AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

EDITORIAL COMMITTEE

Mr A.J. du Plessis (Chairman),
Mr H.J. van Rensburg, Dr J.J. Gregory and Prof. J.A. Groenewald,
Mr G.J. Wissing (Editor), Mr Q. Momberg (Technical editing)

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.

The Journal is obtainable from the distributors: "AGREKON", Private Bag 144, Pretoria.

The price is 25 cents per copy or R1 per annum, post free.

The dates of publication are January, April, July and October.

"AGREKON" is also published in Afrikaans.

Contents

	<u>Page</u>
I. EDITORIAL	1
II. ECONOMIC TRENDS IN AGRICULTURE IN SOUTH AFRICA	3
III. ARTICLES	
1. The measurement of managerial inputs in agriculture - III: The construction and evaluation of a scale	5
- P.J. Burger, University of Pretoria	
2. The utilisation of operations research techniques in the planning of agricultural undertakings	12
- O.D.J. Stuart, University of Pretoria	
3. A review of the financing pattern of farmers in the four maize production areas of the republic of South Africa	16
- F.G. Steyn, Maize Board	
- J.A. Groenewald, University of Pretoria	
4. Trends in economic development in the Eastern Transvaal Lowveld	23
- J.P.F. du Toit, University of Pretoria	
IV. STATISTICS	29

Trends in economic development in the Eastern Transvaal Lowveld

by

J.P.F. DU TOIT
University of Pretoria

INTRODUCTION

Since economic development has become a deliberate goal of all nations, the importance of regional development has more and more been realised. Regional development is made essential partly by the uneven distribution of natural resources among the regions of a country. Not only are there quantitative as well as qualitative differences in the spatial distribution of resources among various regions, but the resources are also utilised at various intensity levels. According to Perloff and Dodds¹⁾ this phenomenon of differential development of regions is closely linked to their share in various branches of production, as well as to the national growth rates of such branches of production.

In South Africa there have been great and rapid changes in the economic field, and in this process the slow progress made by certain rural areas in particular, is giving rise to great concern. The drastic depopulation of certain areas such as the sheep grazing regions, the grazing regions of the eastern escarpment, the crop producing regions of the winter rainfall area and the inland plateau dry-land cropping regions²⁾, are causing towns with a variety of very important functions to decline to hamlets³⁾, and this is detrimental to life on the platteland.

Consequently there is an increasing tendency to undertake regional investigations to obtain a more realistic idea of the economic reality in a specific area, so as to explain the causes, nature, extent and implications of the uneven development of areas.

Some of the findings of a study⁴⁾ on the economic structure of the Eastern Transvaal Low-

veld⁵⁾ will now be discussed briefly against the background of a few economic criteria.

POPULATION

The population, and especially the growth of population in a region of a specific country, is a valuable indication or indicator of economic viability - activity or economic prosperity⁶⁾.

At the time of the 1960 population census, the Eastern Transvaal Lowveld had a population of 617 000, viz 39 per cent of the total population of the Republic. Bantu constituted 92,8 per cent of this total, Whites 6,7 per cent and Coloureds and Asiatics together only 0,5 per cent.

Table 1 shows population growth (Bantu and White) in the Eastern Transvaal Lowveld from 1921 to 1960.

TABLE 1 - Average annual growth rate of population in the Eastern Transvaal Lowveld, 1921 to 1960

Period	Growth rate (%)	
	Whites	Bantu
1921 - 1936	4,3	2,7
1936 - 1946	0,2	1,7
1946 - 1951	3,5	0,2
1951 - 1960	3,7	3,0
1921 - 1960	3,0	2,3

Source: Population censuses, Department of Census and Statistics, Pretoria

The rapid increase of the total population in the Eastern Transvaal Lowveld over the past few decades is striking. The average annual growth rate of the White population was up to 3,0 per cent per annum over the period 1921 to 1960. This growth rate is considerably higher than the corresponding figures for the whole of the Transvaal (2,6 per cent), and for the Republic as a whole (1,8 per cent). This rapid growth of the White population cannot, however, be attributed merely to natural increase; there has been large-scale White migration to the area, especially since malaria has been brought under control.

5) For the purpose of this study it was assumed that the Eastern-Transvaal Lowveld consisted of the following present magisterial districts: Barberton, Letaba, Lydenburg, Nelspruit and Pilgrim's Rest

6) But the same is not true of developing countries. In such countries a larger population is correlated rather with greater poverty or a lower per capita income

1) Perloff, H.S. and Dodds, V.W., How a region grows, Area Development in the United States Economy (Committee for Econ. Development), New York, 1963

2) Cilliers, S.P., Social and demographic characteristics of rural areas. Agrekon Vol. 8, No.2, 1969, pp. 14 - 23

3) Du Toit, P.J.D., Service areas and rural development, Agrekon Vol. 8, No. 2, 1969, pp. 40 - 53

4) Du Toit, J.P.F., Die makro-ekonomiese struktuur van die Oos-Transvaalse Laeveld. M.Sc. (Agric.) thesis, University of Pretoria

The rapid growth of the White population (rural as well as urban) - see Table 2 - shows that, in contrast with many other rural areas, this area as a whole has not experienced the migration of the White population from the platteland. Only in the district of Lydenburg has there been, so far as Whites are concerned, slight depopulation at a rate of 0,8 per cent per annum during the period 1951 to 1960.

TABLE 2 - Comparative annual growth rate of urban and rural population in the Eastern Transvaal Lowveld, 1951 to 1960

District	Rural		Urban		Total	
	Whites	Bantu	Whites	Bantu	Whites	Bantu
	%					
Barberton	2,7	3,0	2,6	6,4	3,0	3,3
Letaba	3,4	3,5	9,3	7,1	4,8	3,7
Lydenburg	-0,8	1,6	5,0	11,8	1,9	2,0
Nelspruit	4,2	3,7	7,5	6,0	5,5	4,0
Pilgrim's Rest	2,4	2,5	-0,5	6,9	1,4	2,6
Total	2,6	2,8	5,3	7,4	3,7	3,0
Net upward move*	36,1	6,3	32,2	30,4	18,5	2,9

Source: Population censuses, Department of Census and Statistics, Pretoria

* Calculated as difference between the actual population and calculated population in 1960, where the latter is based on the following growth rates for the country as a whole between 1951 and 1960:

	Whites	Bantu
Urban population	23,6 per cent	45,2 per cent
Rural population	-8,6 per cent	20,7 per cent
Total population	16,9 per cent	27,7 per cent

over the same period, viz 3,7 per cent. In the area as a whole the growth rate of the urban Bantu (7,4 per cent), however, exceeded the urban White growth rate (5,3 per cent) by 2,1 per cent. Table 2 shows clearly that both White and Bantu populations of the area, urban as well as rural, have increased.

GROSS DOMESTIC PRODUCT (G.D.P.)

The G.D.P. or regional income of the Eastern Transvaal Lowveld grew fairly consistently from R55,6 million in 1954/55 to R80,4 million in 1961/62 (Table 3). These figures indicate relatively rapid economic growth in this region.

Agriculture and mining make the largest contributions to the G.D.P. of the area. These two primary branches of production contributed about 60 per cent to the total G.D.P. of the Lowveld in 1954/56, a figure that declined to about 55 per cent in 1960/62.

The contribution made by secondary economic activities, viz manufacturing and construction, including electricity and water, increased in relative terms from 6,5 per cent to 6,9 per cent over the eight-year period, although the absolute contribution, measured in rand, practically doubled.

The contribution of the remaining tertiary production branches to the regional income of the Lowveld also increased over the same period, viz from 34,4 per cent to 37,8 per cent.

A further feature of the economy of this region is the high degree of constancy of growth during this period. There were no great fluctuations in total income, in spite of the fact that the economy of the region depends heavily on agriculture.

TRENDS IN ECONOMIC DEVELOPMENT

Perloff⁷⁾ asserts that the total economic growth of a region is largely determined by, or dependent on, two growth components, viz proportional and differential growth.

TABLE 3 - The G.D.P. of the Eastern Transvaal Lowveld according to branch of production, 1954/55 to 1961/62

Branch of production	1954/55	1956/57	1958/59	1960/61	1961/62
	R1 000				
Agriculture and forestry	21 997	26 106	22 476	28 020	27 215
Mining	11 376	11 416	14 112	14 861	16 992
Manufacturing, construction, electricity, .. gas and water	3 289	4 025	4 596	5 210	5 828
Transport, storage and communication ...	3 636	4 104	4 563	5 400	5 868
Trade	4 612	5 213	5 275	6 747	7 033
Financial institutions and fixed property ..	1 061	1 266	1 381	1 634	1 743
Home ownership	790	915	1 072	1 180	1 244
Government services	4 941	5 657	6 306	7 224	7 468
Private services	3 932	4 619	5 220	6 785	6 962
Total	55 634	63 321	65 001	77 061	80 353

Source: Du Toit, J.P.F. op. cit. p.56

The Bantu population of the area increased at an especially rapid rate (3,0 per cent per annum) during the period 1951 to 1960, but this growth rate was lower than that of the White population

7) Perloff, H.S., Dunn, E.S., Lanpard, E.E. and Muth, R.F. Regions, resources and economic growth. The John Hopkins Press, Baltimore, 1960, pp. 63 65

A. 1954/55 to 1955/56

B. 1960/61 to 1961/62

FIG. 1 - Percentage distribution of the Eastern Transvaal Lowveld's contribution to the G.D.P. in 1954/56 and 1960/62

Proportional growth arises from the fact that some branches of production (or components of branches of production) grow more rapidly in the country as a whole than others. Perloff explains this as follows "when an industry is growing nationally because of increasing demand for its products, areas in which the nationally growing industry is located will grow because of this advantage. Conversely regions containing slow growth or declining industries will suffer as a consequence. This may be termed the composition or industry-mix effect."⁸⁾

Differential growth takes place because certain regions grow more rapidly as regards certain branches of production (or components of branches), than other regions. Perloff explains this as follows: "At the same time since regions compete for industries, some of them will be getting more or less of any given industry, whether it is growing nationally or not. This may be termed the local factor effect."⁸⁾

In order to investigate the dynamic properties of the economy of the Eastern Transvaal Lowveld further, these two growth tendencies, either proportional or differential, must first be exposed, since the two components together determine total economic growth. For this it is necessary to link the economy of this area by way of comparison to that of the country as a whole.

Figures 2 shows which general economic structural changes the South African economy has undergone over the past few decades. Whereas the contribution made by the primary branches of production, viz agricultural and mining, has declined sharply over this period, the secondary industrial sector has shown rapid growth. Agriculture and mining are therefore classified as slow-growing branches of production, and manufacturing as fast-growing.

This by no means implies that the agricultural and mining sectors have become less important over this period, but indicate to what extent the growth of these sectors has been overshadowed by growth in other production branches - mainly the secondary branches.⁹⁾

It has been calculated that the real gross domestic product of the Republic increased by 36,26 per cent during the period 1954/56 to 1960/62. If the regional income of the Eastern Transvaal Lowveld had increased by the same percentage during this period, the increase would have been R20 393 000. In fact, however, the regional income increased by an amount of R22 468 000. So this area has shown a total net upward shift of the regional income of R2 075 000 over this period, viz the overall growth of this region exceeded that of the country as a whole by this amount.

The net upward shift of the regional income was partly the result of a net upward differential shift in regional income, as is shown in Table 4. The

8) Perloff, H.S. and Dodds, V.W., Op. cit., p. 70

9) Brand, S.S. and Tomlinson, F.R., Die plek van die landbou in die Suid-Afrikaanse volkshuishouding. The South African Journal of Economics, Vol. 34, 1966, pp. 26 - 49

Source: Kotzé, H.A., Features of the economic growth and development of rural areas.
Agrekon Vol. 8, No. 2, 1969, pp. 27 - 39.

FIG. 2 - Share of agriculture, mining, manufacturing and other branches of production in the national income, 1920 and 1960/62

methods used to calculate these figures are the same as those described above, except that they have now been made to apply to each branch of production.

TABLE 4 - Differential shift in regional income in the Eastern Transvaal Lowveld, 1954/56 to 1960/62

Branch of production	Net shift
	R1 000
Agriculture and forestry	+ 4 085
Mining	- 2 169
Manufacturing, construction, electricity and water	+ 694
Transport, storage and communication	+ 419
Trade	+ 1 270
Financial institutions and home ownership	- 72
General Government services	+ 1 197
Private services	- 332
Total differential net shift in regional income	+ 5 092

Source: Du Toit, J.P.F. *op. cit.* p. 73

From this table it is clear that agriculture in particular, as well as other sectors such as trade, general Government services and transport, were responsible for this upward differential shift in the regional income to the value of about R5,1 million, since these branches of production grew more rapidly in this region than in the country as a whole. On the other hand, mining (R2,2 million), financial institutions, including home ownership (R0,07 million) and private services (R0,3 million), underwent downward differential shifts in income.

TABLE 5 - Differential and proportional shifts in the regional income of the Eastern Transvaal Lowveld, 1954/56 to 1960/62

Type of shift in regional income	R
Net shift in total income	+ 2 075 000
Net differential shift in income	+ 5 092 000
Net proportional shift in income	- 3 017 000

Source: Du Toit, J.P.F. *op. cit.* p. 74

TABLE 6 - Shifts in district incomes in the Eastern Transvaal Lowveld, 1954/56 to 1960/62

Shift in district income	Districts				
	Barberton	Letaba	Lydenburg	Nelspruit	Pilgrim's Rest
	R1 000				
Net shift in total income	- 1 834	+ 4 536	+ 945	+ 1 229	- 2 801
Differential shift in income	- 1 221	+ 5 619	+ 601	+ 2 448	- 2 355
Proportional shift in income	- 613	- 1 083	+ 344	- 1 219	- 446

Source: Du Toit, J.P.F. *op. cit.* p. 75

The proportional shift in the regional income of the Lowveld is now shown as the difference between the total and differential shift in income in Table 5.

From Table 5 it appears that the area has undergone a relatively large downward net proportional shift in income. The economy of the Eastern Transvaal Lowveld is very largely dependent on the two primary branches of production, viz agriculture and mining, and these two branches are classified as slow-growing sectors in the country as a whole. The positive economic growth of this region is therefore not only the result of an increasing share in relatively fast-growing branches of production, but more importantly the result of the larger share that this region has obtained in the relatively slow-growing branch of production, agriculture.

The distribution of growth trends within the region over this period are shown in Table 6 on the basis of magisterial districts.

The districts of Barberton and Pilgrim's Rest have experienced a net downward shift in total income in this period, which was the result, in both cases, of net downward differential as well as proportional shifts in income. Only in one district, viz Lydenburg, were the net differential and proportional shifts in income over this period positive. The other two districts, Letaba and Nelspruit, also experienced upward shifts in total income, resulting in these districts (in spite of downward proportional shifts in both districts) from large upward differential shifts in income.

GROSS DOMESTIC PRODUCT PER CAPITA

In view of the rapid economic growth of the Lowveld, with its rapidly growing total population, the question arises whether the economic growth over this period was rapid enough to result in an increase in personal income. Table 7 is now presented in an effort to answer this question.

According to Table 7 the per capita G.D.P. in the Eastern Transvaal Lowveld increased over this period by 17,6 per cent - from R105,3 in 1954/55 to R123,8 in 1961/62. So this growth rate was somewhat lower than the rate at which the per capita G.D.P. increased over the same period in the Republic as a whole (19,5 per cent). One should, however, remember that the population grew more rapidly in this area than in the country as a whole.

Whereas there was apparently a decline in economic prosperity, in terms of per capita G.D.P., in the Barberton and Pilgrim's Rest districts over this period, the opposite is true of the Letaba, Nelspruit and Lydenburg districts. The growth trends shown could, after compensation for the Barberton and Pilgrim's Rest districts, still emphasise the dynamic economic character of the Eastern Transvaal Lowveld, and place this area on a level which is definitely comparable to that of the Republic as a whole as regards the growth rate of the per capita G.D.P.

GROSS INVESTMENT

To indicate how the productive capacity of the infrastructure was developed in the Eastern Trans-

TABLE 7 - Change in the per capita G.D.P. according to magisterial districts in the Eastern Transvaal Lowveld, 1954/55 to 1961/62

Area	1954/55	1961/62	Change	White - Non-White ratio (numbers)*
R per capita				
Barberton	164,9	151,0	- 9,4	1 : 14,4
Letaba	87,2	121,8	+ 39,6	1 : 17,6
Lydenburg	92,9	122,8	+ 32,2	1 : 16,1
Nelspruit	115,7	154,4	+ 33,5	1 : 7,5
Pilgrim's Rest	85,6	75,6	- 11,7	1 : 22,8
Total	105,3	123,8	+ 17,6	1 : 14,0
Republic	260,7	311,6	+ 19,5	1 : 4,2

Source: Du Toit, J.P.F., op. cit. p. 85

* Because the Non-Whites, and especially the Bantu, being in an absolute majority in these areas, depress the per capita income a great deal, the White - Non-White ratio is also shown here. 10)

vaal Lowveld, gross investment for certain years is shown in Table 8.

Gross investment in the area concerned as a whole amounted to about R12,3 million or 1,3 per cent of gross investment in South Africa in 1954/55; after that it increased to R22,7 million or 2,0 per cent of the total for the Republic in 1961/62.¹¹⁾

A further analysis showed that the share of the production branch agriculture in the gross investment in the area had increased from 31,7 per cent in 1955/56 to 38,2 per cent in 1959/60, and then declined to 22,8 per cent in 1961/62. The contribution of the mining sector declined, in spite of rises in some years, from 25,0 per cent in 1954/55 to 21,6 per cent in 1961/62.

Secondary branches of production obtained an ever greater share in the gross investment, increasing, for instance, from R1,9 million in 1954/55 to R4,6 million in 1961/62. The percentage share of these production branches rose sharply from 6,9 per cent in 1957/58 to 20,3 per cent in 1961/62.

In spite of considerable year-to-year fluctuations in gross investment in the tertiary production branches such as transport, trade, home ownership and general services, these branches of production also increased their share in terms of gross investment in the region as a whole over this period.

10) Because of the nature of the labour services they provide, especially in rural areas, as well as factors such as training and low productivity, the earnings of the Bantu are generally very low in comparison with those of the Whites, Asiatics and Coloureds

11) The total for the Republic includes gross investment in South West Africa, Lesotho, Swaziland and Botswana

TABLE 8 - Gross investment in the Eastern Transvaal Lowveld according to production branch, 1954/55 to 1961/62

Production branch	1954/55	1956/57	1958/59	1960/61	1961/62
	R1 000				
Agriculture and forestry	4 736	5 680	5 884	5 248	5 182
Mining	3 072	6 316	3 686	5 414	4 908
Manufacturing, construction, electricity and water	1 929	1 302	1 607	3 827	4 607
Transport, storage and communication ...	558	1 059	1 201	1 969	1 401
Trade	193	289	350	1 086	1 174
Financial institutions and fixed property ..	84	61	39	106	142
Home ownership	419	742	815	867	1 004
Government services	825	1 034	1 746	2 885	3 349
Private services	306	413	564	637	702
Total	12 303	17 081	16 146	22 273	22 684

Source: Du Toit, J.P.F. *op. cit.* p.90

The annual growth rate of investment in the region as a whole for the period from 1954/55 to 1961/62 came to 12,1 per cent. All the magisterial districts concerned showed a greater or lesser degree of positive annual growth as regards gross investment over this period.

SUMMARY

The economy of the Eastern Transvaal Lowveld is characterised, in comparison with that of the country as a whole and that of certain other regions, by sound size and growth of economic activities. The economic growth of the area even exceeded the rapid growth of the country as a whole. Seeing that this analysis applies to the period 1954/55 to 1961/62, one should realise that this area has undergone rapid development in practically all fields in the economy since 1961/62. A few examples are the fact that new agricultural products are now produced here, such as sugar (Barberton) and tea (Letaba), and that cotton and tobacco, and especially subtropical fruit, are grown on a scale that increases almost every year.

The eight-year period covered here may be regarded as only the precursor of a great deal of mining activity at Phalaborwa and in the vicinity, which has since expanded phenomenally and has great possibilities for the future.

The production branches manufacturing, construction, transport, trade and other services industries have expanded a great deal since 1961/62, and this expansion is reflected to some extent in the rate at which towns such as, in particular, Tzaneen, Phalaborwa, Nelspruit and White River have grown since 1962.

The prospects for the future of the Lowveld are definitely promising. If the water potential of this area is utilised to the full in the future, it is clear that agriculture will remain the major single production branch here for many years to come. But the region also has great mineral reserves - especially copper, phosphates, platinum, antimony, asbestos, chrome, vermiculite, titanium, and many others.¹²⁾

12) Anderson, T. The mineral resources of the Transvaal. *Optima*, Vol. 17, 1967, pp. 34 - 42

It may be expected, therefore, that mining, and the related secondary and tertiary industries, will undergo great expansion in this area in the future.

The Eastern Transvaal Lowveld further has a very great tourist potential. On account of the Kruger National Park and many other worthwhile sights, the natural scenery and the warm climate, this area is definitely at an advantage in this regard, which may serve as a great stimulus for further economic expansion, especially of the services industries.

CONCLUSION

There is great concern at present about the welfare of many rural communities in South Africa. One should, however, guard against generalisations. The Eastern Transvaal Lowveld, like Griqualand East¹³⁾, is an area that is still specialising in the primary (or slow-growing) production branches, but is nevertheless undergoing rapid economic progress. As Kotzé says "all rural areas where farming is the main industry and where the largest portion of the population is concerned with agriculture, should, however, not be classified as areas subject to retarded economic development."¹⁴⁾ It is obviously just as dangerous and harmful to build up an unnecessarily pessimistic impression, on the basis of a few other regions, of the possibilities for growth in potentially progressive rural areas, as it is to be over-optimistic about possibilities in other areas, where the growth potential simply does not exist. A more optimistic approach in certain areas - such as the Eastern Transvaal Lowveld - appears to be quite realistic in the light of technological development, improvements in entrepreneurs' talent in agriculture, decentralisation of industries, as well as increases in the buying power of the Bantu.

13) Kotzé, H.A., *Op. cit.*

14) *Ibid.* p. 28