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REQUIREMENTS FOR CONTRIBUTIONS

Articles in the field of agricultural economics, suitable for publication in the journal, will be welcomed.

Articles should have a maximum length of 10 folio pages (including tables, graphs, etc.), typed in double spacing. Contributions, in the language preferred by the writer, should be submitted in triplicate to the Editor, c/o Department of Agricultural Economics and Marketing, Pretoria, and should reach him at least one month prior to date of publication.

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Contents

The importance of the contribution of the agricultural sector [1] to the rate of growth of South African economy

by

L.W.A. NEL*

INTRODUCTION

In a comparatively rapidly developing national economy, economic growth in the various industrial sectors takes place amidst structural changes in production, on account of changes in the patterns of utilization of the country's production factors. Under these circumstances it is found that certain industrial sectors, particularly manufacturing and the service industries tend to grow relatively more rapidly than agriculture. This tendency is mainly due to two causes,[2] namely, in the first instance the fact that the income-elasticity of demand for agricultural products tends to be considerably lower than that of the secondary and tertiary industries and which in consequence offer more favourable growth possibilities for development. Furthermore it is known that the growth in the secondary and tertiary sectors frequently takes place at constant or even declining costs, while these possibilities occur less frequently in agriculture. The result is that capital investment and the introduction of other improvements in productivity take place at a more rapid rate in the secondary and tertiary industries than in the primary production branches, which consequently results in a higher rate of growth of labour productivity[3] in the secondary and tertiary industrial branches. Secondly there is a tendency amongst the economically active population to be employed to a greater extent in those sectors with the highest labour productivity. This tendency in the patterns of utilization of the economically active population does not only relate to the increase in the labour force, but also applies to the existing economically active population. The changes in the pattern of utilization of the economically active population have by themselves the effect of increasing the average labour productivity.

The result of these changes in the utilization of resources in a rapidly developing national economy, is reflected in the disproportionate rates of growth in the respective industrial sectors, which in the course of time are reflected in the changes in the relative contribution of each sector to the real domestic product of the economy. This of necessity entails that the direct importance of changes in the economically active population as well as in the rate of growth in labour productivity will change over the long-term in the determination of the general rate of growth of the economy. In a national economy with a high rate of development like that of South Africa, it can for example be expected that the rate of employment in agriculture will tend to decline and may even become negative, while the rate of growth of average labour productivity in this sector will remain more or less constant or may even rise. Consequently the relative contribution of agriculture to the real rate of growth of the gross domestic product will become smaller and smaller. At the same time it may be expected that the rate of growth of the economically active population in the secondary and tertiary industrial branches will tend to rise, while the labour productivity in these branches will also increase more rapidly. These sectors will, as the leading growth sectors, consequently make an ever increasing contribution to the economic rate of growth of a country.

To maintain a relatively high rate of economic growth over a long period, it will, however, inter alia be essential to bring about some "equilibrium" between the rates of growth of the respective industrial sectors - primary, secondary and tertiary. Agriculture may not for example ultimately develop into a constantly smaller sector, unless it is economical for a country to import more and more of its food requirements in exchange for manufactured goods. If such a tendency is not justified by economic or other considerations, then the steadily declining contribution of agriculture to the general rate of growth of the economy will ultimately result in a position where higher prices of food will be followed by higher wages and increased costs. These factors together with the effect on the

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1) Agriculture includes forestry and fisheries.

* Economics Division, Department of Planning.

2) Compare Krogh, D.C. : Die Ekonomiese Groeiproses in Suid-Afrika. Paper read at the General Meeting of the S.A. Academy for Science and Art, July 1966.

3) Compare Krogh, D.C., op.cit. p.285. He defines "labour productivity" as follows: "Labour productivity includes all the factors which contribute to productivity and includes growing capital investment; improvements in the quality of labour itself; better economic organization and management, technological development, increased advantages of scale and external industry savings. Besides this average labour productivity is influenced by shifts in the labour force from less to more productive sectors of industry". (Translation).

balance of payments of larger imports of food requirements can have a depressing effect on the general rate of economic growth.

The change in the terms of trade in favour of agricultural products will result in a higher rate of capital investment in agriculture and a rise in the growth rate of labour productivity as a result of the introduction of improvements in productivity, e.g. better seed, better use of fertilizers, better organization and farming methods, etc. The declining rate of the agriculturally active population might also slow down. The recovery of the agricultural sector to a more "equilibrium" position as against the other industrial sectors will naturally not be a painless process and it could require a very considerable time, while inflation and a lower general rate of growth might meanwhile be experienced.

From this brief introduction it can be inferred that one of the most important issues with which the agricultural sector has to contend in a relatively rapidly growing economy is the maintenance of an "equilibrium" rate of growth.

THE REAL RATE OF GROWTH OF THE GROSS DOMESTIC PRODUCT (G.D.P.)

Next the real growth of the G.D.P. will be briefly considered as well as the growth of the relative contributions of the various industrial sectors to the G.D.P. during the past four decades.

When observing the real rate of growth of the G.D.P. of the Republic during this period it is clear that a relatively high rate was maintained. In Table 1 the economic growth of the Republic since World War 1, excluding the period of World War II, is given at constant 1958 prices.

The high average annual rate of growth of about 5 per cent a year during the four decades should be noted. In comparison with other countries the Republic's economic development has thus far taken place at a relatively high growth rate. It is, however, essential to note the degree of instability in the growth rates between 1921 to 1940 and 1946 to 1965. During the period 1921 to 1940 (pre-war) the annual rate of growth fluctuated between minus 10 per cent and plus 24 per cent, while during 1946 to 1965 (post-war) it fluctuated between plus 1.6 per cent and plus 9.2 per cent. The instability during the pre-war years may be ascribed mainly to the unstable growth of the agricultural sector which made a relatively large contribution to the G.D.P. during those years. This instability in the contribution of agriculture, was largely the result of the effects of unstable weather conditions and the lack of stability in producers' prices of agricultural products as well as uncertain marketing conditions. The contribution of secondary industry was still comparatively small since this industry was only in its early stages of development. The rapid industrial development during the post-war period and the comparatively greater contribution of secondary industry to the G.D.P. contributed considerably to the greater stability in the post-war rate of growth of the country's G.D.P. Likewise the agricultural sector's contribution to the G.D.P. showed greater stability as a result of a determined stabilisation policy for agriculture on the part of the authorities.

THE REAL GROWTH OF THE AGRICULTURAL SECTOR

In Table 2 the growth rates of the contributions of the various industrial sectors to the G.D.P. are given and also illustrated in the accompanying graph.

It is significant to note that the growth in the real contribution of the agricultural, forestry

TABLE 1 - Real rate of growth in the G.D.P. of South Africa (1958 prices) [4]

1921	2.2	1931	-10.1	1946	1.6	1956	5.3
1922	1.2	1932	4.0	1947	4.7	1957	4.4
1923	14.6	1933	- 8.4	1948	8.0	1958	2.6
1924	- 4.5	1934	23.9	1949	2.4	1959	4.6
1925	18.3	1935	5.2	1950	5.7	1960	4.2
1926	- 6.6	1936	10.6	1951	5.0	1961	5.7
1927	12.0	1937	10.4	1952	3.4	1962	5.2
1928	2.2	1938	- 2.2	1953	5.2	1963	7.0
1929	2.7	1939	9.1	1954	6.4	1964	9.2
1930	5.0	1940*	3.7	1955	5.2	1965	5.6
Average	4.7%	Average	4.6%	Average	4.8%	Average	5.4%

4) See du Piesani, C.J. : Die bepaling en die gebruik van kapitaalopbrengsverhoudings. Unpublished M.Com. Thesis. University of Pretoria, 1968.

* 1941 to 1945 excluded.

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GRAPH - ANNUAL GROWTH RATE OF THE REAL CONTRIBUTIONS OF THREE INDUSTRIAL SECTORS TO THE GROSS DOMESTIC PRODUCT

GRAFIEK - JAARLIKSE GROEIKOERS IN DIE REËLE BYDRAE VAN DRIE NYWERHEIDSEKTORE TOT DIE BRUTO BINNELANDSE PRODUK

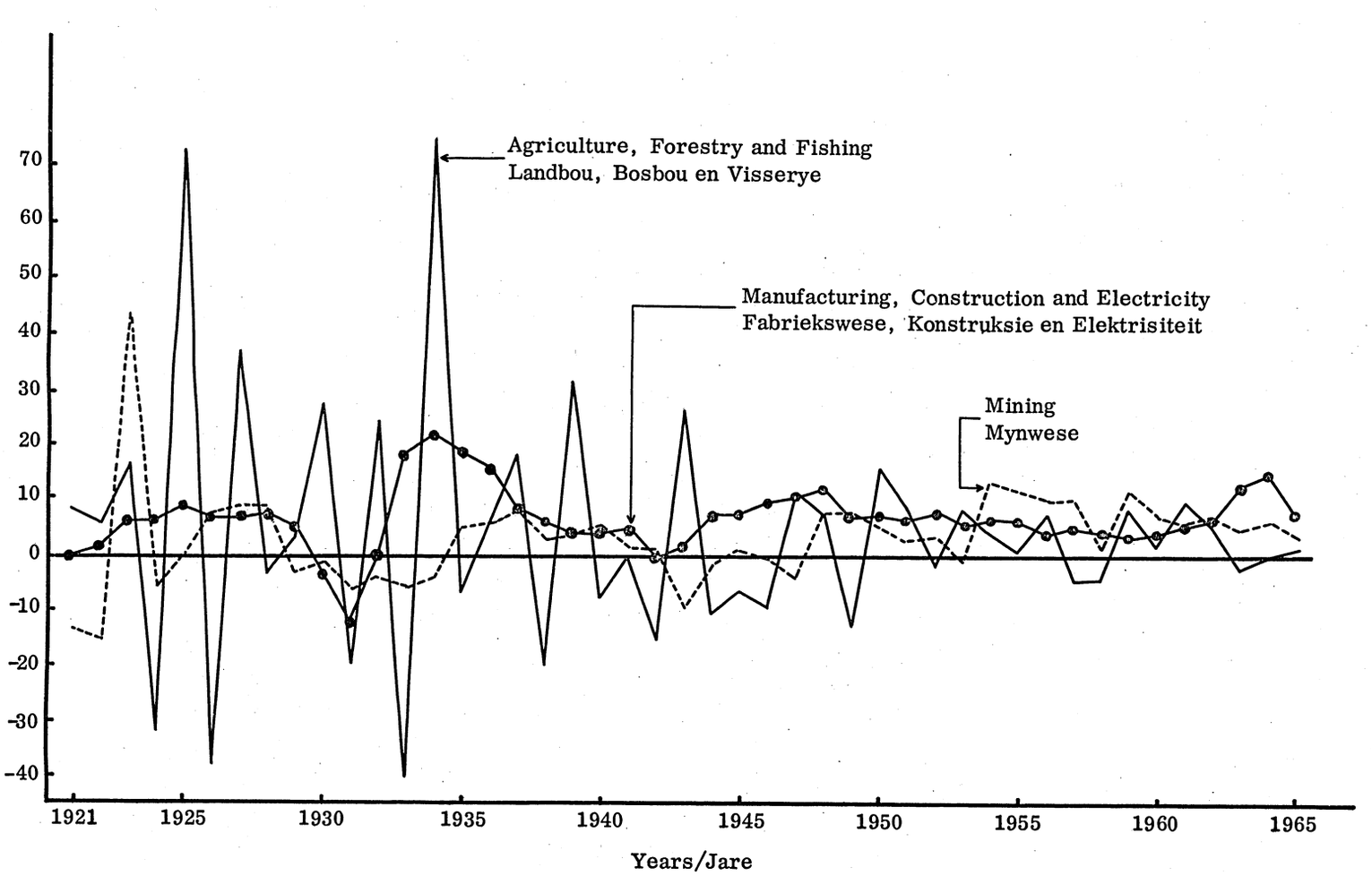

TABLE 2 - Growth rates of the real contributions of the various industrial sectors in the G.D.P. 5)

Year	Agriculture, forestry and fisheries	Mining	Manufacturing, construction and electricity	Services
1921	8.3	-12.7	0.4	6.5
1922	6.0	-14.2	2.1	4.5
1923	16.2	44.0	6.8	5.9
1924	-31.6	5.3	6.8	4.4
1925	73.0	0.5	9.5	7.8
1926	-37.8	8.0	7.6	3.0
1927	37.0	9.3	7.4	5.1
1928	- 3.3	9.5	8.0	4.4
1929	3.5	- 2.2	5.9	3.6
1930	27.5	- 0.2	- 2.8	- 0.7
1931	-19.5	- 5.5	-11.5	- 6.4
1932	24.6	- 3.3	0.3	- 2.1
1933	-39.9	- 5.0	19.1	3.2
1934	75.8	- 3.3	22.5	16.0
1935	- 6.9	5.4	19.0	7.8
1936	5.8	6.1	16.7	12.2
1937	18.5	8.5	9.3	7.8
1938	-19.4	3.3	6.4	1.8
1939	31.2	3.9	4.3	3.7
1940	- 7.3	5.9	4.3	8.2
1941	0.5	1.8	5.7	10.0
1942	-14.1	1.6	0.2	3.4
1943	26.5	- 9.1	2.5	3.3
1944	-10.1	- 1.1	8.0	3.8
1945	- 5.8	1.2	7.9	5.3
1946	- 8.9	-	9.9	2.4
1947	12.0	- 3.3	11.1	2.1
1948	7.8	7.9	12.4	6.4
1949	-12.0	8.4	7.2	3.5
1950	16.2	5.5	7.6	2.4
1951	8.5	2.9	6.6	3.8
1952	- 1.1	3.6	7.9	2.8
1953	9.0	- 0.5	5.7	5.1
1954	4.3	13.9	6.9	5.3
1955	1.5	12.1	6.6	4.2
1956	7.8	10.4	4.1	4.1
1957	- 4.1	10.8	5.5	4.7
1958	- 3.9	1.6	4.2	3.8
1959	8.8	12.0	3.5	2.2
1960	2.0	7.7	3.9	3.9
1961	9.9	6.0	5.2	4.7
1962	5.5	7.5	6.3	4.0
1963	- 1.9	5.0	12.7	7.1
1964	-	6.3	14.8	9.3
1965	1.1	3.5	7.4	6.3

5) Calculated on the basis of the real contributions to the G.D.P. according to the unpublished thesis of C.J. du Piesani.

and fisheries sector was characterised by considerable fluctuations from year to year. These fluctuations assumed large dimensions, particularly during the twenties and thirties. The process of growth in this sector entered a new phase, however, after World War II. Greater stability in the rate of growth of this sector was brought about through energetic policies on the part of the authorities to stabilise agricultural production and incomes, namely through a supporting price policy, increased application of scientific farming methods, more mechanization, improved seed and better use of fertilizers; better organization and management, and more active financial support to place agriculture on a sound and more stable footing.

In contrast with the agricultural sector it may be noted that mining, industry and the service industries maintained a comparatively stable yearly rate of growth and it is particularly significant that a fairly high rate of growth was maintained by secondary industry.

Notwithstanding greater stability in agricultural output the rate of growth of the real contribution of this sector to the G.D.P. shows a declining tendency. Table 3 gives the average yearly rates of growth for five-year periods from 1921 to 1965. According to these rates it is clear that agriculture is a lagging sector in the national economy.

TABLE 3 - Average yearly growth rates of the real contribution by industrial sectors to the G.D.P.

Years	Agriculture, forestry and fisheries	Mining	Manufacturing, construction and electricity	Services	G.D.P.
	%	%	%	%	%
1921-25	14.4	4.6	5.1	5.8	6.4
1926-30	5.4	4.9	5.2	3.1	3.1
1931-35	6.8	-2.3	9.9	3.7	2.9
1936-40	5.8	5.5	8.2	6.7	6.3
1941-45	-0.6	-1.1	4.9	5.1	3.0
1946-50	3.0	3.7	9.6	3.4	4.5
1951-55	4.4	6.4	6.7	4.2	5.0
1956-60	2.1	8.5	4.2	3.7	4.2
1961-65	2.9	5.7	9.3	6.3	6.5

From Table 3 it is clear that a disproportionate growth between agriculture and the other industrial sectors has taken place. During the twenty years prior to World War II (1921 to1940) the average yearly growth rate of agriculture was 8.1 per cent compared with 3.2 per cent in mining, 7.1 per cent in manufacturing, construction and electricity and 4.8 per cent in services. During the post-war period (1946 to 1965) agriculture attained an average growth

of 3.1 per cent a year as against 6.1 per cent in mining, 7.5 per cent in manufacturing, construction and electricity, and 4.4 per cent in the services. The relative rate of growth in agriculture has during the 10 years, 1956 to 1965, declined to 2.5 per cent a year and during the five years, 1961 to 1965, the average yearly growth was 2.9 per cent which is considerably lower than the average yearly growth rates for the other industrial sectors.

While weather conditions constituted a factor which hampered the real growth in agriculture to some extent, the disproportionate growth is also the result of changes in the utilization of the country's resources particularly labour and capital. These changes in the use of the country's resources between different industrial sectors of necessity cause the direct importance of changes in the rate of employment as well as the rate of growth in labour productivity to vary. In a national economy with a relatively high growth rate, such as that of South Africa, it may for example be expected that the rate of employment in agriculture will tend to decline and may even become negative while the rate of growth of the average labour productivity will remain more or less constant or may even rise. Consequently the real contribution of agriculture to the G.D.P. will become relatively smaller and smaller. On the other hand the rate of growth of the economically active population in the secondary and tertiary sectors has risen, while the labour productivity has also increased more rapidly in those sectors.

Should the present rate of disproportionate growth between the agricultural sector and the other industrial sectors continue over the long-term, agriculture will develop into a more subordinate sector. This will amongst other things result in the country's food requirements being imported to an increasing extent in exchange for manufactured goods. If such a development cannot be justified by economic or other considerations as is the case at present, then the declining contribution of agriculture to the general rate of growth of the economy will ultimately result in higher food prices followed by higher wages and increased costs. These factors together with the effect on the balance of payments of reduced exports of agricultural products initially and the possible importation of food later could result in a lower general rate of growth or development of the economy.

ECONOMIC DEVELOPMENT PROGRAM (E.D.P.)

Next the growth objectives for the agricultural sector in accordance with the Economic Development Program will be considered.

In the E.D.P. for 1966 to 1971 an average real growth rate of 5.5 per cent a year in the G.D.P. has been accepted as the objective. This objective implies that according to the estimates in the E.D.P., South Africa has under certain conditions at its disposal the production factors or resources to realise this average rate of growth during the programming period and also that the Governement will apply its traditional policy instruments to make possible the attainment of this objective in the rate of growth. Whether this rate of growth will be realised or not depends to a great extent on the achievements of the respective sectors.

According to the E.D.P. for 1966 to 1971 [6] the real contribution of agriculture to the G.D.P. increased during the period 1948/49 to 1964/65, on average by 3.8 per cent a year. For the purposes of the E.D.P. it is accepted on this basis that the average growth potential of the agricultural sector will amount to 3.8 per cent a year. If this percentage is accepted as the long-term growth potential of agriculture its contribution to the G.D.P. in 1971 will be approximately 40 per cent above the relatively low level of 1965. This increase is equal to an average growth rate of 5.8 per cent a year. At this rate agriculture will succeed not only in expanding its contribution to the G.D.P. but also in increasing its share of the G.D.P. above the relatively low level of 1965. This course is, according to the E.D.P., apparently in conflict with the long-term trends in the percentage contribution by agriculture to the G.D.P. in more developed countries. In the E.D.P. it is pointed out, however, that the percentage contribution during 1965 was exceptionally low but it is expected that given more favourable weather conditions and larger crops the percentage contribution of agriculture will initially show an increase, to be followed by the normal declining tendency.

In the E.D.P. estimates for 1971 it is assumed that 1971 would be a "normal" agricultural year, and consequently no provision was made for short-term fluctuations which might be caused by weather conditions or other unpredictable factors. It is also pointed out that considering the growth rates, circumstances in the base year and the assumptions for the end year must always be taken into account. The estimated growth in the E.D.P. in respect of agriculture including forestry and fisheries is given in Table 4. [7]

The expected capital investment in this sector was for the whole programming period (1965 to 1971) estimated at R860 million which would be required for replacements and the build up of capital assets.

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6) See Economic Development Program for the Republic of South Africa 1966 - 1971 pp. 25 to 26. Government Printer, Pretoria.

7) Op.cit., page 52.

TABLE 4 - Estimated development of agriculture, forestry and fisheries

	1965	1971	Real yearly rate of growth
	R million		%
Production	1,178	1,650	5.8
Imports	51	72	5.9
Total supply	1,229	1,722	
Domestic demand (excluding stocks)	1,023	1,351	4.7
Change in stocks	-17	7	-
Exports	223	364	8.5
Total demand	1,229	1,722	

The expected trend of employment in this sector is shown in Table 5. It is estimated that total employment over the whole period would increase by 1.4 per cent a year which is considerably less than the anticipated rise in production. It is thus assumed that the contribution per worker (increase in labour productivity) to the G.D.P. would increase by 4.4. per cent a year. The absolute level of the contribution per worker to the G.D.P., namely R435 for 1965 is based on the average of the level attained by Whites in agriculture and that prevailing in the Bantu homelands.

TABLE 5 - Estimated employment in agriculture, forestry and fisheries

	1965	1971	Yearly rate of growth
	1,000		
Total	1,849.0	2,011.6	1.4
White	109.6	96.2	-2.2
Non-White	1,739.4	1,915.4	1.6
Contribution per worker to G.D.P.	R435	R561	4.4

SUMMARY

In the foregoing reference has been made briefly to the following aspects:

1. In a relatively rapidly developing national economy, such as that of South Africa, the real contribution of the agricultural sector to the G.D.P. will tend to decline because certain factors bring about a lower growth rate in this sector and a higher rate in the other sectors.

2. This disproportionate growth between the various industrial sectors in South Africa is borne out by empirical data. The growth rate in the real contribution of agriculture to the G.D.P. has, however, over the long-term declined fairly sharply relative to the other industrial sectors.

3. Should the present disproportionate growth between the agricultural and the other industrial sectors continue over the long-term then agriculture will become a more subordinate sector. This would, inter alia, result in the country possibly having to import more of its food requirements in exchange for manufactured goods. If this tendency cannot be justified for economic or other considerations, which is the case at present, then the declining contribution of agriculture to the general rate of growth of the economy would ultimately result in higher food prices followed by higher wages and higher costs. These factors together with the effect on the balance of payments of reduced exports of agricultural products initially and subsequently the likely importation of more food can have a depressing effect on the general rate of growth or development of the national economy.

4. To ensure inter alia a more balanced growth rate between the respective industrial sectors the Government has accepted a system of economic programming in terms of which objective rates for the economy and for the various industrial sectors were established. The objective rate for agriculture was placed at 5.8 per cent a year for the programming period 1966-1971.

CONCLUSIONS

The maintenance of an "equilibrium" growth rate for agriculture is of the utmost importance for the economic development of the country, since there are at this stage no economic or other reasons which would justify the importation of food requirements. The agricultural sector thus cannot be permitted to develop into a more subordinate sector. It is therefore essential that agriculture, to maintain an "equilibrium" rate of growth should attain the objective of 5.8 per cent a year during the programmed period 1966-1971.

Whether agriculture, because of its declining rate of growth in the real contribution during the post-war years and more particularly during the past decade, will attain the objective of 5.8 per cent during 1966 to 1971, will in the first instance depend upon weather conditions which are unpredictable. Over the longer term the application and utilization of resources, namely the economically active population and labour productivity [8] will play an important role. The utilization of the economically active population

8) See Krogh, D.C., Op.cit.

and the increase in labour productivity in agriculture are the most important factors which can contribute to the attainment of the objectives over the longer term. It has been pointed out, however, that there is a tendency in rapidly developing countries for the economically active population to be employed to an increasing extent in those sectors with the highest labour productivity - an economic phenomenon which has been proved empirically. This tendency in the employment pattern of the economically active population of South Africa, which not only relates to the increase in the labour force but also to the present economically active population, actually takes place in respect of the economically active White population in agriculture but not in respect of the non-White population. Since the change in the employment pattern of the economically active population has the effect of raising the average labour productivity, the relatively high rate of increase in the agriculturally active non-White population thus has a depressing effect on any positive contribution in the improvement of the average rate of growth of labour productivity in agriculture. It is therefore essential that the rate of increase in the employment of the agriculturally active non-White population should decline or even become negative since this is of utmost importance for the South African economy and particularly for agriculture.

It would thus appear that apart from weather conditions, one of the most important issues with which the agricultural sector will have to contend in future will be the raising of the growth rate of labour productivity. If special efforts are not made during the coming decade and in future, to raise the growth rate of labour productivity in South African agriculture, then the disproportionate growth and the structural imbalance between the agricultural and other sectors will assume greater proportions.

Should the objective in the rate of growth for the agricultural sector not be realised during the next five or ten years, then the rate of increase in food prices or that of imports will proceed more rapidly than has been assumed in the E.D.P. There is, however, reason to believe that merely the maintenance of an average rate of growth of 5 per cent a year for the economy as a whole during the coming decade, without a higher rate of inflation or of imports, will entail special efforts in bringing about improvements in labour productivity in the agricultural sector.