. (Pretoria: University of Pretoria, 1992).

- van Rooyen, C.J. "Agricultural Restructuring in Southern Africa: The Contribution of the Developing Agricultural Sector." *Agrekon*, Vol. 29, No. 1 (Pretoria: 1990) pp. 3-10.
- _____. "Using Results from Experimental Farms in Planning Irrigation Schemes for the Farms at Hartbeestpoort." unpublished M.Sc. (Agriculture) dissertation. (Pretoria: University of Pretoria, 1973) (in Afrikaans).
- van Rooyen, C.J. and J. van Zyl. "Agricultural Restructuring in South Africa: Changes in the Production Structure and Some Considerations On the Food Question." Paper prepared for International Conference on Agricultural Restructuring in Southern Africa. Sakopmund, Namibia: International Agricultural Economic Association. (1990).
- _____. "Agricultural Production in South Africa: An Overview." Unpublished paper, presented at IDASA "Rural Land" Workshop (Houshoek Inn, 9-11 March, 1990).
- van Rooyen, C.J., van Zyl, J., and T.I. Fényes. "A Comparison of the Contribution and Relative Performance of Agriculture in Southern Africa." *Development Southern Africa*, Vol. 4, No. 2 (1987) pp. 183-198.
- van Seventer, F. and van Zyl. "An Input-Output Analysis of Agribusiness in South Africa." *Agrekon*, Vol. 31, No. 1 (Pretoria: March, 1992) pp. 12-21.
- van Schalkwyk, H.D., and J.A. Groenewald. "An Estimate of Aggregate Supply Response in South African Agriculture." (unpublished paper, 1992).
- _____. "Agricultural Land Price and Quality." (unpublished paper).
- _____. "Price of Agricultural Land and Quality." *Development Southern Africa* (forthcoming).
- _____. "Regional Analyses of South African Agricultural Resource Use and Productivity." *Agrekon*, Vol. 31, No. 3 (Pretoria: September, 1992) pp. 116-127.
- van Schalkwyk, H.D., and J. van Zyl. "The South African Land Market: An Analysis of Land Prices." forthcoming.
- van Wyk, S.P. "Trends in Land Values in South Africa." *Agrekon*, Vol. 6, No. 1 (Pretoria: 1967) pp. 23-30.
- _____. "Determination of an Economic Farming Unit." (?) pp. 18-29.
- van Zyl, Johan. "Practical Approaches to Land Reform - 1: Values - Economic Reform in SA." *Farmer's Weekly* (July 26, 1991) pp. 41-43.
- _____. "Models for Land Use." *Farmer's Weekly* (August 2, 1991) pp. 32-33.

- _____. "Agriculture's Potential for Growth." *Farmer's Weekly* (March 15, 1991) pp. 34-35.
- _____. "Productivity and the Bottom Line - 3: The Grain Industry." *Farmer's Weekly*. (August 17, 1990) pp. 19, 21.
- _____. "Interrelationships in Maize Markets in Southern Africa I: Structural Effects of the Farmer Support Programme." *Development Southern Africa*, Vol. 6, No. 2 (May, 1989) pp. 202-270.
- _____. "The Effect of Inflation on Agricultural Production under Conditions of Risk." *Agrekon*, Vol. 25, No. 3 (Pretoria: 1986) pp. 56-63.
- _____. Reporting on Herman van Schalkwyk's M. Com. dissertation at the University of Pretoria. *Farmer's Weekly* (September 11 & 18, date).
- van Zyl, J. and J.A. Groenewald. "Flexibility in Input Substitution: A Case Study of South African Agriculture," *Development Southern Africa*, Vol. 5, No. 1 (1988) pp. 2-13.
- van Zyl, J., A. van der Vyver, and J.A. Groenewald. "The Influence of Drought and General Economic Effects on Agriculture: A Macro-Analysis." *Agrekon*, Vol. 26, No. 1 (Pretoria: 1987)
- van Zyl, J., A. van der Vyver, and C.W. Mostert. "The Effect of Debt Burden, Interest Rates and Inflation on the Survival of Farming Enterprises: A Case Study in the Western Transvaal and the North-Western Bushveld." *Agrekon*, Vol. 26, No. 1 (Pretoria: 1987) pp. 1-7.
- van Zyl, J., H.J.G. Nel, and J.A. Groenewald. "Agriculture's Contribution to the South African Economy." *Agrekon*, Vol. 27, No. 2 (Pretoria: 1987) pp. 1-9.
- van Zyl, J. and J. van Rooyen. "Agricultural Restructuring in South Africa: Changes in the Production Structure and Some Considerations On the Food Question." Paper prepared for International Conference on Agricultural Restructuring in Southern Africa (Sakopmund, Namibia: International Agricultural Economic Association, 1990).
- _____. "Agricultural Production in South Africa: An Overview." Paper presented at an IDASA workshop on Rural Land, 1990b.
- van Zyl, J. and N. Vink. "Effects of Farmer Support Programmes on Consumption and Investment." *Development Southern Africa*, Vol. 9, No. 4 (November, 1992).
- Vink, N. and W.E. Kassier. "Agricultural Policy and the South African State," in A Harvest of Discontent: the Land Question in South Africa, M. de Klerk ed. (Cape Town: Institute for a Democratic Alternative for South Africa, 1992)
- Viljoen, P. and J.A. Groenewald. "An approach to farming efficiency analysis as applied in Ruens," *Agrekon*, Vol. 16, No. 4 (1977) pp. 6-8.

Volkscas Bank. "Capital Efficiency in Agriculture," *Economic Spotlight* (February, 1991).

_____. "Relating Perceptions and Associated Economic Criteria to Economic Survival In Commercial Dryland Farming In South Africa." Draft of unpublished paper.

Weiner, J. "Land Use, Agricultural Productivity and Farming Systems in South Africa." Draft Report, 1989.

Wheeler, M.W. & G.F. Ortmann. "Socio-economic Factors Determining the Success Achieved Among Cotton-Adopting Households in Two Magisterial Districts of KwaZulu." *Development Southern Africa*, Vol. 7, No. 3 (August, 1990) pp. 323-333.

Wilson, F. "Farming, 1866-1966." *Oxford History of South Africa*, M. Wilson and L. Thompson, eds., Vol. 11 (1971) pp. 104-71.

Wilson, F. and M. Ramphela. Uprooting Poverty: The South African Challenge (Cape Town: David Philip, 1989).

World Bank. "An Economic Perspective on South Africa." (Washington, D.C.: Southern Africa Department, World Bank, 1993).

_____. "Venezuela: Land Markets, Land Reform, and Rural Land Ownership." (Washington, D.C.: Latin American and the Caribbean Department, World Bank, 1992).

_____. *World Development Report 1992: Development and the Environment*. Table 33: (Oxford, New York: Oxford University Press, 1992) pp. 282-83.

_____. "Outline of Work Briefs for External Consultants." Zimbabwe Forestry Sector Review Mission. (Washington, D.C.: World Bank, 1991).

_____. "Uruguay: Agricultural Sector Review." Vol. 1, Main Report. (Washington, D.C.: Latin America and the Caribbean Region, World Bank, 1988).

_____. "Jordan: Towards an Agriculture Sector Strategy." (Washington, D.C.: Country Department III, Agricultural Operations Division, Europe, Middle East and North Africa Region, World Bank, 1990)

_____. "Kenya: Growth and Structural Change." Basic Economic Report. (Washington, D.C.: World Bank, 1983)

Wright, Peter David. *A Study in Political Economy: The South African Maize and Dairy Industry*. Ph.D. Dissertation (Pietermaritzburg: University of Natal, Department of Agricultural Economics, 1992).

ANNEX 1

Table 1.1: Unemployment Among the Economically Active Population

	Registered Unemployment (%)			Coloreds (%)		Asians (%)		Blacks (%)	
	Whites	Coloreds	Asians	Male	Female	Male	Female	Male	Female
	A	B	C	D		E		F	
1975	0.2	0.6	0.9						
1976	0.3	0.7	1.0						
1977	0.6	1.6	2.1						
1978	0.7	1.7	2.2					6.7	17.7
1979	0.6	1.4	1.9	6.6	12.4			6.0	15.6
1980	0.5	1.1	1.5	4.1	9.8			5.3	14.9
1981	0.3	0.7	1.0	3.6	5.9			5.0	13.8
1982	0.3	0.9	1.0	4.5	6.0			5.1	13.7
1983	0.7	1.8	2.7	7.0	8.5	6.4	9.6	6.0	14.1
1984	0.7	1.1	1.3	5.2	7.8	5.5	9.2	5.4	13.5
1985	1.3	2.6	3.8	7.9	8.5	6.7	10.4	5.4	12.7
1986	1.6	2.9	4.2	9.2	12.9	8.0	15.0	15.4	27.2
1987	1.4	2.5	3.3	13.0	15.8	10.7	16.1	11.6	23.8
1988	1.1	2.0	3.2	9.7	11.5	8.5	11.3	10.6	18.9
1989				7.3	9.0	6.1	7.3	8.3	16.3

a. Columns A-C are registered unemployed.

b. Data in columns D-F are the unemployment rate based on the current population survey (whites excluded).

Source: South African Statistics 1990, pp. 7.34 and 7.41.

Table 1.2: Trends in exchange rates (US \$ per rand; and indices; period averages.)

	Market Commercial Rate (\$/R)	Nominal Effective Exchange Rate (1985=100)	Real Effective Exchange Rate (1985=100)
1978	1.15	-	-
1979	1.18	-	-
1980	1.29	-	-
1981	1.15	-	-
1982	0.92	-	-
1983	0.90	-	-
1984	0.70	147	132
1985	0.46	100	100
1986	0.44	79	92
1987	0.49	78	104
1988	0.44	68	98
1989	0.38	62	99
1990	0.39	58	102
1991 3rd Q	0.35	54	106

Source: International Financial Statistics, International Monetary Fund, Washington DC. Various issues.

Table 1.3: Shares and Rate of Growth in General Government Expenditures¹

	1978-82	1983-87	1988-92	1991	1992
<u>Percentage Shares of Government Expenditures</u>					
Recurrent expenditure	70.3	80.2	86.3	83.3	89.0
Remuneration of employees	26.1	30.7	31.4 ²	32.7	63.6 ³
Other goods and services	23.9	25.5	28.7 ²	30.0	
Interest payments	8.3	10.5	13.0	10.9	11.9
Subsidies	4.5	6.2	5.6	5.0	4.3
Other current transfer	7.2	7.2	7.0	5.9	7.6
Capital expenditure	20.1	18.2	12.4	14.0	9.9
Net Lending	9.6	1.6	1.3	2.7	1.9
Total expenditure	100.0	100.0	100.0	100.0	100.0
GDP share of government expenditure	31.3	33.0	35.7	37.2	37.0
<u>Real Rates of Growth (constant 1985 prices)</u>					
Current expenditure	3.7	6.1	3.7	1.2	5.6
Remuneration of employees	4.1	7.1	5.2 ²	11.4	4.8 ³
Other goods and services	3.2	5.5	5.2 ²	-1.4	
Interest payments	11.7	8.9	6.1	-4.8	7.4
Subsidies	3.7	9.5	-4.4	-9.7	-14.3
Other current transfer	3.4	2.8	3.8	-12.2	27.0
Capital expenditure	-1.1	3.8	-7.3	17.9	-35.0
Total expenditure	2.3	3.1	2.6	8.3	-1.0
GDP	4.0	0.2	1.4	-0.7	-0.6

Source: Calculations based on SARB data. Fiscal year ending March 31.

- Notes:**
1. Data are in fiscal years, e.g. fiscal year 1978 refers to the year preceding March 31, 1978.
 2. 1987/88 - 1990/91
 3. Refers to 1991/92 total for remuneration of employees and other goods and services.

Table 1.4: Macroeconomic Indicators

	Exchange Rates		Annual Inflation	Short to Medium Term Lending Rate	Government Bond Yield Interest Rate		Land Bank Long-Term	
	(\$/R)	SDRs/R)	(CPI)	(%)	Nominal (%)	Real (%)	Nominal (%)	Real (%)
	A	B	C	D	E	F=E-C	G	H=G-C
1990	0.39	0.29	14.4	21.0	16.2	1.8	16.1	1.7
1989	0.38	0.30	14.7	19.8	16.9	2.2	14.6	-0.1
1988	0.44	0.33	12.9	15.3	16.4	3.5	13.7	0.8
1987	0.49	0.38	16.1	12.5	15.3	-0.8	13.7	-2.4
1986	0.44	0.38	18.6	14.3	16.4	-2.2	13.9	-4.7
1985	0.46	0.45	16.3	21.5	16.8	0.5	13.3	-3.0
1984	0.70	0.68	11.5	22.3	15.2	3.7	10.0	-1.5
1983	0.90	0.84	12.4	16.7	12.7	0.3	10.0	-2.4
1982	0.92	0.84	14.7	19.3	13.5	-1.2	10.0	-4.7
1981	1.15	0.97	15.2	14.0	13.0	-2.2	7.0	-8.2
1980	1.29	0.99	13.8	9.5	10.1	-3.7	7.0	-6.8
1979	1.19	0.92	13.2	10.0	9.3	-3.9	7.0	-6.2
1978	1.15	0.92	11.0	12.1	10.4	-0.6	7.0	-4.0
1977	1.15	0.99	11.0	12.5	11.0	0.0	7.0	-4.0
1976	1.15	1.00	11.2	12.3	10.4	-0.8	7.0	-4.2
1975	1.37	1.13	13.5	11.8	9.7	-3.8	7.0	-6.5
1974	1.47	1.22	11.6	10.2	9.0	-2.6	6.0	-5.6
1973	1.44	1.21	9.4	8.0	7.8	-1.6	6.0	-3.4
1972	1.30	1.20	6.5	8.8	8.4	1.9	6.0	-0.5
1971	1.40	1.39	6.4	8.8	8.4	2.0	6.0	-0.4
1970	1.40	1.40	5.1	8.2	7.2	2.1	6.0	0.9
1969	1.39	1.40	2.9	8.0	6.5	3.6	6.0	3.1
1968	1.39	1.40	1.8	8.3	6.5	4.7	6.0	4.2
1967	1.39	1.40	3.0	8.3	6.5	3.5	6.0	3.0
1966	1.39	1.40	3.8	7.5	6.3	2.5	6.0	2.2
1965	1.40	1.40	3.9	6.9	5.6	1.7	6.0	2.1

a. Period average market exchange rate of U.S.\$ per Rand (IMF Statistics).

b. Period average SDR value of the Rand (IMF Statistics). Prior to July 1974, the SDR was valued at the par value of the dollar. Beginning July, the value of the SDR is determined daily on the basis of a basket of currencies.

Table 1.5: Inflation, Real Interest Rates and Real Price Changes, 1955-1991

Year	Inflation	Land Bank	Co-ops	Commercial banks	Weighted total	Real producer prices	Real input prices	Real land prices
		A	B	C	A,B,C	(%) change	(%) change	(%) change
	(%)	(%)	(%)	(%)	(%)			
1955	1.6	3.90	6.40	4.40	4.96	-0.40	0.50	-0.20
1960	1.4	4.33	6.88	5.08	5.50	-0.72	-0.59	9.11
1965	3.9	2.08	4.58	3.08	3.31	-0.74	-3.14	-0.35
1970	5.1	0.94	3.44	3.44	2.70	-1.63	-0.68	-13.39
1971	6.4	-0.42	2.08	2.58	1.52	-3.10	-1.52	5.70
1972	6.5	-0.53	1.97	1.97	1.23	7.91	0.80	-1.13
1973	9.4	-3.43	-0.93	-1.07	-1.72	16.27	1.13	3.39
1974	11.6	-5.64	-2.64	-0.56	-2.80	1.00	5.78	4.27
1975	13.5	-6.51	-5.01	-1.66	-4.29	-4.93	8.02	13.94
1976	11.2	-4.22	-1.97	1.16	-1.55	-1.80	4.13	-8.15
1977	11.0	-4.01	-1.76	1.49	-1.29	-1.56	1.62	3.92
1978	11.0	-4.02	-0.77	-0.16	-1.52	-4.93	1.71	-16.21
1979	13.2	-6.15	-3.65	-3.55	-4.36	5.99	7.55	-6.30
1980	13.8	-6.82	-4.24	-3.85	-4.86	4.86	4.00	14.39
1981	15.2	-8.22	-1.87	0.48	-2.93	-3.21	-4.07	9.78
1982	14.7	-7.72	1.55	3.88	-0.38	-3.54	1.61	-0.32
1983	12.4	-2.39	2.02	6.73	2.36	0.92	1.50	-0.50
1984	11.5	2.46	4.33	12.49	6.62	0.69	-3.71	-0.92
1985	16.3	-2.28	-4.26	1.00	-1.84	-9.44	2.77	-8.37
1986	18.6	-4.60	-7.46	-5.61	-5.97	-4.90	0.70	-13.36
1987	16.1	-2.10	-2.25	-2.89	-2.43	0.08	-6.80	-10.13
1988	12.9	1.15	4.79	4.83	3.72	-0.29	0.11	-4.87
1989	14.7	0.83	4.08	6.05	3.80	-9.16	5.29	-2.93
1990	14.4	1.63	4.38	6.38	4.27	-6.02	-2.42	2.75
1991	15.3	-0.31	3.38	4.80	2.78	-6.31	-4.89	-15.64

ANNEX 2

Table 2.1: Number and Area of Farms

	1953	1963 ⁷⁷	1972	1983	1988
Number of Farming Units					
Cape	43,576	38,156	30,767	23,468	25,160
Natal	11,514	9,645	8,202	6,044	6,770
Transvaal	39,024	34,874	28,363	19,511	23,260
Orange Free State	25,084	18,712	14,603	10,937	11,820
Total	119,198	101,387	81,935	59,960	67,010
Total Area of Farming Units ('000 ha)⁷⁸					
Cape	55,970	58,448	56,978	55,251	55,209
Natal	4,488	4,622	4,388	4,291	4,124
Transvaal	15,727	16,293	14,687	14,631	14,634
Orange Free State	11,823	12,008	11,863	11,842	11,801
Total	88,008	91,371	87,916	86,015	85,768
Owned Area ('000 ha)					
Cape	--	51,664	47,691	45,235	45,641
Natal	--	4,113	3,764	3,460	3,475
Transvaal	--	13,957	11,684	11,150	11,290
Orange Free State	--	9,645	8,780	8,499	8,622
Total	--	79,379	71,919	68,344	69,028
Rented or Leased Area ('000 ha)					
Cape	--	6,784 ⁷⁹	8,585	9,721	8,946
Natal	--	508	577	803	601
Transvaal	--	2,335	2,560	3,281	3,025
Orange Free State	--	2,362	2,650	3,123	2,896
Total	--	11,989	14,372	16,928	15,468
Sharecropped Area ('000 ha)					
Cape	--	--	703	295	623
Natal	--	--	46	27	47
Transvaal	--	--	443	201	319
Orange Free State	--	--	431	220	284
Total	--	--	1,623	743	1,272

Source: 1953, 1963, 1972, and 1983 Census of Agriculture; 1988 Agricultural Survey.

⁷⁷ Original data in morgen (1 morgen = .8566 ha).

⁷⁸ Total area = owned + rented + sharecropped area.

⁷⁹ Figures for 1963 for Rented or Leased Area include leased and sharecropped land.

Table 2.2: Size (Number) Distribution of Farms

Hectare Classification	1950 (percent)	1962 (percent)	Hectare Classification	1978 (percent)	1983 (percent)	1988 (percent)
< - 4 ha	8.40	5.28	< - 2 ha	0.44	0.31	0.18
5 - 17 ha	9.40	11.88	2 - 4 ha	--	1.99	1.67
18 - 86 ha	11.90	14.41	5 - 9 ha	7.39	2.79	2.64
87 - 428 ha	32.10	28.55	10 - 19 ha	--	3.29	3.00
			20 - 49 ha	13.14	7.61	7.98
			50 - 99 ha	7.17	6.50	6.57
			100 - 199 ha	8.67	8.26	9.67
			200 - 299 ha	6.96	6.69	6.92
429 - 857 ha	17.50	15.97	300 - 499 ha	11.10	10.81	11.21
858 - 1713 ha	11.00	11.48	500 - 999 ha	16.53	16.88	17.04
1714 - 2570 ha	3.80	8.33	1000 - 1999 ha	13.04	15.70	14.36
2571 - 4283 ha	3.10		2000 - 4999 ha	10.52	12.88	12.33
4284 - 8566 ha	2.10	2.96	5000 - 9999 ha	3.61	4.46	4.453
> - 8566 ha	0.70	1.14	> - 10000 ha	1.43	1.82	1.98
Total	100.00	100.00	Total	1.00	1.00	1.00

Note: Original classification in 1950 and 1962 was in morgens (1 morgen = .8566 ha).

Source: Roth, *et al.*, 1992.

Table 2.3: Size (Area) Distribution of Farms

Hectare Classification	1950 (percent)	1962 (percent)	Hectare Classification	1978 (percent)	1983 (percent)	1988 (percent)
< - 4 ha	--	--	< - 2 ha	0.00	0.00	0.00
	--	--	2 - 4 ha	--	0.00	0.01
15 - 17 ha	--	--	5 - 9 ha	0.03	0.02	0.02
	--	--	10 - 19 ha	--	0.03	0.05
18 - 86 ha	0.90	0.81	20 - 49 ha	0.28	0.17	0.22
			50 - 99 ha	0.43	0.33	0.47
87 - 428 ha	10.44	8.68	100 - 199 ha	1.06	0.84	1.15
			200 - 299 ha	1.42	1.14	1.35
429 - 857 ha	14.76	11.11	300 - 499 ha	3.63	2.96	3.36
858 - 1713 ha	18.07	15.65	500 - 999 ha	9.90	8.51	9.16
1714 - 2570 ha	10.94	25.02	1000 - 1999 ha	15.33	15.51	15.03
2571 - 4283 ha	14.26	--	2000 - 4999 ha	27.21	27.93	27.22
4284 - 8566 ha	16.67	19.96	5000 - 9999 ha	20.78	21.25	20.20
> - 8566 ha	13.96	18.77	> - 10000 ha	19.92	21.31	21.77
Total	100.00	100.00	Total	100.00	100.00	100.00

Source: Roth, *et al.*, 1992.

Table 2.4: Distribution of Arable Land Holdings in Gcumisa Ward, KwaZulu

	KwaZulu Nata Mistbelt	KwaZulu Dry Bushveld Area	KwaZulu Newspaper	KwaZulu Nqunquma
0	0.8	3.3		
0.01 - 0.25 ha	10.6	11.5		
0.26 - 0.50 ha	18.9	22.7		
0.51 - 0.75 ha	22.7	19.7		
0.76 - 1.00 ha	11.4	18.0		
1.01 - 1.25 ha	11.4	3.3		
1.26 - 1.50 ha	6.8	1.6		
> - 1.50 ha	17.4	16.4		
< - 1.00 ha			27.7	7.5
1.00 - 1.90 ha			18.1	30.0
2.00 - 2.90 ha			28.6	6.0
3.00 - 3.90 ha			12.4	3.0
4.00 - 4.90 ha			8.6	43.0
5.00 - 5.90 ha			—	4.5
6.00 - 6.90 ha			1.8	1.5
4.00 - 7.90 ha			1.8	1.5
> - 8.00 ha			1.0	3.0
Total			100.0	100.0

Source: Stewart and Lyne, 1988, p. 191; and Cobbett, 1984, p. p. 371.

Table 2.5: Trade in Selected Agricultural Commodities--Imports

	Imports 1970	('000 t) 1980	1990	Import Value 1970	Import Value 1980	(RMn) 1990
Maize	200.1	4.7	3.4	--	3.2	5.8
Wheat	118.3	4.8	584.4	--	0.8	228.8
Barley	14.0	0.0	0.0	1.2	0.3	0.6
Sugar	12.1	32.9	30.1	1.4	6.2	28.5
Beef	24.4	0.9	6.6	10.9	1.3	7.1
Sheep	0.0	0.0	0.9	0.0	0.0	1.6
Pork	2.0	0.5	1.3	0.9	0.5	8.4
Poultry	0.0	3.4	20.1	0.0	3.7	44.5
Wool	3.5	1.4	2.0	2.9	4.4	15.8
Hides/Skin	5.5	2.0	0.3	1.7	2.3	2.3
Mohair	0.0	0.1	0.0	0.2	1.0	0.0
Coffee	15.1	14.8	17.1	--	--	--
Tea	17.4	18.6	14.0	--	--	--

Table 2.6: Trade in Selected Agricultural Commodities - Exports

	Export 1970	Volume 1980	(000MT) 1990	Export 1970	Value 1980	(Rand Mn) 1990
Maize	1218	3663	2001	54	421	607
Wheat	0	120	146	0	19	58
Sorghum	80	149	10	3	18	2
Barley	0	26	1	0	4	1
Sugar	790	976	1014	48	397	729
Apples	122	179	202	20	64	201
Grapes	28	42	79	4	18	133
Apricots	0	0	2	--	0	5
Pears	28	42	79	4	18	133
Peaches	1	1	2	0	1	7
Plums	2	6	11	1	6	28
Oranges	200	377	305	24	91	245
Grapefruit	28	81	62	5	24	59
Lemons	4	0	32	1	0	29
Nartjes	0	0	3	0	0	3
Avocados	2	13	30	1	9	44
Mangoes	0	1	3	0	1	5
Beef	28	34	19	13	57	104
Sheep meat	1	0	0	0	0	0
Pork	5	2	2	3	3	8
Poultry	0	22	2	0	15	18
Wool	93	--	56	64	159	538
Hides/skins	51	0	40	22	61	247
Ostrich	0	0	0	1	4	0
Mohair	5	0	3	5	26	39

Source: Department of Agriculture

Table 2.7: Percentage of Cultivated Area Under Principal Field Crops, 1955/56-1990/91
(percent of area cultivated)

Year	Maize	Wheat	Oats	Sunflower Seed	Sugarcane	Cotton	Grain Sorghum	Barley	('000 ha)	Area Cultivated (percent of farm area)
1990/91	43.7	22.4	10.1	8.3	5.4	1.8	1.7	1.6	6917	
1989/90	45.8	24.1	9.1	6.9	4.9	2.2	1.8	1.3	7582	-
1988/89	47.7	25.1	7.2	5.2	4.8	2.6	2.3	1.0	7917	9.2
1987/88	47.6	22.5	6.5	6.0	5.0	2.7	3.4	1.3	7686	9.0
1986/87	49.9	23.8	5.6	4.7	5.0	2.0	3.9	1.1	8077	9.4
1985/86	50.1	24.1	5.4	4.0	5.1	1.6	3.8	1.2	8093	-
1984/85	49.3	24.2	6.2	3.9	5.1	1.4	4.0	1.1	7937	9.2
1983/84	51.0	22.9	5.7	4.1	5.2	1.3	3.6	1.0	7892	-
1982/83	51.0	24.7	5.8	4.1	5.1	1.3	2.3	0.8	7990	9.1
1981/82	53.6	22.8	5.0	3.9	5.0	1.4	2.2	0.9	7829	9.0
1980/81	54.4	20.7	4.6	4.9	4.9	1.5	2.5	0.9	7845	9.6
1979/80	51.8	22.8	5.1	4.0	4.5	1.4	2.9	1.3	8337	9.5
1978/79	52.7	23.2	4.9	4.5	4.4	1.2	2.5	1.2	8168	9.7
1977/78	52.7	21.9	5.1	6.6	4.4	0.0	3.2	1.1	8174	9.5
1976/77	53.6	23.4	5.9	4.7	4.1	0.0	2.7	1.1	8306	9.5
1975/76	55.9	22.6	5.7	3.5	4.2	0.3	2.6	0.9	8139	9.7
1974/75	54.7	22.7	5.1	2.9	4.1	0.6	3.1	0.8	8203	8.5
1973/74	52.5	23.8	5.1	2.8	3.8	0.0	4.0	0.7	8495	9.4
1972/73	48.6	27.1	5.6	4.7	4.3	0.0	2.9	0.7	7433	-
1971/72	54.8	24.1	4.5	2.3	3.8	0.0	3.9	0.6	8355	9.3
1970/71	53.5	23.5	4.5	2.2	4.0	0.3	4.6	0.5	8226	9.3
1969/70	51.1	22.4	7.6	2.3	4.0	0.0	4.0	0.7	8247	-
1968/69	54.3	20.7	6.9	2.0	4.1	0.0	3.2	0.8	8074	8.7
1967/68	58.9	16.2	7.8	2.0	4.2	0.0	3.3	1.0	8026	8.5
1966/67	57.8	14.3	6.9	1.8	4.3	0.0	8.1	0.8	7934	-
1965/66	55.3	17.7	7.5	2.3	4.3	0.0	6.0	0.9	7663	8.2
1964/65	55.5	17.1	7.2	1.8	3.8	0.5	6.2	0.8	7735	-
1963/64	54.3	18.6	9.3	2.0	3.1	0.0	4.5	0.9	8171	-
1962/63	53.8	17.0	8.3	2.2	3.0	0.4	6.2	0.8	8067	-
1961/62	55.8	18.1	9.3	2.0	3.3	0.3	3.4	0.7	7778	6.7
1960/61	54.6	16.6	9.0	2.5	3.4	0.2	4.4	0.7	7538	
1959	56.8	15.9	7.4	2.3	3.4	0.2	4.3	0.6	7452	
1958/59	57.9	17.2	6.2	3.1	4.0	0.3	3.0	0.6	6287	
1957/58	55.6	21.8	6.2	2.2	3.9	0.3	3.0	0.5	6113	
1956/57	54.9	20.8	7.2	2.1	3.7	0.3	2.7	0.6	6312	
1955/56	58.0	19.3	6.9	1.8	3.9	0.4	2.1	0.6	5851	

Area cultivated refers to the area under principal field crops reported in the Abstract of Agricultural Statistics, 1992.

Source: Abstract of Agricultural Statistics, 1992.

Table 2.8: Growth Rates in Agricultural Commodity Areas, Production and Yields, 1970-1989

	70--79		Area		Production			Yield	
	80-89	70-89	70-79	80-89	70-89	70-79	80-89	70-89	
Republic of South Africa									
Maize	0.18	-1.86	-0.93	3.46	0.82	-0.22	3.28	2.73	0.71
Wheat	-0.78	0.83	-0.27	2.87	4.68	2.64	3.68	3.82	2.92
Oats	1.25	5.47	1.71	-4.50	-8.09	-5.86	-5.69	-12.86	-7.44
Sunflower	8.70	4.38	3.25	11.25	6.46	3.63	2.34	1.99	0.37
Sugarcane	1.77	-0.45	1.31	3.62	2.31	1.33	1.82	2.78	0.03
Barley	11.07	4.36	3.19	21.07	13.75	11.77	9.00	9.00	8.32
Cotton		8.09		16.83	7.45	6.36		-0.59	
Sorghum	-4.43	-0.28	-1.64	1.32	2.03	-0.39	6.02	2.31	1.27
Soya Beans	18.29	9.89	8.62	38.07	17.93	15.75	16.73	7.32	6.57
Groundnuts	-3.82	-8.94	-3.58	-4.42	-0.37	-5.54	-0.62	9.41	-2.04
Dry Beans	1.00	1.25	-0.86	1.33	6.37	1.40	0.33	5.06	2.28
Rye	-1.10	1.17	1.16	-6.15	-14.41	-5.43	-5.11	-15.39	-6.51
Tobacco	1.43	-3.24	-2.99	3.93	-1.14	-0.18	4.10	2.17	2.59
Cowpeas	-20.18	2.53	-11.29	-5.26	-20.40	-11.86	18.69	-9.71	3.65
Chicory	9.21	-4.05	0.84	0.87	-1.65	1.60	-2.22	2.50	0.70
Buckwheat	0.15			-3.46	-19.07	-16.97	-3.61		
Hay				5.64	-0.57	3.00			
Dry Peas				4.46	2.06	1.15			
Lentils				10.21	-0.72	-1.44			
Horticulture				2.12	2.54	2.75			
National States:									
Maize				-9.63	7.19	0.37			
Dry Beans					8.01				
Sorghum					7.01				
Wheat					3.35				
Groundnuts					9.85				

Estimates were derived from linear regressions. Not all estimates are statistically significant. RSA buckwheat production and cowpeas area and yield figures through 1987 only; chicory area and yield figures exclude 1979; tobacco area and yield figures from 1972 only. National States exclude Transkei from 1976, Bophuthatswana from 1977, Venda from 1979, and Ciskei from 1981; wheat production figures exclude 1983.

Source: Roth, *et al.*, 1992.

Table 2.9: Maize Production, Area Planted, Yield and Value, 1980/81 to 1992/93

Season	Production			Area	Yield	Value
	White	Yellow	Total			
1980/81	3847	6633	10480	4322	2.42	1.28
1981/82	6702	7721	14423	4338	3.32	1.93
1982/83	4269	3993	8262	4278	1.93	1.28
1983/84	2030	1974	4004	4065	0.98	0.68
1984/85	1492	2817	4309	3953	1.09	0.93
1985/86	3611	4298	7909	3887	2.03	1.73
1986/87	3455	4471	7926	4044	1.96	2.19
1987/88	3579	3489	7068	4014	1.76	1.9
1988/89	3780	2951	6731	3656	1.84	1.79
1989/90	6553	4999	11552	3778	3.06	3.02
1990/91	4365	3977	8342	3548	2.35	2.52
1991/92	3745	3954	7699	3025	2.55	2.54
Trend	-2.60	-5.76	-4.30	-2.72	-1.59	4.66
Growth*						

* Defined as the annual compound growth rate between 1980-82 and 1990-92

Source: Food Studies Group, 1992

Table 2.10: Maize Production, Consumption, Imports and Exports

Season	Production (a)	Consumption	Imports (b)	Exports
1970/71	6133	5104	73	1302
1971/72	8600	4824	16	2835
1972/73	9483	5164	0	3917
1973/74	4160	5157	0	607
1974/75	11037	5807	0	3698
1975/76	9098	5856	0	3769
1976/77	7472	5888	0	2087
1977/78	9714	5688	0	3170
1978/79	10056	5490	0	3843
1979/80	8332	5877	10	3141
1980/81	10762	5887	23	4256
1981/82	14656	6354	62	5924
1982/83	8359	6960	89	5096
1983/84	4083	6806	2389	833
1984/85	4405	5727	2076	712
1985/86	7909	5479	224	1204
1986/87	7926	5206	34	3538
1987/88	7068	5573	31	2357
1988/89	6731	5675	57	1390
1989/90	11552	6362	3	4909
1990/91	8342	6673	0	1963

Source: Maize Board (1991)

Notes: (a) Department of Agriculture Estimates
(b) Including sales to BLNS, TBVC

Table 2.10: Maize Production, Consumption, Imports and Exports

Season	Production (a)	Consumption	Imports (b)	Exports
1970/71	6133	5104	73	1302
1971/72	8600	4824	16	2835
1972/73	9483	5164	0	3917
1973/74	4160	5157	0	607
1974/75	11037	5807	0	3698
1975/76	9098	5856	0	3769
1976/77	7472	5888	0	2087
1977/78	9714	5688	0	3170
1978/79	10056	5490	0	3843
1979/80	8332	5877	10	3141
1980/81	10762	5887	23	4256
1981/82	14656	6354	62	5924
1982/83	8359	6960	89	5096
1983/84	4083	6806	2389	833
1984/85	4405	5727	2076	712
1985/86	7909	5479	224	1204
1986/87	7926	5206	34	3538
1987/88	7068	5573	31	2357
1988/89	6731	5675	57	1390
1989/90	11552	6362	3	4909
1990/91	8342	6673	0	1963

Source: Maize Board (1991)

Notes: (a) Department of Agriculture Estimates
(b) Including sales to BLNS, TBVC

Table 2.11: Consumption of Livestock Products, 1955/56 to 1990/91

	Population Million	Milk Consumption		Beef Consumption		White Meat		Red Meat	
		Total '000 MT	Kg/Cap						
1956	15.3	976	64.0	429	28.1	29	1.9	612	40.1
1957	15.8	997	63.0	479	30.3	29	1.8	667	42.1
1958	16.2	1018	63.0	474	29.3	31	1.9	661	40.9
1959	16.4	1131	69.0	492	30.0	40	2.4	680	41.5
1960	17.0	1139	67.0	485	28.6	41	2.4	685	40.3
1961	17.6	1108	63.0	498	28.3	42	2.4	692	39.3
1962	18.0	1118	62.0	487	27.0	43	2.4	691	38.3
1963	18.6	1093	58.9	501	27.0	44	2.4	697	37.6
1964	19.1	1104	57.9	537	28.2	48	2.5	734	38.5
1965	19.6	1075	54.8	508	25.9	52	2.7	706	36.0
1966	20.2	1107	54.9	505	25.0	61	3.0	727	36.1
1967	20.7	1075	51.9	512	24.7	65	3.1	722	34.9
1968	21.3	1110	52.1	508	23.8	77	3.6	746	35.0
1969	21.9	1101	50.3	496	22.7	95	4.3	762	34.8
1970	22.0	960	43.6	525	23.8	111	5.0	809	36.7
1971	22.6	992	43.8	553	24.4	120	5.3	848	37.4
1972	23.5	965	41.1	588	25.0	159	6.8	866	36.9
1973	23.9	1015	42.4	600	25.1	191	8.0	840	35.1
1974	24.6	1022	41.5	567	23.0	230	9.3	813	33.0
1975	25.3	1026	40.5	515	20.3	266	10.5	763	30.1
1976	26.0	1096	42.1	548	21.1	290	11.1	797	30.6
1977	27.1	1096	40.5	613	22.7	290	10.7	859	31.7
1978	27.9	1096	39.3	624	22.4	299	10.7	881	31.6
1979	28.7	1135	39.6	661	23.1	291	10.2	921	32.1
1980	29.5	1112	37.7	742	25.2	312	10.6	1010	34.2
1981	30.3	1181	39.0	640	21.1	339	11.2	907	30.0
1982	31.0	1167	37.6	654	21.1	379	12.2	944	30.4
1983	32.0	1179	36.9	667	20.9	438	13.7	994	31.1
1984	32.8	1181	36.0	681	20.8	460	14.0	1009	30.8
1985	33.8	1223	36.2	674	19.9	485	14.4	1009	29.9
1986	34.5	1130	32.8	621	18.0	498	14.5	929	27.0
1987	35.3	1114	31.6	644	18.3	525	14.9	936	26.6
1988	36.0	1253	34.8	648	18.0	545	15.1	938	26.1
1989	36.7	1245	33.9	639	17.4	545	14.8	927	25.2
1990	37.6	1244	33.1	638	17.0	548	14.6	948	25.2
1991	38.4	1262	32.9	693	18.1	554	14.4	1028	26.8

Note: The population series used is the implicit total from Table 71 of the above publication

Source: Abstract of Agricultural Statistics

ANNEX 3

1. **Maize.** Maize production fell by 9.6% per year during the 1970s, partly because of the change in statistical base resulting from the exclusion of the TBVC countries (beginning with Transkei in 1976/77, Bophuthatswana 1977/78, Venda 1979/80, and Ciskei 1981/82). Production levels fluctuated from 200,000 tons in 1972/73 to 427,000 tons the following year. During the 1980s production levels recovered, growing at an annual rate of 7.2 percent, from 184,000 tons/yr in 1980/81 to 324,000 tons in 1989/90. Approximately 299,000 tons were produced in 1990/91.
2. **Dry Beans.** Production of dry beans fell from 23,000 tons in 1978/79 to 4000 tons in 1981/82, following the exclusion of the TBVC countries, but recovered to an average of 15,125 tons/yr over the remainder of the decade. Roughly 16,000 tons were produced in 1989/90 and 14,000 tons in 1990/91.
3. **Sorghum.** Sorghum production fell from 24,000 tons in 1980/81 to 9000 tons the following year, peaked again at 26,000 tons in 1986/87, and fell to 12,000 tons in 1989/90 and 11,000 tons in 1990/91.
4. **Wheat.** Wheat production peaked at 19,000 tons in 1977/78, but fluctuated widely throughout the period. Crops of 14,000 tons and 11,000 tons were harvested in 1982/83 and 1987/88 respectively, but production fell below 5000 tons in each of the decade's remaining eight years. In four of those years production fell to 2000 tons or less. 3000 tons were produced in 1989/90 and again in 1991/92.
5. **Groundnuts.** Production of groundnuts fell from 9000 tons in 1978/79 to 1000 tons per year between 1981/82 and 1984/85. About 5000 tons were produced in 1987/88, 2000 tons in 1989/90, and 3000 tons in 1990/91.
6. **Sunflower Seed.** Production of sunflower seed grew from less than 500 tons prior to 1985/86 to 2000 tons in 1989/90 and 1990/91.
7. **Livestock.** Livestock is an important type of investment for the black population. Although the homelands are heavily overstocked and average turnover is 2 percent, some districts in the homelands have cattle turnover rates exceeding 6% (Groenewald and du Toit, 1983). Numbers of cattle and pigs appear to be falling in the homelands, while numbers of sheep and goats are on the increase, reflecting perhaps more favorable mutton prices and/or the substitution of sheep and goats for cattle because of the shortage of land and the decline of quality pasture in homeland areas. Growth in poultry production has been mixed, increasing in Venda, Bophuthatswana, and Lebowa, but declining in the Transkei and the Ciskei (Table 3.1).

Table 3.1: Growth Rates in Livestock Production, 1970-1989

	Number			Slaughtered			Meat		
	1970-79	80-89	70-89	1970-79	80-89	70-89	1970-79	80-89	70-89
<i>(% per year)</i>									
Republic of South Africa:									
Cattle	1.86	-0.19	-0.14	3.60	-1.74	0.81	4.34	-0.80	1.42
Pigs	0.32	2.29	1.52	0.68	3.94	1.77	0.86	2.68	1.97
Sheep & Goats	0.51	-1.01	-0.44	-1.33	-0.79	0.66	-1.01	-1.80	0.31
Poultry					11.48	4.38	7.20		
Transkei:									
Cattle		-0.88							
Pigs		-11.89							
Sheep & Goats		1.84							
Poultry		-11.26							
Venda:									
Cattle		-2.89							
Pigs		-7.57							
Sheep & Goats		6.50							
Poultry		15.50							
Bophuthatswana:									
Cattle		-3.84							
Pigs		-7.66							
Sheep & Goats		4.34							
Poultry		2.54							
Ciskei:									
Cattle		-6.52							
Pigs		-3.05							
Sheep & Goats		1.53							
Poultry		-4.33							
Lebowa:									
Cattle			2.76						
Pigs			-4.86						
Sheep & Goats			-8.18						
Poultry			33.05						

Source: Appendix Tables B.9, B.12 - B.16.

Livestock in the TBVC Countries

8. **Cattle.** Cattle numbers remained steady in Transkei over the 1980s, averaging 1.5 million animals. In Bophuthatswana cattle numbers declined at an average rate of 3.8% per year, from 602,560 in 1981 to 467,354 in 1988. In Venda the number of cattle fell from 169,365 in 1980 to 83,485 in 1985, before recovering to 136,339 by 1989. Cattle numbers in Ciskei have followed a similar pattern, from

184,677 in 1980 to 69,242 in 1985, and then back up to 124,329 in 1989.

9. **Pigs.** The number of pigs reported in Transkei fell at a rate averaging 11.9% per year over the 1980s, from 424,744 in 1983 to 181,815 by 1988; no pigs were reported in 1989 and 1990. In Bophuthatswana pig numbers fell from an average of 13,128 animals for 1981-83 to an average of 7953 animals between 1984 and 1988. From a total of 5141 pigs in Venda in 1980 the number grew to 12,635 in 1985 before falling to 3512 in 1989. Pig numbers held steady in Ciskei over the 1980s, at an average of 15,323.

10. **Sheep and goats.** Transkei sheep numbers grew from 2.1 million in 1980 to 2.7 million by 1990. Goats averaged 1.7 million over the decade, with 1.7 million animals reported in 1990. The number of sheep in Bophuthatswana rose from 194,002 in 1981 to 263,328 in 1988, while goats increased from 425,489 in 1981 to 530,430 by 1988. Considered together, sheep and goat numbers grew at an average annual rate of 4.3% during the period. Sheep numbered an average of only 2291 animals in Venda, less than a tenth the goat total, which grew from 45,687 in 1980 to 77,960 by 1989. Sheep and goats together increased at an annual rate of 6.5% in Venda. The number of sheep and goats held steady in Ciskei, averaging about 498,000 animals, equally divided.

11. **Fowl.** The number of fowl in Transkei has fallen from an average of 1.5 million for 1980-83 to an average of about 668,000 for 1984-88, a decline averaging 11.3% per year over the 1980s as a whole. Numbers in Bophuthatswana have held steady around an average of about 201,000 per year. In Venda, fowl numbers have increased at an average rate of 15.5% per year, from 90,044 in 1980 to 336,366 in 1989. Fowl numbers in Ciskei have fallen slightly, from an average of 112,000 for 1980-82 to an average of 86,105 for 1983-87.

Agricultural Production in Lebowa

12. **Maize, sorghum, millet, and sisal** together accounted for 94% of the total area under principal field crops in Lebowa in 1989, as indicated in Table 3.2. Data on area, production, and yields of these and other major crops (Table 3.3), as well as livestock, are available for Lebowa between 1981 and 1989. These data are discussed by commodity below:

13. **Maize.** The area devoted to maize fell steadily during the 1980s. In 1981 and 1982 more than 100,000 hectares were planted to maize; but in 1983 this figure had fallen to 67,014 hectares, and by 1989 only 54,623 hectares of maize were planted. Nevertheless, maize remains the single most important crop in Lebowa in terms of area, accounting for 49% of the land under principal field crops in 1989. Production levels fell less abruptly than cultivated area, from 52,014 tons in 1981 to 36,429 tons in 1989. Yields improved modestly, from 482 kilograms/hectare in 1981 to 667 kilograms/hectare in 1989.

14. **Sorghum.** The area devoted to the production of sorghum dipped from 31,363 hectares in 1981 to 10,216 hectares in 1984 before climbing back to 30,708 hectares in 1989, representing 27% of fieldcrop area. Production dropped an even more dramatically, from 13,472 tons in 1981 to just 1142 tons in 1984, before climbing to 16,909 tons in 1989. Yields averaged 382 kilograms per hectare across the decade, but fell to 112 kilograms/hectare in 1984. About 551 kilograms/hectare were produced in 1989.

15. **Millet.** Millet is the third most important crop in Lebowa in terms of area allocated, after maize and sorghum, representing 13% of field crop area. A total of 14,054 hectares were planted in 1989, up from a low of 7057 hectares in 1984, but down from 23,453 hectares in 1981. Production levels ranged from 1425 tons in 1984, when yields were only 202 kilograms/hectare, to 18,152 tons in 1989, when yields reached 1,292 kilograms/hectare. The increase in yields over the period represented an average annual growth rate of 14.7 ton/hectare
16. **Sisal.** The area devoted to sisal grew slowly but steadily in Lebowa during the 1980s, from 4858 hectares in 1981 to 5912 hectares in 1989, representing an average annual increase of 2.5 ton/hectare. Sisal accounted for more than 5% of field crop area in Lebowa in 1989. Production fell over the same period, from 1565 tons in 1981 to 1170 tons in 1989. Yields of sisal declined at an average rate of 4.9% per year over the decade, from 322 kilograms/hectare in 1981 to 198 kilograms/hectare in 1989.
17. **Wheat.** The area planted to wheat in Lebowa averaged 1557 hectares in the early 1980s and then fluctuated widely over the remainder of the decade, exceeding 2200 hectares in four years, but falling to 200 hectares or less in the other two. 2445 hectares were planted in 1989. Production fluctuated accordingly, totaling 8557 tons in 1989. Yields grew from 917 kilograms/hectare in 1981 to 3.5 tons/hectare in 1989.
18. **Cowpeas.** The area devoted to cowpeas has fallen very sharply over the last decade. From 15,470 hectares in 1981, only 1809 hectares were planted in 1989, representing an average decline of 22.8% per year. Production fell from 6339 tons in 1981 to 780 tons in 1989, while yields fluctuated around an average of 448 kilograms/hectare. Yields were 431 kilograms/hectare in 1989.
19. **Cotton.** Cotton has increased rapidly in terms of area planted over the past decade. A total of 1402 hectares were allocated to cotton in 1989, up from 138 hectares in 1981, representing a growth rate of 33.4% per year. Production grew at an even faster rate, averaging 36.7% per year, from 312 tons in 1981 to 3869 tons in 1989. Yields averaged 1.9 tons/hectare, but reached 2.8 tons/hectare in 1989.

Table 3.2: Percentage of Cultivated Area by Crop, Lebowa, 1981-1989

	1981	1982	1983	1984	1985	1986	1987	1988	1989
Maize	55.8	55.3	54.6	54.1	54.8	56.0	53.0	50.4	48.6
Sorghum	16.2	15.9	13.1	16.5	17.4	17.4	21.9	28.4	27.3
Millet	12.1	12.5	17.9	11.4	14.7	11.8	12.9	8.5	12.5
Sisal	2.5	2.7	4.3	8.2	5.4	5.2	5.5	4.4	5.3
Wheat	0.7	1.0	1.3	0.3	2.6	2.6	0.1	1.7	2.2
Cowpeas	8.0	7.6	4.2	5.4	2.4	2.0	2.1	2.2	1.6
Cotton	0.1	0.2	0.5	0.5	0.5	2.0	1.4	1.4	1.2
Dry Beans	2.5	2.6	2.4	0.9	1.2	1.8	2.2	2.0	0.9
Groundnuts	1.9	1.8	1.3	1.9	0.6	0.5	0.3	0.9	0.2
Sugar-cane	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.0	0.2
Sunflower	0.0	0.3	0.1	0.3	0.1	0.5	0.2	0.0	0.0
Tobacco	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Lucerne	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0
Total ('000 ha)	193	183	123	62	98	107	107	129	112

Source: Appendix Table B.11.

20. **Dry Beans.** The area devoted to dry beans varied between 564 hectares in 1984 and 4795 hectares in 1981, with 971 acres planted in 1989. Production levels varied widely as well, from 58 tons in 1984 to 2274 tons in 1987. Some 660 tons were produced in 1989. Yields ranged from 103 kilograms/hectare in 1984 to 961 kilograms/hectare three years later and averaged 680 kilograms/hectare in 1989.

21. **Groundnuts.** Groundnuts declined sharply in importance in Lebowa over the 1980s, falling by 24.8% per year in area and by 23.2% per year in production. While 1670 tons were produced on 3692 hectares in 1981, only 125 tons were produced on less than 277 hectares in 1989. Yields fluctuated around an average of 545 kilograms/hectare, and averaged 451 kilograms/hectare in 1989.

22. **Sugarcane.** The area devoted to sugarcane has remained relatively stable over the course of the last decade. Roughly 181 hectares have been reported under sugarcane each year with the exception of 1988, when only 44 hectares were reported. Total production fluctuated between 277 tons in 1988 and 1983 tons in 1989, for an average of 720 t/yr. Yields increased at an average annual rate of 14 percent, from 3.1 tons/hectare in 1981 to 10.7 tons/hectare in 1989.

23. **Sunflower.** More than 530 hectares were devoted to sunflower in Lebowa in 1982 and again in 1986; the total in the rest of the 1980s was less than half that level, and fell as low as 49 hectares in 1989. 1986 was an exceptional year in terms of both production and yield, averaging 2.7 tons/hectare for a total production of 1418 tons. A total of 471 tons were produced in 1982, at an average yield of 885 kilograms/hectare; production in other years remained below 100 tons in total, and yields in other years never exceeded 400 kilograms/hectare.

24. **Tobacco.** The area devoted to tobacco production in Lebowa fell from a peak of 49 hectares in

1983 to just 9 hectares in 1989. The figures for total production in those years were 37 tons and 16 tons respectively. Yields varied between 405 kilograms/hectare in 1984 and 1778 kilograms/hectare in 1989, and averaged 743 kilograms/hectare during the period.

25. **Lucerne.** The area devoted to the production of lucerne has fallen by 22.9% per year since 1981, from 90 hectares or more in the early 1980s to only 4 hectares in 1989. Production fell from a peak of 2234 tons in 1983 to just 66 tons in 1989. Yields dipped to 0.8 tons/hectare in 1985, but exceeded 7.0 tons/hectare in other years, and reached 16.5 tons/hectare in 1989.

Table 3.3: Lebowa: Growth Rates in Agricultural Commodity Areas, Production and Yields, 1970-1989

	Area 1981-89	Production 1981-89	Yield 1981-89
Lebowa:		(% per year)	
Maize	-6.15	-0.64	5.87
Sorghum	3.31	6.42	3.01
Millet	-7.38	6.21	14.68
Sisal	2.51	-2.46	-4.85
Wheat	1.34	14.87	13.35
Cowpeas	-22.83	-17.75	6.57
Cotton	33.36	36.65	2.47
Dry Beans	-11.68	0.65	13.96
Groundnuts	-24.83	-23.23	2.14
Sugarcane	-6.46	6.63	13.99
Sunflower	-20.08	-28.74	-10.84
Tobacco	-12.40	-7.29	5.85
Lucerne	-22.87	-24.96	-2.71

Source: Roth *et al.*, 1992.

26. **Cattle.** The number of cattle slaughtered in Lebowa averaged about 16,000 animals during the early 1980s and increased to about 24,000 for 1986-88. A total of 14,039 cattle were slaughtered in 1989, the last year for which data are available.

27. **Pigs.** The number of pigs slaughtered varied widely during the 1980s, from 978 in 1981 to 8382 in 1987. Only 33 animals were reported slaughtered in 1989.

28. **Sheep and Goats.** An average of 2476 sheep and goats were slaughtered each year between 1981 and 1989. A total of 493 sheep and 204 goats were slaughtered in 1989.

29. **Fowl.** Approximately 3.7 million fowl were slaughtered in Lebowa in 1989, up sevenfold from 1981, when 532,112 fowls were slaughtered and nearly nine times the number (63,439) in 1985.