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South Africa: Two Agricultures?

A preliminary comparison of black farmers and white farmers

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South Africa: Two Agricultures?

A preliminary comparison of black farmers and white farmers

by

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SOUTH AFRICA: TWO AGRICULTURES?

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I. ABSTRACT

Most observers believe there are two quite distinct agricultures in South Africa (SA): the efficient, white capital-intensive sector and the undeveloped black sector which, burdened with traditional "tribal" customs and attitudes and operating on unmechanised, small-scale holdings, is, and will obviously remain, inefficient. In most parts of the world, such views of "less-developed" farming have been abandoned under the growing weight of evidence that small farmers not only respond rationally to their risky (and often socially unjust) situations, but that they compare favourably in their outputs and yields with large-scale capital-intensive farmers.

In this paper it is argued that in SA too black farmers have produced much more, especially per unit of input, than is generally believed and that the deficiencies in their performance are due to lack of incentives and social injustices, not to "bad farming". It is also argued that policy should aim at creating an integrated and properly specialised farm economy. The huge expenditures on agriculture should be switched from (over-subsidised) white to black agriculture, with black farmers being encouraged to produce labour-intensive commodities and to market them freely throughout South Africa.*

II: COMPARING THE OUTPUT AND PERFORMANCE OF BLACK AND WHITE FARMERS

Output

The universally unfavourable assessment of black farmers in SA rests on a comparison of the total output, and yields per acre, of black and white farmers.⁽¹⁾ The output of small-scale, and particularly of subsistence agriculture, is extremely difficult to measure. In SA, the difficulties (and perhaps lack of interest?) were thought to be so great that, wrote van der Horst in 1942, "the census method has been abandoned and, except in the case of Natives living on farms in European occupation, estimates are now relied on for particulars of livestock and crops".⁽²⁾

In 1950/51 a sample survey of 1,100 black farms was carried out by The Tomlinson Commission.⁽³⁾ Its detailed statistical findings have provided the basis for most subsequent analyses (of which there have unfortunately been very few) of black agriculture.

Since Tomlinson, only occasional estimates of black agricultural output appear to have been published, for example, in the 1959/60 Agricultural Census and in the Agricultural sections of the annual reports of the Bantu Affairs Department.

These seem to be estimates based on even less satisfactory methods of investigation than those of Tomlinson (discussed below). In view of the obvious scarcity of basic information, it is surprising that such sweeping and confident generalizations should have been made about black farming.

Maize (mealies) is the staple crop of black farmers, accounting for over 70 percent of crop production. Tomlinson claims (p. 84) that the average yield of maize on black farms is 2.5 bags per morgen.^{*} Each bag weighs 200 lbs, so that this equals 500 lbs per morgen. This he compares unfavourably with the yield on white farms of 6.98 bags per morgen.

* 1 morgen = 2.12 acres = 0.86 hectares; or
1 hectare(ha) = 2.47 acres = 1.17 morgen.

The 1959/60 Agricultural Census recorded yields of 8.1 bags on white farms and only 2.1 bags on black farms. So the official figures for the 1950's and 1960's show yields as being 3-4 times higher on white farms.

The black yields are unbelievably low. At a recent international discussion on world-wide maize production, reference was made to the worst maize yields on dry land, with unsatisfactory rain conditions, as being in the range of 300-400 kg per hectare. [1 Kg = 2.205 lbs], which equals 661.5 lbs or 3.3 bags per morgen. ⁽⁴⁾ In Ethiopia, peasants farming dryland under very primitive conditions (no irrigation, fertilizer, or modern equipment) got ^{average} yields from 1948 to 1953 of 847 lbs (4.2 bags) per morgen. ⁽⁵⁾ An agricultural economist with whom I discussed the SA figures commented that it would be difficult to get such yields even if one sprinkled the seeds in the field and just left them to grow or wither.

A careful analysis of the Tomlinson findings suggests that there are good reasons for doubting these estimates. Tomlinson states (p. 84) that "The Bantu begin eating their maize in the 'soft dough' stage, and that it is difficult to determine the percentage actually harvested as ripe grain". He does not state what he did about this. I assume that he made no allowance for it. Subsequent official estimates (very close to his figures) are usually prefaced by the phrase that the output figures represent that "that portion of the crops which was reaped after consumption in the green stage had ceased" (6). How much of output does "the green stage" account for? Regardless of the stage at which it is consumed, it does obviously constitute output.

In her classic study of the Xhosa, Monica Hunter wrote: "From the time of the first-fruits [in mid-December] until the harvest of dry maize, green cobs and pumpkins are daily plucked by the women, and for nearly four months the people are living on the green food brought daily from the fields. A considerable part of the crop is harvested day by day. Harvest of dry maize for storage begins in May and June". "...a large part of the crop is used as green food." (7).

If the farmers live off the green maize for four months then, assuming they produce enough maize to feed themselves, the green stage must account for at least one-third, and the amount harvested for only two-thirds of total output. (8) If (as Tomlinson and many others assume)

black farmers do not produce enough even to feed themselves, then four months supply of green maize accounts for a higher proportion of total output. Let us assume, conservatively, that it accounts for only one-third of output. This would then be, not ~~from~~ $2\frac{1}{2}$, but $3\frac{3}{4}$ bags per morgen.

The second question is, how did Tomlinson measure the harvested output? Unfortunately, the published Summary of the Report contains no information on this and I have not yet (in the U.K.) been able to consult the full, unpublished 18 volume report. But unless the Commission conducted proper crop-cutting surveys (i.e., going in and harvesting the grain themselves), there is a further wide margin for error. The alternative method would be to base their figures on estimates by the village headman and/or peasants. (9) The scanty evidence available on the reliability of such estimates suggests that, in a situation in which they have no reason to conceal their output from the Government, there is nevertheless, a consistent (and ^{un}intentional) tendency to underestimate the crop by 10 percent. (10) In SA, where relations between the peasantry and the authorities have long been strained, an underestimate of 10 per cent would be very conservative. This would bring total output up from 3.75 to 4.2 bags per morgen. (i.e., $3.75 = 90$ per cent of 4.2).

Considering the avalanche of material regularly published on SA it is surprising (and unfortunate) that these estimates cannot be checked against independent surveys. There has, however, been research on peasant production in other parts of Southern Africa and the results of this provide circumstantial evidence which throws further doubt on the Tomlinson figures.

In Swaziland, Daniel estimated that yields in 1960 were 2.4 to 4.3 bags per acre, i.e., 5.08 to $9.10\frac{\text{bags}}{\text{per morgen}}$ (11). In Lesotho, in 1960, Morojele found that 80 per cent of farmers were getting maize yields between 3.4 and 4.1 bags per acre (12), i.e. 7.14 to 8.6 bags per morgen. Within South Africa, black tenants on their arable plots on 'white' farms got yields of 5.5 bags per morgen in 1959/60. (13) It is not stated what, if any, account was taken of consumption in the green stage in these estimates.

There does not seem any prima facie reason why these other black farmers in Southern Africa should get yields from two to four times greater than those of black farmers in the 'reserves' or Bantustans.

If they do, the matter should be investigated, not taken for granted.

These dubious output figures, in conjunction with its estimates of maize consumption, led the Commission to conclude that the Bantustans were unable even to feed themselves. This led in turn to assumptions about black living standards, the need to 'import' food from SA, and the need to sell their labour to Whites. However, not only are the Commission's output estimates possibly too low; its consumption estimates, the other side of this equation, seem much too high.

Consumption

"The Commission has established that the average Bantu family of six persons, requires about 15 bags of grain per annum." (14) Each bag weighs 200 lbs, so this equals 3,000 lbs per family per annum.

Let us take each family of six persons as equivalent to three adult units who do heavy work. In fact, (a) a high proportion of the able-bodied men are absent; (b) there is a high birthrate, high dependency burden, and therefore a high proportion of children. So the three adult units will provide a generous over-estimate of consumption requirements per family.

If we allow 20 ozs. ($1\frac{1}{4}$ lbs) of grain per day for each adult unit (and it would surely be difficult to consume more?), then consumption for the family = 3.75 lbs per day = 1,369 lbs per annum. Increase this to 1,500 lbs to allow for loss in grinding and storage and for a margin of error. (15) This brings the daily adult allowance to 23 ozs. (or 1 lb. 7 ozs) each. It still comes to only $7\frac{1}{2}$ bags of grain per annum per family, - half Tomlinson's estimate!

Tomlinson's curious notions about the "Bantu mind" seem to be paralleled by his notions about "Bantu" physiology. It is surely impossible that "the average Bantu person" could consume the 2 lbs 14 ozs of grain per day which Tomlinson (with uncharacteristic generosity) allotted him. Yet this estimate has been widely accepted; indeed it is usually referred to now as "the minimum grain requirement". (16)

Food Imports:

On the basis of these (inflated) consumption and (understated) output figures, Tomlinson deduced (p. 84) that the Bantustans "imported" about half their normal grain requirements from SA. (One assumes he must have deduced it, for how can grain flows be measured across open borders.)

Other scholars, using Tomlinson's consumption and output figures, have "confirmed" that this is still the case today. Rutman recently estimated, using the Tomlinson assumptions, that the Transkei imports 40 per cent of its grain requirements: a finding that was, he stated, substantiated by the "official estimates". (17) The Bureau of Economic Research (BERB) in Pretoria, set up to provide the Bantustans ~~lands~~ with the information required as the basis for policy-making, has likewise confirmed this. (18)

But this conclusion is questionable, even on the Bureau's own output figures. In 1972 maize output in the Transkei was 187,920,000 kg., (19) which equals 2,067,120 bags. This is, on my revised consumption estimate, enough grain for 275,616 families or 1,653,696 people. In 1970, the (de facto) population of the Transkei was 1,745,992. This leaves a shortfall of maize for 92,266 people or 15,538 families, which equals 115,365 bags, or 5.6 percent (not 40 percent) of total output.

But this deficit would surely be wiped out by:-

- (i) The fact that many people (particularly given the absence of so many men) do not eat 1 lb. 7 ozs. of maize per day; and/or
- (ii) the underestimate, however conservatively we value it, of output.

I am not of course saying that the Transkei does not import grain. I do not know whether it does. But the figures do not add up.

Comparing the value of output.

On his output figures, Tomlinson estimated (p. 35) that in 1950/51 the gross value of agricultural production on black farms was R23m. In the same year, the gross value of production for the whole country was R589,858,000. Brand divides these output figures by the land available to each sector to get the value of output per morgen at R1.3 for black farms, compared with R5.4 for white farms. Brand concludes, like Tomlinson

and others, that the difference is greater than one would expect. (20) However, I find it surprising - given the difference in inputs and incentives (discussed below) - that the value of output per morgen on white farms is only four times greater than on black farms, ^{even} if we accept Tomlinson's dubious output statistics.

If we use the (conservatively) revised estimates of black production suggested above, this increases the gross value of black output from R23m to R29.1m. (21), and the output per morgen from R1.3 to R1.8, narrowing the ratio to 3. to 1. If we also add to black output (and land area) the value produced by black tenants farming on their own account on "white" farms (Brand includes them in the white output figures), then their output of R11.6m (produced on 700,000 morgen) ⁽²²⁾ brings up the output per morgen to R2.37, reducing the ratio to 2.25 to 1.

It seems remarkable that in 1950/51, the value of output per morgen produced by white farmers was possibly only two to three times (and certainly no more than four times) higher than that produced by black farmers, given the enormous differentials in inputs and economic incentives. Moreover in 1959/60 yields of white farmers were, even on the official figures, no better than those of poor, "undeveloped" farmers in Lesotho.

If we looked at the value of output in relation to the costs of production, i.e. at net value added (by subtracting the raw-material inputs), the ratio would undoubtedly (whether on Tomlinson's estimates or on mine) be drastically narrowed. I hope someone with the necessary econometric skills will attempt this calculation, making an estimate of real value added, net of current inputs (properly priced), per unit of (non live-stock) capital.

Some implications of these findings

(1) If the revised consumption estimate is accepted then, (a) even on the official output figures, net grain imports into the Transkei would comprise at most a small proportion of total grain requirements.

(b) It does not follow from these results that everyone in the Transkei is well fed. First, those who lack land and/or the manpower to plough and harvest it (discussed below) might not have enough to eat. Tomlinson commented (p.98) on the "very striking" inequality of incomes in the reserves. Second, a diet that is over-dependent on maize can result in malnutrition. Most malnutrition in poor countries is now considered by nutritionists to be due to calorie rather than protein deficiency: i.e. people are simply not getting enough to eat. Malnutrition due to protein deficiency or imbalance (even with the intake of sufficient calories) is less common. However, if there exist, as reports suggest, kwashiorkor and pellagra (the protein-deficiency forms of malnutrition) as distinct from the more common marasmus, in the Bantustans, then this is not incompatible with adequate supplies of maize - especially if subsistence farmers do not complement it with beans or similar legumes. Third, maize is the most difficult of the cereals to wean children on. It is hard to get them to take enough of such bulky food and it contains moreover a protein-blocker (zein) which makes the absorption of protein difficult. (23)

(c) It does not follow from these figures that there are no grain imports into the Transkei. Some districts may "import" while others "export". Given really inadequate marketing and transport facilities, it may even be easier and cheaper for those in, say, Qumata to buy their grain from SA than from Pondoland. The point is that the Transkei would not be a large net importer of grain.

(2) If an upward revision of the output and yield estimates are also accepted then,

(a) the Transkei must be a net surplus producer of grain. The question then arises - where have all the mealies gone? Unrecorded sales? High storage losses? Wasteful feeding of grain to animals in the absence of marketing facilities?

(Brewing for beer is of course another way of taking one's calories.)

(b) However, there is an alternative hypothesis. The disagreement with Tomlinson is not really about total output, but about yields. It is perfectly compatible with this analysis that black farmers are farming less land than is officially claimed, but are getting (with higher yields per morgen) roughly the same output. In the Transkei, if the official output figures were correct, they would then roughly be satisfying subsistence requirements, but not producing a surplus. I will return to this question later, in the discussion on labour supply, when it will be argued that the Bantustans are probably underfarmed, because of lack of manpower and/or because of lack of incentives to produce farm products for sale in competition with subsidised white farmers.

(c) The acceptance of these revised consumption and/or output and yield estimates (especially if both are accepted) has far-reaching implications for the analysis of labour supply. It helps to explain the phenomenon of "voluntary unemployment": the capacity (which has puzzled many observers and recruiters) of blacks to turn down jobs on the mines and farms and hold out for the higher-paid industrial jobs. Put another way, it means that the product of the potential migrant is higher than is believed, and that the estimate of the wage required to draw him out must therefore be raised.

(3) It must be stressed that this brief exercise, using the new consumption and output assumptions, was done in relation to the Transkei. There are important regional differences between the Bantustans and the results and the implications would not necessarily be the same for pastoral regions, such as Bophutatswana, or for the more densely populated regions such as Kwa-Zulu and the Ciskei.

(4) Finally, the narrow margin of large-scale, capital-intensive white farmers over small-scale, lowcost black farmers will not surprise most development economists. It will however surprise most of those working on this subject in SA, not only because of their prejudices about black farmers, but because of their unshakable belief in the relative efficiency of large-scale farming, with its supposed economies of scale in agriculture.

It is hoped that these results will give rise to serious doubts about the widely-held assumptions and much used statistics of Tomlinson (and similar official estimates). However, they offer no answers to replace them. These must await empirical investigation in the field. The aim here is to draw attention to the mistakes, anomalies and contradictions in the official estimates; to discuss some of the possible implications of their revision; to suggest one or two hypotheses that might be usefully explored; and to indicate some of the information needed to answer the mysteries and puzzles that remain.

III. COMPARING THE INPUTS OF BLACK AND WHITE FARMERS

The performance of black farmers in Southern Africa then gives more support than is generally believed to the growing belief (discussed below) that the lowcost smallholder, farming intensively with family labour, often has a comparative advantage or competitive edge over the capital-intensive, large-scale farmer, particularly in labour-intensive products such as vegetables, root crops and probably cereals. But this raises the question, why has black farming not developed and thrived in SA? A large part of the answer is to be found in (a) overt political measures taken to coerce blacks into working for whites, rather than producing on their own account, and (b) in the discriminatory allocation of economic resources, which has rigged the market against blacks so that it is not worth their while to put more inputs or effort into farming. We shall examine this by looking at the allocation of Land, Labour and Capital to white and black farmers respectively.

Land

The 1913 Land Act, and the subsequent 1936 Native Land and Trust Act, reserved ownership of almost 87 per cent of the land of SA for whites. Ownership by blacks (who constitute 70 per cent of the population) was restricted to the "native reserves" or Bantustans, which constitute 13.7 per cent.

The Act furthermore restricted even the leasing or hiring of land in the "white" areas to blacks, many of whom found that they had become squatters or tenants on land (often long occupied by their families), which was now regarded as belonging to whites. The restrictions on tenancy were progressively tightened and today black tenant farmers have, at least in law, been virtually eliminated.

The division of farmland in SA is slightly less unequal than the overall division of land. This is because almost 15 per cent (18m out of 122m ha) of the land surface is taken up by cities, roads, airports, etc., which are concentrated mainly in the "white" areas. The area of white farms is 87,815,000 ha.⁽²⁴⁾ There is no separate estimate of the area of black farms (the statistics on black agriculture are consistently inadequate). As the Bantustans are almost entirely agricultural, their present total area of 15.5m ha (1.1m ha are still owing to them in terms of the 1936 Land Act⁽²⁵⁾) is generally taken as the extent of farmland. But we shall subtract from the 15.5m ha, the approximately 856,898m ha listed in the 1959/60 Agricultural Census (part I, p.66) as forests and "other land". This leaves a total farm area of 14.65m ha.

Only 12 per cent of the area of SA is classified as "arable" - a high arbitrary concept, as irrigation and machines can obviously bring additional land under the plough (arare = to plough). Quite a high proportion of the "white" sector is semi-arid; while the much smaller black sector is estimated to contain 20-25 per cent of the total arable area. However, the population density of the black area is also considerably higher: 119 per square mile, compared with 35 per square mile in the rest of SA.⁽²⁶⁾ As the latter contains the densely populated cities, the discrepancy between the black and the white rural areas is obviously much greater than these figures suggest.

In the "white" areas, the number of farm holdings is 86,092 (mainly white, but there are also some Indian and coloured farmers). The average-sized white farm is therefore 1,021 ha. The total cultivated area is 10.5m ha, an average of 122 ha per holding. These averages cover considerable variation in farm size. In 1969, almost half the farms were in the 300-5,000 ha range. However, 10,604 farms were less than 10 ha in size; while 4,604 were greater than 5,000 ha. (27)

The attempt to do this simple calculation for the Bantustans is fraught with difficulties. First, there do not appear to be any recent statistics on the number and size of holdings. Second, there is a problem of classification and definition because of the communal grazing land to which, in theory, everyone has access, even those without arable allotments. The most recent comprehensive information on the number and size of holdings appears to be that provided in the Tomlinson Report. From this it seems that there were 605,549 farming families in 1951. (28) If they all had land this would mean an average of 24.3 ha per family holding, including share of communal grazing. The area of cultivated land is estimated at 1.620,000 ha, (29) an average of 2.67 ha (or 6.4 acres) per holding.

Surprisingly, given population growth since 1951, the figure of 2.67 ha of cultivated land is not incompatible with the findings of recent surveys of farm size in the Transkei and Ciskei. (30) If this is correct, it would suggest that, in some areas at least, holdings have been kept to a minimum size, rather than being sub-divided to accommodate growing numbers. This would also imply an increase in the number and percentage of the landless. However, presumably, some of the people without allotments no longer want to be farmers. According to the latest census, almost half a million people in the Bantustans had jobs outside agriculture in 1970. (31)

If the estimate of the number of black holdings is roughly true - and this is one of the many areas on which research is urgently needed (32) - then the ratio of farmland available to white and black farmers is 42 to 1; the ratio of cultivated land is 46 to 1.

Apart from the highly unequal distribution of land, it must be recognised that, whatever the initial quality of the two areas, past allocations of capital have upgraded the land farmed by whites (especially via irrigation), while there has been deterioration (due to overgrazing and capital starvation) of black land. Hence in "efficiency-units" of land, the ratio is even more unfavourable.

Capital

Frankel estimated that the state spent £112,000,000 (R224,000,000) on white agriculture from 1910-36.⁽³³⁾ This is in line with estimates by Brand (p.155) of official expenditure. On the basis of these estimates, gross annual expenditure on white agriculture averaged R9,000,000 during this period.

Hailey calculated that state expenditure on black agriculture from 1910-34 was a mere R1,247,642,⁽³⁴⁾ an annual average of R50,000. If these amounts are correct, the ratio of expenditure on white ^{to} ~~and~~ on black agriculture before the second world war was about 179 to 1.

Brand estimates that in the early 1950's, Government expenditure on white agriculture averaged R38,537,000 annually. (It should be noted that these are gross figures. Brand estimated that white farmers paid R6,985,000 in taxes then, which would mean net state expenditure of R31,552,000.)

The Tomlinson Commission confirmed that very little had been spent on black agriculture up to 1946. It stated (p.75) that in 1953 R2,790,000 would be spent by the Technical Agricultural Service (mainly on halting soil erosion and "stabilising" the land). It is likely that additional amounts were spent, for example on land purchase, but I have not yet tracked these down. Accepting this as the minimal amount spent brings the ratio down to 13.8 to 1. (If we allow for white tax receipts and if expenditure on blacks was say, 50 per cent higher, then the ratio would be about 8 to 1.)

In 1973 expenditure on white agriculture totalled R202,990,000.⁽³⁵⁾ Expenditure on black agriculture via the votes of the Bantustan governments in 1974/5 equalled R35,180,000; another R25,000,000 was spent on the purchase of land, bringing the total to R60,180,000. Additional amounts were also spent by the SA Bantu

Trust, the Xhosa Development Corporation and the Bantu Investment Corporation, but these are difficult to track down. The current ratio of about 3.4 to 1 therefore overstates the differential somewhat.

The expenditure on white agriculture includes about R90m on food subsidies, which keep down the price of basic foods to the SA consumer at a time when (in contrast to previous decades) SA food prices are below international levels. If we deduct this amount, as I think we should, from expenditure on white farmers, then the ratio is 1.88 to 1.

This ratio is, of course, much wider on a per holding basis, as there are more black farmers. State expenditure (minus food subsidies) now averages out at R1,314 per white and R100 per black holding: a ratio of 13 to 1.

Since Union then, there have been decades of phenomenally discriminatory expenditure in favour of white farmers. Until about 1946, practically nothing was spent on black agriculture. Since then, the gap in total expenditure has narrowed considerably, but in 1973/4 at least twice as much in direct state expenditure was still being spent on the rich, developed white as on the poor, undeveloped black sector.

Official state expenditure is not the only source for farmers of the capital with which to enlarge, equip, and modernise their farms. Apart from their own savings (easier for the rich than for the poor) they can often draw on private capital. Brand shows that there have been large net flows of private capital into white agriculture, much of this presumably through banking loans, including the Land Bank. It was recently stated in Parliament that Land Bank loans to white farmers (at subsidized rates of interest of 8 per cent) are currently running at R1,392,000,000. (37)

This explains why, up to 1945, gross domestic fixed investment in agriculture was estimated to be roughly 50 per cent higher than gross savings in agriculture. From 1945-65, investment was almost 100 per cent higher than savings. In 1965, for example, estimated savings were R66m; but investment equalled R129m. (38)

Dr. Verwoerd overruled the Tomlinson Commission's recommendation that private white capital be allowed into the Bantustans. Blacks would moreover obviously have great difficulty in getting loans from banks. Timely credit is often vital to farmers because of the highly risky and seasonal nature of their work. If the harvest fails and credit is unavailable, they might not be able to buy the inputs (seeds etc.) for the next season's crop, and could therefore be driven out of farming.

It is a favourite myth of the rich, used to justify their service to society in accumulating savings, that the poor do not save; but they do. The savings of Bantustan farmers have been quite substantial and have gone mainly into cattle. In fact, this must be the area in which, economically, blacks compare most favourably with whites - in quantity, though not quality of cattle. In 1950, blacks owned 41 per cent of the cattle, 42 per cent of the pigs, 66 per cent of the goats and 12 per cent of the sheep in SA.⁽³⁹⁾ According to the 1971 and 1973 Agricultural Censuses, the percentages were: 36 per cent of cattle, 75 per cent of horses, mules and donkeys, 65 per cent of goats, 37 per cent of pigs and 14 per cent of sheep.⁽⁴⁰⁾

Many commentators regard this accumulation of livestock as a quaint tribal custom, invariably adding that it bears no relation to the economic, but only to the "social and cultural", value of cattle. However, until very recently, this was practically the only form of investment open to blacks, certainly to those in the Bantustans. They could not buy land (though on the few occasions when they had the opportunity to do this, they availed themselves of it⁽⁴¹⁾). There were severe limitations on their ability to invest in business. Not only do they, like many of us, lack the skill and knowledge to play the stock market, they do not even have access to it! They were, understandably, reluctant to invest in safe government bonds, especially in view of the low rates of interest. Investment in cattle (which they do know something about) has been one of the few investment outlets for blacks with land.

In an interesting exercise, Rutman argued that this has also provided a higher rate of return than the few alternatives open to blacks, and that the accumulation of cattle has therefore been rational - despite its serious effects on the ecology of the reserves. (42)

The complaint that investment in cattle has heavy social costs or diseconomies and has led to the overgrazing and the deterioration of the reserves seems true (although I have not looked closely at the figures on this). However, there are often discrepancies between social and private rates of return - which it is the job of policy-makers to try and correct. But this does not detract from the fact that it can be economically rational and profitable for the individual black farmer, with free access to communal grazing, to accumulate as much livestock as he can. His success in doing so, despite his poverty, should be recognised as the sign of an impressive willingness and capacity to save, which should perhaps (and this needs investigation) be channelled into more profitable and varied investments. It should certainly not be patronisingly shrugged off as a quaint "tribal custom".

More briefly, a few other indicators of the differential investment in white and black agriculture. The value of capital assets in white agriculture attributable to machinery vehicles, tractors and implements was R763,000,000 in 1971. (43) I have not found any assessment of the value of capital equipment ~~for~~ ⁱⁿ the Bantustans. However, the 1965 census of capital equipment on black and white farms confirms one's observation *that* they lack expensive modern equipment. (44) Black farmers in the Bantustans do however own 340,933 (non-motorised) ploughs, 116,567 cultivators, and 42,000 wagons and carts. In addition, in 1960, black tenants on white farms owned 52,406 ploughs, 20,972 cultivators, and 50,000 wagons and carts. A further indication of the desire and ability to save and invest.

Tomlinson records (p.84) that in 1938, a scheme for the subsidised purchase of ploughs, harrows, planters and cultivators by black farmers was introduced "and considerable use was made of it until it was discontinued in 1947". Among those who objected to such schemes was former Prime Minister Strijdom,

who complained in Parliament that, "If the Government went on in this way, blacks would soon cease to be labourers and become farmers, with disastrous effects on white farming, where the problem of markets was already serious"⁽⁴⁵⁾. Strijdom, at least, understood the potential of black farmers and the rationale behind the discriminatory allocation of capital resources.

The large amounts of capital available to white farmers were not used only for the purchase of land and machines and the construction of buildings, irrigation works, etc. They were also invested in new seeds, fertilisers and pesticides, which can easily double, treble and quadruple yields per morgen. In 1973 R120,000,000 was spent on fertilisers alone in SA.⁽⁴⁶⁾ Very few of these valuable inputs found their way into the Bantustans. Tomlinson estimated (p.84) that only 13 per cent of the cultivated area of the Bantustans received fertilisers, and even this received substantially less than was needed to maintain soil fertility. Recently the Fertilizer Society of SA estimated that only 10 per cent of the area cultivated ^{in the Bantustans} receives fertiliser.⁽⁴⁷⁾

In countries with uncertain rainfall, irrigation is critical to farmers. It opens up the possibility of taking two or even three crops per annum, thus enormously increasing output and spreading work more evenly over the year. It also reduces the element of uncertainty and risk, and therefore encourages farmers to experiment and innovate.

The total irrigated area of SA in 1974 was estimated to be 900,000 ha, or 7.4 per cent, of the total cultivated area of 12.3m ha. Of this just under half comprised State and Irrigation Board projects, such as those on the Orange, Letaba, Crocodile and Olifants Rivers. The area under irrigation in the Bantustans is 23,947 ha, which equals 2.7 per cent of total irrigation.⁽⁴⁸⁾ Despite his low opinion of black farmers, Tomlinson recorded their enthusiasm and support for irrigation schemes.⁽⁴⁹⁾

Finally, in addition to these rough statistical indicators of the difference in inputs between the two sectors, mention must briefly be made of the differential access to ^{two} ~~three~~ vital resources.

(1) Marketing and transport facilities:

It is no use going to the effort, risk and expense of growing produce (except for consumption), if you cannot be sure of marketing it at a reasonable profit. A glance at the map of SA shows that the white areas are well served by excellent road and rail facilities. The railways, and the sophisticated, elaborate system of State Marketing Boards, provide them with excellent facilities for storage, grading, refrigeration, marketing and export of their goods. They are also helped by favourable railway rating, the stabilisation of prices, etc.

Tomlinson acknowledged (p.86) that there was "no organised marketing of agricultural produce in the Bantu areas". Transport is generally extremely inadequate. Traders (who must take their own cut) have provided the main channel for the sale of produce. Obviously the system of transport and marketing geared to the needs of whites, and practically non-existent for black farmers, has seriously weakened their competitive position as producers.

In addition to the lack of facilities, blacks have been severely hampered by overt restrictions on the trading and marketing of their produce. A 1963 ruling prohibited blacks "from trading as pedlars, hawkers or speculators in livestock and produce outside their residential areas".⁽⁵⁰⁾ Moreover, even within "their own residential areas", a very restrictive licencing policy makes it extremely difficult for them to find outlets for their goods. Black businessmen complain bitterly about this and I observed it myself during a tour of the Bantustans in 1972. For example, the large township of Mdantsane, near East London, was limited to two licences for bakeries because (officials told me) East London bakers insisted on retaining a share of this lucrative market and still "exported" 36,000 loaves daily to the township.⁽⁵¹⁾

It is ironic that it is usually precisely those whites who dismiss blacks as hopeless farmers (and businessmen) who insist on erecting barriers against black competition. Whatever the psychological complexities of this behaviour, its economic effects are straightforward. They make it difficult for blacks to dispose of their produce and further load the economic incentives against the black producer.

(2) The acquisition of skill

First-class research facilities have been geared to the interests and needs of white farmers. They have also benefitted enormously from superior general education and technical training. The decades of huge expenditure on white education represents an enormous and valuable investment in human capital. One would expect its beneficiaries to have far greater technical and managerial skills. The investment in training and research in the black areas has not, to put it mildly, been comparable. This too has constituted a huge bonus, funded by the State, for white farmers.

Labour

It has long been said that the Bantustans have an excess supply of labour. Hence their need to export it to the white areas. It has also long been said that white farmers are desperately short of labour: the reports of official commissions, and the pages of history books, echo with their cries for more.

TABLE I. FIRST ESTIMATE OF THE ALLOCATION OF LABOUR BETWEEN WHITE AND BLACK FARMERS.

	White Farms		Black Farms
	Estimates A and B		D
Number economically active	1,125,000 ⁽¹⁾	1,300,000 ⁽²⁾	979,140 ⁽¹⁾
Area of farmland (hectares)	87,815,000	87,815,000	14,650,000*
Area of cultivated land	10,500,000	10,500,000	1,620,000
Hectares per worker of:			
(1) farmland	78.06	67.55	14.96
(2) cultivated land	9.33	8.07	1.65
Ratio of white to black farms in:			
(1) farmland per worker	5.2 to 1	4.5 to 1	
(2) cultivated land per worker	5.7 to 1	4.9 to 1	

*1.1m ha. still to be added to black areas (1 ha. = 2.47 acres)

Sources: (1) Based on 1970 Census, South African Statistics, 1972, A27.
 (2) Based on Agricultural Statistics, 1968/9, Census No. 43.

Re the two estimates for white farms: it seems likely that the 1970 Census figures, on which estimate A is based, underestimated the number of workers on white farms. The separate, more detailed Agricultural Censuses show consistently higher numbers: 1.6m in 1968/9; 1.4m in 1971/2 and 1.3m 1972/3. It seems reasonable to increase numbers on white farms in 1970 to 1.3m - the lowest of these estimates.

The 1970 Census estimate of 979,140 blacks "economically active" in Bantustan agriculture is highly questionable. Unfortunately, the Agricultural Census does not cover the Bantustans so we have no alternative estimate. What we need to know in comparing the allocation of labour is the number of manhours invested in each sector. In the Bantustans, outside the few irrigation schemes, project farms, sugar farms and perhaps some cattle farms, there appears to be little intensive full-time farming. This is hardly surprising considering that most people take only one crop a year and have little incentive to farm seriously. Work is therefore likely to be highly seasonal, with long slack periods. In fact, it is possible that many of the men classified as farmers were migrant workers temporarily at home with their families. The fact that the Census was held on 6 May 1970, i.e. during the harvest, makes it likely that much larger numbers than usual were then engaged in farm work. (52)

The manpower resources of the Bantustans must further be enormously affected by the fact that so many of those listed as economically active in ^{black} agriculture (almost half the number in Table A) are women. Not only are women occupied with the care of the family and incapacitated by pregnancy, but there are some essential jobs, particularly ploughing, which they simply can not do. The high proportion of women must be taken into account in comparative estimates of the manpower available to the two sectors.

In Table II, a very tentative, revised labour estimate is offered, based on a more realistic assessment of the allocation of manpower between the two sectors. It is assumed in turn (estimates E & F), that these were the equivalent of 0.5 million and 0.25 million fairly full-time workers in Bantustan agriculture (instead of the 0.9 million in Table I, column D). Table II also takes account of the fact that of the 1.3m workers on white farms, about 0.6m were seasonal or part-time. Unfortunately, we have no idea how many hours they worked. For this very approximate calculation, the numbers of casuals has been halved, giving a total of 1 million fairly full-time workers.

TABLE II. REVISED. ESTIMATE OF ALLOCATION OF LABOUR BETWEEN WHITE AND BLACK FARMERS.

	<u>White Farms:</u>	<u>Black Farms:</u>	
	<u>Estimate C</u>	<u>Estimate E</u>	<u>Estimate F</u>
Number of economically active	1,000,000	0.500,000	0.250,000
Area of farmland (ha.)	87,815,000	14,650,000	
Area of cultivated land	10,500,000	1,620,000	
Hectares per worker on:			
(1) farmland	87.8	29	59
(2) cultivated land	10.5	3.2	6.48
Ratio of white to black farms in:			
(1) farmland per worker		3 to 1	1.5 to 1
(2) cultivated land per worker		3 to 1	1.6 to 1

Given the high degree of tractorisation (plus combine harvesters, etc.) on white farms, one would expect each worker there to farm more than 5 times as much land as each worker on a black farm. Yet this low ratio is what even the official figures in Table I suggest.

The estimates in Table II bring the ratios very close indeed. The conclusion must be that white farms are more labour-intensive relative to black farms than a superficial glance at the respective man-land ratios and the allocation of capital would lead one to expect.

Those who are surprised by this result probably do not realise how labour-intensive farming (except for livestock) usually is. The failure to appreciate this is perhaps one of the reasons why SA's are so resistant to the evidence of the effectiveness and competitiveness of small-scale farming (discussed below). Rich white SA's (of all political hues) seem to share Tomlinson's view that one morgen (2.2 acres) is merely the size of a decent garden - for that is what (in the land-scarce Bantustans) he recommended as the necessary size for each family's residential plot! Those who share his view, probably employ a couple of gardeners, but they should try for one year to farm 2.2 acres intensively on their own - starting with the ploughing (minus tractors). Farming is especially labour-intensive, unless very substantial sums are available for mechanisation, when new land is being cleared and brought under the plough. This has been necessary in much of SA during the last few decades.

The man-power figures for the Bantustans have important implications. On the median estimate E in Table II, each economically-active person must farm 3.2 hectares (or 7.9 acres) of cultivated land, plus his or her share of livestock care. Agricultural experts with whom I have discussed this insist this would be quite impossible for one person, using only simple mechanical devices to do. A strong, skilful, able-bodied man, without motorised equipment, would not, in their opinion, be able to farm as much as two acres entirely on his own. Yet even on the official figures in Table I there is only one economically-active person (including women) for each 1.65 ha. (4.08 acres) of cultivated land.

This suggests that the Bantustans are seriously underfarmed. The impression that they are overfarmed is partly the result of a confusion with their being relatively over-populated and /or overgrazed. These are quite different problems.

Not only is the amount of labour on white (relative to black) farms greater than one would expect (given the relative capital endowments), but its price is also lower than one would expect from a comparison with wages in other sectors, and even with incomes in Bantustan agriculture.

TABLE III. ESTIMATES OF AVERAGE ANNUAL BLACK EARNINGS (CURRENT PRICES) IN SELECTED SECTORS.

	1950's	1960's	1970's
<u>Family in Bantustans</u> ⁽¹⁾	1950/51: R97.4 (of which R55.4 from farming)	<u>Ciskei</u> : 1964, R227 <u>Transkei</u> : 1968, R214	? ?
<u>Workers on white farms</u> ⁽²⁾ (cash and kind)	<u>E.Cape</u> : 1952: regular (i.e. full-time) worker. R72; of which R36 cash. Some opportunities for family earnings to supplement the wage.	1961/2: average for regular and casual workers: R62. 1968/9: regular and casual: R88. regulars: R135 casuals: R36	1972/3: regular and casual: R146 regulars: R217 casuals: R62 1973: Family wage: R486
<u>Workers on gold mines</u> ⁽³⁾ (cash only):	1951: R109 (plus board)	1961: R146 (plus board) 1969: R199 (plus board)	1974: R556 (plus board)
<u>Worker in manufactur-</u> ⁽⁴⁾ <u>ing and construction</u> :	1950/51: R234	1960/61: R371	1972: R720 1975: R1,264

SOURCES: (1) 1950's: My (conservatively) revised estimate of Tomlinson. His estimate was R86, of which R44 came from the family farm. 1960's: Maree and de Vos, op.cit. Unfortunately they do not say how much was derived from agriculture, now how they estimated output.

(2) 1950's: F. Wilson, "Farming, 1866-1966," Oxford History of South Africa, Vol. II, p. 160. 1960's: Merle Lipton, "White Farming", p.8. 1970's: Calculated from Agricultural Statistics, 1972/3.
Census No. 46. Estimate for family wage from Merle Lipton, op.cit. p.11.

(3) 1950's and 1960's: F. Wilson, Labour in the SA Gold Mines, p.46.
1970's: Calculated from Mining Statistics, 1974.

(4) 1950's and 1960's: W. Steenkamp, "Bantu Wages in SA", SA Journal of Economics, June 1962. 1970's: Merle Lipton, British Investment in South Africa: Is Constructive Engagement possible? (CCSA, London, 1976).

In his celebrated essay on the movement of labour from the subsistence to the capitalist sectors of a "dual" economy, Lewis estimated that the wage outside the subsistence sector would need to be 30-50 per cent higher than the worker's current product to draw him out to work. (53.) (He was of course referring to the unskilled wage which would be lower than the average industrial wage given here).

The calculation is complicated because the domestic product (estimated by Tomlinson at R44 in 1951, and by me, conservatively, at R55.4 i.e. 25 per cent higher) would obviously have been higher if the worker - usually the ablest and strongest member of the family - had stayed at home and worked on the farm instead of going to town. Instead his remittances as a migrant added R42 to the family income, bringing up the total to R97.4 (or R86 on Tomlinson's figures).

Lewis assumed, however, that there was in the subsistence sector, a surplus of Labour, or "disguised unemployment", such that the worker could be withdrawn without causing a reduction in total output. If my argument about the underfarming and shortage of manpower in the Bantustans is correct, then this was not the situation there.

Tomlinson claimed (p. 35) that in 1949/50, "the average total income" of a black farm labourer on white farms was R166, "to which the wages of other members of the family must be added to obtain the family income". This claim, together with his underestimate of output in the Bantustans, formed the basis for his conclusion that blacks on white farms were better off than in the reserves: "for their productivity in this capacity (i.e., as labourers) is a good deal higher than where they function as agricultural entrepreneurs".

But Tomlinson's figure for the average black farm wage seems to be an extraordinary overestimate and must be the result of a mistake. Almost twenty years later, the average wage of regular workers had only reached R135.

The figures suggest that potential migrants would go last for jobs on the farms. Not only were wages lowest, but a high proportion was paid in kind. Even on the Tomlinson estimate of domestic product it would not seem worthwhile for the average family to send out an able-bodied man for the cash wage (R36). There was furthermore a dislike of the harsh discipline (including corporal punishment) on some farms, and a fear of being tied to the farm and unable to leave. This made the farms unpopular and accounts for the "stigma" attached to farm work, of which white farmers complained.

Even with the rigging of incentives against black producers, it is doubtful whether the average black family was better off on the white farms than in the Bantustans, at least in the 1950's. There is not yet sufficient information on the domestic product of the Bantustans in the 1960's and 1970' to make a comparison.

It is obvious from Table III that the rational man, responding to economic incentives, would be keen to work in town. As is known, he has even been prepared, despite fears about security of tenure, to give up his holding and move there permanently with his family.

The low response of black farmers to job opportunities in mining is, however, on these figures, a puzzle. Migrants would obviously have a preference for the higher wages and freer life of the towns. Many would also dislike and fear mining work (as would many whites). But the low response raises the possibility that the domestic product is higher than my revised (and deliberately conservative) estimate. This would raise the level of wages required to draw men out.

Although the mines have never been able to attract as many SA blacks as they would like, quite a lot have worked there: about 125,000 in 1956.(54). They are probably accounted for by the inequality of income distribution within the Bantustans, which Tomlinson (p. 98) described as "very striking". Total family incomes in 1951 ranged from R55 (of which only a third was from agriculture) in the low rainfall, mixed farming areas; to R231 (of which 96 per cent was from agriculture) on the irrigation schemes. (55) The latter family would obviously not find it worth while to send men to work for the unskilled wage in manufacturing - let alone to the mines or farms.

The situation of families, therefore, varied considerably. I suggest, as a hypothesis to be tested, that the mines relied on the low-income farming families for their workers. But that farmers, except for seasonal work, might have had to rely on the landless. It seems, despite the theory that all are entitled to land, that arable plots were not automatically provided for everyone. The landless had no domestic product to fall back on and therefore had little bargaining power and little choice over jobs.

Farmers also drew on those rural blacks who found themselves, in 1913, in the 87 percent of SA classified as "white". First they were termed "squatters", then tenants, then finally they were converted into labourers. The process of conversion from tenant to labourer was delayed by the difficulty farmers encountered in retaining even this group, to whom they were often forced to offer the inducement of arable plots and grazing rights. (56).

As these rights were whittled away, and as competition for labour from the towns increased, influx control and Masters and Servants laws were tightened and extended to hold down the labour force. These workers then were serfs, unable to sell their labour "freely" - difficult and harsh though that can also be. The process reached its zenith in the 1950's, when very large numbers of convict workers were supplied to farmers. (If the wages of this ultra-cheap source of labour were included in the rural wage figures for the 1950's, they would be further and markedly reduced)

During the last decade, the changing economic interests and declining political power of white farmers has, as I argued elsewhere (57), led to some improvement in the conditions (earnings, education, mobility) of farm workers. Recently, this has been accelerated by the greater demand, and willingness to pay, of the gold mines for black SA workers. This has precipitated the long-averted clash over labour between these two huge labour-intensive sectors and considerably increased the rise in black wages. Intensified competition for labour could, however, lead some farmers to press again for tighter restrictions over mobility. It is to be hoped that more powerful political and economic interests would defeat any such attempt. However, these overdue, progressive trends could be slowed down by recession and by a further fall in the gold price. Hence the importance - at SA's current stage of development - of continued economic growth. (58) I hope in a later paper (see footnote 75) to argue that in SA's current phase of development, continued economic growth is likely to benefit not only black workers (and particularly agricultural workers with whom we are here concerned), but also to lead to an easing of restrictions on black producers.

The evidence regarding both the quantity and the price of labour on white farms leads to the same conclusion. The large supply, and its low price, cannot be explained in terms of the natural operation of market forces. They were the consequence both of the rigging of market forces to reduce the incentives to black farmers, and of political actions, which ranged from outright coercion (tied labour) to the Land Act.

It was undoubtedly part of the intention of the Land Act, with its severe restriction on black ownership of land, and on black tenants in the 'white' areas, to swell the labour supply by creating a large group of landless people. The Native Affairs Commission of 1903-5, which was influential in framing the Act, was explicit about this. For example, it recommended the strict enforcement of restrictions on "squattling", (the renting of land to blacks) in order to increase the supply of labour to farmers. (59)

Taxes on blacks were likewise a political measure aimed at increasing the supply of labour, by forcing subsistence farmers in the Bantustans to earn cash wages. The taxes would, said Rhodes, introducing the Glen Grey Act of 1894, act as a "gentle stimulant" to blacks to work. (60).

The Land Act (and similar political measures) contributed to the labour supply by increasing landlessness. It deprived many blacks of the chance of being farmers; but it does not per se account for the failure of those who had land to become producers rather than migrant workers. This analysis suggests that, contrary to popular beliefs, the highly unequal distribution of Land, and in particular the relatively small size of holdings, has not for them been the constraint on development.

This raises the question, why have blacks with land not farmed and developed it? The mystery deepens if, as is now claimed, there is high unemployment. First, the question of unemployment:

- (a) There are not yet reliable statistics on (present and past) levels and trends of unemployment. Conclusions on this must therefore await the results of research being done by J.B. Knight and C. Siemens, among others. (which will hopefully be discussed at the conference).
- (b) From the little that is known it seems likely that, except perhaps during recessions, there was little or no labour surplus or "disguised unemployment", in the Lewis sense, around the turn of the century, when the framework of labour legislation (pass laws, Land Acts) was laid down. This legislation (and the accompanying economic measures) was intended to force out the labour at a low price in the absence of a surplus. It also seems likely that the labour supply situation has changed over time. The population explosion, plus mechanisation in industry, agriculture and now mining, may have profoundly altered the balance, so that there may now be a labour surplus situation.
- (c) In agriculture, acute seasonal shortages of labour are not incompatible with excess supplies of labour (or "disguised unemployment" or underemployment) during the rest of the year. Indeed this is a common pattern when only one crop a year is taken.

High unemployment deepens the mystery, but it does not alter the basic explanation offered here, tentatively, as a hypothesis, to be tested in the field: viz., that the reason why those with land do not farm is not because their holdings are too small, nor because they dislike and are useless at farming; it is because it is not worth the effort, risk and expense (cost of seeds, fertilisers, etc.,) of even attempting to cultivate it intensively.

The risk of failure is too high. This is due to the lack of capital for basic requirements such as irrigation and urgent credit (to buy seeds and other inputs at the right time); The extreme difficulty of marketing produce; and the difficulty of competing with heavily-subsidised and favourably-treated white farmers.

Placed in this situation, the sensible, rational man will probably judge that it is not worth his while to farm. Instead of using his energy and skill to cultivate and increase the value of land, on which he will get little return, he will look for employment elsewhere (as it was intended he should). Even though urban jobs may be interspersed with periods of unemployment, it is still likely that his lifetime earnings will be higher from migrancy than from farming his land under these disadvantaged conditions. (The Ceylon Report records a similar pattern in some parts of Ceylon. (61))

This outcome is not the result of the working of "natural" market forces. The heavy loading of economic incentives against them effectively discourages many potentially viable black farmers from farming. While the availability of cheap labour and cheap capital encourages many marginal white farmers to stay in business. The result is obviously a serious misallocation of resources and a distorted pattern of development.

IV: DISCUSSION AND CONCLUSIONS

The Controversy over the Lewis model.

This analysis does not lend support to a "market forces" explanation of the development of white, and the failure to develop of black, agriculture. Nor can it accommodate the application of the Lewis model in explaining the conversion of blacks from producers into workers. (62) The Lewis model is inapplicable in SA for the following reasons:

(a) Despite the lack of unemployment statistics, it seems likely that initially there was not a labour surplus situation as defined by Lewis ("disguised unemployment"). On the contrary, there was a severe shortage of unskilled, as well as ^{skilled} labour. Those who explain the large skilled-unskilled wage differential on the grounds of shortage of skilled-contrasted with excess of unskilled-labour conveniently overlook this fact. But it is well-documented that there were severe shortages of unskilled labour for the mines and agriculture.

(b) The shortage of unskilled was not, as in the case of skilled, labour solved by economic measures or market forces i.e., raising wages. The measures taken to solve this problem varied profoundly between the different sectors. In mining, the problem was solved by the importation of cheap, foreign migrant labour, which severely undercut the wages of SA blacks. This would be regarded ^{by some} as a partially economic or semi-political solution. But it does completely rule out the Lewis model, which assumes closed borders. So the Lewis model does not apply to the mining sector. In agriculture, the solution was partially economic - the prolongation of tenancy; but mainly political - outright coercion to tie workers down on the farms. This certainly rules out the Lewis model. Industry, and most other urban employers, did not depend on coercion. It is even likely, judging by relative wages and by the world-wide eagerness for urban jobs, that industry would have got the workers it needed even without the rigging of economic incentives. The industrial and commercial sector then comes closest to the Lewis model situation.

(c) Finally, over and above all this the incentives were rigged against black producers. This reduced their opportunity cost and their overall wage levels, except possibly in industry. The lack (though by no means complete lack) of black trade unions was at least partly countered by influx control, which reduced black numbers and raised black wages in the towns.

It is part of the mythology, currently being nurtured about SA liberals, that they failed to realise this and propagated a crude "free market forces" analysis of SA development. However, the point about the manipulation of market forces has been hammered home and well-documented by, among others, Van der Horst and Horwitz. It is precisely one of their complaints about SA policy. They should not be confused with the more conservative neo-classicals, such as Horwood, Brand, and probably that stimulating maverick, O. Dowd (63), whose analysis ^{does} has come closer to the "free market forces" interpretation.

The elegant but simple two-sector Lewis model is quite inapplicable in the case of South Africa. The rules governing the working of the mining, agricultural and industrial sectors are so different that I suggest we need a more complex, though less elegant, four-sector model to explain the laws governing labour supply in the SA economy.

However, while a "free play of market forces" analysis is obviously inapplicable, many of the insights of the neo-classical approach and particularly the concept of opportunity cost (explicitly rejected by some (64) and missing in the work of all SA Marxists) is essential in explaining the development of the agricultural sector and the behaviour of individuals. It is necessary to take account both of the effects of market forces and prices (whether manipulated or not), and of the economic interests and political power of groups and classes. We need an approach which combines the insights and methodology of both Marxists and neo-classicals. (65).

The Controversy over the function of the 'reserves' or Bantustans.

Recently Wolpe explored the interesting question of why blacks were left in possession of such large tracts of land. (66) He argued (as others have before him (67)) that the retention of the reserves was in the economic interests of whites. The reserves met part of the cost of subsistence (or the reproduction cost) of the worker's family, thus enabling the employer to pay him lower wages: "when the migrant-labourer has access to means of subsistence ... then Capital is able to pay the worker below the cost of his reproduction ... since in determining the level of wages necessary for subsistence of the migrant worker and his family, account is taken of the fact that the family is supported to some extent, from the product (in the Reserves) ... it becomes possible to fix wages at the level of subsistence of the industrial worker." (68).

The argument, which is influential and widely quoted, is interesting. However, it is, in my view, mistaken and rests upon a failure to grasp the importance of opportunity cost.

Wolpe's argument appears to get support from the rationalisation of employers on the gold mines (pre-1973) that low black wages were justified because they were merely a supplement to black subsistence earnings. But the mineowners' patently dishonest argument (private white incomes did not result in a downward adjustment of their earnings) does not account for the fact that many blacks were willing to work for the low mining wages. Those who did, were not those who could "afford" to, on the grounds that they had other sources of income. They were those who had no, or very little, other income and no alternative jobs. They therefore had no choice and no bargaining power.

If Wolpe's argument was correct, those blacks with the highest subsistence incomes would work on the mines, being best able to afford the low wages; while those with the lowest subsistence incomes, and the landless, would have to get the high wage jobs in the towns, as they would not be able to work for less. It would moreover follow, that if subsistence incomes were raised, this would not, as one would expect, lead to a rise in wages (to draw out the workers), but to a fall in wages, as workers would be able to work for less. Thus the development of the reserves, far from improving the bargaining power of blacks, by providing them with alternative jobs, would weaken it and lead to lower wages. Presumably, then, if we took land away from blacks this would really strengthen their bargaining power: for wages would need to be raised to compensate for lost subsistence. If furthermore this land was inflicted on white workers, they would need less income and this would lead to a drop in their wages.

The argument is contradicted both by logic and by the fact that SA blacks (partly because they had land, partly because they had alternative jobs) did not come forward to work on the mines. Recruits came mainly from amongst poorer blacks outside SA, who had lower incomes, lower opportunity cost, and therefore less bargaining power. Within SA it was the poorer blacks who went to the mines, not those whose domestic product meant they could afford to work for less.

It is invariably the poorest people who are landed with the worst-paid jobs. Wages are not determined by what people "need" (itself a controversial concept). Wages are determined by the size of the product and the relative strength of workers and employers in securing their share. The disadvantage for blacks is not that they have some land, but that they do not have enough, and that they have not been able to develop it. The possession of this land has strengthened the bargaining power of SA blacks (hence their ability to refuse jobs on the mines and white farms). If they had more land, or its

productivity was increased, their bargaining power would be greater. If they had less land (or have a bad harvest), the converse must apply. It was precisely because they realised this that many employers did not want the development of the reserves.

The inadequacy of the amount of land set aside for blacks should not lead us to conclude that it is a source of weakness and a millstone round their necks. On the contrary, it has increased their bargaining power and given them some element of choice.

I cannot then accept the argument that the existence of the reserves has reduced the bargaining power (or opportunity cost) and led to lower wages for blacks. The question is of importance, not only analytically and theoretically, but also in understanding the economic and political role of these areas, and in devising a strategy for change. A mistaken analysis and a failure to recognise their potential could lead to serious mistakes in devising strategies to increase black bargaining power. A policy which urges the development of black land does not, of course, imply the acceptance of the inequitable land distribution in SA. The two questions are distinct. There ought to be both a redistribution of land and the development of this major resource owned by blacks.

Small-scale versus large-scale farming

This preliminary comparison of black and white farming obviously requires further research and refinement. But even its tentative results must surely bring into question many widely held views about the relative performance of the two groups of farmers, and particularly about black farmers. These orthodox views stem partly from (convenient) stereotypes of black farmers, and partly from an unshakeable belief in the relative efficiency of large-scale farming, and its supposed economies of scale in agricultural production.

This belief is in conflict with the growing body of evidence which shows that in agriculture, unlike industry, output per acre and per unit of capital is often in inverse relation to size. This has been solidly documented in the series of state-wide Farm Management Studies carried out by the Indian Government, and by similar work in Kenya and in Taiwan by T.H. Lee and S. Shen for the Joint Committee on Rural Reconstruction. This evidence has been accepted by the World Bank, which now in part bases its strategy for agricultural development on it. It has also been accepted by the U.S. Agency for International ^{Development} ~~Development~~ which recently acknowledged that it had been a mistake to define farm "viability" so narrowly as to classify the small farmer as "non-viable": for "Recent evidence shows both that per hectare productivity on small farms is often higher than on large farms, and that small farmers have high marginal savings rates, especially when profitable investment opportunities exist". (68)

The evidence indicates that, especially in vegetables, root crops and probably cereals, the small family unit will saturate a given area of land with much more labour than on a large farm. As the farmer and his family have few other uses for their labour, they will, even when their marginal product is low, produce higher levels of output per acre with the same volume of inputs than is possible for the large-scale farmer working with hired labour. Put another way, the labourer will work harder and produce more when he is working for himself and receives the whole product of his labour. In industry this is compensated for by the enormous economies of scale of large-scale production. But this is not the case in production (as distinct from marketing) in agriculture.

Unmechanised agriculture, especially in cereals and legumes, is extremely labour-intensive. As mentioned above, agricultural economists consider that one strong, skilled man, without motorised equipment, will not be able to crop

more than 2 acres of good land on his own. The area will be even less if he has irrigation and other inputs enabling him to farm intensively and take 2 or even 3 crops a year, thus spreading work more evenly and enormously increasing output and earnings. If he has more land than this, he will need to hire labour, or he will have to get machines. In a situation where labour is available and land or capital scarce, the policy must obviously be to go for a labour-intensive strategy. A definite pointer to this is the existence of unemployment. If it exists, then it is wrong and wasteful to install expensive machines, while men are left without work.

In adopting a labour-intensive strategy, it is desirable to do so along small-holder lines, allowing each man to have his own allotment and to be his own boss, rather than working for someone else. This is both more egalitarian and more efficient, for it means (for the reasons given above) that output per unit of land will be higher.

The case for larger-scale, more capital-intensive farming, emerges in a normal "market focus" situation when the level of urban employment makes labour scarce and when the accumulation of capital enables the economical replacement of that labour by machines. It is then sensible to switch to a more capital-intensive strategy. This has been the development path followed by most of the new rich countries. They did not move quickly into a capital-intensive agriculture, except for the U.S., which was always short of labour relative to land, and had more capital to spare. The attempt to switch too early into a capital-intensive agriculture (emulating western countries at very different stages of development) has caused terrible problems of unemployment, and the wasteful use of scarce capital resources, in many developing countries. Most of them are now talking of reversing these disastrous and mistaken policies - but the now entrenched vested interests (of the few big farmers and urban markets) make this difficult. So it is important to adopt the right strategy straight away in planning black agricultural development.

Once the rural economy begins to move into a labour-scarce situation, it is not difficult to enlarge holdings and to help farmers (via credit etc.) to acquire the equipment to farm it.

Large-scale farming also makes heavy demands on technical and managerial skills. The progression from small to large-scale farms gives farmers time to learn the necessary skills, both on the job and from extension officers.

Even then, however, it remains true, that small farms still have higher output per acre. In Ludhiana in India (where farmers now have irrigation,

fertilisers, new seeds, etc. but not machines) output per acre is higher than in Kansas. In Kansas, however, output per worker is much higher. Each society is, therefore, farming efficiently: Ludhiana economizing on scarce Land and Capital; Kansas economizing on scarce Labour.

Kansas farmers produce larger food surpluses, not because of higher yields, but because they have far fewer mouths to feed. However, even with lower yields, each individual large-scale operator will obviously produce a larger total surplus for the market than the small-holder, though the cost of food from the latter will be lower (reflecting his lower production costs). However, with cooperative marketing, the surpluses of small farmers can be effectively mobilised and marketed, without losing the advantages of low-cost production. But the extensive marketing system in South Africa would obviously have to be adapted and /or supplemented to take account of their needs as well as those of the large-scale farmers, to which it is presently geared.

Small-scale, labour-intensive, non-mechanised farming must not be confused with old-fashioned, pre-scientific farming.⁽⁶⁹⁾ On the contrary, it is essential for farmers to be given the necessary inputs - fertilisers, new seeds and above all, improved water supply, if they are to maximise output. These inputs will enable them to push up their yields and incomes enormously. Only when they ~~get~~^{have} these, will it be possible to make a proper comparison between the performance of small-scale, labour-intensive and large-scale, capital-intensive farming in South Africa.

There was a good example, in a recent Farmers Weekly (26 May 1976) of how scientific and lucrative intensive, small-scale farming can be. A white "home gardener" (and there is no reason why all large-scale farmers should be white and all small-scale black. Black pastoralists, in particular, might need to be large-scale) cultivated a garden of less than 1,000 sq. metres (about $\frac{1}{4}$ of an acre). "In one summer season he harvested almost R1,000's worth of vegetables.The subsequent winter crop did not fall much short of this yield and all the signs are there that the present summer season will be even more successful". This farmer followed a skilful and well-established procedure. He analysed his soil with one of the new, simple soil-testing kits. On the basis of this analysis, he frequently applied fertilisers specially selected to supplement the deficiencies of the soil. No mention is made in the report of irrigation and seeds, but one assumes that these were amply and skilfully applied.

These scientific methods are being increasingly experimented with by small-scale farmers throughout the (developed and developing) world. With help from extension officers, the radio etc., they are learning on-the-job to farm scientifically. When given the right economic incentives - credit and marketing facilities, and improved water supply (which reduces the risk of crop failure) they are eager to try the new methods and to push up their output and incomes.

Another recent Farmers Weekly (30 June, 1976) contained an example of how not to develop South African agriculture. Vegetable farmers, it reported, facing tremendous "shortage and high cost of labour" were abandoning vegetable production in favour of crops such as wheat, which can be more easily mechanized. However, research and money is now being expended in the hope of mechanising the production of some vegetables, such as green peas.

But large-scale farmers, instead of absorbing scarce capital and research resources, should switch into crops which they can produce more easily and efficiently. Vegetable production should be taken over by small-scale (black or white) producers. This would encourage the emergence in South Africa of two complementary agricultures, each concentrating on what it can produce most efficiently and economically.

Recent policy statements by the South African Agricultural Union on the need to encourage and help black farmers, as well as the action of producer groups such as the SA Sugar Association⁽⁷⁰⁾ in extending credit and technical aid to them, are encouraging signs of the recognition by some powerful white farmers of the need to let black farmers have a share of the growing market for agricultural products.

The development strategy selected at any particular time must be determined by the availability and relative price of the factors of production - Land, Labour and Capital. Above all, policy must be geared to the labour-supply. If recent estimates of very high and rising levels of unemployment are correct, this strengthens the case for a labour-intensive strategy in the large undeveloped sectors of SA agriculture, and also for the general slowdown of mechanisation in the rest of the economy.

Many well-intentioned people want continued mechanisation because, while it reduces jobs, it also increases productivity[?]wages. But it is foolhardy to duck the urgent dilemma raised by the relationship between mechanisation and unemployment in the vain hope that "some other way" will be found of coping with unemployment. Once the machines are in, future SA governments, of whatever political hue, will be stuck with them (and with a large labour aristocracy and high unemployment).

The need for jobs is then the main argument for a labour-intensive strategy. But there is another argument. This strategy offers many blacks the quickest and most effective way of developing, under their own auspices, the one major resource possessed by ^{them} blacks in SA. There are surely powerful economic and political reasons in favour of this.

Conclusions

It is only possible to speculate about the extent to which the policies pursued affected the pattern of agricultural development in South Africa. But it seems likely that, in their absence, there would have been more black and less white agriculture. Cheap capital, cheap labour (and for some decades high protected food prices) kept inefficient white farmers, often on unsuitable agricultural land, in business. It was recently acknowledged, by the du Plessis Commission of Enquiry into Agriculture, that at least a third of white farmers were, after decades of subsidies, "uneconomic" and should be encouraged to leave farming.⁷¹

The reservation of such a large part of the country for the relatively small white group, and the prohibition of even the leasing of land to blacks, made it inevitable that South African agriculture would develop along large-scale lines. It also made it inevitable that white farmers, opening up much new land, would press for huge quantities of both Capital⁹ and Labour and would, nevertheless, feel "starved" of both. It reduced the possibility, within the "white" areas of the development of a low-cost, intensive small-scale sector. (There seems in addition to have been a strong policy bias against this. This is reflected in the 1970 Act on the Sub-Division of Agricultural Land, which prohibited farms of less than 25 morgen (53 acres) in size. Tomlinson, incidentally, claimed the credit for this extraordinary piece of legislation.⁷²)

This pattern of development no doubt contributed to the fact that, for decades, SA food prices were above international levels and agriculture required heavy tariff protection. The fact that SA has succeeded in satisfying its food requirements, and that internal prices are currently below international price levels, does not vindicate the path of development taken. In judging its performance, account must be taken of the cost - very high in both financial and human terms - and of the likely results of alternative strategies of development. It seems likely that the human and financial costs of the alternative strategy (allowⁱⁿ the emergence of competing black farmers) would have been much lower and that it would have produced cheaper food for the town and less poverty in the rural areas.

The inefficiency and inequity of this path of the over-development of white, and the under-development of black, agriculture does not however justify the conclusion that whites were inferior or bad farmers. One would not expect a large-scale agriculture, wastefully over-capitalised and based upon a repressive system of cheap labour to produce good results - whether in the Soviet Union or in South Africa.

We are now, however, in a situation in which a large-scale agricultural sector has been built up. It represents a considerable accumulation not only of scarce capital, but also of valuable and equally scarce technical and managerial skills. It must also continue, for the foreseeable future, to produce much of the food surplus for the urban areas. A new policy for agriculture should be based upon combining the efficient, viable (i.e. now able to exist without subsidised Capital and Labour) segments of this large-scale sector, with the development of an intensive small-scale sector. Resources - long over concentrated on the developed large-scale sector - should be switched to the undeveloped, small-scale sector. Capital, skill and manpower should be pumped in, and more land be made available for it.

Many South African whites, observing the undeveloped state of black agriculture today, and confusing cause with effect, react with frank disbelief to the suggestion that blacks could be good farmers. The elaborate and systematic steps (both economic and political) to discourage them from becoming producers rather than labourers should surely give them pause for thought.⁷³ They should also reflect on the growing body of historical evidence which is providing examples of black producers in Southern Africa, before they were hit by the Land Act, loaded marketing systems etc., responding to the increasing market opportunities for food production.⁷⁴ There are conversely many examples, some of them documented by official bodies like the du Plessis Commission, of unsuccessful farming by whites.

It does not, however, necessarily follow from the fact that market forces were rigged, and overt political measures used, to discourage them from farming, that blacks would otherwise have been successful farmers. Great upheavals took place in SA in the early decades of the century - population growth, wars, natural disasters (drought, rinderpest), economic crises with wild fluctuations in food prices, the changeover from a shifting to a settled agriculture, the growth of alternative jobs in the towns. These changes made it likely that many blacks would fail in agriculture and/or prefer to leave their land for the towns - as did many whites.

But it must be recognised - and it often is not - that ^{over} ~~above~~ and above this, there were major political actions, and the large-scale manipulation of economic incentives, which loaded the scales against black farmers. These measures (as was intended) reduced their numbers. They also reduced the chances of success, and the incentives to innovate (and the number of entrepreneurial family heads around to do so) for those who remained on the land. To describe the outcome as the result of the "natural ^{operation} play of market forces" is to leave so much out of account as to give a distorted and blinkered picture. To claim furthermore that the outcome "proves" the lack, or inferior ability, of black farmers is to add insult to injury.

The myth that blacks are hopeless farmers has been a convenient one for their white competitors and employers (who held the political power). The myth predated Tomlinson, but received its final embodiment, buoyed up by a battery of largely unfounded statistical "findings", in his massive and "authoritative" report.

The aim of this paper has been to question the certainties - the facts and statistics - which provide the apparently solid and authoritative basis for this myth. It is not possible as yet, given our abysmal ignorance about black farming, to provide alternative answers. However the doubts that remain may prove a more fruitful starting-point for research ^{and} for the intellectually and politically difficult task of framing a new agricultural policy for South Africa. (75)

FOOTNOTES

- * I am grateful to Michael Lipton for valuable discussions on agricultural economics and for his comments on this draft paper, which has been greatly influenced by his own work, in particular by, Why poor people stay poor: Urban bias and world development. (Temple Smith, 1976); The fear of knowledge: High-yielding cereals in poor countries (forthcoming); and "The theory of the Optimising Peasant", Journal of Development Studies, April, 1968.
1. This unfavourable assessment has been shared by liberals and conservatives alike. Among the few who have written seriously about black agriculture are: D.H. Houghton, Some Economic Problems of the Bantu in South Africa (South African Institute of Race Relations, 1958) and The South African Economy (1967); S.S. Brand, The Contributions of Agriculture to the Economic Development of South Africa since 1910 (Ph.D. thesis, Pretoria University, 1969); G. Rutman, "The Transkei: An experiment in Economic Separation", South African Journal of Economics (SAJE), 1968, Vol. 36. (henceforth Rutman I), and "A test of the 'uneconomic culture' thesis" in Journal of Development Studies, July 1973 (henceforth Rutman II), and A reconsideration of the problem of capital formation in underdeveloped areas: A case-study of the Transkei. (Round paper for conference at Jan Smuts' House, Johannesburg, 1974. (Henceforth Rutman III); J.A. Lombard and P.J. van der Merve, "Central Problems of the Economic development of the Bantu homelands", Finance and Trade Review, June, 1972; M. Horrell, The African Homelands of South Africa, (1973), and in various other publications of the South African Institute of Race Relations (SAIRR); G. Maasdorp, Economic Development Strategy in the African Homelands (SAIRR, 1974); See also regular publications of Sabra and The Bureau of Economic Research in Pretoria.
 2. S. van der Horst, Native Labour in South Africa (1971), p. 305.
 3. Summary of the Report of the Commission for the Socio-Economic Development of the Bantu Areas within the Union of South Africa. U.G. 61/1955 (Henceforth Tomlinson Report).
 4. E. Johnson in discussion proceedings at the 1973 Summit Symposium on World-wide Maize improvement, Mexico City, 1974.
 5. FAO Production Yearbook (1965), p 49.
 6. Report of the Department of Bantu Administration and Development 1971, KP 41/1973, p. 32.

7. M. Hunter, Reaction to Conquest (1964), p. 84 and 86.
8. In fact, consumption at this early stage, before the grain has fully ripened, will reduce potential output. It would be interesting to discover why this apparently uneconomical procedure is adopted. Michael Lipton suggests the following hypotheses as a starting-point for research (which I hope to undertake in the field). (a) A severe shortage of manpower to help with the harvest (held, according to Hunter, in May and June). This practice would spread harvesting over a longer period. (b) High wastage in storage. (c) Nutritional functions: Ripe maize is deficient in Vitamin C. Does "green maize" contain this vitamin?
9. I was told, by a former official of the Department of Agriculture, that the occasional estimates in the Department's Agricultural Censuses were based on marketed produce of blacks. If true, this would constitute an extremely gross underestimate of output.
10. G. Myrdal, Asian Drama, 1968.
11. J. Daniel, "The Swazi Rural Economy", Experiment in Swaziland, edited by J.F. Holleman (1964), p. 215.
12. 1960 Basutoland Agricultural Census, part 4, Ch. 5, by C.M.H. Morojele.
13. Report on Agricultural and Pastoral Production 1959-60, Census No. 34. Vol. No. 2.
14. Tomlinson Report, p. 77.
15. M. Miracle found (Maize in Tropical Africa, 1967) that storage loss is normally small - ^{less than} ~~about~~ 5%. Grinding loss is not really a "loss". The bran, waste, etc., can be eaten by animals and is often eaten by poor people.
16. Rutman III, p. 5, Professor Rutman's articles are a valuable contribution to the study of black agriculture. These criticisms are directed solely at his reliance on the Tomlinson assumptions and statistics.
17. Rutman III, ibid.
18. Transkei: Economic Review, (Benbo, 1975) p. 43.
19. Agricultural and Forestry Production, (revised Benbo paper, 1974), Table 1.2.3.
20. Brand, p. 213.

21. I have not yet established how much of the R23m was attributable to crop, as distinct from live-stock production. The discussion on p. 85 of the Tomlinson Report suggests 40 per cent would be a reasonable estimate. 40 per cent of R23 = R9.2m. If this equals 60 per cent of true output, then true output is R15.3 m. So an extra R6.1 m. should be added to the total. I am assuming that Tomlinson's estimates of livestock output (which I have not examined) were reasonable.
22. This applies only to production by those classified as tenants. It does not include production by farm labourers on arable plots set aside for them to farm on their own account.
23. Michael Lipton, The fear of Knowledge. Scientists are currently developing a new maize hybrid without the zein. Meanwhile the solution is to eat maize with beans. Unfortunately, as Hunter records (p. 75), agricultural extension officers have for years tried to discourage blacks from growing beans with their maize! This illustrates the need for agriculturists to work together with nutritionists, especially when advising subsistence farmers who eat what they grow.
24. Agricultural Census 1971/2
25. South African House of Assembly Debates, 14 February, 1975, Vol. 2, Col. 108.
26. Horrell, p. 39.
27. South African Statistics 1974, 9.5
28. Calculated from Tomlinson Report, p. 115, Table 1.
29. South Africa 1974, Official Year Book, p. 670.
30. Data covering 1954-64 from Annual Reports of the Department of Agriculture in the Transkei, cited Rutman I, p. 29; and data on the Ciskei and Transkei from J. Maree and P.J. de Vos, Underemployment, Poverty and Migrant Labour (SAIRR, 1975) p. 27.
31. South African Statistics, 1972.
32. Basic statistics on black farming should include details of: (1) the number and size of holdings (i.e., the arable allotment). Each family is supposed to be given an arable allotment, a residential site, and free access to the communal grazing. (2) An indication of the degree to which the allotment is actually farmed, viz, the proportion of the area under cultivation, and the cropping pattern, and the proportion of total family

earnings derived from it. (3) ^{The area for} Communal grazing, the number of families with grazing rights and the number of animals grazed. (4) The number of people with residential plots only. (5) Do the latter (and any others?) also have access to communal grazing (i.e., in addition to those with arable plots). (6) What is the source of income of categories 4 and 5? Do they work for other farmers (i.e., are they landless labourers); do they work in the urban cities (i.e., really urban commuters).

33. Cited in R. Horwitz, The Political Economy of South Africa, (1967), p. 136.
34. Ibid
35. South African Statistics 1974, 19. 7 and 8.

37. Speech by Gordon Waddell, House of Assembly Debates, 16 May 1975, Vol. 14, Col. 6247 ff.
38. Calculated from Brand, p. 158.
39. Tomlinson Report, p. 35.
40. House of Assembly Debates, 25 March, 1975, vol. 8, col. 595.
41. Van der Horst, p. 299.
42. Rutnan II. This calculation, however, was based in part on Tomlinson's output figures for crop production; it therefore requires revision.
43. Merle Lipton. White Farming: a case-study of change in South Africa, (SAIPR, 1974), p. 5.
44. SA Statistics 1974. 9.30 - 31.
45. Quoted M. Ballinger, From Union to Apartheid (1967) p. 67
46. SA Statistics 1974, 9.34.
47. Farmers Weekly, 30 June 1976.
48. South Africa 1974, p. 691 and Survey of Race Relations in South Africa, 1975. p. 143.
49. Tomlinson Report (p. 121) recorded that: "in the Transvaal interest and enthusiasm have reached such a pitch that some schemes have come into being mainly as a result of the keenness of the local Bantu who proffered their labour free for the purposeApparently the chief reason for the lack of interest in irrigation in the Transkei and Ciskei must be sought in the fact that the schemes were not properly planned".

50. G. Hart, African Entrepreneurship (1972) p. 105.
51. Merle Lipton, "The South African Census and the Bantustan Policy", World Today, June, 1962.
52. People were classified where they happened to be on census day. Merle Lipton, op. cit., p. 259.
53. W.A. Lewis, Economic Development with unlimited Supplies of Labour (1954).
54. Calculated from Wilson, Goldmines, p. 70 and 158.
55. Calculated from Tomlinson Report, p. 85-6.
56. See Van der Horst (p. 294) on the exodus that took place from white farms when an attempt was made to remove these rights from tenants (in the Leydenburg district of the Transvaal) in 1937.
57. White Farming.
58. Discussed more fully in Merle Lipton, British Investment in South Africa: Is Constructive Engagement possible?
59. Van der Horst, p. 291. It is currently fashionable to assert that SA liberal academics have failed to appreciate the connection between the Land Act and the pressures to increase the supply of labour. The accusation is puzzling, because they have on the contrary clearly grasped and documented it. For example, Van der Horst headlines her discussion of the Land Acts, and restrictions on black tenancy, "Official attempts to increase the supply of Native Labour". Monica Wilson is well-known for her view that: "The argument that land should be limited, so that African men might not 'live in idleness' but go out to work for Europeans has been repeated again and again in the history of Southern Africa... Peasant production was 'idleness' to the white man in need of labour" (Oxford History of SA, Vol. II, p. 65) See also F. Wilson, "the contemporary evidence suggests that [the Land Act was] far more concerned with the problem of labour supply than with anything else ... The political pressure ... come, almost entirely it seems, from those who wished to ensure a cheap supply of labour..." (op. cit. p. 127 and 129); and Horwitz: "prohibiting the sale of land to the Africans was ... aimed at restricting land utilisation by the Africans so as to increase labour utilisation of the Africans" (p. 47).
60. Van der Horst, p. 149.
61. Matching employment opportunities and expectations, The ILO Report on Ceylon, 1971. (henceforth The Ceylon Report).
62. Among those who have discussed the Lewis model are O. Horwood, "Economic Balance,

- Dualism and Growth, with applications for the South African Economy", SAJE September, 1965; Brand, op. cit.; D. Hindsen, Economic Dualism and Labour Reallocation in South Africa, 1917-70. (M.A. Thesis, Rhodes University, 1974); and G. Arrighi in his seminal paper "Labour Supplies in Historical Perspective," Journal of Development Studies, April 1970.
63. Horwood, op. cit.; Brand, op. cit., and M.C.O. Dowd in South Africa: economic growth and political change, edited by A. Leftwich (1974).
64. H. Wolpe, "Capitalism and cheap labour power in South Africa: from segregation to apartheid". Economy and Society, Vol. 4, 1972.
65. On the ideological conflicts between Marxists and neo-classicals, see Ch. 4, of Michael Lipton, Why poor people stay poor.
66. Wolpe, op. cit.
67. D.H. Houghton, Some Economic Problems of the Bantu in South Africa, and F. Wilson, Goldmines, p. 147.
68. U.S. Dept. of State, Agency for International Development. Circular on Guidelines on Project Aid and ^{Program} Planning for small farmer credit. ^{Circular no. 418 of} (1974).
69. On scientific, small-scale farming, see The Ceylon Report, Technical Papers, p. 99. ff.
70. SAAU policy statement, The Star, August, 1976. The SA Sugar Association's programme is set out in the paper by Mr. Schaffer. I have some criticisms of this policy, which will be discussed at the Conference.
71. White Farming.
72. Agrekon, January, 1973. The question of size in white farming would be an interesting subject for research.
73. ^{further historical} Against For ^{against} (examples of white pressure/production by black farmers, see Van der Horst, p. 310-15; P. Spray, A tentative Economic History of Lesotho from 1830. (IDS mimeo, 1976); and W. Beinart, Peasant Production, Underdevelopment and Stratification: Pondoland 1880 - 1930. (U.C.T. mimeo, 1974).
74. For examples of the positive response by black farmers to market opportunities, see G. Arrighi, op. cit. on Rhodesia; and P. Spray, op. cit., on Lesotho. On the Transkei and Ciskei, see M. Wilson, op. cit., W. Beinart, op. cit., and C. Bundy, "The Emergency and Decline of a South African Peasantry", African Affairs, October 1972. On Natal, see H. Slater, The Changing Pattern of Economic relationships in Rural Natal: 1838-1914. (University of Sussex, mimeo).
75. I had hoped to put forward in this paper some preliminary suggestions for

the reform of agriculture in South Africa, and also to discuss some of the social, institutional and cultural problems which are widely believed to constitute a serious obstacle to black farming. Time and space do not allow this, but I hope the chance will arise to produce work on this in the near future.

TWO AGRICULTURES by Merle Lipton.

The following addendum was added when the paper was delivered on 22 September 1976.

CONSUMPTION ESTIMATES (p.6).

Since this paper was written last month, I have done further work on the consumption estimates. These have been compared with the energy and protein requirements recommended by an expert working group of the Food and Agriculture Organisation (FAO) set out in a standard work, Energy and Protein Requirements(1973).

The food requirements set out in this report are not for a minimum, but for a desirable diet, which will keep an active person healthy and well-fed.

On the basis of this comparison, I wish to add the following points to the Section on Consumption.

- 1) The FAO Report recommends that the 'reference' man (aged 20-39, working an 8-hour day throughout the year) should have 3 000 calories per day. (Making allowances for climate and body size, the FAO adjusted this, in another report to 2 800 calories for the reference man in Lesotho, who would probably be comparable to South African men). Of this, 2 800 - 3 000 calories, it is estimated that 2 000 should come from grain, (rice, maize or wheat etc.);
- 2) The consumption estimates in my paper allow the 'reference' man 1 lb. 4 ozs. to 1 lb. 7 ozs. of maize per day. 100 grams of maize have 356 calories, ^{1/} so this equals 2 000 to 2 300 calories per day. The estimate (of 2½ bags of 500 lbs. per bag) therefore allows enough maize for the recommended FAO diet.
- 3) The remaining 800 - 1 000 calories must be taken in the form of food, such as legumes, vegetables, fruit or, if they can be afforded, more expensive foods such as meat and milk. The requirements here are not very high. Nutritionists have found (as discussed on p.9), that we need less protein than was once thought. But a diet based on maize must be supplemented by even small amounts of these foods.

The consumption of extra maize will not provide the necessary nutrients.

- 4) The FAO recommendations lead me, however, to modify the food estimates for children, whose calorie requirements rise faster after the age of 5, than I allowed for in calculating the number of adult units which can be taken to represent a family. For a fairly typical Bantustan family with the able-bodied men absent, the number of adult units should be increased from 3 to 3.4. This family would then require 8½ instead of 7½, bags of maize. For a family with 2 able-bodied men (father and teenage son) the number of adult units should be increased from 3 to 4. Their maize requirement would be 10 bags annually. Although such a family would, according to statistics on the sex and age composition of the Bantustans, not be typical, it would be safer to base ideal consumption requirements on their needs. I shall therefore revise the calculations on consumption and imports. (p.6-7), accordingly.

^{1/} On this see I Palmer, Food Production and the New Technology (UN Research Institute for Social Development, Geneva 1972). and M. Mirade, Maize in Tropical Africa (p. 10. Table 1.1).