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THE ACCUMULATION CRISIS IN AGRICULTURE

For the greater part of the 1980s, agriculture in South Africa has been in crisis. Arguably this crisis is likely to be the most prolonged and the accompanying restructuring the most fundamental since the Marketing Act of 1937 and the Land Acts of 1913 and 1936 laid down the foundations of the present structure. For a sector that is still the second largest employer of black labour, that is the source of the most essential of wage goods, and that provides the backbone of the rural economy, the potential importance of this crisis not only for agriculture, but the structure, level and distribution of activity in the economy as a whole, needs no stressing.

This article explores

- the symptoms (and nature) of the crisis
- the causes, immediate and underlying
- and the implications for agriculture itself and for the economy at large .

The focus is on commercial agriculture - referred to simply as 'agriculture' unless otherwise indicated.

1. SYMPTOMS AND NATURE OF CRISIS

The ability to accumulate capital depends on a number of factors. In the first instance, it is a function of profitability. But this is not all that matters: to be able to 'stay in business' and continue to accumulate, firms need both to remain 'liquid', i.e. able to meet their short-term obligations, and, ultimately, to remain 'solvent', i.e. able to cover all their liabilities to outside parties on the sale of their assets.

Failure to make profits can be sustained, in the short run, by a reduction in the owners' capital (or 'equity' as it is sometimes called) and/or by an increase in borrowed capital, i.e. debt. Consistent failure to make profits will generally result in insolvency and the winding up of a firm. Failure to remain sufficiently liquid can also be sustained, for a period, by increasing borrowings, but this makes a firm vulnerable to being wound up at any moment at the discretion of its creditors, whether or not it is insolvent.

The degree to which capital is being accumulated by a firm is measured by the growth or decline in the value of its capital assets, while the degree to which its owners are accumulating capital is gauged by the change in the 'net worth' of the firm, i.e. total assets minus total debt. Both measures need to be adjusted to eliminate the effects of inflation if a true or 'real' indication of the rate of accumulation is to be obtained.

Though Marx's notion of profit may differ from conventional accounting measures, it is in terms of the latter that one is usually obliged to assess the process of accumulation of capitalist firms - the data needed to do it by any other method are not often available. Likewise, the ideal in assessing the performance of an entire economic sector, such as agriculture,

would be to break it down by sub-sector and region, but the data are seldom available. Table 1 sets out the essential information for a conventional analysis of accumulation in agriculture as a whole in South Africa between 1970 and 1988. Where available, additional fragmentary findings are referred to, to give the overall picture some regional and sub-sectoral flavour.

1.1 Profitability

The profitability of farming can be assessed in various ways, the most basic of which is 'net farming profit'. The data in Table 1 (col.6) show a rising trend through the 1970s until 1981, followed by a decline in 1982 and 1983, and then a gradual recovery until the 1981 peak was passed in 1986.

However, this measure does not take into account the resources applied to achieve these returns. A more comprehensive measure which reflects the latter is:

$$\text{net return on assets (investment)} = \frac{\text{net farming income}}{\text{value of capital assets}}$$

Line 1 in Table 2 records the net return on assets between 1970 and 1988. The pattern is very similar to that of net farming profit: from a 5,5% starting point in 1970, the return climbed to 11,4% in 1981, fell to a low of 5,3% in 1983, and then rose steadily to a new peak of 12,1% in 1988.

The valuation of capital - on which the calculation of the net return on assets depends - is no simple task. Analysis of the estimates of the stock of agricultural capital made by the RSA Department of Agricultural Economics and Marketing, shows that the basis of the calculation was revised in a number of ways between 1978 and 1982. Each of these revisions had the effect of understating the value of capital assets in the later period relative to the earlier period, though it is hard to say which part of the series is the more reliable. Appendix A elaborates. In respect of the net return on assets, this suggests that the data in Table 2 (line 1) are relative overestimates for the 1980s rates of return that were achieved in the late 70s, while the 'trough' reached in 1983 is likely to have been a good deal lower than the rates of return in the 70s .

Perhaps the most refined indicator is:

$$\text{net return on owners' equity} = \frac{\text{net farming profit}}{\text{capital assets - total debt}}$$

(see Table 2, line 3.) This most accurately reflects the return to farmers on the capital they have invested. Though both the trend and the level are very similar to that of net return on assets up to 1981, the low to which net return on owners' equity fell in 1983 was considerably lower (2,7% as against 5,3%), and the recovery thereafter was slower. The immediate reasons for this divergence - the increased reliance on borrowed capital and the rise in the interest rate payable on borrowings - are discussed below. The qualifications made in respect of the estimates of the rate of return on assets apply equally to the rate of return on owners' equity, and the conclusions that follow

TABLE 1: INCOME AND EXPENDITURE, ASSETS AND LIABILITIES OF AGRICULTURE.

SOUTH AFRICA, 1970-1988.

year	1 gross farming income	2 expend. on intermed. goods services	3 expend. on salaries wages, rent depreciation	4 net farming income 1-(2+3)	5 interest payments	6 net farming profit 4-5	7 value of capital assets	8 short term debt	9 total debt
1970	1265	418	337	510	74	436	9202	395	1402
1975	2833	906	458	1469	134	1335	16974	702	2004
1980	5882	2213	887	2782	323	2459	28579	1668	3839
1981	7104	2658	1075	3371	545	2826	29574	2184	4839
1982	7496	3192	1352	2952	785	2167	33053	2967	5786
1983	7122	3410	1791	1921	1074	847	36259	4034	7409
1984	8533	3575	2012	2946	1344	1602	38709	5203	9495
1985	9270	4144	1661	3465	1698	1767	42067	6069	11118
1986	11513	4775	2185	4553	1585	2968	45879	6517	12431
1987	13696	5242	2456	5998	1650	4348	49783	6980	13286
1988	15366	6028	2728	6610	1700	4910	54463	n.a.	(14000)

Sources and Notes: Appendix B

TABLE 2: AGRICULTURAL FINANCIAL INDICATORS, 1970-1988.

	indicator	Table 1 col.ref	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	198
1	net nominal return on assets (%)	4/7	5,5	8,7	9,7	11,4	8,9	5,3	7,6	8,2	9,9	12,0	12,1
2	net real return on assets (%)	note 1	0,2	-4,8	-3,4	-3,8	-5,8	-7,0	-9,1	-8,0	-8,7	-4,1	-0,4
3	net nominal return on owners equity(%)	6/7-9	5,6	7,4	9,9	11,4	7,9	2,9	5,4	5,7	8,8	11,9	(12,1)
4	net real return on owners equity(%)	note 2	0,3	-6,1	-3,2	-3,8	-6,8	-9,4	-11,3	-10,5	-9,8	-4,2	(-0,4)
5	net worth (Rm)	7-9	7800	14970	24740	24735	27267	28850	29214	30949	33448	36497	(40463)
6	C.P.I.	note 3	36,1	56,6	100,0	115,2	132,1	148,4	165,7	192,6	228,5	265,3	298,5
7	inflation rate (%)	note 4	5,3	13,5	13,1	15,2	14,7	12,3	16,7	16,2	18,6	16,1	12,5
8	real net worth (Rm)	note 5	21814	22985	24740	20604	20752	19826	18962	19656	19927	20219	n.a.
9	real capital stock (Rm)	note 6	25698	26526	28579	24805	25132	24829	24692	25429	25367	25227	n.a.
10	debt burden (%)	9/7	15,2	11,8	13,4	16,3	17,5	20,4	24,5	26,4	27,1	26,7	(25,7)
11	short-term debt (%)	8/9	28,2	35,0	43,4	45,1	51,3	54,4	54,8	54,6	52,4	52,5	n.a.
12	average nominal interest rate (%)	5/9	5,3	6,7	8,4	11,3	13,6	14,5	14,2	15,3	12,8	12,4	(12,1)
13	average real interest rate (%)	note 7	0,0	-6,8	-4,7	-3,9	-1,1	-2,2	-2,5	-0,9	-5,8	-3,7	(0,4)
14	net farm profit: short-term debt	6/8	1,10:1	1,90:1	1,47:1	1,29:1	0,73:1	0,21:1	0,31:1	0,29:1	0,46:1	0,62:1	n.a.
15	capital:output ratio	7/1	7,27:1	5,99:1	4,86:1	4,16:1	4,41:1	5.09:1	4,54:1	4,54:1	3,98:1	3,63:1	3,54:1

Sources and Notes: Appendix B

are similiar.

At first glance, these rates of return, though clearly low in 'bad' years such as 1983, do not seem to represent an unsatisfactory record from the point of view of farmers and indirect investors, even taking into account the relative overstatement in the 1980s. However, they conceal at least two important sets of indicators, namely, variations by sub-sector and region, and returns net of inflation. Information by sub-sector and region is not readily available, but from the negative net farming income received by field-crop farmers in the Transvaal and Orange Free State and by meat-producers in the Transvaal in 1983, it can be seen that important sub-sectors and regions have, at times, actually experienced negative nominal rates of return while the return to agriculture as a whole has still been positive (SA Agricultural Union, 1984: 51).

The rates of return in lines 1 and 3 of Table 2 are expressed in nominal terms. When calculated in real terms - net of inflation - with the exception of 1970, they are all found to be negative, the more so when the estimates are adjusted for the relative undervaluation of capital in the 1980s. Lines 2 and 4 set out the details. Were net real return on owners' equity the sole criterion, the average farmer would have been well advised to sell up and reinvest in the another sector. In practice, for most, hidden returns in the form of salaries received out of current income, lifestyle and the nominal appreciation of capital assets accompanying inflation, were sufficient attraction to retain their investment in agriculture.

Perhaps the most important impact of these trends has been on the real stock of capital in agriculture. The series in Table 2 (line 9) shows a significant rise (of about 11%) during the 1970s before a sharp drop in 1981 followed by narrow fluctuation during the rest of 1980s. However, the analysis in Appendix A suggests that much of the rise in the 70s should be discounted if all of the data are to be compared on a consistent basis. It therefore appears that the total real capital stock in agriculture has remained substantially the same for most of the past two decades.

Moreover, to maintain this level of the capital stock, farmers in the 1980s have had to rely increasingly on borrowed capital. Line 10 of Table 2 shows the extent of the increase in the burden of farmers' debt: whereas in 1975, debt constituted 11,8 % of the value of farming assets, by 1986 this had risen to 27,1%. Though part of this increase must be discounted because of the relative undervaluation of capital in the 1980s, the escalating dependence on loans from outside parties is clear. Farmers have become either unwilling or unable to retain the proportion of the capital stock that they owned in previous years.

There is some evidence that farmers have become less willing to maintain the relative level of their involvement in agriculture. Data collected by the SAAU in 1984 showed that the proportion of farmers' assets held in non-agricultural investments increased from 8,8% in 1970 to 13,9%, valued at R6441 m, in 1983 (1984: 34). The average annual growth rate of investments outside agriculture during this period was 16,7% as against 12,5% for investments in farming. Though this could have been caused merely by a more rapid rate of appreciation of non-farming investments,

the SAAU concluded that it was largely the result of an increase in the number of part-time farmers, 45% of whose assets were located outside agriculture in 1983 (1984: 34-37). Some active diversification has therefore taken place.

But other factors have also played a role. Fiske (1988, personal communication) points out that credit has, until recently, been readily available to farmers at lower than market rates, while the returns to be had on investments in agriculture have generally been below those obtainable elsewhere. It has therefore paid farmers to borrow cheaply and invest in beach-cottages, town-houses, insurance policies, share portfolios and so on - not directly with borrowed funds, but with internal funds which could otherwise have been used for farming purposes.

A second more powerful argument suggesting that farmers may have become less willing to retain as large a share of the agricultural capital stock, could be mounted around the surprisingly steep decline in the capital:output ratio, which measures the value of capital required to produce each rand's worth of output. From 7,27:1 in 1970, the capital:output ratio (calculated at the current values recorded by the Department of Agricultural Economics and Marketing) fell to 4,16:1 in 1981, and then rose somewhat before finishing at 3,54:1 in 1988 - less than half the starting ratio at the beginning of the 1970s (see Table 2, line 15). This would indicate a declining need for capital in farming. Together with the poor rates of return on agricultural capital described above, it would therefore appear to have been rational for farmers to transfer capital from agricultural to non-agricultural investments.

In fact, it is probable that the capital:output ratio did not fall as rapidly as the figures in Table 2 indicate. There are two main strands to the explanation. The first is the relative undervaluation of capital starting in 1978 and growing in disproportion until 1982, when the procedure for valuation resumed some stabilty. (Appendix A gives details.) This accounts to some degree for the considerable drop in the capital:output ratio in the late 70s. Thereafter, the greater part of fluctuations in the ratio can be explained by corresponding fluctuations in weather patterns.

The second strand concerns the rapid increase in the application of intermediate inputs. Real expenditure on fertilizers, seeds, pesticides, herbicides, fuel, etc. rose by about 50% between 1970 and 1982, when the drought began. Real output, between 1970 and 1981, grew just a little more than commensurately. During the 80s, the relationship between the two has remained close, though modified by the drought.

Together, the two explanations suggest that the substantial fall in the capital:output ratio is more apparent than real - accounted for, on the one hand, by statistical aberation, and on the other, by the omission of growing inputs of working capital. If so, the argument that farmers became less willing to invest in agriculture because of the declining requirement for capital, should not be overemphasized.

Conversely, there is a wealth of evidence to suggest that growing

financial pressures sapped the ability of most farmers to fund capital needs from internal sources, making it difficult to avoid the accumulation of debt. The evidence is provided by an analysis of debt and liquidity trends in agriculture.

1.2 Liquidity

The particularly rapid build-up of debt in 1983 and 1984 focuses attention on liquidity as a measure of financial health. Liquidity, it will be recalled, is the capacity to repay short-term debt at short notice. The two most common measures of liquidity are:

'current ratio' : $\frac{\text{current assets}}{\text{current liabilities}}$

and,

'liquidity ratio' : $\frac{\text{cash, marketable securities, receivables}}{\text{current liabilities}}$

The rule of thumb in general use (Helfert, 1967: 59) and adopted by the SAAU (1984: 79) is that these ratios should not be below 2:1 and 1:1 respectively. Of the two, the SAAU considers the liquidity ratio - popularly referred to as the 'acid test' - to reflect the true position of farmers more accurately (1984: 80).

Data that would make the annual calculation of these ratios possible are hard to come by. The best approximation of the trend, though not of the level, of the liquidity ratio is:

$\frac{\text{Net farming profit}}{\text{short-term debt}}$ (See Table 1, line 15)

This is, in practice, the liquidity ratio, omitting the non-farming liquid assets (cash and marketable securities) in the numerator, since by far the largest 'receivable' is net farming profit. Table 2 shows a marked deterioration in this ratio between 1975 and 1980, which becomes quite dramatic thereafter, reaching a low point of 0,21:1 in 1983.

The financial survey conducted by the SAAU in 1983 allows the accurate calculation of both the liquidity ratio and the current ratio for that year. While the average current ratio for farmers as a whole stood at 1,70:1 - significantly less than the acceptable level - the liquidity ratio was on average only 0,32:1 - less than one third of what is satisfactory (SAAU, 1984: 80). Just one region, the Eastern Cape, was able to show a liquidity ratio above the safe minimum. Others, including the key Transvaal and Orange Free State regions, were as low as 0,17:1. This indicates an acute degree of illiquidity. Farmers with strong cash and marketable security reserves might have been able to meet their short-term obligations by drawing on these reserves. But by 1983, few farmers had such reserves. (To some extent, this has been encouraged, at least in the major grain sectors, by the ready availability of Land Bank finance for short term needs through cooperatives.) Consequently, most farmers were

obliged to borrow further to honour their short-term debts. In most instances, this borrowing took the form of the 'consolidation' of existing short-term debt, that is, an extension, normally by a year or more, of the period for repayment of such debt. This effectively converts short-term debt to medium or long-term. By 1986, more than a quarter of the total debt of crop farmers in the summer rainfall region consisted of 'hard-core', normally short-term, debts of this nature (Potgieter, 1987: 5).

Perhaps the greatest problem created by this form of financing is that it increases the burden of interest payments, making it more difficult for farmers to generate sufficient income to cover their short-term costs and repay loans. It is for this reason that the threshhold of insolvency is reckoned to be much lower than the actual level of debt which signifies insolvency (see below).

Acute illiquidity in the period from 1982 onwards, is thus a substantial - though by no means the only - cause of the rapid movement of many farmers towards insolvency. Furthermore, the combination of increased debt and high interest rates has helped turn illiquidity into a chronic problem, prevalent even in years of relatively good returns (see results for 1986 and 1987 in Table 2). It will take not one but several years of high net income to reestablish an acceptable level of liquidity.

1.3 Solvency

In terms of the ultimate debt criterion, solvency, the overall position of the agricultural sector is still sound. The rule of thumb for financial health in this respect is that total debt should not exceed half of the value of total assets (SAAU 1984: 72). As line 10 of Table 2 shows, the average debt burden (total debt / total assets), which has been rising continuously since 1975, still stood at about 27% in 1986 and 1987, although some part of this rise should be discounted because of the relative undervaluation of capital in the 1980s. Nevertheless, as far back as 1983, when the average debt burden was considerably lower (18,9%), many farmers were at or beyond the critical level. The SAAU records that the average debt burden of the 15200 farmers most seriously in debt in that year was exactly 50% (1984: 78). Assuming a normal distribution, this would have place at least 11% of farmers in immediate danger of insolvency. And, as is pointed out below, the situation appears to have deteriorated substantially since then.

However, solvency on its own is no guarantee of financial stability. As the level of debt grows, it becomes increasingly difficult for farmers to cover their interest payments and repay loan capital. Beyond a certain point - usually much lower than the critical level for solvency - it is reckoned to become effectively impossible to farm without a progressive increase in debt. Of course, what is critical at any moment depends not only on the burden of debt, but also on the rate of interest, expected crop yields, input and output prices, asset structure and so on. In the circumstances prevailing in 1983, the SAAU calculated the critical debt burden for several of the largest sub-sectors as : 16,7% for summer crops; 34,1% for winter crops; 10,2% for red

meat; 17,2% for milk; and 14,2% for wool (1984: 56). Though this level rises by about half if non-farming income is included, the broad standards adopted by the Union are that farmers in the summer crop and meat sub-sectors with a debt-burden in excess of 20% should be regarded as being financially unsound, and that for all other producers the critical burden should be 30% (1984: 58).

Against these criteria, no fewer than 15200 farmers - 22,4% of the total - were assessed to be critical in 1983, concentrated chiefly in the Transvaal and Orange Free State, particularly younger farmers. The sub-sectors worst affected were summer crops, where 52% were beyond the critical level, followed at a distance by winter crops (22,6%). By the end of 1984, these estimates were expected to have grown to 22700 farmers (33% of the total), 65% (summer crops) and 38% (winter crops (1984: 58-66, 86).

Since then the position would appear to have worsened: while the average interest rate has changed little, the debt burden has grown significantly (see Table 2, line 10), and it will be shown that input prices have grown faster than output prices. Only total output has improved. Estimates of the number of maize farmers who would not survive, given conditions prevailing in 1987, put the figure at around 6000, or more than half of those involved (Farmer's Weekly, 8 May 1987: 75; Potgieter, 1987: 5).

Confirmation of these trends is to be found in court records. Though relatively few farms that change hands under financial duress are actually sold on sequestration, the number of farmers sequestrated for insolvency has risen sharply in the last three years: whereas between 1980 and 1984 the average number of agricultural sequestrations per year was 75, between 1985 and 1987 the average jumped to 232. In 1987, it was 313 (Central Statistical Services, 1986: 15.23; 1988b: 10.67) and recent reports suggest that the rate has not receded (Maize News, September 1988: 7).

The number of sequestrations would have been far greater had it not been for extensive state aid. Quite apart from the 'normal' forms of financial assistance, state aid designed specifically to alleviate the extraordinary financial pressures of the 1980s has included subsidies on:

- the consolidation of debt (R344 m between 1981 and 1987)

- crop production loans (R470 m between 1981 and 1987)

- interest on consolidated debt and production loans (R90 m between 1981 and 1987 with a further 'interest subsidy equivalent to 10% of the Land Bank's interest rate on cash credit loans to agricultural cooperatives in respect of carry-over debts' approved for 1988-89)

- stock feed loans

- input costs for farmers in drought-stricken areas (R120 m 'paid to creditors of farmers to help clear production debts incurred in the 1987-88 season')

- the conversion of sub-marginal crop-lands to planted pasture (R280 m budgetted for 1987/88-1991/92)

- export losses for summer grains, chiefly maize (up to R200 m per annum available from 1988).

In addition, the State stands as guarantor of consolidated debts to the value of R900 m. Direct State aid to farmers in its various forms - but excluding the indirect effects of tariff protection, import control, etc. - amounted to more than R2,7 billion between 1981 and 1987. About 25000 of the 59000 farmers on the land during this period were beneficiaries - an average of more than R1 m per recipient. The National Maize Producers' Organisation (NAMPO) estimated that 'at least 40% of South Africa's grain producers would be forced into liquidation...if State aid to farmers was summarily withdrawn' (Farmer's Weekly, 11 September 1987: 83-84; 5 February 1988: 75; 15 April 1988: 75-76; 5 August 1988: 76).

Of the various indicators discussed in this section, arguably the single, most comprehensive is the burden of debt, or the ratio of total debt to total assets (see Table 2, line 10), since this reflects not simply the year-to-year fluctuations in liquidity and return on investment, but the cumulative results of these fluctuations over an extended period. Perhaps more important, it provides a rough inverse idea of the capacity of the agricultural sector to accumulate capital. The higher the debt burden, the lower the capacity to accumulate, both because of the increased interest and loan capital repayment drain on net farming income, and because banks and other creditors as effective part-owners of farms are unlikely to want to 'plough back' profits into farms. Even mitigated by the relative undervaluation of capital in the 80s, the steady rise in the burden of debt over the last decade indicates a progressive weakening of the capacity of agricultural capital to accumulate. Unqualified by undervaluation,the present debt burden of 27% would indicate that the average farmer is close to the threshhold of sliding into insolvency - that is, total cessation of the capacity to accumulate.

The analysis of the causes of the crisis in Section 2 focuses on the processes that have brought the burden of debt to its current high level, and examines the likelihood of these processes - and hence of the crisis in agriculture - persisting.

2. CAUSES, IMMEDIATE AND UNDERLYING

2.1 Drought

The causes of the crisis can be grouped into three broad categories: drought; monetary policy, or more specifically, the structure and movement of interest rates; and the deterioration of agriculture's terms of trade with industry. It is important to identify not only the degree to which each has been responsible for the crisis and the mechanisms by which this has occurred, but also the proximity of each to the cyclical or structural end of the spectrum.

Nearest the cyclical end is the prolonged drought of 1982-85 in

the summer rainfall region. Rainfall has improved since 1986 and is expected to be more favourable in the 1990s (Tyson and Dyer, 1983: 6; Farmer's Weekly, 21 November 1986: 19-21), but the financial legacy of the drought is likely to be felt for some years yet.

The most immediate effect of drought is on farming income and hence on liquidity: for arable farmers, crop failure reduces liquidity in the current year, while for pastoral farmers the effect is usually delayed for a year or so by the slaughter or sale of stock. Either way, adverse weather conditions call for cash to build up current assets. For farmers without cash reserves, this means additional debt. The onset of drought, which was at its most severe in 1983 and 1984, accounts for a substantial part of the steep rise of agricultural debt in those years. However, the State President's Economic Advisory Council has estimated that only 22% of the increase in farming debt between 1980 and 1985 can be directly ascribed to drought (Economic Advisory Council of the State President, 1986: 105).

2.2 Interest rates

Interest rates are most often expressed in 'nominal' terms, that is, at current prices, or the rate quoted by the institution concerned. An alternative, which has particular significance in economic analysis, is to express them in 'real' terms, net of inflation: the real rate of interest is therefore calculated by deducting the current rate of inflation from the (current) 'nominal' rate of interest.

2.2.1 Trends in nominal interest rates

The second major contributor to the growth of the debt burden is the rate of interest. Line 13 of Table 2 shows steady rise in the average effective nominal rate, i.e. net of state subsidies, paid by the farming sector. Though the most rapid increase occurred between 1980 and 1982, prior to the drought, nominal interest rates have remained on a high plateau, at or above the 1982 level, since then. The period of historically high nominal rates therefore coincides with the prolonged drought and its financial aftermath. Bearing in mind that the drought made it necessary to 'consolidate' much of the sector's short-term debt, the effect of high interest rates was to compound the growth of farming debts at a particularly rapid rate. The State President's Economic Advisory Council attributes 31% of the increase in the agricultural debt burden between 1980 and 1985 to interest rate movements (1986: 105).

Until fairly recently, one would have had little hesitation in placing high interest rates, with drought, at the cyclical end of the spectrum. But with high rates of inflation and a tight balance of payments constraint expected to be more permanent features of the economy in the foreseeable future, high nominal interest rates may be more structural than cyclical. The decision by the State to phase out various policies which reduced the rate of interest payable by farmers to the Land Bank and co-operatives, will add to this, although the practical effects of this decision have not yet been felt. And the present high level of direct interest subsidies paid to farmers by the State (see

Section 1), is unlikely to be maintained indefinitely. High nominal interest rates have therefore contributed materially to the growth of farming debts, at least in the 1980s, and seem likely to do little to ease this burden in the foreseeable future.

2.2.2 Trends in real interest rates

However, there is a further, less obvious, but more fundamental mechanism by which interest rates have influenced the debt structure and the capacity of agriculture to accumulate capital. The rise in nominal interest rates was accompanied in most years by a still more rapid rise in the rate of inflation (see Table 2, line 7), which meant that, in real terms, the rate of interest payable by farmers was negative. As line 14 of Table 2 shows, only in 1983 did the real rate of interest, net of State subsidies, rise to a positive value. For most of the past two decades, many farmers have therefore felt it sensible to increase, rather than reduce, borrowing. This has been encouraged further by the ready availability of credit from banks and cooperatives and the basis on which income tax for farmers has been calculated (see below), and by the relatively low cost of credit available to farmers (see above).

Capital investment in agriculture can be divided into three main categories: in descending order of overall magnitude, land and fixed improvements, livestock and machinery and implements. In respect of the first and third of these, the effect of persistently negative real interest rates on debt and the process of capital accumulation can be clearly discerned.

The borrowing encouraged by very low positive or negative real interest rates has pushed land prices up, well beyond a level commensurate with the productive capacity of land in most regions. One of the main determinants of the price of land is the value of the expected stream of net income from that land discounted at a certain rate of interest. The lower the rate of discount, the higher the value of the income stream and the price of the land. Persistently low real interest rates have led most farmers to use an equally low discount rate, and hence to value land at an inordinately high price - inordinate, that is, relative to the real profitability of production on that tract of land. In other words, most of the profitability of farming, at least over the last decade and a half, has come from an appreciation of the capital value of land, brought about not so much by physical improvements to the land as by increases in the price that farmers have been prepared to pay for land (of a constant productive capacity). Put still more simply, it is speculation in land rather than the fundamental profitability of agricultural production that has been the main source of profit in farming. To a large extent this has been brought about by very low real interest rates (Janse van Rensburg, 1984).

In the present context, two consequences are worth noting. First, the level of debt is higher than it would otherwise have been. And second, much of the nominal capital accumulation that has occurred is of a precarious nature. With higher real interest rates, the financial pressures on farming intense and the number of sequestrations rising, land prices and nominal

capital values must be vulnerable to significant falls. Paradoxically, what is probably shielding farmers most at present, is the very degree of their indebtedness. As substantial part-owners of farms, banks are wary of precipitating a slide in land values by accelerating the pace of legal action against insolvent farmers. They are, to a degree, 'locked in'. Indeed, the threat of substantial capital losses, and the range of disruptive effects that these could have, has held up the entire process of reconstituting the accumulation process in agriculture.

Low real interest rates have also encouraged the purchase of machinery and implements. Broadly speaking, mechanisation on farms seems to have been labour-complementing prior to 1970. Few analysts have questioned the productiveness of capital investment of this nature. Post-1970, it seems by and large to have been labour-substituting (Fenyes et al, 1988: 189), and there is more doubt about its productiveness. Though the indications are not all uniform, it seems more than probable that there has been a degree of over-mechanisation. The Marais Commission drew attention to this tendency in 1970 (RSA Commission of Enquiry into Agriculture, 1970: 165); there are numerous local studies of over-mechanisation (Fenyes et al, 1988: 190); the SAAU's survey of farm finances in 1983 showed that those farmers most deeply in debt had invested twice as large a proportion of their capital in machinery and implements as those least in debt (1984: 30), although there is some ambiguity in this; and the stock of machinery and implements has remained more or less constant in real terms since 1982.

Assembling the evidence, it would appear that, though there is little direct connection between negative real interest rates and the rapid rise of agricultural debt in the 1980s, such low real rates have brought about a higher level of borrowing than would otherwise have occurred. More important, they have helped induce relatively unstable and unproductive forms of investment which, along with changes in the terms of trade (see Section 2.3), have eroded the fundamental profitability of agricultural production and, with it, the sector's capacity to generate a surplus for accumulation. It is reasonable to conclude that this, as much as any other consideration, is why the State has begun to shift away from policies which reduce the cost of investment in agriculture, and can be expected to pursue this line - short-term measures notwithstanding - in the foreseeable future.

Finally, a question arises as to why capital was so cheaply and readily available for relatively unproductive forms of investment. The various forms of direct interest subsidy - which, it must be remembered, are very recent - and indirect subsidy through favoured treatment by the Land Bank and co-operatives, have already been discussed. A change in tax legislation in 1977 had the effect of making it still cheaper to borrow for some purposes: farmers were granted permission to write off the full cost of machinery and implements against taxable income in the year of purchase (compared to a three-year period for all other businesses). The lure of short-term tax savings musts have outweighed the burden of longer-term debt repayment for more than a few undiscerning farmers - before the

weather changed in 1982. Following the Margo Commission's recommendation, this provision is now to be scrapped.

Perhaps most important is the basis on which banks have granted credit. Solvency, not liquidity, has been the main criterion. In other words, loans have been granted fairly freely against the security of a farmer's net assets, rather than against his capacity to fund interest charges and capital repayments out of current income. Especially with nominal land values rising rapidly, many farmers have been allowed to borrow beyond this capacity (Potgieter, 1987: 9-10). With banks now partly the prisoners of their own policies, this too is starting to change.

But whatever the changes, the financial damage of past policies seems likely to remain with the agricultural sector for many years to come.

2.3 Terms of trade

2.3.1 Trends in the terms of trade

The most enduring cause of the deterioration in farm finances has been the gradual but consistent adverse movement in agriculture's terms of trade, that is, in the rate at which agricultural goods exchange for those of other sectors, primarily manufacturing.The Economic Advisory Council's calculations also suggest that it was the most significant single cause of the increase in farming debt between 1980 and 1985, accounting for as much as 47% of the rise (1986: 105).

There are several ways in which this rate of exchange manifests itself. The most immediate is the domestic terms of trade, or the ratio of farm input prices to farm output prices in South Africa. In keeping with international trade (see Table 3, column 8), this ratio improved significantly from farmers' point of view at about the time of the first oil crisis in 1973. Since then it has deteriorated almost unbrokenly. If the terms of trade were at parity, or 1:1, in 1975, by 1986 they would have reached a ratio of 1,37:1 (see Table 3, column 5). In other words, if the average South African farmer had had to exchange 1000 bags of maize for, say, a tractor in 1975, by 1986 he would have had to part with an additional 370 bags.

Agricultural output can, of course, also be sold abroad. No composite index of the ratio of domestic input to export output prices is published, but rough calculations for two of the country's most important agricultural exports, maize and wool, show similar trends. For wool, the ratio fell from 1:1 in 1975 to 1,32:1 in 1986 - close to the domestic average - whereas for maize the drop was considerably greater, from 1:1 in 1975 to 2,09:1 in 1986, in spite of the large boost to the Rand price of farm exports provided by the depreciation of the Rand (see Table 3, columns 5,6,9). By 1986, maize farmers would therefore have had to export more than twice as many bags to pay for a tractor as they would have in 1975. So, regardless of whether farm output has been sold domestically or abroad, the terms of trade have moved steadily against South African farmers for the last decade and a half.

TABLE 3: THE TERMS OF TRADE OF AGRICULTURAL GOODS, 1970-1987.

	Rand price indices (1975=100)							other indicators	
year	1 domestic agric. inputs	2 domestic agric. outputs	3 maize exports	4 wool exports	5 1/2	6 1/3	7 1/4	8 manuf.goods/ crude foods (US prices)	9 rand/ US $
1970	56.20	54.90	46.40	33.20	1.02	1.21	1.69	1.57	0.72
1971	59.10	56.90	47.50	39.30	1.04	1.24	1.50	1.50	0.72
1972	63.40	64.80	47.70	112.90	0.98	1.33	0.56	1.53	0.77
1973	70.30	81.80	75.30	109.80	0.86	0.93	0.64	1.08	0.69
1974	82.30	92.00	103.10	74.40	0.89	0.80	1.11	0.86	0.68
1975	100.00	100.00	100.00	100.00	1.00	1.00	1.00	1.00	0.74
1976	115.60	109.50	109.00	117.90	1.06	1.06	0.98	1.18	0.87
1977	130.20	119.60	89.60	120.00	1.09	1.45	1.09	1.44	0.87
1978	146.70	127.10	93.60	133.50	1.15	1.57	1.10	1.44	0.87
1979	176.90	151.30	103.20	149.80	1.17	1.71	1.18	1.44	0.84
1980	207.40	179.30	108.90	149.40	1.16	1.90	1.39	1.41	0.78
1981	230.30	201.00	129.40	190.60	1.15	1.78	1.21	1.50	0.88
1982	270.50	225.80	127.40	180.20	1.20	2.12	1.50	1.83	1.09
1983	308.30	255.00	167.60	208.60	1.21	1.84	1.48	1.76	1.11
1984	330.20	284.50	224.20	298.40	1.16	1.47	1.11	1.74	1.48
1985	392.90	310.40	275.90	334.60	1.27	1.42	1.17	1.99	2.23
1986	467.20	341.10	223.70	353.00	1.37	2.09	1.32	(2.28)	2.28
1987	520.40	n.a.	161.60	n.a.	n.a.	3.22	n.a.	n.a.	2.04

Sources and Notes: Appendix B

2.3.2 Determinants of the terms of trade

Farmers attempted to offset the negative effects of this trend on profits by simply producing more. This was made possible by the extended period of favourable climatic conditions lasting until 1981, and was encouraged by the basis on which the prices of several of the most important agricultural products - notably maize and wheat - were determined. For many years now, the prices of these commodities have been fixed annually on what would appear to be essentially a 'cost-plus' basis by the marketing boards concerned - although the precise method of calculation is never disclosed. This has had two important consequences: first, it has allowed the domestic producers' price to escalate in line more with the rate of inflation in South Africa than with supply and demand conditions locally and internationally. And secondly, by placing the emphasis on a 'fair return' for farmers whatever their input costs and by guaranteeing a fixed price whatever the size of the crop, it has created incentives for farmers to produce more rather than more efficiently.

At the same time that agricultural producer prices determined by Marketing Boards have risen rapidly in South Africa, they have tended, after the boom that accompanied the first oil crisis, to stagnate or fall on international markets, both absolutely and relative to the price of manufactured goods. Only recently have they turned upward materially. The cost-advantage of South African agricultural exports has therefore been eroded, and in most cases eliminated. A survey in 1983 showed that of tradeable agricultural goods that South Africa produced in significant quantities, only the various categories of fruit, wine, wool, mohair, karakul pelts and ostrich feathers could be exported at a profit (Stadler et al, 1983: 14-23). Though the subsequent sharp fall in the Rand offered temporary relief to exporters of some other farm products, the rate of inflation in South Africa soon counteracted that, and the position at present is probably much as it was in 1983. It is about 10 years since South Africa was last able to export maize at a profit.

The losses on exports engendered by this process and exacerbated by rising output and export volumes have slowed the rise of domestic producer prices, but not that of input prices. Particularly in the 80s, this has been an important cause of the widening gap in the terms of trade.

The most important contributor to the sustained rise in input prices has undoubtedly been the general rate of inflation in South Africa. The establishment and protection of import substitution industries has added to this: it was estimated in 1982 that the cost of intermediate inputs (cattle feed, fertilizer, fuel, etc.) was 6,9% higher than it would have been under tariff-free international trade (Stadler et al, 1983: 6). The effect on the costs of capital inputs, whose life extends over several years, is more difficult to assess, but the same study estimated that over the 10 year 'phasing-in period' of Atlantis Diesel Engines from 1982, the 'tractor bill' would be 16% higher than it would otherwise have been (Stadler et al, 1983: 12-13).

It is rather surprising then, that, on balance, agriculture has probably gained rather than lost from industrial protection. The reason is the growing degree of protection afforded to agricultural outputs. Without tariffs and import controls but including transport costs, Stadler et al estimated that consumers would have paid R916 m less for the same volume of agricultural output than they actually did in 1982, as against an additional cost to farmers of R221 m from the protection of intermediate inputs (plus a small additional amount on capital inputs). This increased the value added by agriculture by 19,4%. Most significantly, Stadler et al point out how the degree of net protection of agriculture has grown as the competitiveness of South African farmers has declined (1983: 24-25). Without State intervention to protect industries, the adverse movement in agriculture's terms of trade would therefore have been still greater.

The overall impact of State intervention on the terms of trade can be summed up as follows: the manner in which key output prices have been fixed and the net protection of outputs have brought about a more rapid increase in domestic producer prices than would otherwise have occurred. Intentionally or not, this has helped slow the deterioration in agriculture's terms of trade. But the export losses induced in the process have, at least for the present, placed a ceiling on the capacity of these policies to limit the rate of deterioration.

The most fundamental determinants of the terms of trade in the long term are the relative rates of change of supply and demand for different categories of goods. In relation to manufactured goods, the international supply of agricultural goods has expanded more rapidly than demand over the last decade and a half, leading to a fall in the relative price of the latter. With some qualifications, similar trends can be identified in South Africa. The details are worth examining briefly because of their implications for future trends.

The global supply of agricultural commodities has expanded comparatively rapidly in the 70s and 80s for a number of reasons, the two most important of which are technological advance and the increased emphasis on agricultural self-sufficiency in many countries (Schuh, 1986). The former has been a significant enabling factor for the latter, particularly in less industrialised countries, but other, primarily economic, mechanisms have also been employed to achieve self-sufficiency. These include the protection of domestic agriculture by tariffs and import controls and the use of price incentives, notably export subsidies, to stimulate production behind these barriers. The result has been that countries which for many years have been substantial importers of agricultural commodities, chiefly grains, have now become either marginal importers or exporters. India, China and the European Community are the most important examples (Groenewald, 1987a: 200-201; 1987b: 226-228). And of the present major importers, only Japan appears certain to remain a major importer (van der Vyver, 1988: 303-304).

On the demand side, several developments have acted to slow the growth of consumption. The population growth rate is falling in most parts of the world except Africa. The demand for

agricultural goods is, in general, income-inelastic: that is, as incomes rise, the proportion spent on food tends to fall (even though total spending on food may increase). And the industrial demand for agricultural raw materials appears to be weakening (Groenewald, 1987b: 226).

The combined effect of these forces has been to lower the relative price of farm outputs, as the rough index in Table 3 (column 8) shows. It is chiefly the depreciation of the Rand that has kept the Rand price of exported maize increasing (Table 3, column 3), and, to lesser degree, the same is true of exported wool too.

Though commodity markets are notoriously unstable - the price of grains has increased dramatically with the current American drought - most indicators suggest a continuation of the decline in the terms of trade of agricultural goods on world markets in the medium to long term. There is no shortage of technological capability; population growth rates are unlikely to rise; the 'hierarchy of needs' which makes the demand for food income-inelastic is unlikely to change; and countries which have gained or regained agricultural self-sufficiency will, for the most part, be reluctant to lose this capacity, especially if they have balance of payments problems. Only a significant movement towards freer international trade in agricultural commodities, involving less competitive subsidization of farm production, appears capable of reversing the trend, environmental calamities excepted.

Within South Africa, the supply-demand relationship is more ambiguous and is complicated by foreign trade. A very rough approximation for the growth of domestic demand for agricultural commodities can be obtained by multiplying the rate of growth of real national income by the income-elasticity of demand for food (since no estimate of the latter for agricultural commodities as a whole is available, and food, in any case, makes up the bulk of agricultural output). The resulting average annual growth rate of demand for the period 1970-1985 varies between 0,79% and 1,76%, depending on one's choice of elasticity estimate. (Groenewald, 1987b: 231 ; SA Reserve Bank, September 1978: 572 ; March 1980: 575 ; March 1985: 578 ; June 1988: 583). The latter is the more likely, given the high population growth rate. Over the same period, the physical index of food production grew at an average annual rate of 2,19% (RSA Department of Agriculture, 1989: 82). These are really only the crudest of indicators, but the results do lend support to the argument that supply has tended to grow faster than demand.

A conclusion to this effect needs qualifying at least by the fact that the market for domestically-produced agricultural goods is not closed. While agricultural imports make up only a small proportion of domestic consumption, exports form a very significant component of demand. Much the most important export commodities in a typical year are maize, fruit, sugar and wool. As noted earlier, maize has been exported at a loss for the last ten or more years, so domestic supply cannot have been increased for the export market. A similar conclusion must be arrived at for sugar, whose export price has been well below the domestic price for an extended period. In the case of fruit and wool,

domestic supply responds largely to international demand, only a small portion of output being marketed locally. So for these commodities, it cannot be argued that a domestic over-supply situation has arisen, although, as with all exports, this could change radically if trade sanctions were effectively imposed.

With some qualifications, therefore, it would appear that the strong growth of agricultural supply relative to demand has been an important underlying cause of the steady shift of the terms of trade against agriculture in South Africa for the past 15 years. With the outlook for exports generally less than favourable and limited scope for import substitution, a sustained improvement in agriculture's terms of trade is unlikely in the medium term, not only internationally but also within the domestic economy - the counter-trend of 1988 notwithstanding.

This finding puts the adverse trend in the terms of trade nearer the structural end of the spectrum of causes of the build-up of farming debt.

To sum up: it appears that of the three major sets of causes of the current crisis, only one - drought - is likely to be of short duration. The higher current incomes from improvements in the weather and the short-run terms of trade will certainly help to stabilize the burden of debt, and there are indications that this is already occurring. But there is reason to believe that the unfavourable trends of the other two - interest rates and the terms of trade - will resume or persist for some years, which makes a rapid reduction of the burden of debt unlikely. The capacity of agriculture to accumulate will therefore probably remain at low levels. Indeed, the prolonged relative decline in agricultural commodity prices is a strong signal to shift resources out of agriculture. Some far-sighted farmers have been willing to do this on their own. But for most less-efficient producers, the process - which now appears well-established in South Africa - has been and will continue to be both involuntary and painful.

Ultimately, it is to State policy to keep white farmers on the land - in its many forms - that much of the cause of the present crisis must be ascribed. It is beyond the scope of this article to investigate the motives for this policy, but party-political and 'security' interests come immediately to mind. And, needless to say, farmers themselves have been the most vociferous supporting lobby. For more than just the period of this study, the level of investment in agriculture has exceeded what is justifiable on purely economic grounds. But it has taken the events of the 70s and 80s to raise the costs - both economic and political - to the level at which the policy has become unsustainable. Seen in these terms, the crisis through which agriculture is now passing should be regarded as a healthy development, where 'crisis' should be identified more closely with 'restructuring' than with 'catastrophe' - though large parts of the farming community might not perceive it in this light.

Section 3 explores the implications.

3. IMPLICATIONS FOR AGRICULTURE AND WIDER ECONOMY

A wide range of implications follows from the present crisis.

3.1 Agricultural production

Perhaps the most far-reaching of these is that the rate of growth of domestic farm output can be expected to slow down, possibly even becoming negative, for much of the coming decade.

Several decelerating influences are at work. First, there is the strong price signal referred to in Section 2.3.2 - to shift resources out of agriculture. Farmers are much more aware of this signal now than they were at the end of the 70s. More important, State policy is now taking the long decline in the terms of trade into account. Moves to discourage inefficient forms of investment were discussed in Section 2.2.2, but the most significant shift is in the basis on which the major grain prices are determined. The first indications came in the early 80s, when maize producer price increases started to become less sensitive to input price increases. However, the fixed single-price policy was maintained, which, as was pointed out in Section 2.3.2, created a perfectly elastic demand curve and still encouraged maximum output at the ruling price. Very recently, however, the Wheat Board (Farmer's Weekly, 15 April 1988: 75) and the Maize Board (Farmer's Weekly, 9 September 1988: 68) have made it known that the producer price for next season will vary inversely with the size of the crop, with the highest prices - still well below the present price in the case of maize - being paid only for deliveries that leave little or no surplus for export. Though the price-elasticity of the Boards' demand curves is greater than unity, so that the total revenue received by farmers collectively will still increase with the size of the crop, the incentive to try to beat the decline in the terms of trade by expanding output is now very much less than before.

The policy for the foreseeable future would appear to be to try to limit output to a little above the level of domestic consumption. For maize, this will mean a drop of about 20% on the average year's production (between 1977 and 1987). For wheat, it will mean holding output levels steady at the 11-year average, which may not be easy with many maize farmers wanting to move into wheat production.

The main alternative for marginal maize farmers is to plant pastures, and the State has offered financial assistance to those undertaking the change. But there is little scope for import substitution in most animal product sub-sectors. In the red meat market, only about 6% of local consumption has been imported annually over the last 11 years. On the other hand, studies suggest that the domestic demand for most sorts of meat - and hence for yellow maize as a stockfeed - would expand fairly rapidly if prices were reduced (Groenewald, 1987b: 232-3).

The market for wool and mohair is effectively unlimited since most of South Africa's output is exported. But the transition would be costly for most farmers, and it is not clear whether wool or mohair production could be undertaken profitably on planted pastures. There is also the additional uncertainty of trade sanctions hanging over exported commodities. Indeed, those sub-sectors which rely heavily on exports - wool, mohair, almost

all types of fruits and fruit products and, to a lesser degree, sugar, hides and skins - would be in a far worse position than the maize industry if trade sanctions were made effective. The only comfort for farmers, in the absence of a substantial depreciation of the Rand or an unexpectedly sustained strengthening of international agricultural commodity prices, is that the State is most unlikely to risk the capacity for self-sufficiency by lowering the protection they presently receive.

With certain qualifications, then, the growth of agricultural production seems likely, at most, to be slow over the medium term. This, in turn, has a number of consequences - for employment, wages and the degree of industrial concentration in agriculture and dependent sub-sectors; and for the gross domestic product, the balance of payments and population distribution in the wider economy.

3.2 Agricultural employment, wages and industrial concentration

Employment in agriculture has been on an erratic downward trend since the late '60s. Reliable and comparable data are hard to come by, but farm employment has fallen from about 1,6 million in 1968 to about 1,3 million at present (RSA Department of Agricultural Economics and Marketing, 1989: 4). Technological change and the growth in the average size of farming units have probably been the main causes of the decline. It was argued in Section 2.2.2 that little further substitution of capital for labour can be expected in farming in the next few years. On the other hand, there are also indications that any fall in the real wages of farm-workers that may occur during this period is unlikely to lead to a significant substitution of labour for capital (van Zyl, 1986: 69). But the average size of farming units will almost certainly continue to rise with the financial pressures that agriculture is currently experiencing. Many smaller farms are likely to be incorporated into larger units in an attempt to generate economies of scale. More often than not, this involves the retrenchment of workers on the smaller farm. While it was seasonal workers who bore the brunt of mechanization, it is permanent workers who are most directly affected by the process of farm consolidation (de Klerk, 1985: 14-15).

Another negative influence on farm employment is the switch from arable to pastoral farming in marginal arable areas. Pastoral farming generally employs fewer workers per hectare. All of these factors, along with the slow-down anticipated in production, will weaken the demand for agricultural labour.

For this reason most workers who remain on farms are unlikely to see their real wages rising noticeably. Those with skills which are readily marketable in urban areas, such as truck-drivers, may be an exception (de Klerk, 1985: 20), and attempts to pre-empt the growth of unions may improve the wages and working and living conditions of others. But, in general, one would expect a weak trend in real wages. This, together with a similar trend in on-farm employment, will increase the degree to which farm residents already rely on off-farm income (de Klerk, 1984: 47-48; Seleoane, 1984). If anti-squatter legislation is used to drive members of extended families off farms, the result will be a

marked fall in income for those who are allowed to stay, irrespective of wage rates. It is also worth noting that salaries and wages now form a comparatively small part of total costs - about 13% in 1987 (R.S.A. Central Statistical Services, 1988c: 2) - so that lower real wage rates will probably not reduce output prices significantly or have any material effect on the competitiveness of exports.

Developments in agriculture will have an impact on industries directly dependent on farming - input manufacturers and output processors - and on the many small-town activities that exist primarily to service the farming community. The agricultural input industry is likely to remain in the doldrums as its market contracts or grows only very slowly. Attendant developments would be a transfer of capital out of the industry, increasing concentration of ownership, and weak employment and wage trends - some of which have already started to occur, in particular in fertilizer and farm machinery manufacturing. Disinvestment by foreign input suppliers has a sound economic basis. In some instances, this has led to a rather unusual form of vertical integration - the purchase of input manufacturing firms by agricultural co-operatives. Whether farmers will be any more successful in controlling rising input costs thereby remains to be seen.

In general, with so many members in financial ill-health and heavily indebted to co-operatives, and with the advantage of subsidized funding by the Land Bank diminishing, one would expect the co-operative movement to be on the retreat. Some weaker groups have already merged with stronger ones, and others have formed partnerships with firms in the private sector.

Agricultural output processors who are orientated towards export, such as fruit canners, are in a vulnerable position. Employment and wages in such firms will depend largely on the imposition and effectiveness of trade sanctions. Those who produce primarily for the domestic market are comparatively secure, but, like most of agriculture, are limited by the rate of growth of this market.

The widest group affected by developments in agriculture are the many employers and workers in the secondary and tertiary sectors in small towns throughout the platteland whose livelihood depends on demand from the farming community. Industrial decentralization and mining will make growth possible in some instances, but in most others the outlook for employment is less than favourable. In fact, as the comments on changes in population distribution below suggest, there are indications of an increase in the rate of unemployment in rural towns, not only amongst urban workers but also amongst those formerly employed on farms (Wilson and Ramphele, 1989: 88-89). In the Cape, where the majority of farm workers are 'coloured', this is a well-established phenomenon, but in the northern provinces, the recent relaxation of influx control may be starting to increase the number of black work-seekers in this category too.

Paradoxically, the relatively high risks and low profits of agricultural production may also open up some opportunities which have long-term significance. In the sugar industry, for

instance, existing large-scale producers appear to be shifting their emphasis towards the more stable activities of milling and marketing and encouraging the growth of the already substantial numbers of small part-time cane producers, who are mostly black.

Not only input prices, but also retail food prices have moved well ahead of the producer prices received by farmers, especially in the 80s, while producers' share of consumer value has tended to fall - particularly in the case of sugar (RSA Department of Agricultural Economics and Marketing, 1989: 99). This is the essential reason for a rather surprising general trend: the increasing concentration of farm ownership evident since the 1950s has, in most sub-sectors, not been accompanied by a similar increase in the penetration of industrial capital into farm-operating, ultimately because industrial capital has found it more remunerative to take its profit at other points in the agricultural production chain. As was pointed out in Section 2.2.2, the most profitable aspect of owning a farm has generally not been in operating it, but in the long-term appreciation of the value of the land - though even this is far from assured in the foreseeable future. Since most firms need to show an acceptable annual trading profit, capital appreciation of this nature is not generally a sufficient attraction, despite being less taxable when it is finally taken. With the number of sequestrations rising, banks may temporarily become the owners of more farms, but if farm ownership was unattractive to industrial capital in the past, it will, over the next few years, become even more so. The age of monopoly capitalism in South African agriculture is not on the doorstep.

The growth of part-time farming is not confined only to small-scale sugar producers. In other sectors, such as grain and livestock production, full-time farmers are becoming or being replaced by part-timers (SAAU, 1984: 35). Though not as efficient as full-time operating (Nel et al, 1987: 25), part-time farming diversifies assets and income sources, thereby reducing risk, and increases liquidity. About 15% of farmers were part-timers in 1983 (SAAU, 1984: 33), and in current circumstances this percentage is likely to increase. One noteworthy consequence of this trend is the increase in the number of black farm managers, or their equivalents, that must be occurring, though few such positions would involve the acquisition of essential financial skills.

In this context, one other probable consequence of the financial pressures on farmers can be identified, namely, an increase in the occurrence of covert black tenancy on marginal and sub-marginal commercial farmland - as well as the need perceived by financially stronger farmers and the State for more stringent rural anti-squatter legislation.

What each of these developments have in common is that they expand the core of potential - and in some cases actual - black commercial farmers.

3.3 Effects on the wider economy

For the wider economy, the crisis in agriculture also has both negative and positive aspects. On the negative side, agriculture's

relative contribution to gross domestic product (GDP) cannot be expected to grow from the present 5 or 6% and, more likely, will continue to wane. This will increase the economy's dependence on urban employment and urban facilities and services - a pattern observable in most industrializing countries. The expected decline in foreign exchange earnings from agricultural exports will also have a negative effect on GDP growth through tightening the balance of payments constraint. If only commodities presently exported at a loss are affected and exports are reduced to a very low level, total foreign exchange earnings might not fall by more than 2 or 3%. Of course, if trade sanctions were effectively imposed, the impact would be far greater. Trade and industrial classifications make it difficult to calculate the contribution of agriculture to exports accurately, but in the early 80s it was still of the order of 20%.

There are the makings of a vicious circle in this relationship. In the past, agriculture has relied heavily on foreign demand for output growth. In the foreseeable future, domestic demand will play an increasingly important role. So not only will a slowdown in agricultural production have a negative effect on GDP growth, but the latter will also have a negative effect on the former.

On the other hand, these developments are not without some positive aspects. Diminishing export markets and greater emphasis on the need to balance domestic demand and supply growth will help reduce the rate of increase of food prices. This should benefit the urban population and, by easing upward wage pressures, assist the growth of urban employment.

Also, directly or indirectly, capital is being released from relatively unproductive uses (in agriculture) for deployment elsewhere. However, this is a very difficult process to trace and it is almost impossible to tell whether more productive use of such resources is, in fact, being made. At least some agricultural capital is likely to move abroad so as to bypass sanctions, thereby nullifying any benefit to domestic employment.

One further group of effects is on population distribution. It can be safely predicted that the substantial outflow from 'white' farms will continue. Until recently, most farm families have had to move to the 'homelands', from which work-seekers have had to migrate to urban areas. This has added significantly, though possibly unintentionally, to State-engineered population relocation. The resulting increase in population pressure in black rural areas is making the prospects of raising agricultural productivity in these areas ever more remote.

With the relaxation of influx control, an increasing proportion of farm leavers is likely to move directly to urban areas, often initially to rural towns. As already noted, the latter is widespread amongst 'coloured' farmer farm-workers in the Cape and may now be becoming so amongst black work-seekers in the other provinces. Small-town facilities will often be inadequate to cope with such an influx. Together with the slow or negative growth of white residents, this will increase the pressure to de-segregate or transfer access to 'whites only' facilities to another 'population group', accompanied in many instances by an increase in white conservatism.

4. SUMMARY AND CONCLUSIONS

Commercial agriculture is currently under great financial pressure, probably greater than at any time since the 1930s. This pressure is manifested in low rates of return on investment (or low profitability), low levels of liquidity and a steady build-up of debt.The most significant impact of these trends has been on the agricultural stock: despite the many forms of state assistance to agriculture, the real capital stock in commercial farming appears to have risen little, if at all, over the past two decades, and the proportion of this stock owned by farmers has tended to decline. The average farmer has become less willing or less able to increase or, in many cases, even to maintain the real level of his investment in agriculture. Capital accumulation in agriculture has clearly entered a critical phase.

The roots of the crisis can be traced, on the one hand, to factors which have induced uneconomically high levels of investment in the past, namely, state agricultural policy, negative real interest rates over extended periods and banks lending policies. In varying degrees, all three seem now to be changing, constituting less of an inducement to invest than before. On the other hand, a distinct but not unrelated group of factors - drought, high nominal interest rates and the prolonged adverse trend in agriculture's terms of trade - has made further investment more difficult by distending the burden of debt carried by farmers. But what is most significant about this group of factors is that with the exception of drought, there is reason to believe that they are less cyclical than structural. Interest rates in the foreseeable future, are likely to remain higher both because of the withdrawal of most forms of state interest subsidy and because of shifts in macro monetary policy. And the terms of trade will probably continue to deteriorate gradually - short term improvements notwithstanding - ultimately because, on an international scale, one can expect supply in the medium term to continue to grow rather faster than demand.

The prognosis is, therefore, that commercial agriculture will remain a comparatively unrewarding area of investment. In net terms, capital is unlikely to accumulate in, or flow into, agriculture in significant quantities for some years, though there will always be sub-sectoral exceptions.

For the rural economy, the most important projected trends are a slower rate of growth of farm output, the further consolidation of large farming units and the transfer of marginal arable land

employment and keep real wages from rising on farms and in small towns. On smaller farms, the increase in the number of part-time farm-operators can be expected to continue.

For the economy as a whole, there is likely to be a continued decline in the relative contribution of agriculture to the gross domestic product, a loss of foreign exchange earnings on agricultural exports and an unstemmed flow of rural workseekers and their families into urban areas. More positively, the prices of foodstuffs ought to rise less rapidly, reducing the pressure on urban incomes and assisting urban employment growth.

However, all of this overlooks one other set of consequences, which are no more than nascent at present but which have the potential to bring about far-reaching changes production structures and the composition of the farming population. The same market forces which are making agricultural production less attractive to many existing white farmers are starting to generate a core of actual or potential black,'coloured' and Asian commercial or semi-commercial farmers, through at least three distinct channels. First, in the sugar industry large vertically integrated producers are encouraging small black producers to take over a share of the relatively high risk, low-return operation of cane-farming. Second, in other sub-sectors part-time farming is not only spreading risks and generating additional cash flows for white farmers but is also transferring responsibilty for day-to-day production activities to what are effectively black farm foremen/managers. And third - though this is hard to trace on the ground - the logic of current circumstances dictates that some marginal and sub-marginal commercial farmland is probanly being rented covertly to black tenants.

It is also possible that a fourth channel is opening up: scraps of evidence suggest that some - probably isolated - going commercial farms are being taken over by 'racially disqualified' farmers. Mechanisms for such transfers do exist in terms of the Group Areas Act, but it is not clear whether these are being used or whether there is under-the-counter circumvention of the law, such as is widely practised in urban areas.

What is perhaps most significant about these processes is that they are all being driven by market rather than political forces. And, as was argued in section 2, the essential direction of these forces appears to likely to remain the same in the foreseeable future. The core of actual and potential black, 'coloured' and Asian commercial farmers can therefore be expected to continue to grow. In the absence of the repeal of the Land Acts and the Group Areas Act, this will constitute the cutting edge of deracialization in agriculture.

If it is not out of order to speculate a little, one might suggest that, realizing the need for the emergence of a black commercial farming class but fearful of the conservative attitude of most of white commercial farmers, a National Party government will - as in urban areas - probably retain the main body of legislation which presently defines land rights in racial terms, but seek ways of accommodating the market forces which are carrying forward the process of deracialization - what one might call a policy of 'managing the shift of the black-white frontier'.

One element of such a policy would be for the state to purchase parcels of land which it would demarcate for use by groups of individual black farmers or farming communities. Depending on the locality and potential of the land, a variety of schemes could be tried. But it is not unreasonable to assume that commercial agriculture will continue to be dominated by a relatively small group of large farmers, who together will produce the overwhelming bulk of output. Entry to this group will in the future, depend less on race classification and more on access to

capital.

This identifies a crucial constraint: what will initially hinder the emergence of a class of smaller black producers most is access to capital. For the many black potential farmers in this positon, tenancy, in its many forms, offers a way forward. One of the most important tasks to which the government will have to attend is the design and operationalization of a system or systems of tenancy which will be attractive both to land-owners and to tenants. This will, in effect, mobilize 'white capital' for use by black entrepreneurs - a key component in any strategy to preserve the market basis of the economy.

Clearly none of this is imminent. Nor is the widespread collapse of commercial farming as it presently exists. If the term 'crisis' is to be correctly understood, for those individual farmers and farm-workers who have already been or who are in immediate danger of being displaced, it should indeed convey a sense of catastrophe. But for the agricultural sector as a whole and for the wider economy, it describes a combination of developments which are starting to provide the impetus for the restructuring, in part of agricultural marketing, but, more fundamentally, of agricultural production in South Africa. The winds of change are blowing on the platteland.

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APPENDIX A

VALUING THE AGRICULTURAL STOCK

There are few variables in economic analysis as important but as problematic to measure as the capital stock. The importance, in this instance, lies in the dependence of many of the indicators in Table 2 on the value attached to the agricultural capital stock. Assessment of the extent , nature and implications of the 'crisis' in agriculture hinges, in turn, on the values calculated for these indicators. Some discussion of the problems of valuing the capital stock is therefore required. The difficulties arise from two sources: techniques of valuation and data.

The Department of Agricultural Economics and Marketing divides the stock of capital on farms into four categories : land, fixed improvements, machinery and implements, and livestock. In respect of the 'fixed capital' items (fixed improvements and machinery and implements), the technique of valuation adopted here - despite some arguable shortcomings - is the 'perpetual inventory method' used by both the Department and the South African Reserve Bank. A full description is to be found in de Jager (1973). The details relevant at this point are as follows:

- the rate of depreciation allowed for machinery and equipment was 10% p.a; for fixed improvements the rate was 1% p.a. until 1982 and 2% p.a. thereafter - this 'inflates' the estimates of the earlier period marginally (by less than 0,1% of the total value of capital stock),

- the real fixed capital component of the total real capital stock (Table 2, line 9) was calculated at constant 1980 prices, using the price indices for the respective components calculated by the Department.

This is the least controversial aspect of the calculation.

The current value of livestock is calculated by the Department by multiplying the August quarterly head-count of the various categories of livestock by the respective indices , compiled from auction prices. (The Reserve Bank accepts this valuation.) In the absence of details for each category, the real value of livestock (at 1980 prices) included in the real capital stock (Table 2, line 9) was estimated by adjusting the total current value of livestock by the combined weighted index of the producer prices of livestock products, published by the Department. Any bias inherent in this method is probably small.

More serious is the bias generated by excluding the value of livestock in the ' independent black states' as from 1978. The 'real value of livestock' series estimated as just described, shows a sudden fall of 22% - or nearly R1 billion - between 1977 and 1978. At most, only a fraction of this is likely to have been caused by destocking in 'white rural areas'. The resultant relative 'inflation' of the pre-1978 total real capital stock from this source is probably of the order of 3 % .

Most difficult of the four asset categories is 'land' - not

strictly part of 'capital' in the neoclassical sense, but much the largest single asset for most farmers and therefore essential to include in any meaningful estimate of the capital stock. ('Land' makes up about two-thirds of the total asset value of the 'average farm'.) Until the late 70s, when much of the information for the annual agricultural census was collected by individual interview and the results were thought to be relatively reliable, the Department simply summed farmers' estimates of the market value of their land to obtain an estimate of the total value of land. Since the, however, census data have been collected by mail. Predictably, the data-collection rate has been too low to allow reasonable estimates of the total market value of land to be made from this source. In the absence of this input, the Department has fallen back on adjusting the market value of land by the combined index of rural land prices compiled by the Central Statistical Services on the basis of transfers of rural immovable property. Consequently, the 'real value of land' - as calculated by deflating the market value by the relevant price index - has remained more or less constant in the 1980s, with a single downward adjustment of exactly R500m (at 1980 prices) occurring between 1982 and 1983.

However, what makes estimation of the real capital stock still more difficult is the fall of no less than 35% in the real value of land - calculated on the basis just described - that took place between 1979 and 1981. This decline of about R8 billion (at 1980 prices) shows up as a 25% reduction in the value of the total real capital stock (from R31359 million to R24805 million) between 1979 and 1981. A decrease of this magnitude is too great to be credible, especially given that these were exceptionally good agricutural years in most parts of South Africa. A small part of this can be explained by the 15% fall in the area of land under tree and field crops between 1976 and 1981 and the transfer of this land to pastoral production. This can be assumed to have led to the depreciation of land values in the areas concerned. But, this apart, one cannot avoid the conclusion that there is a major inconsistency in the measurement of the value of land.

In respect of all the categories of asset, other than machinery and implements (which is the smallest of the four by value), it must therefore be concluded that there has been a relative undervaluation in recent years. Which part of the series is the more reliable, it is hard to say.

Allowing for the disjunctions that either certainly or probably occurred shortly before or after 1980, the most that can reasonably be said about the real capital stock (as recorded in Table 2, line 9) is that it has probably changed little over the nearly two decades of the study, fluctuating narrowly around the R25 billion level (at 1980 prices). The apparent rise that took place between 1974 and 1979 and the subsequent sharp fall should be regarded with caution.

In respect of the indicators in Table 2, the relative undervaluation of capital in the 1980s implies:

- a relative overstatement of all of the nominal and real rates of return on assets and owners' equity (lines 1-4) in the 1980s,

- a relative understatement of the nominal and real net worth of the farmers (lines 3, 8) in the 1980s,

- a relative overstatement of the burden of debt of agriculture (line 10) in the 1980s,

- a relative understatement of the capital:output ratio (line 15) in the 1980s.

The implications of these inconsistencies are explored in the text.

Finally, Fiske (1988, personal communication) draws attention to a number of factors which lead to a persistent undervaluation of agricultural capital by the Department of Agricultural Economics and Marketing:

- although relatively little agricultural production is undertaken by large corporations in South Africa, a more-than-negligible percentage of capital assets in the farming sector is owned by such corporations and by state and semi-state bodies. While deliveries of produce from these sources are included in 'gross farming income', the greatest part of their farming assets escapes measurement.

- as members of co-operatives, farmers own the reserves of co-operatives, but this is not counted as an asset. Similarly, the reserves held by Control Boards on behalf of farmers are not included in farming assets.

- crops on the land, stored produce, stocks of intermediate inputs and various other inventory items are ignored in the valuation of assets.

The indicator for which these particular shortcomings are most important is the burden of debt. If capital is undervalued, insolvency, for heavily indebted farmers, will appear more imminent than it actually is. This qualification should be borne in mind in the discussion of solvency in the text. There is no immediate reason to suppose that the downward bias was more serious in one period rather than another. Trends, as opposed to levels, are probably not significantly affected by this last group of errors.

APPENDIX B

Table 1

1. Sources: RSA Department of Agricultural Economics and Marketing, 1989: 104; personal communications with the Department, April 1989.

2. Short term debt (col. 8) defined as loans from commercial banks and agricultural cooperatives.

3. Total debt 1989: preliminary estimate by Department of Agricultural Economics and Marketing.

Table 2

1. Net nominal rate of return on assets less rate of inflation.

2. Net nominal rate of return on owners' equity less rate of inflation.

3. Calculated from: SA Reserve Bank, 1980: S65; 1981: S79; 1988: S80; Central Statistical Services, 1988a: 5; 1989:6.

4. Year-on-year change of Consumer Price Index.

5. Real capital stock (line 9) less real debt. Real capital stock and real debt calculated at 1980 prices. Real debt adjusted by Consumer Price Index. For real capital stock, see Appendix A.

6. See Appendix A.

7. Average real interest rate less rate of inflation.

Table 3

1. Sources: - columns 1 and 2: RSA Department of Agricultural Economics and Marketing, 1988: 90, 97.

- columns 3 and 4: calculated from International Monetary Fund, 1977: 44,46; 1978: 35,37; 1981: 51,53; 1984: 71,73; 1988: 81,83; and from SA Reserve Bank, 1980: S80. Assumed: international maize price - current wholesale price, Chicago; international wool price - wholesale price Australia/New Zealand, UK 64s price.

- column 8: International Monetary Fund, 1986: 201. Assumed: U.S. export unit values for manufactured goods and crude foods.

- column 9: S.A. Reserve Bank, 1980: S65; 1981: S79; 1988: S80.

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