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Inequalities in Agricultural Earnings

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The average gross income per gainfully occupied person in the agricultural sector has been estimated at R464 in 1970, about one third of the figure of R1 441 per head for all sectors. (2). In the predominently White sector of farming the estimated figure was R760 per head, which is less than half the income per head in any other sector of the economy apart from agriculture. A rough estimate for Bantu homeland agriculture in the same year was R102 per gainfully occupied worker.

These figures show that besides inequalities within the agricultural sector there are considerable differences in earnings between the farming sector and the other sectors of the economy. Incomes per head in farming are however increasing, for the numbers of White farmers declined from 106 000 in 1960 to 82 000 in 1973, and of regular farm workers from 873 000 in 1962 to 727 000 in 1973. Moreover, the volume of agricultural production is increasing at a faster rate than the population, at 3,4 percent per annum against a population increase of 2,8 percent per annum. Population is expected to double by the turn of the century.

TABLE 1 : Wages in cash and kind on South African farms, 1962 and 1973 and increases in real wages.

	Wages in cash and in kind		Real wage, 1973, compared with 1962=100*	Percent compound increase per annum, 1962 to 1973
	1962	1973		
Whites	1 265	3 062	163,2	4,5
Coloureds	213	387	120,7	1,7
Asians	215	713	195,0	6,5
Bantu	110	217	126,8	2,2

* Wages deflated by retail price index, 1958/59 to 1960/61=100

Agricultural census reports give wages in cash and in kind but the figures represent neither the full real wage of workers nor the full incomes. Payments in kind include items such as food, clothing and tobacco, but they do not include housing nor the rights to cropping or grazing land, nor the value of the products that are realised from the land such as stock or any crops that are sold or consumed. There is no reason to assume that the additional real income earned by farm labour forms a large part of the total earnings, although it must be recognised as part of it. Average wages of Whites in farming were nearly 15 times greater than the earnings of Bantu workers.

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From 1962 to 1973 the real wages of White workers are estimated to have increased at 4,5 percent per annum, of Asian workers at 6,5 percent per annum but of Coloureds and Bantu at relatively slow rates, 1,7 percent and 2,2 percent per annum respectively. Whites are mostly employed as managers and foremen, are relatively well educated, and because of opportunities to earn good incomes in urban occupations are today becoming scarce in farming. The indications are that, irrespective of race, managerial skill is in short supply.

The greater part of the rising output may be attributed to the large-scale commercial farms as may be seen in Table 2. In 1971 a 10 percent sample survey of farms was done in 5 bioclimatic regions in Natal.(3). The total number of farms in the sample was 347, and for each group various factors were sorted into quantiles by thirds. The upper third of farmers in the 5 groups, with the greater incomes, earned 59 to 70 percent of the total incomes of all farmers, and the lower third 10 to 15 percent of all income. Land area is distributed more unevenly than gross income, for the upper third of farmers occupies 60 to 73 percent of the total land area and the lower third from 6 to 12 percent of the area.

TABLE 2: Percentage distribution of gross income and of land area of 347 farms ranked accordingly in Natal in 1971.

Bioclimatic Region	No of farms	Gross farm income		Land area		
		Upper third	Middle third	Upper third	Middle third	Lower third
Coastal Hinterland	27	70	19	11	70	24	6
Mist Belt	52	59	27	14	60	28	12
Highland Submontane	86	63	27	10	72	20	8
Upland Moist	90	61	27	12	70	20	10
Upland Dry	92	66	23	10	73	19	8
Total	347						

The production of the large output farms is important in the economy, for without it people in the towns would be extremely short of food.

TABLE 3: Average net farm income per farm with farms sorted according to gross income and area per farm, 347 Natal farms in 1971 (R1 000)

Bioclimatic Region	Gross farm income			Land area		
	Upper third	Middle third	lower third	Upper third	Middle third	Lower third
Coastal Hinterland	25,9	1,4	1,3	10,3	7,7	10,7
Mist Belt	17,0	4,7	0,12	12,4	6,4	3,2
Highland Submontane	16,3	6,0	-0,4	13,4	5,2	3,4
Upland Moist	17,3	6,0	1,4	12,2	7,3	5,3
Upland Dry	13,3	4,8	1,1	13,8	-1,6	2,8

Table 3 shows how net income is distributed between groups of farms when farms

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are sorted into thirds according to gross farm income and total land area. Average net incomes on the large output farms range from R16 000 per farm to R26 000 per farm, but for the low output farms net incomes range from R-400 to R1400 per farm. By any criterion of White earnings in South Africa the large output farms earn large incomes and the low output farms extremely low incomes. Rural poverty still exists amongst White farmers.

When farms are sorted according to area per farm, the large farms earn average incomes ranging from R10 000 to R14 000 per farm and the small farms incomes ranging roughly from R3 000 to nearly R11 000 per farm. Output per farm is thus a greater determinant of net income than area. The larger farms area-wise operate more extensively, earning lower net incomes per hectare than the smaller farms which are farmed intensively and which produce more per hectare. Large farms may have more extensive grazing land and little cropping land and small farms may have a high proportion of cropping land part or all of which may be irrigated. It is normally possible, however, to farm most farms more intensively. Some farms are undoubtedly too large for the occupiers in that land resources are not being used and others may be too small to bring their owners satisfactory incomes.

If net farm income per R100 of capital invested in the farm is taken as a measure of efficiency of resource use on the farm, Table 4 shows that small and large farms, according to area, tend to earn equal net returns on total capital. This is with the exception of the Upland Moist bioclimatic region where the smaller farms clearly show higher net returns on capital., around 8 percent and in the Coastal hinterland where the small number of farms averages 15,4 percent.

TABLE 4: Average net farm income per R100 capital with farms sorted according to area and gross income per farm, 347 Natal farms in 1971.

Bioclimatic Region	Land area			Gross farm income		
	Upper third	Middle third	Lower third	Upper third	Middle third	Lower third
Coastal Hinterland	4,6	4,9	15,4	13,1	2,2	1,8
Mist Belt	5,5	5,3	5,5	9,6	7,2	0,15
Highland Submontane	4,8	4,1	5,4	7,9	6,8	-0,5
Upland Moist	5,2	8,0	8,1	10,6	7,1	3,2
Upland Dry	4,7	7,0	5,9	8,4	6,9	1,8

Net farm income per R100 of capital is clearly better on the high output farms ranging from 8 to 13 per cent in the 5 bioclimatic regions, but on the low output farms from less than zero in the Highland submontane region to 3,2 percent in the Upland moist region. This confirms the conclusion reached above that output per farm is of more importance than area in making an efficient use of farm resources.

What is a poor farmer to do in order to raise his income? His decision is partly dependent on his age and his family responsibilities. A middle-aged farmer with a low level of education, say Standard 6, on a small farm may be well advised to stay on his farm if alternative well-paid occupations are not open to him. If the farm is able to supply his subsistence needs,

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his need for cash may not be high, but his cash needs again depend on the size of his family. If he can stay on the farm as well as educate his children up to the compulsory age of 16, farming is likely to offer him more security than an unskilled position in town.

Farmers on small farms may in certain circumstances acquire more land to increase their scales of operation and once having done this, extension advice may enable them to improve their incomes considerably.

Observations made on the decline in the numbers of farms point to the process taking place by fewer younger farmers replacing older farmers who stay on in farming until they cannot carry on. Farmer's sons tend to be better educated than their fathers and normally a son is able to earn more in an urban occupation than he would on a small-paying farm. While it may well be desirable for the numbers of farmers to decline, it may be less desirable for established farmers to leave the land, because of the security that the land gives them.

Through better techniques of farming and better management it is possible to effect marked increases in the earning power of individual farms. For example, study groups of farmers in the Kokstad and Cedarville areas of East Griqualand doubled their average net incomes in real terms over a period of 10 years from R5 000 to R10 000 at 1969 prices. These farmers kept accounts which were analysed by the Department of Agricultural Economics of the University of Natal, and the account analyses were followed up by discussion meetings and intensive advice by the local extension officer.

Nearly all facets of farm husbandry were tackled, and the improved incomes came from higher livestock and cropping yields and a better choice of forage crops. Information was recorded on wage rates but little attention was devoted either to labour efficiency or to an improvement in wage rates.

Were the benefits of the higher net farm earnings being passed on to farm labour ? Records of farm wage rates have been kept by all study groups. Farmers record the total wages paid to all regular labour, consisting of cash, rations and other items that are bought, plus products from the farm such as milk and slaughter stock. An allowance is made for the interest on the value of cropping land and land for the kraal site. Grazing rights are also valued as well as any assistance that the farmers may give with crop production such as fertilizer and tractor time. The wage does not include what the labourer himself realises from the sale or consumption of his own livestock or livestock products or crops. In order to arrive at a labour unit one woman and one boy or girl is equated to half a man, an arbitrary distinction which has probably undervalued the work of many adult women.

Table 5 shows the regression relationships between the return on capital as expressed by net farm income per R100 of capital invested, an index of financial success or farm efficiency, and real farm wage rates at approximately 1960 prices. A simple correlation coefficient of 1,00, negative or positive, shows an exact relationship between two variables, and a coefficient of zero no relationship. A total of 313 farm records was examined of which 151 were from East Griqualand, 96 from Ixopo and 66 from the Natal Midlands. If all records are taken together or

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subdivided regionally the correlation coefficient in each case is almost zero, and the regression line if fitted to the data lies all but on the horizontal. The standard errors of the wage rates are smaller than the standard errors of the average return on capital.

TABLE 5: Regression equations showing relationships between net farm income per R100 capital invested and monthly wage rate per labour unit, 313 farm records in Natal Region, 1968/69 to 1974/75. Wage rates at 1958/59 to 1960/61 prices. Standard errors are given in brackets.

Area	No of records	Correlation coefficient	Average farm income per R100 capital (X)	Average real wage rate at 1960 prices (Y)	Regression equation
All records	313	-0,032	9,3 (± 0,48)	13,2 (± 0,36)	Y=13,431-0,021X
East Griqualand	151	-0,011	9,1 (± 0,44)	13,5 (± 0,29)	Y=13,586-0,008X
Ixopo	96	-0,103	11,5 (± 0,96)	12,3 (± 0,42)	Y=12,807-0,046X
Midlands	66	0,097	6,4 (± 1,02)	14,0 (± 0,89)	Y=13,458-0,085X

Why does this non-relationship prevail? Between farms, wage rates tend to approximate the mean but returns on capital range from negative to high figures. If a farmer has had a bad season and suffers a loss, the wages he pays remain the same, and labour does not share the losses. Labour also does not share the high gains that farmers may realise because of superior management or fortuitously good seasons.

A large component of the farm capital investment is the value of the land, and in the same way that wage rates tend to be constant between farms, land values approach the market value for farm land in particular districts. Superior earnings that result from superior management are not reflected in land values. The relative constancy of land values between farms in part explains the lack of correlation between the net returns on capital and the wage rates. Moreover, every farm has its necessary complement of buildings and other improvements, machinery and livestock. These relatively fixed investments must be productively and efficiently used if management is to realise satisfactory returns upon them, and the farmer pays the market price for them in the same way that he pays the market price for labour. Higher net returns become largely a function of management and entrepreneurship associated with the application of technical and scientific knowledge.

If wages are low in relation to net farm income where does the answer lie in raising them? To start, let us examine how farmers use their resources in relation to their net earnings. One means of doing so is by using cross-section production functions. It is possible to estimate the marginal productivity of resources from a sample of farm records at the average level of output of the sample. The Cobb-Douglas or logarithmic function is a useful device for measuring the marginal returns on resources, because the function permits diminishing returns to take place.

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Table 6 gives the marginal value products of resources used on dairy farms in East Griqualand and the Natal Midlands whose accounts were analysed over a four year period from 1958 to 1971. This is one of a number of studies done in South Africa over the last 20 years, and the figures are given by way of illustration. The marginal value product of land was not determined in this instance.

TABLE 6: Average marginal value products per R100 of input of selected inputs on dairy farms in the Natal Region, 1968 to 1971 (R)

Area	No of records	Crop variable expenses	Livestock variable expenses	Machinery	Labour	Fixed improvements
East Griqualand	59	124	150	-57	172	20
		(t=1,45)	(t=2,27)	(t=0,76)	(t=2,44)	(t=0,41)
Natal Midlands	116	201	117	19	200	71
		(t=4,14)	(t=5,05)	(t=0,40)	(t=3,24)	(t=2,36)

Each of the coefficients has a meaning, if the farming situation is known in each area. A coefficient greater than 100 means that farmers should be spending more on a particular factor of production, while if it is less than 100 less should be spent. Crop and livestock variable expenses have coefficients greater than 100, and these are statistically significant as shown by the t values. Crop variable expenses, mainly fertilizer, are higher in the Natal Midlands than in East Griqualand, because growing conditions for crops and the opportunities to grow cash crops are better in the Midlands. The livestock variable coefficient, mainly purchased feed, is higher in East Griqualand than in the Midlands, which seems to indicate that East Griqualand farmers are feeding less than they should, whereas Midlands farmers, with higher milk yields per cow, are feeding at higher levels. As a result of diminishing returns the marginal value product on purchased feed is lower.

Machinery and fixed improvement expenses have lower coefficients which, with the exception of the Natal Midlands, are not statistically significant. These are fixed or overhead costs that do not contribute directly to farm income and in the case of farm machinery may indicate that farmers have tended to overspend on machines.

In both cases the marginal value products of labour expenditures are high and this shows that farmers may spend more on labour, either by increasing the quantity of labour or by raising wages.

It is possible to generalize from the various cross-section production function studies.(2). Most studies show a low marginal product on land, particularly grazing land, although the marginal returns on cropping land are higher because such land is scarce in South Africa. Grazing livestock shows high marginal productivity and this means that farms tend to be

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understocked. Capital inputs manifest high marginal productivities, particularly machinery and fertilizer on cropping farms.

With the exception of a plantation type of farming such as sugarcane where large quantities of labour are used and where the coefficient of marginal productivity has been below the wage rate, labour in most farming areas has shown a marginal productivity in excess of the wage rate.

The greater portion of farm labour in South Africa in the White farming area lives on the farms with their families. In many cases they have grazing and cropping rights. This extra security they have probably explains in part the high marginal productivity of labour, and the cost to the farmer in wages does not measure this factor. In order to lower the marginal productivity more labour should be employed or wages should be increased.

The relatively low marginal productivity of agricultural land is borne out in the trends in land values which in real terms from 1960 to 1973 increased at 3,7 percent per annum.(2). Over the same period the average real net farm income for the farming sector as given in the Annual Report of the Secretary for Agricultural Economics and Marketing increased at a faster rate of 5,9 percent per annum. A greater share of agricultural earnings has apparently come from labour, capital and entrepreneurship. Per farm, the upward trend in net farm income would be at a higher rate because the number of farms has been declining.

An increase in agricultural production with a smaller labour force must ultimately bring higher returns to labour, and the relatively high marginal productivity should allow scope for the increase in farm wage rates.

Table 7 shows the average wage per labour unit for three study groups in East Griqualand and Southern Natal for the 1974/75 financial year. About three quarters of the total wage represents a cash outlay to the farmer and the remaining quarter comes from produce from the farm or grazing and cropping rights on the land. The wage does not represent the real income that may accrue to the family, because income may be realised from grazing livestock or from the cropping land and more than one labour unit may belong to one family. The average area of cropping land per unit is small because a number of farmers either do not allocate cropping land to their workers or else the area per farm is too small in hectare terms to count in as a significant portion of the total farm area.

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TABLE 7 : Average monthly wage per labour unit, Kokstad, Cedarville and Ixopo farm study groups, 1974/75.

	(R)	
Cash	15,64	
Purchased rations	6,92	
Other expenses	0,88	R23,44
Supplied from farm :		
Crops	1,39	
Milk	2,15	
Livestock slaughtered	1,90	
Rental : housing and hut site .	1,24	
Grazing at 50 cents per A.U. per month	0,32	
Value of cultivation assistance	0,26	
Cropping land @ 6% of value	0,07	
Total from farm		7,33
Total wage		R30,77
Number of labour units (1 man = 2 women = 2 boys)		17,9
Hectares of cropping land per labour unit		0,085
Animal units of grazing livestock per labour unit		1,16
Percentage annual increase in real wage 1972/73 to 1974/75		6,5
Average annual percentage increase in real net farm income, 1969/70 to 1974/75		13,3

It is estimated that the real wage per worker increased at 6,5 percent per annum from 1972/73 to 1974/75. In 1973 Natal farmers paid greater attention to labour conditions and from that year wages have increased at a higher rate than in earlier years.

For the same study groups it is estimated that the real net farm income per farm increased at an average rate of 13,3 percent per annum from 1969/70 to 1974/75. The evidence thus points to net farm incomes per farm increasing at a faster rate than wage rates.

If wages are low in relation to net farm incomes where does the answer lie in raising them? Ruttan (4) has studied labour productivity as measured by output per male worker as a function of resource endowments, technical inputs and education. In a comparison of farm labour productivities between less developed and recently developed countries 35 percent of the differences in output per male worker could be accounted for by education, 26 percent by technical inputs and 37 percent by differences in resource endowments consisting of land and livestock. Within these categories livestock was seen as a more important resource endowment than land, fertilizer a more important technical input than machinery, and general education more important than technical education.

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Ruttan's conclusion has been that, "In the developed countries human capital and technical inputs have become the dominant sources of output growth. Differences in the natural resource base have accounted for an increasingly less significant share of the widening productivity gap among nations. Productivity differences in agriculture are increasingly a function of investments in the education of rural people and in scientific and industrial capacity rather than natural resource endowments. Indeed the one inescapable implication of the results of our cross country analysis is the importance of literacy and schooling among agricultural producers and of technical and scientific education in the agricultural sciences".

Examine the situation of farm labour in South Africa. The labourer has his own physical talents to offer. He has little access to land apart from his subsistence plot and a right to graze a limited number of stock. He may not rent or buy White owned land, nor can he buy machinery or fertilizer because he does not have access to land. Even in Bantu areas he is not able to buy or rent land, and there is consequently no market for agricultural land in Bantu homelands. Relatively few do own their own land and on Trust land in released areas, i.e. land already bought from White farmers, land is let to occupiers at nominal rentals. Generally Bantu agriculture is not conducted on a commercial scale.

The chances are that the farm labourer has had very little education. Indeed, for all population groups levels of education may be seen in Table 8 to be lower in the agricultural sector than in the other sectors of the economy.

Table 8 : Levels of schooling attained by gainfully occupied workers in agriculture and other sectors of the South African economy.

	1970						1960	
Schooling	Whites		Coloureds		Asians		Bantu	
(Years)	Agric	Other	Agric	Other	Agric.	Other	Agric	Other
None	1,2	0,2	61,4	11,9	27,5	4,6	79,8	55,5
Up to 8	34,2	17,0	37,4	66,3	62,3	63,1	19,7	40,6
9 - 11	34,3	42,2	1,1	18,1	8,9	23,0	0,5	3,6
12	30,3	40,6	0,1	3,7	1,3	9,3	0,03	0,3
	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0

Thirty five percent of White workers in farming have Standard 6 (8 years) or less, but only 17 percent in all other sectors. The degree of illiteracy of Coloured labour in agriculture, 61 percent, is surprisingly high. The higher levels of education of Whites and Asians in farming probably explains the more rapid rises in wage rates for these groups, shown earlier on. In addition to school qualifications, nearly 6 000 Whites in farming had diplomas in 1970, and 3 000 had degrees. No Coloureds or Asians in agriculture had a diploma or a degree, and this points to a gap in the agricultural education provision for these groups.

In 1960 almost 80 percent of Africans employed in farming had had no schooling at all. The opportunity return to such labour on a farm or in an African homeland cannot be high, nor can these workers be expected to adapt to modern scientific agriculture. They can neither read nor write and many do not know a straight line or a right angle. Despite these apalling figures relating to the education

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of unskilled Bantu labour, the 1960 population census listed as working in agriculture 87 Bantu with university degrees, although unlikely to be agricultural degrees, and 713 with diplomas, plus standards 8, 9 or 10. The five Bantu agricultural colleges will have supplied a good proportion of those holding diplomas, while the newly established Faculty of Agriculture at Fort Hare is now turning out much needed technically trained manpower for homeland agriculture.

Schooling for the children of farm workers is provided mainly by farm schools of which there were 3 579 for 90 000 farms in 1973, one school for 25 farms. There were 1,8 teachers and 96 pupils per school, 53 per teacher, and in most cases the highest level of education was up to Standard 2. More research is needed on the meaning of these figures in terms of potential labour productivity.

The first priority that I would give to reducing the inequalities in agricultural earnings would be to improve the educational facilities for the children of farm workers.

As a second priority I would suggest the removal of constraints in the access to land and capital markets for Black workers in agriculture. This presents legal and political problems of considerable magnitude, which could still be solved along pragmatic lines. Opportunities to farm on their own account, even on small scale farms, may offer alternative and potentially more remunerative occupations than as farm labourers.

Two final alternatives may be considered, although not in detail here. The first is the introduction of minimum wage rates in agriculture. This I see as most difficult to implement because of the variation in the subsistence content of wages between areas. Farmers further from the markets would be less able to adhere to any minimum wages that are laid down. The second is land reform. If landowners are to be compensated for their farms at market rates the whole process becomes prohibitively costly as may be seen in the case of the Native Land and Trust Act of 1936, which affected about 7 percent of White owned farming land in South Africa, and which has not yet been fully implemented.

As an economist I believe in the open market for agricultural resources. With appropriate safeguards I see the solution to the problems of inequalities and poverty in the agricultural sector through the removal of restrictions in the markets for all factors of production. Better service conditions for farm workers such as these prescribed by the Natal Agricultural Union (5) and better schooling do, of course, merit greater attention.

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