THE ECONOMIC STRUCTURE OF THE CAPE MIDLANDS AND KARROO REGION: A SECTORAL AND SPATIAL SURVEY

by

JESMOND PHILLIP BLUMENFELD

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INTRODUCTION

The observation that economic development is unevenly distributed over space is deceptively trite. It is neither entirely accidental, nor is it entirely by design, that some areas attract greater shares of available investment capital, or produce greater proportions of total output, than do other areas. Economic theory would suggest that, even in the absence both of accidental factors (such as differences in resource endowments) and of planned development, economic forces alone would ensure the emergence of concentrations of population and of economic activities.

Consider, for example, the case of a homogeneous flat plain, on which resources and population are evenly distributed in uniformly scattered and self-sufficient farms of equivalent size, and on which transport costs are both equal in every direction and proportional to distance. Even in this situation of apparently stable equilibrium, specialization, division of labour and economies of scale would be sufficient to induce the establishment of "central places" of various sizes at regular intervals (Lösch, 1938; Nourse, 1968, Ch. 3). Put in its simplest terms, we would soon find "crowds of economic areas on a plain which we deprived of all spatial inequalities at the outset" (Lösch, 1938).

Real-world spatial inequalities are, however, not confined simply to the existence of concentrations of people and of economic activities. In practice, there exist also widespread areal differences in actual levels of development. That the concept of 'the level of development' is not unambiguous in no way gainsays this fact. Whether we define 'development' in terms of a single quantifiable criterion, such as income per capita, or in terms of some more complex and less readily measurable criterion, such as "creating the conditions for the realization of the potential of human personality",[1] the phenomenon of differing levels of development finds universal recognition in the common, if imprecise, division of countries or regions into 'developed' and 'undeveloped', 'advanced' and 'backward' or 'rich' and 'poor'. Such divisions are, moreover, no less recognisable within countries or regions which may commonly be termed 'more developed' or 'less developed', than they are between such more and less developed areas themselves.

The spatial inequalities and imbalances to which these divisions refer are thus not those attributable to economic forces alone, but rather those which have their origins in non-economic factors. In other words, accidents of nature and the designs of man merely serve to disturb the regularity with which concentrations of population and of economic activities are distributed and located in economic space, and frequently to give rise to further inequalities, usually manifested in differing returns to production factors.

Classical economic theory would have had us believe that such regional differentials in factor earnings would, with the passage of time, and under conditions of perfect competition, be redressed by the operation of the market mechanism (Richardson, 1969 b, Ch. 12; Nourse, 1968, Ch. 8). Thus, resources would shift, or be shifted, from areas of low remuneration to areas of higher remuneration until such time as the marginal value products of such resources were equivalent in all regions. However, this process is frequently too slow to be of much effect or of much value. Even worse, empirical evidence has, on occasion, failed to support the convergence hypothesis (Richardson, 1969 a, Ch. 2).

For a wide variety of reasons, derived as much from social and political as from economic considerations, the widespread persistence of such imbalances has become the concern of many disciplines in the social sciences. Both the reasons for, and the means of reducing, spatial imbalances have become a preoccupation of development economics in general, and regional economics in

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1. Seers, D., 1972, "What are we Trying to Measure", Journal of Development Studies, Vol. 8, No. 3, pp. 21-36.

particular. As Maasdorp has recently observed, "at the centre of the stage today are unemployment, poverty and income inequality".[1]

These problems are no less urgent in South Africa than they are elsewhere. In Maasdorp's words, South Africa is currently "at an intermediate or transitional level of economic development with wide racial and regional inequalities and one of the most highly skewed income distributions in the world".[2] However, in South Africa, the interest excited by the intellectual and practical challenges afforded by the problems of less developed areas, particularly insofar as their relationships to the more developed areas are concerned, has thus far been directed largely at specific areas and problems. In particular, attention has been focussed on the problems of the development of the hitherto neglected African reserve areas (the 'homelands') and their adjacent 'border areas'. More recently, development policy has shown signs of increasing attention to the problems of development in the so-called 'Coloured preference area' which consists largely of the Western Cape Province, and in which the "centre stage" problems of unemployment, poverty and income inequality abound amongst the Coloured people.[3]

There are, however, other areas in South Africa, which are neither African 'homeland', nor African 'border area', nor Coloured 'preference area', but in which economic underdevelopment has become endemic and which are, in consequence, beginning to pose social, political and economic problems of their own.

The hinterland of Port Elizabeth, upon which the present study focuses, is one such area. It is a relatively arid region whose economy has been dominated for the past hundred years by Merino sheep and wool production. Intermittent efforts to broaden this agricultural base have been frustrated by a lack of water. In spite of the building of dams and other attention to water conservation, the two main rivers of the area - the Great Fish River and the Sundays River - have proved inadequate for the support of irrigation farming on any but a very small scale, and the rainfall is insufficient and too unreliable for large-scale arable farming. Economic advance in the area ceased after the 'mineral revolution' of the late nineteenth century, and its subsequent history has been characterised by persistent economic stagnation and decline. The 'fall from grace' of this area is reflected also in the fact that it received relatively little attention in the plethora of diverse areal and regional studies which have been a prominent feature of the past two decades.

That this area, long of great interest to historians, attracted relatively little interest from other social scientists cannot be ascribed to deliberate intent. But, as the present study has revealed time and again, its important historical role apart, the area lacks a clear ecological identity. Economically, agriculturally, socially, demographically and climatologically, it is an area of transition. Its economic and cultural orientations are characterised by a dualism which at times suggests a conflict of interests. Politically and administratively, it has no independent identity. As has already been noted, it finds itself marginally and transitionally situated on the fringes of the two main problem areas of social, political and economic development in South Africa, namely the African 'homelands' and 'border areas' and the Coloured 'preference area'. In short, in the context of contemporary South Africa, its situation could be said to represent the ecological counterpart of 'marginality', with all the concomitant disadvantages of that unhappy sociological state. Thus, despite the fact that, as this study shows, Port Elizabeth's hinterland exhibits all the characteristics of underdevelopment, and despite the fact that it was in this very area that the conflict of interests between Whites and Blacks in Southern Africa first attained serious proportions, its transitional situation itself,

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1. Maasdorp, G. G., 1974, "Economic Development Strategy in the African Homelands: The Role of Agriculture and Industry", paper delivered at Fourty-Fourth Annual Council Meeting of the South African Institute of Race Relations, Cape Town, January 1974.

2. Ibid.

3. For example, attempts are now being made to stimulate the growth of industrial employment in this area (see Department of Industries, 1971).

together with a variety of economic factors - notably an apparent lack of resources and of significant development potential - seemed destined to preclude the area from playing a major role in the resolution of the great socio-political problems of the day.

For many of its inhabitants, however, this relegation of the area to an insignificant role in the social, economic and political life of South Africa proved unacceptable, and their faith bore fruit when, in 1962, the Orange-Fish-Sundays Rivers development scheme was adopted in principle by Parliament, thereby giving renewed hope for a new vitality for the area. The scheme comprised a proposal to divert water from the Orange River to the Fish River, via a sub-terranean tunnel some 83 km in length, and subsequently to lead water from the Fish to the Sundays River through a further system of canals and tunnels.

These local residents, through their representative organizations and development associations, then pressed for socio-economic studies of their respective areas. This local initiative was welcomed by the Department of Planning, which channelled available energies into support for the creation of a wider-ranging socio-economic study of the development potential of this large but hitherto somewhat neglected area. The survey was thus commissioned and financed by the Department, together with the Cape Provincial Administration, the Karroo, Cape Midlands and South Eastern Areas Development Associations, and the local authorities falling within the area.

Although Port Elizabeth and its hinterland form a common economic unit, particularly in relation to the Orange-Fish-Sundays Rivers scheme, the parties concerned decided that the area should be subdivided for investigation purposes, with the University of Port Elizabeth assuming responsibility for the Port Elizabeth-Uitenhage metropolitan area and its inner peripheries, and Rhodes University the hinterland areas. From this process was synthesised the Cape Midlands and Karroo 'region'. From 1967 to 1973, this combined area of twenty-one magisterial districts (Fig. 1) thus became the object of investigation in a variety of studies concerning the land use, geography, urban structure, demography, history, economic structure, transport system and other aspects of life and development in the region.

The present study, dealing with the economic structure of the region, was undertaken during 1971 and 1972 when I was engaged as Research Economist on this interdisciplinary survey, which was conducted in the Institute of Social and Economic Research at Rhodes University. This volume is one of a series devoted to the results of the survey investigations, and takes the form of a report to the sponsoring bodies on my findings.

It commences (Chapter One) with an attempt to obtain a perspective view of the Cape Midlands and Karroo region in its national context: its physical location and characteristics; its historical role; and its place in the spatial system to which economic development in the country has given rise. Still at this macro-level, the rates and characteristics of growth and development in the region are then compared with those in a number of adjacent regions.

Chapter Two outlines a number of different theoretical approaches to areal economic investigations and then proceeds to an analysis of the spatial structure of development in the region within the framework of a set of five sub-regions delineated for this purpose. The spatial dispositions of such factors as population, geographic product, income, employment and 'economic welfare' are discussed and the Chapter concludes with an overview of spatial organization in the region.

Chapter Three is devoted to a detailed examination of the sectoral structure of the economy of the area as revealed in the composition of geographic product and of employment.

Chapter Four attempts an evaluation of the nature and the quality of the region's developmental infrastructure and of its resources.

Chapter Five assesses first the nature and causes of the problems of under-development in the region. It then considers the nature of the region's development

potential and the possibilities of realizing this potential. Special consideration is given to the role of national development policies in this respect.

The study concludes with an Appendix in which some of the theoretical aspects of regional types and systems and of models of regional developments are considered as a prelude to a discussion of the problems of regional delimitation. The latter gives consideration to the viability of the Cape Midlands and Karroo region itself, as defined for the purposes of this study, and follows this with an evaluation of the usefulness and the validity of the sub-regional breakdown used in the preceding analysis of the structure of the regional economy in relation to a number of other possible means for subdividing the area into analysis regions.

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Jesmond Blumenfeld

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CHAPTER ONE

THE REGION IN ITS NATIONAL CONTEXT

DEFINITION AND SITUATION OF THE REGION

The Cape Midlands and Karroo region (Fig. 1) comprises twenty-one magisterial districts, which total almost 72 500 km^2 in extent, representing 10,1% of the total surface area of the Cape Province and 5,9% of the Republic (Badenhorst, 1970, p. 1). These twenty-one magisterial districts are: Aberdeen, Adelaide, Albany, Alexandria, Bathurst, Bedford, Cradock, Fort Beaufort, Graaff-Reinet, Jansenville, Maraisburg, Middelburg, Murraysburg, Noupoort, Pearston, Somerset East, Steynsburg, Steytlerville, Stockenström, Tarka and Victoria East.[1]

The situation of this region can be described in a number of different ways. It can, for example, be said to comprise the greater (and western) portion of what is commonly known as the 'Eastern Province'.[2] It can also be said to comprise the eastern portions of the Great Karroo, together with most of the area known as the 'Cape Midlands' and part of the western extremity of the 'Border Region' of the Eastern Cape. A third description is that it accounts for the greater part of the catchment areas of the Sundays and Great Fish Rivers. But perhaps the most useful description from the point of view of this study would be that the region forms the greater part of the hinterland of the Port Elizabeth/Uitenhage metropolitan area and a minor part of the hinterland of the East London/King William's Town metropolitan area.

It is, however, important to note that the region, as defined, excludes not only these metropolitan areas themselves but also the inner peripheries of their hinterlands. Thus, virtually all areas within regular (i. e. daily) commuting distance of the metropolitan centres, and all areas into which urban development in the latter might 'spill over' in the foreseeable future are excluded. In the case of metropolitan Port Elizabeth, these exclusions are reflected in the roughly 'crescent-shaped' southern boundary of the region.

The situation of the region can further be described in terms of its major physiographic features which reveal a number of factors which are also of importance for understanding and analysing the economy of the area.

Physiographically, "there is a clear reflection (in the region) of the most

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1. In all but a few of these twenty-one magisterial districts, the main urban centre bears the same name as the district. The exceptions are Albany, where the main centre is Grahamstown; Maraisburg (Hofmeyr); Stockenström (Seymour); Tarka (Tarkastad); and Victoria East (Alice). Although the town of Bathurst is the seat of the magistracy in Bathurst magisterial district, the coastal resort of Port Alfred is the largest urban centre.
2. Rennie, 1945, notes that the term 'Eastern Province' has two popular usages, a broader one which includes the Transkeian territories, and a narrower one in which the Kei river is taken to be the eastern boundary. It is this latter (and narrower) usage which is employed in this report.

important elements in the structure of South Africa as a whole" (Badenhorst, 1970, p. 8).

The main topographic features of the region are its east-west mountain ranges - the most important of which form part of the Great Escarpment - and the two catchment areas of the Sundays and Great Fish Rivers, which run in a south-easterly direction and encompass most of the region (Fig. 2).

The Great Escarpment forms a crescent around Graaff-Reinet, Middelburg and Steynsburg in the northern part of the region. In fact, the northern boundary of the region lies just above the Great Escarpment and can "be taken roughly as the watershed between the north-flowing tributaries of the Orange River and the southern coastal rivers" (Badenhorst, 1970, p. 3).

The plateau below the Great Escarpment embraces the greater part of the region, and comprises the eastern portion of the Great Karroo in the west and the 'composite' Midlands plateau in the east. The latter contains an important feature, namely the so-called 'second escarpment' which is "an unbroken hilly and mountainous belt, 50 to 80 kilometres wide" (Badenhorst, 1970, p. 4). This is the Tandjiesberg-Bankberg-Winterberg line which virtually bisects the region and separates Cradock and Tarkastad to the north from Pearston, Somerset East, Bedford, Adelaide, Fort Beaufort and Alice to the south (Fig. 2). Badenhorst (1970, p. 4) quotes Els as saying that this belt "is so mountainous that agriculture can hardly be carried out, and the region is then exploited mainly as summer grazing from the surrounding lower lying regions". Badenhorst notes further that "geographically speaking, this range is of importance in that it is an important watershed and obstacle to traffic in respect of the Great Fish River basin". At the western extremity of this range, the Tandjiesberg and its southerly projection - the Bruintjieshoogte - forms the main watershed between the Sundays and Great Fish catchments.

The Karroo and Midlands plateau areas are separated from the Coastal plateau and belt by the Cape Fold mountain belt. The latter "is not only of topographical importance, but it also forms an important climatological boundary (to the Great Karroo) ... this belt contributes greatly to the arid conditions ... of the Karroo" (Badenhorst, 1970, p. 6).

Although the region has a varied topography - in terms of relative relief, the surface area comprises "5% mountains, 23% very mountainous or broken terrain, 18% hilly or very broken terrain and 54% rolling or flat" (Badenhorst, 1970, p. 2) - Badenhorst notes, significantly, that "there is no clearly defined central area of outstanding importance" and that no feature or section of the landscape "has more than purely local importance" (1970, p. 8).

BRIEF HISTORICAL PERSPECTIVE

No specific study has yet been made of the history of the patterns of settlement and development of the twenty-one magisterial districts, probably because as an integral part, first of the frontier regions of the Cape Colony in the late 18th Century and early 19th Century, and later of the Eastern Province, they have not hitherto warranted separate treatment. Indeed, the emergence of major regions of distinct cultural and economic character within the Eastern Province is a relatively recent phenomenon (Rennie, 1945). Socio-political factors and the growth of the two ports of East London and Port Elizabeth respectively have been the main causes of this process of differentiation.

The earlier economic and social history of the Cape Midlands and Karroo region can thus be regarded as being largely coincident with that of the Eastern Province, of which the twenty-one magisterial districts in the region form a significant part.[1]

This area has declined from a position of historical, political and economic importance in the context of Southern Africa to one of relative insignificance in contemporary affairs. The reasons for its historical and political importance were threefold:- this was the area of initial contact (and conflict) between White colonist and Black native; it was the area of settlement by the 1820 Settlers; and it was the area from which the Voortrekkers emanated.

Its economic importance was due mainly to the fact that it became the centre of the wool-farming industry which, together with the wine industry, accounted for the greater part of the Cape Colony's exports in the nineteenth century. In 1834, the value of wine exports from the Colony was £93 744 as against £9 806 for wool (Chase, 1843, p. 180). By 1842, this relationship had been reversed: £43 141 for wine and £72 497 for wool (Thom, 1936, p. 195). Although Theal's contention that "merino sheep saved the country from bankruptcy" may be regarded as exaggerated (Thom, 1936, p. 196) it is nonetheless clear that the rising value of wool exports in the face of the declining value of wine exports was of great economic benefit to the Colony.

Of the total wool exports of over £16 000 in 1835, some 37% by weight and some 26% by value were shipped from Algoa Bay. By 1841, the latter port accounted for 60% by weight and 57% by value (Chase, 1843, p. 173).[2] In 1851, Port Elizabeth accounted for 3,7 million lbs as against Cape Town's 1,8 million lbs and by 1865, these shares had grown to 28,8 million and 3,8 million lbs respectively. Although by this time Algoa Bay was also handling substantial wool exports from the Orange Free State, the dominant position of the Eastern Cape at this stage of the wool industry's development is obvious.

The extension of the eastern frontier to the Fish River in 1780 and to the Baviaans and Tarka Rivers in the north in 1786 had brought the greater part of the Cape Midlands and Karroo region under the direct influence of the Cape Colony. But the development of a market economy did not begin in earnest until after the turn of the century. The village of Graaff-Reinet, established in 1786, saw little growth in its first 20 years of existence. At the end of the first decade it still had, according to one observer, "a miserably poor appearance" (K. W. Smith, 1971). By 1811, however, "the beginnings of trade" had been noted and some 22 tradesmen were operative (Smith, 1971). Between 1813 and 1820, Graaff-Reinet virtually doubled in size.

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1. The history of the Eastern Province has been well documented, and the discussion in this section draws heavily on such standard treatises as those of Walker, 1957; de Kiewiet, 1957; and de Kock, 1924, as well as on the more recent regional studies undertaken by Banach, 1969; Truu, 1971; and K. W. Smith, 1971.
2. The 1835 figures actually understate the Eastern Province's share, as they relate only to exports shipped direct from Algoa Bay. Those shipped coastwise to Cape Town and thence to Europe are included in the figures for Table Bay. The 1841 figures reflect both direct and indirect exports from Algoa Bay and thus provide a more accurate comparison of the shares of the Eastern and Western Provinces.

In the central, eastern and southern parts of the region the position was somewhat different. Although after 1781, "the Zuurveld became congested" (Smith, 1971) with increasing numbers of both Whites and Blacks, the combination of Xhosa incursions and Boer uprisings left the area east of the Gamtoos River virtually denuded of White colonists at the turn of the century. And despite the establishment of Fort Frederick at Algoa Bay in 1799, a mission station at Bethelsdorp in 1802 and a drostdy at Uitenhage in 1804, large parts of the frontier districts in the south were still in Xhosa possession in 1811. Similarly, in the north, "the whole of the Tarka lay deserted in the first years of the nineteenth century" (Smith, 1971).

By the end of 1811, however, colonial forces had re-established control of the frontier and Cradock (1812) and Grahamstown (1814) were established as border settlements (Smith, 1971).

Thereafter, the pace of development increased. The influx of settlers (particularly in 1820), the presence of the military and the proximity of the native tribes stimulated urban development and commercial activity, especially in the Albany district, of which Grahamstown was the centre. Despite its head start of 28 years, and despite its rapid development after the turn of the century, Graaff-Reinet was soon eclipsed by Grahamstown.

By the time it was designated the seat of government in the Eastern Province with the appointment of a Lieutenant-General in 1836, Grahamstown had emerged as the largest settlement, not only in the Cape Colony, but also in the whole Southern African sub-continent, apart of course from Cape Town itself.

To a large extent, this increased tempo of development can be ascribed to a growing tendency to regard the Cape Colony as an integral part of the British economy. Thus the British administration gradually reformed the land tenure system, encouraged the production of commodities which would serve as imports for British industries, promoted immigration schemes (partly to stimulate development in the colony and partly to relieve unemployment at home) and stabilised the Cape's currency and brought it into the same currency area with the mother country.

As many of the 1820 Settlers were driven from the land to the towns by well-nigh impossible conditions, a further stimulus was provided for the emergence of a thriving market economy. They spread as traders and craftsmen to towns throughout the Eastern Province from Port Elizabeth to Graaff-Reinet, but the market was centred mainly on Grahamstown as the main administrative, service and distribution centre, in which roles it supplanted Cape Town.

Wool, and later ostrich feathers and mohair, grew rapidly in importance as export products, and the resultant prosperity was felt throughout the Eastern Cape. The foundations of irrigation agriculture were laid at Graaff-Reinet in response to the growing demand for fodder (lucerne) for the ostriches; commerce flourished as purchasing power grew and the volume of imports rose; and woolwasheries and other processing and service industries sprang up in the towns of the Eastern Province.

Hence from the very weak foundations laid by the semi-nomadic pastoralists who had penetrated the Eastern Cape from the west in the 18th century, population and economic activity grew, despite the setbacks occasioned by the Great Trek,

the Kaffir Wars and the alternative ravages of drought, floods, blight and pests.

Ironically, however, even before the discovery of diamonds and gold, "the effects (of which) were felt throughout South Africa like a seismic disturbance" (Marquard, 1960), the very activities which resulted in this export-led economic boom carried with them the seeds of the economic decline which was to be the lot of the Cape Midlands and Karroo region. The growth of the export trade led to the development of a seaport at Port Elizabeth (and later also at East London) and whilst the hinterland economy reaped the initial benefit of the resultant stimulus to demand for produce, labour, capital and enterprise began to migrate to the new town, which soon over-shadowed Grahamstown in importance. Woolwasheries and other industries migrated from the country towns and became centralised in Port Elizabeth. Moreover, as the colony's frontier moved further east, the region lost its key geographic location. Again, when the diamond and gold rushes began, the region benefited from the improvement in communications which resulted from the need to link the coastal ports with Kimberley and the Witwatersrand. The growth of population in Kimberley called forth increased supplies from the region; but in the long run, the alignment of the major communications links adversely affected some areas within the Cape Midlands and Karroo region: Grahamstown, for example, was by-passed by both the main railway line and the main road from Port Elizabeth to the north. The region soon lost both population and resources to the mining areas, the development of which quite overshadowed that of the Eastern Cape as a whole.

The decline continued with the drift of population from the rural to the urban areas in the 20th century and with the study area's failure to participate in, or contribute directly to, the technological and industrial developments taking place elsewhere in the country. This was the result of the area's apparent lack of mineral and natural resources (including water), its unstable agricultural sector[1] and its increasingly unfavourable situation in relation to the new major population concentrations. Indeed, whilst some local residents would claim that the region's situation, approximately equi-distant from the Republic's three most important industrial complexes - Southern Transvaal/ Northern Free State; Durban/Pinetown/Pietermaritzburg; and Cape Town - is a potential asset in its future development, this factor has operated distinctly to the region's disadvantage in the past.

On the one hand, with the first major stirrings of large-scale industrial development during and after the first World War, the region's main centres were at a comparative disadvantage to the port locations, as a very large proportion of raw materials and other inputs were imported. The ports were thus the logical places to site industry. On the other hand, preferential rail tariffs were introduced to enable the Witwatersrand, with its obvious development potential, to compete with the coastal locations, and to enable the Cape ports to overcome the distance advantage held by Durban and Lourenco Marques. Without a detailed study of the railway rating structures applicable

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1. For example, apart from fluctuations in the climate and in the demand for wool, the collapse of the lucrative ostrich feather market in the early 20th century led to the decline of areas such as Steytlerville (Banach, 1969).

to the various towns in the Cape Midlands and Karroo region in this period, the precise effects of railway rates on development in the region cannot be determined. It is, however, probable that this factor, together with all the other disadvantages under which the region laboured - such as the lack of direct access both to raw materials and to the main markets - effectively discouraged any major industrial development in the region. From the point of view of manufacturing for export, the region was similarly poorly located, for its export industries would have had to bear the additional burden of transport costs to the ports.

By contrast, all these factors, of course, operated to Port Elizabeth's advantage, and were major reasons why that city was able to attract the motor industry which has been so important for its progress.

Without any significant economic growth and development, the loss of population has continued throughout the past six decades. From one point of view, of course, this out-migration has been both beneficial and desirable, since without it, the pressure of population on resources would have been most severe. It has probably also helped to maintain, if not raise, per capita income levels, especially in the rural areas of the region. But out-migration, especially on a large and continuing scale also means loss of skills, capital, spending power and markets. The result has been slow economic growth and even economic stagnation throughout most parts of the region. In addition, the position has been aggravated in the sixties by the combined effects of abnormally severe drought and falling wool prices, both of which have been keenly felt in a region in which the main economic activity is agriculture, and the main agricultural product, wool.

RELATIONSHIP TO THE NATIONAL SPACE ECONOMY

Every regional study must at some stage come to grips with the problem as to what constitutes 'a region', even if only in order to be able to delimit the area to be studied.

This problem is a vexed one, for the concept of 'a region', and, indeed, the term 'region' itself, is open to many interpretations and has many applications. Some of these are simple and essentially pragmatic. Thus, as "an intellectual construct designed to simplify analysis and provide a basis for action", a region might be defined as "a somewhat homogeneous area or community of interest according to one or more criteria" (Nicholson and Sametz, 1963, p. 6). Others involve complex philosophical, mathematical and taxonomic concepts and are, to say the least, esoteric (see, for example, Teitz, 1962; and Spence and Taylor, 1969).

The region of investigation in the present study clearly falls within the former rather than the latter category of regions. It was defined in advance as comprising, simply, a particular group of twenty-one magisterial districts. As is indicated in the Preface to this report, this definition was primarily the result of practical considerations, such as the need to include the areas associated with the bodies which requested the investigations and the (possibly conflicting) consideration of dividing the work between two research organizations. Moreover, the purpose of its delineation was solely to study the socio-economic structure and characteristics of the area within its boundary. Consequently, insofar as the definition of the study region itself is concerned,

this must be taken as given and the need for a discussion of the regional concept for this purpose is obviated.[1]

Some consideration of the concept of a region is, however, necessary before the economy of the Cape Midlands and Karroo region can be placed in its national context. In particular, it should be noted that the total surface area of any country can be regarded as "a mosaic of regions, differing from one another in their natural and man-made features" (Nicholson and Sametz, 1963, p. 6), and that the Cape Midlands and Karroo region is but one element in the 'mosaic of regions' which together comprise the Republic of South Africa. Even more important is the fact that "a region is, first and foremost, a spatial concept with respect to a portion of the earth's surface" (Nicholson and Sametz, 1963, p. 6).

It is, therefore, imperative that the relationship between the economy of the region and of the country as a whole should be seen in spatial as well as in quantitative terms. Indeed, it has already been suggested that the initial and most important cause of the economic decline of the once-prosperous districts of the Cape Midlands and Karroo region was their displacement from a relatively central to a relatively peripheral location vis-à-vis the main centres of settlement and economic activities in Southern Africa. Local factors, such as the relative lack of water and mineral resources, naturally contributed to this decline, but the crucial factor was almost certainly the change in the spatial relationship between the Cape Midlands and Karroo region and other regions of the country.

Inasmuch as the changes in the economic fortunes of the region in the past can be explained in terms of changing spatial relationships, both the present level of development and future possibilities must similarly be seen in the context of a conceptual framework which embodies these spatial relationships.

The concept of space economy

Such a framework is to be found in the concept of the 'space economy', which enables economic development in any defined area, be it region, country or continent, to be looked at not only in terms of its sectoral components but also in terms of its geographic (or spatial) form or pattern. This concept has application to both developed and developing areas. In the latter context, it also represents a useful framework for consideration of some of the problems of economic dualism - that is, the co-existence of a modern, progressive, industrial sector with a traditional, subsistence sector - which characterize developing and under-developed areas, including, of course, Southern Africa. For economic dualism "involves more than an understanding of contrast between sectors of the economy. It has generally a strong spatial dimension as well and gives rise to regional dualism ... In Africa the familiar pattern of economic development is essentially that of 'islands of development' - comparatively small areas of primary, secondary and tertiary activity - set in a vast sea of economic backwardness ... Thus a dual economy comprising sectors of unequal level of development manifests itself spatially as a dual space economy comprising areas of differential economic status" (Fair, Murdoch and Jones, 1969, p. 6).

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1. This should in no way be taken to imply that the delineation of the region is not open to criticism - on the contrary, in subsequent sections of this report several unsatisfactory features of the definition of the region are pointed up.

The space economy consists of three main elements, namely surfaces, nodes and networks, which together constitute "the spatial manifestation of the economy as an 'economic landscape' " (Fair, Murdoch and Jones, p. 6). These three elements are defined and discussed in the following paragraphs with specific reference to the structure of the national space economy of South Africa (see Board, Davies and Fair, 1970) and to the position of the Cape Midlands and Karroo region within this structure.

Economic surfaces

Surfaces are "regional patterns as displayed in population distribution, economic activity, land use, the spheres of influence of nodal centres and so on" (Fair, Murdoch and Jones, 1969, p. 6). Economic surfaces can be regarded as analagous to "height contours on a topographic map" (Haggett, 1965, p. 153) representing in this instance "a series of topographic surfaces each varying both in economic level and character and with gradients of varying steepness between them" (Board, Davies and Fair, 1970, p. 370). Each surface level - that is, the 'area' contained within a particular contour - represents a type of 'economic space' (Boudeville, 1966, p. 3) characterized by a degree of homogeneity in respect of some or other socio-economic variable. Several economic spaces having the same or a similar degree of homogeneity - i. e. the same 'height level' - may be identified in any country or region, but they will not necessarily be contiguous, since they may be separated by an economic space bounded by a different contour level.

Economic surfaces are thus devices which permit the identification of areas of distinct differences in the spatial distribution pattern of development characteristics or socio-economic variables. As already indicated, they may be used to depict the spatial patterns exhibited by single variables, such as land use, per capita incomes, population densities, volumes of economic activity etc. But they may also be used to depict the spatial patterns of composite measures of development characteristics resulting from either the weighted combination, or the superimposition, of the spatial patterns of more than one of these variables.

The usefulness of the concept of surfaces in a variable landscape for affording a mental image of the pattern of economic development, and of the location of areas of relative economic homogeneity, has been amply demonstrated by its application to Italy : "Viewing Italy as a homogeneous economic whole is like visualizing it as one great unbroken plain; no hills or valleys, mountains or gorges relieve the single expanse. When the country is divided into regions, the flat plain becomes a series of plateaus rising to the height of the average per capita income of the people living there. But ... the plateaus are not level, they are etched with the dualism of city and country life. Scattered over and rising from the plateau, then, are mounds, hills and even mountains reflecting the higher incomes of urban centres" (Saville, 1967, p. 51).

Board, Davies and Fair (1970, p. 369, et seq) have constructed a map of what they termed 'socio-economic' surfaces for South Africa, by combining a measure of 'volume' of economic activity, represented by the spatial distribution pattern of the gross geographic product per square mile in each magisterial district, with a composite measure of the 'welfare' of the population in each magisterial district, incorporating per capita incomes, and the educational levels, age structure and employment characteristics of the population.

These different 'socio-economic' or 'development' surfaces (Fig. 3) appear as 'plateaus' or 'plains' of varying heights surrounding a number of mountain or upland 'peaks' which correspond to the major metropolitan centres. In this form of geographical imagery the Witwatersrand can be viewed as a mountain range running south-west from Pretoria, through Johannesburg (the highest peak) to Vereeniging and Vanderbijlpark. Outcrops of this range appear at Klerksdorp and Welkom. The other metropolitan centres - Bloemfontein, Kimberley, Cape Town, Port Elizabeth, Durban and Pietermaritzburg - generally appear as rather isolated peaks, situated mainly on the coastline.

The surfaces surrounding these peaks together comprise the 'peripheral economic space' (Board, Davies and Fair, 1970; and Fig. 4) into which falls the overwhelming proportion of the surface area of South Africa. This peripheral space is divided into the inner periphery; the intermediate periphery; and the outer periphery.

The inner peripheral spaces correspond broadly to the journey-to-work areas (foothills) surrounding the metropolitan centres; to the development axes (upland ridges) between these centres; and to the areas (plateaus) of intensive mining and agricultural activities. The intermediate periphery, consists largely of the extensive farming regions of the country (plains), whilst the outer periphery corresponds to the more backward and depressed areas (valleys), including those furthest removed from the metropolitan centres and most of the Bantu reserves as well.

In this topography of national socio-economic surfaces, the Cape Midlands and Karroo region appears to be very low-lying, being transitionally situated between the intermediate peripheral and outer peripheral surfaces, with the Fish River Valley corresponding approximately to the zone of transition. The western portions of the region lie within the ambit of the "dry, sparsely-settled pastoral west ... with a comparatively high productivity per head", and the eastern portions in the "wetter eastern sector far more heavily settled and intensively worked but far less productive in terms of output per head" (Board, Davies and Fair, 1970, p. 371).

Nodal structure

Nodes are 'points' of concentrated activity, usually comprising urban centres such as cities, towns or villages. These centres are sometimes also referred to as 'central places'.

Central places can be assigned to a ranking in a hierarchy of all such places on the basis of various criteria, which might include size (measured in terms of total population), the 'level' of services provided, or the 'volume' of economic activity.

The hierarchy can be visualised as a tiered or pyramid-like structure with several graded levels of centres each supported by a lower and more broadly-based (i. e. numerically greater) tier. In general, one centre will be found to be so dominant in relation to the remaining centres that it will stand out at the top of the pyramid. A number of theoretical distributions of central places have been postulated in which the number of elements in each tier bears a predictable functional relationship to the number in the preceding and succeeding tiers, the nature of this relationship depending upon the type and level of sophistication of the economic organization upon which the central places are based.

In South Africa, a very high degree of correlation has been found to exist between rankings made according to the two different criteria of size and number of services provided (Board, Davies and Fair, 1970, p. 373). Consequently, for all practical purposes, the two can be regarded as one, and the urban hierarchy in South Africa can be said to comprise seven distinct 'orders' of central places. The first order is the principal metropolitan centre (the Witwatersrand), followed by the successively lower orders of major metropolitan centres; metropolitan centres; major country towns; country towns; minor country towns; and local and low order service centres. Statistical tests have shown these seven orders to be "functionally distinct" from each other (Board, Davies and Fair, 1970, pp. 373-4).

In discussing this national nodal structure, Board, Davies and Fair (pp. 376-378) note that it "is sufficiently balanced such that 59 per cent of the country lies within 150 miles"(i. e. 240 km) of at least one of the metropolitan centres. "However, in those areas falling beyond this distance nodes of a lower order are the main urban foci and assume roles more important than their hierarchical level may suggest" (p. 376). Middelburg (in the study region) is given as an example of such an instance.

The main focal city region of the Witwatersrand is "supported by a distribution of nodes of higher population, service rank and volume of economic activity ... which collectively constitute a 'primary urban mesh' ... (including) the metropolitan centres of the Southern Transvaal together with Durban, the Orange Free State Goldfields, Bloemfontein, Pietermaritzburg, Kimberley, Vereeniging and Klerksdorp". This 'mesh' (Fig. 5) has a high density of urban centres, particularly within the areas which constitute the 'inner peripheral surfaces' (Fig. 4). Beyond these surfaces, the nodal structure of the primary mesh is "less strongly developed" with distances between centres increasing and the higher order metropolitan centres exercising a dominant influence over increasingly larger areas with little support from lower order centres.

The support for, and strength of, this primary mesh comes from "urban economies in which manufacturing and commerce play dominant roles". Indeed the manufacturing function "has been shown to correlate significantly with urban growth" (Board, Davies and Fair, 1970, p. 377).

In the south-western Cape there is a "highly localized 'secondary mesh' ... orientated about the metropolitan node of Cape Town". This mesh is "closely knit" although "at its margins the mesh declines steeply in level and density". Although this mesh "is closely correlated to levels of areal economic welfare and intensity of production", it also derives its strength from "urban economies with high levels of manufacturing and commerce" (Board, Davies and Fair, 1970, p. 378).

The "semi-arid" areas west of this secondary mesh, including the greater portion of the Cape Midlands and Karroo region, are characterised by "a weak urban mesh commensurate with the sparsely populated pastoral areas deriving wealth from a rural rather than an urban economy", whilst "in areas dominated by African reserves no urban mesh of any quality emerges" (Board, Davies and Fair, p. 378).

The weakness of the urban mesh which embraces the Cape Midlands and Karroo region is evidenced by the relatively low density of central places organized about Port Elizabeth and East London in comparison with the densities in the primary and secondary national meshes (Fig. 5).

The region's urban centres do not therefore feature very prominently either in the national nodal hierarchy or in the organization of the country's urban mesh. The highest ranking attained by any town in the region is that of 'order 4' or 'major country town', represented by Grahamstown (Board, Davies and Fair, 1970, Fig 21; and Cook, 1971, Table 6). The remaining urban centres in the region all fall within the lower order categories.

That the region lies within a weak area of the national urban mesh would suggest that integration between its urban centres is low in relation to that exhibited in other parts of the Republic. This suggestion will be borne out by evidence later in this report.

Networks

Networks are the systems of flows and linkages between the various elements of a nodal system. As such, they include the alignment and status of road, rail and air routes as well as tele-communications and other links, together with the volumes of 'traffic' conveyed by these connecting systems. Obviously, the higher the status of an urban centre, the stronger will be the flows which it can be expected to generate. Thus the structure of the network of connections between the various urban centres is an important determinant of both the hierarchical status and the functional dominance of each such centre.

Patterns of connectivity can be viewed at the national, regional and sub-regional (or local) levels, each of which caters for traffic of a different nature e. g. long-distance, medium-distance and local movements.

The national road and rail systems focus on the Witwatersrand and radiate outwards towards the five main ports of Lourenco Marques, Durban, East London, Port Elizabeth and Cape Town, encompassing most of the other metropolitan centres (Bloemfontein, Kimberley, Pietermaritzburg etc.,) en route. This radial road system is complemented by the provision of axial links between those metropolitan centres situated on the radii, notably the coastal centres. The latter characteristic is, however, conspicuously absent from the rail network, but is compensated for by sea links between the five ports.

Passenger traffic on domestic air flights, rail freight volumes, trunk telephone traffic and road traffic all exhibit strongest flows between Durban and the Witwatersrand and between Cape Town and the Witwatersrand (Board, Davies and Fair, 1970, Figs. 11-15). The main subsidiary flows of air travel are between Port Elizabeth and Johannesburg and between Durban, Port Elizabeth and Cape Town. There is also a relatively high volume of rail freight between Port Elizabeth and the interior, whilst both road and trunk telephone traffic flows are particularly strong between Port Elizabeth and East London.

The Cape Midlands and Karroo region occupies a relatively more prominent position in the national road and rail networks than it does in the case of national economic surfaces and the national nodal hierarchy. This is because virtually all road and rail traffic between Port Elizabeth/Uitenhage and all the other metropolitan centres of the Republic passes through one or other portion of the region. However, the region is somewhat peripheral to the two main road and rail communications axes in South Africa, namely the Witwatersrand-Durban and the Witwatersrand-Cape Town axes. In respect of most other flows, the region does not feature very prominently.

The structure of the space economy

The combination of the three elements of surfaces, nodal structure and networks provides an integrated, albeit generalized, view of the spatial aspects of economic development. This spatially oriented approach has numerous uses and advantages, not the least of which is its application to the question of regional delimitations.

Board, Davies and Fair (1970) have identified four 'main metropolitan nodal regions' in the Republic, on the basis of the location and level of national economic surfaces; the distribution, function and influence of the country's urban centres; and the degree of connectivity between these urban centres.

The first of these four regions, which has as its focus the Witwatersrand, is so rich, so complex and so highly integrated (in terms of interaction between its component nodes) that it "encompasses some two-thirds of the national area, contains all but three of its metropolitan nodes and generates 74, 8 per cent of the country's GDP". (Board, Davies and Fair, 1970, p. 383.) Hence it is termed the 'principal region'. Within this principal region, which covers virtually the whole of the Transvaal, Natal, Orange Free State and Northern Cape (Figs. 4 and 6), can be identified numerous sub-regions (termed 'subsidiary metropolitan' and 'other subsidiary nodal'regions) each focussing on one or more of the metropolitan or other urban centres. Thus, for example, there are subsidiary metropolitan regions focussing on Durban, Pretoria, Bloemfontein, Kimberley and Klerksdorp. all within the principal region.

The remaining three 'main' regions are much smaller in size than the principal region, and focus on Cape Town, Port Elizabeth and East London respectively. These three regions are sufficiently far removed from the Witwatersrand to reduce their degree of interaction with, and the influence of, the latter below the critical levels at which they too would be incorporated in the principal region. None of these three main regions contains subsidiary urban centres of sufficient prominence to enable the identification of subsidiary metropolitan regions within their boundaries. The constituent parts of these three regions thus lack the complexity of orientation and organisation which characterises the structure of the principal region.

These four main regions encompass virtually the entire surface area of the country. However, there appear to be two areas whose situation is so marginal to two or more of the four main metropolitan nodal regions that they do not possess an identifiable primary metropolitan focus. One of these two areas, which focuses on De Aar, borders directly on, and indeed partially overlaps with, the northern boundary of the Cape Midlands and Karroo region (Fig. 6). The second of these 'indeterminate' areas also borders on the Port Elizabeth main region and occurs in the George-Oudtshoorn area.

The situation of the Cape Midlands and Karroo region within this framework is such that it straddles the hinterlands of two of the four main regions of the national space economy, namely those organized about Port Elizabeth and East London. This would suggest an element of duality in the study region's external orientation, and raises in turn the possibility of a conflict of interests between its constituent parts, as well as an element of competition between the two metropolitan centres for the region's markets and resources.

The Cape Midlands and Karroo region's position in the context of the

spatial organization of the national economy can thus be summed up as follows: it lies in the 'inter-metropolitan periphery', partly in the depressed 'valley' areas and partly on the extensive rural 'plains' of the economic landscape; its hierarchical urban structure, which underpins the market economy and through which the "impulses of economic change are transmitted" (B. J. L. Berry, quoted by Fair, 1972) is poorly developed and poorly integrated both internally and with the national urban hierarchy; and its networks, whilst fairly well integrated with the national system, are nonetheless slightly peripheral to the main flow corridors of economic intercourse.

Clearly, to see the region in this spatial context is to emphasise the locational as opposed to the structural factors in its development. The more usual approach adopted to date in regional economic studies in South Africa has been that of analysis in sectoral terms alone. This sectoral approach, which will not be neglected in this report, reverses the emphasis in favour of structural factors. However, it should be stressed that neither approach is complete in itself. The full explanation of the pace, direction and nature of a region's economic development naturally embraces both locational and structural aspects.

INTER-REGIONAL COMPARISONS OF GROWTH AND DEVELOPMENT

> "As we see it, to understand economic growth within a particular region, it is necessary (1) to relate the region's development to developments in the nation as a whole; (2) to 'weight' its growth in relative terms - that is, in terms of departure from the national norm; (3) to examine the characteristics of its growth pattern; (4) to evaluate its changing position with regard to its ability to hold and attract persons and industries; and, in general, (5) to study how it reacts to changes in the national 'parameters' that influence supply and demand conditions for the major industries" (Perloff, Dunn, Lampard and Muth, 1960, p. 63).

The economic and social importance of a region in the national context, and its rate of growth and development relative to other regions, can be assessed in quantitative terms via a variety of measures. These measures may include the region's share of national surface area, output, incomes, retail sales, population and employment (or unemployment) and, especially, the relationships between certain of these variables. A distinction is generally drawn between those measures which point up the level and growth in the 'volume' of economic activity in a region, and those which reflect the level of 'economic welfare' of its population, since it is possible for a region to experience an increase in (say) output or employment without necessarily experiencing a corresponding improvement in the standard of living or quality of life for its inhabitants (Perloff and Dodds, 1963, p. 13).

Despite the large number of areal studies already undertaken in South Africa, the possibilities for making meaningful comparisons of the volume and welfare aspects of economic development between various regions are limited. This is partly due to the relative lack of suitable or comparable data on these aspects. But it is also due to the fact that the characteristics of any region, as reflected in the macro-values of different variables - such as the growth and composition of geographic income or population - will vary according to the manner in which, and the purpose for which, the region is defined, and particularly according to which areas are included in, or excluded from, the region.

The basis on which regions are delineated is thus of fundamental importance to the interpretation of any comparisons between their characteristics. In the case of predominantly rural or farming regions, this qualification applies particularly to the inclusion or exclusion of the metropolitan or other major urban centre within whose sphere of influence the greater part of the region lies. But it applies also in general to the manner in which adjacent areas with significantly different parameters of development are treated. A simple example will serve to illustrate this point.

Consider a country comprising three contiguous districts, A, B, and C, each with an equal population and an equal rate of natural increase of r% p. a. Assume no net migration across the national boundaries. Let the parameters of internal population movement be such that out-migration takes place from district A to district B at a rate equal to half the rate of natural increase, with no net migration into or out of district C. The rates of population growth in the three districts A, B and C in any year will be 0,5r%, 1,5r% and r% respectively. Assume that the country is to be divided into two regions on the basis of the three districts. There are three possible alternative combinations: (A + B, C); (A + C, B); and (A, B + C). In the first of these three combinations, the rates of population growth in the two regions will be r% and r% respectively; in the second case, they will be 0,75r % and 1,5r % respectively; and in the third case, 0,5r% and 1,25r% respectively. Thus, depending on which combination is used, the picture obtained will be variously that of two regions growing at the same rate; one region growing twice as fast as the other; or one region growing two and a half times as fast as the other.

These factors had, of course, to be borne in mind in selecting regions with which the Cape Midlands and Karroo region could be compared. This task was complicated by the fact that the definition of the study region itself left much to be desired in certain respects. In particular, the orientation of, and the parameters of development in, different parts of the region vary considerably, resulting in precisely the unsatisfactory sort of situation outlined in the above example.

Subject to this major limitation, however, it was felt that, in general, the most useful results would probably be obtained from comparisons with other predominantly rural regions whose locational and other circumstances were similar to those of the study region. Fortunately, there were three such areas in the Cape Province which had been the subject of investigation in the recent past, and for which the available information rendered meaningful comparisons with the Cape Midlands and Karroo region feasible.

These three 'regions' varied greatly in extent from less than one-third of the area of the study region to almost four times the size of the latter. For this, and other reasons - notably, again, the arbitrariness of their delineation - they were less than ideal, but apart from the lack of more suitable alternatives, they provided valuable and ready-made sources of comparable data.

The 'regions' concerned, and the studies in which they were investigated were North-East Cape (Kotzé, 1966); North Cape (Malan, 1969); and North-

West Cape (Cilliers et al, 1964) (Schedule A).[1] Two of these regions, namely North-East Cape and North-West Cape adjoin the Cape Midlands and Karroo region (Fig. 7), whilst the North Cape region approximates that area of the Cape Province which lies to the north of the Orange River (although its eastern extremities intrude into the Orange Free State). All three are extensive, under-developed, predominantly rural and agricultural regions[2] situated in the intermediate and outer peripheral space of the national space economy.

Apart from these inter-regional comparisons, it was also considered desirable in presenting the picture of the role and status of the Cape Midlands and Karroo region in the national context, to demonstrate the effects on this picture of the exclusion from the study region of the Port Elizabeth/Uitenhage metropolitan area. Consequently, comparisons were also made with a fourth region, from another study, namely the 'Cape Midlands' (Banach, 1969), which included the metropolitan area. In order to avoid confusion, Banach's study region will be referred to in this report as the Port Elizabeth-Midlands region.[3]

It should perhaps be noted at this point that two other areas which adjoin the Cape Midlands and Karroo region have been under investigation concurrently with the survey of the latter. These are the 'Central Karroo' region, which is being studied by the Institute of Social and Economic Research at the University of the Orange Free State, and a Port Elizabeth/Uitenhage metropolitan region, which is being studied by the Institute for Planning Research at the University of Port Elizabeth. Unfortunately, at the time the comparisons between the Cape Midlands and Karroo region and the other regions mentioned above were made, the results of these two concurrent regional surveys were not available

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1. The region studied by Cilliers et al was actually entitled 'Western Cape' and encompassed a much wider area than that covered by the 'North-West Cape' region used here for comparisons with the Cape Midlands and Karroo region. The wider region, however, included metropolitan Cape Town, the Cape Peninsula and the 'South-Western districts' - i. e. the Southern Cape coastal region, including the Garden Route - as well as parts of the Cape Midlands and Karroo region itself (Cilliers et al, 1964, Figs. 1 and 12). It was, however, possible to abstract from their report data relating to an extensive 'North-West Cape' hinterland region from which all the above-mentioned areas were excluded (Schedule A).
2. The North Cape region includes the Kimberley magisterial district which in turn includes the Kimberley metropolitan area. In respect of some variables, the region is sufficiently large to minimise the influence of the metropolitan area. In other instances, however, the inclusion of Kimberley results in a distortion of the characteristics of the region. Where necessary, therefore, the Kimberley district has been excluded from some of the inter-regional comparisons.
3. Since this Port Elizabeth-Midlands region included not only the metropolitan area itself and the inner periphery of the hinterland, but also fifteen of the twenty-one magisterial districts in the Cape Midlands and Karroo region (Schedule A), it was regarded as a suitable substitute for undertaking the considerable additional calculations which the addition of the metropolitan area to the Cape Midlands and Karroo region would have entailed. That it also included a further six hinterland districts not included in the Cape Midlands and Karroo region - namely Willowmore, Albert, Aliwal North, Colesberg, Richmond and Hanover - was not regarded as invalidating this conclusion.

and could not, therefore, be incorporated in this report.[1] All these regions are defined in detail in Schedule A and illustrated in Fig. 7.

Gross geographic product: size and growth

The gross geographic product (GGP) of a sub-national area can be regarded as being the regional equivalent of the gross domestic product (GDP) of the country as a whole. In other words, it represents "the total earnings of all production factors in an area, as a result of their participation in the economic activities of that area" (Nel and de Coning, 1965, p. 24). It is, moreover, "the best yardstick for determining the scope, growth and structure of the economy of a region" (Nel, 1965, p. 294).

Unfortunately, however, a major obstacle to regional economic investigations in many countries has been the relative paucity of data on the geographic incomes of sub-regional areas. This problem still exists in South Africa, where the only comprehensive data on total regional incomes are the estimates of the gross geographic product at current prices of each magisterial district for each year from 1954/55 to 1959/60 inclusive.[2]

These estimates were the result of a number of studies undertaken for the Office of the Economic Adviser by research workers in different sectors of the economy. The identity of the research workers concerned, the sources of the estimates and the methods of their compilation have been fully documented elsewhere (see, for example, Nel and de Coning, 1965; and Banach, 1969) and will not be repeated here. Although the methods and sources concerned do give rise to some problems of interpretation and to doubts about the validity of some of the detailed estimates, it is widely accepted that the estimates have general validity when aggregated for a number of magisterial districts. Consequently, any discussion necessitated by these problems and doubts will be deferred until the relevant estimates for the study region are discussed in detail in subsequent sections of this report.

Beyond the six-year period to which these estimates refer, very little geographic income data is available for any sub-national areas, and none for the Cape Midlands and Karroo region. Discussion of the geographic income of the latter had, therefore, to be limited to this period.

The gross geographic product (GGP) of the Cape Midlands and Karroo region was R68, 2 million at current prices in 1959/60.[3] This represented

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1. Some of the results of the Central Karroo survey have since been made available (see, for example, W. J. F. du Toit, 1970). A number of reports have been published by the Institute for Planning Research at the University of Port Elizabeth, but to date these have dealt only with the built-up (municipal) areas of Port Elizabeth, Uitenhage and Despatch themselves, rather than with the wider region of six magisterial districts.
2. Estimates of total personal income and total personal disposable income (as opposed to the gross geographic product) are also available by magisterial district for 1958/59 (see Nel and de Coning, 1965) and by race within each magisterial district for 1959/60 (see Nel, 1968a and 1969). (For the differences in definition between personal income and geographic income see, for example, Nel and de Coning, 1965, pp. 18-27).
3. Except where otherwise indicated, all data in this report relating to GGP in the Cape Midlands and Karroo region are calculated from tables of estimated GGP by nine production sub-sectors within magisterial district, kindly made available by the Department of Planning. They include the estimates relating to the present day Hanover magisterial district which, together with the present-day Noupoort magisterial district, formed one magisterial district during the period to which the estimates refer.

only 1,5% of the gross domestic product (GDP)[1] of R4 552 million in the country as a whole in the calendar year 1959[2] (Table 1.1).

GGP in the North Cape, North-East Cape, North-West Cape and Port Elizabeth-Midlands regions in the same year was R143,4 million, R19,8 million, R87,8 million and R275,2 million respectively (Table 1.2). The corresponding shares of these regions in the national product were thus 3,1%, 0,4% and 1,9% and 6,0% respectively.[3] But a region's share of GDP must be seen in relation to its area, since the size of the geographic product will obviously vary with the size of the region under consideration.

Thus, for example, whilst North Cape has a surface area three times greater than the Cape Midlands and Karroo region, its GGP was only twice as large.

This inter-relationship between size of output and size of region is most clearly seen by converting to a standardized measure of output per unit of surface area. Such a measure is provided by the gross geographic product per square kilometre (GGP/km^2).

As would be expected, the 'intensity' of economic activity in the Cape Midlands and Karroo region, as reflected in this measure, is very low in comparison with the national average - R896/km^2 in 1959/60 in the region as against R3 728/km^2 at the national level in 1959 (Table 1.3). However, the region fares reasonably well on this criterion in comparison with some of the other extensive pastoral farming areas in the western half of the country. In the North Cape and North-West Cape regions, for example, GGP/km^2 in 1959/60 was R749 and R304 respectively, whilst in the North-East Cape region it was R934. The North Cape region, however, includes the metropolitan area of Kimberley. Exclusion of Kimberley magisterial district from the data causes the figure to drop from R749 to R518 per sq. km.

The inclusion of the Port Elizabeth metropolitan area with its hinterland, however, alters the levels of intensity far more significantly, the 1959/60 figure for the Port Elizabeth-Midlands region being almost R2 500/km^2 - nearly three times higher than in the Cape Midlands and Karroo region. The latter is of course, hopelessly outclassed in comparison with the major metropolitan areas themselves. Thus, for example, in the Port Elizabeth and

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1. In order to avoid confusion, the convention will be adopted in this report of referring to the areal product of the country as a whole as the 'gross domestic product' and that of any sub-national areas as 'gross geographic product'.
2. Calculated from the table of GDP estimates in "South African Statistics, 1968", page W-13. These figures, on a calendar year basis were used in preference to the estimates quoted by Banach on a mid-year to mid-year basis, due to the much greater length of the time series in the former, which were the 'official' figures.
3. Unless otherwise indicated, all data relating to the North Cape, North-East Cape, North-West Cape and Port Elizabeth-Midlands regions have been derived, or calculated, from the data in Malan, 1969; Kotzé, 1966; Cilliers et al, 1964; and Banach, 1969, respectively.

Uitenhage magisterial districts alone, GGP/km^2 was about R44 500 at 1959/60, whilst the Southern Transvaal, with a 1% share of the surface area of the Republic, but a 37% share of GDP, had an average output of over R133 000/km^2 in 1958/59.[1]

Apart from the absolute size and intensity of GGP, a standard measure of the buoyancy of economic activity in any geographic unit is the rate of growth of the geographic income (or product). Unfortunately, the period for which regional income data is available for most areas in South Africa - namely 1954/55 to 1959/60 - is clearly too short to enable accurate quantification and computation of long-term trends and rates of change. The availability of this data does, however, afford some additional insight into the relationship between the national and regional products and, particularly, into the compositional differences between them.

Although GGP at current prices in the Cape Midlands and Karroo region was higher in 1959/60 than in 1954/55 - R68,2 million as opposed to R62,1 million - the path followed between these two years suggests the probability of a tendency to fluctuate fairly widely about the same level rather than a general tendency to increase (Table 1.1). The net increase in the regional product over this period was thus only 10%. Since the national consumer price index rose by over 13% between 1954 and 1959, it is unlikely that there could have been any growth in real terms in the regional product over the period as a whole.

In contrast, at the national level, GDP at current prices advanced continuously, albeit erratically, during the same period, from R3 542 million in 1954 to R4 552 million in 1959 - an increase of 29%.

As a result of this adverse relationship (which, as subsequent paragraphs will show, was due mainly to instability in the agricultural sector) the region's share of GDP declined slightly over the period from just over 1,7% to just under 1,5%.

The Cape Midlands and Karroo region was not entirely alone in this unhappy situation (Table 1.4). The North-West Cape region fared even worse with a net decline of 2,3% in GGP at current prices from R89,9 million in 1954/55 to R87,8 million in 1959/60, i.e. from 2,6% to 1,9% of GDP. Similarly, GGP in the North-East Cape showed virtually no net increase at current prices over the period - R19,3 million in 1954/55 and R19,8 million in 1959/60. In both these cases, as in the Cape Midlands and Karroo region, there were marked fluctuations from year to year.

North Cape on the other hand achieved a net increase of some 42% at current prices in the same period from R101,1 million to R143,4 million - or from over 2,8% to over 3,1% of GDP. In this instance, the magnitude of the increase cannot be ascribed to the inclusion of the Kimberley metropolitan area, for the exclusion of Kimberley magisterial district actually raises the increase over the period to over 47% (Table 1.4).

In the Port Elizabeth-Midlands region, GGP at current prices rose by only 14,3% from over R240 million to over R275 million, causing its share of GDP to fall from 6,8% to 6,0% during the period. Clearly the Port Elizabeth/Uitenhage metropolitan area itself did not fare as well as might have been expected in this period.

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1. Calculated from Malan, 1969, Table 2.0.

The relative performances of each of these regions can be shown more clearly by calculating what Perloff, Dunn, Lampard and Muth (1960) have termed the 'total net shift' in GGP in each region between 1954/55 and 1959/60, i.e. by showing the extent to which income growth in each region deviated from the level which would have been achieved if every region had grown at the same rate (29%) as the country as a whole (Table 1.5). For this purpose, the latter rate might be termed the 'expected' rate.

In the Cape Midlands and Karroo region, actual growth in GGP fell short of 'expected' growth of R18 million by almost R11,9 million - a shortfall of two-thirds. In North-East Cape, where 'expected' growth would have been R5,6 million, actual growth was only R0,4 million - a shortfall of 93%. In the North-West Cape region, where GGP fell over the period, actual performance was R28,2 million (or 108%) below the 'expected' increase of R26,1 million. Even in the Port Elizabeth-Midlands region, the actual growth of R34,4 million was only about half the 'expected' growth of R69,8 million. All these regions thus experienced a 'net downward shift' in regional income growth, whereas the North Cape region experienced a 'net upward shift': actual growth exceeded the 'expected' growth of R29,3 million by R13 million or 44%.

These differential increases in total volume may also be expressed as changes in the intensity of economic activity, i.e. as GGP/km^2. In the Cape Midlands and Karroo region, GGP/km^2 at current prices rose from R816 in 1954/55 to R896 in 1959/60, although during the period it varied from a low of R765/km^2 in 1955/56 to a high of R896/km^2 in 1956/57 and 1959/60 (Table 1.3). The national product per sq km was R2 901 in 1954, and it increased steadily by 29% to R3 728 in 1959.

In North-East Cape, intensity increased only marginally from R915 to R934. However, the variation was much greater - from a high of R1 120 in 1956/57 to a low of R850 in 1958/59. In North-West Cape, there was a marginal decline from R311/km^2 to R304/km^2. In North Cape, apart from 1958/59, when there was a marginal decline, GGP/km^2 rose continuously from R528 to R749 over the six-year period.

The vast differences in the 'density' of geographical product, between extensive rural areas on the one hand and built-up metropolitan areas on the other, which are shown up by this measure of the 'volume' of areal economic development per unit of surface area are, of course, not unexpected. Such differences arise from the major structural differences between the predominantly urban industrial (and mining) economies on the one hand and the predominantly rural agricultural economies on the other, the former activities being more intensive users of land than the latter. They are also to be expected in the light of location factors: despite relatively well-developed transport networks, sheer distance coupled with unfavourable transport pricing policies, especially on finished products, has effectively limited the access of many farming areas, such as the Cape Midlands and Karroo region, to the major metropolitan markets of South Africa.

In other words, the low levels of intensity of economic activity in the Cape Midlands and Karroo region, and in the North, North-West and North-East Cape regions,are the result of their peripheral location in the national space economy, and of the general rural/agricultural character of their economies.

Population

The preliminary results of the 1970 population census reveal an enumerated[1] total population (excluding Asians) of 420 300 persons in the Cape Midlands and Karroo region (Whites: 54 900; Coloureds: 88 100; Bantu: 277 300)[2] As a proportion of the total population of the Republic this represents a mere 2,0% (Whites: 1,5%; Coloureds: 4,4%; Bantu: 1,8%). Total population density was 5,8 persons/km^2 .

As the detailed results of the 1970 census are not yet to hand, the 1960 results must be used for inter-regional comparisons (Table 1.6). At that date, the Cape Midlands and Karroo region's population of 384 000 constituted a 2,4% share of total population (Whites: 2,0%; Coloureds: 5,3%; Bantu: 2,2%). The other regions' shares of total population ranged from an almost negligible 0,8% in the case of North-East Cape to a more substantial 3,7% in the North Cape, and 5,2% in the Port Elizabeth-Midlands region.

As in the case of GGP, the sizes of the regions are highly relevant to an assessment of these comparative shares, but this factor can be taken into account by calculating the respective population densities.

In the Cape Midlands and Karroo region, total population density at 1960 was 5,3 persons/km^2 (Table 1.6). This is low compared with the density of 13,1 for the whole Republic, but higher than that of 3,1 for North Cape and significantly higher than the level of 0,95 persons/km^2 in North-West Cape. When the influence of Kimberley magisterial district is excluded, the North Cape density falls to 2,7. In North-East Cape, the density was 6,1, and in the Port Elizabeth-Midlands region it was 7,5.

Population density is thus markedly lower in the western than in the eastern areas, and in these comparisons alone clearly lies part of the reason

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1. Both in South Africa in general, and in the Cape Midlands and Karroo region in particular, the enumerated census populations (especially of Coloureds and of Bantu) at most, if not all, census years are subject to a number of adjustments. The need for such adjustments is usually the result of under-enumeration of particular population groups, the apparent shortfalls being very substantial in a number of instances (see, for example, Blumenfeld, 1972, Ch. 3 and Appendices A4 and A6). However, other more localized factors, such as incorrect racial classifications or abnormal circumstances in specific areas, may also necessitate adjustments to the enumerated figures (see, for example, Truu 1971, p. 37 et seq). The task of rectifying these errors and omissions for any or all of the regions under consideration here would be an impossible one. With very minor exceptions, therefore, the discussions of population data in this report are based entirely on the enumerated census figures as reflected in the official census publications.
2. Truu (1971) omitted Asians from his demographic analysis of the Cape Midlands and Karroo region as their small number - less than 500 at 1970 - renders them negligible in the overall demographic picture. Since some of the population data for the region in this report are based on his results, a similar course has been followed here.

for the higher 'density' of GGP in the Cape Midlands and Karroo and North-East Cape regions, compared with the North and North-West Cape regions.

The race composition of the population differs quite substantially from region to region, and between each region and the Republic as a whole (Table 1.6).

In the Cape Midlands and Karroo region, the relatively low proportion (16%) of Whites and the relatively high proportion (21%) of Coloureds in the population, compared with the national proportions, is due in the former instance to the predominantly rural character of the region and in the latter instance to the proximity of the region (especially its western half) to the western and south-western portions of the Cape Province, where the great majority of Coloureds in South Africa tend to reside. As in the country as a whole, the Bantu accounted for some two-thirds of the region's population at 1960.

The same factor in respect of the White population explains the relatively low 15% share of this group in the population of the North-East Cape region. In the case of the Coloured people, the opposite factor - namely relative distance from the western Cape - largely explains the relatively low proportion (6%) of Coloureds. The relative absence of Coloured people, coupled with the proximity of the Ciskei and the Transkei, effectively boosts the proportion of Bantu to almost four-fifths.

Moving westwards, the higher-than-average proportion (26%) of Whites in the North-West Cape region, despite its rural character, can be attributed to the abnormally low representation (15%) of Bantu in the region. This is due to a combination of historical factors and the application of political controls, as a result of which Bantu settlement and in-migration commenced at a late stage and were contained within relatively low rates of increase. The Coloured people's share of some three-fifths of the total was due partly to the same factor, but also to the close proximity of the region to the Cape Peninsula. This latter factor resulted in the region accounting for almost 11% of the Republic's Coloured population at 1960.

The population composition of the North Cape Region was more akin to that of the Republic as a whole than was the case for any of the other regions. Historical factors probably account in part for the slightly higher-than-average proportion of Coloureds. The presence of Bantu reserves in the north of the region, and the proximity of Botswana, have probably boosted the share of Bantu in the total. The share of Whites (18%) is slightly higher than might be expected for a predominantly rural region, but the exclusion of the influence of Kimberley magisterial district from the data reduces this share to a level on a par with the Cape Midlands and Karroo and North-East Cape regions.

As might be expected, the inclusion of the Port Elizabeth/Uitenhage metropolitan area in the Port Elizabeth-Midlands region raised the share of both Whites and Coloureds to above-average levels, with the latter accounting for over 14% of the total Coloured population of the Republic. However, since the Port Elizabeth-Midlands region excludes those portions of the Cape Midlands and Karroo region in which the Bantu are most markedly predominant, this group's half-share of the total was somewhat lower than might have been expected, with the result that the shares of both Whites and Coloureds were probably slightly inflated.

Truu (1971, pp. 160-161) has shown that, during the period 1904-1970, the population of each race group in the Cape Midlands and Karroo region has grown at a slower rate than the corresponding national population. As a result, the region's share of the total population of the Republic has been declining.

In the case of the White population of the region, not only has there been a decline in relative terms, but there has been a long-term secular trend towards a decline in absolute terms as well. This trend continued during the sixties, and the White group was some 27% smaller in 1970 than it was in 1904. This has been due largely to continuing depopulation of the rural areas of the region, whilst the urban areas have barely managed to retain their White populations (see Chapter Two). The mean annual national growth rate for Whites between 1904 and 1970 was 1,85% (Truu, 1971, Table 75).

The region's Coloured and Bantu populations, however, have grown continuously, albeit slowly, since 1904, the former having increased by 114% and the latter by 136% by 1970, implying mean annual compound growth rates of 1,16% and 1,31% p.a. respectively. In both instances, though particularly in the case of Coloureds, the data suggest a substantial incidence of out-migration from the region. The corresponding national growth rates were 2,23% p.a. for Coloureds and 2,09% p.a. for Bantu (Truu, 1971, Table 75).

Since there is usually a fairly close correlation between the growth of population and the growth of employment opportunities - at least in the case of population groups which are not subject to legal or institutional restrictions on mobility - the relative lack of growth in the region, particularly of the White population, is indicative of the poor state of economic health which has prevailed in the area for the better part of the twentieth century. As will be shown later, the decline in the ability of the agricultural sector to support the rural community has been especially important in this respect.

Population growth trends in the North-East Cape region appear to have been essentially similar to those in the Cape Midlands and Karroo region.

In the other regions, however, the parameters of population growth were evidently rather different. Thus, in the North-West Cape, there was a slight increase (12%) in the White population between 1904 and 1960. This can probably be ascribed to the development of mining operations in the far north-west corner of the region (the Namakwaland/Vanrhynsdorp area), for in the rest and greater part of the region, there was a net absolute decline over the period. Coloured and Bantu population growth was also more rapid than in the two eastern regions. However, the rate of increase of the Coloured people appears still to have been adversely affected by a net out-migration from the region. Bantu population growth on the other hand was probably due largely to in-migration of workers and work-seekers, with natural increase playing only a relatively minor role.

In the North-Cape region, the White population virtually doubled from 1904 to 1960. Whilst this was still well below the national average, and reflected a degree of White out-migration, it can nonetheless be taken to reflect a state of relative economic health in the region (compared with the three regions discussed above) due in all probability to the development of the mining industry and, as the analysis of GGP data will suggest, to relative stability

in the agricultural sector. With the Bantu population trebling and the Coloured population more than trebling in the same period, this region experienced a far more rapid growth of population than the other three regions.

In the light of the strong outflow from the rural to the urban areas, the inclusion of the metropolitan area in the Port Elizabeth-Midlands region naturally results in a growth pattern substantially different from that in the Cape Midlands and Karroo region. However, much of the White out-migration from its own hinterland must have accrued to areas other than the Port Elizabeth metropolitan area, for the increase in the White population of the Port Elizabeth-Midlands region was only about 50% (or 0,79% p.a.) between 1904 and 1960. Even in the case of the Coloured and Bantu groups, the increases were less than might have been anticipated.

Clearly, both the Cape Midlands and Karroo region, as well as other hinterland areas of the Cape Province, have been losing their population to other parts of the Republic. Their inability to retain their populations must be seen as a function of their limited capacities to provide for the gainful employment of their residents. This factor is also reflected in the relationships between total employment and total population in these regions.

Employment

The only comprehensive data available for inter-regional comparisons of employment are those from the 1960 population census, which was the first such census in which data on employment was tabulated by magisterial district.[1]

In that census, over 122 000 persons (excluding Asians) were enumerated as 'economically active' (i.e. both willing and able to work)[2] in the Cape Midlands and Karroo region (Table 1.7) (Whites : 20 000; Coloureds: 27 000; Bantu: 76 000). This represented 2,1% of the total economically active population of the Republic. For the individual races the corresponding proportions were:- Whites: 1,7%; Coloureds: 4,8%; and Bantu: 1,9%. In each instance this represented a lower proportionate share of the total economically active population than the corresponding share of total population.

Consequently, the 'crude activity rate' (i.e. the ratio of the economically active population to the total population, expressed as a percentage)[3] is lower in the region than in the country as a whole for each race (Table 1.7), although in the case of the Coloured people, the difference is very slight.

Conversely, dependency rates are higher in the region - in other words, for each race there is a larger number of economically inactive people for every worker in the region than there is in the Republic as a whole, indicating that the regional labour force carries a greater burden of support.

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1. The first results of the 1970 population census which relate to employment were made public far too late to be incorporated into this report.
2. This includes unemployed persons.
3. The crude activity rate is sometimes also referred to as the 'gross work participation rate'.

This situation can be ascribed mainly to structural differences in the respective populations of the region and the Republic (Truu, 1971, Chap. II). These differences are evident in the age and sex structures of the two populations. In general, the proportions of the population below and above the 'working age' of 15-64 years are higher in the region. In addition, the ratio of males to females tends to be lower in the region. Since most economically active persons fall within the 'working age' group, and since,in general,a larger proportion of the male than of the female population is economically active, these two factors result in lower crude activity rates in the region. These structural differences are probably due to a large extent to the fact that a substantial number of adults of working age in each race group tend to leave the region in search of work elsewhere, and that, of these out-migrants, a majority tend to be males, thereby reducing both the proportion of the region's population in the working age group and the crude activity rates. This is, of course, as much the result of the lack of employment opportunities in the region as it is of the long-term national trend towards urbanization.

These general characteristics - namely, a lower proportionate share of national employment opportunities than of population, and hence a lower activity rate - are common to all the other regions dealt with in this section of the report, except the Port Elizabeth-Midlands region and, to a lesser extent, the North-West Cape region (Table 1.7). Indeed, there is a striking consistency in the crude activity rates for each race in the Cape Midlands and Karroo, North-East Cape and North Cape regions. For the latter, this holds true whether Kimberley magisterial district is included or excluded. This similarity can be assumed to be due to the existence of similar circumstances in each of the three regions.

In the North-West Cape region, the crude activity rate for Coloureds is marginally higher than the national rate, whilst that for Bantu is 50% higher - 54% in the region as against 36% for the Republic as a whole. These two factors can be regarded as being partially inter-related. Thus, the high crude activity rate for Bantu can be ascribed to the selective process of in-migration operative in the region, in which work-seeking Bantu, for statutory or other reasons, generally leave their families in the Bantu reserves. At the same time, the relative lack of Bantu labour in the region has resulted in an additional demand for Coloured labour, which has manifested itself in a higher crude activity rate.

The crude activity rates for each race in the Port Elizabeth-Midlands region at 1960 were virtually identical to the corresponding rates for the country as a whole. That they were higher than the rates prevailing in the Cape Midlands and Karroo and other rural regions can be ascribed to the greater availability of work opportunities in the metropolitan area and to the comparatively higher proportion of the population in the working age group.

Gross geographic product per capita

The discussions in the three previous sections (on the size and growth of geographic product and population, and the size of the employment force)concern the 'volume' measures of areal economic growth. However, these measures do not, of themselves, indicate much about the 'welfare' of the regions concerned, in the sense of levels of, and changes in, living standards - or, as Perloff, Dunn, Lampard and Muth (1960, pp. 3-4) put it, the "better" aspect of regional economic growth as opposed to the "more and bigger" aspect.

A comparative measure of the level of regional prosperity is, however, given by the relationship between regional product and population (Table 1. 8). Thus, with a regional product of R68, 2 million in 1959/60, and an estimated 'mid-year' population of 384 800, estimated GGP per capita at current prices in the Cape Midlands and Karroo region was R177 in that year.[1] This compares with an estimated national level of R293 of GDP per capita in 1959.[2]

Further contrasts are afforded by the North-East, North-West, North Cape and Port Elizabeth-Midlands regions for which estimated per capita GGP was R156, R324, R244 and R338 respectively at 1959/60. If Kimberley magisterial district is excluded from the North Cape region, the per capita figure falls from R244 to R199 (Table 1. 8).

A comparison of these estimates with the corresponding data on population densities would seem to suggest that, when the metropolitan areas are left out of the reckoning, there might be an inverse relationship between total population density and per capita income. In fact, however, the relationship is more probably one between race composition and per capita income, with those areas with a higher proportion of Whites (and, to a lesser extent, of Coloureds) in their population, tending to have higher per capita incomes. The apparent relationship with population density stems from the fact that,in the rural areas, a higher proportion of Whites (and/or Coloureds) in the population tends to imply a lower density, and vice versa.

Thus, for example, the lower per capita geographic income in the North-East Cape region, compared with the Cape Midlands and Karroo region, can to a large extent be attributed to the fact that the proportion of Bantu - who are generally the group with the lowest income-earning capacity in the South African socio-economic structure - in the population is substantially higher in the former area than in the latter area. Similarly, the relatively high GGP per capita estimate of well over R300 for the North-West Cape region can be attributed largely to the abnormally low proportion (15%) of Bantu in the population. However, it is also due, in part, to the lower dependency rates which have already been shown to exist in both the Bantu and Coloured population groups of that region.[3]

In the built up areas, technological considerations become far more important as determinants of per capita income levels. In the first place, the higher ratio of capital to both labour and land in the urban economies raises significantly the productivity of the population in comparison with the rural areas. Secondly, where the nature and composition of economic activities in an urban area results in a relatively high ratio of skilled to unskilled workers, per capita incomes will tend to be higher than in areas where this ratio is lower. And thirdly, the tendency towards lower dependency rates in the urban areas - in part, the result of differences in age and sex structures - similarly raises per capita income levels.

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1. Since the accounting year for the GGP estimates is from July to June, the 'middle' of the year becomes end of December/beginning of January. The regional mid-year population estimates used in this section were obtained by linear logarithmic interpolation between total population at 1951 and at 1960 in each region. In the case of the Cape Midlands and Karroo region, they include Hanover magisterial district, in order to ensure comparability with the GGP data.
2. Calculated from "South African Statistics, 1968", pages W-13 and A-11.
3. See previous section.

Of all the regions discussed above, only the North Cape region appears to have registered an increase in per capita GGP levels, in either current or real terms, during the period from 1954/55 to 1959/60 (Table 1.8). In the Cape Midlands and Karroo region, for example, with the population rising from an estimated 349 600 at the beginning of 1955 to an estimated 384 800 at the beginning of 1960 and with GGP varying between R58,2 and R68,2 million, estimated GGP per capita at current prices varied between R188 and R163 p.a. in the period. Significantly, the level at the end of the period was no higher than that at the beginning - indeed, a moving average suggests a marginal decline over the period. Consequently, a decline in real income per capita is suggested.

The patterns in the North-East Cape, North-West Cape and Port Elizabeth-Midlands regions are essentially similar to that in the Cape Midlands and Karroo region. Thus, even in the Port Elizabeth-Midlands region, where the increase in total GGP at current prices was probably sufficient to prevent a drop in the real total regional product (Table 1.4), the increase in population during the period was such that the region could only sustain per capita income levels at current prices - i.e. real income per capita declined.

In North Cape, however, where total GGP at current prices rose by over 40%, per capita GGP at current prices rose by over 23%, despite the increase in population. This was probably sufficient to cause an increase in real terms as well. Even with the exclusion of Kimberley magisterial district, per capita GGP rose from R157 in 1954/55 to R199 in 1959/60 - an increase of almost 27%.

By contrast, estimated GDP per capita at current prices in the country as a whole rose fairly steadily by some 14% from R258 in 1954 to R293 in 1959 (Table 1.8). Since this meant that national per capita income could only be sustained at the same level in real terms - the general level of prices rose by over 13% in the same period - the performance of the North Cape region appears all the more creditable.

In the light of these per capita income levels and trends, it is not difficult to understand why, the metropolitan areas of Port Elizabeth and Kimberley apart, the two western regions discussed above (North and North-West Cape) fall within the intermediate periphery of the national space economy (Fig. 4), whilst the eastern regions (Cape Midlands and Karroo and North-East Cape) fall within the outer periphery. In all instances, except North-West Cape, per capita GGP was well below the national average, and in most cases it fell further behind during the period. Despite the fact that the populations of these regions were growing slowly in comparison with the national averages, they were still unable to achieve increases in their levels of prosperity. Even in the North-West Cape, the effects of the higher 'welfare' levels were largely offset bythe particularly low 'volume' levels (Table 1.3).

Composition of gross geographic product

The GGP estimates for each magisterial district, made available for this study, were broken down into nine categories, namely agriculture, forestry and fishing; mining and quarrying; manufacturing, construction, and electricity, gas and water; transport, storage and communication; trade; financial institutions and real estate; ownership of dwellings; general government services; and other services.

For the purposes of the present study, the first two of these categories - agriculture and the extractive industries - have been taken to constitute the primary sector; the third category - manufacturing, construction and 'power' - has been taken to represent the secondary sector; and all the remaining categories comprise the tertiary sector.

On the basis of these assumptions therefore, one of the nine categories into which the GGP estimates have been broken down corresponds to a sector, the remaining eight categories being sub-divisions of either the primary or tertiary sectors. However, in order to avoid confusion, the nine categories listed above will be referred to throughout this report as 'sub-sectors', the term 'sector' being reserved to connote the more aggregative concepts of the primary, secondary and tertiary sectors.[1]

Although the nature of this breakdown, with a high degree of aggregation in some categories, naturally places certain limitations on the usefulness of the data for analysis purposes, it does enable considerable insight to be gained into the sectoral structure of economic development.

Comparisons of the sectoral and sub-sectoral composition of GGP in the Cape Midlands and Karroo region with that of national GDP reveal clearly some striking, though not unexpected,structural differences between the regional and national economies (Table 1. 9).

At 1959/60, the agricultural sub-sector accounted for some two-fifths of the regional product compared with only 13% of GDP in 1959. Extractive industries on the other hand also accounted for 13% of GDP but were virtually non-existent in the region - a reflection of the lack of mineral resources. The primary sector therefore accounted for two-fifths of the regional product and one quarter of the national product.

For the secondary sector, this relationship was reversed, with manufacturing, construction and power generation together contributing one quarter of GDP and only 6% of GGP. The latter proportion strikingly illustrates the non-industrial character of the region.

Although the tertiary sector's shares were similar (56% of GGP and 49% of GDP), some marked differences were evident in the shares of the component sub-sectors. Those production sub-sectors with significantly higher shares in the region were transport, storage and communication; general government services; and other (i. e. mainly private) services. Only one sub-sector - trade - had a significantly higher share at the national level. The remaining two tertiary sub-sectors - financial institutions and real estate; and ownership of dwellings - had similar shares of both products.

Inter-regional comparisons (Table 1.9) reveal that the composition of GGP in the North-East Cape region was virtually identical with that in the Cape Midlands and Karroo region at 1959/60. In turn, GGP in both these regions was similar in composition to GGP in the North-West Cape, although there were two important differences:firstly extractive industries (mainly

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1. Although the nomenclature of the nine GGP categories corresponds in a number of instances to that used in obtaining breakdowns of the total labour force into employment data according to type of industry, the definitions of the GGP and employment categories with the same name are seldom comparable. For this reason, the term 'sub-sector' will be used for GGP data and the term 'industry division' will be used for employment data.

mining in Namakwaland magisterial district) accounted for some 23% of GGP in the latter region; and secondly,the primary sector as a whole accounted for slightly more than in the case of the other two regions (one half as opposed to two-fifths). However, the presence and exploitation of mineral resources in this region had not led to any noticeable industrialization by 1959/60, nor had it rubbed off in the form of proportionately greater amounts of trade, service or transportation activities. Consequently, although the tertiary sector as a whole accounted for rather less (46%) of GGP than in the Cape Midlands and Karroo region (56%), its internal structure was very similar to that of the latter area, the only significant difference being a lower share for private services in the North-West Cape.

The North Cape region presented a rather different picture. In this instance, the presence of mineral resources - the mining and quarrying sub-sector accounted for one-fifth of GGP in 1959/60 - had led to increased manufacturing and trading activities. The sub-sectoral composition of the product of the tertiary sector was thus more akin to that of the Republic as a whole than to that of the Cape Midlands and Karroo region. This is evident particularly in respect of the lower proportionate contributions of services (both public and private) and of transport, and the higher proportionate contribution of trade,to GGP in North Cape compared with the correspodning shares of these sub-sectors in the Cape Midlands and Karroo region.

The exclusion of Kimberley magisterial district from this region results in some changes, but these are insufficient to bring the structure of GGP into line with that of either the North-West Cape region (which also has a prominent mining component) or the two predominantly agricultural regions. Despite the exclusion of the metropolitan area, the secondary sector retains a relatively high proportionate share, whilst the shares of the transport and of the public and private services sub-sectors remain relatively low.

Finally, the composition of GGP in the Port Elizabeth-Midlands region differed significantly from that in all the above regions as well as from that in the country as a whole. The main differences are in the low share of the primary sector (15%), the high share of the secondary sector (30%) and the relatively high share of the transport sub-sector - a reflection mainly of the existence of the harbour.

These regional output structures were by no means static, nor did they change at the same pace. In a number of instances, the position at 1959/60 was rather different from that only six years earlier in 1954/55 (Table 1.9). For example, agriculture's share of GGP in the Cape Midlands and Karroo region fell from 48% to 39% over the period. The reasons for the changes in the structures of the various regional products, and of the national product, can be deduced from the respective rates of change of the different production sub-sectors in these various areas (Table 1.4).

It should be noted that the fact that total output in the Cape Midlands and Karroo region grew by only 10% at current prices between 1954/55 and 1959/60, compared with 29% for the Republic as a whole, does not of itself confirm that the region is growing at a slower pace than the national average in the long term, for the six-year period is far too short to establish long-term trends. Indeed, when looked at sub-sector by sub-sector, some very interesting features emerge.

For example, the contributions of both the manufacturing, construction and power sub-sector and the non-governmental services sub-sector advanced more

rapidly in the region than in the country as a whole between 1954/55 and 1959/60, whilst the rate of advance of the transport, storage and communications sub-sector was approximately equivalent in both areas (Table 1.4). The remaining non-primary sub-sectors advanced more slowly in the region, particularly in the case of trade which showed virtually no net increase in the region over the period as a whole (although its contribution did fluctuate from year to year)but which grew by 17% at the national level. The value added by mining and quarrying in the region showed a net absolute decline over the period compared with a 59% increase in the country as a whole. The contribution of agriculture declined in both areas, but more rapidly in the region.

The grounds for suggesting that the differences in the overall growth rates of the Cape Midlands and Karroo region and of the country as a whole during this period may, in fact, be indicative of long-term trends, are derived in part from the differences in the composition of the two products. This can be illustrated by a comparison of the performances of the largest production sub-sector in each of the two products, and by a comparison of the proportionate shares of the fastest growing sub-sector of each product.

At the national level, the biggest component was the manufacturing, construction and power sub-sector, which accounted for almost one-quarter of the total both at the beginning and the end of the period. This sub-sector grew at a moderately rapid pace - 31% in six years. In the region, the value added by the agricultural sub-sector - which accounted for almost one-half of the total at the start of the period - actually declined by a net 12%. Similarly, the fastest growing sub-sector in the GDP was mining and quarrying, which accounted for between 11% and 13% of the total product, whereas the fastest growing sub-sector in the region - manufacturing, construction and power- accounted for only 4% to 6% of GGP.

Thus the largest national sub-sector grew far more rapidly than the largest regional sub-sector (which in fact experienced negative growth), and the fastest growing national sub-sector was proportionately far more important than the fastest growing regional sub-sector.

The detrimental effects of these two factors on the region's economic growth were reinforced by the experiences of some of the other sub-sectors. For example, the (emerging) second largest national sub-sector - trade - is growing, albeit slowly, whereas trade in the region, also not unimportant in overall terms, experienced no net growth. Moreover, the value added by trade in the region appeared in general to rise with a rise in the value added by agriculture and to fall with a fall in the latter. Although the amplitude of the fluctuation in trade was much smaller than that in agriculture, this would suggest that growth in volume of trade in the region was to some extent dependent upon agricultural revenue. Hence, whereas a poor performance by the important agricultural sub-sector might have had a depressing effect on some of the other regional sub-sectors, this factor would have been less important in the country as a whole.

The 'composition' and 'local factor' effects

These dynamic features of the various geographic product structures can be more clearly illustrated and compared by reference to production sub-sector variations of the 'shift' technique used earlier to illustrate the growth patterns of total GGP.

From the above discussion on the importance of the respective proportionate shares and rates of growth of the various production sub-sectors it will be evident that the 'total net shifts' in GGP in the various regions (described earlier) are due to the combined effects of two sets of factors.

In the first place, on the 'expectation' that each production sub-sector in each region would grow at the same rate as that sub-sector is growing at the national level, regions which specialize in those industries which are nationally slow-growing can be expected to show slower overall growth as a result of their specialization. In other words, for any period of time, a region which starts the period with its 'industry-mix' (vis-à-vis the national 'industry-mix') heavily weighted in favour of those production sub-sectors which, at the national level, are slow-growing, can be expected to experience a 'downward shift' in total income. Conversely, if its industry-mix (relative to the national industry-mix) is weighted in favour of the nationally faster-growing (or 'growth') industries, the region can be expected to experience an 'upward shift' in total income. This shift is known variously as the 'compositon effect', the 'industry-mix effect' or the 'proportionality effect' (Perloff, Dunn, Lampard and Muth, 1960; also Perloff and Dodds, 1963).

The second set of factors arises from the fact that regions which are able to improve their competitive position in respect of certain industries will be able to attract more of those industries. The rate of growth of those industries in the region concerned will then be greater than the national average rate of growth. Conversely, a region which loses some of its comparative advantages for a particular industry, will experience slower growth in that industry than the 'expected' growth implied by the national growth rate. In other words, a region which, by virtue of its locational characteristics, attracts industries away from (or loses industries to) other regions, will grow at a faster (slower) rate than the 'expected' rate. Thus, in any period, the fact that a region starts with a strong representation of a national 'growth' industry is no guarantee that it will grow at the 'expected' fast rate - to do so it must at least retain its relative ability to attract the activity concerned. If it fails to do so, it will experience a 'downward shift' in income growth in that production sub-sector; if it improves its relative competitive position, it will experience an 'upward shift'. This shift is known as either the 'local factor effect' or the 'differential effect' (Perloff et al, 1960; and Perloff and Dodds, 1963).

The local factor effect is readily observed and calculated by comparing the actual growth rate in each production sub-sector with its 'expected' growth rate. The sum of the resultant upward or downward shifts in each sub-sector is the net differential effect for the region concerned. The composition effect is less readily calculated from the data for individual production sub-sectors since it requires a series of weighting operations. It can, however, be shown that the net composition effect is, in fact, equivalent to the difference between the net shift in total income on the one hand and the net local factor shift on the other hand. Hence it is sufficient to calculate only these two shifts since they determine uniquely the net proportionality or composition effect (Perloff et al, 1960, p. 71).

Comparisons between the various regions reveal an interesting variety of relationships and permutations between the three types of shift (Table 1.10).

All but two of the nine production sub-sectors in the Cape Midlands and

Karroo region experienced a downward local factor shift between 1954/55 and 1959/60. That is to say, all but two grew at a slower rate than the national average for the relevant sub-sector in the period. The two exceptions - namely manufacturing, construction and power; and private services - grew at a faster rate than their respective national averages. The result was a total net downward local factor shift of some R4 million, of which the greater part (over R2,8 million) was accounted for by the agriculture, forestry and fishing sub-sector. But the total net shift in GGP has already been shown (Table 1.5) to be a net downward shift of almost R12 million. The difference of nearly R7,9 million represents a net downward shift caused by the composition effect. Were the latter shift also to be broken down into its production sub-sector components, it would be found that agriculture was again the main contributor to the net downward shift.

The region thus suffered from the double disadvantage of specializing in an industry (agriculture) which, at the national level, was not merely growing slowly but actually declining in both absolute and proportionate terms (the composition effect) and at the same time experiencing a very much larger-than-average decline in that industry (the local factor effect). In this instance, the two effects clearly reinforce each other.

Although these shift estimates should in no sense be regarded as precise, the relative magnitudes of the two effects would suggest that the compositon effect is the more disadvantageous of the two from the point of view of the region. Since the estimated compositon effect is almost twice as large as the estimated local factor effect, and since it is an inherent characteristic of this technique that the magnitude of the composition effect tends to be under-stated (Stilwell, 1970, p.454), the conclusion that the latter effect is the larger one would seem justified in this instance. This would in turn seem to suggest that the lack of diversity in the region's economy and its heavy dependence on agriculture is a greater hindrance to economic growth in the region than its various comparative locational disadvantages. However, too much should not be made of this distinction, partly because of the imprecision of the calculated shifts, partly because the period concerned is rather too short to throw up meaningful long-term trends, and partly because the two aspects are closely inter-related: it is the region's locational disadvantages in the past which have led to the emphasis on agriculture; and at the same time, the concentration of slow-growing or declining industries in the region does little to enhance its present attractiveness to other activities.

Insofar as the agricultural sub-sector itself is concerned, the reason for its poor performance can similarly be traced to a lack of diversification and to the heavy dependence on wool - a commodity for which the demand is relatively elastic and which has been adversely affected by the growth in production of highly competitive man-made fibres.

The positon in the North-East Cape region was again very similar to that in the Cape Midlands and Karroo region; a net downward local factor shift in virtually all production sub-sectors, particularly agriculture, and a net downward composition shift to reinforce it. In this instance, however, the relative magnitudes of the two effects are rather too undifferentiated to enable one to say with confidence which is the greater (Table 1.10).

In the North-West Cape and Port Elizabeth-Midlands regions, both effects are again negative, but in these instances they are weighted heavily in favour of the local factor effect (though, as subsequent paragraphs will show, for very different reasons in the two areas).

In the North-West Cape region, as in the Cape Midlands and Karroo and North-East Cape regions, agriculture is an important contributor to both the downward net local factor and downward net composition shifts of R25 million and R3 million respectively (Table 1. 10). However, a particularly large downward net local factor shift of over R13 million was experienced by the region's extractive industries, whose gross value added actually declined slightly in absolute terms (Table 1. 4). In contrast, at the national level, mining and quarrying achieved a higher increment (59%) than any other production sub-sector. Similarly, though of less overall significance, the contribution of trade to the region's GGP fell in absolute terms, as opposed to a moderate increase (17%) at the national level.

That the net downward compositon shift is so small is attributable to the large upward composition effect occasioned by the relative prominence of mining activities in the region. Or, to put it another way, by virtue of mining's position as the fastest-growing national production sector, the presence of a substantial amount of mining activity in the region would, other things being equal, confer a significant advantage on the region. However, local factors more than offset this advantage causing a downward local factor shift far in excess of the upward composition effect in this sub-sector.

Confirmation of the fact that adverse local factors were operative in regard to mining activities in the North-West Cape region is provided by a report on a government survey of Namakwaland magisterial district in 1964. This report stressed local labour problems, the lack of water, the effect of great distances to the main national markets and the lack of an adequate transportation network. In an assessment of the economic potential of one mineral deposit, it was found that total transport costs per ton from the mine to the nearest harbour exceeded actual mining costs by almost 500%, with the result that the estimated FOB price per ton was nearly 50% in excess of the likely attainable market price (Cilliers et al, 1964, pp. 21-22 and 88).

What the extractive industries did for the North-West Cape, the secondary sector did for the Port Elizabeth-Midlands region. Again, there was a very large downward net local factor effect of some R26 million (relative to the size of the downward net composition effect of R10 million). The downward local-factor shift in the secondary sector exceeded R20 million, with agriculture and trade also exhibiting adverse shifts (Table 1. 10).

Since the local factor shift in the secondary sector in the Cape Midlands and Karroo region was in an upwards direction, the large downward shift in this sector in the Port Elizabeth-Midlands region must have been localized in the Port Elizabeth/Uitenhage metropolitan area. This is confirmed by Banach (1969), who shows that the metropolitan area's proportionate share of national gross value added by the secondary sector fell between 1954/55 and 1959/60. The explanation would seem to lie to a large extent in the apparent fact that the motor industry, which accounted for over 45% of gross value added by the secondary sector in the metropolitan area in 1954/55, experienced a severe decline during the period (Banach, 1969).

Thus, despite the inclusion of the metropolitan area, with its considerable locational advantages, the Port-Elizabeth-Midlands region achieved an upward local factor shift in only three production sub-sectors - transport; government services; and private services.

The high proportionate contribution (one-third) of secondary sector

activities to GGP, relative to the national contribution (one-quarter) is the main reason why the net downward composition effect was contained to within R10 million. The transport, storage and communication sub-sector, which was also prominent in the region, would similarly have exerted an upward compositon effect.

In contrast to all these regions, the North Cape region experienced a total net upward shift of almost R13 million in GGP, comprised of mutually reinforcing upward net local factor and composition shifts of R12,6 million and R0,3 million respectively (Table 1.10).

The main causal factor here was that agriculture had an upward local factor shift of R12,2 million. This was undoubtedly due in turn to the fact that agricultural production in the region was relatively diversified compared with that in the four regions already discussed, and that it was concentrated in products for which the demand was far more stable than that faced by the wool producers. Thus, in the period 1959/60 to 1961/62, two-fifths of agricultural revenue was derived from crops and three-fifths from livestock and livestock products.

Of the revenue from crops, some 43% was derived from maize (Malan, 1969, Table 3.0), which is the staple diet of a large proportion of the Bantu population of the Republic, and for which the demand is, in consequence, relatively inelastic.

On the livestock side, one third of revenue was derived from beef production, one quarter from dairy products and one-fifth from mutton production, all products for which there is either a relatively inelastic demand or a high income elasticity of demand.

Several other production sub-sectors also experienced upward local factor shifts of some importance: the most noteworthy of these were the trade, transportation and manufacturing, construction and power sub-sectors. There were also small upward local factor shifts in the financial institutions and real estate sub-sector and in the private services sub-sector. However, all these upward shifts were virtually completely offset by a downward local factor shift of almost R4,4 million in the mining and quarrying sub-sector.

Apart from the mining industry, the only production sub-sectors with downward local factor shifts were the ownership of dwellings and the general government services sub-sectors. In both instances, the shifts were relatively slight.

The negligible net composition effect in this region would have been due mainly to an upward shift derived from the higher-than-average share of mining in GGP being offset by a downward shift caused by the higher-than-average share of agriculture in GGP.

However, if Kimberley magisterial district is excluded from the region, the small upward net composition effect of R0,3 million is converted to a somewhat larger downward net shift of over R2,6 million. This is because the exclusion of Kimberley magisterial district from the region lowers the mining sub-sector's proportionate contribution to GGP and raises agriculture's contribution, thereby weighting the industry mix towards a nationally slow-growing industry. The result is that the unfavourable composition of the regional product partially offsets the favourable local factor effects.

SUMMARY

The picture which emerges from the foregoing paragraphs of the Cape Midlands and Karroo region in its national context, is one of poor and disadvantageous location relative to the main national centres and corridors of economic activity; poor resource endowments; and falling shares of national output, population and employment. More particularly, the proportion of low income-earning population groups in the region is high and rising; dependency rates are high; and the region's industry-mix is, at best, conducive to only slow growth.

From the inter-regional comparisons, however, it is clear that, apart from a few important differences in respect of certain variables, conditions in the region are fairly typical of a number of extensive rural and hinterland areas in South Africa which, for a variety of reasons, derive a less than proportionate share of the benefits of national economic advance. For most of these regions, the most serious problem would appear to be that their populations, although growing slowly, are nonetheless increasing at a faster rate than the value of the output which their economies can produce. The importance of the various 'national share' figures quoted in the preceding paragraphs thus lies in the fact that they are a measure of the problems of areas such as the Cape Midlands and Karroo region; they are not justifications for dismissing the role and the potential of these regions.

In many respects, therefore, the Cape Midlands and Karroo region is representative of the broad problems posed by regional imbalances in South Africa's economic development. The remaining chapters of this report will focus on the main features of those problems as manifested in the region's economic structure.

CHAPTER TWO

THE SPATIAL STRUCTURE OF THE REGIONAL ECONOMY

The relationships between the Cape Midlands and Karroo region and the national economy, and between this region and several other regions, are outlined in the first Chapter of this report. These relationships, which are sketched very broadly, do not, however, reveal very much about the internal structure of economic development in the region. For an understanding of this structure, it is necessary to examine more closely the economy of the region itself.

APPROACHES TO REGIONAL ECONOMIC ANALYSIS

Areal economic surveys in South Africa, as elsewhere, have traditionally employed a sectoral approach to the study of economic development, analysing the economy in terms of the structural characteristics of its production sectors and sub-sectors. The number of sub-sectors discussed varies considerably from study to study, but they are almost invariably viewed as comprising three broad sector groupings: the primary sector, the secondary sector, and the tertiary sector or, in some instances, simply 'agriculture', 'manufacturing' and 'services'. The position of mining is ambiguous, being sometimes associated with the primary, and sometimes with the secondary sector, or on occasion regarded as a further distinct sector. Availability of data is normally the main determinant of the degree of intra-sectoral disaggregation which is employed.

The ubiquitousness of this approach can to a large extent be ascribed to the prevalence of the 'economic sector' theory of economic development, in which the proportions of employment and output in each of the three main sectors are regarded as critical indicators of development of the area concerned and of its economic problems and potentials.

This theory stems largely from the works of Clark (1940) and Fisher (1939). On the basis of empirical observations that changes in income per capita are frequently associated with changes in the distribution of economic activities between the various production sectors, Clark (1957, p. 493) put forward the generalised hypothesis that "as real income per head rises ... the relative demand for agricultural products falls all the time, and ... the relative demand for manufacture first rises and then falls in favour of services".

The emphasis here is clearly on internal adjustment mechanisms: with rising real per capita incomes and the operation of Engel's Law - that is, the simple observable fact that as income rises an increasingly smaller proportion of consumption expenditure is devoted to foodstuffs (Hoover, 1948, p. 188) - there is a relative shift in resources from the primary to the secondary and subsequently to the tertiary sector. The result is that the relative share of agriculture, and hence usually of the primary sector as a whole, in both total output and total employment declines, although both primary output and primary

employment may continue to rise in absolute terms.[1] The reason for these adjustments is, as Engel's Law implies, that the demand for the products of the secondary and tertiary sectors is more responsive to rising incomes than is the demand for agricultural produce. In other words, the income elasticity of demand for agricultural products is lower than that for many other products.

A natural extension of this 'economic sector' theory is the 'development stages' theory, which postulates that, in response to the adjustments implied in the sector theory, the economy of a country or region passes through several identifiable stages of development. The first of these stages has been variously termed the 'traditional' stage (Rostow, 1961), or 'self-sufficient subsistence' stage (Perloff, Dunn, Lampard and Muth, 1960, p. 59). This is followed by the 'pre-conditions for take-off stage (Rostow, 1961), in which specialization and trade begin to emerge in conjunction with increased mobility of both people and goods;[2] then follows the 'take off' stage itself (Rostow, 1961), in which the rising incomes which trade and specialization have engendered make possible the investment of resources in the production of non-agricultural commodities, and in which the growing population necessitates the larger-scale production and processing of both agricultural and non-agricultural products; next comes the 'drive to maturity' (Rostow, 1961), in which the emphasis shifts from mining, and from the processing of agricultural and mineral products, to a more diversified industrial structure characterised by increasing inter-dependence of industrial firms and production of increasing proportions of commodities with a high income elasticity of demand. The final stage is the 'age of high mass consumption' (Rostow, 1961) or the 'services era' (Perloff, Dunn, Lampard and Muth, 1960) in which specialization reaches an advanced stage, and service activities of all kinds come into their own.

A number of writers have used the development stages approach to demarcate various stages of growth in South Africa's economic history or to assess the present stage of development of certain geographical regions of the country. Thus Houghton (1964, p. 6 et seq), using Rostow's five stages, has "tentatively" demarcated the first four as pre-1820, 1820-1933, 1933-1945, and 1945-93?, with the fifth stage obviously still to come. Some writers have taken issue with Houghton as to the dates at which the transition from one stage to the next took place,[3] but the idea of using "some general categories or broad terms of reference ... to assess our economic development ... (and) to compare our experience with that of other developing nations" (Houghton, 1964, p. 6) clearly finds general acceptability.

At the regional level, Banach (1969), Kotzé (1966) and Malan (1969) have all used 'development stages' as one approach to assessing the current situation of the Port Elizabeth-Midlands, North-East Cape and North Cape regions respectively, in these instances adhering to the classification used by Marais (1963). This classification refers to three broad development stages, namely the agricultural stage, the agricultural/mining stage and the agricultural/mining/industrial stage, although numerous sub-stages are identified within

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1. Often output rises whilst employment actually falls in absolute terms due to the rapid increases in productivity which can be effected in agriculture through mechanisation and improved scientific techniques.
2. This stage of development is usually thought to be triggered off by a reduction in transport costs.
3. See, for example, de Jongh's demarcation of stages, as quoted in Banach, 1969, pp. 83 and 86.

these three broad groupings.

A further extension of the economic sector theory, which is also applied to regional studies, is to be found in the 'leading sector' or 'growth industries' concept. This is the concept which formed the basis for the inter-regional comparisons in Chapter One of this report, namely that, in any region, a higher-than-average share of an industry which is growing rapidly at the national level will promote growth in that region. Since the sector theory suggests that the secondary and tertiary sectors in a modern economy will almost invariably be found to be growing faster than the primary sector, and since under-developed regions usually appear to suffer from a relative lack of secondary industry, the transplantation of the nation's most rapidly growing manufacturing industries to the distressed areas is often regarded as the key to the problem of rescuing under-developed regions (Perloff, Dunn, Lampard and Muth, 1960, p. 60).

The wide-scale application of the economic sector theory and its extensions to regional studies in South Africa is probably also due, in part,to the all-pervasive concern, manifest at the national level, with the relationship between the mining and manufacturing sectors on the one hand and with the rural-agricultural problem on the other.

Preoccupation with the former problem stems from the historical role of gold mining in the country's economic development and the realization that with the inevitable decline of this sector in the future, only a co-ordinated and large-scale programme to effect economic diversification, export growth (particularly in manufacturing) and import replacement will enable the country to achieve the high rate of real economic growth which is rendered imperative by the rapid growth of its population. Concern with this problem has, of course, been heightened by the lack of certainty about the future monetary role of gold (which will be the main determinant of the long-term prospects for the gold mining industry) and by the relative vulnerability of the country's economy to possible politically-motivated threats to supplies of 'strategic' commodities, such as oil. The repeated calls made from time to time by leaders and spokesmen from many sections of the country's politico-economic spectrum for increased effort in the manufacturing sphere; the close correlation between the general level of economic confidence and the level of new private investment in manufacturing industry (and the general concern which accompanies a fall-off in the latter); and the official policy of industrial decentralisation - all these factors could not help but rub off in the form of a concern for the relative size of the secondary sector in the various regional economies.

The long-standing concern for the problems of agriculture and of the rural areas in South Africa is evident from the number of official commissions of enquiry which have been appointed, over the years, to investigate various aspects of both problems. Since these problems spring to the fore in any study of a rural region, they re-inforce the tendency to project the sector-oriented thinking at the national level on to the regional level.

By viewing the growth process as a series of adjustments to changing internal parameters, the sector theory stands in sharp contrast to the 'export base' theory, which views the process as one of response primarily to exogenous factors, particularly the external demand for commodities in which the area concerned has a comparative advantage. According to this theory,

of which North (1955) has been a leading proponent, it is the demand for such 'basic' commodities which generates new income in the region, which in turn results in increased internal demand for goods and services via a local employment or output multiplier effect. Since the latter commodities tend to be local-serving, they are termed 'non-basic'.

Whilst the sector theory sees economic diversification and new investment as being initially part of an endogenous process arising out of the growth of incomes and of specialization, the economic base theory postulates that the initial impetus comes from external demand for the 'basic' product (or products) and that this demand results in an inflow of capital and other resources from other (external) areas in order to promote the development of the 'economic base'. Although internal growth is then stimulated by rising local incomes, the whole process is regarded as being dependent upon the exogenous factor of external demand for the base products.

Empirical observations in different places and at different times have suggested that both these theories can have application and relevance for regional economic growth studies - indeed, both theories arose out of such observations. It has also been suggested that a different theory may have been relevant at different stages in the growth of the same region. Banach (1969, p. 84), for example, in dealing with the development of the Port Elizabeth-Midlands region in the nineteenth century contends that "the export base theory is ... particularly useful in explaining this stage of the region's development which was undoubtedly, and in large measure, dependent upon an exogenous expansion of demand for the region's primary products", but that the inter-dependence of industries "suggests that the leading sector theory (primarily the motor car and allied industries) is important in explaining much of the economic growth after 1945".

As might be expected, however, when two such directly opposing, yet apparently valid, theories are put forward, neither approach provides a complete answer. The export base theory emphasises external factors at the expense of internal factors whilst the reverse applies to the sector theory and its extensions.[1] In fact, missing from both theories is the one set of factors

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1. This is not to suggest that either theory completely ignores the other element. Implicit in the base theory is the recognition of the internal multiplier-accelerator adjustments to exogenously-induced increments in income and employment. Similarly, on the sector theory side, recognition of the role of external factors is implicit in the fact that an increase in trade (especially inter-regional trade) is one of the characteristics of an economy emerging from the 'traditional' stage into the 'pre-conditions for take-off' stage. But, as Stabler (1968, p. 50) has pointed out, such inter-regional trade "arises as a result of change generated within the region and is not, as in the export base theory, the vehicle by which the impetus for development is provided". In some instances, however, foreign demand is explicitly introduced into the discussions illustrating the applicability of the theory. For example, in discussing his three broad development stages in relation to the South African economy, Marais (1963) notes that the "three stages went hand in hand with the development of an export base, which consisted in the various stages of wine, wool and hides in the agricultural stage, gold, diamonds and agricultural products in the agricultural mining stage, and agricultural, mining and industrial products in the last stage of development".

that would provide the essential link between them, namely, the explicit statement of the conditions under which growth and development will actually take place. In other words, they do not explicitly identify the distinguishing characteristics of (say) two subsistence areas, one of which has responded to an improvement in communications by evolving into a market economy and has now reached the second or third or subsequent stage of development, with specialization, trade and division of labour, whilst the other has remained at the subsistence stage despite a similar reduction in transport costs. Similarly, they do not directly explain why, of two regions with successful agricultural export bases, one will develop a modern, progressive and diversified economy, whilst the other will not.

Despite their shortcomings, however, both theories represent useful frameworks for the discussion and analysis of the regional growth process. But in certain circumstances, one may be regarded as more relevant than the other. Thus, in the case of the development stages-economic sector approach, North (1955, p. 242) has asserted that "when this sequence of stages is placed against the economic history of regions in America, two basic objections arise. (1) These stages bear little resemblance to the actual development of regions. Moreover, they fail to provide any insight into the causes of growth and change. A theory of regional economic growth should clearly focus on the critical factors that implement or impede development. (2) Furthermore, if we want a normative model of how regions should grow, in order to analyze the causes of arrested development or relative decay, then this sequence of stages is of little use and is actually misleading in the emphasis it places on the need for (and difficulties of) industrialization". North further asserts (1955, pp. 242-3) that the pattern of regional development in America stands "in marked contrast to the experience of Europe ... where a market-oriented economy emerged only gradually from the predominantly local economies of the manorial system". American regions, on the other hand, were "exploited in large part as a capitalist venture". In other words, the "basic objective was to exploit the land and its resources in order to produce goods that could be marketed 'abroad' and would bring in a money income ... If a subsistence economy existed in a new region in America, it was solely because of a lack of means of transport ..."

It can similarly be argued that the economic sector-development stages approach has limited application to the conditions of South African economic development in general and the development of a region such as the Cape Midlands and Karroo region in particular. Although it is clear that the South African economy, and that of many of its regions, has passed through a sequence of stages, in some instances commencing with a subsistence economy and in others culminating in a "drive to maturity", both the history of the development process and the present structural characteristics raise doubts as to the validity and applicability of the stages theory to certain areas. In the pre-minerals era, the colonial nature of the settlement process suggests that, as in the case of the United States, the export base theory has greater applicability than the economic sector-sequential stage approach. Though 'capitalist exploitation' of resources (in the sense used by North) may not have been uppermost in the minds of the settlers who trekked eastwards from Table Bay, it was certainly prominent in the minds of the officials of the Dutch East India Company and of the subsequent colonial administrations. Again, the inflow of foreign capital, labour and enterprise which followed the discoveries of diamonds and of gold could hardly be described as internal adjustments to an evolving pattern of rising demand consequent upon increased incomes from growing trade and specialization. Even in the twentieth century, the national and regional roles of the diamond and gold mining areas, and of the sugar, wool,

wattle, wine and fruit-growing areas, in generating foreign earnings - not to mention the invisible earnings such as those generated by the ports, especially Durban - are consistent with the export base theory. As Stadler (1968, p. 11) has noted, "due to the nature of its domestic activity, South Africa traditionally was an importer of manufactured consumer and capital goods and an exporter of agricultural products ... and mining products ...".

Thus a strictly sectoral approach to the study of economic development in the Cape Midlands and Karroo region may not only be inappropriate, but, in North's words, may have "policy implications that may be fundamentally in error" (1955, p. 253). Nevertheless, partly because there are valid functional distinctions between the economic activities which comprise the primary, secondary and the tertiary sectors - the most obvious distinction lies in the nature of the production processes themselves - and partly because the available data for the Cape Midlands and Karroo region lends itself to organization along such lines, a sectoral analysis of economic development has been undertaken for the region. The results of this analysis are presented in the next Chapter.

However, in adopting this approach, an attempt will be made to avoid any tendency, as Perloff has put it, "to discuss 'agriculture', 'industry', and 'services' not as if they were classes to provide a framework for analysis, but as if they possessed inherent qualities which provided a basis for policy conclusions" (1957, p. 162). Consequently, wherever possible, disaggregation rather than aggregation will be used in order to avoid "an over-generalized approach ... (which does) not take adequate note of the developmentally significant differences among the major industry groups within the three broad sectors ..." (Perloff, 1957, p. 162).

Since "developmentally significant differences" not only among, but also within, the various production sectors are frequently closely correlated with locational and spatial factors, an attempt will first be made in this Chapter to provide some insight into the internal spatial structure of economic development in the region, before proceeding to a production sector analysis of the region's economy. Such an understanding of the spatial structure will provide a useful context for the subsequent consideration of individual economic activities.

THE SPATIAL STRUCTURE OF ECONOMIC DEVELOPMENT

The spatial structure of all social activities can be defined as "the orderly and persisting physical arrangement of these activities with respect to each other in geographic space" (Friedmann, 1955, p. 1).

The relevance of such persistent patterns for economic development is firstly, that all development has a spatial manifestation; secondly, that there exists a clear logic for the manner in which such manifestations are juxtaposed in space; and thirdly, that evolutionary development implies (and requires) orderly and gradual changes in some underlying structure. Hence development, as such, has meaning only when viewed as a process of modification of an existing and persisting framework.

This structural framework is, moreover, the net result of past development, and a study of spatial structure thus has the two-fold purpose of summarising the results of the development process to date and of defining the framework within which the future development process must operate. Looked at in another way, the existing spatial structure defines certain limits to the

nature and direction of future development which cannot be exceeded without effecting further structural alterations to the existing framework. But more than that, the spatial structure itself, as the embodiment of an on-going development process, and the reflection of the differential areal effects of this process, can provide clues to the probable location and character of such development in the future, barring the effects of major social, economic and physical upheavals and disasters, and of windfall gains or losses.

These factors have obvious relevance to areal economic planning in so far as both the ends and the means of such planning are concerned.

Insight into spatial structure can be gained by considering the geographical dispositions of a number of socio-economic variables or 'indicators', as well as the distributions of the centres of economic activities, of the elements of the physical infrastructure and of the activity 'flows' within the system. In the paragraphs which follow, these distributions will sometimes be illustrated in terms of the three concepts of surfaces, nodes and networks which comprise the space economy (Chapter One).

DELINEATION OF SUB-REGIONS

In order to facilitate this analysis, the region was sub-divided at an early stage into a number of distinct areas.

The process of delineation of these sub-regions was non-rigorous and to some extent based on subjective interpretations of the available information. The underlying principle was a resolution of the two major criteria of 'nodality'[1] and 'homogeneity'[2] used to distinguish between different types of analysis regions. In this manner it was hoped to identify areas reflecting maximum closure in regard to 'functions' and minimum internal variation in regard to 'attributes'. The 'functions' taken into account were:

(i) effective trading areas of urban centres

(ii) communications linkages and general accessibility

(iii) 'local' administration areas

The 'attributes' (or characteristics) examined were:

(i) topography and relief

(ii) agricultural land use (crops and livestock)

(iii) density of population (Whites and total)

(iv) racial composition of population

(v) structure (composition) of geographic income

The rationale behind the selection of the last four of these characteristics

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1. 'Nodality' is sometimes also termed 'functionality' or 'interdependency' (see Appendix).
2. 'Homogeneity' is sometimes referred to as 'uniformity' (see Appendix).

for examination was the assumption that, in general, relative homogeneity in composition of population, income and land use in contiguous areas could be taken to imply a degree of functional integration between the areas concerned.

Two additional constraints were placed upon the identification process, namely that the sub-regions should conform to the basic statistical unit of the magisterial district and that, in view of the interdisciplinary nature of the wider survey of the Cape Midlands and Karroo region, the regions selected should be compatible with the requirements of the research workers in the other disciplines.

From this process emerged five sub-regions, each of which can, in one sense, be regarded as relatively homogeneous in character, but at the same time can also be regarded as approximating fairly closely to 'nodal' or 'functional' regions. Thus each sub-region consists of its own core and its own periphery,[1] and each can, to a greater or lesser extent, be said to be internally integrated and internally interdependent in that it is comprised of areas "that stand in an active relation to each other, whose futures are linked by the flows of people, information, goods, or financial investments among them" (Friedmann, 1966, p. 41).

These five sub-regions and their constituent magisterial districts are as follows (Fig. 8):

SUB-REGION	MAGISTERIAL DISTRICTS
SUNDAYS	Graaff-Reinet (node), Aberdeen, Jansenville, Murraysburg, Pearston and Steytlerville.
ESCARPMENT	Middelburg (node), Maraisburg, Noupoort, Steynsburg and Tarka
FISH	Cradock (node), Bedford and Somerset East (subsidiary node)
BORDER	Adelaide, Fort Beaufort, Stockenström and Victoria East[2]
COASTAL	Albany (Grahamstown, node), Alexandria and Bathurst

The validity of this areal breakdown of the region and of the method and the underlying principle of the delineation is discussed in detail in the Appendix. However, it will be evident from the paragraphs which follow that, whilst this breakdown may not provide a unique solution, it nonetheless has considerable utility for analysis purposes.

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1. For an explanation of the 'core-periphery' concept, see the Appendix.
2. No single urban centre stood out as a core area in the Border sub-region. However, the linear system of towns from Adelaide through Fort Beaufort to Alice/Fort Hare serves a similar function.

DISTRIBUTION OF POPULATION

The distribution of total population between the sub-regions and the pattern of population growth over the years provides the first indication of the internal spatial structure of economic development in the region by identifying the areas of greatest concentration and growth of population. Since, in general, a positive correlation can be assumed between growth of population and growth of economic activity, the disposition of population over time also provides a preliminary indication of the comparative rates and levels of economic development of the different parts of the region.

Spatial distribution of total population by race (1970)

The spatial distribution of the total population (421 000 at 1970) suggests a relative degree of concentration in the Coastal sub-region, the population of which exceeded 130 000 (31%) at 1970, compared with about 60 000 to 80 000 (14% to 19%) in each of the four remaining sub-regions (Tables 2.1 and 2.2). However, these total figures obscure some interesting contrasts in the spatial distribution of Whites, Coloureds and Bantu, who comprised some 13%, 21% and 66% respectively of the enumerated[1] total population at 1970.[2]

Using the sub-regional distribution of the total population as datum (Table 2.2), the Border sub-region has a very much lower-than-average share of the region's Whites (10% as opposed to 19% for total population). The remaining sub-regions all have slightly higher-than-average shares. The distribution of Whites thus does not differ much from that of the total population and, as in the case of the latter, there is a relative concentration (32%) in the Coastal sub-region.

In contrast, there is a clear and marked concentration of Coloureds in the Sundays sub-region (44% at 1970). The Fish and Escarpment sub-regions have average to slightly higher-than-average shares, but there is a marked under-representation in the Border and Coastal sub-regions (only 9% and 12% respectively).

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1. Truu (1971, pp. 37-41) effected a number of adjustments to the published population census data for the region. Since the discussion in this section is intended only to provide a broad sweep of population growth and distribution in the region, rather than a detailed demographic analysis, these adjustments have not been incorporated in this report, except in the case of Middelburg magisterial district in 1904 (see Truu, 1971, pp. 37-8). The omission of these adjustments in no way invalidates the general trends evident in the data, although a number of the specific proportionate distributions and percentage increases noted in the ensuing paragraphs may be subject to a certain amount of error. It should, moreover, be noted that the adjustments made by Truu in no way rectify the probable major errors in the data arising from the general level of under-enumeration of Bantu and Coloureds at a number of census years (see relevant footnote to discussion of population in Chapter One).
2. The number of Asians is negligible - less than 500 at 1970.

The distribution pattern for Bantu is the reverse of that for Coloureds, though it is not characterised by such a high degree of concentration in any one sub-region. Bantu are significantly under-represented in the Sundays sub-region (8%, as opposed to 17% of total population) with average to slightly lower-than-average representation in the Fish and Escarpment sub-regions. On the other hand, over 60% of Bantu are to be found in the Border and Coastal sub-regions - mainly the latter - compared with 50% for the total population.

The effect of the different geographic distributions of the races is firstly, that Whites are unimportant in numerical terms in all parts of the region (Table 2.2). Indeed, in all except one magisterial district - Noupoort - Whites comprised less than 20% of the enumerated total population at 1970. Secondly, although they comprise a much smaller proportion of the total regional population than the Bantu, the Coloureds comprise the overwhelming majority of the non-White population west of the upper Fish Valley (mainly the Sundays sub-region) whereas Bantu dominate both the Fish Valley itself and the area to the east of it. Apart, therefore, from a few districts in the Sundays Valley, where Coloureds account for more than half the total population, Bantu are numerically preponderant in virtually every part of the region. The reasons for this spatial relationship between Coloureds and Bantu are largely historical, although unfavourable environmental conditions, a relative lack of economic development and governmental policy in regard to Bantu population movements and settlements have served to perpetuate the contrast in demographic character between the western and eastern parts of the region.

A proper perspective on the distribution and concentration of population can, however, be obtained only by relating the region to the adjacent metropolitan zones of Port Elizabeth and Uitenhage magisterial districts on the one hand and East London and King William's Town magisterial districts on the other i.e. (old) Economic Regions 08 and 18 respectively.[1] The total enumerated populations of these two areas at 1970 were 500 400 and 389 300 respectively compared with the regional total of 420 700.[2] In Economic Region 08 (Port Elizabeth/Uitenhage), the composition of the population was 31% White, 23% Coloured and 45% Bantu. In Economic Region 18 (East London/King William's Town) it was 19%, 5% and 76% respectively, again reflecting the 'traditional' contrast between the Coloured and Bantu population concentrations. Seen in this light, and in the light of the fact that the Cape Midlands and Karroo region is about 18 times larger in area than either of the two metropolitan zones, the degrees of concentration suggested by the spatial distribution patterns within the study region are slight, as reference to the densities involved will confirm.

Total population densities at 1970 in Economic Regions 08 and 18 were 97,2 and 118,5 persons per sq km respectively, compared with a mere 5,8 for the Cape Midlands and Karroo region as a whole. Density was however by no means uniform within the region (Table 2.3). This lack of uniformity in the internal density distribution pattern can be illustrated by means of a map of economic surfaces for the region.

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1. Virtually all the Economic Region data used in this report conform to the original set of 51 Economic Regions into which the Republic was divided (Winklé, 1961) rather than the more recently delineated set of 61 regions (Nel, 1968b). For this reason, unless otherwise indicated, all references to Economic Regions in this report will be based on the old definitions.
2. The figure for East London and King William's Town magisterial districts (Economic Region 18) includes an estimate of the enumerated Bantu population as the new classification of population between 'White' areas and 'Bantu' areas does not permit an exact figure to be obtained.

This surface map (Fig. 9) reveals a very high ridge in the east and south-east of the region, where densities rose to levels as high as 29 persons/km^2 (Victoria East magisterial district) at 1970, with a combined mean of 17 persons/km^2 in the Border and Coastal sub-regions. Below this ridge lies a plain, sloping downwards from the east to the north and the west, where densities are particularly low. For example, the mean for the Sundays sub-region at 1970 was only 2,4 persons/km^2, with levels of just over 1 person/km^2 in the western extremities of the region (Murraysburg and Aberdeen magisterial districts).

Except in the Sundays sub-region, it is of course the distribution of Bantu - who comprised from 30% to 84% of the populations of the five sub-regions at 1970 (Table 2.2) - which is the main determinant of the level of total population density in most parts of the region. Bantu population densities varied from an average of almost 15 persons/km^2 in the Border sub-region and 12,5 persons in the Coastal sub-region, down to 0,7 in the Sundays sub-region (Table 2.3).

Since the geographical distribution of Whites paralleled that of the total population, relative White population densities in the sub-regions also followed broadly the same pattern as those of the total population with higher densities (up to 3 persons/km^2) in the east and south-east and the lowest densities (down to 0,1/km^2) in the west and, to a lesser extent, the north.

In the case of the Coloureds, however, in spite of the uneven distribution of population between the sub-regions, densities were remarkably uniform throughout the region, varying only from 1,7 persons/km^2 in the Border sub-region to 0,9/km^2 in the Escarpment sub-region.

Urban-rural distribution of population (1970)

The use of magisterial district totals and averages for comparing population distributions and densities obscures a fact which is of considerable importance for spatial structure in the region, namely that the proportion of the total population which was enumerated as 'urban' at 1970 was 48% (Table 2.4).

In three of the sub-regions - Escarpment, Fish and Coastal - the urban population was similarly approximately one-half. Since urban areas account for only 1,5% of the total surface area of the region, the average rural population density both in the region as a whole and in the above three sub-regions, is about half the corresponding total population density.[1] By contrast, the average urban density in the region at 1970 was 181 persons/km^2 and in the Escarpment, Fish and Coastal sub-regions it was 314, 218 and 215 persons respectively.

In the Border sub-region, the urban proportion was only one-third and the rural density of 12,2 was thus not so much lower than the total density of 17,7. But in the Sundays sub-region, some 63% of the population was classified urban and the average rural density was thus less than 0,9 persons/km^2. Urban density in the Border and Sundays sub-regions was 175 and 111 respectively.

The urban proportions of the three race groups vary considerably (Table 2.4). Some three-quarters of Whites, three-fifths of Coloureds and two-fifths of Bantu

1. The proportion of urban areas in each sub-region is calculated on the basis of data as at 1965 (See Bureau of Statistics' Report No. 02-02-01, "Urban and Rural Population of South Africa: 1904 to 1960"). It is unlikely that any subsequent changes in urban boundaries will have materially affected these proportions.

were classified as urban at 1970. For Whites, this proportion is relatively constant in the five sub-regions. White rural population density is thus exceptionally low, the average for the whole region being 0, 2 persons/km^2 . In parts of the Sundays sub-region, such as Murraysburg magisterial district, there is an average of only one White person per 15 square kilometres of rural territory.

Apart from the Coastal sub-region, the proportion of urban Coloureds in each sub-region is similarly fairly close to the regional average of 60%. In the Coastal sub-region, the proportion rises to 74%. For Bantu, however, the urban proportion varies considerably from 28% in the Border sub-region to 68% in the Sundays sub-region.

Population growth (1904-1970)

The foregoing discussion has shown that, in respect of density of population, the region lies in the shadow of the metropolitan zones; a look at the relative growth patterns reveals that these shadows have been lengthening over the years: thus, the total population of Economic Region 08 grew by 33% between 1960 and 1970, by 89% between 1951 and 1970, and by 638% between 1904 and 1970, causing population density to rise from 17, 5 to 68, 2 to 129, 1 persons/km^2 in 1904, 1951 and 1970 respectively. For Economic Region 18, the increases in 1960-70, 1951-70 and 1904-70 were 47%, 91% and 255% respectively, with the result that density rose from 27, 4 in 1904, to 51, 0 in 1951 and then almost doubled to 97, 2 in 1970.[1]

Total population in the Cape Midlands and Karroo region, however, rose a mere 9, 5% between 1960 and 1970, 31% in 1951-1970 and 80% in 1904-1970 (Table 2. 5).[2] The change in density was from 3, 2 in 1904 to 4, 4 in 1951 and 5, 8 in 1970.

The three main races in the region fared very differently in these periods. Thus between 1960 and 1970, the Bantu and Coloured populations increased by 14% and 11% respectively, whilst the White population registered a net decrease of 9%.

Similarly the 31% rise in the total enumerated population of the region in 1951- 1970 comprised net increases of 53% and 39% in the total enumerated Coloured and Bantu populations respectively, and a net decrease of 12% in the enumerated White population. And in the 66 years from 1904 to 1970, the Whites registered a net decrease of 26%, as opposed to the increase of 136% in the Bantu population and 114% in the Coloured population.

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1. In order to permit comparability over the years the magisterial districts of Port Elizabeth, Uitenhage, East London and King William's Town have been used to represent the metropolitan areas, rather than the continuous urban 'envelopes' themselves, as the latter are subject to a continual process of areal expansion. Since all four magisterial districts contain very substantial proportions of territory officially classified as 'rural', the total densities significantly understate the effective densities of the metropolitan areas themselves. On the basis of the 1965 breakdown between urban and rural areas, the effective 1970 metropolitan density in Port Elizabeth/Uitenhage was of the order of 2 500 persons/km^2 , whilst that of East London/King William's Town was approximately 1300 persons/km^2 .
2. For a detailed study of population growth in the Cape Midlands and Karroo region, see Truu, 1971.

This comparison between the three periods demonstrates that the overall patterns of growth or decline of the races in the region are well-established. They are, by any standards, unimpressive performances. In the case of the Whites, the process of depopulation is obvious; yet Truu (1971, pp. 97-106) has shown that both the Coloureds and the Bantu have similarly experienced net losses of population through migration over the years. In other words, the losses through migration to other areas have reduced the gains which would otherwise have accrued from natural increase. These patterns of growth and decline pose several questions about the spatial structure of development in the region.

First, the population has nonetheless grown by nearly 200 000 since 1904 and it is of value to know where this increase has been accommodated. Secondly, in the case of losses of population, the question also arises as to where the losses come from. Thirdly, are the areas which have grown most rapidly, and the areas which have lost most heavily, characterised by identifiable differences such that the presence or absence of certain features might provide pointers to the likelihood of further growth or decline in the future?

In total, the Coastal sub-region easily outstripped the other sub-regions with an increase of almost 160% between 1904 and 1970 (Table 2.5). The Fish, Escarpment and Border sub-regional populations all grew by between 78% and 65% - less than the regional average of 80%. The Sundays sub-region lagged far behind with an increase of only 27%. This pattern has not, however, been unchanging. In 1951-1970 and 1960-1970, the Fish, and (in the latter period) the Escarpment sub-region, began to lag behind even the Sundays sub-region, whilst the Border sub-region emerged as the second-fastest growing area.

As might be expected from this distribution of total population growth, Bantu population growth was most rapid in the Coastal sub-region and least rapid in the Sundays sub-region. After 1960, however, it also slowed considerably in both the Escarpment and Fish sub-regions. As administrative factors, such as the influx control and contract labour regulations - can have a very significant influence on Bantu demographic processes - reasons for the varying patterns of Bantu population growth are often difficult to identify. The decline in the rate of growth of the Bantu populations of the Fish and Escarpment sub-regions in 1960-1970 may, however, be ascribable to a combination of two factors: firstly, to increasing enforcement of influx control and other regulations, as a result of which a considerable number of Bantu may have been removed to the Reserves; and, secondly, to the demand for labour on the Orange River project, for which the recruitment of Bantu from drought-stricken areas (such as the Fish and Escarpment sub-regions) has been permitted as a drought-relief measure. To the extent that this latter factor has been operative, the decline may be temporary, as the return of the Bantu upon completion of their contracts can be expected. A third possible contributory factor may have been increased demand for Bantu labour in the Port Elizabeth/Uitenhage area.

Another factor of interest is the relatively slow growth rate for Bantu in the Border sub-region in the period from 1904 to 1951. No immediate explanation for this suggests itself. One possibility, however, is that the pressure of population on the land, especially in the Bantu Reserve areas in the sub-region,

may have caused an outflow to other areas.[1]

Coloured population growth was well spread within the region (Table 2.5), although it tended to be more rapid in the Sundays sub-region and relatively slow in the Border sub-region, especially in the earlier years.

The losses of White population, on the other hand, were very unevenly distributed, varying from a net loss of over 50% in the Sundays sub-region in 1904-1970 to a net gain of 17% in the Coastal sub-region in the same period. The rate of net out-migration in the Coastal sub-region was thus slower than the rate of natural increase. However, in the most recent inter-censal period, even the Coastal sub-region suffered a net loss.

Changes in urban-rural population distribution (1904-1970)

However, even more significant than the distribution of the changes in the total population of each race, are the changes in the distribution between the region's urban and rural areas, because the 80% increase in total population in 1904-1970 consisted of an increase of 193% in the urban population and only 35% in the rural population (Table 2.6). This phenomenon occurred throughout the region, though it was much more pronounced in the Border and Coastal sub-regions than in the others.

This differential urban-rural growth pattern has been common to all three races, albeit in varying degrees. Thus, the urban Bantu population of the region increased almost six-fold, whilst the urban Coloured population virtually trebled in 1904-1970. Although the Bantu and Coloured rural populations also increased - by 74% and 53% respectively - the relative smallness of these increases suggests that it was from the rural areas that the majority of the region's out-migrants emanated. Similarly, in the case of the White population - which declined overall by 26% - the number of rural Whites fell by 65%, whilst the White urban population actually registered a 27% rise. Compared with the increases in the non-White urban populations, however, this rise is negligible.

In commenting upon the particularly slow growth of the White urban population in the region (0.6% p.a. between 1904 and 1960), Truu (1971, p.29) has suggested that "it would not be a misleading summary of the general situation to state that during the 20th century the White urban population ... has tended to remain static, while the rural population of the region has experienced a fairly rapid decline". But even this situation appears to have changed in the last decade as the 1970 census figures suggest a decline of over 8% in the White urban population when compared with 1960. The rate of decline in the rural population was, however, more than twice as fast, with the result that the urban proportion of the White population in the region continued to rise, from 72,7% at 1960 - already a remarkably high proportion

1, It is particularly in instances such as this one that the question of the general efficiency of enumeration at each census year becomes relevant. It may well be that the apparent increase in the rate of Bantu population growth in the Border sub-region was the result of improvements in the efficiency of enumeration. If so, it becomes spurious to attribute the changes in the growth rate to demographic or socio-economic factors.

for a farming region - to 74,4% at 1970,[1] despite the absolute decline in the number of urban Whites.

The sixties have also seen a marked change in the pattern of Coloured population growth: for the first time since 1921, there has been an absolute decline in the number of rural Coloureds from over 39 000 at 1960 to about 34 300 at 1970[2] - a decline of some 12%. Thus, whereas the proportion of urban Coloureds fell from almost 53% to 50% in 1951-1960, it rose again to over 60% in 1970.

Amongst Bantu, the rural population has not yet started to decline (except in certain parts of the region) but its growth has certainly slowed considerably since 1960, whilst the urban growth rate appears to have persisted. Consequently, at 1970, nearly 40% of the enumerated Bantu population was classified as urban.

Within the region, the urbanization process between 1904-1970 differed somewhat for the various races. Again, however, these differences are not unexpected in the light of the foregoing discussion of the distribution and growth of the total population. White rural depopulation occurred throughout the region (Table 2.6), but was most severe in the Sundays sub-region and least severe in the Coastal sub-region. Conversely, the gain in urban population was greatest in the Coastal sub-region, with the Sundays sub-region actually experiencing a small net decrease in the number of urban as well as rural Whites. The urban Coloured population increased in each sub-region, with the largest increases in the Sundays and Border sub-regions, although the population of the latter is not numerically significant. Increases of about 50% to about 90% occurred in the rural Coloured population of the Sundays, Fish and Escarpment sub-regions, with a small increase in the Coastal sub-region and a small decrease in the Border sub-region. The Bantu urban population registered increases of up to 760% in the Border sub-region and 580% in the Coastal sub-region, with smaller but nonetheless significant increases elsewhere. The only area where the rural Bantu population did not increase was the Sundays sub-region - it fell there by nearly 50% - but the increase of about 50% in the Border sub-region was unexpectedly low.

Assessment

In short, then, the region has lost, and is continuing to lose, substantial proportions of its residents through out-migration. As a result, it is losing both its potential labour force and, through the concomitant loss of purchasing power, it is losing its potential market as well. Within this overriding process, however, several subsidiary long-term secular trends are evident within the region.

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1. Steynsburg magisterial district was excluded from the calculation of these urban proportions because the 1970 results reflect a rise of nearly 1 000 in the White rural population of that district, indicating that the White construction workers on the Orange-Fish tunnel (who are housed in temporary townships, such as the one at Mid-Shaft) were classified as 'rural' in the census.
2. Again excluding Steynsburg magisterial district.

Firstly, there has been a mass exodus from the rural areas and, in the case of Whites, these areas are actually being emptied of their population. Throughout the region, therefore, the rural economy would seem to have been exceptionally weak and quite unable to support its population which, in spite of big losses, continues to grow. In other words, whilst the burden of support in the rural areas has clearly been increasing, the capacity of the latter to carry this burden may well have been running down.

Rural depopulation is, of course, a world-wide phenomenon and, in some instances, a highly desirable one. But the greatest proportionate loss in the region has been of Whites, rather than of non-Whites. Since within the social, economic and political framework of South Africa, the Whites are the main source of both capital and expertise, and the non-Whites are primarily labourers, ineligible for title to the land and lacking the resources for entrepreneurial activity, this fact cannot but bode ill for the cause of economic development in the region.

Secondly, there has been a relative shift to the urban areas. Thus, whilst the overwhelming majority of White rural out-migrants have probably left the region altogether, it seems likely that a small proportion have moved to the region's towns, thereby partially offsetting the loss of Whites from the latter. In the case of the Bantu, the proportion of rural out-migrants to re-settle in the region's towns appears to have been large. In the case of the Coloureds, the evidence suggests that, whilst a substantial proportion of those leaving the rural areas also left the region altogether, this proportion was also not as great as in the case of the Whites, and that a significant number also moved to the region's towns.

That relatively few Bantu (compared with Coloureds and Whites) appear to have emigrated from the region can again be attributed more to the administrative control measures to which they are subject than to social or economic factors. Indeed, the fact that the region's towns, in open competition with other areas, were able to attract only a few of the departing rural Whites (and unable even to retain their own population), suggests that there were probably also strong socio-economic pressures on rural Bantu to leave the region, but that the operation of these forces was inhibited by institutional factors. In contrast, such administrative factors cannot similarly be assumed to explain why the proportion of Coloureds who left the region was not larger. However, it will be shown later that other pressures probably did exist which militated against a higher level of out-migration.

Since the Whites are the main generators of employment opportunities in the urban areas, no less than in the rural areas, the question similarly arises whether the region's towns are able to carry the additional burden arising from the rapid increase of non-White population whilst the White population is all but stagnant. As will be shown later, the evidence suggests that the fact that so many non-Whites have remained in the region has had far-reaching socio-economic consequences both for the people themselves and for the region's urban centres.

Thirdly, apart from the relative shift to the urban areas, the region's population is tending to concentrate increasingly in the Coastal sub-region. This relative concentration is occurring in both the urban and rural areas of the sub-region. The only noteworthy exception to this structural shift is provided by the Coloured population, which has tended to increase its concentration in both the urban and rural areas of the Sundays sub-region, although this trend has been insufficient to prevent the sub-region from suffering an overall net loss of rural population of all races since 1904 (Table 2.6).

Despite the existence of abnormal factors - such as administrative controls - which limit the volume, and distort the pattern, both of internal migration and of out-migration of the region's non-White populations, the processes of change which have become manifest over the years cannot be entirely divorced from economic considerations. Hence, in the light of its increasing proportionate share of the population, the Coastal sub-region stands out as an area of apparent relative economic strength within the region, whilst the remaining sub-regions, and the Sundays sub-region in particular, would seem to be areas of relative weakness.

In this respect, it is of interest to note that, although several sub-regions had total populations of approximately equivalent size in 1904, the area of most rapid subsequent growth - the Coastal sub-region - had a relatively high initial population density (Tables 2.1 and 2.5). It is similarly noteworthy that, although they had substantially smaller populations than the region in 1904, Economic Regions 08 and 18 both had much higher densities and both grew much more rapidly.

The question therefore arises whether, in the absence of deliberate attempts to influence growth in specific directions, or to alter long-term secular growth patterns, it can be expected that areas with relatively high degrees of population concentration will tend to experience faster growth (of population) than areas with lower initial densities.

Although the above example would seem to bear out such a suggestion, there are some apparent paradoxes. For example, density in the Border sub-region was even higher than in the Coastal sub-region at 1904, yet growth in the former was relatively slow. Similarly, although Economic Region 18 (East London/King William's Town) had the higher initial density, it was Economic Region 08 which registered the faster growth. Again, taking the region's Coloured population alone, initial density in the Border sub-region was higher than in the remaining sub-regions, yet growth was slower in the former.

A possible explanation for these apparent paradoxes may, however, lie in differences in the internal disposition of population within the areas concerned. For example, despite the higher overall density in 1904, some 60% of the population of Economic Region 18 was dispersed in the rural areas of its two constituent magisterial districts, with only 40% in the few square kilometres of urban area. In contrast, in Economic Region 08, where overall density was lower, some 86% of the population was concentrated in the urban areas, resulting in a far higher degree of internal concentration. Similarly, only 12% of the Border sub-region's population was enumerated in urban areas in 1904, compared with 34% in the Coastal sub-region (Table 2.4). The population of the former was thus much more dispersed. Again, less than one-fifth of Coloureds in the Border sub-region were urbanized in 1904, compared with between two-fifths and three-fifths in the remainder of the region.

There may, therefore, be grounds for suggesting that, other things being equal, the portents of future growth are likely to be better for an area characterized by both a relatively high overall population density and a relatively high degree of internal population concentration (especially in urban areas) than for other areas, provided population is not already exerting undue pressure on resources. In other words, as has been found elsewhere, it may

be that existing spatial patterns of growth tend to be self-reinforcing and self-perpetuating, and that areas with an existing growth momentum tend to be able to maintain or even increase that momentum, unless interrupted either by planned policies or by unforeseen circumstances, whilst areas that have tended to lag in the past are likely to continue to lag in the future (see, for example, Friedmann, 1955). This is not, of course, to suggest that there is anything inherent in the growth processes themselves which results in the spatial differentiation of growth patterns. Indeed, if (as would seem to be the case) the existing spatial structure revealed by the distribution and growth of population can be expected to persist, then the reason will be found in the differing locational advantages and disadvantages of the areas concerned.

DISTRIBUTION OF GROSS GEOGRAPHIC PRODUCT

An equally enlightening indication of spatial structure in the region is afforded by the distribution of total geographic product, for an area's share of total product is a succinct, albeit crude, measure of its relative economic importance.

Spatial distribution and growth of gross geographic product

On this basis, the GGP data for 1959/60 suggest that the Coastal sub-region - with a 28% share - was the most important area, followed by the Fish and Sunday's sub-regions with 23% and 22% shares respectively (Table 2.7). Of lesser importance was the Escarpment sub-region (17%), with Border (10%) trailing well behind.

The margin of importance of the Coastal sub-region in this instance was, therefore, small. Moreover, this differential was not evident during the remainder of the period for which GGP data are available. Thus, in 1954/55, the shares of the Coastal, Fish and Sundays sub-regions were 24%, 23% and 25% respectively. Indeed, on average during the six-year period, these three sub-regions appear to have contributed approximately equivalent shares of GGP, their combined share being between 70% and 75% of the total.

The GGP data alone are insufficient to determine whether this change in distribution during the period was merely a reflection of minor fluctuations or really represented an incipient trend for the Coastal sub-region to out-distance the others (as would appear to be the case in the growth and distribution of population).

In either event, the data demonstrate a clear lack of areal concentration of economic activities within the region. Since centralisation and concentration is an almost universal manifestation of a high level and rapid pace of both regional and national economic development, this lack is significant, for it confirms the suggestion of a secular tendency towards a low level and pace of economic development in the Cape Midlands and Karroo region.

The probable lack of real growth in GGP in the region as a whole between 1954/55 and 1959/60 has already been noted (Chapter One). Since there was no net increase in GGP (at current prices) in the Sundays and Escarpment sub-regions - in the former there was actually a net decrease - and only a 10% increase in the Fish sub-region (Table 2.7), compared with the national inflation rate of 13% in the same period, a similar conclusion is indicated for these three areas. Indeed, a decline in real terms seems most probable. In the Border sub-region, however, a net increase of 18% in GGP at current prices

was achieved, and in contrast to the three aforementioned sub-regions, the pattern of annual fluctuations suggests (see Table 3. 1) the possibility of a general upward tendency.

As the discussion in the next Chapter will show, the main reason for the difference would appear to be that the value of agricultural output (at current prices) in the Border sub-region showed no net change over the period, whereas the corresponding values in the other three areas fell, in some instances sharply. Such real growth as did take place in the Border sub-region is accounted for by all the secondary and tertiary sub-sectors, with the exception of trade and private services which experienced no net increase in real terms. In the other three sub-regions, all secondary and tertiary production sub-sectors would similarly appear to have experienced growth in real terms, in this instance with the sole exception of trade, which evidently declined in both real and current terms. The decisive influence of the agricultural industry is thus clearly illustrated.

By contrast, it was only in the Coastal sub-region that a real net decline in the value of agricultural output was avoided, and with the (sometimes substantial) real increases in all the secondary and tertiary production categories - again with the solitary exception of trade - a net increase of 25% was recorded in GGP at current prices. Again, the six-year period is too short to draw firm conclusions, but the apparent relative strength of the agricultural industry - and hence of the rural economy - in the Coastal sub-region during the period is significant in the light of the earlier conclusions on population growth and distribution.

Gross geographic product per square kilometre

Those areal differences that do exist in the size and growth of geographic product reflect the differing locational characteristics of the areas concerned. As Perloff, Dunn, Lampard and Muth put it (1960, p. 36),the forces determining the 'volume' aspects of economic development "are those that affect relative costs of production (both costs of material inputs and labour costs) in the various parts of the country, the relative size of different market centres (both final or consumer and intermediate producer markets), and relative transport costs as between different places". But,as in the case of the inter-regional comparisons in Chapter One, an assessment of the relative economic importance of the various sub-regions must also take account of their respective geographic sizes: thus, for example, in 1959/60, the Border sub-region produced an output equivalent to 46% of that produced by the Sundays sub-region in an area 15% of the size of the latter.

Hence, conversion to output per unit of area will again be necessary before direct comparisons can be made between areas of different size. This variable can also be illustrated in terms of the economic surfaces concept, since it gives rise to a 'volume' surface (Fig. 10) showing the intensity of economic activity in each magisterial district, expressed in terms of GGP/ km^2 .

This surface map is not unlike the previous (population density) surface map. It reveals a tendency for the levels of intensity to decline with increasing distance from the metropolitan centres of Port Elizabeth and East London. Based on 1959/60 GGP estimates, the Coastal sub-region forms the highest plateau with an intensity level of almost R2 300/km^2 - two and a half times higher than the regional average of R900 (Table 2. 8), but quite insignificant in relation to the metropolitan core areas: GGP/km^2 in Economic Region 08

was R43 700 at 1959/60 and the corresponding figure for Economic Region 18 was R19 000. The surface level declines further to approximately R1 500/ km^2 in the Border sub-region and R1 100/km^2 in the Fish sub-region. On the Escarpment, and in the Sundays sub-region, the level falls to about R600/ km^2 and R500/km^2 respectively.

Thus, when the geographic products of the five sub-regions are reduced to comparable units, the prominence of the Coastal sub-region, which is obscured in the overall spatial distribution, re-asserts itself.

This spatial configuration of the volume surface in relation to the adjacent metropolitan zones is, of course, to be expected. A gradient-type structure in the intensity of land use is an empirically observable regularity of the space economy (see, for example, Fair, 1972, p. 2 and Fig. 3; and Morrill, 1970, p. 176). These gradients arise from the market orientation of most economic activities. The larger a market centre, the greater the competition between land uses of all kinds - from processing and service activities to residential activities - for accessibility to the centre. As a result of the substitutability between land costs and transport costs, "expensive sites close to the centre can be chosen and then used intensively, or farther sites may be chosen and used less intensively - with the same total costs" (Morrill, 1970, p. 175). Economic activities therefore concentrate at or near such market centres to produce the familiar gradient pattern of decreasing intensity of volume with increasing distance from the major centres.

The decline in the gradient can, however, be expected to be interrupted wherever subsidiary market centres are located. The Cape Midlands and Karroo region provides no exception to this pattern, and the volume surface map shows the existence of intervening peaks at several of the magisterial districts containing sub-regional nodes. Especially evident are the districts containing Grahamstown (Coastal sub-region) and Cradock (Fish sub-region), whilst a similar but apparently less clear cut situation is observable at Graaff-Reinet (Sundays sub-region).[1] That there is no district in the Border sub-region in which the level of intensity rises clearly above the level in the surrounding districts is also according to expectation, since (as will be shown later) none of the urban centres there stands out as a dominant sub-regional focus. However, the apparently similar situation on the volume surface in the Escarpment sub-region runs contrary to expectations: thus, although the intensity level in the Middelburg magisterial district is higher than in all the remaining districts of the sub-region, this level is only 58% higher than that in the district with the lowest intensity.

To some extent, this situation is explained by the fact that Middelburg magisterial district is between two and four times larger in area than most of the other districts in the sub-region and the influence of the less intensively

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1. The position is actually more clear cut than would appear from the surface map. Although the latter shows Graaff-Reinet and Jansenville magisterial districts in the same income interval, the actual figures of GGP/km^2 show the former to be near the upper limit of the interval whilst the latter only narrowly falls inside the lower limit. The level of intensity in the former is thus some 73% higher than that in the latter.

developed rural areas is proportionately greater in the Middelburg district. However, Albany magisterial district stands in a similar size relationship to the remaining districts in the Coastal sub-region, but still revealed a clear superiority in terms of intensity levels. Moreover, a comparison between Middelburg magisterial district and the remaining magisterial districts in the sub-region, in terms of relative geographic areas, relative sizes of total GGP, and relative proportionate contributions of the districts' agricultural sub-sectors, suggests that it is by no means certain that, if reduced to the urban components only, Middelburg would necessarily stand out as a significantly higher peak than all the other urban centres in the sub-region.[1]

Assessment

Although there are many factors contributing to regional and sub-regional differences in intensity, in the final analysis they must be seen as reflecting the locational characteristics of the sub-regions in general and the productivity of the land in particular. Thus, for example, relative proximity to the metropolitan areas, favourable climate, better resource endowments, and suitability for relatively intensive forms of agricultural production - all of which permit the attraction and retention of a relatively large population and the provision of a relatively large number of income-earning opportunities - place the Coastal sub-region at a considerable advantage vis-á-vis the Sundays sub-region. The latter has a more peripheral situation, a less favourable climate, fewer and less valuable natural resources and less productive soils, all of which place it at a relative disadvantage.

DISTRIBUTION OF PERSONAL INCOME

The distribution of gross geographic product, outlined above, gives no indication of the manner in which income in the region is distributed between the different races, nor does it provide any direct information on the different income-generating capacities of the rural and urban areas. Both these gaps in the available information can, however, be regarded as being filled by Nel's data on the total personal income of the population of each race in both the urban and rural areas of each magisterial district in 1959/60 (Nel, 1968a). Totals for each magisterial district are also available for 1958/59 (Nel and de Coning, 1965), but these do not include either of the above breakdowns.[2]

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1. It is not, of course, possible to obtain an exact urban-rural breakdown of the GGP estimates. However, the exclusion of the value added by agriculture provides an approximation of the urban component. In this respect, it should be noted that the intensity levels in the sub-regional nodes themselves would be substantially higher than the averages for the corresponding magisterial districts. Moreover, all other urban centres in the region could probably be expected to cause additional, albeit less marked, peaks interrupting the general decline of the gradient of the volume surface.
2. The data for the two years are also not strictly comparable (see Nel, 1968a).

In contrast to gross geographic product, which represents the total earnings of all factors of production arising out of their participation in economic activities within the borders of the area concerned, Nel's personal income estimates comprise the current income from all sources of the area's inhabitants only.[1] A further difference between the two sets of data is that the GGP estimates show total factor income according to the areas in which that income was generated, whereas the personal income data were classified according to the area of residence of the recipients. In other words, the former show income where it was paid; the latter show income where it was received. Since the data also reflect income from all sources - cash and kind, actual and imputed - the urban-rural and race breakdowns of the personal income estimates reflect the income-earning capacities of the residents of the relevant areas, according to race.

Spatial distribution of personal income by race

The spatial distributions of estimated total personal income among the five sub-regions in the two years 1958/59 and 1959/60 are virtually identical to the distributions of GGP for the corresponding years (Tables 2.9 and 2.7). At this aggregated level, therefore, little additional information on the region's spatio-economic structure emerges. However,the race and urban-rural breakdowns of the 1959/60 data reveal a number of very interesting features of income distribution in the region.

Perhaps the most striking feature of the distribution of personal incomes in the region is that, whereas Whites comprised only some 16% of the total population at 1960, whilst Bantu comprised about 64%, no less than 74% of total personal income in 1959/60 was earned by Whites, with only 18% by Bantu (Tables 2.9 and 1.6). This inverse relationship between numbers and incomes was also evident, albeit less markedly, in the case of Coloureds, who earned only 8% of personal income, although they comprised over 20% of the population.

These marked differences in the income-earning capacities of the different races gave rise, in turn, to another noteworthy feature. Although the spatial distribution of the personal income of each race parallelled almost exactly the corresponding spatial distribution of population, the distribution of total personal income among the sub-regions differed considerably from the corresponding distribution of total population (Tables 2.9 and 2.2). Thus, the fact that the Sundays sub-region had a 22% share of total personal income (and of GGP) at 1960, with only a 17% share of total population, is due largely to the fact that the proportion of Whites in the sub-regional population (21%) was higher than the proportion in the region as a whole (16%). It would also have been due partly to the fact that the ratio of Coloureds to Bantu was also much higher in the sub-region. Conversely, the fact that the Border sub-region, with a population share of 18%, had an income share of only 12% (GGP: 10%), is due largely to the lower-than-average proportion of Whites in the population,

1. In this respect, they differ from the more widely accepted concept of personal income which includes not only real individuals but so-called 'quasi-individuals' - e.g. non-profit institutions - as well. Since the latter pose problems for racial allocation of total personal income, they were excluded by Nel.

although the relatively low ratio of Coloureds to Bantu would also have been a contributory factor. In the case of the Coastal sub-region, where the proportion of Whites was the same as in the region as a whole, the fact that the 27% share of personal income was slightly lower than the 30% share of total population, can similarly be ascribed to the low ratio of Coloureds to Bantu.

Urban-rural distribution of personal income

Another feature of these breakdowns is that, for each race, for each sub-region, and for each race within each sub-region, the proportion of personal income accruing to the residents of urban areas seldom lay outside the range from 40% to 60% (Table 2.10).

For the region as a whole, the urban proportion was almost exactly 50%. Since only 43% of the total population at 1960 was urban, the urban areas were evidently receiving a slightly more than proportionate share of personal income. In the light of the yawning gap between White and non-White income-earning capacities, the fact that the proportion of Whites in the enumerated urban population at 1960 was 26% compared with only 8% in the rural areas, leads to the expectation that a disproportionately large share of personal income should accrue to the urban areas. That the proportion of Coloureds in the urban areas population was higher than in the rural population - 24% as opposed to 18% - similarly reinforces this expectation.

However, given the size of this earnings gap, and given these large differences in the proportions of Whites (and of Coloureds) in the urban and rural populations, the actual disproportion noted above between urban and rural total personal income appears unexpectedly small.

The explanation for this apparent paradox lies in the fact that within the White community itself there is a disproportionate distribution of personal income between urban and rural areas which favours the latter. Thus, the disposition of White population at 1960 was 73% urban and 27% rural (Table 2.4); the distribution of White personal income was 50% urban and 50% rural (Table 2.10).

To some extent, the reason for this can probably be found in higher dependency rates in the urban areas, i.e. in a higher ratio of economically inactive population (children, retired persons, housewives, students, etc.) to economically active population. But the unexpectedly low share of urban residents in White personal income would seem to have been due mainly to a genuine differential in urban and rural income-earning capacities among Whites, with the balance in favour of the rural community. The 1960 population census results reveal that income-earning Whites in the rural areas tended to have larger incomes than those in urban areas (Table 2.11). Thus, 31% of income-earning White rural males in the region reported total personal incomes in excess of R3 000 p.a., compared with only 11% in the urban areas; similarly, 18% of income-earning rural females had incomes in excess of R1 600 p.a., compared with only 9% of urban females. This imbalance occurred throughout the region, although it was more marked in the Sundays, Fish and Escarpment sub-regions than in the Coastal and Border sub-regions.

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1. Asians are an exception to this, in that virtually 100% of Asian personal income was urban. However, the total personal income of Asians was less than 0,5% in the regional total.

This phenomenon is, however, limited to the White population: Coloured personal income in the region as a whole was 57% urban compared with 50% urbanization of the population; and in the case of the Bantu, the urban proportions were 46% for income and 34% for population (Table 2.10). The personal income data from the 1960 population census confirm that incomes of Coloureds tended to be higher in the urban areas. No comparable information is available for Bantu.

Since the total income accruing to non-Whites was so much smaller than that accruing to Whites, the fact that the urban-rural distribution of the non-White incomes favoured the urban areas generally had only a marginal influence on the distribution of total personal income of all races within the region. Consequently, the overall regional distribution pattern between urban and rural areas recurred to a greater or lesser extent throughout most parts of the region. Thus in the Escarpment sub-region, the urban population earned 49% of total personal income, whilst accounting for 45% of the total population (Tables 2.10 and 2.4). Although Whites accounted for 76% of total personal income in the sub-region, and although 69% of Whites resided in urban areas, the fact that the proportion of rural income-earning White males with incomes in excess of R3 000 was 33%, whilst the corresponding urban proportion was only 9%, accounts for the unexpectedly low proportion of urban income.

In the Fish sub-region, the gap between the income-earning capacities of rural and urban Whites was apparently even larger, with the result that the proportions of total personal income and total population in the urban areas were virtually equivalent.

The Coastal and Border sub-regions conformed somewhat more to the expected pattern. In these areas, the proportions of total population in the urban areas were lower (41% and 31% respectively). Yet due to substantially smaller White urban-rural income differentials, the urban proportion of total personal income rose to 52% in the Border sub-region and 58% in the Coastal sub-region.

In the Sundays sub-region, however, a rather different situation obtained. Here, the proportion of urban population was 55% - the highest of all sub-regions. Yet, despite the fact that 74% of Whites resided in the urban areas, and despite the fact that the White rural-urban income differential was no greater than in the Escarpment and Fish sub-regions, the proportion of personal income accruing to urban residents was only 43%. The explanation for this reverse situation would seem to lie in the fact that more than half the Bantu in the sub-region (56%) were in the urban areas at 1960. In other words, instead of 'weighting down' the rural areas, as was the case in the other sub-regions, the relative concentration of this low income group in the urban areas of the Sundays sub-region only served to accentuate the greater income-earning capacity of the rural areas.

Assessment

The most important economic implications of the distribution of personal incomes concern the spatial structure of the market in the region. A large and concentrated market would be a valuable asset in the competition for industry. At 1959/60, the estimated total personal income of R70,2 million in the Cape Midlands and Karroo region fell not far short of the total of R80,0 million in Economic Region 18 and exceeded that in East London magisterial

district itself (R68, 9 million). But, whereas purchasing power in the latter areas was relatively highly concentrated, affording possible opportunities not only for the realization of economies of scale, but also for the establishment of mutually reinforcing inter-industry linkages, the market in the region was highly dispersed without even any really significant localized concentrations, except perhaps in the Coastal sub-region.[1]

Thus, in the great majority of the twenty-one magisterial districts in the region, the purchasing power of rural residents exceeded that of urban residents. The only exceptions were the Graaff-Reinet, Middelburg, Noupoort, Cradock, Fort Beaufort, Victoria East and Albany magisterial districts. Since most of these districts contain the sub-regional nodes, these exceptions are to be expected. But it is only in the case of the Coastal sub-region that purchasing power is sufficiently concentrated to provide a market centre of more than purely local importance. Urban personal income in the Albany magisterial district - which is effectively limited to Grahamstown - comprises 47% of total personal income in the whole sub-region. In comparison with the situation in the other sub-regions this represents a relatively high degree of concentration. In the Sundays sub-region, urban personal income in Graaff-Reinet magisterial district was only 25% of the sub-regional total; the corresponding proportions for Cradock magisterial district in the Fish sub-region and Middelburg magisterial district in the Escarpment sub-region were 27% and 21% respectively. But Grahamstown's purchasing power was only $12\frac{1}{2}$% of total purchasing power in the region. Consequently, in the context of the region as a whole, there is no dominant internal market centre.

A further factor to be borne in mind when considering the spatial distribution of purchasing power in the region is that, given present socio-economic conditions, the number and proportion of Whites in the population is at least as important as the size of the total population, although a large total population is likely to increase the consumption outlays of public authorities.

DISTRIBUTION OF WELFARE

Economic activities have as their aim the satisfaction of wants. "Economic development, therefore, must be evaluated in terms of how well it

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1. Strictly speaking, personal disposable income is a better measure of purchasing power than personal income, as the latter represents income before direct taxation. The relationship between the two concepts is, however, sufficiently close to permit them to be used interchangeably in a generalized discussion. (It should be noted, however, that even personal disposable income can only be regarded as a crude index of purchasing power, for in a heterogeneous population, effective demand for different commodities is affected by the differing propensities to consume amongst the various income groups and the various cultural groups. An accurate assessment of purchasing power thus requires that personal disposable income be weighted to take account of these factors - see Nel and de Coning, 1965, p. 112 et seq for a discussion of this point.)

fulfils that function, how it affects the well-being of people" (Friedmann, 1955, p. 72).

No single satisfactory measure of welfare has yet been developed, for welfare is a highly subjective concept which does not necessarily vary along an identical scale for each individual. Indeed, the old adage that 'one man's meat is another man's poison' would not be inappropriate to the problem of measurement of welfare.

The accepted practice of using income as a measure of individual welfare is open to question, because there are some things which some people value more than money. An example relevant to the study of a rural region is that some rural people would willingly forego higher income-earning possibilities in the cities for what they perceive as the advantages of rural life. For many city dwellers, the reverse would hold true. An assertion that the state of well-being of rural folk is less than that of city folk because the former have lower per capita incomes would thus need to be qualified by such conceptual issues.

But when all is said and done, income remains the simplest, most convenient and effective means of affording such comparisons. In the first place, it is aggregate (real) income which is the yardstick for measuring national economic progress, and a country which can boast both increasing aggregate and increasing per capita income is by definition said to be 'better off' or to be 'developing more rapidly' than one in which total real income is rising, but per capita income is falling.

In the second place, income is the means by which people in a modern economic system are enabled to meet their basic needs of food, clothing and shelter, and whilst the qualifications which other welfare variables might introduce, if taken into account, would probably result in some blurring of the distinctions between income groups, it seems probable that at least some such broad distinctions can be drawn.

In the third place, it has been suggested that "a high correlation (can be) assumed between income and other possible measures of welfare (health, education, etc)" not only in highly "materialistic" societies - such as the United States - but also on a world-wide scale (Friedmann, 1955, p. 73). Even allowing for the possibility of different evaluations of, and attitudes towards, income arising out of the cultural differences between Whites, Coloureds and Bantu in the Cape Midlands and Karroo Region, it would seem probable that the relative homogeneity of the area, coupled with the fact that virtually all its residents are part of a single market economy,[1] would permit the extension of this assumpton to the region.

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1. The dualism of co-existent market and subsistence economies, which characterizes the South African economy in general is absent from the economy of the Cape Midlands and Karroo region, except for the minor intrusion of Bantu Reserve Areas into the eastern portions of the Border sub-region.

Finally, income remains the only readily quantifiable indicator of welfare, both in general, and in the specific case of the Cape Midlands and Karroo region.

Gross geographic product per capita

Income per capita in different parts of the region would be determined jointly by the spatial distributions of income and of population. By using the GGP estimates for 1959/60 and interpolated population estimates for the beginning of 1960, an estimate of GGP per capita was obtained for each magisterial district in the region. This variable was then translated into regional economic 'welfare' surfaces (Fig. 11) which revealed a wide variation in per capita GGP at 1959/60 within the region, the level in the Sundays sub-region being more than twice as high as that in the Border sub-region, with the Fish, Escarpment and Coastal sub-regions in decreasing order between them (Table 2.8).

West of the Fish River, where per capita GGP at 1959/60 was of the order of R280 to R200 p.a., the welfare surface map reflects a relatively unbroken plateau sloping downwards slightly from west to east. East of the Fish River, the increasing density of population begins to offset the advantage of greater intensity of economic activity, resulting in an inverse relationship between welfare and volume. In the Border sub-region, for example, there is a progressive decline from about R150 per capita in the west to about R70 in the east. The welfare surface map thus shows a series of successively declining levels from the Sundays to the Fish and Escarpment sub-regions followed by a sharp drop to a much lower surface in the Border and Coastal sub-regions. Unlike the western surfaces, however, the surface in the latter two areas is a broken one with a peak in Albany magisterial district falling sharply away in all directions, but particularly to the north-east and south-east, where densities are highest.

Assessment

The regional welfare surfaces are thus rather different in character from the volume surfaces. The three main differences are (i) that volume levels tend to be higher in the east and lower in the west, whilst the reverse is true for welfare levels; (ii) that the variation in levels between the various districts and sub-regions is much more extreme in the case of volume than in the case of welfare; and (iii) that, unlike the volume surfaces, the welfare surfaces do not reflect intermittent 'peaks' around the main urban centres.

The explanation for these differences can be found mainly in the differences in the determining forces which underlie the two variables. As has already been noted, the volume forces are primarily related to locational factors. The welfare forces, on the other hand, are "those that influence the relation between the rate of increase in population and labour force and the rate of increase in non-human factors of production within given regions and those that differentiate one region from another in the characteristics of the population - in their skills, age, sex, and racial composition" (Perloff, Dunn, Lampard and Muth, 1960, p. 56). An explanation for the first of the above-mentioned differences between the regional volume and welfare surfaces might therefore be found in some or all of the following: a lower rate of population growth in the western parts of the region relative to the rate of growth in total output; higher productivity of production factors, but especially of labour, in the west; higher capital - labour ratios in the west; and differences in the occupational and industrial structure of the labour force.

Adequate data on all these factors are not available; but in the light of the vast differences in the income-earning capacities of Whites, Coloureds and Bantu, it is certain that the large numbers and proportions of Bantu in the eastern parts of the region have served to depress welfare levels in those areas.

Of greatest interest, however, is the failure of per capita income levels in the region's main urban centres to rise significantly above those in the surrounding districts, for, at a national level, a welfare surface, like a volume surface, usually has a distinctive 'gradient' structure with 'peaks' at the main centres of economic activity - usually the metropolitan and other major urban centres - and with 'valleys' in the inter-metropolitan and inter-urban zones (Fair, 1972, p. 2).[1]

A correspondence between high welfare and volume levels in the major centres of economic activity - such as the metropolitan areas - can be regarded as being the result of relatively high productivity levels, favourable occupational and industrial structures, and high activity ratios, so that despite a high rate of population growth, total income nonetheless grows fast enough to permit high and rising welfare levels. Data on the rate of growth of total output in the region's urban centres is lacking, but intensity levels are clearly relatively high in comparison with the inter-urban areas. It must, therefore, be assumed that the favourable factors which would enable output growth to outstrip population growth are not present in these centres, and relative weakness of the urban economy in the region is indicated.

DISTRIBUTION OF EMPLOYMENT

The industrial structure of employment, as of output, in the region will be discussed in some detail in the next Chapter. The broad geographical distribution of employment amongst the constituent parts of the region, and between urban and rural areas, is however also of significance for spatial structure.

Spatial distribution of total economically active population by race

In the population census of 1960, 122 300 persons were classified as being 'economically active'[2] in the Cape Midlands and Karroo region (Table 2.12).[3]

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1. Since the estimates of GGP per capita by magisterial district do not distinguish between urban and rural areas within the magisterial districts, this statement may be somewhat misleading. It is clear, however, that with the possible exception of Albany magisterial district, if welfare levels at the sub-regional nodes are higher than those of the surrounding rural areas, the differences are insufficient to raise the levels for the corresponding magisterial districts as a whole above those of adjacent magisterial districts.
2. The term 'economically active' includes a category of persons classified as 'unemployed and unspecified'. Although in practice unemployment is difficult to measure, the suggestion that an unemployed person is one who is willing and able to work, but for whom no work is available, would probably find general acceptability. The unspecified component of the above-mentioned category, however, comprises persons who are evidently in employment, but who have provided inadequate or contradictory information in their population census returns regarding the nature of the work undertaken by their employers. Such persons are classified as being of indeterminate or unspecified industrial activity. This combination of employed with unemployed persons in a single tabulation category poses a number of problems for analysis, which will be raised later in this section of the report.
3. Including Hanover magisterial district, and excluding Asians.

Of this number, 16,1% were Whites, 21,8% Coloureds and 62,0% Bantu. The corresponding population proportions were 15,7%, 20,7% and 63,5% respectively. Consequently, the crude activity rates for each race appear not to have been dissimilar: 32,3%, 32,6% and 30,8% for Whites, Coloureds and Bantu respectively, and 31,4% for the three races together (Table 2.13). However, 15% of economically active Coloureds, 15% of Bantu, and 4% of Whites were classified as 'unemployed and unspecified' (see Table 3.5), and it can be taken for granted that, in each instance a substantial proportion - if not the bulk - of those in this category were unemployed. The effective work participation rates of Coloureds and of Bantu were thus almost certainly below 30% - indeed, in the case of the Bantu, the level may well have been closer to 25% than to 30%. Although the ensuing discussion will be couched mainly in terms of the total economically active proportions, it should be borne in mind that the 'true' proportions for Coloureds and Bantu are somewhat lower.

The sub-regional shares of the economically active population of each race at 1960 were, with a few exceptions, the same as their shares of the corresponding total populations. Consequently, in general, the crude activity rates for each race did not vary much from one sub-region to the next. The main exceptions would appear to have been in the Border and Escarpment sub-regions.

In the Border sub-region, the White crude activity rate of 35,0% appeared to be slightly higher than the average and the Bantu rate of 26,3% significantly lower. In addition, although the Coloured rate of 32,4% appeared to be about average, the proportion of Coloureds in the 'unemployed and unspecified' category was exceptionally high at 35%. The effective rate for Coloureds must thus have been rather low. Similarly, the already low rate for Bantu was made even worse by the fact that the 'unemployed and unspecified' category was also very high, accounting for 24% of the total.

In the case of the Bantu, this situation can probably be attributed to the existence of Bantu Reserve Areas within the sub-region for the predominantly subsistence economies of the Reserves offer little in the way of employment opportunities; in the case of the Coloureds, it would appear to have been due partly to a relative lack of farm employment opportunities for this race group in certain parts of the sub-region, which may have been due in turn to the ready availability of Bantu labour. However the problem appears to have been particularly serious only in the Fort Beaufort district, where Coloured farm employment was at a very low level and where fully 58% of the economically active population was classified as 'unemployed and unspecified'. No immediate

explanation can be adduced for these unusual circumstances.[1]

In the Escarpment sub-region, on the other hand, crude activity rates tended to be slightly higher than average (Table 2.13). For Whites, the difference was slight; but for Coloureds, the rate was relatively high (34,8%). For Bantu, not only was the rate relatively high (32,9%) but the proportion in the unemployed and unspecified category was also relatively low (9%). As far as the Bantu are concerned, the reason for this would seem to lie in the fact that an unusually high proportion of Bantu were employed in the construction industry in this sub-region in 1960 (see Table 3.5), and the possibility (if not the probability) is that this was a temporary boost to employment created by specific construction projects. The fact that it was localized largely within the Middelburg magisterial district and, to a certain extent, Noupoort magisterial district, would tend to support this thesis. No specific reason is readily evident for the higher White and Coloured rates.

The only other noteworthy deviation from the norm is in the case of Bantu in the Sundays sub-region. Here, the crude activity rate for this race was highest (34,4%), but again, there appears to have been an abnormally high proportion of Bantu in the construction industry, when compared with the regional average. In this instance, the phenomenon was less localized, with several districts reflecting a relatively high proportion. Nonetheless, the suggestion that this was the result of specific construction projects being undertaken at the time, rather than a longer-term tendency, would again seem to be the most likely explanation.

On the surface, then, the distribution of employment at 1960 appears not to have differed significantly from the distribution of population at the same date. However, partly because the racial proportions differ in the various sub-regions, and partly because of the differences between the 'apparent' and 'effective' activity rates for non-Whites, the situation in some sub-regions would seem to have been less healthy than in others. For example, total crude activity rates varied from over 33% in the Escarpment sub-region to less than 28% in the Border sub-region and, even allowing for the possibility that the former might have been enjoying a temporary boost, when the unemployed populations have been taken into account the differences remain substantial. In particular, the Border sub-region appears to have been labouring under a high burden of dependency.

However, whilst the Border sub-region may seem to be badly off in relation to the remainder of the region, the latter is itself in an unhappy situation in relation to the adjacent metropolitan areas. The total crude activity rate for the region at 1960 was 31,4%, the effective rate probably being rather less than 30%, with Coloureds and Bantu apparently suffering from high rates of unemployment and underemployment.

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1. The possibility of error in tabulation cannot be ruled out as an explanation. Indeed, in an alternative census tabulation on personal incomes, the total number of economically active Coloureds in Fort Beaufort magisterial district is given as only 557 in contrast to the figure of 979 given in the industry division tabulations on which the above discussion is based. The former figure conforms more to expectations than the latter. Differences between the two tabulations, in the number of economically active persons of a particular race in a particular district, are also evident in several other instances. For the most part, however, these differences are insignificant.

By contrast, the total crude activity rate in Economic Region 08 (Port Elizabeth/Uitenhage) at 1960 was 38,9% and in Economic Region 18 it was 35,2%. The dependency burden in the region is thus somewhat greater than in the adjacent metropolitan zones. This is true for all races (Table 2.13).

Urban-rural distribution of employment

Of more interest than the broad, overall spatial relationships outlined above would be a breakdown of total employment into its urban and rural components within the five sub-regions. Such a breakdown cannot be obtained directly from the employment data but as non-farming activities in the rural areas of the region are, as a general rule, insignificant, all non-farm employment can for all practical purposes be regarded as being urban.[1] On this assumption the ratio of farm to non-farm employment would provide a rough guide to the proportions of total job opportunities provided by the rural and urban areas of the region respectively.

Unfortunately, the determination of this ratio from the population census 'employment by industry division' tables is again complicated by the large proportion of economically active persons classified as 'unemployed and unspecified'. However, since it is reasonable to assume that many, if not most, of the persons in this category are in fact unemployed, rather than being employed, (with an indeterminate or inadequately specified industrial classification), and since it is further reasonable to assume that no particular bias is likely to exist in the actual industry group distribution of those classified as 'unspecified', the exclusion of the unemployed and unspecified category from the total economically active population enables approximate ratios of farm to non-farm employment to be obtained.[2]

On this basis, some 45% of total employment in the region at 1960 can be regarded as having been provided in the rural areas, with the remaining 55% of job opportunities located in the urban areas (Table 2.14). Since the proportion of total population in the urban areas at 1960 was only 43%, this suggests that either the proportion of economically active persons in the urban population was higher than in the rural population, or a significant number of rural residents were working in the towns (or both). But in the light of the agglommerative nature of urban economies, a relative concentration of employment in urban areas is not unexpected.

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1. Such permanent non-farm employment as may occur in the rural areas is normally confined to the occasional trading store, quarry, railway station or other minor activity. From time to time, however, road, dam, railway or other similar construction and repair activities do result in significant short-term increases in rural non-farm employment.
2. Whilst the difficulties of classifying economic activities in general, and of distinguishing between employment and unemployment in particular, in a population census are fully appreciated, it might be noted at this point that the practice of the census authorities of combining unemployed persons with persons who are apparently employed, but whose industry group is indeterminate, in one category for tabulation purposes, represents a severe (and statistically unnecessary) obstacles to the efficient utilization and interpretation of the census data. (For a more detailed discussion of the problems to which this practice can give rise, see Blumenfeld, 1972, Appendix A8.)

This characteristic, namely that the urban-rural employment ratio tended to be higher than the corresponding population distribution ratio, was also evident to a greater or lesser extent in all the sub-regions. There were, however, significant differences between the races in this respect.

Amongst the Coloureds, for example, 60% of employment was estimated to have been urban compared with only 50% of the population. This pattern was repeated clearly in all the sub-regions, except for Coastal, where the difference in the two ratios was small. Similarly, some 49% of Bantu employment in the region could be regarded as urban as against 34% for population. Again, this pattern was evident in each sub-region. But amongst Whites, the estimated 72%-28% ratio of urban to rural employment was virtually the same as the ratio of urban to rural population. Even in the five sub-regions, this remained the general rule, although there were minor deviations in one or other direction in a couple of instances.

Assessment

This is an unexpected result, the more so because the urban-rural employment ratios used here can be effectively regarded as indicating the distribution of employment by place of work rather than by place of residence of the worker. As it might reasonably be assumed that the number of rural residents commuting to work in the towns would normally be higher than the number of urban residents commuting to work in the rural areas, this virtual equivalence of the employment and population distribution ratios between urban and rural areas implies that the activity ratio in the rural areas must be higher than that in the urban areas. Normally, the reverse would be the case, because the world-wide trend both towards rural depopulation and towards a declining proportionate share of agricultural employment, could be expected to lead to a relative concentration of employable (and employed) persons in urban areas. This is usually reflected in higher activity rates and in a higher proportion of working age people in the urban population. The earlier comparisons between the Cape Midlands and Karroo region on the one hand and the adjacent metropolitan areas on the other hand confirm that this is also true for each race in the South African situation. Why then is it not true of the relationship between Whites in the urban and rural areas of the region?

One possible explanation might be that the above estimated urban-rural employment breakdown is erroneous. Certainly, it must be regarded as an approximate breakdown, but its general validity is confirmed by the data from the 1960 population census tabulations of personal income of Whites according to work status, from which it is possible to obtain a breakdown of the economically active White population into its urban and rural components on a place of residence basis. These tabulations show clearly (Tables 2.15 and 2.16) that White rural crude activity rates in the region are substantially higher than the urban activity rates. Thus, the crude rural activity rate for Whites at 1960 was 38% compared with only 29% for urban areas. A similar differential is evident in each of the sub-regions, except the Border sub-region where the ratios are virtually equivalent.

Had this phenomenon been restricted to the Coastal sub-region, it might perhaps have been explained in terms of the unusually large number of scholars, students, military and other trainees from outside the sub-region who are to be found in Grahamstown, or in terms of the suitability of the Coastal area as a retirement location for the elderly. But clearly this is not the case, and factors of this nature can only provide part of the explanation.

A further partial explanation might lie in the possibility that a large number of farm residents, particularly the wives and children of farmers, might have been classified as 'unpaid family assistants' in the census, which would result in their being regarded as economically active.

But,provided the data are not completely erroneous, the conclusion is inescapable that the explanation lies mainly in an uncharacteristic age structure of the out-migrants from the rural areas. In other words, instead of showing the expected marked bias towards the working age group, the age structure of White rural out-migrants has apparently been weighted somewhat more in favour of the non-economically active groups. In contrast, out-migration from the towns has clearly been biassed towards the working age group. (This latter conclusion is confirmed by Truu's survey of migration from the region's towns - see Truu, 1971, Chapter VII.) Since it has already been suggested that some of the out-migrants from the rural areas gravitated towards the region's towns, the large differences between urban and rural activity rates might be largely explained by suggesting further that those who moved to the towns were generally the elderly and the young rather than the adults of working age.[1]

Although the urban-rural employment ratios for non-Whites were higher than the corresponding ratios for population distribution and thus conformed to the expected pattern, the question arises whether, in the light of the unusual circumstances pertaining to Whites, the concentration of work opportunities in the towns was not less than it should have been.

For Coloureds, as for Whites, data on the number of economically active persons in urban and rural areas is available. From these it would seem that, whereas somewhat more than half of Coloured employment is to be found in urban areas (Table 2. 14), slightly less than half of economically active Coloureds actually lived in the towns (Table 2. 15). Once again, therefore, rural activity rates were higher than urban activity rates (Table 2. 16), although the margin in this instance was only very slight. For the whole region, the rural activity rate was 33% and the urban rate 31%. This close correspondence was repeated in each of the sub-regions.

In considering possible explanations for what would again appear to have been a relative lack of concentration of employment in the towns, it should first be recalled that the region's Coloured economically active population probably included a large proportion of unemployed persons. Should this unemployment have been mainly amongst rural Coloureds, then the effective work participation rates in the urban areas would have been somewhat higher. On the other hand, if the bias in unemployment was towards the urban areas then the relative ratio of the urban activity rate to the rural activity rate would be depressed even further. Unfortunately, there is no data available which might throw light on this situation. Nonetheless, even if there was proportionately more unemployment in the towns than on the farms, the urban activity rate for Coloureds and the relative concentration of

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1. Since the population census is enumerated mainly on a de facto basis rather than a de jure basis, a high proportion of rural children boarding at schools in the adjacent towns would also go a long way towards explaining this unusual phenomenon.

employment opportunities for Coloureds in the urban areas does appear to be low. In the case of the Whites, the presence in the towns of large numbers of young people, either from the surrounding rural areas or from outside the region, serve to depress urban activity rates. These factors are not operative to any significant extent amongst Coloureds.[1] Similarly, it is unlikely that Coloured persons from outside the region would choose to move to the region in order to retire, to anything like the same extent as elderly Whites might do.

Thus the most likely explanation again seems to revolve around the rural-urban migration patterns. It was suggested earlier that a substantial number of Coloured rural out-migrants relocated themselves in the region's towns. If these people tended to be mainly dependants, and if those who left the region altogether were mainly economically active, then this would go a long way towards explaining the failure of the urban activity rate to rise above the rural rate.

Unfortunately, additional data on the urban-rural distribution of the economically active population at 1960 is not available for Bantu.[2] It is, therefore, difficult to ascertain whether the estimated 49%-51% urban-rural distribution of employment (Table 2.14) compared with the 34%-66% urban-rural distribution of population (Table 2.4) really implies a significant concentration of economic activity in the urban areas. It is, however, possible to obtain work potential ratios for Bantu, i.e. the ratio of working age population (15-64 years) to the total population, in both urban and rural areas (Tables 2.15 and 2.16).

Of the total Bantu population aged 15-64 years, 37% were in the urban areas and 63% in the rural areas. Consequently, this age group formed a slightly higher proportion of total population in the towns than in the rural areas - 50% as opposed to 45%. Although this reveals nothing specific about the economically active population itself, it does suggest that, other things being equal, at least some advantage should have accrued to the towns in respect of activity rates. Nonetheless, bearing in mind that the crude activity rate for Bantu in the region was only 30,8% at 1960 - and when the unemployed are taken into account, was effectively rather lower - it would have required a substantial urban-rural differential to have raised the activity rate in the urban areas to a satisfactory level. The probability is, therefore, that as in the case of both Whites and Coloureds, the Bantu populations of the region's towns labour under a heavy burden of dependency. If the earlier suggestion that large numbers of Bantu have moved from the farms to the towns within the region is correct, then this can only have aggravated the situation.

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1. Although there are no boarding schools for Coloureds in the region's towns, some rural Coloured children may board privately with town households in order to attend school. The incidence of this is, however, unlikely to be significant.
2. The data for Whites and Coloureds were derived from the population census tabulations of personal income by work status (see Vol. 7, No. 3, 1960 Population Census) and no data on Bantu incomes was sought in the course of the census enumerations.

The urban activity rates for Whites and Coloureds and Bantu in the region are in themselves of interest, apart from their relationship to the rural rates. For both Whites and Coloureds, these rates were well below those in the adjacent metropolitan zones at 1960. The White urban crude activity rate was 29%, whereas that in Economic Region 08 (Port Elizabeth/ Uitenhage) was 40% and that in Economic Region 18 was 37%. In both of these metropolitan zones, the 'unemployed and unspecified' component accounted for only 4% of the total. Even if unemployment accounted for the greater part of this, it still indicated a situation of full employment. A comparable figure is not available for the urban areas in the region, but for the region as a whole, the proportion was similarly 4%, and since two-thirds of economically active Whites lived in the towns, the urban proportion could not have differed much from this figure.[1] Consequently, the effective work participation rates in the region's towns must also have been well below those in the metropolitan areas.

For Coloureds, the regional urban crude activity rate of 31% was similarly well below the corresponding levels of 38% and 37% in Economic Regions 08 and 18 respectively. Here, however, the overall employment situation was very different. Although the 'unemployed and unspecified' proportion of 15% in the region was high, this category accounted for no less than 20% of the economically active population in both the metropolitan zones, indicating an exceptionally high level of unemployment. In Economic Region 01, which effectively comprises the metropolitan zone of Cape Town, the proportion was 19,5%, and in Economic Region 30 (Durban/Pinetown) it was 24%. Even in Johannesburg (Economic Region 40), it was over 20%.

In this situation lies the probable major reason for Coloured out-migration from the region failing to attain the same level as White out-migration, for it is these major centres that could be expected to exert the greatest attraction on platteland Coloureds. Faced with little likelihood of getting work, - and, in most instances,of finding reasonable accommodation as well - it is hardly surprising that some Coloured people, displaced from the rural areas of the region, chose to relocate in the neighbouring towns rather than to leave the region.[2] Whether the unemployed and unspecified proportion in the region's urban areas was higher or lower than the overall regional figure of 15% cannot be ascertained, but given the fact that the ratio of all economically active persons to the total population was already very low, the number of dependants per employed Coloured person in the region's towns must have been exceptionally high.

The proportions of 'unemployed and unspecified' in the economically active Bantu populations of Economic Regions 08, 18, 40, 01 and 30 at 1960 were 18%, 11%, 14%, 10% and 12% respectively, compared with 15% in the region. Although the national average is only 8%, suggesting that pressure on work opportunities (and housing) in the metropolitan areas may have played a role in persuading Bantu not to migrate from the region, it is far more likely, as has already been pointed out, that administrative controls were the main

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1. The national proportion was also only 4%.
2. That large numbers nonetheless did leave both the Cape Midlands and Karroo region and other hinterland areas is, of course, partially reflected in the unhappy employment situations in the metropolitan areas.

governing factors in the movement, or lack of movement, amongst Bantu. Without specific data for the region's towns, it is not possible to be dogmatic, but again the impression is gained of a distressingly high dependency burden on Bantu workers in the region.

These factors go a long way towards explaining why the region's larger towns failed to appear as 'peaks' on the welfare surface, and the conclusion must be that unemployment and poverty, with all their attendant social ills, are rife amongst the Bantu and Coloured populations of the region.

LEVEL OF ECONOMIC DEVELOPMENT

As in the case of welfare, the problem of the measurement and definition of the 'level' of economic development and of the 'state of economic health' has thus far lacked satisfactory solution. Amongst the indicators that are used are growth in, and size of, aggregate real income; growth in, and level of, real per capita income; volume and nature of unemployment; and a variety of others involving indexes of urbanization, population growth, employment growth, proportionate size of population of working age, sectoral structure of employment and output, growth of manufacturing output, and growth of retail sales (see, for example, Thompson, Sufrin, Gould and Buck, 1962).

Each of these indicators has its limitations and its advantages, and in many instances the results obtained will depend upon the indicator selected. The most widely used are, however, those involving aggregate and per capita income measures. The main drawbacks of the former are that increases in total income do not necessarily involve increases in the welfare of the community - if population were growing faster than real income there would be no increase in average per capita income - and that the measure reveals nothing about the distribution of the increase in income (it being conceivable that the increase might be confined to a small elite group). The per capita income criterion suffers from the same disability in so far as the question of distribution is concerned, as well as from the fact that, in certain circumstances, a rise in per capita income is conceivable despite a decline in aggregate income and/or population. As a rule, however, it is generally accepted that an increase in either aggregate or per capita income signifies 'development' in some widely understood, if inexplicit, sense, and the special cases referred to above may well be considered to be the exceptions which prove the rule.

A combination of the two criteria of 'volume' and 'welfare' - i.e. of (aggregate) GGP/km^2 and GGP/capita - should, therefore, provide an acceptable, if crude, indicator of the level of development in various parts of the Cape Midlands and Karroo region. The two indicators can be said, in a sense, to reflect the totality of economic activities in, or the socio-economic 'status' of, the region, for within these two variables are embodied all the parameters of the area's development: its locational advantages (and disadvantages); its social, economic, demographic and institutional structures; the productivity of its production factors; and the character of its resource base.

The general level of development

The combination of the volume and welfare criteria for each magisterial

district results, when mapped, in the construction of overall 'socio-economic' surfaces for the region (Fig. 12). The plotting of these two variables against each other is not necessarily intended to suggest that there exists some functional 'trade-off' between the two, i.e. that there exists some relation between the two such that the loss of socio-economic 'status' which results from a decline in the volume ranking can be exactly compensated for by a functionally determined rise in the welfare ranking. It can, however, be intuitively accepted (subject to the usual qualifications about the hidden distribution factors which accompany the use of these criteria) that an area which ranks high on both volume and welfare criteria is 'better off' than one with a similar volume ranking but a lower welfare ranking or a similar welfare ranking but a lower volume ranking. Again, whilst it is not suggested that direct comparisons can be made between two areas, one of which has a relatively high volume and a relatively low welfare ranking, whilst the other has a relatively low volume and relatively high welfare ranking, it can be intuitively accepted that both reflect a 'higher' level of development than an area with relatively low rankings on both criteria.

In this limited fashion, therefore, the map of overall socio-economic surfaces provides a further revealing insight into the spatial structure of economic development in the region. The map reveals a reverse 'S' - shaped belt of relatively high-lying surfaces running from Graaff-Reinet down the Fish valley (Cradock and Somerset East magisterial districts) and into the Coastal sub-region (Alexandria and Albany magisterial districts), with the 'tail' extending into Fort Beaufort magisterial district in the Border sub-region. (A notable omission from this belt is Middelburg magisterial district which falls within the lowest lying surfaces in the region.) Albany magisterial district emerges as the summit of economic activity. This is largely a reflection of the fact that in 1959/60 it accounted for no less than a third of GGP - three times greater than the share of any other district.

Three major plains of intermediate activity form the periphery to this high-lying belt: a uniform upper level plain, situated mainly on the western and south-western extremities of the region encompassing most of the Sundays sub-region (apart from Graaff-Reinet magisterial district), in which lower population densities offset the adverse effects of low volume levels; a second and much smaller upper level plain, covering Bedford magisterial district and most of the Border sub-region, but much less 'flat' than the first plain, with a 'peak' at Fort Beaufort magisterial district and a 'depression' at Stockenström magisterial district, and characterised by intermediate to high volume levels and intermediate to low welfare levels; and a lower intermediate plain of uniform character, skirting the north and north-east of the upland areas, encompassing virtually the whole of the Escarpment sub-region. In the north, the occurrence of the latter plain is due to a combination of intermediate levels of both volume and welfare; in the north-east it is due to high volume levels being offset by higher population densities.

However, perhaps the most significant feature of this map is that even within the relatively limited ranges of the two variables which it incorporates, there is no area in the region which ranks so low on both criteria that it forms the lowest surface level. In other words, in terms of the joint volume/welfare criterion employed here, differentiation in level of development between different areas in the region is relatively slight. This is undoubtedly the result of the disadvantages of peripheral location, of relative homogeneity in economic structure and of low productivity of the soil in some areas, and of

high population densities (particularly of lower income groups) in other areas. This relative lack of differentiation in level of development within the region is, of course, in sharp contrast to the very marked differentiation evident between the region as a whole and the adjacent metropolitan zones of Port Elizabeth and East London (Fig. 3).

Agricultural output as an index of development levels

Although the discussion of the sectoral structure of geographic product is deferred until the next chapter, the importance of the rural areas in general, and of the agricultural industry in particular, to the regional economy, suggested the need to attempt to gauge some of the more general spatial aspects of comparative agricultural development levels within the region. This was done by combining two factors - gross value added in agriculture per sq km in each magisterial district at 1959/60, and the percentage share of each magisterial district in the regional total of gross value added by agriculture in the same year - and mapping them in a similar manner to that in which volume and welfare were combined in the socio-economic surface map. The resultant'agro-economic' surfaces (Fig. 13) reveal clearly that the area of most intense and significant agricultural activities is the Coastal sub-region, where a high value of output per unit of surface area combines with a high proportionate share of total agricultural output to make the sub-region the agricultural core of the region. The Fish sub-region was next in importance, being characterised generally by intermediate to high levels both of agricultural output per sq km and of proportionate shares of total value added by agriculture in the region.

A projection of this higher-lying ridge on the surface map is to be found in the eastern districts of the Border sub-region, where agricultural development is fairly intensive, but relatively unimportant in the total regional context. The rest of the Winterberg region,together with parts of the eastern Sundays valley, lies on a lower intermediate surface due to moderate intensity and low proportionate contributions. In the Graaff-Reinet magisterial district, intensity is even lower, but the greater size of the district raises its proportionate contribution to the regional total to moderately higher levels. In most of the Escarpment sub-region, however, and in the western extremities of the Sundays sub-region, both the intensity of development and the relative importance fall to very low levels, with the result that both the northern and western portions of the region - including, once again, the strategically located Middelburg district - are situated on the lowest-lying surface.

These 'agro-economic' surfaces thus reveal a wide range of variation in the intensity and relative importance of agriculture in the different parts of the region. The Coastal sub-region stands out as a summit with the remaining surfaces falling away with increasing distance from this summit. Despite some differences, however, a close correlation is evident between the results obtained from using agriculture as an index of the level of development and those obtained from the more general 'socio-economic' indicator.

NODAL STRUCTURE

The size, character, distribution and location of towns, both in their capacity as elements of the physical infrastructure of an area and in their role as market and production centres, are important determinants (and reflections) of the spatial structure of the economy of an area.

The twenty-one magisterial districts in the Cape Midlands and Karroo region include a total of 37 urban centres (Cook, 1971, p. 3). By far the largest of these (in terms of population) is Grahamstown (41 086 persons at 1970), which is approximately twice as large as Graaff-Reinet (22 065 persons), and Cradock (20 522). These, in turn, are nearly twice as large as Fort Beaufort (11 504), Middelburg (10 818) and Somerset East (10 246). Thereafter, the size distinctions become less clear-cut. Port Alfred, Noupoort and Adelaide (in that order) have total populations of about 8 500 down to about 7 000. The remainder are all less than 6 000, with a few actually below 500.

As has already been noted, these urban centres carry a high proportion of total population in what is essentially an agricultural region: some three-quarters of the White population, three-fifths of the Coloureds and two-fifths of the Bantu were enumerated in urban areas in the region at 1970. These proportions have been increasing over the years and can be expected to rise further in the future if the process of emptying out of population from the platteland continues.

The key social and economic role of the region's urban centres is further underlined by the fact that at 1960 - the last date for which data are available - some seven-tenths of economically active Whites, three-quarters of economically active Coloureds and three-fifths of economically active Bantu were classified as non-agricultural workers, who can to all intents and purposes be regarded as urban workers. The buoyancy and resiliency of the economies of these urban areas would thus be a pointer to the state of economic health in the region.

Attention has already been drawn to the lack of prominence of these centres in the national urban hierarchy (Chapter One). Specifically, when Cook (1971) assigned each urban centre in the region to a ranking in Davies' national hierarchy based on a combination of population size and weighted functional indices, she identified Grahamstown as the highest ranking central place in the region with an 'order 4' or 'major country town' ranking (Fig. 14). Cradock, Graaff-Reinet, Somerset East and Middelburg were all identified as 'order 5' or 'country town' centres, whilst the three main urban centres in the Border sub-region - Adelaide, Alice and Fort Beaufort - together with Bedford and Port Alfred, were assigned to 'order 6' ('minor country town') status. The remaining urban centres in the region rank only as 'local' or 'low order' service centres (orders 7 and 8 respectively).[1]

Board, Davies and Fair (1970) produced a refinement of the national hierarchy referred to by Cook, by introducing 'volume' criteria into their rankings. This resulted in their drawing a distinction between two levels within the 'country town' (order 5) category - namely, those with 'high' and

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1. Cook evidently drew a distinction at the regional level between 'local' service centres and 'low order' service centres, which were considered by Board, Davies and Fair (1970) to constitute one category (order 7) at the national level.

those with 'low' volume ratings. All four order 5 places in the region were assigned to the lower of these two rankings (Board, Davies and Fair, 1970), p. 389, Figure 21) thus suggesting the existence of a 'void' between Grahamstown and the lower order centres and raising the relative status of the former.

All the sub-regional nodes thus have more than purely local significance (as would be expected), although their spheres of influence are clearly circumscribed.

This is true in most respects even of the highest ranking regional centre of Grahamstown, whose sphere of influence to the west and to the east is, of course, effectively limited not only by the metropolitan centres of Port Elizabeth and East London, but also (as will be shown) by Uitenhage and King William's Town. To the south lies the coast; to the north, there is greater scope for Grahamstown to exert an influence, but even this can be shown to conflict ultimately with the area of influence of Queenstown.

Most of the region's towns are predominantly trading and service centres with processing activities generally conspicuous by their absence. The urban economies are thus deprived of the strong linkage and agglommeration effects which are characteristic of such activities. Moreover, apart from Grahamstown, which has long been established as an important educational centre, there is a clear lack of functional specialization, and with so many of the towns providing essentially similar services and performing essentially similar activities, the incentive for inter-urban trade, especially between centes of the same hierarchical status, is at a low level.

The spatial characteristics of the region's nodal structure, and of the relationship between this structure and urban centres outside the region, go a long way towards explaining both its low hierarchical status and the low level of internal economic flows which it generates.

Spatial characteristics of the nodal structure

The spatial distribution of towns within the nodal structure appears to be fairly regular. Each of the higher order centres (orders 4 and 5) is situated approximately 110 km from at least one other centre in this group.[1] By including the three order 4 towns of Queenstown, King William's Town and Uitenhage immediately beyond the boundaries of the region, Cook (1971, Fig. 3) demonstrates this regularity graphically. Centres of lower order are similarly regularly sited, the distance between them being approximately 55 km. (Cook, 1971, p. 11.)

Cook notes further that this spatial distribution and hierarchical structure of central places in the region conforms fairly closely to that which might be expected from the theoretical model to which she referred her results, with relatively few discrepancies between the actual and theoretical patterns. Some of the discrepancies are due to historical factors, such as the fact that development first followed a west-east pattern - Graaff-Reinet, Cradock, Queenstown in the north; and Uitenhage, Grahamstown, King William's Town in the south - until the development of the interior focussed attention more on

1. These are 'as the crow flies' distances rather than road travelling distances between centres, which are subject to somewhat greater variation.

the north-south routes. Thus, only at a late stage were the north-south gaps between these two parallel east-west lines of towns filled in.

However, "the majority of the gaps in the distribution of urban places reflect unfavourable environmental conditions" (Cook, 1971, p. 11). Thus low population densities and relatively low agricultural productivity are seen as accounting for the wide spacing of major urban centres in the south-western portion of the Fish River valley and in the northern and north-western portions of the region. The suggestion by Board, Davies and Fair (1970, p. 376) that Middelburg performs higher order functions than its status would suggest (see Chapter One) is confirmed by Cook (p. 11) who points out that the theoretical distribution leads to the expectation of an order 4 place in Middelburg's position, whereas Middelburg is actually only an order 5 place. She attributes this to the "generally lower density of population together with the lower buying power of a large proportion of the inhabitants".

A further discrepancy is that there is "a group of unexpectedly high order places to the north of the lower Fish River. A variety of factors both historical and environmental account for this local concentration. The zone is backed by a mountain barrier and supports high population densities on the slightly more productive land. The only west to east railway follows this route and is locally significant in increasing the centrality of the existing places ..." (Cook, 1971, p. 12).

But the relative lack of interaction and integration between Grahamstown and, for example, Cradock, Somerset East and Graaff-Reinet, as well as the lack of integration amongst the latter three, must also be seen as a function of the orientation of these centres. In this respect, the existence of the three relatively high order places of Uitenhage, King William's Town and Queenstown, almost immediately beyond the boundaries of the region, over and above the two metropolitan centres of Port Elizabeth and East London, is important. As already mentioned, these three centres are all classified by Cook as order 4 places (on a par with Grahamstown). Board, Davies and Fair (1970) also classify all four of these centres as 'major towns', although they assign King William's Town to a lower volume ranking than the others. With the possible exception of the special case of Middelburg, virtually all the main urban centres in the region have an external orientation. Thus Cradock, for example, is only about 145 km by road from Queenstown, compared with 175 from Grahamstown, both the latter being equivalent in status. The route to Grahamstown, moreover, includes a stretch of some 65 km of gravel road (Fig. 15). Again, since Middelburg, Somerset East and Graaff-Reinet, all equivalent in status to Cradock, are some 100, 110 and 145 kms respectively from the latter, Cradock could be expected to be oriented somewhat more towards Queenstown than towards the three first-mentioned towns for higher order functions. But, with Port Elizabeth only 245 km away on the national road, and with a main line rail connection between the two centres, Cradock's main higher order orientation is clearly towards the metropolitan area.

Similarly, Somerset East is only about 185 km from Port Elizabeth on the national road compared with 155 to Grahamstown, the latter distance again including the untarred stretch.

In the Border sub-region, both Alice and Fort Beaufort are closer to King William's Town than to Grahamstown, with East London only another 60 km

away. The rail link between these two smaller centres and King William's Town also strengthens the eastward orientation at Grahamstown's expense. Adelaide is closer to Grahamstown by the direct route (95 km), but this is gravel for all but the last 20 km. The tarred route (via Fort Beaufort) offers no distance advantage over the route to King William's Town, whilst the pull of the latter is again strengthened by the rail link and the proximity of East London. Although Bedford is closer to Grahamstown than to King William's Town, there is again the disadvantage of the gravel road, plus the fact that Somerset East and Cradock - both higher in status than Bedford itself - are closer and are both linked by rail to Bedford.

In the Sundays sub-region, Graaff-Reinet's position is less immediately obvious, as there is no higher order centre within a radius of 200 km.[1] But, once again, the distances by road to the equivalent status centres of Somerset East, Middelburg and Cradock (125, 100 and 145 km respectively) are probably too great to encourage much mutual trade, especially when Uitenhage is within 230 km, and Port Elizabeth only a further 30 km. The railway line probably strengthens the Graaff-Reinet-Middelburg axis somewhat, but a similar advantage accrues in the southern direction too.

NETWORKS

The communications networks in the region operate at three levels in that they perform national-serving, regional-serving and local-serving functions. Available information on connectivity in the region includes the road and rail networks, the road motor transport services and trunk telephone traffic. Air traffic is of negligible importance.

The road network

Five national roads currently traverse the region. Of these, the most heavily trafficked is the N2 route running south-west through Grahamstown (Staude, 1972, p. 163 and Map 11), which not only serves as the only link between East London and Port Elizabeth (via King William's Town) but also conveys traffic from Natal and the Transkei to Cape Town via the Garden Route. Although it is the busiest route, it is clearly peripheral to the greater part of the region (Fig. 15), and the northern and western parts of the region probably use the Bedford-King William's Town or the Cradock-Queenstown main roads to gain access to the Border, the Transkei and Natal.

The northernmost of the five routes is part of the main Cape Town-Bloemfontein N9 link through the Karroo, but as it traverses only the north-western tip of the region through the western extremity of Murraysburg magisterial district, it can for all practical purposes be ignored.

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1. The lack of a defined 'urban mesh' in the Karroo regions of the Cape Province has already been pointed out (see Fig. 5 and Chapter One).

Two of the remaining three national roads provide the region with its main links to the interior. One of these is part of the N1 which provides an alternative Cape Town-Bloemfontein route by linking with the Garden Route at George (it is joined by the N9 at Colesburg just beyond the northern boundary of the region). This route proceeds southwards from Colesburg to Noupoort and thence to Middelburg, where it forks. The western limb swings south-west through Graaff-Reinet and Aberdeen to George, whilst the eastern limb (N7) continues southwards through Cradock and the Fish Valley to Port Elizabeth, linking with the East London-Grahamstown-Port Elizabeth route (N2) at Nanaga at the southern extremity of the region. These two north-south routes thus provide most parts of the region with ready access to the interior. However, access to the north from the eastern half of the region can also be obtained via the N6 national route from East London through King William's Town and Queenstown to Bloemfontein which runs more or less parallel to the eastern boundary of the region.

The fifth route (N17) provides a link between the N1 and N9. It deviates from the former between Middelburg and Noupoort and intersects the latter at Hanover before proceding north-west to De Aar.

The latter route notwithstanding, interconnection between the national routes within the region is generally poor, and those links that do exist do not encompass the main centres. Thus, there is no direct link between Graaff-Reinet and Cradock, nor between Cradock and Grahamstown,[1] although each of these three centres is linked directly and independently with both Port Elizabeth and other areas outside the region. Similarly, even when lower level roads are taken into account, there are weaknesses in general connectivity between some of the sub-regions, mainly in the east-west directions. Although there may have been valid historical reasons for these omissions, the region's topographical peculiarities were doubtless also responsible. For example, the development of east-west communication links between the Fish and Sundays River valleys would have been inhibited by the Tandjiesberg/Bruintjieshoogte range which forms the watershed between these two catchment areas.

On the other hand, internal road connectivity within each of the five sub-regions is good. Thus, although the region's road system as a whole focuses mainly on Port Elizabeth, each of the sub-regional nodes acts as the focus for a subsidiary radial system of (mainly) tarred roads within its respective sub-region, with minor roads frequently providing axial links between lower order centres in each sub-region.[2]

The rail network

Rail traffic serving the region operates in two separately administered System Areas - the Cape Midlands System (Area 3), controlled from Port Elizabeth and the Cape Eastern System (Area 4), controlled from East London.[3]

The main railway line to the north from Port Elizabeth follows the Fish Valley through Cookhouse, Cradock and Rosmead (near Middelburg) to Noupoort, and forms the backbone of the Cape Midlands System (Fig. 15). At Rosmead it is joined by an alternative route from Port Elizabeth via Uitenhage, Klipplaat

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1. The Grahamstown-Bedford-Cradock route is fairly direct, but as already noted, a substantial portion of it remains untarred.
2. Staude (1971-1972) does point out, however, that the condition of many of these minor roads leaves much to be desired.
3. For a detailed description of the region's rail network, see Staude, 1971 and 1972.

(near Jansenville), Graaff-Reinet and Middelburg. One branch line from this main route feeds to Alexandria and another to Port Alfred, via Grahamstown. At Cookhouse, the main line meets the east-west route from King William's Town through Alice, Fort Beaufort, Adelaide and Bedford to Somerset East. This east-west route is a branch line from the Cape Eastern System's main line from East London to the north, which, like the national road from East London, lies just beyond the eastern boundary of the region. Another branch from this eastern main line feeds Tarkastad, whilst a third runs via Steynsburg to link with the Port Elizabeth routes at Rosmead, with a spur to Hofmeyr en route.

Thus, apart from the lack of a rail link from Port Elizabeth to East London via Grahamstown - a deficiency which is probably felt far more keenly by Grahamstown than by the other two centres - the region's rail system mirrors the main features of its road system. It also exhibits the same deficiencies in respect of connectivity between the main centres of each sub-region, with the added lack of direct north-south linkages between the Coastal and Border sub-regions.

Road motor transport services

Rail services in the region are supplemented by road motor transport services run by the railways administration. In the Cape Midlands and Cape Eastern System Areas as a whole, these services focus on Port Elizabeth and East London respectively. But, in respect of the region itself, Grahamstown and Graaff-Reinet are the main foci, with subsidiary foci at Cradock and at the combination of the main urban centres in the Border sub-region (Fig. 16).

Thus, in the Coastal sub-region, apart from catering for numerous 'through services' (e.g. Port Elizabeth-East London, Port Elizabeth-King William's Town, Port Elizabeth-Peddie, and Port Elizabeth-Fort Beaufort), Grahamstown acts as the point of departure for services to Bowden, Sheldon, Kommadagga/Vangendsrivier, Paterson, Alexandria, Port Alfred, Alice, Debe Nek, as well as additional services to Fort Beaufort, King William's Town and Peddie. (In addition, there is the recently introduced private feeder service between Grahamstown and Port Elizabeth.) From Graaff-Reinet, there are services to Richmond, Murraysburg, Aberdeen, Pearston, and Bethesda Road; from Cradock to Tarkastad, Somerset East and several other minor centres. Several minor services originate from Adelaide, whilst several 'through services' call at both Fort Beaufort and Alice. A number of other services link minor centres in the region, such as Bedford-Tarkastad, Port Alfred-Alexandria, Murraysburg-Aberdeen, etc. In many instances, two or more alternative routes are used between these various centres (Fig. 16).

Several points of interest emerge from this summary of route coverages. Firstly, only the Coastal and Border sub-regions have services to Port Elizabeth or to East London/King William's Town and thence to the interior; secondly, there are virtually no services in the Escarpment sub-region; thirdly, there are again no linkages between the sub-regional nodes (Cradock-Graaff-Reinet, Graaff-Reinet-Middelburg, Middelburg-Cradock, Cradock-Grahamstown) except in the case of the Border and Coastal sub-regions; and fourthly, most services operate within a limited radius such that inter-connection between the five sub-regions is again poor.

Telephone traffic

Data on local telephone traffic in the region were not available for this report, but Cook (1971, Figure 4) gives a diagrammatic representation of the

nodal structure of the Eastern Cape, excluding Port Elizabeth and East London, based on trunk telephone traffic. From this it is clear that there is a polarization of flows of trunk telephone traffic towards the order 4 centres of Uitenhage and Queenstown and, to a lesser extent, Grahamstown and King William's Town, both from within and outside the region. Minor poles are also evident at the order 5 centres of Aliwal North and De Aar, both of which attract traffic from the northern parts of the region, whilst the region's own order 5 centres appear to act as local foci only. Apart from some apparent interconnection between Middelburg and Cradock, telephone flows between the major centres in the region appear to be at a low level. Instead, there is a tendency to by-pass these centres for higher order places outside the region.

SPATIAL ORGANIZATION IN THE REGION : SUMMARY

From the outline description of the national space economy in Chapter One, and from the descriptions in this Chapter of spatial relationships in the region, it is possible to draw some general conclusions about spatial organization in the Cape Midlands and Karroo Region, and about the degree of spatial integration and the level of internal interdependence amongst its constituent parts.

In the national context, the region is situated on the lowest lying economic surfaces of the national space economy and is peripheral to the areas of significant economic development. It suffers from its dual orientation towards the East London and Port Elizabeth metropolitan areas as a result of which it lacks a clear identity of its own. This is further emphasized by the fact that its northern extremities appear to lack any significant degree of external orientation.

Internally, an attempt has been made in the foregoing sections to highlight the main features of the spatial structure of the region's economic development by examining a variety of indicators, such as the spatial distributions of population, employment and incomes.

Five of these indicators were mapped in the form of regional economic surfaces. These surfaces have been identified and presented in a relatively unsophisticated manner. Thus, for example, instead of contours, the boundaries of magisterial districts have been used to differentiate between the various surface levels. In addition, the surfaces were identified on the basis of the actual data applicable to the region, and not by reference to some standard (such as a national or regional mean for each characteristic), and each surface reflects only one or two variables.

Nonetheless, these five surface maps provide a clear and unambiguous image of the spatial pattern of economic development in the region. Thus differentiable areas of population composition, of volumes of economic activity and of levels of welfare of the population, as well as of land use, climate and topography can be identified. Differences in the general level of development are also evident amongst various parts of the region.

In this last respect, Albany magisterial district in particular, and the Coastal sub-region in general, appear as the areas with the highest level of

development and the most intensive economic activity within the region. The Fish sub-region - Cradock, Bedford and Somerset East magisterial districts - also appears fairly consistently as an area of relatively high level and intensity of development. In respect of certain characteristics, Graaff-Reinet magisterial district and a limited number of other areas also reflect relatively high levels of development, but they do not feature as prominently as the Fish sub-region. In respect of the characteristics mapped, Middelburg magisterial district appears to emerge as an area of somewhat marginal importance in the overall context of the region, despite the fact that it was one of the few districts to achieve a net increase of any significance in gross value added between 1954/55 and 1959/60.

A factor of additional interest is that if, for example, the 'agro-economic' surface is redrawn on the basis of the GGP data for all six years for which it is available (i.e. 1954/55 to 1959/60), the results indicate an incipient trend for the Coastal sub-region to strengthen its position vis-à-vis the remaining areas in the region.

Nonetheless, taken as a whole, the region appears relatively homogeneous in terms of general levels of economic development, and the internal differences must be regarded as relatively slight, particularly when seen in the light of the very marked differences in levels of development between the region itself on the one hand, and the adjacent metropolitan zones on the other. In addition, the degree of functional specialization amongst the constituent parts of the region is low, particularly in so far as the character and organization of economic development is concerned.

The towns in the region are generally small and low in functional status. They suffer from a lack of economic diversification and functional specialization, and from apparently high levels of unemployment and high dependency ratios of economically inactive to economically active population. Although their populations are growing, the ratio of higher to lower income groups is falling, resulting in a lagging rate of growth in purchasing power and probably also, in some instances, providing more of a burden on, than a stimulus to, urban development.

In many instances too, the hinterlands of the towns are too sparsely settled and too low in productivity and the rural economy generally too weak to provide enough support for the towns to attain the threshold levels of population size and market potential necessary to attract investment and to achieve significant economies of scale.

Where the communications networks are concerned, access by both road and rail from the region as a whole to the rest of the country is excellent (although there are some areas within the region, such as Grahamstown, which are not as well connected to the national system as are other areas). But internally, the alightments of, and the connections between, the numerous main road and rail routes which traverse the region have been developed to serve the interests of the national (inter-metropolitan) networks, rather than to meet the requirements of centres within the region. As a result, looked at purely from the point of view of the region, it is probably no exaggeration to say that there is a relative excess of inter-regional connections and a relative dearth of intra-regional routes.

There is, moreover, no single point within the region on which the

transportation and communications network focuses, although there are several points at which some of the road, rail, bus and/or telephone routes and flows converge. Instead, the networks tend to focus on Port Elizabeth - and to a lesser extent on East London - which lies outside the region. The points of convergence within the region are not only widely dispersed, but in some instances - such as Cookhouse, Noupoort and, to a lesser extent, Rosmead - they do not coincide with the main urban centres. As a result, the latter are deprived of the additional stimulus to activity and the elevation of status which such coincidence could provide. Of these local foci, Middelburg-Rosmead and Grahamstown tend to stand out in relation to the others, but each serves a different purpose in a different part of the region.

All these factors - the overall low level of development, the weakness of both the urban and rural economies, and the deficiencies and alignments of the communications networks - suggest a low level of interaction amongst the region's urban centres and confirm the suggestion by Board, Davies and Fair (1970) that the high degree of integration evident between the elements of the nodal system in the principal region of the country (centred on the Witwatersrand), apparently does not extend to the other three main metropolitan regions, particularly to those centred on Port Elizabeth and East London. These researchers have noted that "the nodal systems centred upon Port Elizabeth and East London lack the cohesion and continuity of organization beyond the immediate environs of the nodes. This is attributable mainly to their marginal location with respect to the three region cores (Witwatersrand, Cape Town, Durban) around which the national space economy is chiefly organized. Secondly, this is attributable to the weakness of the respective hinterlands, largely African reserve in the case of East London, and the predominance of pastoral areas of low economic intensity in the case of Port Elizabeth" (1970, p. 385).

The lack of primacy within the region

But perhaps the most important conclusion to be drawn is that, in sharp contrast to the national space economy, the internal spatial organisation of the region reflects a marked lack of 'primacy' - the "domination of the space economy by a single urban region" (Friedmann, 1966).

In other words, there is no node (or group of nodes) within the region, suitably situated, of sufficient size and functional status to be able to extend its zone of influence over the greater part of the region, and towards which there is a polarization of flows from all parts of the region. Instead, the region can be seen as comprising a number of poorly integrated areas, each of which is influenced as much, if not more, by Port Elizabeth or East London, or both, than by the other constituent parts of the region. Support for this conclusion can be derived from a number of factors.

Firstly, within the framework of the national space economy, no subsidiary nodal regions are identifiable within the main metropolitan nodal regions focusing on either East London or Port Elizabeth (Fig. 6). Moreover, the fact that the Cape Midlands and Karroo region not only straddles these two main regions, but that its northern portion also overlaps with an area of indeterminate orientation in the national context, renders it unlikely that any centre within the region could act as dominant focus for it.

Secondly, the system of trade areas delineated by Cook (1971, Fig. 37)

shows that, apart from the influence which Grahamstown exerts over the Border sub-region, in no instance does the trading area of any major urban centre in the region encompass any other centre of significant hierarchichal status. On the other hand, Port Elizabeth's retail and wholesale trading areas clearly encompass most parts of the region, with East London dominating the eastern areas.

Thirdly, Staude (1971) has shown that the agricultural supply and distribution areas within the region are similarly localised and that they, in fact, correspond closely to the five sub-regions.[1] The main urban centres appear not to draw on areas outside their respective sub-regions for supplies of fresh produce to any significant extent, nor do they distribute goods emanating from beyond the region to areas outside their respective sub-regions. By contrast, when both internal and external traffic are combined, it is clear that Port Elizabeth is the main destination for all goods forwarded from stations in the Coastal, Fish, Sundays and, to a lesser extent, Escarpment sub-regions, whilst East London is the main destination for traffic originating in the Border sub-region.[2] Similarly, it is clear that of all trafic received into the region, Port Elizabeth was responsible for forwarding significant proportions in the case of the Coastal, Fish, Sundays and Escarpment sub-regions, whilst East London played a similar role in respect of the Border sub-region (Staude, 1971, Table 2 and Tables 8A & 8B).

Fourthly, as already pointed out, whilst the communications network in the region has several local foci, there is no centre within the region upon which all or even most of the major routes focus. On the other hand, this network is an integral part of the radial systems focussing on Port Elizabeth and East London and, to a lesser extent, on Bloemfontein. Even in the case of telephone traffic, Cook (1971, Figure 42) shows how all major centres in the Eastern Cape, except Aliwal North and De Aar, by-pass each other in a polarization of flows towards Port Elizabeth and East London. The two exceptions, which exert a stronger influence than Middelburg over the northern parts of the region, have a northwards orientation.

Fifthly, despite Grahamstown's higher status in the nodal hierarchy of the region, Cook's analysis of the "mean number of functional units recorded

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1. In the case of the Coastal sub-region, Staude notes (1971, p. 11) that "of the commodities forwarded to points within the boundaries of the research area, the bulk went to centres in the Coastal sub-region itself". Similarly, "within the research area, the Border sub-region supplies mainly the centres lying within its own boundaries" (p. 11); in the case of the Fish sub-region "once again it is evident ... that each sub-region is the main supplier ... to the urban centres within its own boundaries. The core of each sub-region redistributes indigenous commodities and commodities imported from outside the research area, to its periphery" (p. 20); for the Escarpment sub-region, "the observation, that of the traffic forwarded to centres in the research area, the bulk goes to towns in the same sub-region as the forwarding station, is confirmed" (p. 20); and for the Sundays sub-region, "Graaff-Reinet is clearly the core ... redistributing ... to the smaller centres" (p. 20).
2. These conclusions are evident from a study of Staude's tables of traffic forwarded from each sub-region both to areas outside and inside the region (cf. 1971, Tables 3, 4, 5, 6 and 7A and 7B).

in each order of place" (1971, Table 8, p. 13) clearly shows that there are only four functions served by Grahamstown which are not available in at least two of Cradock, Graaff-Reinet, Middelburg and Somerset East. These functions are: department store; building society branch (as opposed to agency); medical specialist; and university. The university apart, these somewhat minor differences are insufficient to accord Grahamstown a dominant status.

Even in the case of a specialised public administration function, such as the supreme court, Grahamstown is not the only centre in the region where this function is located. The Eastern Cape offices of most other regionalized administrative services of the central government or its agencies, including the railways, the post office and a wide range of state departments, are situated either in Port Elizabeth or East London (or both). The only major exceptions appear to be agricultural matters, with regional offices in Port Elizabeth, Middelburg and Queenstown, and the Cape provincial roads department, which also has regional offices in Queenstown, in addition to Port Elizabeth.

Finally, there is no reason to believe that some or all of the four order 5 centres - Middelburg, Cradock, Somerset East and Graaff-Reinet - together constitute a dominant focus for the region as a whole, in much the same way as the order 6 centres of Adelaide, Alice and Fort Beaufort together act as a focus for the Border sub-region. Indeed the two situations are not analogous because the level of functional integration is very low in the former case and relatively high in the latter case. Thus, for example, the Adelaide group all fall within a single trade area, are all readily accessible to each other, and exhibit a relatively marked tendency towards inter-urban transactions (see Cook, 1971, Figures 7 et seq); the four larger towns, on the other hand, have independent trade areas, are poorly connected and exhibit a low tendency towards inter-urban purchases. A further indication of functional interdependence in the former group is that Adelaide, Fort Beaufort, Victoria East and Stockenström magisterial districts are all combined (together with Middeldrift and Keiskammahoek magisterial districts) for divisional council purposes, whereas the second group all have independent divisional councils.[1] Thus even a combination of the larger centres cannot be regarded as acting as a focus for activities in the region as a whole, though each undoubtedly dominates a substantial part of the western and northern portions of the region.[2]

Possibilities for sub-regionalization

The lack of primacy and cohesion in the overall spatial organization of the region implies that the latter is not itself a 'functional' region and that the search for functionally distinct analysis areas must be conducted at a sub-regional level.

In this respect, it has been amply demonstrated, that areas of differential status, character, composition and function exist within the region. However, the number of such distinct areas which can be identified is by no means unique,

1. Although the functions of divisional councils are orientated towards rural rather than urban areas, the combination of districts for administrative purposes is not without significance for the integration of activities in the Border sub-region.
2. This point is discussed further in the Appendix.

and depends on the purpose for which the delineation is required and upon the criteria applied.

Given these purposes and criteria, a variety of highly sophisticated techniques and models have been developed, which, if applied to the region, would yield a definitive and optimal breakdown. But the use of these more refined techniques (which include factor or principal components analyses for the determination of the main sources of variance between different areas, and gravity models for the determination of functional boundaries between nodes) would be a time-consuming operation, would require a sophisticated data base and would constitute a major study in itself. For the purposes of the present study, therefore, recourse was had to the more subjective approach outlined briefly earlier in this Chapter, and which led to the five-region breakdown, in accordance with which most of the information on the region is presented in this report. The evidence produced in the course of the above discussion of the spatial structure of the economy of the region confirms that this breakdown is not without validity and that it represents one possible and viable division of the 21 magisterial districts for analysis purposes.

But whether it represents an optimum breakdown, both in respect of the criteria applied and in respect of its utility and general applicability for analysis purposes in all the investigations undertaken in the course of the Cape Midlands and Karroo survey, is, of course, open to question. Truu, in his demographic study, used an alternative breakdown; both Cook and Badenhorst appear not to have required any formal spatial grouping of the twenty-one magisterial districts for the presentation of their results; in the agricultural study, undertaken concurrently with the present study, a different conception of the internal organisation of the region has emerged (see Appendix). On the other hand, the results of the transportation study suggest that Staude has found the 5-region breakdown useful for his purposes.

If the various investigations into the region are to lead ultimately to any form of synthesis, then these diverse conceptions of its internal structure may well prove to be an inhibiting factor, nothwithstanding any advantages which they may confer on the individual research programmes. Consequently, the validity of each of a number of alternative sub-regional breakdowns was tested for its 'performance' in relation to a variety of criteria of a demographic, geographic, economic, agricultural and socio-economic nature.

Two tests were undertaken, one in order to determine whether the various sub-regions delineated or implied by these different conceptions of the region could be regarded as functionally integrated areas, the other in an attempt to assess the degree of homogeneity exhibited by these different sub-regions. Although conducted at a relatively unsophisticated level, the exercise was a useful one. The results are presented in the Appendix to this report. They reveal that, of five alternative breakdowns tested, four (including the one used in this report) could be regarded as comprising areas which were in some measure interdependent. In so far as homogeneity was concerned, however, the five-region breakdown used in the present report consistently 'performed' better than most of the others. An overall assessment of the relative merits of the five breakdowns suggests that the one used in this report does have the most general applicability, and provides a valid perspective on the spatial structure of the economy of the region and a valid framework for analysis.

CHAPTER THREE

THE SECTORAL STRUCTURE OF THE REGIONAL ECONOMY

In this Chapter, the economy of the Cape Midlands and Karroo region is discussed in terms of the nature and structure of its various component activities, and of their distribution within the region.

DEFINITION OF SECTORS

A distinction is drawn in the first instance between three main production sectors: the primary sector (agriculture and extractive industries); the secondary sector (manufacturing, construction and power generation activities); and the tertiary sector (trade and financial institutions; transport, storage and communication; government services; and non-governmental services). As noted in the previous Chapter, an attempt will be made to avoid viewing these three sectors as self-contained and compartmentalised elements of the economy and to point up instead, wherever possible, the relationships which exist between them and their component activities and which, together with the spatial characteristics already outlined, go a long way towards explaining both the relative lack of overall economic growth and development in the region as a whole and the differences in development between the different sub-regions. Unfortunately, however, this intention is subject to two important qualifications.

Firstly, available information on such interrelationships is scant, largely because the data for several economic activities are frequently derived from unrelated sources and vary widely in both quality and quantity. For example, reasonably comprehensive and comparable data coverage on agriculture is obtainable from the agricultural census reports for the period 1954/55 to 1967/68, although far more information was published in the earlier than in the later part of the period. Data coverage on the secondary sector - derived mainly from the industrial censuses - is far less comprehensive and in any event relates only to private (non-governmental) activities - a deficiency which is particularly noticeable in the case of the construction industry. In the tertiary sector, data coverage is minimal and, where available, usually relates to a portion only of one of the constituent activities in the sector. These differences will be reflected in the breadth and depth of the discussions of the various activities.

Secondly, it is worth noting at the outset that any attempt to provide a comprehensive picture of inter-sectoral and intra-sectoral relationships in the region's economy, even at a relatively highly aggregated level, will be bedevilled by a lack of comparability between the data from the two main sources of information on sectoral structure, namely, the estimates of annual gross geographic product by production sub-sector for the period 1954/55 to 1959/60, and the tabulations of employment according to type of industry from the 1960 population census (Volume 7, No. 2).

The latter source provides a breakdown of the enumerated economically

active population of each magisterial district at 1960 according to nine major categories: agriculture, forestry and fishing; mining and quarrying; manufacturing; construction; electricity, gas and water ('power'); commerce and finance; transport, storage and communication; services; and unemployed and unspecified. Clearly, the first of these two categories can be taken to comprise the primary sector; the next three to comprise the secondary sector; and the remainder (apart from the unemployed and unspecified category) to comprise the tertiary sector.

As was noted briefly in Chapter One, the nomenclature of these nine categories is similar - in several instances identical - to that of the nine sub-sectors into which the GGP estimates are broken down, but the 'content' of the various categories is not always similarly identical. For this reason, the nine employment categories are referred to in this report as 'industry divisions', as opposed to the term 'sub-sector' used for the nine categories of the geographic product.

This problem is by no means unique. Although there exists a widely accepted standard for classifying economic activities - the International Standard Industrial Classification (ISIC)[1] - these standard definitions are, in practice, frequently and for obvious reasons adjusted to suit the available data or the objectives of a study, rather than vice versa. It is thus an unfortunate characteristic of sectoral groupings and analyses that the same terminology is used for what are sometimes essentially different and non-comparable groupings of activities. Whilst in many instances this practice may be unavoidable, even desirable, it nonetheless poses considerable problems for the analysis and utilization of the data (see, for example, Blumenfeld, 1972, Appendices A7 and A8).

In the case of the present study, this problem arises mainly in connection with the secondary and tertiary sectors (Schedule B).

Nominally, the secondary sector might be understood to embrace all activities which fall under the three general headings of 'manufacturing', 'construction' and 'power generation', the two former categories including repair activities and the last-mentioned covering all electricity, gas and water services, including such diverse activities as the generation of electricity and the provision of sanitation and refuse removal services. Although a distinction might perhaps be drawn within each of these three categories between the activities of private enterprises and those of public authorities, the nature of the activities themselves would suggest that they should all be included in the secondary sector.[2] Exceptions to this general rule might be

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1. In South Africa, the Department of Statistics utilizes a Standard Industrial Classification (SIC) of economic activities, which is basically the ISIC classification adapted for local conditions (see Dept. of Statistics, "Standard Industrial Classification of all Economic Activities", 1970).
2. The classification of repair activities is, however, problematical. Thus, it might be argued that some repair activities (e. g. shoe repair services) should be classified as 'personal services' in the services industry division, and that others (e. g. household electrical appliance repair services) should be classified under retail trade in the commerce and finance industry division. (See discussion of this problem in the Department of Statistics "Standard Industrial Classification of all Economic Activities", 1970, p. 6).

made for such activities as construction work, repairs and maintenance work, and power generation and distribution undertaken by firms or other organizations for their own purposes or consumption. Whilst this definition would hardly find universal acceptability, it nonetheless conforms broadly to the basis of classification of all economic activities embodied in the South African SIC.[1]

From a study of the differences between the definitions of the secondary sectors in the estimates of GGP by production sub-sector and the employment by industry division tabulations from the 1960 population census (Schedule B), it can be seen that whereas the latter conforms to the SIC classification, the former classifies a number of 'secondary' or 'processing' activities of public or semi-public institutions under one or other of the tertiary sub-sectors. This course of action was necessitated mainly by the non-availability of separate data for these activities (Nel & de Coning, 1965, p. 26 and Part II).

In the case of the tertiary sector, this problem relates also to differences in classification between the individual industry divisions and production sub-sectors within the tertiary sector as a whole (Schedule B). These differences occur mainly in respect of transport and of public and private service activities.

The detailed implications of these differences in definition between the two classifications will be dealt with in the relevant sections of this Chapter, but their existence should be borne in mind throughout the ensuing discussion.

In this discussion, a second distinction between economic activities, which cuts across the three-sector classification, will sometimes be made between 'basic' and 'non-basic' activities, in the sense in which these terms are employed in economic base theory (Chapter Two). In any given area, basic activities comprise those which 'export' from the area, where 'export' is taken to mean all sales of goods and of services to markets beyond the boundaries of the area. Non-basic activities comprise all internal transactions within the area.[2] "Implicit in this division of markets is the cause and effect relationship. Export markets are considered the prime mover of the local economy. If employment serving this market rises or falls, employment serving the local market is presumed to move in the same direction" (Tiebout, 1962, p. 13).

A region's 'economic base' is thus not necessarily the same as its 'resource base'. The latter may take the form of (say) favourable location, high potential arable land, natural sources of water, favourable climate,

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1. This conformity applies to the SIC used in classifying economic activities in the 1960 population census (see Population Census, 1960, Vol. 6, "Industry", p. ix and Table 3; also Dept of Statistics unpublished "Revised Code List: 1962" for 1960 population census). A new SIC was, however, adopted with effect from 1970 and the definition outlined above differs slightly from the new classification, especially in so far as the classification of repair activities is concerned (see previous footnote).
2. Transactions with tourists and other visitors to the area, effected within its boundaries, and the provision of services (such as education) within the region to persons normally resident elsewhere, constitute basic activities in terms of this definition, because they are paid for with funds from 'abroad'.

exploitable mineral resources, labour supplies etc., but if the demand for these resources emanates largely from within the region, their exploitation or utilization do not constitute 'basic' activities.[1]

The basic organization of this Chapter will, however, be along sectoral lines, and the individual activities in the region's economy will be discussed primarily according to the sectors into which they fall, rather than according to whether they are basic or non-basic in character. Before discussing the various activities individually, however, the general structure of the region's economy, as reflected in the estimates of GGP by production sub-sector and the industry division composition of the labour force, will be examined in some detail.[2]

COMPOSITION AND GROWTH OF THE REGIONAL PRODUCT

In 1959/60, the primary, secondary and tertiary sectors' shares of the Cape Midlands and Karroo region's estimated gross geographic product of R68,2 million were 39%, 6% and 55% respectively (Tables 3.1 and 3.2). Of the nine production sub-sectors identified, agriculture, forestry and fishing was far and away the most important, accounting for almost 39% of the total regional product, thereby also completely dominating the primary sector. The next most important sub-sectors were general govenment services; transport, storage and communication; and other (private) services, each of which contributed approximately 13% to the total product, and together accounted for some 70% of gross value added by the tertiary sector. More than three-quarters of the regional product was thus concentrated in four sub-sectors.

Of the remaining sub-sectors, trade (8%) was the most prominent, followed by ownership of dwellings (6%). No breakdown of the six per cent contribution of the secondary sector into the three main component activities of manufacturing; construction; and electricity, gas and water ('power'), is available.

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1. The resource base of the Cape Midlands and Karroo region is discussed in the following Chapter.
2. The attention of the reader is drawn to the fact that, with five sub-regions and nine production sub-sectors into which the GGP estimates for the region can be broken down and, in the case of the employment data, three race groups in addition to the five sub-regions and nine industry divisions, it is impossible to deal comprehensively in a report of this nature with every aspect of these breakdowns and distributions. Consequently, only a few of the more important features of the latter will be noted in the various sections of this Chapter. The breakdowns and distributions are, however, shown in considerable detail in the Tables which accompany this Chapter, and readers who make a closer study of these Tables will gain many additional insights into both the sectoral and the spatial structure of economic development in the Cape Midlands and Karroo region.

In the five sub-regions, the composition of GGP at 1959/60 differed little from that in the region as a whole (Table 3.2). In the Sundays sub-region, the agricultural sub-sector had a slightly larger share (43%) mainly at the expense of transport, storage and communication (10%) in the tertiary sector.

On the other hand, the latter sub-sector was far more prominent in the Escarpment sub-region, with a 20% share compared with the regional average of 13%. This was counterbalanced by reduced shares in the two services sub-sectors and, to a lesser extent, in ownership of dwellings. Thus, whilst the broad tripartite sectoral composition was virtually the same as that for the region as a whole, the internal structure of the sub-region's tertiary sector was rather different. This latter structure was closely paralleled by that in the Fish sub-region in which the transport sub-sector was similarly prominent (18%). In contrast, transport activities in the Coastal sub-region had a lower-than-average share of total product (8%), but this was 'compensated' for by a comparative prominence of private service activities (17%).

In the Border sub-region, agriculture had a relatively small share (33%); the manufacturing, construction and power sub-sector was marginally more prominent (7%) than in the other sub-regions; the transport and private services sub-sectors were relatively less important; but government services were especially prominent (22%, compared with 13% for the region). In other words, it was only in the Border sub-region that the composition of geographic product was rather out of character with the overall regional picture.

By and large, these differences in the structures of the sub-regional products can be explained by the varying spatial distribution patterns for each activity, using as datum the sub-regional shares of total GGP in the region at 1959/60 - i.e. 22% for Sundays, 17% for Escarpment, 23% for Fish, 10% for Border and 28% for Coastal (Table 3.2). Although these spatial distributions, and the locational factors which underlie them, will be dealt with in greater detail in the ensuing sections of this Chapter, the effects of the different distributions can be illustrated briefly here for three sub-sectors.

For example, the relative prominence of the transport, storage and communication sub-sector in the geographic products of both the Fish and Escarpment sub-regions is due to the fact that these two areas contributed 33% and 25% respectively to the gross value added by the sub-sector in the region as a whole, compared with their respective 23% and 17% shares of the total gross value added in all production sectors (Table 3.2). This, in turn, reflects the importance of the rail communications axis from Port Elizabeth through Cookhouse, Cradock, Rosmead (Middelburg) and Noupoort to the north, at each of which centres are located important depots or junctions serving the lines. In contrast, whereas the Coastal sub-region accounted for 28% of total GGP, the fact that this area is served by branch lines only is reflected in its substantially lower-than-average 17% contribution to the gross value added by the transport sub-sector in the region as a whole. As a result, transport activities are relatively unimportant in proportionate terms in the structure of the sub-region's economy.

In the case of general government services, the only significant deviation from the norm is in the Border sub-region, where this sub-sector featured

very prominently in the structure of the sub-regional product as a result of its much higher-than-average contribution to the gross value added by government services in the whole region. This can probably be ascribed to the 'over-representation' of relatively high order urban centres in the sub-region (Chapter Two), which probably results in substantial duplication of both local and central governmental services.

Similarly, the substantially higher-than-average concentration of the product of the other (private) services sub-sector in the Coastal sub-region (and hence its prominence in the sub-region's total GGP) can probably be attributed partly to the higher urban hierarchical status of Grahamstown, and partly to the latter's relative specialisation in the provision of educational services.

During the six-year period for which the GGP estimates are available, a number of changes took place in the composition of the geographic product of the region and of its sub-regions (Table 3.2). The most noteworthy of these changes is, of course, the decline in agriculture's share of GGP from 48% to 39% in consequence of a 12% decline in the gross value added by the sub-sector at current prices (Table 3.3). Had no other changes taken place, agriculture's declining share would simply have been offset by a corresponding proportionate rise in the share of all other sub-sectors. In most sub-sectors - including the most important ones in the regional context - this is, in fact, what did happen: the value added (at current prices) by the transport; government services; other services; and ownership of dwellings sub-sectors increased by between 32% and 37% between 1954/55 and 1959/60 (Table 3.3), and accordingly, each of these sub-sectors increased its proportionate share of total GGP in the region.

In the trade and in the manufacturing, construction and power sub-sectors, however, there were evidently other factors operative, for the former experienced a slight decline in share of total regional product from 9% to 8%, and the latter experienced an increase from 4% to 6%. Expressed in terms of value added at current prices, the former increased by only 2% over the six-year period whilst the latter increased by no less than 55%, although there are reasons for believing that this last-mentioned increase may be subject to some error.

A few exceptions apart, the direction of growth of GGP in the sub-regions from year to year appears to have been positively correlated with that in the region as a whole. As far as individual sub-sectors are concerned, some differential growth patterns are evident in the sub-regions (Table 3.3). In the case of agriculture, for example, only the Coastal sub-region recorded a net increase in gross value added at current prices over the six year period. The patterns of increases and decreases in the values added by trade and by government services also vary from one sub-region to another. In all other sub-sectors, however, performance tended to be fairly uniform.

Clearly, the parameters of growth in the various sub-sectors of the region's economy were significantly different in a number of instances. These differences, and the reasons for them, are examined in the ensuing discussions of the individual activities.

COMPOSITION OF THE LABOUR FORCE

At 1960, some 122 300 Whites, Coloureds and Bantu were classified as being economically active in the region, the numbers in each race group being 19 800, 26 700 and 75 800 respectively (Table 3.4).

The industry division composition of the region's total economically active population at 1960 differed in a number of respects from the production sub-sector composition of the regional product at 1959/60 (Tables 3.2 and 3.5). These differences occur mainly in the secondary and tertiary sectors and can probably be ascribed more to the differences in category definitions between the two classifications (Schedule B) than to any other factor or factors.

The 39% share of the enumerated economically active population which is accounted for by the agriculture, forestry and fishing division, corresponds closely with the agricultural sub-sector's proportionate contribution to the regional product in the latter half of the fifties, the more so because the 39% share is almost certainly lower than the 'true' proportion due to the fact that no less than 16 200 (13%) of all economically active persons were classified in the unemployed and unspecified division (Tables 3.4 and 3.5) - a factor which similarly understates the 'true' share of all the remaining industry divisions as well. Since the mining and quarrying division contributes as little to the provision of employment opportunities as it does to GGP in the region, the primary sector's shares in the two classifications are also similar.

It is thus in the secondary sector that the first, and probably the most interesting, difference occurs. The manufacturing, construction and power sub-sector contributed a mere 6% to GGP in 1959/60 (Table 3.2) whereas the three industry divisions of the same names together accounted for over 10% of the labour force (and probably slightly more, if allowance is made for the unemployed and unspecified division) (Table 3.5). Of particular interest, though, is the fact that construction employment, with an 8% share of the total labour force, completely dominated the secondary sector employment scene. The reasons for this latter factor will be outlined later in the section dealing with the secondary sector.

It naturally follows from the above remarks about the primary and secondary sectors that the tertiary sector accounted for a smaller proportion of the labour force (38%) than of the regional product (56%) although the former is again slightly understated. The most important difference within the sector is that the transport, storage and communication sub-sector accounted for some 13% of GGP but only 4% of employment.

These differences are, as already noted, ascribable largely to definitional factors, although productivity differentials between employees in different industry divisions may well also have played a part.

Although the employment data are available for only one point in time and do not therefore provide any information on trends and changes in growth and composition of the labour force, they do have one important advantage over the GGP estimates in that they permit some insight to be gained into the differing racial patterns of participation in economic activities in the region.

Bearing in mind that some 15% of both the Coloured and Bantu labour forces were classified in the unemployed and unspecified division, it is evident that a far higher proportion of economically active Blacks than of Whites are engaged in agricultural activities, the former probably almost exclusively as labourers (Table 3.5).

In the secondary sector, the proportions of the three race groups engaged in the sector as a whole did not differ substantially, but within the sector, the construction industry division was clearly a more important source of employment opportunities for non-Whites than for Whites (Table 3.5).

A far higher proportion of White than of non-White workers were therefore employed in the tertiary sector, within which there were again some interesting features. The commerce and finance division for example, afforded employment to 19% of Whites, but to only 5% of Coloureds and 3% of Bantu. Similarly, the transport, storage and communication division accounted for 12% of Whites but only 2% each of Bantu and Coloureds. The proportion of Whites employed in the services division (26%) was, however, slightly lower than the corresponding proportions for Coloureds and Bantu, but this situation is doubtless due to the large numbers of non-Whites employed as domestics in White households.

These differing employment structures are the result of differences in the race composition of the labour force in the various industry divisions (Table 3.6).

Thus, whereas Whites, Coloureds and Bantu accounted for 16%, 22% and 62% respectively of the region's total labour force, the corresponding racial shares of the labour force in the agricultural division (and in the primary sector as a whole) were 11%, 19% and 70% respectively.

In the secondary sector as a whole, the corresponding shares were 19%, 27% and 54% respectively. These proportions were largely due to the pattern in the dominant construction division, although the ratio of Whites to non-Whites was raised slightly by the fact that the proportion of Whites in the manufacturing division was relatively high (29%).

In the tertiary sector, the overall race distribution of 24% Whites, 22% Coloureds and 54% Bantu bore little relationship to the situation in any of the three component industry divisions. In commerce and finance, the proportions were almost reversed: 53%, 18% and 29% respectively; and in the transport division, they were 55%, 14% and 30% respectively. In the services division, however, which completely dominated tertiary sector employment amongst both Coloureds and Bantu, the proportion of Whites fell to only 15%, whilst those of Coloureds and Bantu rose to 24% and 62% respectively.

In other words, Bantu dominated the labour force in agriculture, construction, power, services and, to a lesser extent, manufacturing. Whites were dominant in the commerce and finance, and in the transport, storage and communication divisions and had a relatively high share of the manufacturing labour force as well. The proportion of Coloureds in each industry division did not differ significantly from their 22% share of the labour force as a whole, except in construction (28%) and in transport (14%).

As was noted in Chapter Two, the spatial distribution of the labour force more or less paralleled that of the total population, with the result that some

30% of the region's economically active population at 1960 was located in the Coastal sub-region, and between 16% and 19% in each of the remaining sub-regions (Tables 3.4 and 3.7).

Somewhat surprisingly, the industry division compositions of these sub-regional labour forces suggest that the economy of the Coastal sub-region is substantially less diversified than those of the remaining sub-regions and of the region as a whole (Table 3.5).

Thus, some 46% of the Coastal sub-region's economically active population was classified in the primary sector (almost exclusively agriculture), little more than 7% in the secondary sector (mainly construction), and 33% in the tertiary sector (mainly services), compared with 39%, 10% and 37% in the region as a whole (Table 3.5). In contrast, in the Sundays, Escarpment and Fish sub-regions, the primary sector accounted for between 34% and 36%; the secondary sector for 12% to 15%; and the tertiary sector for 41% to 43%. Although all these proportions are subject to adjustment for the unemployed and unspecified division, which is of varying importance in the different sub-regions - indeed, in the Border sub-region, this division is so large as to virtually invalidate the relative proportions in the three sectors - they nonetheless reveal quite clearly a different labour force structure in the Coastal sub-region from that in the Sundays, Escarpment and Fish sub-regions.

On the other hand, it should be recalled that the GGP estimates for 1959/60 reflected somewhat greater homogeneity of general economic structures in the sub-regions - again with the exception of the Border sub-region - at least in so far as the three main sector groupings were concerned (Table 3.2).

The answer to this apparently contradictory situation lies partly in differences in the productivity of the labour forces in the five sub-regions. Thus, for example, in the Coastal sub-region agriculture employed some 45% (or more) of the total sub-regional labour force and contributed 38% to the sub-regional GGP (Tables 3.5 and 3.2). In the Sundays sub-region, agriculture's share of the labour force was probably not much more than 35%, yet it contributed 43% of GGP. When the absolute values of employment and of value added are taken into account (Tables 3.4 and 3.1), it transpires that agricultural gross value added per worker in the Sundays sub-region in 1959/60 was approximately R872, whereas that in the Coastal sub-region was only about R430.

The answer probably also lies partly in differing technologies of production in the two sub-regions. Thus, the fact that, of the agricultural labour force in the Coastal sub-region, only 8% were Whites and 89% were Bantu, whereas that in the Sundays sub-region comprised 18% Whites and only 25% Bantu (Table 3.6), suggests that agriculture in the former sub-region was far more labour intensive than in the latter sub-region.

Similar comparisons between the employment and GGP data for the remaining categories of economic activities are, of course, rendered virtually impossible by the lack of correspondence between the definitions of the employment industry divisions on the one hand and the GGP sub-sectors on the other.

Within each of the three race groups, some differences were evident in the industry division compositions of the sub-regional labour forces (Table 3.5) although these generally appear to run according to expectations.

For Whites, the proportions employed in each of the three main sectors did not vary significantly amongst the five sub-regions. The main differences lay in the relatively low proportion of Whites in the primary sector of the Coastal sub-region and the relatively high proportion in the Sundays sub-region (although the former was probably slightly understated as a result of the abnormally high proportion - 9% - of unemployed and unspecified Whites in the Coastal sub-region)(Table 3.5). Similarly, the Border sub-region had a relatively low proportion of Whites in the secondary sector whilst the reverse was true for the Escarpment sub-region. Within the tertiary sector, however, the transport division was a far more important source of employment opportunities for Whites in the Fish and Escarpment sub-regions than in the remaining sub-regions, especially the Coastal and Border sub-regions. On the other hand, the proportions of Whites employed in the services division in the latter two sub-regions were significantly higher than elsewhere.

The main sub-regional differences in composition of the Coloured labour force lay in the relatively low proportion of Coloureds employed in agriculture in the Coastal sub-region and the relatively high proportion in the secondary sector in the same area (Table 3.5).

For Bantu, a high proportion were absorbed by agriculture in the Coastal sub-region and a low proportion in the Sundays sub-region. The secondary sector - especially the construction industry - was an important source of employment for Bantu in the Sundays, Escarpment and, to a lesser extent, the Fish sub-regions, but was quite unimportant in the remaining sub-regions. Services were also more important for Bantu in the same three areas.

Given this background of the general structure, distribution and growth of the regional product, and of the composition and distribution of the labour force, it is now possible to proceed to a more detailed examination of the internal structures of the various economic activities in the region.

THE PRIMARY SECTOR

The region's primary sector, which accounted for some forty per cent to fifty per cent of both employment and output in the late fifties, is comprised almost entirely of agriculture (Tables 3.1, 3.2, 3.4 and 3.5). Fishing, forestry and extractive industries are all of minor significance in the economic structure. There is no commercial fishing; forestry operations are largely confined to the higher reaches of the Winterberg and Amatola ranges in the Border sub-region; and mining and quarrying contributes barely one per cent to gross regional product from the extraction of salt, clay, building sand and stone and other non-metallic and non-precious minerals.

Fruitful discussion of the primary sector must therefore perforce be confined to agriculture. Only commercial farming operations will be dealt with as the problems of subsistence farming impinge only upon the most easterly portions of the Border sub-region where small pockets of Bantu reserve areas occur.

AGRICULTURE

Agriculture forms a major (though by no means the only) element in the region's economic base, and it is evident that by far the greater proportion of agricultural output is 'basic': Staude (1971, Tables 3A and B to 7A and B) has shown that the overwhelming proportion of the region's agricultural output by weight is exported from the region.[1] By and large, therefore, agriculture in the region is oriented towards serving external markets rather than towards meeting the needs of the local populace.

Since the vicissitudes of external demand for agricultural commodities, not to mention those of nature, upon which agriculture is also heavily dependent, have proved to be both severe and unpredictable, this heavy reliance upon agriculture represents a serious structural weakness in the economy. That this dependency, which is rooted in the history of the area, is the region's Achilles' heel is also suggested by the fact that it was agriculture alone which determined the course of GGP in 1954/55 to 1959/60: when gross value added by agriculture rose, so did total GGP; when it fell, GGP again followed suit (Table 3.1).

Not only has the regional economy been largely dependent upon agriculture, but agriculture itself has also been largely dependent upon one commodity - wool. Between 1954/55 and 1959/60, when the gross value added by agriculture to GGP varied between R23,4 and R32,3 million (Table 3.1), the total value of the wool clip in the region varied between R12,1 and R20,9 million (Table 3.8). To obtain comparable estimates of the gross value added by wool farming alone, it would be necessary to adjust the value of the wool clip for the value of net changes in sheep inventories in each year and to deduct the annual value of intermediary goods and services consumed in the course of wool farming. Nonetheless, even allowing for these adjustments, the high degree to which the sub-sector is dependent upon wool is readily evident from the above relationships.

Despite its periodic misfortunes, it remains a remarkable fact that the agricultural sub-sector's tremendous external earnings power has, over the years, not resulted in any significant form of economic diversification, as the export base theory might lead one to expect. The region's wool industry surely represents a classic example of an 'export staple' attracting capital and enterprise from without the region to exploit its obvious comparative advantages for production (North, 1955, p. 247) and it has had ample opportunity over the years to show itself as "the prime influence inducing economic growth, the development of external economies, urbanization, and eventually industrial development" (North, 1959, p. 944). That it has not done so is all too painfully obvious.

The reasons for the failure of the region's export base, and especially the wool industry, to lead to much in the way of internal economic growth and development will be discussed in detail later in this report (Chapter Five). These reasons can, however, be summarized very briefly at this juncture. This situation is partly the result of what are generally referred to in the literature on regional development as 'leakages', i.e. factors which reduce the 'multiplier' effects on incomes and employment which might otherwise be expected to result from any initial increases in either of these two variables (see, for example,

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1. Unfortunately, no data on the value of these exports is available.

Wadsworth & Conrad, 1965). This situation is also partly the result of the impermanence of such newly created earnings and job opportunities; of the region's comparative locational disadvantages for further economic development; and of the tendency for the structural disadvantage itself not merely to persist but also to be self-perpetuating.

The distribution of agricultural activities

In 1959/60, the Coastal sub-region contributed 28% to the R26,3 million of gross value added by agriculture in the region, the Sundays and Fish sub-regions 25% and 24% respectively, and the Escarpment and Border sub-regions 15% and 9% respectively (Table 3.2). This distribution was virtually the same as the distribution of total GGP amongst the sub-regions, the only difference being that that the Sundays and Escarpment sub-regions had slightly higher-and lower-than-average shares respectively.

Although agriculture is clearly the crucial production sub-sector, and wool the 'staple' product in the region as a whole, the types of farming carried out differ substantially amongst some of the sub-regions (Badenhorst, 1970, Chapter II).

According to the 1962 agro-economic map of South Africa, the region consists mainly of a number of 'sheep grazing regions' which encompass virtually all of the Escarpment, Fish and Sundays sub-regions and most of Albany magisterial district (Fig. 17).

Only two 'irrigation regions' - one in the central Fish River valley and the other in the Kat River area - are identified, although irrigation schemes of varying importance are, of course, also operative in the Sundays River valley and in parts of the Coastal sub-region. The two coastal districts of Bathurst and Alexandria and the southern part of Albany magisterial district are assigned to a 'coastal region', whilst the greater part of the Border sub-region lies within a 'thornveld region' of the type found in parts of Natal and the Transkei. Finally the northern slopes of the Winterberg range are classified within a 'Drakensberg grazing region'.

The sharp contrast between the transitional and heterogeneous character of the eastern areas on the one hand, and the relative homogeneity of the western areas on the other, is well illustrated by this agro-economic classification.

The overwhelming proportion of the ground area of the region is given over to extensive farming, less than 2% being devoted to cultivation. Crop farming is, however, of considerable economic importance in parts of the region, as the return per hectare is higher on cultivated than on grazing lands (Badenhorst, 1970, p. 74).

Sheep farming - mainly for wool - occurs throughout the region, but is concentrated in the Sundays, Fish and Escarpment sub-regions. The two former sub-regions are also important mohair production areas, the district of Jansenville being the most important mohair producing area in the country. Cattle farming is practised mainly in the eastern half of the region, but is concentrated in the Coastal sub-region.

Crops cultivated in the region vary considerably. Pineapples and chicory are found in the Coastal sub-region, as are maize and oats. Of the latter two, maize is also found in the eastern areas of the Border sub-region, whilst oats are cultivated throughout the eastern half of the study region. Wheat occurs mainly in the north and the west, and citrus in the east (Badenhorst, 1970).

Clearly it is possible to distinguish areas of widely differing agricultural land use in the region. These differences are attributable to variations in climate, rainfall, water resources, soils, vegetation and topography amongst and within the five sub-regions. The western and northern areas are predominantly pastoral in character; in the eastern areas, crop cultivation is of considerable importance; and the Fish sub-region represents the zone of transition between the two.

These differences in land use are also reflected in the composition of the agricultural products of the five sub-regions, in so far as it is possible to assess these compositions. In 1959/60, for example, the value of wool and mohair production in the Sundays sub-region together amounted to over 110% of gross value added by agriculture in the sub-region in that year. Similarly, in the Escarpment and Fish sub-regions, the production value of these two commodities amounted to over 90% of the corresponding value added figure. But in the Border sub-region, they amounted to less than 60%, and in the Coastal sub-region to less than 15%. Again allowing for the deduction of the value of intermediate goods and services consumed in the production of the wool and mohair clips, it is abundantly clear that these two commodities, but especially wool, completely dominate agricultural production in the western half of the region, but are far less important in the eastern areas, becoming relatively unimportant in the Coastal sub-region.

The growth of agricultural product

In 1954/55, when the gross value added by the agricultural sub-sector was R29,7 million, the distribution was rather different from that six years later (Table 3.2). At the earlier date, the Sundays sub-region with a 30% share was clearly the most important agricultural region. The Coastal sub-region (21%) lagged behind the Fish sub-region (23%) as well, with the Escarpment sub-region (18%) close behind. The main feature of the changes during the period was thus the rise of the Coastal sub-region and the eclipse of the Sundays sub-region, and except for these two areas, the spatial distribution of agricultural product at 1954/55 again paralleled that of total GGP.

In each sub-region, agriculture's proportionate share of sub-regional GGP declined, most severely in the Sundays sub-region and least severely in the Coastal sub-region. Nonetheless, the sub-sector was still accounting for between 33% and 43% of GGP in each sub-region at 1959/60.

Given that the erratic path followed by the total value of the region's wool clip between 1955/56[1] and 1959/60 - the annual values were successively R16,1; R20,9; R15,3; R12,1; and R15,1 million (Table 3.8) - was repeated the agricultural sub-sector in each of the sub-regions (Table 3.1), the sub-regional

1. Data for 1954/55 not available.

relationships outlined earlier between the gross value added by agriculture and the total value of the wool clip go a long way towards explaining the considerable differences in the fortunes of agriculture in the different parts of the region in that period. Thus the patterns of increases and decreases from year to year in agricultural gross value added in the Escarpment, Fish and Sundays sub-regions paralleled the corresponding patterns of changes in the value of the wool clip, with the result that all three areas - but especially the last-mentioned - recorded net declines in agricultural gross value added (at current prices) between 1954/55 and 1959/60.

In the Border and Coastal sub-regions, however, the year-to-year changes differed from the corresponding fluctuations in the value of the wool clip. In addition, in contrast to the other three sub-regions, there was no decline (at current prices) in the value added by agriculture in the Border sub-region over the six-year period, whilst the Coastal sub-region actually registered a 14% increase.

Clearly, in the period under discussion, the lack of agricultural diversification proved a severe handicap to the greater part of the region. However, whether those areas with a more diversified agricultural base continued to fare better than the specialist farming areas during the long drought of the sixties, remains an open question.

The economic structure of farming

Commercial agriculture in the region in 1967/68 - the latest date for which census data are available - was carried out on some 3 750 farm holdings or units, covering a total area of 8 million morgen, with a mean size of 2 150 morgen per unit (Table 3.9).

Of the total number of holdings, 26% were situated in each of the Sundays and Coastal sub-regions, 19% in the Fish sub-region, and 17% and 12% respectively in the Escarpment and Border sub-regions. However, the total morgenage in the Sundays sub-region was more than three and a half times that in the Coastal sub-region resulting in a similar ratio in the mean size of farm. Average farm size decreased from 3 466 morgen in the Sundays sub-region, through the Escarpment, Fish and Border sub-regions (in that order) to 947 morgen per unit in the Coastal sub-region. In the light of the transition from mixed farming in the east to the much more extensive pastoral land uses in the west, these differences are not unexpected.

Between 1954/55 and 1967/68, the spatial distribution of farms altered but little (Table 3.9). However, in common with the national trend, the total number of farming units in the region declined by over 22% from over 4 800 units in 1954/55 to almost 3 750 units in 1967/68, due largely to a process of consolidation of holdings. This process has been slightly more rapid in the region than in the country as a whole - the corresponding national percentage decline was 17% (Abstract of Agricultural Statistics, 1972, Table 6) - but up until 1968 it showed no sign of accelerating.

During this period, consolidation appears to have been most rapid in the Fish sub-region, where a decline of over 30% in the number of units occurred. This rate may, however, have been boosted by the abandonment of small

irrigation plots of inconsequential size due to the 'de-scheduling' of irrigable land.[1]

The rate of decline was slowest in the Coastal and Sundays sub-regions where mean farm sizes were respectively the lowest and the highest both at the beginning and end of the period.

The consolidation of farming units has, of course, led to an increase in the mean size of farms in the region and to changes in the distribution of farm sizes.

Overall, the mean farm size rose by 29% from 1 670 morgen in 1954/55 to 2 150 morgen in 1967/68. Apart from the Fish sub-region, where the increase was 42%, the proportionate change in the average size of farm varied little amongst the sub-regions. There is thus no suggestion of a tendency towards a convergence of mean farm sizes in the different parts of the region.

Between 1954/55 and 1963/4 (the last date for which a distribution of farms by size group is available) when the total number of units declined by 16%, the number with a size of less than 1 000 morgen fell by 27%. As a result, the proportion of farm units below 1 000 declined from 50% to 45%. Similarly the proportion below 2 000 morgen fell from 72% to 67% (Table 3. 10).

The fact that the total morgenage of all farm units has remained fairly constant at around 8 million in the 13 years between 1954/55 and 1967/68, despite the substantial reduction in the number of units, suggests that up until the latter date there is no evidence of any large-scale abandonment of farms having taken place in the region. There is thus no official census confirmation as yet of reports that the abandonment of farms in districts such as Steytlerville and Jansenville has reached alarming proportions in the past few years. Indeed, in the thirteen years to 1967/68, the percentage decline in the Sundays sub-region was somewhat lower than the average for the region as a whole.

However, from the results of a survey undertaken by the Department of Agricultural Technical Services in the Steytlerville magisterial district in 1971, it would appear that some remarkable changes have been taking place in that district in the past few years. According to the survey report, the district "(is) onderverdeel ... in 230 boerderyeenhede wat aan 181 eienaars behoort ... Alle boere wat nog op hul plase is, is besoek asook boere wat op Steytlerville werksaam is. In totaal is 92 boere besoek" (Gerstner et al, 1971, p. 2).[2]

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1. For example, in the Great Fish River Irrigation Board area, "major de-scheduling took place in 1961 and 1967 in two concerted efforts ... to reduce the amount of irrigated land to more practical proportions. In 1961 the Department of Water Affairs agreed to buy out any farm which may be considered as an uneconomic unit. Farms with less than 300 morgen of veld were eligible ... A total of 6 262,42 morgen was de-scheduled ... (and) a further 517,5 morgen ... in 1967" (unpublished Memorandum by R. E. Ridd, Rhodes University, 1971).
2. Although a confidential document, this report was kindly made available to the writer by officials at Grootfontein.

Although the figure of 230 farming units does not tally with the latest available census figure of 164 in 1967/68,[1] and although the report does not indicate clearly whether the farms not visited are definitely not being worked,[2] the fact that only 92 farmers could be contacted in the district nonetheless speaks volumes for itself.

Information on the present position in other magisterial districts and sub-regions is not available, although officials at Grootfontein have suggested in discussions that the position is equally serious in Jansenville; and it is known that, at Middelburg, a substantial number of farmers from the district have taken up employment in the town or at Grootfontein.

A detailed examination of the questions of optimum and economic farm sizes and of the social and economic consequences of large-scale consolidation of farming units in the Cape Midlands and Karroo region, falls beyond the immediate scope of the present study. Nonetheless, some reference to these vexed problems would be relevant, for available data suggest that the need for some form of restructuring in the agricultural industry in at least some parts of the region may well be pressing.

Firstly, rough estimates made by research workers at the Grootfontein agricultural research station suggest that a very high proportion of farms in the region are of uneconomic size, in that they appear to provide inadequate incomes from farming operations.

These researchers formulated estimates of the potential net farm income which could be derived solely from livestock farming, on the basis of assumed 'reasonable carrying capacities' and an assumed net income figure per small stock unit in each magisterial district. From these estimates, the sizes of farms required to obtain net incomes of R2 000, R3 000 and R4 000 respectively were obtained.

The proportions of farms in each magisterial district which were of smaller size than that required to earn each of the three levels of income were then calculated from the tables showing distribution of numbers of farms by size group in the 1957/58 agricultural census. The writer has weighted the results obtained for each magisterial district, and it appears that, on the assumptions made, 37% of all farms in the Sundays, and 22% of all farms in the Escarpment sub-region were incapable of earning a net farm income of R2 000 p.a. The proportions of farms unable to earn R3 000 were 49% and 41% respectively; and for R4 000, 60% and 54% respectively.[3]

It is believed that the carrying capacities assumed for the purposes of this exercise were larger than those currently being applied under the stock reduction scheme, and that the assumed value of net income per small stock unit was generous. Hence, even allowing for the fact that mean farm sizes

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1. According to the agricultural censuses, the number of units has declined gradually from a level of about 177 in the latter half of the fifties.
2. For example, it is not clear whether farms run by employees for absentee owners were included in the figure of 92.
3. The estimates by magisterial district were kindly made available to the writer by research personnel at Grootfontein. The estimates unfortunately did not cover all magisterial districts in the Cape Midlands and Karroo region.

have increased since 1957/58 and for the fact that crops do also contribute to net farm income in a number of instances in the two sub-regions, the situation does not appear very healthy.

Secondly, this suggestion that a number of farms in the region may not be economically viable is probably confirmed by the results of both the 1961/62 and 1962/63 agricultural censuses, which show numbers of holdings according to gross value of livestock and farm produce sold. In the former year, no less than 30% of all Cape Midlands and Karroo farms generated a gross farm income of less than R2 000, whilst the proportion below R5 000 was 54%. In the latter year, the position was little better, with 27% below R2 000 and 51% below R5 000 (Table 3.11). Since these proportions are based on gross incomes from farming operations, the reduction to net farm incomes would make the situation appear even worse. These proportions were higher in some sub-regions and lower in others, although these areal differences are undoubtedly due, at least in part, to differences in the mean size of farm and in the type of farming activity in the various sub-regions. Such figures must, of course, also be related to expenditures incurred and to return on capital (which are also functions of location, size and land use), and to the burden of debt, as well as to the general climatic and economic conditions obtaining in the agricultural industry in general in the two years for which these data are available, but the fact that they are gross figures does suggest that the viability of farming operations in the region may be rather tenuous.

The tentative terms in which the discussion in the preceding paragraphs has been couched is due to the fact that the income data under discussion relate to gross farm incomes which are, in themselves, virtually meaningless as indicators of the economic viability of farming operations.

The recent commission of enquiry into agriculture (the 'Marais commission') addressed itself at some length in its second report to the problem of distinguishing between 'economic' and 'uneconomic' farming units (Report No. R.P. 84/1970, Ch. IV).

The commission termed the problem of uneconomic farming units "one of the greatest single problems in present day South African agriculture ... (and) because of its economic, biological and sociological implications ... (is) undermining agriculture in the Republic" (p. 28, para 4.1). The commission noted, however, that "so far as can be ascertained, there is no clearly defined concept or definition of an economic unit", and that customary usage of the term incorporates such subjective concepts as implying that "such units must be large enough so that the income therefrom under average management will be sufficient to provide the occupier and his family with a 'good' or 'reasonable' or 'decent' living" (p. 29, para 4.3).

Both the South African Agricultural Union and the Land Bank, in their submissions to the commission, contended that the complexities of the problem rendered a hard and fast definition virtually impossible to attain. The former body appears to have suggested that the customary definition in effect put the cart before the horse, because "an economic farming unit is not determined according to the size of the land or the volume of production, but ... the volume of production and the land area required is determined by production potential and techniques and the price of the products, including capital interest, risk

remuneration, entrepreneur's remuneration, direct production costs, etc., ... Because the farmer as entrepreneur is usually the largest indivisible production factor, it means in practice that the external limit of the size of the economic unit is determined by the management ability of the farmer. Inside these limits it is the technical production functions, the satisfaction of climatic requirements and the requirements of soil structure which often determined the technical and economic optimum size of the unit". The Union concluded that "only in extreme cases ... (is it) possible to express an unqualified opinion as to whether a certain unit is an economic unit or not... It is not, however, possible to lay down a general standard and each case must therefore be considered on its own merits" (p. 29, para 4.4).

The Land Bank was of the opinion that the unqualified criterion that an economic unit was one which afforded the unit holder a living was, in many instances, actually self-defeating, for many farms which provide their operators with a living do so only by virtue of "over-exploitation of natural resources" in situations in which "the development level is not synchronised with inherent potential". Frequently, this practice so harms the production potential of a piece of land "that it can be converted from an economic to an uneconomic unit" (p. 29, para 4.5).

The Bank also referred to the dynamic aspects of the problem, especially the possibility that technological factors can improve productivity, thereby converting a piece of land, previously regarded as uneconomic, into an economic unit, as well as the reverse process in which climatic and other factors render it impossible "to contend that any land qualifying as an economic unit under present conditions and standards would remain thus in the long term."

The Bank therefore concluded that "an economic unit cannot be created within the framework of specific requirements and norms". Moreover, "the size of the land is ... not the only determining factor of an economic unit. There are also such considerations as over-capitalization and over-burdening with debt. An economic unit must yield interest on all capital invested in it, whether it is the farmer's own capital or borrowed capital ... (Consequently) every case must be dealt with on its merits and ... a determination taking only the size of the land into consideration is insufficient" (p. 29, para 4.5).

Despite the pessimism of these two organizations regarding the solution of this problem, the viewpoints of both emphasize two fundamental elements upon which any solution must ultimately be based. The first of these is that the size of an economic unit will vary according to a variety of factors, including ecological considerations, entrepreneurial ability, the type of farming undertaken, the existing state of technology and the burden of debt. The second element is that, given all these considerations, it nonetheless remains the net income from farming operations which determines whether a given piece of land represents an economic size of farm or not.[1]

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1. In cases where the unit holder is a part-time farmer, and his income from employment is thus derived only partially from farming operations, a different set of criteria may be required. The Marais commission clearly opposed the trend towards part-time farming, but in a minority report, one of the commissioners drew attention to some interesting factors which perhaps represent another side to the coin (Report No. R. P. 84/1970, pp. 233-234).

It is, therefore not surprising that an Interdepartmental Study Group on the Uneconomic Subdivision of Agricultural Land came to the conclusion that an economic farming unit can be defined "as the minimum size of land that, under specific conditions, will assure the user with an average managerial capacity of an adequate average net family income (that is, the average annual amount that would be retained by the farmer and his family after provision is made for current farming expenses, interest costs and capital redemption and creation) to enable him and his family to maintain a standard of living in keeping with that of comparable callings of other sectors of society"(Report No. R. P. 84/ 1970, pp. 29-30, para 4. 6). In other words, in the light of "the interaction of a large number of physical, economic and sociological factors,... there is only one way scientifically to determine the minimum size of an economic farming unit and that is to calculate the potential of such a farming unit with due allowance for these factors" (p. 30 para 4. 7).

In practice, of course, such a calculation would be fraught with many difficulties, and strong arguments could be mustered both for and against the alternative courses of making either generous or conservative allownaces for all the relevant factors. But these difficulties do not obscure the crucial role of the net income obtained from the operation of the farming unit in determining whether the latter is an economic unit or not.

In this respect, the lack of reliable (and up to date) data on net farm incomes represents a serious deficiency in the data base for this survey of the Cape Midlands and Karroo region. In the light of the diversity of farming operations (and of mean farm sizes) in the different parts of the region, there can clearly be no single estimate of the size (or size range) of farming unit which will constitute the optimum or economic size of farm for the region. Consequently, this lack precludes any adequate assessment of the problems of agriculture in the region, especially in so far as the need (or otherwise) for consolidation of farming units, and the economic viability of farming operations, are concerned.

In regard to other aspects of the economic structure of farming in the region, the agricultural census reports, particularly for the second half of the fifties, contain a wealth of data on farm labour and earnings from employment. Under the former heading may be found details of total farm population, family labour, farm managers, regular and casual farm employees and domestic servants on farms, all broken down by race and sex. Data on earnings cover cash wages, payments in kind and bonuses for the various categories of labour.[1]

What might be termed 'permanent paid employment' on farms - namely, 'regular' farm employees and domestic servants - appears to have declined between 1954/55 and 1963/64 from nearly 50 000 to about 40 000 (Table 3. 12). Separate data on casual employment is available only for the period 1957/58 - 1961/62. The numbers in this category dipped very sharply after 1958/59 and appear not to have regained their previous level. As a result of the changes in these two main categories of employment, it is evident that total agricultural employment in the region has declined from over 70 000 in the late fifties to less than 60 000 in 1967/68. It must be presumed that it has declined further since that date.

It must, however, be emphasised that, because these figures refer to paid employment only, about 99% of this 'total' labour force is comprised of

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1. Not all this information is included in every census.

Coloureds and Bantu (particularly the latter). For example, of the total of 61 921 in 1959/60 - which is in fact the employment figure for June 1960 - a mere 800 were Whites. In the population census in September 1960, 5 260 economically active Whites were classified under the agricultural industry division (Table 3.4). The difference is presumably due to the inclusion in the latter figures and the exclusion from the former figures of the White farmers themselves and those members of their families who also derive a living from the farm.

However, attention should also be drawn to the fact that a reverse - and quite unexpected - relationship exists between the agricultural and population census data for Coloureds and Bantu. Thus, in the population census, about 9 000 Coloureds and 33 000 Bantu were classified as agricultural workers (Table 3.4) whilst the corresponding numbers in the agricultural census were approximately 14 500 and 48 000 respectively. In theory, the 'all-inclusive' nature of population census enumerations could be expected to yield a slightly higher figure than an 'industry-specific' census, such as the agricultural or industrial censuses, in which the operating 'establishment' forms the basis for enumeration. Portion of these differences may perhaps be explained by under-enumeration in the population census, and portion by the substantial numbers of Coloureds and Bantu classified as 'unemployed and unspecified', but unless the enumeration at 1960 was hopelessly inaccurate, the full explanation must lie elsewhere. The forthcoming results of the 1970 population census enumeration may throw some light on this question which merits a more detailed examination than that undertaken for the present report.

The trends in total employment outlined above apply to all sub-regions, although the decline in the Coastal sub-region has been proportionately smaller than in the others. The farm labour force is of approximately equivalent size in the Sundays, Fish and Escarpment sub-regions, smaller in the Border sub-region and substantially larger in the Coastal sub-region.

Total remuneration (cash and kind) appears to have risen slightly between 1957/58 and 1967/68 (Table 3.13). Approximately one-third (30% - 35%) of total remuneration is accounted for by payments in kind. The increase in cash wages in the 10 year period was about $8\frac{1}{2}$%, compared with a rise of nearly 50% in the country as a whole. Since the earnings of labour are an important element in gross value added, these figures support the earlier suggestion that the gross value added by agriculture in the region has not risen significantly in absolute terms, if it has risen at all.

Within the region, the increase in remuneration is reflected only in the Border and Coastal sub-region. Payments have been virtually static or declining in the remaining areas.

In order to guage the trend in the level of gross capital formation in agriculture in the region in recent years, data on capital expenditure on erection of new buildings and works[1] and on purchases of new equipment[2] were extracted from the various agricultural census reports (Table 3.14). It is readily acknowledged that these two items alone represent but a portion

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1. Includes new (or additions to) residential buildings, farm buildings, silos, stalls, dams, irrigation canals, boreholes, fencing, establishment of orchards, etc. Maintenance expenditure is excluded.
2. Includes water pumping equipment, motor vehicles (cars and lorries), tractors and other machinery, equipment and implements. All maintenance expenditure is excluded.

of gross capital formation in the agricultural sector - maintenance expenditure of a capital nature and changes in livestock inventories are the two most important items excluded - but the willingness to extend their stock of fixed assets can be regarded as an index of producers' confidence in the future of their undertakings. It would appear that in most years between 1958/59 and 1967/68 capital formation in the limited sense defined above slightly exceeded R4 million, with higher levels in 1959/60 (R5, 1m) and 1963/64 (R6, 1m).[1]

Taken at face value these figures suggest that outlays on fixed capital formation in agriculture in the region have been relatively constant. (By contrast, total gross domestic fixed capital formation by the agricultural sector in the country as a whole rose by some 20% over the same period.) But the index of wholesale prices of building and construction materials rose by over 12% between 1961 and 1967, that of machinery and transport equipment by 15% between 1961 and 1968 and that of farming requisites by 12% between 1958 and 1967.[2] Furthermore, inventories of sheep - by far the most important form of livestock in the region - have declined from over 4 million in the second half of the fifties to about $3\frac{1}{2}$ million in 1966/67 and 1967/68 (Table 3.15).

Since it can be assumed that the declining price of wool would have precluded any rise in the value of each unit of livestock there has probably been net disinvestment in livestock inventories - a factor which is presumably being accelerated by the recently introduced stock reduction scheme. Hence, the conclusion is unavoidable that real gross capital investment in agriculture in the region is declining.

The image projected by agriculture in the region is hardly one of a dynamic, expanding and healthy industry. Even where some restructuring has taken place - such as in the consolidation of small farms - there is evidence to suggest that its impact on the magnitude of the problem has thus far been fairly limited. Contraction appears to be the order of the day, with only the Coastal sub-region providing the occasional exception.[3]

It is, of course, true that the declining importance of agriculture in economic development in industrialised countries is a universal development and need not always be regarded as an alarming trend. But whereas South African agriculture as a whole, despite many problems, has managed to achieve a significant increase both in the physical volume and the gross value of production, the performance of agriculture in the region has lagged far behind. Perhaps most disturbing of all is the fact that whilst rural population still seems to be growing, agricultural employment has been declining, without any compensating rise in employment opportunities for the potential rural labour force.

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1. The analysis only goes back to 1958/59 as it is not possible to distinguish between new works and maintenance in earlier years.
2. Calculated from "S. A. Statistics, 1968" and the Supplement to Quarterly Bulletin of Reserve Bank, September 1971.
3. For example, the Coastal sub-region is the only area in which, the 1970/71 and 1971/72 seasons apart, there has been a general tendency for the value of the wool clip to rise (Table 3.8).

THE SECONDARY SECTOR

According to the two major sources of data on general economic structure for the present study - namely the GGP estimates by production sub-sector, and the industry division tables of the 1960 population census - the secondary sector accounted for less than 6% of geographic product, but more than 10% of total employment in the Cape Midlands and Karroo region at the beginning of the sixties (Tables 3.1, 3.2, 3.4 and 3.5).

However, as already noted, the data for the secondary sector from these two sources are not comparable, although in both instances they are classified under the same three headings of manufacturing; construction; and electricity, gas and water. The differences relate mainly to the manner of classification of the processing and repair activities of the public authorities, including the central, provincial and local governments and the South African Railways and Harbours Administration (Schedule B). In effect, therefore, the fact that the secondary sector contributed only 5,6% to total gross value added in the region in 1959/60 can be taken to refer to the manufacturing, construction, repair and power generating activities of the private sector only - but including public corporations, such as Escom - with the activities of the public sector largely excluded. On the other hand, the 10,5% of the region's total economically active population classified under the secondary sector includes the processing and repair activities of both the private and public sectors.

At the national level, where the public sector's secondary activities are proportionately unimportant, their exclusion from the GDP estimates might still leave the data within tolerable error limits for certain purposes, including comparisons with the employment data. But, as will be shown shortly, public sector activities in the secondary sector in the study region are proportionately very significant. The secondary sector's estimated contribution of 6% to GGP is thus an understatement of the 'true' proportion.

THE SIZE AND GROWTH OF THE SECONDARY SECTOR

If, in two regions - A and B - secondary industry accounts for x% of GGP in A and y% in B, with x greater than y, but with total GGP in B greater than in A, then the possibility that secondary industry in B may actually have a far higher output per capita and per sq. km. would be obscured by a direct comparison of the proportions x and y. Indeed, when relative geographic and population sizes are taken into account, B may well emerge the more highly 'developed' region than A, notwithstanding its 'small' secondary sector.

To emphasise the largeness or smallness of the secondary sector's contribution to GGP in a region - such as the 6% share in the Cape Midlands and Karroo region - compared with other areas, may well therefore be misleading. Nonetheless, given that the gross value added by the secondary sector in the Cape Midlands and Karroo region in 1959/60 amounted to a mere 5% of that added in Economic Region 08 (Port Elizabeth/Uitenhage), implying an output of R53/km^2 in the former and R19 200/km^2 in the latter area, and an output per capita (of total population) of R10 in the former and R205 in the latter, it is not unreasonable to assert that the secondary sector's average 5% share of total GGP between 1954/55 and 1959/60 represents one of the greatest single measures of the extent of underdevelopment in the region.

This lack of secondary industry - especially in so far as it applies to manufacturing industry - represents both cause and effect of the economic malaise from which the Cape Midlands and Karroo region suffers.

On the one hand, it is abundantly clear that the hinterland of Port Elizabeth is not highly favoured as an advantageous location for industry. This conclusion is inescapable, for in the many years of largely open competition amongst the various regions of South Africa for industrial investment - that is, before the introduction of policies which actively sought to effect industrial decentralization not only with 'positive' measures designed to enhance the relative advantages of the rural areas but also with 'negative' measures designed to promote the emergence of relative disadvantages in the established industrial centres - the Cape Midlands and Karroo region clearly failed dismally to attract any industries of note, and especially those with strong subsidiary growth-inducing characteristics.

The malaise is thus, in the first instance, a fundamental one, in that the region lacks most of the characteristics which might otherwise have attracted a greater share of investment. As the next Chapter will show, it has lacked exploitable mineral resources, adequate water resources, agricultural land with a high productivity potential and a concentrated, well-trained and rapidly growing population. It lacks a diversity of raw materials, a concentration of purchasing power and, above all, a favourable location relative to those areas of the country more favourably endowed with such resources, and relative also to the main axes along which the economic flows amongst and between these better endowed areas are carried.

The lack of secondary industry is, in this sense, a result of unfavourable economic circumstances in the region. But it is also the cause of such circumstances. As various factors, such as changing cultural and social attitudes and values, the high risk factor inherent in farming enterprise, improved agricultural techniques, low income elasticity of demand (as well as unstable demand) for agricultural products, and the unceasing battle against the elements, have combined to create, and drive out, a surplus rural population, the region's inability to re-absorb this displaced population in other occupations and sectors - but particularly in manufacturing industry - has resulted in the loss of this population to other areas. Similarly, in times of agricultural hardships, the region has lacked a non-agricultural 'base' of sufficient depth and diversity to enable it to cushion the impact. Again, it has been unable to keep pace with the growth of population in the towns since it has lacked the means for accumulating the necessary development capital.

There is no part of the region which has been able to escape from the vicious circle thus set up. The small volume of secondary activities which the region can boast is spread thinly amongst all five sub-regions, indicating that no centre in the region has any significant locational advantages over all other centres. The distribution of value added by the secondary sector amongst sub-regions at 1959/60 was more or less in proportion to their respective shares of total GGP (Table 3.2). As a result, the secondary sector accounted for a similar proportion (5% to 7%) of GGP in each sub-region.

Between 1954/55 and 1959/60, the estimated contribution of the secondary sector to GGP increased by the unexpectedly large margin of 55% (at current prices). In all sub-regions, except Sundays, the corresponding increases varied within the relatively narrow range of 42% to 52%. In the Sundays sub-region, the estimated contribution virtually doubled. Thus, whereas in

1954/55, the secondary sector in this sub-region accounted for a much lower-than-average share of the corresponding gross value added in the region as a whole (15% as opposed to 25% for total GGP), and for only 2% of GGP in the sub-region itself, compared with between 4% and 6% in the remaining sub-regions, by 1959/60 the Sundays sub-region was contributing a more or less average share with an internal proportionate contribution on a par with the remaining sub-regions (Table 3.2).

There would seem to be three main factors which explain these somewhat unlikely estimates. Firstly, the absolute output figures involved are relatively small, with the result that even small absolute changes from year to year can represent large percentage changes. Secondly, although the GGP data themselves provide no clue to the respective contributions of the three component industry groups (manufacturing, construction and power), it can (and will) be shown that as a result of the lack of manufacturing industries, the output of private construction industry in the region, particularly in the Sundays sub-region, accounted for an unusually large proportion of the value added by the secondary sector in 1959/60, and by its nature, construction has a far more volatile annual output. Thirdly, and most importantly, the GGP estimates for the six years from 1954/55 to 1959/60 were based largely on the results of the industrial censuses of 1956/57 and 1959/60, the rates of growth between these two years being used to obtain interpolated or extrapolated estimates for the remaining four years in each magisterial district. In the light of the first two factors, this third factor renders the estimates for the four remaining years fairly suspect. It can reasonably be concluded that the estimated increase of 55% in the value added by the region's secondary sector in the six-year period is exaggerated.

Turning to the employment data, the results of the differences in classification are immediately apparent. Whereas the data on gross value added suggest that the secondary sector was relatively insignificant in the region, the employment data suggest that it was a relatively important source of employment opportunities, accounting for more than 10% of the economically active population at 1960 (Tables 3.4 and 3.5). It appears to have been especially important for Whites and for Coloureds for whom it afforded jobs to one in every eight economically active persons (in the case of Coloureds the proportion was probably closer to one in every seven persons actually in employment).

At the national level, some 24% of GDP and 17% of employment were classified as 'secondary sector' at 1960 (Tables 3.2 and 3.5). Even if it were not the case that due to the differences in classification, the GDP proportion was slightly understated, it is apparent from these two proportions that worker productivity in this sector is high in the country as a whole. Since it is inconceivable that, relative to the other sectors, productivity in the secondary sector in the region, could be so low as to completely reverse this relationship between output and employment, it must be concluded that a large (if not the greater) proportion of both secondary sector output and secondary sector employment in the region is accounted for by the activities of the public sector. Further evidence to support this conclusion will be furnished in the separate discussions of the three main component activities of the secondary sector, namely manufacturing, construction and power.

Unlike the GGP data, the employment figures on the secondary sector do distinguish between these three activities. Since construction accounted for

less than 9 330 (73%) of the 12 812 persons classified under the secondary sector at 1960, compared with 2 765 manufacturing employees (22%) and 717 power employees (6%), it is clear that the construction industry dominated the region's secondary sector (Table 3.4). This conclusion must surely remain valid even if construction activities at 1960 were, as has been suggested in the previous Chapter, temporarily boosted by such factors as non-recurring major road or rail construction projects in certain parts of the region.

MANUFACTURING INDUSTRY

The 1967/68 industrial census brought to light the existence of 103 private industrial (i.e. manufacturing and repair) establishments in the Cape Midlands and Karroo region (Table 3.16).[1] This number appears to represent a fractional decline in comparison with 1959/60 and a fairly significant decline compared with 1956/57, at which date some 120 firms submitted census returns. These differences may be due, in large measure, to the lack of strict comparability between the area and category definitions employed in the three censuses,[2] but even so they demonstrate a lack of growth in the area.

In 1967/68 some 1 904 persons of all races were employed in manufacturing industry in the region. Together they produced an output, the net value of which was slightly more than R3,1 million, representing a net output per worker of R1 600 (Table 3.16). Partly because of numerous gaps in the published data for 1956/57 and 1959/60 and partly because of the definitional differences between the data for these years and 1967/68, only rough estimates can be made of output per worker for the two earlier years. Nevertheless, the estimated productivity of R1 200 of net output per worker in 1959/60 and R900 in 1956/57 does suggest that worker productivity in the region has risen over the years, at least in money terms. In real terms this trend is confirmed, as the consumer price index rose by only 29,8% between 1958 and 1968 compared with the estimated 78% rise in worker productivity in the region in money terms. Nevertheless, productivity in the region is low in comparison with the country as a whole, where net output per worker was R1 500 in 1956/57, R1 700 in 1959/60 and R2 200 in 1965/66 (1967/68 figures not available).

In so far as total employment in private manufacturing industry in earlier years is concerned, strict comparisons are again not possible, but in the light

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1. All information from the 1967/68 industrial census obtained from unpublished tabulations by magisterial district kindly made available by the Department of Planning.
2. For example, for reasons of confidentiality, the 1956/57 data for some magisterial districts in the region were combined with those for other magisterial districts outside the region. As far as differences in category definitions are concerned, the data have, as far as possible, been adjusted to minimise their effects, but some differences still remain. In particular, the motor industry, which was excluded by definition from the 1956/57 and 1959/60 censuses, has been included in the results for 1967/68 for the sake of completeness. If these establishments are excluded throughout, the number of firms at 1967/68 drops to 95 (see Table 3.17).

of the estimated labour force figures of 2 226 in 1956/57 and 1 827 in 1959/60, the best that can be said for the region is that its manufacturing labour force has not increased.[1]

Private industrial development is spread throughout the region with no evidence of centralization. At 1967/68, net output was highest in the Coastal and Escarpment sub-regions, with these two areas accounting for some 55% of total net output in the region (Table 3. 16). But from the geographic distribution of numbers of establishments and of total employment at the same date, the Fish and Coastal sub-regions and, to a lesser extent, the Border sub-region, stand out as relative concentrations (Table 3. 16). In terms of net output per establishment, and per worker, however, the Escarpment sub-region stands head and shoulders above the rest.

These relative positions have not altered much since 1956/57, apart from a relative decline in the Border sub-region's provision of manufacturing employment opportunities but which has been countered by a marked increase in worker productivity. Productivity has also risen sharply in the Coastal and Sundays sub-regions, and total net output was more evenly distributed between the sub-regions in the earlier years.

There has evidently been a marked decline in the number of establishments in the Sundays sub-region, although this has been exaggerated by the fact that the 1956/57 data includes Richmond magisterial district.

The bulk of the manufacturing establishments, employment and output is concentrated in the core centres of each sub-region - Middelburg, Graaff-Reinet and Grahamstown, in the case of the Escarpment, Sundays and Coastal sub-regions and in Cradock and Somerset East in the Fish sub-region.[2] In the Border sub-region, as might be expected, no single centre is dominant.

There have been shifts in the composition of manufacturing industry in the region since 1956/57. Most significant are the declining proportions (and numbers) of establishments in the non-metallic mineral products and wood and cork major groups on the one hand, and the rising proportions in the metal products, transport equipment[3] and furniture and fixtures major groups on the other hand (Table 3. 17). The metal products and transport equipment firms presumably comprise mainly the small engineering and panel beating establishments serving the local construction industry and motor trade. This suggests a movement away from the processing of local raw materials to the provision of services and commodities for the local population. Since the latter types of establishment are far less likely than the former to sell their services or their wares beyond the boundaries of the region, this would suggest that there has been a shift away from basic to non-basic activities. This trend has been counter-balanced very slightly by an increase in the number of meat processing establishments.

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1. The apparent decline in employment between 1956/57 and 1967/68 is probably a combination of at least two and possibly three factors - namely, differences in the definition of an industrial establishment; the demise of some of the smaller and less viable firms; and decreasing employment within existing firms.
2. Somewhat surprisingly Somerset East is more important than Cradock in this respect.
3. The increased proportion of transport equipment firms is, however, due to the fact that some of these firms were excluded from the earlier censuses by definition.

A possible reason for this apparent trend towards the provision of purely local 'place-bound' services is that improvements in communications have made it easier for building contractors, for example, to obtain supplies of wood and other materials from the larger suppliers in Port Elizabeth. One essentially service-type industry which appears to have suffered in this respect is the bakery industry. Even allowing for differences in definition between the various censuses, the apparent large decline in the number of bakeries from 17 at 1956/57 to 9 at 1967/68 suggests the probability that competition between bakeries in adjacent Cape Midlands and Karroo towns and from bakeries in Port Elizabeth and King William's Town/East London has eliminated some of the weaker establishments.

The data in the previous paragraphs relate exclusively to private industrial establishments. Normally, the proportion of public manufacturing employment is any area is low, if not negligible. In the Cape Midlands and Karroo region, however, the lack of industrial development greatly increases the proportionate share of the public sector. Thus, in the 1960 population census, 2 765 persons (excluding Asians) were classified as being employed in manufacturing industry in the region (Table 3.4), compared with the 1959/60 industrial census figure of 1 827. Whilst the former figure cannot be taken entirely at face value in respect of either of its public or private industrial components, the difference of over 900 employees can only be accounted for by three main factors:

(i) employment in the abbatoir and Bantu beer departments of local authorities;
(ii) certain categories of employment in these bodies' electricity and public transport departments; and
(iii) the repair workshop activities of the South African Railways.

The latter factor probably accounts for the particularly large differences between the industrial and population census figures in the Escarpment and Fish sub-regions.

CONSTRUCTION INDUSTRY

Apart from building contractors, this category includes demolishers, painters and decorators, plumbers, shopfitters, electrical contractors, and civil and structural engineers. Unfortunately, the census data obtained for 1967/68 do not include construction firms so any discussion of this industry must be limited to the results of the 1956/57 and 1959/60 censuses.

Estimates made from these results suggest at face value, that the number of private construction firms in the region rose from 83 to 94 in the 3 year period (Table 3.18). However, it appears that the later census included, and the earlier census excluded, borehole contractors of whom there were some 27 in the region in 1959/60. This would suggest that there had in fact been a decline in the total number of private construction firms, although changes in the definition of what constitutes an establishment may again have been partially responsible.

From the estimated total employment figures of 1 683 workers in 1959/60 and 1 441 in 1956/57 (excluding borehole contractors) it is evident that the

private construction industry is almost as important as private manufacturing industry as an employer of labour in the region. Productivity is estimated at approximately R800 of net output per worker at 1959/60 and R600 at 1956/57, compared with the corresponding national levels of about R1 000 and R900 respectively (Table 3. 18).

Although the Coastal sub-region accounts for only a minor proportion of all construction firms in the region the average size and output of its establishments is significantly higher than in the remaining areas. Worker productivity, however, does not vary much with location. The activity level in the industry was evidently quite high in the Sundays sub-region in 1959/60 and in the Fish sub-region in 1956/57. Private construction establishments were virtually non-existent in the Border sub-region (Table 3. 18).

When the above 1959/60 employment figure of 1 683 is compared with the total of 9 330 persons (excluding Asians) classified as working in the construction industry division in the 1960 population census (Table 3.4), the relative insignificance of the private construction industry in the region becomes apparent. Clearly the construction activities of the central and provincial governments, of the divisional and town councils, and of the railways are dominant (although the figure of 9 330 would also include any self-employed or itinerant plumbers, carpenters, painters and other handymen working on their own account). These public sector activities include road and rail works, erection and maintenance of buildings (e. g. schools, law courts, government offices etc.), dam construction works, etc., except where these tasks are contracted out to private firms.

POWER GENERATION

This category includes the supply of electricity, gas and water (apart from irrigation systems) as well as refuse and sanitary disposal works. By their nature, such activities usually belong largely to the public sector. In the Cape Midlands and Karroo region, they are primarily the responsibilities of the various local authorities, and in the limited amount of information available on the activities of the latter, separate data for this category are generally not distinguishable. The 1960 population census results show that the industry as a whole generated a total of only 717 employment opportunities (excluding Asians) in the region, and its proportionate contribution to GGP is probably similarly insignificant. Its vital infrastructural role is, however, obvious.

CAPITAL FORMATION

Without access to the detailed results of the various industrial censuses, there is little that can be said about private gross capital formation in the secondary sector in the region, although the fact that,from 1964 to 1966 inclusive, the value of buildings completed for industrial pruposes in the 3 main regional centres of Cradock, Grahamstown and Graaff-Reinet totalled a mere R14 000 indicates little in the way of new works.

The public sector is a different matter - electricity generation and distribution, water supply and sewerage disposal works require large amounts of capital outlays, albeit rather intermittently. Escom is, as yet, relatively unrepresented in the region with the result that the bulk of this expenditure comes from the region's town councils. Again, all available data are included in the discussion of government services below. Nonetheless, with a number of major capital works being undertaken by and on behalf of government bodies in various parts of the region at the present time, it is probable that the 'true' contributions of the secondary sector to GGP in the region have increased both in real and proportionate terms, although only a part of such increases would be reflected in any calculation of the present GGP on the same basis as in the late fifties.

THE TERTIARY SECTOR

The tertiary sector comprises all economic activities not covered by the primary and secondary sectors, howsoever these may have been defined. Its three main components are (i) commerce and finance ('trade'); (ii) transport, storage and communication; and (iii) services (including government). Lack of data precludes detailed coverage of all these activities in this report.

In the case of the tertiary sector, the differences in the three-sector classification of all economic activities between the GGP estimates and the employment data relate not only to classification as between secondary and tertiary sector, but also as between industry divisions or production sub-sectors within the tertiary sector itself (Schedule B). In addition, there is a further difference in that the GGP tertiary sector includes 'ownership of dwellings', but since it is possible for (say) farmers and factory workers to derive income from ownership of fixed property, the GGP classification slightly overstates, and the employment by industry division classification slightly understates, the tertiary sector's share in relation to the other classification in this respect.

The sector's share of GGP in the region between 1954/55 and 1959/60 rose from about 48% to about 55%, and in 1960, it accounted for some 37% of all economically active persons in the region, and probably a substantially higher share of those actually in employment (Tables 3.2 and 3.5). Even allowing for the differences in definition, it is clear that in terms of sheer volume, the tertiary sector has become at least as important to the economy of the Cape Midlands and Karroo region as the primary sector. On the other hand, most tertiary activities would not normally be considered growth-inducing. Expansion of many services tends to follow in the wake of, rather than precede, growth in income because they have a high income elasticity of demand. Nevertheless, the role of this sector in the Cape Midlands and Karroo region should not be under-estimated, because in this instance, not only is the sector dominated by activities concerned with the maintenance and expansion of the developmental infrastructure, upon which growth may in turn be based, but it is also a very important element in the region's economic base. This is true of both private and public activities in the sector.

Consider, for example, three private tertiary activities in any of the larger Cape Midlands and Karroo region towns: a tourist class hotel; a

private school of national repute; and a petrol filling station on the national road passing through the town. To the extent that the 'clientele' of these establishments do not normally reside in the region, these activities form part of the latter's economic base. Any consumption expenditure by such non-residents during their stay in the region, represents an increase in demand from the export sector.

In the case of many public sector activities, the process is more obscure, in that the exports are 'invisibles', but the net effect is the same: the 'output' of a state- (or province-) owned hospital, school, library or administrative office in the region is, in effect, being paid for by transfers-in from the rest of the country and can therefore be classed as 'sales' to the export sector.[1] These factors should be borne in mind in the ensuing discussion.

TRADE

The commerce and finance (or 'trade') category includes all distribution activities (wholesale, retail and motor trade), all forms of financial institutions, and the various commercial and financial agencies (manufacturers' representatives, auctioneers, estate agents etc). Most of the ensuing discussion will, however, focus on the retail trade, due to the almost total lack of separate and usable data on the remaining activities.

The period 1952-1960

The estimated contribution of the distributive trades to GGP in the region in 1954/55 to 1959/60 was between 8% and 9% (Table 3.2). In absolute terms, the gross value added by trade (at current prices) fluctuated between R5,3 million and R5,9 million with little net growth over the period as a whole (Table 3.1).

Confirmation of this relative lack of growth in the fifties comes from the distributive trade censuses of 1952 and 1960/61, and from data on the number of new motor vehicles licensed each year in each magisterial district.

The census data are not available by magisterial district for 1952, but comparisons can be made for Economic Regions.[2] For Economic Regions 09, 10 and 11 together - large portions of which are included in the Cape Midlands and Karroo region[3] - the total value of trading revenue in retail

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1. The relative proportions of the 'output' of both public and private tertiary sector activities 'purchased' by the three market sectors - exports to private sector; exports to government; and the local market - vary widely according to the nature of the activity and the type of institution concerned. In the case of state- or province- subsidised institutions, the relative size of the subsidy is a major determinant.
2. These are again the 'old' Economic Regions (see Chapter One).
3. Economic Region 09 comprised the Coastal sub-region plus Kirkwood magisterial district; and Economic Regions 10 and 11 comprised the Sundays, Fish and Escarpment sub-regions plus Willowmore, Albert, Aliwal North, Colesberg, Hanover, Richmond and Ventersburg magisterial districts, but minus Tarka and Bedford.

establishments grew by 15,3% from R24,0 million in 1952 to R27,7 million in 1960/61. In Economic Region 19, of which a small portion was contained within the region,[1] the increase was only 6,6%. By contrast, Economic Region 08 (Port Elizabeth and Uitenhage magisterial districts) recorded an increase of 36% (the national increase was 29,6%).[2] Since the consumer price index rose by 21,3% between 1952 and 1960, it would appear that there was little or no increase in the actual volume of trade in Economic Regions 09, 10, 11 and 19 - and hence also in the Cape Midlands and Karroo region - in that period.

Similarly, in the same period, retail trade employment in Economic Regions 09, 10 and 11 together rose by only 8,3%, whilst in Economic Region 19 it declined by 3,7%, compared with an increase of 15,5% in Economic Region 08. Salaries and wages paid rose by 49% in Economic Regions 09, 10 and 11, 24% in Economic Region 19, and 66% in Economic Region 08. Since other expenses also rose, the resultant effects upon net profits in the three areas were a decline of 4,6%, a decline of 16,6% and an increase of 1,5% respectively, again indicating a relative lack of growth not only in the Cape Midlands and Karroo region, but also in the wider area of Port Elizabeth and its hinterland as a whole.[3]

The data on new motor vehicle registrations show that, apart from a substantial increase in new vehicle purchases in the Cape Midlands and Karroo region between 1956 and 1957,[4] the level of purchases fluctuated between about 2 800 and 2 500 between 1957 and 1960 (Table 3.19). Since the number of purchases in the province and the country during the same period increased significantly, and since the level of motor vehicle purchases can to some extent be regarded as an index of available purchasing power, these figures can be regarded as further evidence of the lack of growth in trade in the region in the latter half of the fifties.

As far as trends within the region are concerned, strict comparisons by sub-region are not possible, as the census data for 1952 are not available by magisterial district. However, a general impression can be gained by regarding Economic Region 09 as an approximation of the Coastal sub-region and Economic Regions 10 and 11 together as an approximation of the Sundays, Fish and Escarpment sub-regions combined.

As far as trading revenue is concerned, Economic Region 09 recorded an increase of 53,3% between 1952 and 1960/61, compared with only 3,8% in

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1. Bedford, Tarka and the Border sub-region were included in Economic Region 19, together with 17 other magisterial districts which form part of East London's hinterland.
2. Unless otherwise stated, all data in this report on the distributive trade censuses of 1960/61 and 1952 are based on Report No. 35 from Part 2 (Retailers) of the 1960/61 Census.
3. These figures must however be evaluated against the performance of retail outlets on the national level, where net profits actually declined by 0,95%.
4. Since,in general, new motor vehicles tend to be serviced and maintained by the garages which supply them, it can be assumed that a very close relationship exists between new vehicle registrations and new vehicle purchases in any area.

in Economic Regions 10 and 11 together. In the case of employment, there was an increase of 34% in Economic Region 09, compared with a decrease of 0,8% in Economic Regions 10 and 11. Similarly, net profits rose by 32,3% in the former area and fell by 17,1% in the latter area. Corresponding comparisons are not possible for the Border sub-region, but since Economic Region 19 as a whole (within which the sub-region is contained) appears to have been an area of contracting commercial activity, it is unlikely that the sub-region would have experienced significant growth. Hence it can be concluded that the Coastal sub-region was the only relatively healthy spot in an otherwise ailing commercial sector in the fifties.

This latter conclusion is also borne out by the motor vehicle statistics, which show that whilst purchases in the region as a whole were relatively static, those in the Coastal sub-region increased uninterruptedly from year to year (Table 3.19).

Since it has already been suggested that there might have been a relationship between the gross values added in trade and in agriculture - these being the only two categories of GGP in the region that did not grow between 1954/55 and 1959/60 (Tables 3.1 and 3.3) - the relative proportions of total trading revenue derived from urban and rural areas would be of interest. Unfortunately, no direct evidence is available on these proportions, but support for the suggestion that such a relationship did exist can be obtained from two sources.

Firstly, the proportion of personal income in the region accruing to rural residents at 1960 is estimated at 45% in the case of Whites and 44% in the case of Coloureds (data for Bantu not available) (Table 3.20).[1] Since only about 27% of Whites were resident in the rural areas of the region at that date (Table 2.4), the higher per capita incomes of the White farming community were probably a significant source of consumer demand. Add to this the fact that half of the Coloured population and two-thirds of the Bantu population were also classified as rural, and there are strong grounds for accepting the thesis that the value of agricultural output and the volume of trade were closely linked.

Secondly, a comparison of the graphs of new motor vehicle registrations and gross value added by agriculture in the region in the second half of the fifties also suggests a fairly close relationship between the two (Fig. 18) and, again accepting the former as an index of purchasing power, gives some support, albeit inconclusively, to the above idea.

The structure of retail trade at 1960/61

In the 1960/61 distributive trade census, 874 retail trading establishments were enumerated in the region (Table 3.21). These offered employment to

1. Volume 7, No. 3 of the 1960 Population Census gives frequency distributions of personal income by race, sex and employment status for both the urban and rural areas of each magisterial district (see Table 2.11 in Chapter Two above). The estimates in Table 3.20 were obtained by multiplying the total number of persons of each race in each income interval, in the urban and rural areas separately, by the corresponding mid-point value of the interval. Persons who did not specify their incomes were omitted. These data were not available for Bantu, and in view of their small numbers, estimates were not made for Asians.

about 4 500 persons of whom 1 081 (or 24%) were 'working proprietors'. This implied 1,24 working proprietors per establishment which, when compared with the corresponding figure of 1,02 for the 1 403 establishments in Economic Region 08 no doubt reflects the prevalence in the region of the old 'family business', and the high degree to which the Cape Midlands and Karroo region's retail outlets were locally financed. Total sales realised R25,1 million, or R28,7 thousand per establishment, compared with R58,0 million total and R41,3 thousand per establishment in Economic Region 08.

Within the region, the pattern of distribution of establishments, sales, employment, remuneration and net profits between the sub-regions were fairly consistent (Table 3.21). In all instances, the Coastal sub-region is revealed as the area of greatest concentration; the Fish and Sundays sub-regions were approximately equivalent in importance, as were the Border and Escarpment sub-regions lower down the scale.

The populations of the Cape Midlands and Karroo region and of Economic Region 08 were virtually equivalent in size at 1960, but the latter area contained more than twice as many Whites as the former. Given that Whites have a higher income earning (and spending) capacity than the other race groups, the above comparisons between the two areas suggest that the performance of the study region's establishments was not unsatisfactory under the circumstances. This is underlined by the fact that the ratio of net profits to total value of sales was slightly higher in the region (6%) than it was in Economic Region 08 (5%).[1]

On the other hand, Nel and de Coning (1965) have estimated that, in 1958/59, total personal disposable income was 2,66 times higher in Economic Region 08 than in the region (Table 3.22). Hence the ratio of 2,32 between total value of sales in Economic Region 08 and in the region in 1960/61 suggests that Economic Region 08 was attracting some of the direct purchasing power from the outlying areas in its hinterland. But this is to be expected, since the range and quality of goods, especially specialist goods, available in the metropolitan area is bound to be greater than in the country areas. Furthermore, commuters living outside, but working in, the Port Elizabeth and Uitenhage magisterial districts, would spend at least part of their incomes in the latter areas.

Yet there is evidence to suggest that the 'leakage' from the region itself was, at that stage, relatively small. This is shown by the fact that the total value of sales in the region in 1960/61 represented 5,04% of the total value in the Cape Province, compared with Nel and de Coning's estimate that 5,40% of the Province's total personal disposable income 'resided' in the region. This leakage presumably did not accrue entirely to the Port Elizabeth metropolitan area, but also to King William's Town, East London, Queenstown, and possibly De Aar and Aliwal North as well.[2]

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1. These figures give no indication of the level of return on capital, which may tell an entirely different story.
2. The leakage is net, not gross, since some of the sales by the region's establishments would have been to non-residents. In the case of both wholesale and retail outlets, however, such sales are likely to have been relatively insignificant.

In 1960/61, therefore, it can be concluded that the purchasing power available to the region was to a considerable extent 'captive'. This would suggest, in turn, that the relative lack of growth in trading activity in the preceding 8 years was due primarily to a lack of growth in the total of personal disposable income 'resident' in the region rather than to a loss of trade to other centres. Presumably, the continued out-migration of Whites from the region and the slow growth of employee remuneration in agriculture were two of the most important factors inhibiting the growth of total personal disposable income.

At the sub-regional level, the geographic distribution of sales at 1960/61 was approximately the same as that of purchasing power at 1958/59, but suggested slight net 'leakages' from the Sundays and Escarpment sub-regions and net gains in the Coastal, Border and to a lesser extent, Fish sub-regions (Table 3.22). Except in the case of the Border sub-region, these relationships run according to expectations, in that they reflect the existence of relatively self-contained shopping catchment areas approximately coincident with each sub-region. Clearly, there is no dominant shopping centre in the region.

A lack of growth in turnover is, of course, unlikely to induce new investment, and from this point of view, perhaps a disquieting feature was the relatively low level of capital formation in retail trade in the region in 1960/61 (Table 3.21). Capital formation (new buildings erected, extensions and improvements carried out, and new equipment purchased) amounted to only R136 000, or 9,0% of total net profit in the region, compared with R376 000 (14%) in Port Elizabeth magisterial district alone. However, comparable data for other years are not available (see discussion below on post-1960 period), so the trend and general level of capital formation in trade in the region cannot be determined.

The period since 1960

Recent data on retail sales in the region are not available, the only readily available statistical series, which could be regarded as indices of the availability of purchasing power, again being the number of new motor vehicles licensed, and the total value of wool sales, each year in the region. Data was also available on the number of business telephones in the region at 1963 and at 1966. Further than that, Cook (1971) quotes the results of her sample survey of individuals' shopping patterns in the region; Drennan (1971) reports on an opinion survey of prominent officials and businessmen in several Cape Midlands and Karroo towns; whilst the writer has conducted brief interview surveys with a number of shopkeepers in Middelburg and a number of wholesalers in the Port Elizabeth metropolitan area, both in September 1971.[1]

These various unrelated sources provided different impressions of the buoyancy or otherwise of trade in the region during the sixties.

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1. Neither in the case of the Middelburg shops, nor the Port Elizabeth wholesalers, were scientific samples selected and no claims are made as to the representativeness of the results. The sole purpose of the interviews was to gain some preliminary impressions of, and opinions on, the 'state of health' of commercial activity in the region, from some of those most intimately involved. Some of the more general impressions obtained are included in this report.

Thus, for example, the average value of the region's annual wool clip was slightly lower in the first half of the sixties in comparison with the second half of the fifties (Table 3.8). It has already been suggested that this can be regarded as an indication of a lack of growth in the gross value added by agriculture in the region, and in view of the apparent relationship between the prosperity of agriculture and of trade in the region, a lack of growth in the volume of trade would similarly appear to be indicated. In the second half of the sixties the mean annual value of the wool clip fell further with a particularly sharp drop in 1970/71, and this would presumably also have had a detrimental effect on the expansion of trade.

Similarly, an examination of the motor licensing data (Table 3.19) reveals that, between 1960 and 1970, the annual total number of new motor vehicles licensed in the region continued to fluctuate widely about the same level, although this level was perhaps marginally higher in the sixties than in the late fifties. The lowest number recorded in the decade was 2 028 vehicles in 1961, and the highest was 3 451 in 1963/64. By contrast, the number of new vehicles licensed in the Cape Province as a whole rose rapidly, if not quite continuously, from 19 210 in 1960 to 76 464 in 1969/70.

For what they are worth, these comparisons suggest that the availability of purchasing power in the region continued to fluctuate from year to year, but without a sustained general rise in total real income levels. However, despite the apparent continuation of the relationship between the volume of trade (as represented by motor vehicle purchases) and the value of agricultural output (as represented by the value of the wool clip) (Fig. 18), there is some evidence to suggest that by the late sixties this relationship had been somewhat weakened, with the result that agriculture's problems might not have had the catastrophic effect upon the volume of trade in the region that might otherwise have been expected. This point is examined further in subsequent paragraphs.

Statistics on value of building plans passed and buildings completed are available for Graaff-Reinet, Cradock and Grahamstown for the period 1964-1966.[1] These data show that buildings to the value of R158 000, R66 000 and R48 000 respectively were completed in these three towns for commercial and financial concerns in the three-year period. In the same period, plans to the value of R235 000, R50 000 and R145 000 respectively were passed, again for commercial and financial purposes. These figures appear quite high, particularly in relation to the capital formation data from the 1960/61 census. However, as it is not known what proportion of the total floor space in the buildings was devoted to shops and as the period is too short to reveal any trends, it is difficult to determine whether these figures really do suggest an increase in trading activities in these centres.

The data on business telephone services utilised in the region in 1963 and 1966 show virtually no change in the number of such services in the region as a whole between those two dates, although there was a slight increase in the Coastal sub-region.[2] Since these figures show no definite tendency to either increase or decrease they are difficult to interpret. They do not, however, suggest an increase in the number of trading establishments. On the other hand, Drennan (1971) reports some fairly significant increases in numbers of establishments in the second half of the sixties in the towns which he visited in

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1. From Bureau of Statistics' Report No. 05-44-01, "Building Plans Passed and Buildings Completed, 1964 to 1966".
2. Estimated from Calitz and de Coning, 1963, and van Tonder and Nel, 1968.

the region, whilst Cook's data (1971, p. 56) show substantial growth in some towns and no growth in others.

Clearly, the available information is insufficient to determine the state of trade in the Cape Midlands and Karroo region during the sixties. However, whether or not the volume and value of retail sales in the region have increased in recent years, there certainly appear to have been a number of significant changes affecting commerce in the area. Three changes in particular are worthy of note.

Firstly, it would appear that as a result of improvements in the road system, the region's purchasing power is no longer as 'captive' as it was 10 years ago. For example, farmers in the region who do not operate bona fide general dealers businesses are nonetheless able to obtain general dealers licences; and, in view of the ease of access to Port Elizabeth, they use these licences for purchasing their requirements from wholesalers in that city. The extent to which this happens cannot be quantified, but that it is a cause for considerable local concern is shown by the repeated complaints about it from country delegates to recent Cape Midlands Chamber of Commerce conferences. Several municipal and development association officials in the region have similarly expressed their concern about this matter to the writer.

The practice of by-passing local traders is, however, not limited to farmers. For example, the interviews with Middelburg shopkeepers reveal that some townspeople apparently also purchase locally available goods in Port Elizabeth and even as far afield as Bloemfontein and Johannesburg, whilst Cook's analysis (1971, p. 24 et seq) of the purchasing habits of both rural and urban residents in the region confirms that in certain areas, and in respect of certain goods and services, significant proportions of residents make regular shopping trips to places outside the region, such as Port Elizabeth, Queenstown, King William's Town and East London. Drennan (1971) also refers repeatedly to this phenomenon in his report on trade in the eastern Cape Midlands towns of Alice, Adelaide, Fort Beaufort, Bedford and Cradock.

But the adverse effects upon local traders of another aspect to the 'leakage' of purchasing power from the region may be even more serious than the tendency of residents to shop elsewhere. This aspect is the apparently increasing trend for institutions, government bodies, building and other contractors, as well as non-commercial business concerns in the region similarly to buy direct from suppliers outside the region. In this respect, officials of the Grahamstown Chamber of Commerce have told the writer of the Chamber's dissatisfaction at the fact that many of the major institutions in Grahamstown do not patronize the city's shops; and wholesalers in Port Elizabeth report that increasing proportions of their sales to the region go directly to contractors and institutions rather than to local dealers, particularly in the building materials, sanitary and hardware lines. In some instances, wholesalers who have themselves been adversely affected by the growing tendency for retailers to purchase in bulk directly from the factories, claim to be "actively courting" such new clients.

The second noteworthy change in recent years has been the entry into the region of the 'national chains', particularly in the fields of clothing, footwear, furniture and building materials. In addition, one of the national 'large variety

store' chains has established itself in Grahamstown, whilst another is planning to enter the fray in both Grahamstown and Cradock. These chain stores have penetrated the market even in some of the smaller Cape Midlands and Karroo towns such as Pearston, Jansenville and Aberdeen in the west, and Fort Beaufort and Adelaide in the east. In some of these instances there are only one or two such stores but their presence is nonetheless significant. In Grahamstown, Cradock, Somerset East, Middelburg and Graaff-Reinet the chain stores feature very prominently.

The popular view of this development is that it has had an adverse effect upon locally-owned establishments, particularly the less viable ones. This has to some extent been borne out by the interviews with wholesalers in Port Elizabeth, some of whom report declining or static turnover from sales to these establishments, despite price increases. Whether it has led to an increase in the number of demises of existing shops is, however, not clear. Drennan (1971), for example, found little immediate evidence of such a trend, though he did consider that the matter warranted closer investigation. Nevertheless, it would not be unreasonable to expect the profitability of a number of existing establishments to have declined as a result of the increasing competition - a suggestion which the volubility of complaints by local entrepreneurs about this competition tends to support. In addition, a number of leading and long-established businesses in the region were singled out by some wholesalers in Port Elizabeth as examples of 'dying establishments'.

To the extent that the region benefits from the reinvestment of profits from locally-owned establishments, whereas the returns from the chain stores tend to accrue to other regions, the decline of the former must be regarded as an unfortunate result of the advent of the latter. And coming as it has on top of the increasing loss of custom to other centres, this development adds to the plight of the local trader.

However, as Drennan has pointed out, there are two sides to this coin, the other side being that where the affected establishments are inefficient or uncompetitive (due to under-capitalisation, to insufficient attention to consumer preferences, or to unwillingness to adapt to changing marketing practices etc.) there is no general economic justification for protecting them. Evidence of these failings is to be found, for example, in Middelburg, where the most vociferous complaints about the chain stores come from those who still operate their businesses along the lines of the old 'native trading stores' so prevalent in earlier decades. Similar examples are doubtless to be found in most other Cape Midlands and Karroo towns.

The above comments should not be construed as a lack of appreciation of the problems to which the advent of the chain stores have given rise, for clearly some of those affected have adequate reason to complain. Again citing Middelburg as an example, some of the smaller establishments which are endeavouring to meet the challenge from the chain stores report difficulties in procuring direct ex-factory supplies due to lack of co-operation from the manufacturers. One respondent reported that ex-factory delivery periods often extended to six months. In such circumstances, dealers have to fall back on the more expensive but more efficient sources of supply through the middlemen. Despite these difficulties, however, a number of the existing establishments in the region have risen to the challenge and are competing successfully. In some instances, this has been achieved by switching to self-service facilities in order to reduce operating costs; in others, advertising

and display practices have been improved; yet others, such as a number of grocers, have joined buying groups in order to benefit from bulk buying - a move which most chemists have recently followed in respect of non-ethical products.

But there is more to this question than efficiency alone, for the chain stores may yet prove to be a blessing in disguise by off-setting some of the advantages to be gained from shopping in larger centres such as Port Elizabeth. The chain stores may cause the differentials in price, quality and variety of merchandise between the metropolitan areas on the one hand and the platteland towns on the other to be narrowed sufficiently to reduce the advantages to the consumer of the practice of deferring certain purchases until the next visit to Port Elizabeth or East London. If so, then the volume of purchases effected in the region will rise to the benefit not only of the chains, but also of those local entrepreneurs who are willing to rise to the challenges of the present-day competitive marketing situation. For example, since the role of the old 'general merchant' is being increasingly usurped by the chain stores, and particularly by the large variety stores, there would appear to be scope for local establishments to exploit the specialised requirements of the crowds who flock to the chain stores. As Drennan has pointed out, price is not the only factor which purchasers take into account. The range of goods available and the quality of the service offered can be telling points in the competion for custom.

The third significant change of recent years has already been referred to: it concerns the question whether the custom of the farmer still represents the mainstay of the region's trading establishments. The presumed decline in real personal income from farming, the absolute and proportionate decline in the rural population of all races in the region, and the tendency of farmers to effect many of their purchases through their co-operatives, might have been expected to deal a death blow to many of the region's smaller establishments already suffering from the loss of custom (including that of the farmers) to other areas and from competition from the chain stores. However, the ability of most of the region's shops to survive (and some even to thrive) despite all these problems, would seem to give the lie to this view, at least in so far as the short-term is concerned. Evidence of a changing pattern of dependency is perhaps to be found in the fact that amongst the shop-keepers interviewed in Middelburg there seemed to be more concern about urban problems than rural problems. Most shopkeepers acknowledged a declining proportion of trading revenue derived from the rural areas. Some establishments have, of course, been more seriously affected than others in this respect. But a number seemed less concerned about this factor than about the loss of custom due to the rehousing of the Coloured population some distance away at Midros, where shops have also been provided, and to the 'endorsement out' of Bantu to the reserves. Moreover, hopes as to the future appeared to hinge rather more on the possibilities of attracting industries to Middelburg, thereby affording employment to, and increasing the incomes of, the local urban population, than on the possible rehabilitation of agriculture.

The fact that new enterprises continue to be established in the region, not only in the larger centres but also, as Drennan discovered, in some of the smaller centres as well, at a time when agriculture is at a very low ebb, gives added support to this argument.

The explanation for this unexpected situation would appear to lie mainly in the considerable number of construction projects currently being sponsored

by various governmental bodies in the region. It would appear that the earnings generated by employment on these projects (which range from the major construction works on the Orange-Fish project, through road and dam construction and other new works to extensions to government buildings) have compensated, at least in part, for the loss of custom from the farmers. However, the additional employment opportunities created by these projects are not necessarily permanent, and it is for this reason that the lack of dependency upon agriculture might only be a short-term phenomenon.[1]

TRANSPORT, STORAGE AND COMMUNICATION

This category covers public and private transport activities (rail, sea, air, road and related services for movement of both passengers and goods); storage and warehousing activities; postal services; and news agencies (Sapa etc.). As far as the Cape Midlands and Karroo region is concerned, apart from the occasional taxi, cartage contractor, travel agent and other privately owned transport service, these services are provided almost exclusively by the public sector (railways and post office).

The contribution of transport, storage and communication to GGP in the region rose slightly from 11% to 13% between 1954/55 and 1959/60 (Table 3.2). In this respect, these activities were proportionately more important in the region than in the country as a whole, where their contribution remained at about 10% during the same period. In absolute terms, this contribution in the region increased uninterruptedly each year, rising by almost one-third to R8,8 million over the whole period (Tables 3.1 and 3.3). Lack of data prevents a precise breakdown, but it is a safe bet that by far the greater proportion of this contribution came from the railways.

In the 1960 population census, a total of 4 289 economically active persons (2 368 Whites, 621 Coloureds and 1 300 Bantu) were classified under this heading in the industry division tables for the region (Table 3.4). This represented 12% of the total for Whites, 2% each for Coloureds and Bantu, and 3,5% of the total for all races (excluding Asians) (Table 3.5). However, as already noted, these employment figures are not comparable with the GGP data (Schedule B) for they exclude several important categories of railways employment: the permanent way and works sections; the maintenance and workshop activities; and the catering, bedding and cleaning activities. These are classified instead under the construction; manufacturing; and services industry divisions respectively. Consequently the above employment figures for all races, though particularly for non-Whites, fall well short of the 'true' levels.

Transport is thus an important activity in the region. But the reason for this is to be found not in a high level of traffic generation within the region but in the fortuitous location of the region between the harbour at Port Elizabeth and the mining areas of the hinterland. As Truu (1971, page 11) has noted, "... But for the mineral discoveries it is very unlikely that rail links would have been established between the coastal centres and the South African interior during the 19th century at all. The agricultural districts through which the

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1. The role of these construction projects in the region's economy is discussed in greater detail in subsequent paragraphs.

three northbound Cape lines passed (from Cape Town, Port Elizabeth and East London) were certainly not able to provide them with enough traffic. From the viewpoint of the Cape Midlands, the coming of the railway was therefore entirely due to causes beyond the region itself". And this situation has by no means improved. Staude (1971) points out that "through traffic destined for the North represents by far the greater volume of traffic" carried on the region's rail network.

The importance of these main arterial routes shows up in the breakdown of GGP and employment according to sub-region. Thus, whilst the Coastal sub-region's railway lines handle by far the greatest volume of both forwarded and received traffic within the region (Staude, 1971, pp. 6 & 8) only 17% of the value added by transport, storage and communication in the region as a whole in the period 1954/55 to 1959/60 was contributed by that sub-region (Table 3.2). Biggest contribution came from the Fish sub-region (one-third), followed by the Escarpment sub-region (one-quarter) and Sundays sub-region (also 17%). Moreover, by the end of the period, transport,storage and communication was contributing no less than one-fifth of the gross value added by both the Fish and Escarpment sub-regions, compared with only 8% in the Coastal sub-region.

Unfortunately, no further data on these activities was available. Railway employment data for the region appears not to be obtainable;[1] data on the postal services are lacking; data on the transport activities of the Grahamstown municipality - the only local authority in the region to run a public transport service - are generally indistinguishable from its other activities; and data on private transport services are non-existent. Particularly unfortunate is the lack of information on capital formation by the railways and post office in the region.

It is clear, however, that the bulk of the contribution made by the transport, storage and communication category is generated by demand from the export market sectors. The category is thus a particularly important element in the region's economic base.

SERVICES

This category comprises a wide range of activities. These include the administration and regulatory activities of central, provincial and local governments, including the police and defence forces (all of which are, by definition, public sector activities); educational, health, welfare, cultural and scientific services (which may be either public or private sector); religious, entertainment and recreational, technical, business and political services (mainly private sector); and personal services, which include domestic, catering, accommodation, cleaning, undertaking, toilet (hairdressing etc.) and photographic services (again mainly private sector).

It should be clear from the above list that it is possible to categorise services according to more than one classification. The main distinction in

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1. The employment records of the System Manager's office in Port Elizabeth do not always distinguish the location of employees, nor do they cover all aspects of railway employment in the region.

this report will be between public and private services. Although a limited amount of information on certain individual services provided by the private sector is available for certain years, the great diversity of these private services renders it impossible to provide meaningful coverage of each service or of all services in a report of this nature. Hence, apart from a few summary statistics, the paragraphs which follow focus mainly on the public sector services, although the information provided is by no means complete in their case either.

Services, both public and private, increased their share of regional product from just over one-fifth in 1954/55 to just over one quarter in 1959/60, by growing without interruption from R12,9 million to R17,6 million - an increase of just over one-third (Tables 3.1, 3.2 and 3.3). At the national level, services accounted for 18% of GDP at both years. The product of services in both the region and the country was divided almost equally between public and private activities.

In the sphere of employment, the 1960 population census industry division tables for the region (Tables 3.4 and 3.5) reveal that 34 524 persons of all races (excluding Asians) were engaged in the services division, which includes both public and private services as defined at the beginning of this section. This figure was comprised of 26% of economically active Whites, 28% of economically active Bantu and 31% of economically active Coloureds. No further breakdown of this category into more detailed industry groups is available, but it can be assumed that a substantial proportion of the services employment amongst the latter two race groups was accounted for by domestic service.

Again, the services items in GGP and the employment industry division of the same title are not strictly comparable (Schedule B). Thus, the GGP services category includes the commercial undertakings of local authorities (breweries, abbatoirs etc.) but excludes any aspect of transport, storage and communication (except those of local authorities). The reverse is true for the employment category.

Private services

The other (non-governmental) services sub-sector in GGP, comprising essentially the private sector components of the various services listed above, increased its contribution to the regional product from 10% to 13% between 1954/55 and 1959/60. In absolute terms this represented an increase of just over one-third from R6,3 million to R8,6 million (Tables 3.1, 3.2 and 3.3).

In view of the multitude of activities involved, it is very difficult to determine which of them were responsible for the major part of this increase. However,as the region's population was growing slowly and its White population was actually declining, and as there appears to have been little growth in total real income, it is unlikely that the credit for this can be given to those personal services (including domestic services) or business, cultural or other services dependent upon the spending power of the local populace. The most likely source of growth would probably have been private education, accommodation (hotels) and possibly private welfare services as well - the first and second because their markets extend well beyond the region and the third, because a growing population with falling or static real incomes evinces an obvious need for assistance which is

not always adequately met by the public sector. This suggestion is borne out by the fact that the greatest proportionate growth in the other services sub-sector (49%) took place in the Coastal sub-region which, in addition to having several prominent private schools and being traversed by the busiest national route passing through the region, also has a university and a population of which the poorer communities comprise a substantial proportion.

It would seem, therefore, that those private sectors which form part of the region's economic base tend to be more important generators of income and growth than those which are primarily local market orientated. This conclusion is reinforced by the fact that the private educational institutions are, in some instances, heavily subsidised by the central or provincial governments.

Public services

The contribution of the general government services sub-sector, which comprises virtually all services provided by the public sector - including, where relevant, health, welfare, education etc., but excluding most transport (see Schedule B) - to GGP in the Cape Midlands and Karroo region rose slightly from 11% (R6,6 million) to 13% (R9,0 million) between 1954/55 and 1959/60 (Tables 3.1, 3.2 and 3.3). As in the case of private services, this is somewhat higher than the corresponding 9% share at national level in the same period, and reflects the importance of the public sector to the region's economy. This importance becomes even more evident when the contribution of the public sector-dominated transport, storage and communication category is taken into account. Indeed, it can be confidently asserted that at least one quarter of the total income generated in the region in the late fifties was due to the combined activities of government departments at all levels and of public (state) corporations. This is probably substantially higher than the corresponding contribution in the country as a whole.

The breakdown of government services into the respective contributions of the four tiers of government is very difficult to assess. However, an examination of the available employment data does provide some indication.

On the assumption that, of the 34 524 economically active Whites, Coloureds and Bantu classified under the services industry division in 1960, one half of the Whites and one-third each of the Coloureds and Bantu were employed by the public sector, some 2 500 Whites, 2 700 Coloureds and 7 100 Bantu - 12 300, or 35%, in all - would be accounted for.[1] Even allowing for differences in definition between the GGP and employment classifications and for any differences in productivity and remuneration levels between public sector and private sector employees, the fact that the gross value added by services in the region is split almost equally between public and private services renders the allocation of 35% of employment to the former a conservative assumption. Yet, in 1965, the various divisional councils in the region employed a total of 1 851 persons (Table 3.23), whilst in 1967, the

1. The lower proportion assumed for non-Whites allows for the large number of domestic servants of both races in the region (Coloureds being employed more frequently in the western half of the region and Bantu more frequently in the eastern half).

urban local authorities employed 2 736 persons (Table 3.24) - a total of less than 4 600 employees. Even if there had been no increase in divisional council and local authority employment since 1960 (which is unlikely),[1] it is clear that by far the greatest contribution to public sector employment in services and hence, presumably, to the geographic product generated by services, is derived from 'external' government agencies. This conclusion would again be reinforced if transport, storage and communication were taken into account.

A further indication of the minor role played by local government in the region, relative to the activities of the state and the province, can be obtained from the available data, limited though it is, on capital formation.

Between 1965 and 1968, total gross capital formation by divisional councils varied between about R300 000 and R650 000 before increasing to just over R1 million in 1969 and R1,4 million in 1970 (Table 3.23). In 1967, gross capital formation by all the urban local authorities in the region amounted to almost R1,9 million (Table 3.24), with the three main centres of Grahamstown, Graaff-Reinet and Cradock together contributing no less than R1,26 million of this total. Since in 1968 and 1969 the combined figures for these three centres were only R851 000 and R713 000 respectively,[2] the 1967 total is clearly not abnormally low. By contrast, the total value of both residential and non-residential buildings completed in the above three centres for the private sector was about R300 000 in 1964, R160 000 in 1965 and R190 000 in 1966.[3] Even when allowance is made for the other components of capital formation in the private sector - new equipment purchased, changes in stocks etc. - it would appear that the divisional councils and urban local authorities alone probably contribute about as much as does the entire private sector, outside of agriculture, to capital formation in the region. Hence, given the magnitude of the role of the 'external' public bodies in the generation of income and employment in the region, it is highly probable that by far the greater proportion of capital formation is similarly derived from these sources.

The above conclusions tend to confirm the earlier suggestion that in the recent period of declining importance of rural purchasing power, due to the continued out-migration of the White rural population and to falling agricultural revenue, the sustaining factor in the regional economy has been the injection of capital by these external governmental agencies consequent upon the expansion

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1. Between 1965 and 1970, for example, total employment by divisional councils increased, albeit with some fluctuation, from 1 851 to 2 200 (see Table 3.23). Similarly, municipal employment in the three main urban centres of Grahamstown, Cradock and Graaff-Reinet rose slightly from 1 372 in 1967 to 1 421 in 1969 (see Bureau of Statistics' Reports Nos. 13-03-02, 13-03-03 (4) and 13-03-04(4), "Local Government Statistics").
2. See Bureau of Statistics' Reports Nos. 13-03-03(4) and 13-03-04(4).
3. Since government departments do not have to submit their building plans for approval by local authorities, all data on building plans passed and buildings completed refer to the private sector only. (See Bureau of Statistics' Report No. 05-44-01.)

of services. In Grahamstown, for example, the additions to government buildings such as the supreme court; extensions to the provincial hospital; and the construction of a new school and a new prison must have represented a very substantial proportion of recent and current stimuli to economic activity. Even the expansion of Rhodes University - also one of the most important activities in the city - is to a large extent financed by central government funds. In Adelaide can be cited the agricultural college; in Fort Beaufort, Alice and Seymour, the new road to Queenstown, the Kat River Dam and the growth of Fort Hare; in Middelburg the new prison and the trade school for Coloureds; along the coast, the new coastal road; and in the Fish River Valley and at Steynsburg, the tunnels and canals for the Orange-Fish River Project. Other similar examples doubtless abound throughout the region.

Although few, if any, of these projects can be expected to add directly to the region's productive capacity, they do represent additions to the region's infrastructure of services. In some instances, these additions may enhance the region's competitive ability to attract additional private sector developments.

SUMMARY

The tertiary sector grew in importance to the regional economy in the second half of the fifties, and in the light of the poor performance of agriculture and the lack of growth of manufacturing industry during the past decade, has probably become even more important since then.

Trade in the region is experiencing many difficulties, although there are signs that the willingness of national trading groups to invest in the region, whilst having an adverse effect on many businesses which cannot prosper without protection, may nevertheless prove a boon in the long run to those establishments which are more adaptable to change.

Transport, storage and communication, dominated by the railways and the post office, can to all intents and purposes be regarded as an exogenous factor in the region's economy, being geared more to national than local needs. The same is true to some extent of certain types of services provided by the region.

Amongst private services, domestic service, education and accommodation are probably the three most important generators of income and employment at the present time, though with a declining White population, the relative importance of the first-mentioned is probably on the wane.

In the government services sector, the local authorities, although obviously vital and indispensable for the day-to-day functioning of the regional economy, are somewhat overshadowed as generators of growth by the state and provincial authorities.

The fact that many tertiary sector activities in the region are financed by and/or serve the export market sectors renders such activities sensitive to changes in external demand - a fact which holds both hope and danger for the region.

CHAPTER FOUR

RESOURCES AND INFRASTRUCTURE

The region's resource endowments, together with its developmental infrastructure of services, will be crucial parameters for any programme for the area's future development. The former embrace natural and human resources, whilst among the more important elements of the infrastructure are the transport, power and educational services.

Mineral resources

The region is sparsely endowed with known and exploitable mineral deposits of economic significance. Indeed, the lack of such deposits has been one of its greatest handicaps in the inter-regional competition for economic growth in South Africa since the beginning of the mineral development era in the latter part of the nineteenth century.

Extractive industrial activities are generally confined to quarrying operations, mainly for the local supply of building materials. The region appears to be a net exporter of building sand and stone,[1] but the scale of these operations is clearly too small to provide much impetus for further economic growth.

Some exports of clay and kaolin from the Grahamstown district (particularly to the potteries of the Transvaal) do occur (Staude, 1971, p. 11 and Table 3A), but larger-scale exploitation of this valuable asset has been inhibited by its high cost of transportation.[2] A kaolin refining plant is, however, scheduled to commence operations in Grahamstown in 1972 in response to a growing domestic and external demand for processed kaolin from the paper, plastics, rubber and paint industries.[3] Salt is exported from the Teviot salt pans in Maraisburg magisterial district (Staude, 1971, p. 20 and Table 6A), and some exploitation of gypsum deposits near Somerset East has commenced only recently (1972).[4] In all of these instances the potential for attracting large-scale developments requiring these raw materials as inputs would appear to be limited.

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1. Staude's tables (1971) show that gravel, granite and sand are railed from centres in each sub-region (except Coastal) to areas outside the region. Since most of these exports, which in some instances reach considerable volume, are destined for adjacent areas and regions, it is unlikely that significant imports of these commodities occur.
2. Some of the more important users of the clay have their own diggings in Grahamstown, but since railage costs on processed clay are more than double those for the 'raw' material, it pays them to ship the clay to their market-oriented plants, rather than to establish refining plants in Grahamstown.
3. Information kindly supplied by the Managing Director of the firm concerned.
4. See E. P. Herald, May 13, 1972.

Clearly then, barring some form of windfall gain, the role of extractive industries in the region's future economic development will continue to be a relatively minor one.

Water

A lack of sufficient and stable water supplies, particularly in the western half of the region, has exercised an equally if not more serious restraint upon economic growth in the past as has the lack of mineral resources. This factor is reflected in the predominant agricultural land use patterns, in the lack of industrial development and in the low density of settlement in the drier areas.

An indication of its restrictive effect is given by the fact that of the approximately 19 000 hectares originally developed for irrigation in the Great Fish River valley, less than 8 000 hectares could be supplied from existing water resources by 1962 (Badenhorst, 1970, p. 107, and Department of Water Affairs, 1962, p. 5). Similarly, in the upper Sundays River valley, "insufficient water supplies from the Van Ryneveld's Pass Dam have meant that large portions of the original irrigated area have had to be de-scheduled with the passage of time" (Department of Water Affairs, 1962, p. 5). By 1962 only about 2 600 of the 7 700 hectares still scheduled could be supplied with irrigation water from existing sources. These proportions have been declining over the years and are likely to decline further.

Since the indigenous water resources are, and will remain, inadequate for any major form of economic development, little further elaboration is required on this point.

However, the Orange/Fish River Development Project, now in the first of several stages of construction, in which water is to be diverted by means of subterranean tunnels and canals to the Fish and Sundays river catchment areas, is intended to secure adequate water supplies both for the Port Elizabeth/Uitenhage metropolitan area and for its hinterland for the foreseeable future.

The estimates of future supplies from this source include substantial quantities of water for irrigation agriculture, for industry and for urban and domestic uses (Badenhorst, 1970, pp. 107-108, and Department of Water Affairs, 1962, pp. 5-8). For example, the original estimates indicated that almost 97 000 hectares of irrigable land in the Fish and Sundays catchment areas - most of which fall within the Cape Midlands and Karroo region - could be supplied with assured irrigation water supplies (Badenhorst, 1970, p. 107). Subsequent estimates have suggested less ambitious targets, and there is reason to doubt whether the scheme will be extended to include the upper Sundays River valley, as originally proposed (Department of Water Affairs, 1971). Nonetheless, the magnitude of the proposals is clear and should the estimated supply figures be realised, the shortage of water will become a thing of the past in a significant portion of the region. Equally clearly, water will cease to be an inhibiting factor in economic development in the affected areas and will become instead a valuable resource. There are, however, some qualifications.

Firstly, the augmentation of water supplies will be limited to the Fish and

Sundays river valley areas (and possibly only to the Fish), and any water shortages in the higher reaches of the catchment areas are likely to persist. Some of the beneficial effects of the greater supply to irrigation lands may well rub off on the dryland farming regions, but the nature and extent of this has yet to be determined. For urban development purposes it may be possible to pump water from the valley areas to higher-lying towns (such as Middelburg), but this would be a costly venture and no provision has yet been made for this eventuality in the proposals.

Secondly, the substantial revisions made in the estimates in the ten years since the scheme was adopted in principle is evidence of the hazards inherent in projections of this nature. Not only are further revisions possible as detailed planning advances, but some factors and side-effects - such as silting, seepage, evaporation and salinity of water supplies, and the effects on the ecological balance[1] - may remain indeterminate until after the scheme has come into operation.[2]

Land

Previous sections of this report have drawn attention to the wide variations in the productivity of land in the region, with the level of GGP per sq. km. generally being higher in the higher rainfall areas. This would suggest, at first glance, that stabilisation and augmentation of water supplies could lead to enhanced productivity of the land in those areas where water is currently most scarce.

However, an examination of other factors affecting the productivity of the land - soil type, climate, etc. - leads to the conclusion that the assumption of a simple causal relationship between the supply of water and the productivity of the land may not be justified.

In the first place, desert soils predominate in the overwhelming proportion of the region (Badenhorst, 1970, Fig. 4). "As a result of the relative infertility of (this type of) soil and the aridity of the environment, the farming activity in the parts where desert soil is found, is predominantly pastoral in character" (Badenhorst, 1970, p. 21). Moreover, "in general the veld has a low carrying capacity", and livestock types tend to be limited to the hardier sheep and goats, for it is only where fodder can be cultivated under irrigation that cattle are also to be found. Grazing conditions are also unsatisfactory in many areas, particularly in the lower-lying parts. As far as crop cultivation in desert soil is concerned, Badenhorst notes that "dryland cultivation justifies only the production of fodder, while the production of grain for market purposes is not recommended at all". Hence the possibilities for effecting widespread gains in productivity through increased water supplies may well be limited by the inherent characteristics of the soil.

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1. Cf. Badenhorst's remark (1970, p. 69) that "in the research area, natural conditions are in so delicate a state of equilibrium, and are so sensitive, that this balance may be disrupted by the application of even the most favourable agricultural techniques".
2. Some of these factors are discussed further in Chapter Five of this report.

Secondly, there has been a serious deterioration in the veld over an extended period of time, with the encroachment of less valuable vegetation species into areas previously characterised by better veld-types. This deterioration is largely the result of misuse of the land in the past (e. g. by sustained over-grazing) and will continue unless active steps are taken to arrest the trend. It has been estimated that, in the absence of effective action, the veld in the greater part of the region "will degenerate within the next 100 years into practically desert-like(conditions)"(Badenhorst, 1970, p. 69).

In the third place, other factors, such as temperature (and other climatic variables) and advanced soil erosion, are limiting factors in agricultural development in the region (Badenhorst, 1970, Sections D and E).

In the fourth place, in the more densely populated parts of the region, it may be necessary to take steps to reduce or reverse the increasing pressure of population on the land before any significant increases in output can be achieved.

Fortunately, conditions in the river valley areas themselves are rather more favourable. Thus although desert soils predominate in the Sundays and Fish River valleys no less than in the higher-lying areas, particular variations of these soil types, namely "deep grey sandy loams ... are found in narrow strips along the rivers ... On the whole, this soil is rich in organic content and extremely well suited to agricultural purposes where irrigation is effected" (Badenhorst, 1970, p. 20). Since much of this potentially irrigable land is currently being grossly under-utilised; since the problems caused by past misuse and erosion are probably less serious by virtue of the fact that much of the land has lain fallow for many years; and since, as Badenhorst has noted, "the return per hectare is higher on cultivated than on grazing lands (in the region)" (1970, p. 74), it is clear that in this highly localized asset lies the greatest potential for improvement.

As mentioned previously, the development of irrigation agriculture along the river valleys may have indirect beneficial effects on the surrounding dry-land areas. For example, an increased supply of winter fodder from the valley areas would help in stabilising supply conditions in the pastoral farming areas, but it remains to be seen whether the production of relatively low-valued crops, such as lucerne, will be justified in the light of the probable high cost of the water.

In sum, then, as J.S. Whitmore has put it, "farming potentialities ... tends to be determined not so much by the favourable as by the adverse or restrictive qualities of the environment. That is to say, success in farming is mainly a function of the least risk" (quoted by Badenhorst, 1970, p. 54). Seen in this light, it is probable that significant increases in unit productivity of the land can be achieved on only a small proportion of the total land area of the region.

'Amenity' resources

The term 'resources' sometimes tends to be regarded as synonomous only with material and human assets, without which development in an area is not possible. This is, however, a rather narrow interpretation of the term. To

some extent, this viewpoint has been encouraged by both the sector-stage and export base theories of regional economic growth, which have tended to imply that the availability of processable and exploitable raw materials (especially minerals) is an indispensible springboard for the development and growth of regional economies.

The sector-stage theory suggested, on the basis of empirical observations, that the development of most sub-national economies took the form of an evolutionary progression from predominantly primary oriented to predominantly secondary (and later tertiary) industry oriented structures. Thus, development from a near-subsistence economy was assumed to take place initially in response to some internal stimulus (usually technological improvements in production techniques or a reduction in transportation costs) which resulted in the emergence of a market economy, usually based on trade in agricultural commodities. Subsequent specialisation was assumed to lead to inter-regional trade, with the cumulative effects of internal and external stimuli causing a shift from the primary sector (where diminishing returns meant an inability to cater for the growing population) to processing activities, based initially on the area's own primary products, both agricultural and mineral, and later on processed and intermediate products.

Similarly, in the case of the export-base theory, it was external demand for the mineral or agricultural products (the 'export staples') of a region which was assumed to provide the stimulus to the latter's growth and development.

This somewhat narrow conception of 'resources' can, of course, be broadened to include those 'natural' factors, such as location and climate, which aid in the development of material resources. Nonetheless, it is often tempting to regard regions lacking in such material resources as being largely devoid of development potential. This is again the result of empirical factors. In South Africa, for example, apart from the coastal locations, where geographic situation per se together with the 'natural resource' of a developable port has provided the foundation for growth,[1] economic growth and concentration has thus far tended to be confined to areas with rich mineral resources. The developments around the diamond, gold and coal deposits are obvious cases in point.

At that stage when economic development is indeed based largely on minerals development and the growth of raw materials orientated industries, this viewpoint is surely valid. But in the long run, a region's resource endowment is by no means necessarily static, nor is it necessarily confined to mineral deposits, adequate water supplies and 'good' agricultural land (together with favourable environmental conditions for agriculture). The composition of the natural resource endowment varies with changes in demand - which are in turn dependent upon changes in tastes, preferences and the level and distribution of income both at home and abroad - and with changes in technology. Such changes can alter substantially the degree of comparative advantage (or disadvantage) enjoyed by a region in the production and supply of both materials and services.

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1. This is not to suggest that other factors were not also responsible for the growth of the port centres. Thus, for example, the natural endowment of high quality agricultural land, suitable for sugar cane cultivation in its hinterland, was a most important factor in the growth of the port city of Durban.

The decline in the fortunes of the Cape Midlands and Karroo region provides but one excellent example of the dynamic nature of resource endowments in the past. In the earliest days of White settlement, the 'commodity' most in demand was simply land, and this the region in particular and the Eastern Cape in general was able to supply in generous quantities.[1] Subsequently the eminent suitability of this land for the rearing of sheep enabled the region to respond to the growing international demand for wool. Similarly, the region's advantageous situation in relation to the major population concentrations of the day,[2] coupled with the relative productivity of its soil for crop cultivation in the river valley and well-watered areas, was an important, if intangible, resource. But in the aftermath of the discovery of valuable and exploitable mineral resources elsewhere, these comparative advantages were substantially reduced and the nature and quality of the resource endowment changed yet again.

As an economy begins to move from the 'minerals era' to the 'services era', evaluation of the prospects for regional growth "requires us to move away from a definition of resource endowment which sees resources exclusively as tangible materials upon which technology works in the production of goods, and toward one which sees natural resources as including other features of the natural environment which have consequences for economic decisions" (Perloff and Wingo, 1961). This more flexible approach permits the inclusion of the concept of 'amenity resources' - "that special juxtaposition of climate, land, coastline, and water offering conditions of living which influence directly the location of population (and, therefore, of markets), as well as of production" (Perloff and Dodds, 1963, p.46).

As technological advances begin to release many formerly 'place-bound' industries from their strong ties to raw material locations, the influence of the market in locational decisions increases; and regions with 'amenity resources', which exhibit potential for attracting migrants from other regions less well-endowed in these respects, must look increasingly to these resources for their growth potential.

The long-established pattern of out-migration from the Cape Midlands and Karroo region, particularly in the case of economically active Whites, does not necessarily imply that such amenity resources are lacking (although both the trend itself and its underlying causes are obvious obstacles to any attempts to establish market concentrations in the area). Indeed, there are three directions in which the region may well be found to have such resources.

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1. "In the Cape Colony, as in all other new colonies, the relation of land to labour and capital was governed by ... abundance of land, scarcity of labour ..., and scarcity of capital. The result was that ... more land was used in proportion to labour and capital than in the old countries ... It follows that, where land, labour and capital are organised in such proportions, an agricultural and pastoral colony will expand and spread out over a wider and wider area as its population increases, so long as there is still new land available" (de Kock, 1924, pp. 33-34).
2. Several of the most important concentrations - Grahamstown, Graaff-Reinet and Port Elizabeth - were located in or near the region.

In the first place, the relative concentration of educational institutions in the region in the past would seem to suggest the operation of a favourable environmental factor. Moreover, as was noted in a recent report on educational services in the region, "with modern cities providing a less and less attractive educational environment, there is a strong argument for providing educational facilities in places like Grahamstown, Cradock, Adelaide, Graaff-Reinet ... (and) with more differentiated education ... there might be a definite inward flow (of pupils) ... (with) a few of the larger centres ... (coming) to act as magnets" (Morton, 1971). Whilst the further assertion in the report that "the fact of the pupils probably getting employment elsewhere is quite an irrelevant consideration" is highly questionable (as will be shown below), there is clearly a prima facie case for identifying, investigating and exploiting those aspects of the region's amenity resources which would prove attractive to educational institutions.

A second area of potential lies in the increasing number (and in the case of Whites the increasing proportion) of retired persons in the population.[1] Here too, "given a highly mobile population with rising incomes and retirement payments ... it seems certain that the attraction of amenity resources will increase" (Perloff and Dodds, 1963, p. 46). In this respect, the 'special juxtaposition ' of amenity resources in certain parts of the region may be less than ideal; but in those parts where extremes of climate are less frequent and where distances from the major centres are far enough to avoid the less desirable features of the metropolitan environment but close enough to render their wider range of facilities still readily accessible, there may well be a substantially unexploited potential for attracting the more affluent among retired persons.

It should be pointed out, however, that the exploitation of either or both of these two rather different types of potential could have some unfortunate demographic side effects which might adversely affect the overall development potential of the region. The net inflow of persons in the pre-working ages (especially the 15-19 year group), together with the net outflow in the working age groups (especially the younger groups) has already led to some significant distortions in the age and sex structure of the population. In the case of the White population in particular, Truu has noted (1971, p. 51) that the population pyramid (of age groups) "has largely lost the triangular form, moving in broad sections rather than by gradual (quinquennial) steps". This is due to the relatively low incidence of births, the high proportion in the school and vocational training age groups, the low proportions in the child-bearing and working age groups and the high proportion in the advanced age groups, all of which have been caused mainly by patterns of migration into and out of the region. Further 'development' along these lines will, in all likelihood, lead to a lowering of the growth potential of the population. Indeed, since the in-migrants in the younger age groups tend to be temporary residents who are lost to the region again when they enter the working and reproductive age groups, whilst the older age groups generally have a very limited remaining life span, the situation could well be reached where natural increase will decline to negligible (or even negative) proportions, with such in-migration as does take place being essentially replacement in character. In other words, unless the encouragement of in-migration in the younger and in the older age

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1. Between 1921 and 1960, the national proportion of Whites aged 65 and over rose from 3,6% to 6,9% ("S. A. Statistics, 1968", p. A-27).

groups is accompanied by measures which will reduce (and indeed reverse) the out-migration in the working age groups, the former will tend to be self-defeating in terms of promoting regional growth.

A third possibility for exploiting amenity resources is provided by the rapid growth currently being experienced in the tourist industry in South Africa. No single, over-riding element in the character of the region stands out, but a number of lesser features (and incipient activities) might provide a base. Three broad character zones - the coastal area, the mountain area and the more desolate Karroo area - are identifiable in the region and these, together with the suitability of the region for such land uses and activities as nature reserves, game farming, hunting, fishing and other open air activities, might be developed to cater both for the recreational needs of the more mobile sections of the metropolitan populations of Port Elizabeth and East London, and for the domestic holiday and tourist trade. The essentially 'historical' character of much of the region should also not be overlooked.

Any amenity resource which the region has in this respect, however, must be developed in conjunction with the potential of the two adjacent metropolitan areas as part of an Eastern Cape tourist zone rather than as several areas with distinct identities.

Human resources

Evaluation of the quality and potential of the human resources of the region is hindered by the lack of qualitative data. The problem is complicated further by the fact that the composition of the labour force is both a determinant, and a reflection, of areal economic health and development potential.

Because the crude activity rate (the ratio of the economically active to the total population) of the region's White population is low in comparison to the national average (Chapter Two, and Truu, 1971, Table 48), it might be supposed that there is much scope for increasing the work participation rate of the present population. But the crude activity rate is a function of the age structure of the population which in this instance is weighted in favour of the pre- and post-working age groups. Thus, when allowance is made for the large number of young White adults undergoing academic, professional or military training in the region, the general activity rate - the ratio of all economically active Whites to the working age group (15-64 years) - shows little scope for improvement, except perhaps in the case of women (Truu, 1971, pp. 109-110). Moreover, it is probable that, in the light of the relatively high geographical mobility of Whites (especially in the younger adult groups) and in the light of the high level of demand for White labour in the major industrial centres, those Whites who are not able to find work in the region will move elsewhere.

By contrast, there is at first glance very little unutilised potential (in quantitative terms) in the Coloured population, since the general activity rate for males is already higher in the region than in the country as a whole (Truu, 1971, Table 56), although again there may be some scope for improving the female rate. But the economically active population on which these rates are based includes unemployed persons (i.e. persons who, though willing and able to work, are not gainfully employed); and whereas this element is unimportant in the case of the White population, it is clear that a relatively substantial proportion of 'economically active' Coloureds are not in fact gainfully occupied.

This problem is also manifest at the national level, which would explain, at least in part, why all these unemployed Coloureds have not left the region for jobs in the metropolitan areas.[1] The Bantu population similarly has a high unemployment component in an economically active population with a relatively high general activity rate. In the case of both these population groups, therefore, the data do indicate a ready availability of labour in the region, and scope for improving the economic position of the two groups by raising their effective work participation rates.

Some idea of the level of skill and training of the region's population can be gleaned from data on the general educational levels of the three main race groups.[2]

More than one quarter of the total working age (15-64 years) White population at 1960 had passed Standard 10, compared with only about 0,5% for Coloureds and 0,25% for Bantu. Conversely, the number of Whites with no formal education comprised only about 1,5% of the population aged 15-64 years, whereas the corresponding proportions for Coloureds and for Bantu were two-thirds and seven-tenths respectively. The gap between Whites on the one hand and Coloureds and Bantu on the other is clearly an enormous one, which will take many years to reduce significantly. Clearly, too, unskilled labour supply will prove no obstacle to further economic growth in the region.

The position in regard to trained and skilled labour is less sure. However, it should be remembered that, whilst those Blacks who have acquired an education beyond the primary level comprise only a small proportion of the population, they are becoming increasingly important in absolute numerical terms in relation to both the number of openings available to them and to the number of Whites available in the region. Thus, partly by utilising available potential amongst the Coloureds and Bantu, and partly by endeavouring to retain the services of those Whites who obtain their training in the region, it may be possible to obviate a skilled labour bottleneck.

A further possibility may lie in the more efficient employment of existing workers. But the occupational structures of the Coloured and Bantu populations are, as Truu has shown (1971, pp. 132-143), seriously lacking in diversity, being heavily weighted in favour of agricultural and other unskilled and service occupations, and whether they would allow for fruitful re-allocation of labour to help promote new development in the region is open to question. It is probable that, given the low level of education of these population groups in the region, inter-industry and inter-occupational mobility and substitutability is low, and would require considerable retraining and re-orientation of workers.

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1. Other factors contributing to the lower level of Coloured out-migration would include the shortage of Coloured housing in most of the major industrial centres (Chapter Two) and what Truu (1971, p. 137) has termed the "relatively strong element of structural inertia ... among the region's Coloured population".
2. The discussion in the ensuing paragraph is based on the data from Volume 7 of the 10% sample tabulation of the 1960 Population Census results. As the proportions are subject to sampling error, they have been expressed in round figures.

Transport

A transportation system is a sine qua non of any national or sub-national economy which seeks to advance beyond the subsistence and self-sufficiency stage of development, for without transport, the possibilities for division of labour and for specialisation in production are severely circumscribed. So vital is its role that some economists have even been tempted to regard transport as a fifth factor of production in addition to land, labour, capital and enterprise (see, for example, Isard, 1956, pp. 89-90).

The function of transport is to bridge the spatial gap between producer and consumer, not only in respect of final products, but also in all other stages of the production process from the raw materials, through the intermediate to the final stage. Moreover, it performs this function not only in respect of physical goods, but also in respect of services.

In bridging the spatial gap between producer and consumer, transport is at the same time bridging other gaps. For example, there is also a time gap between a spatially separated producer and consumer which must be overcome before trade can take place. To put it more succinctly, "we must recognise the obvious fact that economic activity takes place in a time-space continuum" (Isard, 1951, p. 186).

The bridging of these gaps has, of course, to be reconciled with cost. It is therefore axiomatic that a transport system which is either inefficient (especially in relation to the time-cost factor) or unsuited to an area's needs, or both, will tend to inhibit the realization of full economic growth potential.

The outline description of the transportation network in Chapter Two revealed that the transport infrastructure in the Cape Midlands and Karroo region has been developed in response to, and is largely geared to, the needs of inter-metropolitan flows. Consequently, from the intra-regional viewpoint, several shortcomings are apparent, particularly in so far as interconnection between the main road and rail through-routes as well as links between the main urban centres within the region are concerned. However, in addition to these shortcomings, there is evidence to suggest that in some respects the quality of the existing infrastructure (and services) leaves something to be desired.

In the case of rail traffic, for example, internal movements of goods within the region, as well as imports and exports to and from the region, appear in certain instances to be subject to considerable delays. Staude has reported that, in instances of less than full truck loads, there is a "long delay in consignments ... reaching their destinations". Even when consignments do constitute full truck loads there is "a considerable delay in commodities exported from the research area reaching their destinations" (1971, p. 5).

These delays are the result of the system of pick-up and trans-shipped traffic used by the railways in handling consignments emanating from, or destined for, stations in the region, whereby outward-bound consignments are progressively moved to stations of higher 'rank' with a reverse procedure being adopted for inward-bound goods. Noupoort apparently ranks highest in the region as a 'concentration depot'; Klipplaat, Cookhouse and Rosmead are 'junction depots'; and Grahamstown, Alicedale, Cradock and Graaff-Reinet are 'railway centres' (Staude, 1971, p. 5).

In the case of full truck loads, consignments "are forwarded to the nearest

railway centre where they are attached to through-trains at the earliest convenience depending on the length of the through-train and capacity available". North-bound smaller loads are forwarded stage by stage on the internal services (which utilise only steam driven locomotives) to Noupoort "where they are transferred to a through-train at the earliest opportunity or sent on to the next concentration depot on the main line " (Staude, 1971, p. 5). Although there are a number of direct services operating at certain times between the more distant parts of the region (e. g. Port Alfred-Noupoort once weekly), it is conceivable that consignments may be transferred to another train at several stages of the journey, with obvious consequent delays (Staude, 1971, Table 1).

Unfortunately, additional data which would permit further evaluation of the adequacy or otherwise of the services provided by the railways in the region and of the infrastructure itself, is lacking. Such data might include route mileages (total; per 10 000 population; and per 100 sq km); total tonnages hauled on each line, and total ton-miles travelled, in relation to the capacity of the system (expressed in terms of maximum daily number and size of trains permissible on each line); number of passengers carried and number of passenger-miles travelled in relation to capacity; and travel lines desired by the farming and business communities in particular, as well as their assessments of the efficiency of the services. In this respect it is important to note that the system actually in operation in the region is geared to the economic viability requirements of the railways administration rather than to the explicit needs of the regional economy (Staude, 1971, p. 5),and a coincidence between the two would be an improbable, albeit happy, circumstance.

In so far as road transportation is concerned, Staude (1971) has drawn attention to the disadvantageous effects of the "great distances of main, divisional and minor roads which are untarred in the various sub-regions. These roads are used mainly by the local inhabitants (farmers) ... to transport their products to the nearest distribution centres and ... (they) often tend to lapse into a state of disrepair". Although, as he points out (1971, p. 25), the authorities are "aware of this situation and a number of road surfacing programmes are in progress" it is also true that progress in this direction has been slow in the past and, in the light of the stringent financial controls currently in force in respect of public expenditures, is likely to continue to be slow in the future.

Again, data on which to base an evaluation of the adequacy of the road system is lacking. There is, however, some evidence to suggest that, in relation to capacity, a number of the higher grade roads (national and provincial trunk roads) are under-utilized whilst some of the lower-grade roads are overloaded.

Apart from the road motor transport services of the railways administration there are relatively few commercial transport services in the region, although considerable numbers of transport carriers traverse the major roads which pass through the region. Again, there is a lack of regular services between the main centres in the region.

Clearly the region is in an unhappy situation in that it has been (and still is) possible for planning for national transport needs to take place without much regard

for local needs. This is largely because the traffic flows (of both goods and people) generated by the region are neither heavy nor complex enough to influence significantly the development of the national road and rail systems.

For the future, some of the deficiencies in the region's network of connections are likely to be remedied by current or planned road developments. Thus, for example, surfacing of the Grahamstown-Bedford road, and the planned road from Cradock to Steynsburg, will improve communication between different sub-regions, as will surfacing and realigning the road from Cradock through the Wapadsberg to the Middelburg-Graaff-Reinet road (though this will not reduce the distance and travelling time between Graaff-Reinet and Cradock substantially below that between either of these centres and Port Elizabeth). On the other hand, the opening of the coastal road from East London to Port Elizabeth may result in one of the most important sources of through traffic becoming even more peripheral to the greater part of the region.

In the case of the rail network, no significant developments which might substantially improve the quality of either the services or the network itself are planned for the immediate future. Two very important proposals have, however, been put forward. The first proposal is to link the two north-bound railway lines from Port Elizabeth in an east-west direction, between Somerset East and Klipplaat, and, if accepted will considerably strengthen the system of communications in the region. Similarly, if Grahamstown and East London are linked by rail, as has also been proposed, one of the most important disabilities suffered by the former will be alleviated.

The railways administration has long had a firm policy in regard to the provision of new or additional links in the rail network. This policy has recently been restated as follows in response to the above two proposals: "The Administration is not unsympathetic towards these representiations, but the question of new railway lines is a matter of some complexity because railway construction is an extremely expensive venture. For this reason, it has been firm policy, for some time, to embark upon the construction of new lines only where the line is essential for departmental purposes; where the Administration can be adequately indemnified against operating losses; or where potential development in the region in question is such that the economic viability of such a line is assured".[1]

The outcome of these representations is not yet known, but in the light of this policy statement undue optimism must surely be regarded as being misplaced.

The problem from the region's point of view is not so much whether existing traffic flows would justify the provision of these links - which they evidently do not do - but whether the development potential of the region could "ensure" the economic viability of the links. As will be evident from the discussion in the next Chapter, the development potential of the region is directly dependent upon a number of important and as yet indeterminate policy considerations in which economic viability per se is not necessarily a crucial consideration. But what does seem certain, is that without the provision of new

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1. Speech by General Manager of Railways to the Cape Midlands Development Association Annual Congress at Port Elizabeth, November 16, 1971.

links, such as those proposed, the type of development which could generate the requisite threshold flows to ensure economic viability, is unlikely to take place.

Thus it is that the structural alterations and improvements to the region's transporation infrastructure currently being carried out or planned, will do relatively little to improve economic efficiency and integration beyond the local level or to radically transform the development prospects of existing urban centres, whereas the schemes which might substantially alter the competitive situation of any of these centres are the ones which appear most doubtful on strictly economic grounds.

Power

Power supplies in the main urban centres in the region are derived either from municipal power stations or from Escom, or from a combination of the two.

Escom is currently extending its grid to incorporate the greater part of the Eastern Cape. In addition, apart from the power generation schemes at the Verwoerd Dam on the Orange River, provision has been made for further hydro-electric schemes in the planning of the Orange-Fish river project. One of the most important of these schemes, from the point of view of the region, would be the proposed generating plants at the outlet from the Orange-Fish tunnel.

A shortage of power supplies in the region is therefore not likely to occur, for Escom power will be available to all who wish to purchase it.

However, some of the municipalities in the region produce their power at a lower unit cost than they would have to pay for Escom power, despite the need to import coal supplies from as far afield as Northern Natal. They therefore have an understandable reluctance to relinquish their own schemes.

On the other hand, some of the plants do not appear to be particularly efficient, in that supply breakdowns are more frequest than might be tolerable for any large-scale industries which might wish to be sited in the region. Although further capital expenditure and considerable effort have together reduced the frequency of breakdowns in some instances, it may well be that part of the price which local residents will have to pay for industrial development in the region will be higher consumption charges for electricity.

Educational services

An evaluation of the resource base and developmental infrastructure in the region would be incomplete without some reference to one of its most important 'industries' - education.

The potential for increasing the volume of these services has already been noted, but without any reference thus far to their adequacy in relation to the needs of the region. The educational report mentioned earlier in this Chapter (Morton, 1971) provides some assessment of this factor.

The most important qualitative criticism which the aforementioned report levels against the educational facilities for Whites is that, owing to the "inevitable

time-lag between the evolution of an educational system and the society and the culture that it serves, and from which it stems", these facilities in the region are still geared to the needs of a previous era and a previous generation (Morton, 1971, pp. 1, 3). The criticism is of the lack of 'differentiated education', "which is the unmistakable and ... urgent need of a modern industrialised economy, where the bulk of the adolescent population continue to attend school, to be prepared for something other than the professions and the university" (p. 3). The relative lack of agricultural training facilities in a predominantly agricultural region is particularly conspicuous.

A further point which is made here is that whilst, on the one hand, the fact that all but four of the magisterial districts in the region can boast a high school may appear to reflect a satisfactory provision of educational facilities, on the other hand "educational efficiency is necessarily threatened by the fact that many of the existing high schools are too small to provide the necessary qualified staff and basic facilities to cope with the six-subject matric ... Many of these must, not unnaturally, feel threatened with a drop in status ... But it might be possible to achieve an all-round betterment of the position by a relatively easy rearrangement, viz. the conversion of some of these schools into technical high schools, ... into agricultural high schools, and commercial high schools, ... some to remain as traditional high schools preparing for university entrance, and the remainder to be lowered in status, their pupils being allotted elsewhere" (p. 4).

The report acknowledges that such action would not lack opposition from the general public, as experience in other countries has shown. On the other hand, such conservatism - which is considered to be endemic to the field of education by virtue of the latter's inflexible and highly institutionalized structures - should not be permitted to obscure the existence of a very real need for reform. For, "if any smugness is to be noted arising from the amounts of money spent, the heavy building programmes being undertaken, the increasing enrolments, and other statistical data, it must stem from the application of criteria that belong to the past ... rather than to the present" (p. 1).

The report notes that, in the case of facilities for the Coloured population, "all the districts are well provided with primary schools ... (and that) it looks as if very few Coloured children in the area are missing out on some measure of primary education" (p. 5). They are, however, "missing out almost entirely on post-primary education. In the whole area, there are only two high schools ... (and with) the absence of boarding facilities, the paucity of schools, the long distances and high expenses, ... the probability is that very few (Coloureds) get high school education elsewhere" (p. 5). The lack of both technical and teacher training facilities in the region is commented upon. However, the main conclusion to which the report comes is that "while primary education facilities may not be wholly inadequate, when we consider the increasingly important part that the Coloured population is playing in the commercial and industrial life of the country - not to mention what they are constrained to do in agriculture - the provision of post-primary education within the area can only be judged very inadequate" (p. 5).

Where Bantu schools are concerned, the report considers that the impression obtained is that of "little more than a beginning being made with the onerous task of providing even the foundations of literacy for a large population" (p. 6). Only five magisterial districts provide post-primary facilities. Whilst the numbers of both schools and enrolments might suggest "a fair beginning for Bantu education" in the region, the ratio of teachers to pupils is so low as to create "a state of affairs ... (which) can hardly even create the conditions from

which even a rudimentary education could result ... If the products achieve a minimum literacy, that is all that can be expected" (p. 6). Again, higher education facilities are lacking.

The report concludes that "in such a situation the recommendation for improvement is clear, simple and inevitable. It is, to improve the supply of really well qualified teachers, so as to lower the pupil/teacher ratio, and this is an even higher priority than to provide additional accommodation, urgent as the latter no doubt is. A teacher-training institution really belonging to, and catering for, the area, is therefore an urgent necessity" (p. 6).

Clearly, the report represents an indictment of the adequacy of existing educational facilities in meeting the needs of the region in so far as ensuring that the level and nature of the education of the population will permit the latter to make an optimum contribution to the future development of the area. In the absence of more detailed information, the report's conclusions cannot be challenged in any material respect. They would, however, appear to be subject to two important qualifications.

In the first place, to consider the region's educational facilities in complete isolation from those available in the adjacent metropolitan areas of Port Elizabeth and East London must necessarily place the former in an unfavourable light, for it is axiomatic that they cannot compete with the latter for variety and diversity. (Whether the facilities in the larger centres do, in fact, make good some of the deficiencies in the region's facilities is, of course, another question).

In the second place, it is probable that the criticisms which are valid in respect of the Cape Midlands and Karroo region are similarly valid in respect of many other peripheral and under-developed farming areas of South Africa. The region may therefore not necessarily be at a disadvantage in relation to other similarly placed regions. Moreover, the region is not autonomous in respect of educational policy and control, and the solution to the problems to which the report has drawn attention is a national rather than a regional responsibility.

CHAPTER FIVE

PROBLEMS AND POTENTIALS

In place of a formal précis of the various facts presented in earlier sections of the report, this final chapter takes the form of a discussion of the main economic problems and potentials of the Cape Midlands and Karroo region. After a discussion of the nature of, and reasons for, the type of underdevelopment which the previous chapters have brought to light, the prospects for growth and development in both sectoral and spatial terms are examined, including a discussion of the role of national policies in regional development, with specific references to the Cape Midlands and Karroo region.

THE PROBLEMS

The region is beset by many economic problems, most of which either stem from or are reflected in structural weaknesses in the area's economy. Evidence of these weaknesses is to be found in the lack of functional integration between the different sectors of the regional economy; in the lack of functional specialization amongst, and spatial integration between, the different geographic areas within the region; and in the lack of diversification of economic development, especially in so far as the heavy dependence upon agricultural products in general, and wool farming in particular, is concerned.

The reasons for these deficiencies have been stressed throughout this study. They include (i) the disadvantageous geographic location of the region relative to the major national centres of production and consumption; (ii) the lack of exploitable mineral resources and, a few minor exceptions apart, of processable raw materials; (iii) the instability of the resource base and of the agricultural elements of the export base, not only in so far as the parameters of supply are concerned, but also (in the case of the export base products) of the parameters of demand as well, within an apparent long-term secular trend towards a decline; (iv) the very large 'invisibles' element in the export base - in other words the high proportion of external earnings accounted for by subsidies and other transfer payments to individuals and institutions in the region - as a result of which a large part of the region's export base does not perform the 'classic' role, which it is assigned in the literature, of attracting large-scale inflows of capital, entrepreneurship and labour for the 'capitalistic exploitation' of the base industries (see Chapter Two); and (v) the low purchasing power of the region's population and its low market potential. To these may be added a sixth factor, namely that, in so far as both explicit and implicit regional distinctions and priorities exist in the formulation and implementation of national development policies, the Cape Midlands and Karroo region occupies a relatively low rank, except perhaps in the case of the Orange-Fish river project.[1]

As a result of these disadvantages, deficiencies and weaknesses, the region has been unable to retain its population, to attract development capital, to create

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1. Generally speaking, where existing development policies do indicate regional priorities, the latter have thus far tended to relate only to the development of the Bantu areas or the 'border' areas.

new employment opportunities, and to narrow the 'development gap' between itself and some of the other, more fortunate, regions of the Republic.

Functional integration

The poor functional integration within and between the region's various production sectors can be seen in terms of the lack of strongly developed 'forward' and 'backward' linkages between productive activities. In fact, in Hirschman's view, "the lack of inter-dependence and linkage is ... one of the most typical characteristics of underdeveloped economies" (1958, p. 109). Hirschman defines these linkages as 'inducement mechanisms' for growth (1958, p. 100). Thus the backward linkage effects are related to the provision of inputs through a process of derived demand, "i. e., every non-primary economic activity, will induce attempts to supply through domestic production the inputs needed in that activity", whereas the forward linkage effects are related to utilization of outputs, in that "every activity that does not by its nature cater exclusively to final demands, will induce attempts to utilize its outputs as inputs in some new activities".

In other words, these linkages are an important means for promoting growth and fostering economic diversification. In any economy (whether of a region or a country), the establishment of an industry A, requiring as input a particular commodity, X, enhances the probability of the emergence of backward linkages. In other words subject to the attainment of the requisite threshold levels, another industry, B, might be established to produce commodity X for use by industry A.

Similarly with forward linkages, where the existence of industry C, producing commodity Y, enhances the possibility of establishment of industry D, which requires Y as input. These backward and forward linkages become most highly developed when A and C are the same industry, both processing and producing intermediate goods rather than processing raw materials and producing final consumption goods.

It is, of course, obvious that the secondary sector provides the greatest potential for the development of these linkages; and since the secondary sector is, and always has been, of minor importance in the region, the lack of such highly developed linkages in the area is self-explanatory. But even allowing for the fact that the expectation of highly developed linkages in the region would be unrealistic, such linkages as do exist appear particularly weak.

Theoretically, as Hirschman notes, "by definition, all 'primary' production should exclude any substantial degree of backward linkage ...". However, as modern methods of capital intensive, mechanised and scientifically based 'primary' production are a far cry from the original and technologically primitive character of the primary sector, agricultural development can foster backward linkages, calling for the production of specialised feeds, chemicals, machinery and other equipment.

In South Africa, backward and forward linkages from commercial agriculture have been studied by Brand (1969a and 1969b). Using the classificatory terminology of the International Standard Industrial Classification (ISIC), Brand has confirmed (1969a, Chapter 6), that, on the national level, backward linkages

from agriculture to manufacturing industry (in the case of current purchases) are strongest in the case of three major industry groups, viz. food, beverages and tobacco; chemicals and chemical products; and metal products. Since it is difficult to envisage that agriculture in the region might provide even a moderately high level of demand for any other major category of manufacturing industry, these three major groups can be assumed to represent the main potential suppliers of material inputs for agriculture in the region as well.

In the case of the food, beverages and tobacco group, backward linkages could be expected to be limited to the production of animal feeds. (To the extent that the necessity to feed the farming population itself can be regarded as an 'input' in the agricultural production process, the backward linkages which could be generated by this factor in the region are severely limited by the relatively low levels of rural population density.)

The fact that, in 1967/68, there were three animal feeds establishments in the region (Table 3.17) producing some 3,8% of the total value of the net output of such industries in the Republic and accounting for some 4,7% of total employment generated by them,[1] does reflect the existence of some backward linkages in this instance. But in the case of chemicals and chemical products, no fertiliser or pesticide factories were located in the region in 1967/68 (although the animal feeds factory at Somerset East does also produce fertilisers). Similarly, in the case of metal products, there were no establishments manufacturing fencing wire, gates or pipes (which would presumably be the metal products most demanded by agriculture), though there was one very small-scale sheet-metal worker and nine manufacturers or repairers of 'other' metal products - presumably small engineering works.

Backward linkages from agriculture to the capital goods and construction industries are probably also weak, partly because outlays on new buildings and works represent a relatively small proportion of gross fixed capital investment in agriculture in the region and have not increased (even in money terms) in the past decade (Table 3.14), and partly because a considerable proportion of these works are probably undertaken by farm labourers (Brand, 1969b, p. 175).

Agriculture has also proved to be a limited source of final demand for the output and services of tertiary sector establishments in the region. Apart from the probable accrual of a substantial proportion of farmers' consumption expenditure to shops outside the region, the range of inputs required by the extensive types of agriculture undertaken in the region appears to be restricted. Thus, for example, in 1964/65, 1965/66 and 1966/67, the maximum number of balers, harvesters, threshing machines, mowers and other mobile items of farming equipment licensed in the region was only 13, 4 and 15 respectively[2] - hardly sufficient to rouse the enthusiasm of agricultural implement distributors, let alone manufacturers. Again, farming enterprises in the region create (or have thus far created) little demand for specialized production or advisory services, apart from those provided by government agencies.

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1. Calculated from Department of Statistics Report No. 10-21-14 and from unpublished data supplied by the Department of Planning.
2. The figures are maxima because they fall within a vehicle licensing category which includes road graders and rollers, frontloaders, mechanised shovels and other mobile construction equipment in addition to the items listed above.

Forward linkages from agriculture to secondary industry appear equally unsatisfactory. The main agricultural product is, of course, wool; yet at 1967/68, there were no textile establishments in the region - not even a single woolwashery. Of food processing firms, for which the possibilities of strong forward linkages from both crop and livestock production exist, there were a number in the region in 1967/68, but more than a third were bakeries, which are really only local service industries.

In the absence of precise studies of the locational factors underlying the establishment of industries utilizing agricultural inputs, it is possible only to surmise about the reasons for the failure of new linkages to emerge, and existing linkages from earlier times to be retained.

In the case of wool, its export orientation is probably the crucial factor. With the centralisation of the commodity markets for wool in the major port centres, the gravitation of associated activities to those centres is to be expected. The lack of any textile or clothing factories producing woollen fabrics or finished products may be due to the predominance of other locational factors in the siting of such establishments. In fact, the table of inter-industry transactions for the South African economy as a whole in 1956/57 shows that only 5,6% of the total value of inputs for the textile industry was derived directly from supplies from the agricultural sector (although there is some indirect linkage due to purchases from other production sectors which in turn use agricultural products as inputs) (du Plessis, 1962, Table 1). Thus market orientation, availability of suitable labour, and accessibility to other inputs - especially imports, which accounted for over 62% of the total value of inputs (du Plessis, 1962, Table 1) - were probably the decisive factors. Even though import substitution may have made these industries more 'footloose', the locational 'pull' of the wool producing areas themselves is unlikely to have been substantially enhanced.

The relative lack of food-processing industries in the greater part in the region can presumably be ascribed to the relatively small (and unstable) contribution to agricultural output of foodstuffs which are not produced for final consumption. In the pastoral areas, livestock production for red meat purposes has tended to be of secondary importance and slaughter stock are sent to the main market centres. In the areas where cultivation is of greater economic importance, such as the Coastal sub-region, the metropolitan areas of Port Elizabeth and East London have been sufficiently close to render the location of (say) pineapple canning factories less economic in the growing areas themselves. In the case of chicory, the probability is once again that the root is low in value relative to the value of the output of its utilizers, with the result that the commodity is exported from the region in a relatively unprocessed state.

The relationship between the primary sector as supplier and the tertiary sector as consumer is also less than ideal. Firstly, the slow growth of purchasing power in the region has meant the lack of a stimulus to greater efficiency and productivity in the production of foodstuffs, especially in the immediate vicinities of the main urban centres. Secondly, the nature of the centralised marketing systems of some of the various commodity control boards, whatever advantages they may bestow on local farmers, do sometimes have the effect of inhibiting the establishment of stable producer-consumer links in the marketing of fruits and vegetables. Thus local producers may, from time to time, be required to market their products in more distant (and unfamiliar)

market centres, whereas local purchasers may find the local markets flooded with goods from outside the region. Thirdly, attention has already been drawn to the practice of certain large institutions in the region of purchasing their requirements, including those of fresh foodstuffs, from places such as Port Elizabeth rather than from their local markets - a factor which could understandably prove irksome to some of the region's primary producers.

Spatial integration

Evidence of the lack of spatial integration within the region also abounds in this report. Examples are the deficiencies in the network of connections between the various parts of the area, the relatively self-contained trading areas in the five sub-regions, and the relatively low levels of economic flows between them. In so far as this latter aspect is concerned the relative paucity of inter- and intra-sectoral linkages in the region is evidence not only of a lack of functional integration, but also of a lack of spatial integration, since it is a contributory factor to the lack of specialization and trade amongst the various sub-regions.

Poor spatial integration is also evident to some extent in the relationship between the main urban centres in the region and their respective rural hinterlands. The latter do not always provide wholehearted support for the urban economies, which are in turn too weak not only to provide all the commodity requirements of the rural population but also to absorb the surplus labour which is displaced from the surrounding farms.

But spatial integration appears to be deficient not only between the constituent sub-regions and between the urban and rural areas within the region, but also at a third level, namely, between the region itself and its metropolitan foci.

Once again, this can be illustrated by reference to inter- and intra-sectoral relationships, this time considering the region together with the metropolitan nodes of Port Elizabeth/Uitenhage and East London/King William's Town. In this respect, it would appear that full advantage has not been taken of the possibilities for promoting integration.

For example, in the case of agriculture and secondary industry, there were only two animal feeds and two pesticide factories in Economic Region 08 in 1961/62;[1] and although there were 51 metal products establishments, of which 7 manufactured fencing and wire products and one supplied metal pipes and fittings, they were evidently small-scale operations. Thus, although these 51 firms represented almost 11% of all manufacturing establishments in Economic Region 08 at 1961/62, they accounted for only 4,2% of gross value of output. In Economic Region 18 there were 3 animal feeds factories in 1961/62, but no pesticide or insecticide manufacturers. Similarly, although there were 13 metal

1. As the 1967/68 industrial census tabulations made available by the Department of Planning did not include the data for Economic Region 08, the 1961/62 figures were the latest available. They were taken from the Bureau of Statistics' Special Report No. 304.

products establishments, including three producing cable and fencing products, accounting for 6,5% of all manufacturing establishments in the area, their combined contribution to gross value of output was only 2,0%, indicating again that they were mainly small-scale establishments.

Forward linkages from agriculture were again most unsatisfactory, because in 1961/62, Economic Region 08 possessed only 8 establishments concerned with the scouring, combing, dyeing,spinning, weaving and knitting of woollen products compared with 32 such establishments in Economic Region 01 (Greater Cape Town), 4 in Economic Region 18, 46 on the Witwatersrand and 20 in Economic Region 30 (Durban/Pinetown). Similarly, food processing firms appear to have been under-represented in Economic Region 08 at the same date in comparison with other centres.

Equally striking is that the motor industry - king-pin of the economy of the Port Elizabeth/Uitenhage metropolitan area - derives, and has sponsored, virtually no support from the hinterland areas.

Further evidence on the relative lack of integration between the region and the metropolitan areas comes from the nature of the transport flows. Although the communication axes from the two metropolitan areas to the interior are of national importance, the great majority of flows along these axes are in the form of through-traffic, the flows actually destined for, or emanating from, centres in the region being very weak by comparison.

The reasons for the lack of spatial integration at the three different levels of regional, sub-regional and local activities can be ascribed to a large extent to the relatively low levels of volume and intensity of economic activity in the constituent parts of the region. Unfavourable environmental circumstances, low population densities and poor resource endowments are all relevant here, but physical barriers to communication and the differences in land uses (especially in agriculture) between the different sub-regions have also been inhibiting factors in the promotion of areal integration. It is doubtless such factors as these that led Board, Davies and Fair to the conclusion already noted in Chapter One that the metropolitan regions and the nodal structures "centred upon Port Elizabeth and Uitenhage lack the cohesion and continuity of organization beyond the immediate environs of the nodes" (1970, p. 385).

The importance of spatial integration in modern economic development should not be underestimated. Increasing specialization of economic activities, both functionally and spatially,necessitates a concomitant increase in 'trade' - which can here be defined in the widest sense of 'interaction' - and in the removal of obstacles to such trade. When the place of residence and the place of work, the point of production and the point of consumption were spatially coincident (e. g. in the self-sufficient farm unit), 'trade' was a dispensible activity. But with increasing specialization and division of labour, and particularly with increasing functional and spatial differentiation and separation of all economic activities, the need for reintegration becomes imperative. Thus, as housing estates become distinct from industrial estates, and both in turn become distinct from 'business centres'; as farming operations in different areas become more and more specialized; and as the distinction between the urban area and the rural area (and between the urban and rural way of life) grows ever more clearcut, so does the need to improve and facilitate interaction increase accordingly.

As Friedmann has pointed out in relation to the emerging city-region phenomenon, this "integration of activities has ... (to be) achieved along both physical and economic lines" (1955, p. 68). Physical integration can be achieved "by the geographic orientation of all activities around a common centre", but the essential requirement is for a system of interlinkages "providing for maximum mobility and flexibility of movement".

Whilst the Cape Midlands and Karroo region, even when linked with its metropolitan core, is far from becoming a city-region of the type which now characterises the spatial structure of the American economy, the principles which Friedmann enunciated appear no less valid in the present instance. The lack of 'primacy' in the region, the lack of a system of interconnections permitting "maximum mobility and flexibility of movement" are clearly amongst the most serious problems.

Equally problematical is the apparent lack of functional and spatial integration between each urban area and its adjacent hinterland. As Friedmann (1955, p. 70) put it (albeit again with specific reference to the "economic foundation and rationale of the city region"), "the economic cohesion and interdependence of rural and city areas is the immediate and necessary result of what has aptly been called an 'equal trade' economy. Equal trade arises where rural and city people each supply the other with the basic necessities for living. Rural people today are almost entirely dependent upon the central city for many basic services, shopping facilities, and the more urban forms of recreation. Similarly, the city depends for its continual prosperity on the prosperity of the population within its trade-service area."

Such an equal trade relationship would appear not to exist in the Cape Midlands and Karroo region, although some of the activities and viewpoints of such bodies as the Cape Midlands Development Association, the Midlands Chamber of Industries and the Regional Chamber of Commerce suggest that there exists a somewhat greater implicit recognition of its importance in the broader region comprising both metropolitan Port Elizabeth and its hinterland.

This lack of an equal trade relationship is particularly relevant in the case of the Cape Midlands and Karroo region itself in the light of the failure (or inability) of the region's urban economies to hold captive the custom of their hinterland residents and to absorb the population displaced from their adjacent rural areas, especially where socio-political factors have operated to prevent such displaced persons from migrating freely out of the region to seek employment elsewhere. Obviously, it is these same weaknesses that prevented the region from retaining those people who have actually left the area for greener pastures.

Diversification of economic development

These, then, are the problems with which the region is faced. But the question remains as to why they have persisted, and why, in times past, when agricultural exports from the region were running at a high level and the balance of trade with the 'rest of the world' may well have been favourable, this substantial inflow of funds from 'abroad' resulted in little in the way of the economic development which the export base theory, for one, might have led one to expect.

Even in subsequent years, when with the decline of agriculture, the emphasis in the region's economic base appears to have shifted to the tertiary sector, and particularly to the public sector, with the deterioration in the region's balance of trade being compensated for, at least in part, by capital inflow, again no economic development of any consequence has resulted. Instead, there is evidence that the economy is contracting or, at best, marking time.

In other words, why have these relatively large inflows of funds into the region, whether in periods of prosperity or of declining income and consumption, not led to the expected growth and development via the multiplier and acceleration effects?

The answer in the case of the earnings from agricultural exports, and especially from wool and mohair, lies partly in the highly disparate distribution of these earnings amongst the population of the region, partly in the highly dispersed spatial distribution of the newly created incomes, partly in the wide fluctuations to which such earnings are subject from year to year, and partly in the manner of disposition of the earnings by the recipients. All these factors have represented 'leakages' in both the income and employment multipliers as a result of which the substantial secondary increases in incomes and employment which, in terms of the export base theory, might have been expected to follow from the primary (initial) increases, have not materialized (see, for example, Wadsworth and Conrad, 1965; and North, 1959).

Thus, as the previous Chapters have shown, personal incomes in the region are highly concentrated in the hands of the minority White population of the rural areas and it is to this group that the greater part of the export earnings accrue. That some of the thousands of Coloured and Bantu labourers employed by these White farmers benefit directly and indirectly from the increased prosperity of the latter is not gainsaid, but that these benefits are disproportionately small is beyond dispute. Hence the potential increases in local consumption expenditure are somewhat narrowly based (North, 1959).

Secondly, because of the low White rural population densities, these potential increases in consumption expenditure are spread over such wide geographic areas that the resultant increases in effective demand are spatially dissipated and thus do little to enhance the possibilities of scale or other agglomeration economies for traders in the urban centres.

The effects of these two distribution factors are further compounded by the wide and unpredictable fluctuations in agricultural earnings from year to year and by the lack of any evident long-term secular trend towards an increase in the total real value of agricultural earnings. (Indeed, that the reverse may be true is a very real possibility.)

Finally, in addition to these 'internal leakages', there is a large 'import leakage', in that a substantial (albeit indeterminate) proportion of farmers' outlays, whether for investment, or for current expenditure purposes, for their farming enterprises, or for personal consumption expenditures, is devoted to purchases (imports) from areas outside the region. To the extent that earnings from exports are devoted to such purchases, the multiplier and accelerator effects of these earnings are reduced (Wadsworth and Conrad, 1965; North, 1959).

The shift in emphasis in 'basic' activities towards the tertiary sector in recent years has unfortunately effected little improvement in the region's ability to attract and retain development capital, especially for directly productive activities, as import leakages have remained a serious problem. Indeed, in the case of some capital works projects financed by outside agencies, even the primary increases in income and employment in the region have been lower than might otherwise have been the case, because contracts have been awarded to outside firms who in turn, have imported many of their supplies, and possibly even some of their more skilled personnel. If the latter do not come as permanent in-migrants, not only is the stimulus to internal demand in the region similarly temporary, but inevitably, a greater or lesser proportion of their earnings will be remitted to other areas.

Moreover, the capital works undertaken have largely been of the infrastructural, or social overhead, type (roads, dams, irrigation projects, prisons, schools, law courts, etc.) with a limited capacity for direct generation of additional income and employment over and above the original stimulus. Even the latter is not necessarily permanent as the demand for labour on such projects is frequently of a 'revolving' character, which falls away completely if no further projects are undertaken when current projects have been completed.

Thus, whatever the source of the export earnings, as a result of the import leakage and of the impermanence and uneven distribution of the newly created incomes and employment opportunities, the increases in local consumption expenditure have been insufficient to raise effective demand to a level at which additional investment in more productive capital could have been induced. There has clearly been little justification for investment in productive capacity which would rely either for its inputs, or for its markets, on local rural sources of supply and demand. Moreover, it would have been the unstable agricultural sector which would have been the primary private source of savings, and hence of investment capital, and this would have resulted in a further element of uncertainty.

Finally, of course, when all these factors which have led to a dissipation of the potential multiplier-accelerator effects of the region's substantial export earnings are placed in the context of the area's inherent overall locational disadvantages and of the obvious disabilities (lack of resources, etc.) under which it has suffered, the lack of economic diversification in the area becomes wholly understandable.

THE POTENTIALS

It has already been suggested (Chapter Three) that the region is caught in a vicious circle of under-development. Its comparative lack of development potential has been one of the fundamental causes of its economic ills. In particular, there is the low volume level of economic activity, resulting in structural deficiencies, a lack of economic diversification and a general lack of employment opportunities on the one hand and the separate but related factor of the low level of economic welfare of its population, resulting in a lack of market potential, a lack of local sources of development capital and a loss of human skills and resources (both as a result of out-migration of trained personnel and as a result of the low level of training of the residual population) on the other hand. But these socio-economic problems in turn have lowered even further the region's ability to attract significant volumes of economic

activity and raise the general level of welfare of its population.

Clearly, if the region is to experience any noteworthy economic growth and development in the future, this self-perpetuating process must be interrupted.

Equally clearly, this interruption can only be achieved either by overcoming or obviating the fundamental locational and other inherent disadvantages of the region, of which its unfavourable economic structure is but a reflection, or by alleviating the socio-economic problems from which it suffers, or both.

The foregoing discussion will have shown that, under the present economic structure, the scope for mutual reinforcement and functional integration of the different economic sectors will remain limited, even if the ailing wool and mohair industries should stage a healthy recovery.

However, the region's position in this respect is not entirely without hope. Possibilities for improvement do exist, and whilst sight should not be lost of the integrated and inter-related character of the various factors, these possibilities can be discussed under the broad headings of primary, secondary and tertiary activities, and of the possibilities for improved spatial and functional integration of the region's economic structure.

The primary sector

As was noted in Chapter Four, apart from some localized deposits of clay and a few other non-metallic minerals of use to the construction industry, the region appears not to have any significant mineral deposits. The path to economic prosperity will thus have to be travelled without the obvious benefits which can accrue from large-scale mining operations, and the fortunes of the primary sector will depend almost exclusively on those of agriculture.

The problems of the region's agricultural industry, as presently constituted, are two-fold, in that they involve both environmental disabilities and unstable markets. These difficulties apply to both stock and crop farming, the latter being possible only under irrigation in most parts of the region.

In the case of stock farming, the recent nation-wide stock reduction scheme represents a major effort by the state to alleviate some of the problems caused by over-stocking of the land. Whether or not, in the overall context, the effects of this somewhat controversial scheme will ultimately prove to have been highly beneficial to the industry or a less-than-optimal device for the re-allocation of agricultural resources, to the extent that it will safeguard a valuable resource and promote a more scientific approach to farming in the region, it represents a potentially important contribution. Similarly, to the extent that farming units are of uneconomic size and to the extent that further sub-division of agricultural land is, in fact, an undesirable practice, the legislative controls recently placed on the subdivision of agricultural land throughout the Republic will doubtless have arrested any tendency which may have existed towards such a trend in the region, and may well even promote the apparent secular trend towards larger farm sizes. But whether these measures will be sufficient to effect such sweeping reforms as may be necessary to place the management of agricultural land on a sound footing remains to be seen. In this respect, the recommendations of the

recent commission of enquiry into agriculture (the 'Marais commission') and the current commission of enquiry into rural reform (the 'du Plessis commission') will be relevant.

As far as the demand for the region's major livestock products - wool and mohair - is concerned, there is little that can be done, at least in the short term, although state subsidies will naturally be of considerable assistance in keeping farmers on the land. Whether the new marketing arrangements will introduce greater stability into the industry or not remains to be seen; but even if wool regains its competitive position, it will be necessary to safeguard farmers against a repetition of the events of recent years if pastoral agriculture is to play any substantive role in regenerating economic growth in the region.

But it is, of course, the Orange-Fish River project which holds the greatest promise for agricultural development in the region. Like similar projects elsewhere in the world, this project, long dreamed of but accepted in principle only in 1962, captured the imagination of many with its proposals to transform the all-but-dormant upper Fish and upper Sundays river valleys into thriving and prosperous major irrigation settlements, by providing their thousands of morgen of potentially irrigable land with the requisite quantities of water of which nature (and man's negligence) has deprived them.

Since the lack of water is one of the most severe of the fundamental disabilities from which the region suffers, if the original promise of this scheme were indeed to be realised, the results could well be revolutionary. Subject to the ability of the scheme to deliver the water at a less-than-prohibitive cost to the consumer, the opportunity would be afforded to provide the region with the stable, viable, and diversified agricultural base, the lack of which it has felt so keenly. More than that, the water, with its associated hydro-electric power schemes, could raise the two river valleys, well-integrated as they are into the inter-metropolitan road and rail communications axes, and well-situated as they are in relation to the harbour at Port Elizabeth, to the status of high-priority 'development axes'. Such development axes would attract development capital, industry and population, the beneficial effects of which would be felt not only by the areas immediately affected, but also by the entire associated catchment areas. Indeed with sufficient scope for the realization of scale-economies, the region's geographical situation - approximately equi-distant from all the major market centres of the Republic - could conceivably become one of its greatest assets, even though it has operated so much to the area's disadvantage in the past.

Such was the grand design. For some, it remains a dream soon to be fulfilled. But for others, the souring of their expectations has surely been a painful and bitter disappointment. For in the ten years since the details of the scheme were first announced, and then accepted in principle by Parliament, a number of doubts have arisen.

For example, whilst the first White Paper (Department of Water Affairs, 1962) mentioned with assurance the inclusion of the upper Sundays river valley, the third supplementary White Paper (Department of Water Affairs, 1971) stated that "according to information available now it must be considered to be unlikely that this portion of the project will be justified economically ... however, it will

in any case not be possible to give any attention to this for the next 15 years". Apart from this severe blow to the western portion of the region, the total cost of the project has risen astronomically. Consequently, in the light of the stated principles (in the 1971 White Paper) "that water rates for irrigation ... will be levied to cover at least the operating costs plus a part of the interest on and redemption of capital" (p. 6) and that only soils which can demonstrate "a positive or at least an equal benefit-cost ratio" (p. 5) will be considered for inclusion, the development and diversification potential of the Fish River valley may also be curtailed (although the newly added rider that "all suitable soils, and not only those that can be commanded by gravity, will be considered for irrigation if it can be justified economically" may compensate somewhat for this factor).

There are other unresolved queries, despite the fact that the water is due to start flowing through the Orange-Fish tunnel in 1974. Thus, for example evaporation still represents an unknown factor, as do the possible changes in the salinity levels of the water and in the ecological balance of the affected areas (see Chapter Four above). Similarly, whether and to what extent the effects of the increased water supply will rub off on the dryland farms in the wider catchment areas is still not clear at this stage. The scale of development in the river valleys which will be generated by this project will thus depend on the quantity, quality, stability and cost of the water supplies which will ultimately materialise.

Despite these numerous doubts and problems, however, there can be no doubt that the theoretical potential is enormous. Since the scheme proposes large-scale allocations of water not only for irrigation agriculture but also for urban and industrial uses, with long-term provisions for increased allocations for the latter if necessary, the possibilities for integrated economic development with well-developed forward linkages (say) to food manufacturing concerns, and backward linkages to implement and other agricultural input manufacturers, will be legion.

Thus, whilst it will be necessary shortly to sound some notes of caution about placing too much faith on the ability of agriculture to solve the region's problems, especially in the short term, the re-emergence of the Cape Midlands and Karroo region as a prosperous farming area may well become a reality in the future.

The secondary sector

Turning to the secondary sector, since manufacturing industry is widely recognised as a most powerful generator of economic growth, it is not surprising that some people in the region prefer to pin their hopes for the future on industrialisation, rather than on the rehabilitation of agriculture. Since water is one (though by no means the only) sine qua non of industrial development, these hopes are similarly based on, and nurtured by, the Orange-Fish-Sundays scheme.

They are, however, also based on a number of other advantages which, it is claimed, the region could, with government assistance, offer to industrialists. These include ample supplies of non-White labour; an improving situation vis-à-vis the country's major market centres due to improved communications and to the increasing development of other hitherto peripheral areas (such as the

'border' areas); the greater attractions to White workers, compared with the 'border' and 'homeland' industrial areas, of urban life in the region, with an established and developing infrastructure of schools, shops, services, recreational and other facilities, but without the congestion and pressures of the 'big city'; the availability of industrial land at competitive prices; and assured power supplies from an expanding Escom network.

On the one hand, it is understandable that the urban areas should be increasingly looked to for a solution to the region's problems and that the need to attract industry on a significant scale to one or more of the region's centres should be considered self-evident. In particular, to those who recognise that the flow of population from the land will continue but who wish to retain the people concerned within the region, industry appears to provide the only satisfactory answer. In addition, as has been shown, the urban unemployment position amongst both Coloureds and Bantu is serious and is likely to deteriorate unless work opportunities are provided or unless those who wish to work are permitted or encouraged to migrate to areas with a need for, and a capacity to absorb, additional non-White workers.

On the other hand, it has also been demonstrated that it is an inescapable fact that the inherent disadvantages of the region for industrial location in comparison with many other centres far outweigh the advantages. Hence, in the initial stages at least, industries will not be attracted by the intrinsic merits of the area, but only as a result of state subsidization on a large scale, in the form of 'growth point' designations and of concessions and grants to offset disabilities suffered in respect of discriminatory rail tariffs against finished products and other disadvantages.

Naturally, if assistance of this nature can be obtained in attracting industries, it may well be possible to establish a nucleus of industries on which to build in the hope of effecting significant changes in the structure of economic development in the region. This factor is given added weight by the consideration that, although clearly also a long term undertaking, industrialization of the right type would be likely to induce growth more rapidly than the rehabilitation of agriculture - a point which will be taken up again later.

In this respect, those who have devoted their energy to promoting the industrial development of the region, have been encouraged by the fact that, to date, four centres in the region - Grahamstown, Middelburg, Graaff-Reinet and Adelaide - have been granted a form of preferential status enabling them to qualify for assistance in attracting new industries. Since these are relatively recent developments, it is clearly still much too early for the availability of these concessions to have had any effects on industrial development in the region. However, as in the case of agriculture, many of the arguments put forward in regard to the industrial potential of the region are rather too simplistic for the real-world situation with which they must contend, and both the value of these 'border' area concessions and the constraints upon effective industrialisation in the region will be evaluated shortly.

The tertiary sector

Since many tertiary activities are dependent for expansion on growth in local population and purchasing power, they are unlikely to induce growth in their own right. There are, however, a number of activities which do offer

possibilities for growth. These are the activities which form part of the region's economic base. For purposes of discussion they can conveniently be dealt with under the broad headings of 'tourism' and 'services'.

Apart from the brief mention of the region's tourist potential in the previous Chapter, a significant omission from this report, and indeed from the other investigations hitherto carried out in the various surveys of the Cape Midlands and Karroo region, has been any detailed reference to the question of tourism. But sight should not be lost of the possibility that the attraction of tourists could hold considerable potential for expansion and diversification.

The potential importance of tourism to the national economy is widely acknowledged and the possibility that the tourist industry, in all its ramifications, could play a significant role in improving the economic well-being of the region thus deserves closer investigation.

It is, of course, true that the region is far from being well-endowed with individual scenic attractions whose grandeur will draw tourists from all parts of the world. However, as noted previously there is little doubt that parts of the region, such as the Karroo, the eastern mountain zone and the southern coastal areas, have a distinctive ecological character which is not without its potential attractions to holiday-makers and vacationers from other parts of Southern Africa. Exploitation of this potential would provide a stimulus to the growth of accommodation and other services related to travel, and the region's shops would also benefit. Naturally, this would require a large amount of risk capital and a heavy investment in the requisite infrastructure - but so would most other development programmes for the region.

In so far as services are concerned, numerous references have been made earlier in this report to the valuable role played by education and by public administrative services in the regional economy. In Grahamstown, Graaff-Reinet and Fort Beaufort/Alice in particular, the urban economies are dominated by these activities. Since the latter are to a significant extent oriented towards the export market sectors (albeit as invisibles),they are not dependent only upon local factors for their expansion.

In view of the ease of access from most of the main centres in the region to Port Elizabeth, and to a lesser extent, to East London, there may well be considerable scope for the establishment and expansion of services which could serve the metropolitan centres without necessarily being located within them. Those which spring most readily to mind are the activities which have proved to be viable in the region in the past, such as education, research and certain types of health and welfare services, but further investigations may well bring to light other possibilities.

The task of promoting such activities will, however, not be an easy one, as the tendency towards centralisation is strong. This is illustrated by the recent decision to transfer most of the activities of the SABC from Grahamstown to the metropolitan area, by the decision to close the teachers' training college in Grahamstown and build a new one in Port Elizabeth, and by the strong pressure being exerted for the establishment of a Supreme Court in Port Elizabeth.

The role of government agencies in this respect is crucial, as is the set of criteria for determining the regional allocation of public funds for investment. The success of this suggested strategy would depend upon the ability of the region to secure the co-operation of these agencies and to motivate the region's

case for a larger allocation of such funds. If successful, this would represent an effective (albeit less obviously spectacular) means of underpinning the economy of the region and particularly of its urban centres.

Functional integration

It is doubtful whether a general consensus exists at the present time on the best approach to future planning in the region or on the most effective strategy for achieving growth and development in either the short or the long term. Thus, for example, there is a fervent hope and belief amongst some that the only salvation for the area lies in attracting industry. Others, on the other hand, appear to see the solution rather more in terms of a programme of rural rehabilitation and reform. This would have as its prime objective the reorganisation, rejuvenation and diversification of agriculture, with the urban centres functioning primarily as local but nonetheless comprehensive, service centres for their rural hinterlands, and acting as absorption centres for those displaced from the land, thereby retaining the population on the platteland, if not actually on the farms. A third viewpoint, based more on tertiary sector development, would see the acceptance of rural depopulation and the decline of farming as inevitable and perhaps irreversible, but would seek to ensure the survival of the region's urban centres by developing them as service centres for the adjacent metropolitan areas.

The foregoing discussion has revealed that each of these approaches has its possibilities, but it was intimated that a number of constraints exist which require that optimism on any score must be tempered with caution. Stress was also laid on the fact that many formidable obstacles will clearly have to be overcome if the region is to achieve any significant degree of economic advance, and particularly on the fact that none of the individual sector-oriented approaches could afford to ignore the inter-relatedness of all aspects of economic development. In this section, it is proposed to examine the possibilities for, and the obstacles to, the achievement of the functional integration which is a prerequisite for growth and development.

Those who pin their hopes largely on agriculture as the means to economic revival, can draw some support from North who, though he concedes that "despite the existence of a few dissenters there seems to be agreement amongst many economists that agriculture contributes little to economic growth" (1959, p. 943), nonetheless argues cogently that "the successful production of agricultural ... commodities for sale without the region can be and under certain conditions has been the prime influence inducing economic growth, the development of external economies, urbanization, and eventually industrial development" (1959, p. 944).

The "certain conditions" are related to the various linkage effects arising out of the production and export of the agricultural commodities concerned. In particular, the requirement is for a broad range of agricultural resources in which the region has a comparative advantage; an appropriate technological structure of the agricultural industry, with specific reference to production functions which do not result in extremes of inequality or spatial or other imbalances in the distribution of incomes and employment generated by farming; a high level of induced investments in the infrastructure and services needed to develop the agricultural export base; and reduced importance of import leakages (North, 1959, p. 945 et seq). In short, the "certain conditions" are all those

which the previous discussion has shown to have been conspicuously absent in the region, with the result that agriculture has thus far failed to emerge as the prime mover in economic growth and development in the region.

The hope must therefore be that these conditions will result directly from the Orange-Fish scheme. As has been pointed out, the possibility that this may yet happen cannot be ruled out, but even the Orange-Fish Project may be insufficient to regenerate confidence in an industry which has taken a severe battering in recent years; which has lost, at least for the time being, its most important and most lucrative market; and which, due to injudicious farming methods, has overworked or destroyed much of the land upon which it is so dependent. Moreover, rehabilitation will be a slow process, extending over years or even decades, with variable climatic and other factors still resulting in widely fluctuating fortunes, whereas some of the region's problems require more urgent attention.

Even more important, it must not be forgotten that even during agriculture's years of plenty the secular trend towards rural depopulation continued unabated and, in terms of development, the region stood still in relation to the rest of the country. Consequently, if one of the objectives of future policy in the region is to arrest this outflow of population, it is doubtful whether rehabilitation of agriculture alone will achieve it. Indeed, in all probability the present size of the farm population - both White and non-White - is far in excess of that to which the land should reasonably be expected to give direct support and employment even in the future.

In this respect, the recently completed commission of enquiry into agriculture (the 'Marais commission') noted that its proposals for "vigorous steps" to restructure the industry "will inevitably mean that many families now trying to eke out a living on undersized farms will have to give up their farms and make a living elsewhere ... As regards non-White labourers on farms ... if, in the national interest, the productivity of labour is to be raised far above the present level, the number of non-White labourers engaged in agriculture will have to be reduced sharply" (Third Report, p. 9). In similar, but even more explicit vein, the commission noted further (p. 185) that whilst it was "aware that efforts to stop the White depopulation of the platteland are actuated by a desire to prevent the platteland from being populated solely by non-Whites, or the ratio of White to non-White in the rural areas, and particularly on White farms, from swinging too far against the Whites" and that whilst the commission was "equally anxious to see this aim achieved", it felt constrained to draw attention to a number of very real elements in the situation.

Firstly, it considered that "the White depopulation of the platteland must be seen not as a phenomenon affecting White farms only, but as part of a complex set of conditions involving many communities, particularly in certain rural areas".

Secondly, it suggested that Whites were leaving their farms partly because they lacked the requisite training, skills and abilities for modern farming, partly because of financial difficulties and partly because good farming land was being bid away from farmers by land uses with a greater rent-paying ability.

Thirdly, "this withdrawal of those farmers who are trying without supplementary earnings to eke out a living on farming units which are much too small must be seen as one of the most essential processes in the programme of structural reform in agriculture. This is one of the best ways of promoting

more efficient agricultural production on economic units, of increasing personal agricultural income, of keeping progress in agriculture in step with that of the rest of the national economy and of ensuring the balanced progress of the country as a whole on the basis of optimum utilisation of all the available resources and means".

Fourthly, "selective and planned withdrawal" of Whites from farms "could be very beneficial to them as well as to agriculture and the country as a whole".

Fifthly, as regards the possibility of "a widening of the numerical ratio of White to non-White ... the indications are that this trend will continue, no matter what financial relief measure may be devised to keep farmers and their families on the farms".

Finally, the Commission held the view that, as a result of the stock reduction scheme, "owners of uneconomic units in particular will be eager to offer themselves for employment elsewhere and to withdraw from farming" when the withdrawal of stock has been completed.

The extent to which each of these factors is relevant to the region is not known, but they have been operative in the past and the region has shown its inability to cope with them, and particularly with the absorption of the labour, both White and non-White, which has been displaced from the farms.

In any event, the implications of the commission's viewpoints and recommendations are clear: the restructuring of agriculture will bring with it social and economic problems of proportions no less urgent and staggering than those which it is designed to solve, and a reliance on agriculture alone to solve the region's problems would be a futile exercise.

What is more, even if the Orange-Fish project does result in the hoped for regeneration and diversification of agriculture and in the emergence of favourable conditions postulated by North (1959) for the activation of growth-inducing mechanisms, there is a further problem to which attention must be drawn. This problem is that any suggestion that the realisation of North's essential conditions necessarily implies that agriculture will assuredly provide a sound basis for rapid industrial expansion in the region, and will obviate the need for state assistance in attracting industries, rather ignores the predictable role of agriculture in economic development in a relatively developed economy, such as that of South Africa. With increasing industrialisation in South Africa, agriculture has been and will continue to be characterised by (i) a declining proportionate contribution to GDP; (ii) a decline in the direct provision of employment opportunities (often in absolute as well as in proportionate terms) and a declining rate of generation of personal incomes, leading to a declining proportionate contribution to final demand; and (iii) a declining ability to furnish the development capital necessary for the establishment of new enterprises. These problems are already evident in the Cape Midlands and Karroo region, despite the fact that the area is still clearly under-developed.

A programme of agricultural and rural reform as envisaged by the Marais commission, covering such factors as "farm sizes, farming systems, the standard of entrepreneurship and precautionary measures ... founded on economic principles which ought to be valid for farming enterprises run on an acceptable structural basis and managed at a level of at least average efficiency"

(Third Report, p. 186), may well remedy the problem of declining contributions by the sub-sector to GGP, but the region will still have to reckon with the remaining difficulties if it relies too heavily on agriculture to stimulate industrial growth. Moreover, as Brand has pointed out (1969a, p. 183), "quite apparently, the most dynamic manufacturing industries in South Africa have not been among those which are heavily reliant on agricultural raw materials as inputs". Brand further contends (1969a, p. 190) that "Hirschman's dictum that '... agriculture certainly stands convicted on the count of its lack of direct stimulus to the setting up of new activities through linkage effects', ... can without many reservations be accepted as descriptive of the South African experience".

The main alternative approach to the problem of the future development of the region, namely that based on a programme of subsidized industrialization, is similarly not without its constraints.

In this instance, the most important factor is that of national policies and priorities with regard to industrial development in general, and the designation of industrial 'growth points' in particular.

It is, of course, common knowledge that present industrial decentralization policies in South Africa have as their primary aim the stimulation of development in areas either adjacent to, or within, the various Bantu reserves and to a lesser extent, areas in which significant unemployment of Coloureds and/or Indians is manifest. As the recent White Paper on industrial decentralisation (Department of Industries, 1971) put it, "The Government accepts that, for the successful decentralization of industries, it is essential that a sufficient number of decentralized industrial areas ... be available ... Since the decentralization of industry should take cognisance of the plurality of nations in South Africa, it is necessary that the centres selected for development with state assistance as decentralized industrial areas, should be in accordance with the geographical distribution of the several nations and, more particularly of the Bantu in their Homelands.

"In general, the Government will encourage industrial development in those centres with a relative surplus of labour, but ... it is essential that attention ... be concentrated on a comparatively small number of specially selected growth points. The guiding principle will be, however, that similar concessions ... may also be made available to industrialists establishing of their own accord in other rural centres near Bantu Homelands, or centres where there is a need for additional employment opportunities for the other national groups and where ... development would fit in with the general decentralization programme. The Government will, however, not apply the same special efforts to promoting industrial development in these relatively small and scattered centres, since the decentralisation programme will primarily be concentrated on those centres specially selected from time to time as growth points ... In the selection of specific growth points a variety of factors has to be taken into account, for instance viability as an industrial centre, availability and cost of infrastructure, etc., ... (but) only a limited number of growth points can be developed at the same time. Whilst, therefore, the Government is aware that there is a large number of rural towns showing keen interest in being selected as growth points, it is naturally impossible to agree to all such requests and selection has to be limited to those cases where the Growth Points Committee has, on its own initiative, and on merit, decided in favour of a particular town."

It is clear from these extracts that there are two types of areas which will receive assistance in the establishment of industries, namely 'growth points' and 'other centres' (where there is "need for additional employment opportunities" and where "development would fit in with the general decentralization programme"). It is further apparent that the difference between these two types of centre lies mainly in the degree to which assistance will be granted to individual industries, and, presumably, in the extent to which the government will provide the requisite infrastructure for development.

In the context of this situation, it must be concluded that, whilst opinions on the merits and demerits of various areas and of their suitability and need for development assistance may differ widely, the Cape Midlands and Karroo region, rightly or wrongly, does not rank high in priority with those agencies which are concerned with the promotion of industrial development at the regional level. Indeed the policy of industrial decentralization, as presently constituted, surely rules out for the foreseeable future the possibility of industrial development in the region on a significant scale. If so, this is probably due mainly to the region's transitional situation between the eastern areas of high Bantu population density and under-employment in the Ciskei and the Transkei, and the western areas of high Coloured population density and under-employment in the Cape Peninsula and in the southern and western Cape areas.

This conclusion naturally raises questions about the value of the concession status granted to Grahamstown, Middelburg, Adelaide and Graaff-Reinet, all of which would appear to fall within the scope of the second category of decentralized area.

Dogmatism on this score could well be dangerous, but an objective evaluation of these concessions must lead to the conclusion that, whilst they represent a significant step forward, the likelihood that there will be a rush to take up industrial sites in the region in the near future is somewhat remote. Whilst in theory, all new industries and all new expansion projects in these areas will be eligible for the concessions, it is of particular importance that, in practice, such industries will not automatically qualify for the concessions. Applications in each instance have to be submitted - and will be considered - on an individual basis. There are also constraints relating to the utilization of labour and the composition of the labour force. Thus, whilst industries wishing to establish in Grahamstown will be able to apply for assistance in respect of employment of both Coloureds and Bantu, those in the other areas can qualify for assistance in respect of Coloured employment only.

Yet even in Grahamstown's case, the labour utilization conditions are not without further complications. Thus, it is a condition of the concessions that Bantu employed by assisted industries must be resident in the Bantu areas, as a result of which Bantu resident in Grahamstown will not benefit, despite the high levels of unemployment in the city. Thus, in terms of this policy, which is explicitly laid down by the Department of Bantu Administration, any Bantu who wish to obtain employment in any new industries which may be attracted to Grahamstown by the concessions, will first have to move from the city to the Bantu reserves east of the Fish river before being able to seek work in the city as migrant labourers. Since the large-scale removals to which this policy must inevitably lead will not only have an unsettling effect upon the socio-economic circumstances of the Bantu concerned, but by removing a large part of Grahamstown's population and market from the city, will also be to the detriment

of the latter's economy, the value of the concessions, at least in the short term, must be regarded as dubious.

In short, the concessions do not, in themselves, create a favourable climate for industrial development in the region. Instead, the onus for this remains fairly and squarely on the shoulders of the region, its inhabitants and its local authorities. It is they who will have to provide the necessary infrastructure of services and of social overhead capital, foster the development of raw material sources, and attract the ancillary services without which the prospects for enticing industry to the area will remain bleak.

Clearly, then, without further substantial assistance from the state there can be no significant development. Consequently, Grahamstown at least is now seeking classification as a 'growth point', and any future prognostications on the region's ability to attract industry must await the outcome of this application.

However, in the unlikely event of Grahamstown and other centres in the region obtaining 'growth point' status, and even assuming that industry can be attracted on a hitherto unprecedented scale, this fact, in itself, will not necessarily be a panacea for the region's ills.

Thus, for example, just as in the case of agriculture, not all industry is necessarily growth inducing. Planning for the achievement of a self-sustaining growth process will be difficult, for this will necessitate attracting industries with strong inter-industry linkages, so that as many firms as possible will utilize the outputs or by-products of other firms as inputs, thereby limiting the need to import raw materials. The role of, and need for, a diversified agricultural base in this respect is self-evident. In short, resources devoted to the attraction of industry will have been efficiently utilized only if the multiplier effects upon income and employment are greater than those which would have been created by an equivalent investment in an alternative project, whether primary, secondary or tertiary in character.

The third alternative strategy for the region is far less ambitious, in that it does not seek to transform the region into a major agricultural or industrial centre, but rather to assist the region in coming to terms with its unfavourable situation.

Since this strategy would rely for its success on the region's ability to attract service activities of various kinds, but particularly 'public' services, it raises questions about the criteria for regional allocation of public funds, especially in view of the role which this report has shown is played by the public sector in the regional economy. Of particular importance is that the effects of the recent lean period suffered by agriculture are being partically alleviated by relatively large-scale public sector investment in social overhead capital. Although a most welcome temporary palliative, this situation does render the region particularly vulnerable to any cutbacks in public sector outlays. Thus, whilst the present clamour for such reductions at the national level may well be justifiable, it could spell even more lean times for the region. Indeed, the recent decisions by the central government to reconsider the economic viability of the upper Sundays River section of the Orange-Fish scheme and by the provincial authorities to postpone the implementation of plans for more schools, hospitals and other capital works may well be portents of worse to come.

In this respect, there would appear to be some fundamental contradictions between the regional implications of a number of different national development policies with regard to the provision of 'social overhead capital', that is "those basic services without which primary, secondary and tertiary productive activities cannot function ... (including) all public services from law and order through education and public health to transportation, communications, power and water supply, as well as such agricultural overhead capital as irrigation and drainage systems" (Hirschman, 1958, p. 83).

On the one hand, the region's contracting contribution to the national economic effort might justify the view that the provision of social overhead capital in the region is wasteful unless such investment produces an economic return. This would, for example, appear to be one of the reasons why the extension of the Orange-Fish scheme to the upper Sundays area is in jeopardy. Thus, in the most recent White Paper on the Project (Department of Water Affairs, 1971) it is laid down that "the principle of the highest possible yield per unit of water must always be applied". In consequence, it appears likely that the proposed Conway right bank canal and Wapadsberg tunnel to the upper reaches of the Sundays river may be shelved because it is unlikely that these projects can be justified economically. It is clearly also the view of the railways administration that the provision of new lines and services must be based on criteria of economic viability (Chapter Four).

On the other hand it it obvious that in a multitude of instances from the provision of health services to the building of roads, economic viability is not taken into account. Instead, in these instances, the criterion of the broad national (or regional) interest has been applied. Similarly, in granting 'border'area concession status to several centres in the region the government has implicitly accepted the principle of subsidization of this aspect of development in the region, for subsidization is the underlying economic principle of the whole policy of industrial decentralization. Indeed, in the recent White Paper (Department of Industries, 1971), the point was made that "for economic, social and political reasons ... it is necessary that economic development should also take place within or near the areas with large non-White population concentrations" and that to achieve this purpose, the government would "compensate industrialists for the cost disabilities which they would experience in decentralized areas".

Hence, economic viability is far from being the sole and consistent criterion for public outlays in areas such as the Cape Midlands and Karroo region. Consequently, whilst it is not intended that this report should make a plea for a general extension of the principle of subsidization to all aspects of regional development, it is nonetheless possible that, once the objectives of such development have been defined, subsidization of certain forms of social overhead capital or infrastructural development, in addition to industrialization, may be shown by further evaluation to be justifiable in certain circumstances or locations (Richardson, 1969b, Chapter 15). The nature of the subsidy - e. g. wage subsidies, price subsidies, capital subsidies, discriminatory areal allocation of public funds to infrastructural development etc. - will depend on the nature of the objectives - e. g. social, political or economic - upon opportunity cost criteria, upon the nature of the development to be subsidized, and upon the net effects of both social and private costs of influencing the location decisions and the mobility of enterprises, of production factors and of population.

From the particular point of view of the Cape Midlands and Karroo region, there are a number of forms of subsidization which, if they could be shown to be justifiable in terms of the above criteria, could be of considerable assistance to the region in overcoming its problems. These might include subsidies to forestall the transfer of institutions already established in the region to the metropolitan areas; to enable the region to compete with bigger centres for the expansion of existing, or the establishment of new, facilities; to stimulate local enterprises and improve the balance of trade with other regions by enabling (or requiring) local authorities, government departments, state agencies, public corporations and public-subsidized institutions to grant price advantages to local firms in tenders for construction or supply contracts in the region.

However, such decisions can only be made within the context of a defined set of general criteria for regional allocation of resources and the possibilities for the implementation of a strategy of this nature must await the determination of such criteria.

Spatial integration

It will be abundantly clear from the emphasis given to spatial factors in this report that any programme for the future development of the region which does not promote spatial integration not only within the region, but also between the region and its adjacent metropolitan foci, can be expected to fail in its objective.

Such integration, as has been pointed out, must be both physical and economic. In the previous Chapter, the steps that are currently being taken, or proposed, to remedy some of the deficiencies in the communications network were outlined, and there is little further than can be added here on that score.

In so far as the economic factors are concerned, it is probable that any measures taken to improve functional integration within and amongst the various production sectors will also assist in promoting spatial integration. Indeed, the two factors are both inter-dependent and mutually reinforcing. Thus, for example, whether the linkages between the various parts of the region and the two metropolitan areas can be strengthened will depend to a large extent on the region's ability to raise the internal level of economic activity; but conversely, the latter will have a better chance of success if the connectivity between the various centres were to be strengthened.

Three of the many projects and possibilities for promoting integration which spring to mind are, of course, the Orange-Fish project; the St Croix Island ore berth project, the effects of which, if it materializes, will rub off directly on the region in the form of increased flows of through traffic and hence increased activity in the transport sector; and the motor industry, for which a study of the prospects of establishing viable and competitive motor component plants in the region's urban centres to supply the major assemblers situated in the metropolitan centres would be an important, if complex, consideration. (Naturally, in the light of the foregoing discussion, it need hardly be stressed that since the first two of these three possibilities involve the direct provision of social overhead capital, the fact that they would be beneficial to the Cape Midlands and Karroo region does not necessarily imply that they should be implemented. Thus, if the criteria of economic viability

or of the broad national interest are to be applied in evaluating these possibilities, it may well be found that they are not justifiable developments.)

Of critical importance to improved spatial integration will be the ability to achieve or to promote agglomeration economies, i.e. the self-reinforcing and beneficial effects arising from increases in the number and scale of related economic activities at any one point in space. Notwithstanding the differences in approach of the protagonists of the 'balanced growth' versus 'unbalanced growth' conceptions of regional economic development, there would be virtual universal agreement that the concentration of activities in one or more 'favoured' locations is an inevitable prerequisite for, and consequence of, economic growth and development.

In this respect, it is worth noting that cut-throat competition between the various urban centres in the region for industrial development will probably be self-defeating. With or without government assistance, the amount of industry which the region can attract will necessarily be limited, and it will require co-operation amongst competing centres to ensure that maximum advantages are derived from the benefits of industrialization. The present piecemeal approach, in which individual centres are competing amongst each other for the limited amount of development available, will not have a significant impact on the region's problems. Indeed, it will serve only to dissipate the possible beneficial effects of those economic activities which can be enticed to one or other of these centres. There is thus an urgent need for the region's urban centres to co-operate with, rather than compete against, each other. This could perhaps best be achieved by means of a development programme which allows for a limited degree of specialization amongst these centres within the framework of an overall objective of economic diversification in the area as a whole. If such a programme were to include the metropolitan areas and take cognizance of functional boundaries and criteria, its efficacy would be enhanced.

SUMMARY

It would appear that a number of alternative possibilities exists for improving the economic climate in the region, but that most of these are not only fraught with practical difficulties but are also unlikely to produce significant results in the short term. The most satisfactory solution may well turn out to be a combination of these alternative approaches, since they are by no means mutually exclusive.

Obviously, any measures which will improve either functional or spatial integration not only within the region but also between the region and the metropolitan areas, particularly Port Elizabeth, or which will raise incomes or employment amongst the inhabitants of the area, will be welcome, although it is clear that only a co-ordinated approach will have a significant impact.

But whatever programme or combination of programmes is adopted or proposed to solve the problems of the Cape Midlands and Karroo region, it should be self-evident that it will fail if (a) it does not take account of the specific circumstances of the region, and (b) it is not at the same time compatible with national policies, within the context of which any development programme for the region must be formulated.

As far as the first of these two factors is concerned, it is hoped that this report will have provided some enlightenment; but as far as the second is concerned, the foregoing discussion will have shown that many questions remain to be answered. Indeed, it could even be said that the various 'solutions' discussed above all beg some rather fundamental questions.

It goes without saying that national policy profoundly influences the constituent regions of a country. It cannot therefore be too strongly emhasized that effective planning in individual regions can only take place in the context of a given framework for regional development which is at the same time consistent with the achievement of the broader goals of national development policies.

Thus, for example, whilst subsidized industrialization would undoubtedly be of benefit to the region, it may not be the most efficient way of allocating resources from the point of view of the national interest, given current national social, political and economic goals. Similarly, there is much to be said for the a priori assumption that any programme for the region should aim at stemming the loss of population - as Richardson (1969b, p. 389) has put it, "the absurdity of prescribing out-migration for the region whose main source of worry is a high net emigration rate" is "obvious". Yet, in the broader national interest, the retention of population may not be regarded as desirable. These, and a number of other related problems, such as agricultural and rural reforms and the criteria for allocation of public funds for infrastructural and other developments, remain to be clarified.

Indeed, it is only when these issues have been clarified at the national level that a decision can be taken on whether and how to absorb any surplus rural labour in the urban centres of the region.

Thus, whilst the broad regional priorities for industrial decentralization are now fairly widely known, similar priorities for other aspects of development either do not exist or are not as well known. In particular, there is no published regional counterpart to the Economic Development Programme, which would provide each region with the framework and constraints for the planning of its future development strategies. Moreover, it is evident that where government economic planners are taking cognisance of regional differences, this process is limited to the various Bantu areas on the one hand and the rest of the Republic on the other (Lombard, 1971; Dept. of Planning, 1967). There is thus a clear need for the provision of such a framework indicating the principles which are to be applied in the implementation of national policies at a more detailed regional level.

Without such a framework, meaningful regional planning, whether by the central government or by regional planning agencies, is not possible. For as Richardson has pointed out (1969b, p. 386), "if left alone to pursue purely intraregional objectives, a regional authority would optimise for its own area in a way which might conflict with the legitimate objectives of surrounding regions..."

To a large extent, therefore, the future development of the Cape Midlands and Karroo region must take place within the constraints of existing national policies. In this respect, it is to be hoped that where the goals and the regional implications of such policies are not already explicitly defined, these will be clarified by the government and its agencies in the course of time.

On the other hand, in a free enterprise economy, it is neither reasonable nor realistic that the responsibility for regional planning and development should devolve solely upon the shoulders of government officials. Indeed, there is a very real and vital role which local institutions and development associations can play in this process.

In this respect, existing policies should not necessarily be regarded as immutable. If the representatives of a region believe their area to be deserving of assistance on the grounds of the particular problems and disabilities peculiar to it - such as rural depopulation and the hardships facing wool and mohair farmers in the case of the Cape Midlands and Karroo region - then they have both the right and the duty to bring these matters to the attention of the government in an endeavour to convince government of the need to accord their amelioration higher priority in the framework of national policies. If, in addition, they believe that the advantages offered by their area are insufficiently widely known and recognised, then they should take steps to remedy this situation. There may well be some substance in the view that an area's comparative advantages are not always directly measurable on the basis of objective criteria, and that part of a region's potential (or lack of it) consists in the psychological factor of the attitude towards it, and the image of it, which exists in the minds of government officials, developers and industrialists, the press and other persons and institutions which can influence opinion and stimulate interest and investment. Richardson has suggested (1969b, p. 391) that government has "a lubricating function" in the spatial allocation of national resources; and (in an extension of this metaphor) it may well happen that the wheel which squeaks the loudest will get the most oil.

However, as Richardson (1969b, pp. 386-7) has put it, "although sub-national bodies should be encouraged to participate in, and indeed initiate, policies that might improve the economic position of their areas, if only because interest in local area problems might stimulate self-help and internal solutions to their difficulties, the ultimate responsibility must rest with the central government ... Thus, a development plan for an individual region ... will still need to take account of the national interest, either in the form of parallel national economic objectives in the plan itself or, more usually, as constraints. Accommodating the national interest seems an essential prior assumption for regional policies in a nation state ...".

APPENDIX

REGIONAL DIVISIONS FOR RESEARCH AND PLANNING

In the brief description given earlier in this report of the manner in which the five sub-regions used throughout this analysis of the economy of the Cape Midlands and Karroo region were delineated, four important points were noted (Chapter Two). These were

(i) the principle adopted was that of combining and reconciling the criteria of homogeneity and functionality, such that the sub-regions would reflect minimum intra-areal, and maximum inter-areal variances. This principle found expression in five sub-regions each exhibiting the characteristics of the 'core-periphery' form of development;

(ii) the delineation was non-rigorous in that it was based on what might be termed 'reconnaissance-level' appraisals, rather than on actual quantification of the strength and level of the connections and interrelationships between the various centres in the region;

(iii) no claim was made that the breakdown adopted presented a unique solution to the question of delimitation of areas for analysis; and

(iv) the breakdown adopted nonetheless had considerable utility.

In this Appendix, all these points are taken up, examined and amplified. In addition, some attention is given to the problem of delimitation of sub-regions, not only for purposes of analysis, but also for purposes of development and of policy implementation. The discussion commences with a brief outline of the general problem of regional delimitation and of the main types of regions which can be identified. Two groups are distinguished, namely analysis regions and planning regions. In relation to the former, a brief outline is given of the main conceptual models of the spatial manifestations of development. This is followed by a discussion of the relative merits of a number of alternative areal breakdowns of the Cape Midlands and Karroo region for analysis purposes, as revealed by the application of two types of statistical test to each of these breakdowns. The Appendix concludes with a short discussion on planning regions.

REGIONAL BOUNDARIES

The literature on the problem of defining regional boundaries is vast, probably largely because there can be no general solution to the problem - or at least no such solution has yet been arrived at.

This situation has been well-stated by Isard, Schooler and Vietorisz (1959, pp. 5-6), in relation to their case study of Puerto Rico, as follows: "It became

clear after some investigation, that several techniques of regional analysis are valid, each being pertinent for certain regional situations but not for others. This outcome was not unexpected. It is well-known that for a long time economists, geographers, sociologists, political scientists, city and regional planners, and other social scientists have been concerned with the concept of 'region'. After much heated discussion and protracted writing, they have generally come to subscribe to a procedure that considers the region as a meaningful unit varying with the problem to be studied, the inclination of the investigator, and other features of a given situation. It is generally agreed that, until the 'ultimate' is achieved in social sciene theory, analysts must be content with sets of regions - or hierarchies of sets of regions - which tend to differ from problem to problem".

That a universal concept of what constitutes 'the region' is lacking even within the individual disciplines mentioned by Isard and his colleagues is evidenced by Meyer's remark (1963) that there is "an almost unavoidable temptation when first coming to grips with the problem of defining regional economics ... to assert that it is simply all of economics scaled to whatever level is required to adequately measure or forecast economic activity for a specific geographic area". Similar situations doubtless exist in other branches of regional science.

As this problem is central to the whole topic of regional analysis, it has had a retardatory influence upon the development of the discipline. As a result, the 'heated discussion and protracted writing' in search of the 'ultimate' solution, which Isard and his colleagues remarked upon some thirteen years ago, has continued unabated. Although the problem still defies final solution, as was noted in Chapter One, some particularly useful, if complex, contributions have been forthcoming.

Fortunately, the lack of a solution to this conceptual issue has not altogether deterred progress in regional analysis for, as Richardson (1969b, p. 223) has noted, "it is sometimes possible for the regional economist to avoid facing it at all". Thus, for example, the analyst can simply accept regions which others have delineated, however arbitrarily, and get on with the task of examining their individual structures and their mutual relationships.

The present study is a case in point, for the outer boundary of the area of investigation had perforce to be taken as given (Chapter One). Hence, apart from some retrospective comments which will be made later on the suitability of this boundary, no further consideration need be given to this aspect at the present stage. Instead the discussion will be confined to an outline of the main types of region which can be identified, and to the problem of sub-dividing the study area for analysis and planning purposes.

REGIONAL TYPES AND SYSTEMS

In much the same way as it is possible to describe the relationships between surfaces, between nodes and between networks in terms of a hierarchy, so too it is possible to describe relationships within the entire integrated spatial system of a geographic unit in terms of "a hierarchical system of regions of different sizes, in which each region of a given rank embraces a number of smaller regions

(or sub-regions) of the rank below" (Richardson, 1969b, p. 224). This idea has found expression, for example, in the regionalization by Board, Davies and Fair (1970) of the South African space economy into a hierarchy of main and subsidiary nodal metropolitan regions (Chapter One).

The manner in which the process of regionalization of a given area is undertaken is subject to a number of constraints, of which the need for contiguity is one and the purpose for which the delimitation is required is another. The latter is also a major determinant of the number of regions to be identified, since it is obvious that the number of ways and the number of units into which a given area can be sub-divided or a given number of small areal units can be aggregated, is, at least in theory, very large. Moreover, as Richardson notes, "subject to these constraints (contiguity, purpose, numbers), there are a number of different approaches to the definition of regions. Virtually all these fall within three main categories: uniform or homogeneous regions; nodal regions; and programming or planning regions".

That these are the three main criteria for regional delimitation is widely accepted throughout the relevant literature on the subject, although not all regional scientists employ the same nomenclature. Thus, for example, nodal regions are often referred to as functional or interdependent or functionally integrated regions. Unfortunately, in some of the literature, similar or even identical terms have been used to mean rather different things, resulting in the possibility of confusion.

In general, it can be said that homogeneity and nodality are criteria which have both descriptive and analytical applications, whereas "by its nature the 'programme region' is a decision-making model" (Boudeville, 1961). Consequently, consideration of the latter can be divorced from consideration of regions for analysis purposes (although this should not be taken to imply that no relationship exists between analysis regions and planning regions).

MODELS OF REGIONAL DEVELOPMENT

Any set or system of regions, delimited according to the three main criteria, can be referred to a theoretical model of the spatial pattern of development. Alternatively, the criteria used in delimiting the regions may be derived in the first instance from one of these theoretical models, of which the 'core-periphery' and the 'development region' models are the most widely used and recognised.

The core-periphery concept

This is defined by Friedmann (who prefers to call it the 'centre-periphery' concept and who suggests a rather different connotation for the term 'core') as "a conceptual model that divides the space economy into a dynamic, rapidly growing central region and its periphery. The growth of the centre is viewed as being subsidized in part by the periphery" (1966, p. xv). Clearly, the fundamental principle underlying the model is one of nodality.

This nodal pattern of development can be identified on the world, continental,

national, sub-national and city levels.[1] For example, Friedmann (1966, p. 10) notes that Meier and Baldwin "have drawn attention to the existence of a centre-periphery structure on a global scale". Similarly, Fair, Murdoch and Jones (1969, p. 39) have contended that the pattern of African economic development has a "distinctive geographic structure" comprising "a number of social and economic enclosures ... and widespread economically backward areas". This pattern is "essentially nodal" - it comprises the urban node (or growth point); the growth zone around the node; and the "residual area of low or stagnant economic activities". These authors claim that "this core-periphery structure is fundamental to any understanding of the present pattern of development in Africa, and the direction of its future advance".

This continental pattern of development in Africa is, not surprisingly, reflected also in the pattern of regional development within individual African states. The concept has been usefully applied to both Lesotho (Davies, Maasdorp and Price, 1971) and Swaziland (Fair, Murdoch and Jones, 1969). Board, Davies and Fair (1970) have shown that in one sense, South Africa can be seen to have one dominant core - the Witwatersrand - to which the rest of the country - indeed the rest of the subcontinent - is peripheral. Yet, they have also shown that, in another sense, the South African space economy can be seen as a system of main and subsidiary functional nodal regions each with its own core and its own periphery.

Finally, as Friedmann notes (1966, pp. 11 and 12), "the centre-periphery relationship has been intensively studied at the level of the city". Thus, whether at the world, continent, national sub-national,or city level,"the centre-periphery hypothesis appears on all the relevant scales of explanation simultaneously as cause and as effect of economic transformation. Although it has been heatedly debated, the balance of the evidence points strongly in its favour".

The development region concept

Perhaps the first thing that should be noted in relation to this concept, which (as a conceptual model) has been formulated by Friedmann, is that a 'development region' is by no means necessarily a 'region for development'. The latter clearly falls under the heading of 'programming region', whereas a development region is "an area delimited on the basis of common prospects

1. Apart from the illustrative examples given here of the world-wide evidence of the applicability of the model, Fair (1965) gives a number of other examples, including some relating to the continents of South America and Australasia.

and problems of development" (Friedmann, 1966, p. xv).[1]

A closer look at this concept suggests that it is, in fact, a modification of the core-periphery concept. Thus, "one may visualise these development regions as forming an abstract pattern in which a core area occupies the centre of a spatial system. This core would be surrounded by a band of contiguous areas whose economies are generally upward-transitional, and these, in turn, would be enclosed by an extensive zone in a state of downward-transition. At certain points along the rim of this zone would be the new settlement or resource frontier regions. Special problem areas would be interspersed at random throughout the system" (Friedmann, 1966, p. 43).

Again there is the underlying concept of nodality, but both from the definition and from the nomenclature, it is clear that the 'development region' concept represents an attempt by Friedmann to reconcile aspects of the notions of nodality and homogeneity, in line with his belief that the latter are not mutually exclusive and that they can (and should) be reconciled (see later quotation). Indeed, Friedmann notes further (1966, p. 44) that "development regions simply have maximum closure with respect to a given problem set ... Their chief function is to assist in the analysis of socio-economic and environmental problems and in the formulation of development strategies at the national level".

Whilst it is conceivable that 'regions' of the types outlined by Friedmann could be identified in small areal units, such as cities and small regions, it is clear from his comments that the development region concept represents an attempt at formulating a model for explaining and studying the space economy at the national level. More particularly, it represents an attempt to classify areas according to the problems with which they are faced as a direct result of the spatial effects of the universal tendency towards a core-periphery form of development.

Friedmann's conception of the spatial 'core' would not necessarily lead to precisely the same geographical area as that to which the core-periphery concept itself would give rise. Whereas the latter would identify the core primarily in terms of the intensity and scale of economic activity, Friedmann's core areas are identified also by the nature of their problems.

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1. This is one of a number of those areas, mentioned above, in which confusion can arise, for the sense in which 'development regions' have been used here is by no means universally accepted. Boudeville, for example, sees a 'development region' as simply a geographically extensive 'region for development' i.e. a 'programming region' large enough to "achieve the necessary co-ordination of basic investment ... (for) the long-term development evolution (fifteen to twenty years)" (1966, pp. 46-47). It should, however, be noted, that Friedmann's conceptual framework does not preclude the possibility that regions delineated "on the basis of common prospects and problems of development" should be used or adapted for the actual implementation of regional planning strategies. Friedmann identifies five types of development region, namely, core region; upward-transitional area; resource frontier region; downward-transitional area; and special problem area.

ANALYSIS REGIONS

"Whether the analyst directs his attention to the homogeneous features of the region or to its nodal characteristics will depend on the nature of his inquiry. If his interest is in the inter-regional relations ... it may be appropriate to treat regions as uniform, while if his primary concern is with the planning problems of the single region it will almost certainly be necessary to concentrate on the polarisation aspects and the inter-dependence between separate sub-regional units" (Richardson, 1969b, p. 230).

The essential distinction drawn by regional scientists between homogeneous and nodal regions thus turns on their applications. The former are widely regarded as a useful device for the study of inter-regional flows and relations; the latter are considered to be most useful in discussing intra-regional characteristics.

The distinction may however be more apparent than real. Since, in Gajda's words, "complete homogeneity is unworkable, theoretically undesirable, and in fact unobtainable ..." (quoted in Richardson, 1969b, p.227), homogeneity becomes a relative concept. Hence, homogeneous regions are, in effect, comprised of heterogeneous areas, linked by some common characteristic. Even in the case of one of the most common types of homogeneous region identified, namely that comprising areas of similar per capital income levels, it is obvious that within the component statistical units to which the per capita income data relate these income levels will not be equivalent at each point in space, no matter how small the unit employed.

In similar vein, Meyer (1963, p. 23) contends that "strictly speaking ,... the three traditional definitions of regional type (homogeneous; nodal; programming) are not mutually exclusive. In fact, all regional classification schemes are simply variations on the homogeneity criterion and it is somewhat misleading to suggest otherwise. The only real question is what kind of homogeneity is sought. Thus, a so-called program or policy region is essentially homogeneous in being entirely under the jurisdiction of some one or a few specific government or administrative agencies. A nodal region is homogeneous in that it combines areas dependent in some trade or functional sense on a specific center. Some socalled homogeneous regions are homogeneous with respect to physical characteristics, like geography or natural resource endowment, while others are defined to be similar in their economic or social characteristics".

It is thus quite conceivable that a region defined according to relative homogeneity in respect of a certain characteristic, may in fact turn out to be a nodal region as well. Teitz (1962) gives the example of a region "consisting of dairy farms which serve some city. As a 'dairy region' it is uniform; as a 'milk shed' it is nodal". In other words, "if the nodal region is to consist of constituents having the same node, then there is no essential difference between it and the simple uniform region".

Numerous other examples can be given of situations in which homogeneity might actually imply interdependency, and vice versa, thereby suggesting that the distinction is sometimes artificial. In South Africa (and in the Cape Midlands and Karroo region), for example, similarity in the racial composition of different areas might well be indicative of both homogeneity and functionality (or interdependency). Thus, adjacent districts with an almost exclusively Bantu population would clearly be homogeneous, especially if characterised by a predominantly

subsistence economy, but they might well also be linked by the centralising influence of the same tribal administrative set-up. Even outside the reserves, areas with a similar population composition would probably also be interdependent by virtue of the similar problems which they both present and share for economic (and social and political) development.

In other words, as Richardson points out (1969b, p. 230), in a comment which can be regarded as particularly apt for the specific case of the Cape Midlands and Karroo region, "... there is no inherent contradiction between the concepts of nodality and homogeneity. Even if regions were defined on the basis of combining units showing uniform homogeneous characteristics, there would still be polarisation flows between centres within such a region".

Further support for this view comes from Friedmann (1966, p. 41), who notes that "for planning purposes, both types of regions are relevant. Best results may be achieved when a pattern of interdependent (i. e. functional or nodal) regions is superimposed for analysis upon regions that are identified by the common problems they pose for economic development".

To sum up, in cases (such as in the present study) where the regional analyst may well be interested in both the intra- and inter-regional relationships of a given region, there would appear to be ample justification in certain circumstances for endeavouring to reconcile the notions of homogeneity and interdependency in selecting regions for analysis purposes.

Analysis areas in the Cape Midlands and Karroo region

Two factors render the sub-division of the study region indispensable for comprehensive analysis purposes. Firstly, the region is not itself a functional entity, permitting meaningful study of inter-relationships between it and other areas or regions of the national space economy at an aggregated level. Secondly, even if it were possible to make meaningful inter-regional comparisons such regional aggregates provide little or no insight into intra-regional relationships and processes. Indeed, it has been shown earlier in this report that they can actually be misleading.

It is perhaps worth noting at this juncture that the validity of the term 'region' as applied to the study area was questioned by Badenhorst (1970, p. 1) in the first of the numerous specific studies undertaken in this series, on the grounds of "the arbitrary manner in which the research area is demarcated". Few regional definitions can of course ever be entirely satisfactory, but where specific objectives are involved, some definitions may be less advantageous than others. In this respect, the Cape Midlands and Karroo region, as defined, does exhibit certain disadvantages which have relevance for any attempts to analyse its structural characteristics.

Certainly, from the history of the inception of the survey it is clear that the outer boundary of the region was not functionally derived in the first instance, except in the limited sense that each of the twenty-one magisterial districts can claim to be situated in or near the Fish or Sundays catchments and hence likely to be 'affected' to a greater or lesser extent by the Orange-Fish-Sundays River scheme (as originally envisaged). Although in some instances, such as Murraysburg, Steytlerville, Tarka and Alexandria, this association was marginal,

it did impart a certain degree both of homogeneity and of functional inter-dependency to the region and its constituent districts.

However, the diversity of land uses in the region (even allowing for the broadly unifying factor that the areas concerned are all predominantly agricultural); the significant differences of population composition; the differences of climate (including the crucial factor of rainfall and water resources); and numerous other factors which differ from one location to another, rather diminish the value of this single factor as a unifying characteristic for the twenty-one magisterial districts in any functional sense.

From another point of view, this same factor of association with the original Orange-Fish-Sundays scheme, together with the presumption that an integrated and co-ordinated utilization programme is being envisaged for the water resources to be derived from the scheme, would lend weight to the idea that the twenty-one magisterial districts together might represent a 'planning' or 'policy implementation' region, i.e. "an area over which economic decisions apply", which fact "gives a unity to the area" (Richardson, 1969a, p. 109). A similar conclusion might be drawn from the fact that the region comprises the approximate 'areas of jurisdiction' of the three relevant local development associations (Karroo, Cape Midlands and South Eastern Areas). However, as far as the first factor is concerned, it should be remembered that areas such as Kirkwood, Addo and Port Elizabeth itself also fall within the ambit of this section of the overall Orange River Project - and these areas lie outside the region. In the case of the development associations, both the high degree of governmental centralisation in South Africa, and the lack of statutory powers of action for the development associations, render this factor relatively unimportant. Moreover, in the case of the Cape Midlands Development Association, its 'area of jurisdiction' includes the Port Elizabeth/Uitenhage metropolitan area itself.

It is in this latter respect, namely the truncation of the region from its most important focus, that the definition of the Cape Midlands and Karroo region suffers its most severe disadvantages, particularly in so far as it affects the relationships between the region itself and the various functional regions and sub-regions of the national space economy. The nature of these relationships has already been outlined earlier in this report, and it will suffice here to repeat only that it is from the Port Elizabeth/Uitenhage metropolitan area that most of the major flows into the region - be they flows of people, goods or communications - emanate, and for this metropolitan area that most of the flows from the region are destined. In addition, the dual orientation resulting from the fact that the eastern districts of the region fall within the sphere of influence of East London/King William's Town rather than Port Elizabeth/Uitenhage, not to mention the external disorientation of the northernmost districts (Chapters One and Two), bears ample testimony to the region's arbitrary and somewhat confused constitution.

Finally, the lack of functionality in the region taken as a whole can also be ascribed to the fact, well-demonstrated in the course of this report, that integration and interdependency amongst some of its constituent areas is weak. In other words, except in a number of localized instances, the region is not comprised of areas "that stand in an active relation to each other, whose futures are linked by the flows of people, information, goods, or financial investments among them" (Friedmann, 1966, p. 41).

Therefore, it is on these localized instances of functionally integrated areas that the search for a suitable sub-regional breakdown must focus. In this respect, it has been demonstrated (by means of the five sub-regions delineated for the purposes of this report) that, despite its lack of functionality overall, the region can be sub-divided into a number of distinct areas which approximate fairly closely to functional regions. But this breakdown is but one of the very large number of theoretical possibilities for aggregating the twenty-one magisterial districts. It is also only one of several alternatives already used, or which have been considered for use, in the various investigations into the region.

Obviously, as has been pointed out before (Chapter Two), the most efficient way of achieving an optimal breakdown would have been by means of the application of one or more of the relatively sophisticated techniques which have been developed for the purpose and which are able to take into account comprehensively all relevant criteria and objectives. But since the achievement of a sub-regional breakdown was not the prime objective of any of the investigations - it was merely a facilitating analytical device - and since in any event there was a lack of the requisite data, time or resources for the successful application of these techniques, less sophisticated methods have been employed in each of the investigations into the Cape Midlands and Karroo area in which the need for a sub-regional breakdown has been felt.

The main alternative sub-regional breakdowns of the Cape Midlands and Karroo region which bear detailed consideration are, in fact, fairly limited in number. The five-region breakdown used in this report is, of course, one possibility. Another is Truu's breakdown into three sub-regions, each corresponding approximately to the area of jurisdiction of the three regional development associations within the region. As Schedule C shows, Truu's sub-region I corresponds closely to the Sundays sub-region used in this report; sub-region II is approximately a combination of the Fish and Escarpment sub-regions; and sub-region III is approximately a combination of the Border and Coastal sub-regions. The relationship of each magisterial district to the three development associations appears to have been the sole criterion applied in obtaining the three groupings.[1]

A different basis for regionalization has been followed in the agricultural survey of the region, in which the six magisterial districts of Bedford, Cradock, Graaff-Reinet, Middelburg, Pearston and Somerset East are seen as constituting a 'core' region in respect of geographical, agricultural and other characteristics (Daniel, 1971).

According to the memorandum outlining the proposed methodology for the agricultural survey, this 'core' area of six magisterial districts "contains the major towns of Graaff-Reinet, Cradock, Middelburg and Somerset East. The presence of these towns and the importance of the two river valleys, especially the Fish, suggests that the region selected is likely to form the core of the...

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1. Truu gives no reasons for adopting the particular breakdown into three sub-regions, but the constituent districts of each correspond exactly to those given in the introduction to his report under the headings of the three development associations. These groupings can also be regarded as comprising broadly the Upper Sundays River catchment area, the Upper Fish River catchment area and the Lower Fish River catchment area, respectively.

(Cape Midlands and Karroo) region in terms of growth and development while at the same time providing contrasts within itself e. g. contrast between Fish and Sundays valleys, Cradock and Graaff-Reinet; the link role of Middelburg, Pearston and Bedford" (Daniel, 1971, p. 5). Agricultural considerations appear, however, to have been crucial in selecting these six magisterial districts. Thus the 'core' is seen as exhibiting a "fair degree of homogeneity in terms of farm size and vegetation cover", whilst certain other districts considered for inclusion were rejected on the grounds that they "would destroy the basic homogeneity of the selected region" by virtue of their different vegetation or farm size characteristics. The situation of most of the districts selected in relation to the area of major impact of the Orange-Fish-Sundays scheme was apparently also a major criterion, although in some instances the integrative communication function of some districts by virtue of their geographical location was of particular importance.[1]

Unfortunately, the detailed implications for regionalization of the remainder of the region were not spelt out in the memorandum except in so far as "the remaining districts are regarded as peripheral (to the 'core') because of distance, communication linkage, being above the escarpment or being characterised by a completely different system of farming" (Daniel, 1971, p. 5). However, the statement that Bedford acts as a pivot or transition zone between the Fish River valley and the Winterberg area, characterised by irrigation from small streams in the intermontane areas and grasslands south of the mountains" (Daniel, 1971, p. 4) suggests an implicit recognition of the essentially different character of the areas to the east and the west of the Fish River valley. This is also suggested by the fact that, amongst other possibilities, consideration was also given to dividing the region according to "the small stock area (of 13 magisterial districts) ..., an eastern region and a (southern) fringe including Albany, Alexandria and possibly Kirkwood" (Daniel, p. 2).

Hence, the delineation of this 'core' area can be interpreted as implying either a three- or a four-element regionalization comprising the 'core' (as defined), the 'periphery' (as the remainder of the Sundays and upper Fish catchment areas, together with the areas above the escarpment), and either a single 'eastern' region (comprising the remaining magisterial districts in the study region) or two eastern areas corresponding approximately to the Border and Coastal sub-regions defined in this report. These two possibilities provide the third and fourth alternatives for effecting a meaningful areal breakdown of the Cape Midlands and Karroo region.

A fifth arguable alternative would be a two-element division of the region corresponding approximately to the areas west and east of the upper Fish valley respectively, with the upper Fish catchment area itself being included in the western sector. The rationale for this breakdown would be the transitional situation of the upper Fish valley not only in terms of physiographic regions, but also in terms of national economic surfaces (Chapter One).

These five breakdowns are defined in detail in Schedule C. The last-mentioned (two-element) breakdown was designated breakdown A; Truu's

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1. In the actual execution of the survey of this 'core' region, the district of Maraisburg was added at the request of the commission on rural reform (the 'du Plessis commission'), on the grounds that it represented an area of special interest to that body.

sub-regions were designated breakdown B; C and D were the three- and four-region 'core-periphery' breakdowns; and E was the five-region breakdown used in this report. Since most other breakdowns which meet the requirements of areal contiguity and which, at the same time, can be shown to be reasonable in relation to the background to, and the objectives of, the Cape Midlands and Karroo survey, as well as in relation to the present state of knowledge of the area, would probably be variations on one of the five 'themes' underlying the above alternatives, the latter can be taken as providing adequate, if not exhaustive, coverage of the main possibilities.

Since each of these five breakdowns has been, or can be, claimed, from different viewpoints, to be based on criteria of either homogeneity or functionality, or both, a comparison of their performances in relation to these two factors would provide a guide to the most useful means to be employed in obtaining an optimal breakdown for analysis purposes, in the absence of more sophisticated techniques. Tests for both these factors were therefore applied to each breakdown.

The test of functionality

Unfortunately, since functionality involves, inter alia, such factors as trading areas, communications systems and the relative strengths of flows and influences, the lack of relevant data on these topics precludes the application of even the most unsophisticated quantitative tests. Assessment of the relative merits of different sub-regional groupings in relation to these directly integrative factors must necessarily remain subjective, and the best that can be hoped for under the circumstances is a consensus of opinion amongst the protagonists of the different regional breakdowns.

However, if two groups of areal units have been assumed to be functionally distinct, then it could reasonably be expected that major differences between them would be apparent in a wide variety of socio-economic, demographic and geographic variables and characteristics, which are the visible and measurable manifestations of the parameters of development in any area.

Hence, if it can be shown that such differences do exist in respect of a sufficiently large number and range of characteristics, then the inference that interdependency and functional integration between the two groups is not very marked would not be wholly unreasonable. Since no area can exist entirely in isolation, this would imply, in turn, the probability that the constituent units of each group will exhibit a larger measure of internal interdependency.

Although this indirect approach has, at best, limited value, in the absence of any other means for testing the strength of functional linkages it was decided to test the five alternative breakdowns of the study region for major differences of this nature among their respective sub-regional groupings.

In all, 18 demographic, economic, socio-economic, agro-economic, agricultural and geographical factors were selected for testing. For each magisterial district, these included density of population by race; race composition of population; total GGP and gross value added by agriculture per capita and per sq km; mean size of farm; livestock combinations; proportion of surface area cultivated; mean annual rainfall; and percentage contributions of agriculture to GGP. Whilst this is by no means an exhaustive list, it was

considered that the range covered was sufficiently wide to detect differences.

For each of these 18 factors, an appropriate nonparametric statistical test of 'significance of differences' was applied to each of the suggested regional breakdowns to ascertain whether the elements (magisterial districts) of each sample (sub-region) could reasonably be concluded to have been drawn from the same or from different populations, the null hypothesis (H_o) being that they all came from the same population. It was decided to test for differences which would be significant at the 95% confidence level. Although there was a one-in-twenty chance of being wrong at this level of confidence, it was felt that, since H_o was to be rejected overall for any sub-regional grouping, only if rejected in respect of most of, if not all, the characteristics tested, the chances of being wrong in so many instances were negligible.

Since the applicability of nonparametric tests for significant differences varies according to the number of groups (samples), the number of elements in each sample and the total number of elements in all samples, the same test could not be used for each of the suggested breakdowns.

For the two-sample case (breakdown A), the test selected was the Wald-Wolfowitz two-sample runs test, the conditions for which are met by the data.[1] For the remaining cases of 3, 4 and 5 samples, the Kruskal-Wallis one-way analysis of variance by ranks test for k independent samples ($k \geq 3$) was employed, this being the most efficient test of its kind (Siegel, 1956, Ch. 8). However, in the case of the 4- and 5- sample breakdowns (D and E), the critical values of the test statistic used for determining the probability of occurrence of the computed test statistic under H_o (and hence for determining the level of significance of differences) were approximations.[2] Consequently, the need for caution was recognised in interpreting the results.

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1. Although the Kolmogorov-Smirnov (two-tailed) test is recognised as being the most powerful in detecting differences between two samples (see Siegel, 1956, Ch. 6) it imposes the condition that the two samples should be of equivalent size for sample sizes smaller than 40. Since this condition was not met by the data, the test had to be rejected in favour of the runs test.
2. In the Kruskal-Wallis test, for n_j sufficiently large, the test statistic is distributed approximately as chi-square, with k-1 degrees of freedom, for number of samples k, and number of elements in each sample n_j (j = 1, 2, ...k). Hence, for n_j sufficiently large, a table of critical values of chi-square can be used for determining the significance of differences. But 'sufficiently large' is usually interpreted as 'greater than 5' (Siegel, 1956, p. 185). For k = 3 and $n_j \geq 5$, the sampling distribution of the test statistic is not sufficiently close to chi-square to permit the use of critical values of the latter in assessing the significance of differences, but tables of exact probabilities are available for such cases. Only breakdown C clearly met the requirements for use of the chi-square critical values table, whilst in the case of B, the fact that one sample did not quite meet the usual interpretation of the 'sufficiently large' condition was not considered likely to invalidate the chi-square approximation assumption. For breakdowns D and E the question arose as to whether the distribution of the computed test statistic was still sufficiently close to chi-square with $k > 3$, but some $n_j < 5$. Unfortunately, the precise effects on the sampling distribution of the test statistic, of changes in the two parameters, k and n_j, were not known, but after consultation with statisticians, it was concluded that the distribution was far more likely to be dependent upon the total number of elements in all samples than upon the number of elements

(continued ...)

The test of homogeneity

The requirement here was for some comparable measure of factor variability from which the average amount of variation in sub-regions could be ascertained. The breakdown which reflected the lowest average variation in its constituent sub-regions would then have the greatest degree of homogeneity in respect of the factor being tested.

The statistic employed was the co-efficient of variation - the ratio of the standard deviation (the most useful general measure of dispersion) to the mean, expressed as a percentage. This statistic was calculated separately for each of the 18 factors in each of the suggested sub-regions and the mean co-efficient of variation computed for each of the five breakdowns.

Assessment of results

The results of the first test show clearly that in four out of the five breakdowns - B, C, D and E - H_o could be rejected convincingly at the 95% confidence level for most of the 18 criteria tested (Schedule D). For the remaining case, A, significant differences at the pre-selected confidence level were obtained in less than half of the factors.

All five breakdowns failed to show significant differences in respect of two factors - agriculture's proportionate contribution to GGP in each magisterial district and the ratio of goats to other livestock (expressed in terms of livestock units)[1] - and it is probable that no meaningful regionalization of the study area will produce sub-regions which exhibit such differences. However, the significant differences obtained in most breakdowns on factors such as farm size, the ratio of sheep and of cattle to total livestock units, and the proportion of ground area under cultivation are evidence enough of the existence of different areas of distinct agricultural character in the region.

Factors for which significant differences were obtained in only some of the four 'successful' groupings were Coloured population density, the ratio of Whites to total population and the ratio of sheep to total livestock units (Schedule D).

Nevertheless, it is clear that, in general, four breakdowns show significant differences in each of the three main factor groupings - demographic factors; economic and related factors; and agricultural and related factors. Hence, in breakdowns B, C, D and E, H_o can be rejected overall, and the elements of each sub-region can be assumed to come from different populations. Even in the case

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Footnote 2 continued ...

in each sample or upon the number of samples themselves, in which case the number of magisterial districts in the region - 21 - could be regarded as sufficiently large to assume the chi-square approximation. Furthermore, given that rejection of H_o overall required significant differences at the 95% confidence level for most or all factors, and given that trial applications of the test to breakdowns D and E produced results ostensibly significant at confidence levels of 99% and even 99,9% based on chi-square critical values, it was concluded that the test would be valid for these two breakdowns, but that the results should nevertheless be cautiously interpreted.

1. Livestock was taken to mean cattle, sheep and goats only. Although in some areas, pigs and other animals are bred, they are not important overall. Livestock in Bantu reserves were excluded.

of D and E, for which particularly cautious interpretation of the results is necessary, this conclusion remains valid. In the remaining case, A, Ho cannot be confidently rejected at the pre-selected confidence level. The implication of these results is that in breakdowns B to E each sub-region can, in a limited sense, be considered a functionally integrated or inter-dependent area. In the case of A, however, the outward manifestations of the development process suggest a lesser degree of functionality in the two sub-regions.

But when the results of the second test are introduced, a very different picture emerges. In respect of virtually every factor tested, the five-region breakdown E exhibits an average internal variation within its constituent sub-regions which is lower than, or at least as low as, that exhibited by any other breakdown (Schedule D).[1]

No clear pattern can be discerned amongst the other four breakdowns, although breakdown D appears to perform rather better in a number of instances than the others. This tendency is, however, less marked in respect of agricultural and geographical factors, where the evidence suggests moderately high variation and hence a lesser degree of internal homogeneity within the breakdown's four constituent sub-regions.

In order to complete the assessment, some discussion of the more subjective factors mentioned earlier, and on which some consensus of opinion may be achieved, is necessary. This can best be done by considering each of the five alternative regionalization possibilities in turn.

Breakdown A

The factors underlying a west-east division of the study area are the differential climatic, physiographic, land use and settlement, and population composition patterns of the areas on either side of the upper Fish valley. These are not simply local factors but arise from the region's transitional situation in the national context. Consequently, when considered from the internal point of view of the region, they ignore many local variations within the broader groupings of what Board, Davies and Fair (1970) termed the "dry sparsely-settled pastoral" west and "wetter ... more heavily settled and intensively worked" east. This explains the relative lack of homogeneity in the two sub-regions, looked at in terms of variability between magisterial districts. In fact, the co-efficients of variation in both the 7-district eastern sub-region and the 14-district western sub-region were relatively high for a substantial number of the 18 factors tested (Schedule D).

Turning to the question of functionality, a nodal structure is evident in the eastern sub-region in this breakdown in the sense that Grahamstown can be regarded as the node with all the remaining areas - Alexandria, Bathurst,

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1. Due to rounding in the calculations of the co-efficients of variation, differences of 1% between the means in Schedule D are not meaningful.

Adelaide, Fort Beaufort, Stockenström and Victoria East - falling into its zone of influence. This is confirmed by Cook's map of trading areas (1971, Fig. 37) and by Grahamstown's role as a focus for communications. However, this does not apply to railway connections, as Grahamstown has no direct rail links with the areas immediately north of it (see Chapter Two above and Fig. 15), nor does it apply to telephone traffic in which Adelaide, Fort Beaufort and Alice tend to by-pass Grahamstown, being orientated more to King William's Town and East London.

In the western sub-region, nodality is much less readily evident. For example, whilst virtually all the 14 magisterial districts in this sub-region can be assigned to one of four main trading areas, it is clear from Cook's map that, despite some overlapping, no trading area is dominant. Similarly, whilst Middelburg is undoubtedly an important road and rail junction, counterbalancing to some extent the attractive force of the metropolitan area in the south, it is not the gravitational pole of communications in and between the 14 magisterial districts. This is true not only of movements of people but also of goods; for, whilst Middelburg is the main forwarding point for goods consigned from the 14 magisterial districts to the north, it is not the main focus for south-bound traffic, nor even for internal distribution within the sub-region (see Chapter Two above; and Staude, 1971).

On the other hand, it might be suggested that, whilst there is no single dominant node in the sub-region, a combination of inter-related areas exists which so dominates the economy of the sub-region that it effectively constitutes a 'core'. The obvious candidates for inclusion in such a 'core' are Graaff-Reinet, Middelburg, Cradock and Somerset East magisterial districts. It has, however, already been shown in this report (Chapter Two) that interconnection and functional integration between these districts and towns is not strong, and despite the fact that there is a relative concentration of economic activities in these four magisterial districts - they accounted for 56% of GGP in the 14 magisterial districts in 1959/60 whilst covering just over 40% of the ground area - it is doubtful whether contiguity alone confers on them the status of a 'core'.

It is,therefore, not surprising that the two sub-regions did not emerge in the first test as areas with marked evidence of internal interdependency (Schedule D). The two-region conception of the study area thus appears as rather too simplistic to be of much value for analysis purposes.

Breakdown B

This breakdown derives from the existence within the region of three Regional Development Associations - Karroo, Cape Midlands and South Eastern Areas. The three sub-regions represent groupings of those magisterial districts orientated towards each of these Associations. This fact in itself suggests an element of interdependency, and might also be expected to suggest a degree of homogeneity.

As far as functionality is concerned, sub-region III is the same as the eastern sub-region discussed in the previous paragraph, apart from the addition of Bedford magisterial district to the former - a factor which has little impact on either the advantages or disadvantages which this sub-region exhibits (Schedule D).

Sub-region II has no identifiably dominant node. However, the Somerset East - Cradock - Middelburg - Noupoort axis does have a certain integrative function, especially in so far as road and rail traffic to, from and between the metropolitan area in the south and the principal region of the country to the north is concerned, and in so far as internal communications and accessibility between the 8 magisterial districts in the sub-region is concerned. On the other hand, the fact of the matter is that, for a distance of some 25 km north of Cookhouse, the Somerset East-Cradock national road, as well as a few minor stretches of the main railway line, traverse the Bedford magisterial district, thereby drawing the latter into its sphere of influence. Whilst this in no way gainsays the validity of the previous comment regarding the integrative function of the communications axis, it does rather diminish the validity of the grouping itself as a viable sub-region for analysis purposes. The exclusion of Bedford magisterial district similarly diminishes the advantages which are conferred on the grouping by virtue of two other factors: (a) that it corresponds approximately to the 'natural' region of the upper Fish valley and catchment area, and (b) that it contains all areas likely to derive fairly immediate direct or indirect benefit from the first phase of the Orange-Fish scheme. Thus, Cradock and Somerset East will be the first areas to receive water; Steynsburg, Maraisburg and, to a lesser extent, the marginal district of Tarka, are already benefitting from the stimulus of the construction programme; and Middelburg and Noupoort, although above the watershed, will benefit from increased traffic along the communications axis. But despite the cohesion derived from these factors, there is no trading area in the sub-region which stands out, suggesting that the degree of interdependency between the 8 constituent districts is not very marked.

Sub-region I appears as a more successful grouping, having one dominant trade area, one communications focus, and one readily identifiable node in Graaff-Reinet. It also corresponds with the 'natural' region of the upper Sundays river valley, apart from the exclusion of Pearston magisterial district which also forms part of the Sundays catchment area, and apart from the inclusion of Steytlerville magisterial district, which lies across the Klein Winterhoekberge and which forms part of the Gamtoos catchment area. This sub-region also contains those areas which stand to gain if the original plan to extend the Orange-Fish scheme to the upper Sundays valley is not shelved. In this respect, Pearston has a marginal situation, since it would benefit from development in both catchment areas.

Despite the shortcomings of sub-regions I and II, the differences between the three groupings appear to have been more than sufficient to suggest that they are in some measure functionally distinct (Schedule D).

They are not, however, particularly homogeneous groupings, although this factor varies considerably between the three sub-regions. Thus, sub-region II emerges fairly frequently as the grouping of least variability, especially on a number of the demographic factors and, to a lesser extent, on some of the agricultural and geographical factors.

It can be concluded that breakdown B is both feasible and viable. Moreover, the distinction drawn between the two main catchment areas of the Sundays and Fish Rivers has its advantages in relation to the raison d' être of the Cape Midlands and Karroo survey, namely the Orange-Fish-Sundays scheme. However,

the breakdown does have defects in so far as internal interdependency within sub-regions is concerned. Moreover, it exhibits a relatively marked lack of homogeneity in respect of the three main factor groupings. Hence, whilst Truu does not appear to have found any major shortcomings in the breakdown from the point of view of his demographic study, it may not be the most suitable breakdown for purposes of general analysis in the region.

Breakdown C

This grouping stems from the earlier discussion of the suggestion for the delineation of an area which is at one and the same time a 'core' and an area of marked homogeneity in respect of agricultural and related characteristics. It can thus also be regarded as an attempt to reconcile the two criteria of nodality and homogeneity for regional delimitation.

Of the three constituent sub-regions, the 'eastern' region corresponds to that already discussed in relation to breakdown A, and thus requires no further comment here except to recall that it did not represent a particularly successful grouping. The remaining two sub-regions - the 'core' and the 'periphery' - again pose the question as to whether an overall pattern of nodality can be superimposed upon the eastern half of the study region, and the answer must again be that, in terms of the present pattern of development, in which integration and interdependency are not marked, this approach has dubious validity.

Nevertheless, whether justified or not, the grouping together of the districts containing the main urban centres of the Fish and Sundays valleys results in a sub-regional breakdown in which significant differences are evident in a wide range of development factors (Schedule D). But once again, when it comes to homogeneity, average variability within the three sub-regions is relatively high. What is more, this variability is no less marked in respect of agricultural and geographical factors than in respect of other factors, despite the fact that delineation of the 'core' region was based on its apparently high degree of homogeneity.[1]

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1. This seemingly contradictory situation arises from the fact that the claim of homogeneity is based on the (unpublished) results of Kleinloog's survey of farming in the study area. Indeed, the point is made by Professor Daniel in his memorandum (1971, p. 3) that his conclusions were "based on this data (which has) been crucial to the decisions reached at this stage". But it is clear from this data that Kleinloog's universe was not defined in terms of the number of farm holdings in each magisterial district as reflected in the agricultural censuses. Thus, for example, Kleinloog's universe in Cradock magisterial district comprised 123 farms, whereas the 1967/68 census identified 301 holdings. On the other hand, in the case of Graaff-Reinet, Somerset East, Middelburg and Pearston magisterial districts, Kleinloog's universe was between 11% and 51% higher than the number of units in the census. A study of the census data reveals that the homogeneity of farm size suggested by Kleinloog's data in terms of his definition of farming units is not apparent in terms of the census definition. Indeed, on the basis of the latter, the shape and dispersion of the distribution of farm sizes differs markedly amongst the various magisterial districts in the 'core'. Hence, until it can be established which of the two definitions has greater validity, the suggestion that the 'core' is a homogeneous agricultural region is open to question.

The relationship of the 'core' to the Orange-Fish scheme is rather different from that exhibited by sub-region II in breakdown B. The 'core' remedies the omission of Bedford from the latter, but it includes, in addition to the three districts of most direct and immediate impact and two districts (Middelburg and Pearston) which will benefit indirectly in the early stages, the Graaff-Reinet area which is marginally situated in relation to the first stage effects of the scheme.

Breakdown C thus does not appear to have any marked advantages over B as a means of subdividing the region for analysis purposes.

Breakdown D

This breakdown differs from C only in one respect, namely that it divides the 'eastern' region of C into two distinct sub-regions, with Albany, Alexandria and Bathurst magisterial districts falling into the one group and Adelaide, Fort Beaufort, Stockenström and Victoria East magisterial districts in the other. Since these correspond respectively to the Coastal and Border sub-regions used in this report, they can conveniently be referred to as such.

The 'core' and 'periphery' have already been discussed. The grouping of the four magisterial districts in the Border sub-region derives partly from the fact that they are orientated towards East London rather than Port Elizabeth, partly from the close association between their main urban centres and partly from the fact that they form one divisional council area (together with the small districts of Keiskammahoek and Middledrift). Although they fall within the sphere of influence of Grahamstown's trade area, they do form a distinct trade area on their own, although in this respect the exclusion of Bedford magisterial district is unfortunate (Cook, 1971, Fig. 37). The urban centres are linked by both road and rail and together they comprise a focus for the surrounding rural areas.

Although the Coastal sub-region does not include the full zone of influence of Grahamstown's trade area, it nevertheless is clearly a nodal region. In regard to communications, therefore, this division of the eastern areas eliminates the disadvantage of the previous grouping in respect of the lack of rail communications between the Border and Coastal sub-region.

As in the case of B and C, breakdown D shows up as four distinct areas in terms of significant differences in development factors (Schedule D). The refinement of the grouping in the east also has beneficial effects in so far as homogeneity is concerned, particularly in relation to demographic and economic factors. But in respect of agricultural and geographical factors, the breakdown does not perform significantly better than either B or C. This is probably partly attributable again to the relative lack of homogeneity in the 'core' area.

This breakdown clearly represents an improvement over the others which have thus far been discussed. But it still retains the disadvantages inherent in the division of the western portion of the region in breakdown C.

Breakdown E

In this breakdown, the Coastal and Border sub-region of breakdown D are retained, but the remainder of the region is organized into three smaller groupings.

The first - the Sundays sub-region - corresponds very closely to Truu's sub-region I, except that Pearston is added. It thus exhibits much the same advantages.

Next, the three districts of Cradock, Somerset East and Bedford are singled out because of their situation in relation to the upper Fish valley and in relation to the area of immediate impact of the Orange-Fish scheme. Cradock clearly acts as the dominant focus for road communications in this Fish sub-region, but there is also an important subsidiary communications focus in the vicinity of Cookhouse. There is, however, no dominant trade area, with the trade areas of Cradock, Somerset East, Bedford and even Grahamstown impinging on the sub-region and, in some instances, overlapping with each other. Furthermore, both Tarka and Steynsburg are excluded although they fall within the sphere of influence of the Cradock trade area, and despite the fact that they also fall within the upper Fish catchment area.

The remaining five magisterial districts together constitute the Escarpment sub-region. These are largely the areas in which the impact of the Orange-Fish scheme will be indirect rather than direct. Middelburg is the main communications focus although the marginal district of Tarka does not really fall within its sphere of influence. The main trade area is also that of Middelburg, although there are also subsidiary trade areas at Hofmeyr and Tarka which again fall outside Middelburg's zone of influence.

These five sub-regions definitely show significant differences in respect of development factors (Schedule D). Moreover, they reflect a much more marked degree of internal homogeneity than any of the other breakdowns in relation to all three major factor groupings. They also distinguish three areas of impact of the Orange-Fish scheme - the area of direct impact; the area of indirect impact; and the Sundays area which will be affected if the scheme is extended to the upper Sundays catchment. Although the Fish and Escarpment sub-regions have defects in respect of internal linkages, these are not as marked as in some of the other suggested breakdowns. Clearly, this breakdown 'performs' best in relation to both the tests applied.

Summary

None of the five sub-regional breakdowns discussed provides a perfect solution to the problem of delineating areas for analysis purposes in the study region. Some of the breakdowns, however, appear to be less advantageous than others, with the breakdown used in the earlier sections of the report appearing the least disadvantageous. It is the most effective of the five breakdowns suggested for achieving a resolution of the two criteria of homogeneity and nodality in regional delimitations.

It is clear that there are several marginal districts, particularly Pearston, Bedford, Tarka and to a lesser extent Maraisburg, which might well with some

profit have been assigned to alternative sub-regions, but this would not necessarily involve major changes in the underlying principles.

Thus, by isolating local factors, and by offering possibilities for aggregation (e. g. the Fish and Escarpment sub-regions together correspond closely to Truu's sub-region II which is the area of influence of the Cape Midlands Development Association), breakdown E appears more flexible than the others, and is likely to accommodate the requirements of different research workers more readily. Thus, for example, research in the Cape Midlands and Karroo region could be organised on the lines of all five sub-regions; or it could concentrate on one of the five, in the knowledge that the area being studied is relatively distinct from other areas in terms of functionality and that it is at the same time a relatively homogeneous grouping; or finally, it could take the form of an in-depth study of one (or more) districts from each sub-region, in the knowledge that the districts selected would be reasonably representative of their respective sub-regions.[1]

PLANNING REGIONS

The notion of the planning region, which is sometimes also referred to as a 'programming' or a 'policy implementation' region, is probably one of the most misunderstood concepts of regional analysis.

The most important point about the planning region is that it is the vehicle for translating development plans into planned development. Indeed, as the quotation from Richardson earlier in this Appendix suggested, the factor which gives a planning region cohesion and coherence is that it is "an area over which economic decisions apply". Consequently, there is no reason why a planning region should not at one and the same time also be a nodal, a homogeneous, a development, a natural (e. g. river basin) or an administrative region (e. g. province, magisterial district, local authority area).

However, as Richardson has pointed out (1969a, p. 11), "regional policy and planning must combine both inter-regional and intra-regional analysis" and the fact that homogeneous, nodal and planning regions are frequently discussed separately "must not be taken to imply a division in the subject matter itself". He adds that "there is a widespread view that the nodal ... region is the optimal planning unit" (1969b, p. 230).

In so far as the Cape Midlands and Karroo region is concerned, it has already been suggested that it was regarded by the sponsoring bodies as a 'planning region' by virtue of its association with the Orange-Fish project, but that the validity of this conception of the region was subject to some criticism on the grounds of its failure to take full account of the interdependence of the areas affected by the project. In this respect, Richardson's comments (1969a, p. 109) are again apposite: "Although planning regions must be taken as given,

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1. This last-mentioned procedure was adopted to good effect by Saville (1967) in his study of regional economic development in Italy.

they may be badly delimited if their boundaries do not conform to the boundaries of natural economic regions. If, as is widely believed, the nodal region is the optimal planning unit, then planning decisions will be distorted if administrative regions (for policy implementation purposes) are drawn up without regard to the functional linkages between centres". This view is echoed by Friedmann (1958) when he states that "the delimitation of planning regions and the organization of planning administration should take the unity of city and region into account".

Hence, functionality would appear to be as important in determining regions for policy implementation purposes as it is for analysis purposes, and the discussion in the preceding paragraphs is not without relevance for the delineation of planning regions within the Cape Midlands and Karroo region. Indeed, it may well be that the five sub-regions which provide a useful basis for analysis might also provide a starting point for the identification of planning regions.

On the other hand, there has been the suggestion that six magisterial districts can be identified as the 'core' for the entire Cape Midlands and Karroo study area "in terms of future growth and development" (Daniel, 1971). In this sense the idea corresponds to Friedmann's view of 'core regions' as areas "characterized by their high promise for economic growth" (1966, p.41), although it plainly lacks at present the high degree of integration implicit in Friedmann's conception. However, the suggestion that these six magisterial districts will form the future focus of the whole study region must be regarded as conjectural at this stage. The potential of the 'core' is beyond doubt, but so is that of the southern and coastal areas of Alexandria, Bathurst and Albany, and the nature and scale of development which will take place in these different locations will depend upon a large number of hitherto indeterminate factors.

In other words, until more is known about the intentions of the government in regard to the region, and until there is a wider framework which permits assumptions to be made about the parameters of future development in the area, it will not be possible to delineate planning regions which will be meaningful areas for policy implementation purposes.

SCHEDULE A : INTERREGIONAL COMPARISONS : DEFINITION OF REGIONS

NAME OF REGION AND MAP REFERENCE (FIG. 7)

CAPE MIDLANDS AND KARROO (CMK)	NORTH-WEST CAPE (NWC)	NORTH-EAST CAPE (NEC)	NORTH CAPE (NC)	PORT ELIZABETH-MIDLANDS (PEM)	CENTRAL KARROO (CK)	PORT ELIZABETH-UITENHAGE (PEU)
MAGISTERIAL DISTRICTS[1]						
Aberdeen	Beaufort West	Albert	Barkly West	Aberdeen	Beaufort West	Hankey
Adelaide	Britstown	Aliwal North	Boshof	Albany	Carnarvon	Humansdorp
Albany	Calvinia	Barkly East	Christiana	Albert	Fraserburg	Joubertina
Alexandria	Carnarvon	Elliot	Gordonia	Alexandria	Laingsburg	Kirkwood
Bathurst	Clanwilliam	Indwe	Hartswater	Aliwal North	Prince Albert	Port Elizabeth
Bedford	De Aar	Lady Grey	Hay	Bathurst	Richmond	Uitenhage
Cradock	Fraserburg	Maclear	Herbert	Colesburg	Sutherland	
Fort Beaufort	Hay	Molteno	Jacobsdal	Cradock	Victoria West	
Graaff-Reinet	Hopetown	Wodehouse	Kimberley	Graaff-Reinet	Williston	
Jansenville	Kenhardt		Kuruman	Hankey	Willowmore	
Maraisburg	Laingsburg		Mafeking	Hanover		
Middelburg	Namakwaland		Postmasburg	Humansdorp		
Murraysburg	Philipstown		Taung	Jansenville		
Noupoort	Prieska		Vryburg	Joubertina		
Pearston	Prince Albert		Warrenton	Kirkwood		
Somerset East	Sutherland			Maraisburg		
Steynsburg	Vanrhynsdorp			Middelburg		
Steytlerville	Victoria West			Murraysburg		
Stockenström	Vredendal			Noupoort		
Tarka	Williston			Pearston		
Victoria East				Port Elizabeth		
				Richmond		
				Somerset East		
				Steynsburg		
				Steytlerville		
				Uitenhage		
				Uniondale		
				Venterstad		
				Willowmore		

1. In compiling this schedule, changes in names of magisterial districts, alterations in their boundaries and the creation of new districts which have taken effect subsequent to the dates of the various surveys have all been taken into account. In a number of instances, therefore, the lists of the districts in each region do not correspond exactly with the lists in the original publications from which they were compiled, although the actual areas covered are identical in both instances.

(Source: Compiled from Banach, 1969; Cilliers et al, 1964; W. J. F. du Toit, 1970; Kotzé, 1966; Malan, 1969; and Research Report No. 2, Institute of Planning Research, University of Port Elizabeth)

SCHEDULE B : ECONOMIC ACTIVITIES CLASSIFIED DIFFERENTLY FOR PURPOSES OF GGP ESTIMATIONS AND EMPLOYMENT CLASSIFICATIONS

ECONOMIC ACTIVITY	CLASSIFICATION	
	GGP (Production Sub-Sectors)	POPULATION CENSUS (Industry Division)
Local authority manufacturing undertakings (e.g. abbatoirs, breweries, saw mills etc.)	Gen. govt. services	Manufacturing
Local authority 'power' services (electricity, water, gas, sanitation etc.)	Gen. govt. services	Electricity, gas and water
Local authority transport undertakings		
(i) administration and operation	Gen. govt. services	Transport, Storage and Communication
(ii) workshops	Gen. govt. services	Manufacturing
'Public works' construction and maintenance (incl. roads, dams, all municipal and govt. buildings)	Gen. govt. services	Construction
South African Railways		
(i) administration and operation	Transport, Storage & Communication	Transport, Storage and Communication
(ii) permanent way and works sections	Transport, Storage & Communication	Construction
(iii) catering, bedding and cleaning	Transport, Storage & Communication	Other services
Ownership of dwellings	Ownership of dwellings	Not applicable

(SOURCE: Code List, 1960, Population Census; Banach, 1969, Appendix B; Nel and de Coning, 1965, Part II)

SCHEDULE C : COMPARISON OF FIVE ALTERNATIVES FOR REGIONALIZATION OF STUDY REGION

SUB-REGIONAL GROUPINGS OF MAGISTERIAL DISTRICTS

A

West/East

West	East
Aberdeen	Adelaide
Bedford	Albany
Cradock	Alexandria
Graaff-Reinet	Bathurst
Jansenville	Fort Beaufort
Maraisburg	Stockenström
Middelburg	Victoria East
Murraysburg	
Noupoort	
Pearston	
Somerset East	
Steynsburg	
Steytlerville	
Tarka	

B

Truu (Regional Development Associations)

I	II	III
Aberdeen	Cradock	Adelaide
Graaff-Reinet	Maraisburg	Albany
Jansenville	Middelburg	Alexandria
Murraysburg	Noupoort	Bathurst
Steytlerville	Pearston	Bedford
	Somerset East	Fort Beaufort
	Steynsburg	Stockenström
	Tarka	Victoria East

C

'Core/Periphery' (3-region)

'Core'	'Periphery'	Eastern
Bedford	Aberdeen	Adelaide
Cradock	Jansenville	Albany
Graaff-Reinet	Maraisburg	Alexandria
Middelburg	Murraysburg	Bathurst
Pearston	Noupoort	Fort Beaufort
Somerset East	Steynsburg	Stockenström
	Steytlerville	Victoria East
	Tarka	

D

'Core/Periphery' (4-region)

'Core'	'Periphery'	Border	Coastal
Bedford	Aberdeen	Adelaide	Albany
Cradock	Jansenville	Fort Beaufort	Alexandria
Graaff-Reinet	Maraisburg	Stockenström	Bathurst
Middelburg	Murraysburg	Victoria East	
Pearston	Noupoort		
Somerset East	Steynsburg		
	Steytlerville		
	Tarka		

E

Functional (5-region)

Sundays	Escarpment	Fish	Border	Coastal
Aberdeen	Maraisburg	Bedford	Adelaide	Albany
Graaff-Reinet	Middelburg	Cradock	Fort Beaufort	Alexandria
Jansenville	Noupoort	Somerset East	Stockenström	Bathurst
Murraysburg	Steynsburg		Victoria East	
Pearston	Tarka			
Steytlerville				

SCHEDULE D : COMPARISON OF RESULTS OF TESTS FOR FUNCTIONALITY AND HOMOGENEITY IN FIVE SUB-REGIONAL BREAKDOWNS

	CHARACTERISTICS/VARIABLES TESTED	'FUNCTIONALITY' TEST (SIGNIFICANCE OF DIFFERENCES) SUB-REGIONAL BREAKDOWN[1]					HOMOGENEITY TEST (CO-EFFICIENT OF VARIATION) SUB-REGIONAL BREAKDOWN				
	CHARACTERISTICS/VARIABLES TESTED	A	B	C	D	E	A	B	C	D	E
		Value of test statistic required to reject null hypothesis at 95% confidence level[2]					Mean value of co-efficient of variation for all constituent sub-regions				
		5	5,99	5,99	7,82	9,49	%				
		Value of test statistic obtained									
DEMO-GRAPHIC	White population density (1970)	6	10,1	10,8	11,0	13,3	55	61	57	47	44
	Coloured population density (1970)	12	1,3	6,9	7,7	3,8	52	53	47	41	42
	Bantu population density (1970)	2	17,0	14,0	14,0	18,2	52	50	54	47	33
	Total population density (1970)	2	14,8	14,7	14,7	16,6	40	45	39	35	30
	% Whites in total population (1970)	8	7,7	6,1	7,5	8,2	36	27	32	30	29
	% Coloureds in total population (1970)	8	13,5	9,0	9,4	15,4	54	40	52	47	35
	% Bantu in total population (1970)	6	14,7	10,3	10,4	15,8	24	20	28	23	16
ECONO-MIC	GGP/km^2 (1959/60)	4	12,5	15,7	16,1	19,8	37	41	28	25	26
	GGP/capita (1959/60)	6	11,7	7,8	8,6	12,0	29	22	25	25	23
	GVA[3] by Agriculture/km^2 (1959/60)	4	14,0	13,3	14,0	16,3	37	34	32	26	21
	GVA by Agriculture/capita (1959/60)	6	8,0	8,4	10,1	13,4	41	36	39	35	25
	GVA by Agriculture as % GGP (1959/60)	10	0,5	1,5	2.7	3,3	34	34	33	33	31
AGRIC/ GEOGR	Median size of farm (1963/64)	4	11,3	12,9	13,1	14,0	50	45	40	37	33
	Goats as % total livestock units (1967/68)	12	4,0	1,8	1,9	7,3	77	77	76	70	51
	Cattle as % total livestock units (1967/68)	2	16,8	14,3	14,3	17,1	70	60	67	67	55
	Sheep as % total livestock units (1967/68)	10	4,1	2,1	2,5	11,3	24	22	22	22	16
	% total magisterial district cultivation[4]	4	14,0	13,1	13,6	16,6	56	54	50	45	36
	Mean annual rainfall[5]	6	14,7	9,7	9,9	13,4	37	23	32	26	20

1. Refer to Schedule C for key to different breakdowns.
2. For breakdown A, value of test statistic equal to, or lower than, required value rejects null hypothesis (H_o) at 95% confidence level; for remaining breakdowns, B to E, value of test statistic equal to, or higher than, required value rejects H_o.
3. GVA = Gross Value Added.
4. From Badenhorst, p. 95, Table 10.
5. From Badenhorst, p. 45, Table 6. In this case the data apply only to one point in each magisterial district for which rain measurements were available. No data were available for either Noupoort or Alexandria magisterial districts.

TABLE 1.1 : GGP BY PRODUCTION SUB-SECTOR : CAPE MIDLANDS AND KARROO REGION[1] (1954/55 TO 1959/60) (R'000)

YEAR	PRODUCTION SUB-SECTOR									
	Agriculture Forestry & Fishing	Mining and Quarrying	Manufacturing Construction and Power	Transport Storage & Communication	Trade	Financial Institutions & Real Estate	Ownership of Dwellings	General Government Services	Other Services	TOTAL GGP
1954/55	29 743	553	2 482	6 656	5 566	1 300	2 850	6 598	6 339	62 087
1955/56	24 592	546	2 673	6 878	5 419	1 407	3 068	6 868	6 751	58 202
1956/57	32 321	250	2 986	7 295	5 929	1 526	3 356	7 301	7 239	68 203
1957/58	23 374	159	3 332	7 637	5 899	1 562	3 591	8 908	7 671	62 133
1958/59	24 422	919	3 576	8 034	5 343	1 608	3 764	8 342	7 971	63 979
1959/60	26 301	336	3 840	8 808	5 655	1 839	3 831	9 042	8 570	68 222

1. Including Hanover magisterial district

(Source: Compiled from data supplied by Department of Planning)

TABLE 1.2 : GGP BY PRODUCTION SUB-SECTOR : VARIOUS REGIONS (1959/60) AND SOUTH AFRICA (1959) (R MILLION)

REGION[1]	PRODUCTION SUB-SECTOR									
	Agriculture Forestry & Fishing	Mining and Quarrying	Manufacturing Construction and Power	Transport Storage & Communication	Trade	Financial Institutions and Real Estate	Ownership of Dwellings	General Government Services	Other Services	TOTAL GGP
CMK[2]	26,3	0,3	3,8	8,8	5,7	1,8	3,8	9,0	8,6	68,2
NC	35,4	29,1	13,2	16,3	16,0	4,1	4,4	11,5	13,3	143,4
NEC	8,3	-	1,0	2,5	1,6	0,5	1,1	2,4	2,4	19,8
NWC	24,2	20,2	3,5	10,5	5,2	2,3	4,4	9,9	7,4	87,8
PEM	38,5	1,4	81,8	41,4	34,5	7,0	10,8	29,6	30,2	275,2
(SA)	(576)	(598)	(1 108)	(457)	(616)	(153)	(193)	(431)	(421)	(4 552)

1. CMK = Cape Midlands and Karroo; NC = North Cape; NEC = North-East Cape; NWC = North-West Cape; PEM = Port Elizabeth-Midlands; SA = South Africa (See Fig. 7)
2. Includes Hanover magisterial district

(Source: Calculated from data supplied by the Department of Planning; also from data in Banach, 1969; Cilliers et al, 1964; Kotzé, 1966; Malan, 1969; and "South African Statistics", 1968)

TABLE 1.3 : GGP PER SQ KM : VARIOUS REGIONS (1954/55 TO1959/60) AND SOUTH AFRICA (1954 TO1959)

REGION	AREA (sq km)	GGP	YEAR					
			1954/55	1955/56	1956/57	1957/58	1958/59	1959/60
CMK[1]	76 100	Total (R million)	62	58	68	62	64	68
		Per km^2 (R)	816	765	896	816	841	896
NC	191 300	Total (R million)	101	105	117	129	128	143
		Per km^2 (R)	528	551	612	675	668	749
NC (excl. Kimberley)	187 700	Total (R million)	66	72	81	88	85	97
		Per km^2 (R)	351	386	431	466	453	518
NEC	21 100	Total (R million)	19	19	24	20	18	20
		Per km^2 (R)	915	918	1 120	965	850	934
NWC	288 700	Total (R million)	90	..[2]	..	..	84	88
		Per km^2 (R)	311	..	..	..	292	304
PEM	110 500	Total (R million)	241	241	262	263	257	275
		Per km^2 (R)	2 180	2 186	2 369	2 380	2 327	2 492
SA	1 221 000	Total (R million)	3 542	3 727	3 998	4 238	4 313	4 552
		Per km^2 (R)	2 901	3 052	3 274	3 471	3 532	3 728

1. Includes Hanover magisterial district
2. GGP data not available (See Cilliers et al, 1964)

(Source: As for Table 1.2)

TABLE 1.4 : INCREASE/DECREASE IN GGP BY PRODUCTION SUB-SECTOR : VARIOUS REGIONS (1954/55 TO 1959/60) AND SOUTH AFRICA (1954 TO 1959) (%)

REGION	PRODUCTION SUB-SECTOR									
	Agriculture Forestry and Fishing	Mining and Quarrying	Manufacturing Construction and Power	Transport Storage and Communication	Trade	Financial Institutions and Real Estate	Ownership of Dwellings	General Government Services	Other Services	TOTAL GGP
CMK[1]	-12	-39	+55	+32	+ 2	+42	+34	+37	+35	+10
NC	+50	+38	+54	+42	+36	+48	+33	+38	+32	+42
NEC	-18	-	- 1	+35	- 6	+33	+13	+44	+31	+ 2
NWC	-30	- 4	+27	+44	-29	+45	+57	+50	+23	- 2
PEM	-13	+51	+ 5	+34	+ 9	+40	+41	+49	+31	+14
SA	- 2	+59	+31	+33	+17	+46	+41	+43	+30	+29

1. Includes Hanover magisterial district

(Source: As for Table 1.2)

TABLE 1.5 : NET SHIFT IN GGP : VARIOUS REGIONS (1954/55 TO 1959/50) (R'000)

REGION	GGP (1954/55)	'EXPECTED' GGP (1959/60)	ACTUAL GGP (1959/60)	NET SHIFT IN TOTAL GGP	NET SHIFT AS % OF 'EXPECTED' INCREASE
CMK[1]	62 087	80 092	68 222	-11 870	- 66
NC	101 105	130 425	143 378	+12 953	+ 44
NEC	19 340	24 949	19 755	- 5 194	- 93
NWC	89 926	116 005	87 764	-28 241	-108
PEM	240 792	310 622	275 241	-35 381	- 51

1. Includes Hanover magisterial district

(Source: As for Table 1.2)

TABLE 1.6 : SIZE, COMPOSITION AND DENSITY OF POPULATION BY RACE : VARIOUS REGIONS AND SOUTH AFRICA (1960)

REGION	WHITES	COLOUREDS AND ASIANS	BANTU	TOTAL
		Population ('000)		
CMK	60	80	244	384
NC	106	105	377	587
NWC	71	163	40	274
NEC	20	8	100	128
PEM	207	216	406	829
SA	3 088	1 986	10 928	16 003
		Race Composition (%)		
CMK	16	21	64	100
NC	18	18	64	100
NWC	26	59	15	100
NEC	15	6	78	100
PEM	25	26	49	100
SA	19	12	68	100
		Density (persons/km^2)		
CMK	0, 8	1, 1	3, 4	5, 3
NC	0, 6	0, 5	2, 0	3, 1
NWC	0, 2	0, 6	0, 1	0, 9
NEC	0, 9	0, 4	4, 7	6, 1
PEM	1, 9	2, 0	3, 7	7, 5
SA	2, 5	1, 6	8, 9	13, 1
		Share of Republic Race Total (%)		
CMK	2, 0	5, 3[1]	2, 2	2, 4
NC	3, 4	6, 9[1]	3, 5[2]	3, 7
NWC	2, 3	10, 8[1]	-	1, 7
NEC	0, 6	0, 5[1]	0, 9	0, 8
PEM	6, 7	14, 3[1]	3, 7	5, 2
SA	100, 0	100, 0	100, 0	100, 0

1. Combined Coloured and Asian regional population as % of Republic Coloured population
2. Less than 0, 5%

(Source: Banach, 1969; Cilliers et al 1964; Kotzé, 1966; Malan, 1969; Truu, 1971; and Vol. 1, 1960 Population Census)

TABLE 1.7 : CRUDE ACTIVITY RATES : VARIOUS REGIONS AND SOUTH AFRICA (1960)

REGION	TOTAL POPULATION ('000)	ECONOMICALLY ACTIVE[3] ('000)	CRUDE ACTIVITY RATE (%)[4]
		WHITES	
CMK[1]	61,2	19,8	32
NC	105,6	34,9	33
NC (excl.Kimberley)	78,9	25,2	32
NEC	19,8	6,5	33
NWC	71,4	23,4	33
PEM	207,4	76,3	37
SA	3 080,2	1 151,1	37
		COLOUREDS AND ASIANS	
CMK[1]	81,8[2]	26,7[2]	33
NC	104,8	33,6	32
NC (excl.Kimberley)	84,2	26,6	32
NEC	8,1	2,7	33
NWC	162,7[2]	56,8[2]	35
PEM	211,1[2]	73,9[2]	35
SA	1 986,1	679,8	34
		BANTU	
CMK[1]	246,5	75,8	31
NC	376,9	128,2	34
NC (excl.Kimberley)	335,5	109,6	33
NEC	100,1	33,7	34
NWC	40,0	21,6	54
PEM	405,9	143,7	35
SA	10 927,9	3 890,0	36
		TOTAL	
CMK[1]	389,5[2]	122,3[2]	31
NC	587,3	196,7	33
NC (excl.Kimberley)	498,7	161,3	32
NEC	128,0	43,0	34
NWC	274,0[2]	101,8[2]	37
PEM	824,4[2]	293,9[2]	36
SA	15 994,2	5 720,9	36

1. Includes Hanover magisterial district
2. Excludes Asians
3. Includes persons classified as 'unemployed and unspecified'
4. Total economically active population expressed as percentage of total population

(Source: As for Table 1.6)

TABLE 1.8 : GGP PER CAPITA : VARIOUS REGIONS (1954/55 TO1959/60) AND SOUTH AFRICA (1954 TO1959)

REGION		1954/55	1955/56	1956/57	1957/58	1958/59	1959/60
CMK[1]	Mid-year population ('000)	350	356	363	370	377	385
	GGP per capita (R)	178	163	188	168	170	177
NC	Mid-year population ('000)	499	514	529	544	560	576
	GGP per capita (R)	202	205	222	237	228	249
NEC	Mid-year population ('000)	115	117	119	122	124	127
	GGP per capita (R)	168	166	198	168	145	156
NWC	Mid-year population ('000)	247	251	256	261	266	271
	GGP per capita (R)	364	..[2]	..[2]	..[2]	317	324
PEM	Mid-year population ('000)	711	730	750	771	792	814
	GGP per capita (R)	339	331	349	341	324	338
SA	Mid-year population ('000)	13 717	14 067	14 421	14 786	15 160	15 546
	GGP per capita (R)	258	265	277	286	284	293

1. Includes Hanover magisterial district
2. GGP data not available (see Cilliers et al, 1964)

(Source: Calculated from data in sources as in Table 1.2, and from interpolated population estimates)

TABLE 1.9 : PRODUCTION SUB-SECTOR COMPOSITION OF GGP : VARIOUS REGIONS (1954/55 AND 1959/60) AND SOUTH AFRICA (1954 AND 1959) (%)

REGION	PRODUCTION SUB-SECTOR									
	Agriculture Forestry and Fishing	Mining and Quarrying	Manufacturing Construction and Power	Transport Storage and Communication	Trade	Financial Institutions and Real Estate	Ownership of Dwellings	General Government Services	Other Services	TOTAL GGP
					1954/55					
CMK[1]	48	1	4	11	9	2	5	11	10	100
NC	23	21	8	11	12	3	3	8	10	100
NC (excl. Kimberley)	35	18	7	6	9	2	4	8	11	100
NEC	52	-	5	10	9	2	5	9	9	100
NWC	38	23	3	8	8	2	3	7	7	100
PEM	18	-	32	13	13	2	3	8	10	100
SA	17	11	24	10	15	3	4	9	9	100
					1959/60					
CMK[1]	39	-	6	13	8	3	6	13	13	100
NC	25	20	9	11	11	3	3	8	9	100
NC (excl. Kimberley)	36	17	8	7	8	2	3	8	10	100
NEC	42	-	5	13	8	3	6	12	12	100
NWC	28	23	4	12	6	3	5	11	9	100
PEM	14	1	30	15	13	3	4	11	11	100
SA	13	13	24	10	14	3	4	9	9	100

1. Including Hanover magisterial district.

(Source: As for Table 1.2)

TABLE 1.10 : TOTAL, COMPOSITION AND LOCAL FACTOR NET SHIFTS IN GGP : VARIOUS REGIONS (1954/55 TO 1959/60) (R'000)

REGION	LOCAL FACTOR SHIFT BY PRODUCTION SUB-SECTOR										TOTAL COMPOSITION SHIFT	TOTAL NET SHIFT IN GGP
	Agriculture Forestry and Fishing	Mining and Quarrying	Manufacturing Construction and Power	Transport Storage and Communication	Trade	Financial Institutions and Real Estate	Ownership of Dwellings	General Government Services	Other Services	TOTAL LOCAL FACTOR SHIFT		
CMK[1]	- 2 847	- 543	+ 589	- 44	- 857	- 59	-188	- 393	+329	- 4 013	-7 857	-11 870
NC	+12 236	- 4 361	+ 1 942	+1 010	+2 211	+ 50	-251	- 385	+180	+12 632	+ 321	+12 953
NC (excl. Kimberley)	+12 203	- 2 472	+ 2 264	+1 214	+1 371	+189	-206	+ 66	+134	+14 763	-2 607	+12 156
NEC	- 1 577	-	- 315	+ 39	- 392	- 50	-127	+ 16	+ 10	- 2 396	-2 798	- 5 194
NWC	- 9 488	-13 268	- 119	+ 790	-3 349	- 13	+455	+ 466	-416	-24 942	-3 299	-28 241
PEM	- 4 659	- 75	-20 214	+ 353	-2 423	-303	- 32	+1 247	+326	-25 780	-9 601	-35 381

1. Including Hanover magisterial district

(Source: As for Table 1.2)

TABLE 2.1 : ENUMERATED TOTAL POPULATION BY RACE WITHIN SUB-REGION (1904, 1951, 1960 AND 1970)

SUB-REGION	1970					1960				
	W	C	A	B	T	W	C	A	B	T
Sundays	11 200	38 536	25	21 220	70 981	13 650	33 700	34	18 540	65 924
Escarpment	9 650	13 562	6	35 584	58 802	9 916	11 087	36	34 583	55 622
Fish	10 829	18 089	67	48 373	77 358	12 777	18 943	97	44 670	76 487
Border	5 557	7 658	90	67 968[1]	81 273[1]	5 829	6 790	131	58 244	70 994
Coastal	17 654	10 234	242	104 202	132 332	18 154	8 957	202	87 919	115 232
CMK	54 890	88 079	430	277 347[1]	420 746[1]	60 326	79 477	500	243 956	384 259

SUB-REGION	1951					1904				
	W	C	A	B	T	W	C	A	B	T
Sundays	14 986	24 877	50	19 322	59 235	23 802	16 125	16	16 127	56 070
Escarpment	9 719	6 993	38	27 649	44 399	13 787	6 327	13	13 068	33 195
Fish	14 206	12 981	86	37 371	64 644	14 163	8 757	207	20 435	43 562
Border	6 474	5 749	96	47 743	60 062	7 494	4 876	12	36 931	49 313
Coastal	16 974	7 114	208	68 040	92 336	15 034	5 103	144	30 853	51 134
CMK	62 359	57 714	478	200 125	320 676	74 280	41 188	392	117 414	233 274

1. Estimated

(Source: Population Census Reports, and Bureau of Statistics' Report No. 02-02-01, "Urban and Rural Population of South Africa: 1904-1960")

TABLE 2.2 : SPATIAL DISTRIBUTION OF TOTAL POPULATION BY RACE AMONGST SUB-REGIONS (%) X RACE DISTRIBUTION OF TOTAL POPULATION WITHIN SUB-REGION (%) (1960 and 1970)

SUB-REGION	W	C	A	B	T
			1970		
Sundays	16 20	54 44	- 6	30 8	100 17
Escarpment	16 18	23 15	- 1	61 13	100 14
Fish	14 20	23 21	- 16	63 18	100 18
Border	7 10	9 9	- 21	84 25	100 19
Coastal	13 32	8 12	- 56	78 37	100 31
CMK	13 100	21 100	- 100	66 100	100 100
			1960		
Sundays	21 23	51 42	- 7	28 8	100 17
Escarpment	18 16	20 14	- 7	62 14	100 14
Fish	17 21	25 24	- 19	58 18	100 20
Border	8 10	10 9	- 26	82 24	100 18
Coastal	16 30	8 11	- 40	76 36	100 30
CMK	16 100	21 100	- 100	63 100	100 100

(Source: Calculated from data in Table 2.1)

TABLE 2.3 : POPULATION DENSITY BY RACE WITHIN SUB-REGION (1970)

SUB-REGION	AREA (sq km)	DENSITY (Persons per sq km)				
		W	C	A	B	T
Sundays	29 857	0,4	1,3	-	0,7	2,4
Escarpment	15 521	0,6	0,9	-	2,3	3,8
Fish	14 172	0,8	1,3	-	3,4	5,5
Border	4 595	1,2	1,7	-	14,8	17,7
Coastal	8 317	2,1	1,2	-	12,5	15,9
CMK	72 462	0,8	1,2	-	3,8	5,8

(Source: 1970 Population Census, and Badenhorst, 1970, Table 1)

TABLE 2.4 : URBAN POPULATION AS % OF TOTAL POPULATION BY RACE WITHIN SUB-REGION (1904, 1960 AND 1970)

SUB-REGION	1970				1960				1904			
	W	C	B	T[1]	W	C	B	T[1]	W	C	B	T[1]
Sundays	75	57	68	63	74	47	55	55	36	42	21	33
Escarpment	65[2]	63	42	51	69	52	37	45	40	47	22	34
Fish	73	57	44	51	71	44	41	47	40	53	23	35
Border	69	54	28	33	67	52	25	31	38	19	6	12
Coastal	78	74	38	46	77	69	31	41	60	52	19	34
CMK	73	60	39	48	73	50	34	43	42	44	16	30

1. Excluding Asians
2. Urban proportion depressed by the enumeration of White construction workers on the Orange River Project, living in areas such as Midshaft (Steynsburg magisterial district), as rural instead of urban

(Source: 1970 Population Census,and Bureau of Statistics' Report No. 02-02-01)

TABLE 2.5 : INCREASE/DECREASE IN POPULATION BY RACE WITHIN SUB-REGION (1904-1970, 1951-1970 AND 1960-1970) (%)

SUB-REGION	1960-1970				1951-1970				1904-1970			
	W	C	B	T[1]	W	C	B	T[1]	W	C	B	T[1]
Sundays	-18	14	14	8	-25	55	10	20	-53	139	32	27
Escarpment	- 3	22	3	6	- 1	94	29	32	-70	114	172	77
Fish	-15	- 5	8	1	-24	39	29	20	-24	107	137	78
Border	- 5	13	17	14	-14	33	42	35	-26	57	84	65
Coastal	- 3	14	19	15	4	44	53	43	17	101	238	159
CMK	- 9	11	14	9	-12	53	39	31	-26	114	136	80

1. Including Asians

(Source: Calculated from data in Table 2.1)

TABLE 2.6 : INCREASE/DECREASE IN URBAN AND RURAL POPULATIONS BY RACE WITHIN SUB-REGION (1904-1970) (%)

SUB-REGION	URBAN				RURAL			
	W	C	B	T[1]	W	C	B	T[1]
Sundays	- 2	+225	+334	+140	-82	+76	- 46	- 30
Escarpment	+12	+190	+425	+162	-58[(2)]	+48[(2)]	+101	+ 33
Fish	+39	+121	+347	+158	-65	+90	+ 73	+ 34
Border	+35	+349	+759	+351	-63	-11	+ 49	+ 32
Coastal	+53	+185	+578	+245	-35	+ 9	+159	+113
CMK	+27	+193	+476	+193	-65[2]	+53[2]	+ 74	+ 35

1. Including Asians
2. If Steynsburg magisterial district is excluded (see Text), the figure for Whites in the Escarpment sub-region becomes -75% and that for Whites in the whole region -68%. For Coloureds, the exclusion of Steynsburg magisterial district would also result in slight reductions in the percentage increase

(Source: 1970 Population Census, and Bureau of Statistics' Report No. 02-02-01)

TABLE 2.7 : SIZE, DISTRIBUTION AND GROWTH OF GGP BY SUB-REGION (1954/55 TO 1959/60)

	SUNDAYS	ESCARP-MENT[1]	FISH	BORDER	COASTAL	CMK[1]
TOTAL GGP (R million)						
1954/55	15,4	11,3	14,3	5,9	15,1	62,1
1959/60	15,1	11,4	15,8	7,0	18,9	68,2
DISTRIBUTION (%)						
1954/55	25	18	23	10	24	100
1959/60	22	17	23	10	28	100
INCREASE/DECREASE (%)						
1954/55 - 1959/60	-2	+1	+10	+18	+25	+10

1. Including Hanover magisterial district

(Source: Calculated from data supplied by Department of Planning)

TABLE 2.8 : GGP/KM^2 AND GGP/CAPITA BY SUB-REGION (1959/60)

	SUB-REGION					
	Sundays	Escarpment[1]	Fish	Border	Coastal	CMK[1]
GGP (R million)	15, 1	11, 4	15, 8	7, 0	18, 9	68, 2
Area (000 km^2)	29, 9	19, 2	14, 2	4, 6	8, 3	76, 1
GGP/km^2 (R)	507	593	1 114	1 522	2 274	896
Population (000 persons)[2]	65, 9	61, 4	76, 5	71, 0	115, 2	390, 0
GGP/Capita (R)[2]	229	186	206	98	164	175

1. Includes Hanover magisterial district
2. Enumerated census population at September, 1960. Hence actual per capita GGP levels are marginally higher than those in this table

(Source: Calculated from data supplied by Department of Planning and from Vol. 1 of 1960 Population Census)

TABLE 2.9 : SPATIAL DISTRIBUTION OF TOTAL PERSONAL INCOME BY RACE AMONGST SUB-REGIONS (%) X RACE DISTRIBUTION OF TOTAL PERSONAL INCOME WITHIN SUB-REGION (%) (1959/60)

SUB-REGION	W	C	A	B	T	(T) (1958/59)
Sundays	77 23	16 42	- 3	7 8	100 22	(25)
Escarpment[1]	76 18	8 15	- 4	16 15	100 17	(16)
Fish	77 23	8 22	- 13	14 18	100 22	(22)
Border	58 10	6 9	- 12	36 25	100 12	(11)
Coastal	74 27	4 12	1 68	22 33	100 27	(26)
CMK[1]	74 100	8 100	- 100	18 100	100 100	(100)

1. Including Hanover magisterial district

(Source: 1959/60 data from Nel, 1968a, Vol. II; 1958/59 data from Nel and de Coning, 1965)

TABLE 2.10 : % TOTAL PERSONAL INCOME ACCRUING TO URBAN RESIDENTS BY RACE WITHIN SUB-REGION (1959/60)

SUB-REGION	W	C	A	B	T
Sundays	40	50	100	58	43
Escarpment[1]	48	55	100	49	49
Fish	45	54	100	47	46
Border	57	69	71	42	52
Coastal	61	80	99	44	58
CMK[1]	50	57	96	46	50

1. Including Hanover magisterial district

(Source: Calculated from data in Nel, 1968a, Vol. II)

TABLE 2.11 : INCOME GROUP DISTRIBUTION OF WHITE PERSONAL INCOMES BY SEX AND URBAN AND RURAL AREAS WITHIN SUB-REGION (1960) (%)

SUB-REGION	AREA	SEX	TOTAL PERSONS[1] (number)	INCOME GROUP (R)										
				-400	400-799	800-1199	1200-1599	1600-1999	2000-2999	3000-3999	4000-5999	6000-9999	10000+	TOTAL
Sundays	Urban	M	2381	19	13	14	13	13	17	5	4	2	1	100
		F	1592	47	26	14	5	3	3	1	-	-	-	100
	Rural	M	1344	10	12	12	8	9	14	8	12	8	6	100
		F	261	41	25	8	6	5	8	2	3	2	1	100
Escarpment[2]	Urban	M	1868	8	12	15	17	18	20	5	3	1	-	100
		F	964	40	31	17	6	3	3	1	-	-	-	100
	Rural	M	1278	5	11	13	13	11	15	9	11	8	5	100
		F	207	40	22	13	7	3	7	3	2	2	-	100
Fish	Urban	M	2122	8	11	16	16	19	19	6	4	1	-	100
		F	1259	36	32	16	8	3	3	1	-	-	-	100
	Rural	M	1226	5	10	10	10	11	15	8	12	8	10	100
		F	224	33	21	16	7	6	7	2	5	-	1	100
Border	Urban	M	1037	10	12	12	16	17	19	6	5	2	-	100
		F	734	35	31	17	7	4	4	1	1	-	-	100
	Rural	M	638	12	14	13	12	10	14	9	8	4	4	100
		F	169	35	18	15	7	8	8	4	4	1	-	100
Coastal	Urban	M	3045	13	13	14	15	15	17	6	5	2	1	100
		F	2168	30	32	19	9	4	4	1	-	-	-	100
	Rural	M	1466	11	15	14	13	11	14	6	8	5	4	100
		F	393	44	24	15	5	3	6	2	-	-	1	100
CMK[2]	Urban	M	10453	12	12	14	15	16	18	5	4	2	-	100
		F	6717	37	30	16	7	3	4	1	-	-	-	100
	Rural	M	5952	8	12	13	11	10	15	8	10	7	6	100
		F	1254	40	22	13	6	5	7	2	2	1	1	100

1. Excluding persons with no income and excluding persons with unspecified income
2. Including Hanover magisterial district

(Source: Vol. 7, No. 3, 1960, Population Census)

TABLE 2.12 : TOTAL ECONOMICALLY ACTIVE POPULATION BY RACE WITHIN SUB-REGION (1960) (NUMBER & %)[1]

SUB-REGION	W	C	B	T[3]
Sundays	4 090	10 953	6 383	21 426
(%)	(19)	(51)	(30)	(100)
Escarpment[2]	3 575	4 676	12 216	20 467
(%)	(17)	(23)	(60)	(100)
Fish	4 075	5 995	13 520	23 590
(%)	(17)	(25)	(57)	(100)
Border	2 041	2 201	15 319	19 561
(%)	(10)	(11)	(78)	(100)
Coastal	5 977	2 884	28 391	37 252
(%)	(16)	(8)	(76)	(100)
CMK[2]	19 758	26 709	75 829	122 296
(%)	(16)	(22)	(62)	(100)

1. Includes persons classified as 'unemployed and unspecified'
2. Including Hanover magisterial district
3. Excluding Asians

(Source: Vol. 7, No. 2, 1960, Population Census)

TABLE 2.13 : CRUDE ACTIVITY RATES[1] BY RACE WITHIN SUB-REGION (1960) (%)

SUB-REGION	W	C	B	T[2]
Sundays	30, 0	32, 5	34, 4	32, 5
Escarpment[3]	33, 2	34, 8	32, 9	33, 4
Fish	31, 9	31, 6	30, 3	30, 8
Border	35, 0	32, 4	26, 3	27, 6
Coastal	32, 9	32, 2	32, 3	32, 3
CMK[3]	32, 3	32,6	30, 8	31, 4
(Economic Region 08)	(40, 0)	(38, 0)	(38, 5)	(38, 9)
(Economic Region 18)	(37, 2)	(37, 2)	(34, 3)	(35, 2)

1. Total economically active population (including 'unemployed and unspecified' persons) expressed as % of total population
2. Excluding Asians
3. Including Hanover magisterial district

(Source: Calculated from Vol. 7, No. 2 and Vol. 1, 1960 Population Census)

TABLE 2.14 : FARM/NON-FARM DISTRIBUTION OF EMPLOYMENT[1] BY RACE WITHIN SUB-REGION (1960) (%)

SUB-REGION	WHITES			COLOUREDS			BANTU			ALL RACES[2]		
	Farm	Non-Farm	Total	Farm	Non-Farm	Total	Farm	Non-Farm	Total	Farm	Non-Farm	Total
Sundays	33	67	100	43	57	100	34	66	100	39	61	100
Escarpment[3]	29	71	100	37	63	100	39	61	100	36	64	100
Fish	27	73	100	43	57	100	43	57	100	40	60	100
Border	27	73	100	34	66	100	57	43	100	51	49	100
Coastal	24	76	100	27	73	100	61	39	100	53	47	100
CMK[3]	28	72	100	40	60	100	51	49	100	45	55	100

1. Persons of 'specified' industry group only i.e. excluding 'unemployed and unspecified' category
2. Excluding Asians
3. Including Hanover magisterial district

(Source: Calculated from data in Table 3.4)

TABLE 2.15 : URBAN/RURAL DISTRIBUTION OF ECONOMICALLY ACTIVE WHITES AND COLOUREDS AND OF POTENTIALLY ECONOMICALLY ACTIVE BANTU WITHIN SUB-REGION (1960) (NUMBER AND %)

SUB-REGION	WHITES				COLOUREDS				BANTU			
	Economically Active (No.)[1]	Urban %	Rural %	Total %	Economically Active (No.)[1]	Urban %	Rural %	Total %	Population 15-64 yrs (No.)	Urban %	Rural %	Total %
Sundays	4 083	66	34	100	10 879	44	56	100	8 820	55	45	100
Escarpment[2]	3 571	62	38	100	4 649	49	51	100	17 488	37	63	100
Fish	4 072	67	33	100	5 966	43	57	100	20 225	43	57	100
Border	2 040	67	33	100	1 776	52	48	100	27 692	31	69	100
Coastal	5 609	71	29	100	2 735	68	32	100	41 802	33	67	100
CMK(2)	19 375	67	33	100	26 005	48	52	100	116 027	37	63	100

1. The numbers of economically active persons in this table and those given in Table 2.12 are derived from different tabulations from the 1960 Population Census. According to the Department of Statistics, the differences between these numbers "are ascribable to the method adopted in machine processing the data. The differences are in most cases relatively insignificant and, therefore, unimportant"
2. Including Hanover magisterial district

(Source: Whites and Coloureds: Vol. 7, No. 3, 1960 Population Census; Bantu: Vol. 7, No. 1, 1960 Population Census)

TABLE 2.16 : CRUDE ACTIVITY RATES FOR WHITES AND COLOUREDS AND WORK POTENTIAL RATES FOR BANTU BY URBAN AND RURAL AREAS WITHIN SUB-REGION (1960) (%)

SUB-REGION	WHITES			COLOUREDS			BANTU		
	Crude Activity Rate[2]			Crude Activity Rate[2]			Work Potential Rate[3]		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Sundays	27	39	30	31	34	32	46	49	48
Escarpment[1]	31	38	33	34	35	35	48	46	47
Fish	30	36	32	31	32	31	47	44	45
Border	35	36	35	26	26	26	58	44	48
Coastal	29	38	31	30	32	31	51	46	48
CMK[1]	29	38	32	31	33	32	50	45	47

(1) Including Hanover magisterial district
(2) Total economically active population (including 'unemployed and unspecified' persons) expressed as % of total population
(3) Total population of 'working age' (15-64 years) expressed as % of total population

(Source: Whites and Coloureds: Vol. 1 and Vol. 7, No. 3, 1960 Population Census; Bantu: Vol. 1 and Vol. 7, No. 1, 1960 Population Census)

TABLE 3.1 : GGP BY PRODUCTION SUB-SECTOR WITHIN SUB-REGION (1954/55 TO 1959/60) (R'000)

SUB-REGION	YEAR	PRODUCTION SUB-SECTOR										
		Agriculture Forestry & Fishing	Mining and Quarrying	Manufacturing Construction and Power	Transport Storage & Communication	Trade	Financial Institutions and Real Estate	Ownership of Dwellings	General Government Services	Other Services	TOTAL GGP	%
Sundays	1954/55	8 900	21	382	1 105	1 193	295	611	1 461	1 468	15 436	25
	1955/56	7 316	17	387	1 157	1 183	322	652	1 559	1 570	14 163	24
	1956/57	9 764	10	395	1 224	1 307	355	703	1 638	1 690	17 086	25
	1957/58	6 205	14	520	1 300	1 250	357	742	1 793	1 751	13 932	22
	1958/59	7 675	13	633	1 379	1 121	372	768	1 861	1 666	15 488	24
	1959/60	6 467	2	750	1 532	1 190	421	772	2 194	1 816	15 144	22
Escarpment[1]	1954/55	5 206	502	436	1 732	1 026	253	384	807	959	11 305	18
	1955/56	4 447	491	503	1 808	987	268	401	862	1 040	10 807	19
	1956/57	5 653	196	589	1 884	1 064	293	434	931	1 122	12 166	18
	1957/58	4 047	87	608	1 966	1 072	297	461	993	1 182	10 713	17
	1958/59	3 741	143	609	2 070	914	305	477	1 055	1 260	10 574	17
	1959/60	4 057	252	620	2 245	971	348	480	1 151	1 264	11 388	17
Fish	1954/55	6 934	2	628	2 232	1 251	331	592	1 294	1 082	14 346	23
	1955/56	5 875	1	703	2 249	1 234	372	636	1 275	1 169	13 514	23
	1956/57	8 011	1	824	2 412	1 397	396	700	1 345	1 263	16 349	24
	1957/58	5 815	1	883	2 534	1 326	404	757	1 443	1 336	14 499	23
	1958/59	4 843	1	915	2 660	1 118	406	802	1 545	1 391	13 681	21
	1959/60	6 183	-	956	2 886	1 187	480	818	1 787	1 487	15 784	23
Border	1954/55	2 314	-	347	474	514	136	373	1 140	614	5 912	10
	1955/56	1 815	-	388	498	496	146	399	1 158	596	5 496	9
	1956/57	3 204	-	434	546	576	162	437	1 248	643	7 250	11
	1957/58	2 283	-	463	556	577	169	466	1 345	687	6 546	11
	1958/59	2 535	679	480	587	542	174	478	1 448	720	7 643	12
	1959/60	2 318	-	505	664	576	193	483	1 555	699	6 993	10
Coastal	1954/55	6 389	28	689	1 113	1 582	285	890	1 896	2 216	15 088	24
	1955/56	5 139	37	692	1 166	1 519	299	980	2 014	2 376	14 222	24
	1956/57	5 689	43	744	1 229	1 585	320	1 082	2 139	2 521	15 352	23
	1957/58	5 024	57	858	1 281	1 674	335	1 165	3 334	2 715	16 443	26
	1958/59	5 628	83	939	1 338	1 648	351	1 239	2 433	2 934	16 593	26
	1959/60	7 276	82	1 009	1 481	1 731	397	1 278	2 355	3 304	18 913	28
CMK[1]	1954/55	29 743	553	2 482	6 656	5 566	1 300	2 850	6 598	6 339	62 087	100
	1955/56	24 592	546	2 673	6 878	5 419	1 407	3 068	6 868	6 751	58 202	100
	1956/57	32 321	250	2 986	7 295	5 929	1 526	3 356	7 301	7 239	68 203	100
	1957/58	23 374	159	3 332	7 637	5 899	1 562	3 591	8 908	7 671	62 133	100
	1958/59	24 422	919	3 576	8 034	5 343	1 608	3 764	8 342	7 971	63 979	100
	1959/60	26 301	336	3 840	8 808	5 655	1 839	3 831	9 042	8 570	68 222	100

1. Including Hanover magisterial district

(Source: Compiled from data supplied by Department of Planning)

TABLE 3.2 : PRODUCTION SUB-SECTOR COMPOSITION OF GGP WITHIN SUB-REGION (%) X SUB-REGIONAL COMPOSITION OF GGP WITHIN PRODUCTION SUB-SECTOR (%) (1954/55 AND 1959/60)

SUB-REGION	PRODUCTION SUB-SECTOR									
	Agriculture Forestry & Fishing	Mining & Quarrying	Manuf Const & Power	Transport Storage & Communi-cation	Trade	Financial Instits & Real Estate	Ownership of Dwellings	General Govt Services	Other Services	TOTAL GGP
1954/55										
Sundays	58 30	- 4	2 15	7 17	8 21	2 23	4 21	9 22	10 23	100 25
Escarpment[1]	46 18	4 91	4 18	15 26	9 18	2 19	3 13	7 12	8 15	100 18
Fish	48 23	- -	4 25	16 34	9 22	2 25	4 21	9 20	8 17	100 23
Border	39 8	- -	6 14	8 7	9 9	2 10	6 13	19 17	10 10	100 10
Coastal	42 21	- 5	5 28	7 17	10 28	2 22	6 31	13 29	15 35	100 24
CMK[1]	48 100	1 100	4 100	11 100	9 100	2 100	5 100	11 100	10 100	100 100
South Africa (1954)	(17)	(11)	(24)	(10)	(15)	(3)	(4)	(9)	(9)	(100)
1959/60										
Sundays	43 25	- 1	5 20	10 17	8 21	3 23	5 20	14 24	12 21	100 22
Escarpment[1]	36 15	2 75	5 16	20 25	9 17	3 19	4 13	10 13	11 15	100 17
Fish	39 24	- -	6 25	18 33	8 21	3 26	5 21	11 20	9 17	100 23
Border	33 9	- -	7 13	10 8	8 10	3 10	7 13	22 17	10 8	100 10
Coastal	38 28	- 24	5 26	8 17	9 31	2 22	7 33	12 26	17 39	100 28
CMK[1]	39 100	- 100	6 100	13 100	8 100	3 100	6 100	13 100	13 100	100 100
South Africa (1959)	(13)	(13)	(24)	(10)	(14)	(3)	(4)	(9)	(9)	(100)

1. Including Hanover magisterial district
(Source: Calculated from data in Table 3.1, and from "South African Statistics, 1968", p. W-10)

TABLE 3.3 : INCREASE/DECREASE IN GGP BY PRODUCTION SUB-SECTOR WITHIN SUB-REGION (1954/55 to 1959/60) (%)

SUB-REGION	PRODUCTION SUB-SECTOR									
	Agriculture Forestry & Fishing	Mining and Quarrying	Manufacturing Construction and Power	Transport Storage and Communication	Trade	Financial Institutions and Real Estate	Ownership of Dwellings	General Government Services	Other Services	TOTAL GGP
Sundays	-27	..(2)	+96	+39	-	+43	+26	+50	+24	- 2
Escarpment[1]	-22	..(2)	+42	+30	- 5	+38	+25	+43	+32	+ 1
Fish	-11	..(2)	+52	+29	- 5	+45	+38	+38	+37	+10
Border	-	..(2)	+46	+40	+12	+42	+29	+36	+14	+18
Coastal	+14	..(2)	+46	+33	+ 9	+39	+44	+24	+49	+25
CMK[1]	-12	-39	+55	+32	+ 2	+42	+34	+37	+35	+10

1. Including Hanover magisterial district
2. Absolute figures too small for percentage changes to be meaningful

(Source: Calculated from data in Table 3.1)

TABLE 3.4 : INDUSTRY DIVISION COMPOSITION OF ECONOMICALLY ACTIVE POPULATION BY RACE WITHIN SUB-REGION (1960) (NUMBER)

SUB-REGION	INDUSTRY DIVISION													
	Agric Forestry and Fishing	Mining and Quarrying	(Primary Sector)	Manuf	Construction	Power	(Secondary Sector)	Commerce and Finance	Transp Storage & Communication	Services	(Tertiary Sector)	Unemployed & Unspecified	TOTAL	(% CMK TOTAL)
							WHITES							
Sundays	1 316	10	(1 326)	120	367	26	(513)	833	440	840	(2 113)	138	4 090	(21)
Escarpment[1]	1 020	7	(1 027)	156	363	26	(545)	571	642	727	(1 940)	63	3 575	(18)
Fish	1 084	3	(1 087)	228	297	23	(548)	780	713	836	(2 329)	111	4 075	(21)
Border	538	-	(538)	55	110	10	(175)	456	155	675	(1 286)	42	2 041	(10)
Coastal	1 302	7	(1 309)	237	350	43	(630)	1 046	418	2 028	(3 492)	546	5 977	(30)
CMK[1]	5 260	27	(5 287)	796	1 487	128	(2 411)	3 686	2 368	5 106	(11 160)	900	19 758	(100)
							COLOUREDS							
Sundays	4 218	6	(4 224)	199	1 092	40	(1 331)	455	189	3 539	(4 183)	1 215	10 953	(41)
Escarpment[1]	1 514	16	(1 530)	93	427	34	(554)	217	124	1 656	(1 997)	595	4 676	(18)
Fish	2 233	-	(2 233)	138	580	14	(732)	255	140	1 783	(2 178)	852	5 995	(22)
Border	494	1	(495)	67	223	14	(304)	99	28	502	(629)	773	2 201	(8)
Coastal	600	9	(609)	204	295	23	(522)	225	140	694	(1 059)	694	2 884	(11)
CMK[1]	9 059	32	(9 091)	701	2 617	125	(3 443)	1 251	621	8 174	(10 046)	4 129	26 709	(100)
							BANTU							
Sundays	1 883	3	(1 886)	61	954	35	(1 050)	223	207	2 171	(2 601)	846	6 383	(8)
Escarpment[1]	4 306	88	(4 394)	208	1 658	87	(1 953)	335	325	4 171	(4 831)	1 038	12 216	(16)
Fish	5 046	95	(5 141)	359	1 101	101	(1 561)	440	330	4 279	(5 049)	1 769	13 520	(18)
Border	6 662	31	(6 693)	243	476	93	(812)	315	126	3 746	(4 187)	3 627	15 319	(20)
Coastal	15 025	44	(15 069)	397	1 037	148	(1 582)	698	312	6 877	(7 887)	3 853	28 391	(37)
CMK[1]	32 922	261	(33 183)	1 268	5 226	464	(6 958)	2 011	1 300	21 244	(24 555)	11 133	75 829	(100)
							TOTAL[2]							
Sundays	7 417	19	(7 436)	380	2 413	101	(2 894)	1 511	836	6 550	(8 897)	2 199	21 426	(18)
Escarpment[1]	6 840	111	(6 951)	457	2 448	147	(3 052)	1 123	1 091	6 554	(8 768)	1 696	20 467	(17)
Fish	8 363	98	(8 461)	725	1 978	138	(2 841)	1 475	1 183	6 898	(9 556)	2 732	23 590	(19)
Border	7 694	32	(7 726)	365	809	117	(1 291)	870	309	4 923	(6 102)	4 442	19 561	(16)
Coastal	16 927	60	(16 987)	838	1 682	214	(2 734)	1 969	870	9 599	(12 438)	5 093	37 252	(30)
CMK[1]	47 241	320	(47 561)	2 765	9 330	717	(12 812)	6 948	4 289	34 524	(45 761)	16 162	122 296	(100)

1. Including Hanover magisterial district
2. Excluding Asians
(Source: Volume 7, No. 2, 1960 Population Census)

TABLE 3.5 : INDUSTRY DIVISION COMPOSITION OF ECONOMICALLY ACTIVE POPULATION BY RACE : SUB-REGION, REGION AND REPUBLIC (1960) (%)

SUB-REGION	INDUSTRY DIVISION												
	Agric Forestry and Fishing	Mining and Quarrying	(Primary Sector)	Manuf	Construction	Power	(Secondary Sector)	Commerce and Finance	Transp Storage and Communication	Services	(Tertiary Sector)	Unemployed and Unspecified	TOTAL
							WHITES						
Sundays	32	-	(32)	3	9	1	(13)	20	11	21	(52)	3	100
Escarpment[1]	29	-	(29)	4	10	1	(15)	16	18	20	(54)	2	100
Fish	27	-	(27)	6	7	1	(13)	19	18	21	(57)	3	100
Border	26	-	(26)	3	5	-	(9)	22	8	33	(63)	2	100
Coastal	22	-	(22)	4	6	1	(11)	18	7	34	(58)	9	100
CMK[1]	27	-	(27)	4	8	1	(12)	19	12	26	(56)	5	100
S. A.	10	5	(15)	18	6	1	(25)	22	10	23	(55)	4	100
							COLOUREDS						
Sundays	39	-	(39)	2	10	-	(12)	4	2	32	(38)	11	100
Escarpment[1]	32	-	(33)	2	9	1	(12)	5	3	35	(43)	13	100
Fish	37	-	(37)	2	10	-	(12)	4	2	30	(36)	14	100
Border	22	-	(22)	3	10	1	(14)	5	1	23	(29)	35	100
Coastal	21	-	(21)	7	10	1	(18)	8	5	24	(37)	24	100
CMK[1]	34	-	(34)	3	10	-	(13)	5	2	31	(38)	15	100
S. A.	22	1	(23)	17	7	1	(25)	8	3	26	(37)	16	100
							BANTU						
Sundays	30	-	(30)	1	15	1	(16)	3	3	34	(41)	13	100
Escarpment[1]	35	1	(36)	2	14	1	(16)	3	3	34	(40)	9	100
Fish	37	1	(38)	3	8	1	(12)	3	2	32	(37)	13	100
Border	43	-	(44)	2	3	1	(5)	2	1	24	(27)	24	100
Coastal	53	-	(53)	1	4	1	(6)	2	1	24	(28)	14	100
CMK[1]	43	-	(44)	2	7	1	(9)	3	2	28	(32)	15	100
S. A.	37	14	(51)	8	4	1	(13)	5	2	21	(28)	8	100
							TOTAL[2]						
Sundays	35	-	(35)	2	11	-	(13)	7	4	31	(42)	10	100
Escarpment[1]	33	1	(34)	2	12	1	(15)	5	5	32	(43)	8	100
Fish	35	-	(36)	3	8	1	(12)	6	5	29	(41)	12	100
Border	39	-	(39)	2	4	1	(7)	4	2	25	(31)	23	100
Coastal	45	-	(46)	2	5	1	(7)	5	2	26	(33)	14	100
CMK[1]	39	-	(39)	2	8	1	(10)	6	4	28	(37)	13	100
S. A.	30	11	(41)	11	5	1	(17)	9	4	22	(35)	8	100

1. Including Hanover magisterial district
2. Excluding Asians
(Source: Calculated from data in Table 3.4)

TABLE 3.6 : RACE COMPOSITION OF ECONOMICALLY ACTIVE POPULATION BY INDUSTRY DIVISION WITHIN SUB-REGION (1960) (%)

RACE GROUP	INDUSTRY DIVISION												
	Agric Forestry and Fishing	Mining and Quarrying	(Primary Sector)	Manuf	Construction	Power	(Secondary Sector)	Commerce and Finance	Transp Storage and Communication	Services	(Tertiary Sector)	Unemployed and Unspecified	TOTAL
SUNDAYS													
Whites	18	53	(18)	32	15	26	(18)	55	53	13	(24)	6	19
Coloureds	57	32	(57)	52	45	40	(46)	30	23	54	(47)	55	51
Bantu	25	16	(25)	16	40	35	(36)	15	25	33	(29)	38	30
TOTAL[1]	100	100	(100)	100	100	100	(100)	100	100	100	(100)	100	100
ESCARPMENT													
Whites	15	6	(15)	34	15	18	(18)	51	59	11	(22)	4	17
Coloureds	22	14	(22)	20	17	23	(18)	19	11	25	(23)	35	23
Bantu	63	79	(63)	46	68	59	(64)	30	30	64	(55)	61	60
TOTAL[1]	100	100	(100)	100	100	100	(100)	100	100	100	(100)	100	100
FISH													
Whites	13	3	(13)	31	15	17	(19)	53	60	12	(24)	4	17
Coloureds	27	-	(26)	19	29	10	(26)	17	12	26	(23)	31	25
Bantu	60	97	(61)	50	56	73	(55)	30	28	62	(53)	65	57
TOTAL[1]	100	100	(100)	100	100	100	(100)	100	100	100	(100)	100	100
BORDER													
Whites	7	-	(7)	15	14	9	(14)	52	50	14	(21)	1	10
Coloureds	6	3	(6)	18	28	12	(24)	11	9	10	(10)	17	11
Bantu	87	97	(87)	67	59	79	(63)	36	41	76	(69)	82	78
TOTAL[1]	100	100	(100)	100	100	100	(100)	100	100	100	(100)	100	100
COASTAL													
Whites	8	12	(8)	28	21	20	(23)	53	48	21	(28)	11	16
Coloureds	4	15	(4)	24	18	11	(19)	11	16	7	(9)	14	8
Bantu	89	73	(89)	47	62	69	(58)	35	36	72	(63)	76	76
TOTAL[1]	100	100	(100)	100	100	100	(100)	100	100	100	(100)	100	100
CMK[2]													
Whites	11	8	(11)	29	16	18	(19)	53	55	15	(24)	6	16
Coloureds	19	10	(19)	25	28	18	(27)	18	14	24	(22)	26	22
Bantu	70	82	(70)	46	56	65	(54)	29	30	62	(54)	69	62
TOTAL[1]	100	100	(100)	100	100	100	(100)	100	100	100	(100)	100	100

1. Excluding Asians
2. Including Hanover magisterial district

(Source: Calculated from data in Table 3.4)

TABLE 3.7 : SUB-REGIONAL DISTRIBUTION OF ECONOMICALLY ACTIVE POPULATION BY RACE WITHIN INDUSTRY DIVISION (1960) (%)

SUB-REGION	INDUSTRY DIVISION												
	Agric Forestry and Fishing	Mining and Quarrying	(Primary Sector)	Manuf	Construction	Power	(Secondary Sector)	Commerce and Finance	Transp Storage and Communication	Services	(Tertiary Sector)	Unemployed and Unspecified	TOTAL
						WHITES							
Sundays	25	37	(25)	15	25	20	(21)	23	19	16	(19)	15	21
Escarpment[1]	19	26	(19)	20	24	20	(23)	15	27	14	(17)	7	18
Fish	21	11	(21)	29	20	18	(23)	21	30	16	(21)	12	21
Border	10	-	(10)	7	7	8	(7)	12	7	13	(12)	5	10
Coastal	25	26	(25)	30	24	34	(26)	28	18	40	(31)	61	30
CMK[1]	100	100	(100)	100	100	100	(100)	100	100	100	(100)	100	100
						COLOUREDS							
Sundays	47	19	(46)	28	42	32	(39)	36	30	43	(42)	29	41
Escarpment[1]	17	50	(17)	13	16	27	(16)	17	20	20	(20)	14	18
Fish	25	-	(25)	20	22	11	(21)	20	23	22	(22)	21	22
Border	5	3	(5)	10	9	11	(9)	8	5	6	(6)	19	8
Coastal	7	28	(7)	29	11	18	(15)	18	23	8	(11)	17	11
CMK[1]	100	100	(100)	100	100	100	(100)	100	100	100	(100)	100	100
						BANTU							
Sundays	6	1	(6)	5	18	8	(15)	11	16	10	(11)	8	8
Escarpment[1]	13	34	(13)	16	32	19	(28)	17	25	20	(20)	9	16
Fish	15	36	(15)	28	21	22	(22)	22	25	20	(21)	16	18
Border	20	12	(20)	19	9	20	(12)	16	10	18	(17)	33	20
Coastal	46	17	(45)	31	20	32	(23)	35	24	32	(32)	35	37
CMK[1]	100	100	(100)	100	100	100	(100)	100	100	100	(100)	100	100
						TOTAL[2]							
Sundays	16	6	(16)	14	26	14	(23)	22	19	19	(19)	14	18
Escarpment[1]	14	35	(15)	17	26	21	(24)	16	25	19	(19)	10	17
Fish	18	31	(18)	26	21	19	(22)	21	28	20	(21)	17	19
Border	16	10	(16)	13	9	16	(10)	13	7	14	(13)	27	16
Coastal	36	19	(36)	30	18	30	(21)	28	20	28	(27)	32	30
CMK[1]	100	100	(100)	100	100	100	(100)	100	100	100	(100)	100	100

1. Including Hanover magisterial district
2. Excluding Asiatics

(Source: Calculated from data in Table 3.4)

TABLE 3.8 : ANNUAL GROSS VALUE OF WOOL CLIP BY SUB-REGION (1955/56 TO 1971/72) (R MILLION)

SUB-REGION	SEASON																
	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65	1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72
Sundays	6,0	7,7	5,4	4,2	5,3	4,1	4,8	4,7	6,1	4,7	5,2	3,8	3,8	4,1	3,7	2,0	2,8
Escarpment	3,6	5,0	3,4	2,8	3,6	3,5	3,5	3,5	3,9	3,4	4,0	3,2	3,3	3,6	3,2	1,7	2,0
Fish	4,7	5,8	4,5	3,4	4,2	3,5	3,7	3,7	4,4	3,8	4,1	3,4	3,3	3,6	3,2	1,7	2,1
Border	1,1	1,5	1,2	0,9	1,1	1,1	1,1	1,2	1,4	1,2	1,2	1,3	1,2	1,2	1,1	0,6	0,6
Coastal	0,7	0,9	0,8	0,7	0,8	0,8	0,8	0,9	1,2	1,0	1,1	1,0	1,0	1,1	1,0	0,5	0,5
CMK	16,1	20,9	15,3	12,1	15,1	12,9	13,9	14,0	17,0	14,0	15,5	12,7	12,7	13,5	12,1	6,6	8,0

(Source : S. A. Wool Board Annual Report, "Statistical Analysis of the South African Wool Clip")

TABLE 3.9 : NUMBER, TOTAL AREA AND MEAN SIZE OF FARM HOLDINGS BY SUB-REGION (1954/55 TO 1967/68)

SUB-REGION	1954/55			1955/56		1956/57		1957/58		1958/59		1959/60	
	No of holdings	Area (000 morgen)	Mean Size (morgen)	No of holdings	Area (000 morgen)	No of holdings	Area (000 morgen)	No of holdings	Area (000 morgen)	No of holdings	Area (000 morgen)	No of holdings	Area (000 morgen)
Sundays	1 182	3 311	2 801	1 175	3 331	1 148	3 408	1 136	3 405	1 096	3 435	1 066	3 336
Escarpment	857	1 776	2 072	789	1 750	778	1 777	796	1 777	763	1 773	733	1 753
Fish	1 022	1 621	1 586	940	1 648	912	1 644	921	1 685	876	1 629	845	1 607
Border	580	457	788	571	457	552	454	543	461	530	484	513	475
Coastal	1 177	875	743	1 140	861	1 134	871	1 116	888	1 114	967	1 106	923
MIDKAR	4 818	8 040	1 669	4 615	8 047	4 524	8 154	4 512	8 216	4 379	8 288	4 263	8 094

SUB-REGION	1960/61		1961/62		1962/63		1963/64		1966/67		1967/68		
	No of holdings	Area (000 morgen)	No of holdings	Area (000 morgen)	No of holdings	Area (000 morgen)	No of holdings	Area (000 morgen)	No of holdings	Area (000 morgen)	No of holdings	Area (000 morgen)	Mean Size (morgen)
Sundays	1 050	3 324	1 028	3 349	1 038	3 462	1 044	3 446	973	3 323	962	3 334	3 466
Escarpment	731	1 755	720	1 747	715	1 759	716	1 785	659	1 690	653	1 749	2 678
Fish	840	1 624	797	1 624	746	1 601	748	1 628	708	1 579	707	1 591	2 250
Border	516	446	499	459	487	465	473	483	451	466	451	455	1 009
Coastal	1 084	907	1 079	913	1 073	869	1 061	940	971	901	971	920	947
MIDKAR	4 221	8 056	4 123	8 092	4 059	8 156	4 042	8 282	3 762	7 959	3 744	8 049	2 150

(Source: Agricultural Census Reports)

TABLE 3.10 : FREQUENCY DISTRIBUTION OF FARM HOLDINGS BY SIZE GROUP WITHIN SUB-REGION (1954/55 AND 1963/64) (NUMBER AND %)

SUB-REGION	SIZE GROUP (MORGEN) 0-99	100-499	500-999	1 000-1 999	2 000-4 999	5 000-9 999	10 000 +	TOTAL
				1954/55				
Sundays	133	85	162	236	388	142	38	1 184
(%)	(11)	(7)	(14)	(20)	(33)	(12)	(3)	(100)
Escarpment	17	48	163	307	272	42	8	857
(%)	(2)	(6)	(19)	(36)	(32)	(5)	(1)	(100)
Fish	155	158	162	269	231	42	5	1 022
(%)	(15)	(16)	(16)	(26)	(23)	(4)	(1)	(100)
Border	98	199	130	111	41	1	-	580
(%)	(17)	(34)	(22)	(19)	(7)	(-)	(-)	(100)
Coastal	149	491	286	170	71	9	-	1 176
(%)	(13)	(42)	(24)	(15)	(6)	(1)	(-)	(100)
CMK	552	981	903	1 093	1 003	236	51	4 819
(%)	(11)	(20)	(19)	(23)	(21)	(5)	(1)	(100)
				1963/64				
Sundays	78	72	139	207	326	162	60	1 044
(%)	(7)	(7)	(13)	(20)	(31)	(16)	(6)	(100)
Escarpment	23	27	94	218	286	57	11	716
(%)	(3)	(4)	(13)	(30)	(40)	(8)	(2)	(100)
Fish	81	78	92	194	235	55	13	748
(%)	(11)	(10)	(12)	(26)	(31)	(7)	(2)	(100)
Border	97	129	83	86	69	8	1	473
(%)	(21)	(27)	(18)	(18)	(15)	(2)	(-)	(100)
Coastal	111	402	261	199	73	12	3	1 061
(%)	(10)	(38)	(25)	(19)	(7)	(1)	(-)	(100)
CMK	390	708	669	904	989	294	88	4 042
(%)	(10)	(18)	(17)	(22)	(24)	(7)	(2)	(100)

(Source: Agricultural Censuses)

TABLE 3.11 : FREQUENCY DISTRIBUTION OF FARM HOLDINGS BY SIZE GROUP OF GROSS VALUE OF LIVESTOCK AND PRODUCE SOLD WITHIN SUB-REGION (1961/62 AND 1962/63) (NUMBER AND %)

SUB-REGION	GROSS INCOME GROUP (RAND)										
	Nil[1]	1-199	200-499	500-999	1 000-1 999	2 000-4 999	5 000-9 999	10 000-19 999	20 000-49 999	50 000 +	TOTAL
						1961/62					
Sundays	38	34	41	49	100	243	249	183	78	13	1 028
(%)	(4)	(3)	(4)	(5)	(10)	(24)	(24)	(18)	(8)	(1)	(100)
Escarpment	18	9	9	25	63	211	214	124	46	1	720
(%)	(3)	(1)	(1)	(3)	(9)	(29)	(30)	(17)	(6)	(-)	(100)
Fish	31	21	38	51	78	153	174	179	60	12	797
(%)	(4)	(3)	(5)	(6)	(10)	(19)	(22)	(22)	(8)	(2)	(100)
Border	49	39	28	40	72	99	74	65	29	4	499
(%)	(10)	(8)	(6)	(8)	(14)	(20)	(15)	(13)	(6)	(1)	(100)
Coastal	53	70	67	85	122	275	238	129	36	4	1 079
(%)	(5)	(6)	(6)	(8)	(11)	(25)	(22)	(12)	(3)	(-)	(100)
CMK	189	173	183	250	435	981	949	680	249	34	4 123
(%)	(5)	(4)	(4)	(6)	(11)	(24)	(23)	(17)	(6)	(1)	(100)
						1962/63					
Sundays	27	41	31	50	112	233	238	155	95	56	1 038
(%)	(3)	(4)	(3)	(5)	(11)	(22)	(23)	(15)	(9)	(5)	(100)
Escarpment	9	15	15	33	68	199	195	133	45	3	715
(%)	(1)	(2)	(2)	(5)	(10)	(28)	(27)	(19)	(6)	(-)	(100)
Fish	19	23	23	32	59	160	181	156	71	22	746
(%)	(3)	(3)	(3)	(4)	(8)	(21)	(24)	(21)	(10)	(3)	(100)
Border	38	57	31	30	43	107	73	68	36	4	487
(%)	(8)	(12)	(6)	(6)	(9)	(22)	(15)	(14)	(7)	(1)	(100)
Coastal	40	63	71	86	102	262	239	146	57	7	1 073
(%)	(4)	(6)	(7)	(8)	(10)	(24)	(22)	(14)	(5)	(1)	(100)
CMK	133	199	171	231	384	961	926	658	304	92	4 059
(%)	(3)	(5)	(4)	(6)	(9)	(24)	(23)	(16)	(7)	(2)	(100)

1. Includes some farms of unspecified income
(Source: Agricultural Censuses)

TABLE 3.12 : NUMBER OF AGRICULTURAL EMPLOYEES BY TYPE OF EMPLOYMENT WITHIN SUB-REGION (1954/55 TO 1967/68)

SUB-REGION		AGRICULTURAL CENSUS										POPULATION CENSUS
		1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1967/68	1960
Sundays	Total Employment	..[1]	..	..	14 641	14 862	10 694	12 693	12 787	..	..	10 353	7 417
	Regulars & Domestics	8 648	8 143	8 133	7 718	7 657	7 479	7 826	7 672	7 320	7 764	..	..
	Casuals	..	..	..	6 923	7 205	3 215	4 867	5 115	..	..	..	..
Escarpment	Total Employment	..	..	..	12 408	12 405	9 987	10 822	11 086	..	..	9 252	6 840[2]
	Regulars & Domestics	7 685	7 196	7 027	6 941	6 768	6 817	6 985	6 723	6 595	6 179	..	..
	Casuals	..	..	..	5 467	5 637	3 170	3 837	4 363	..	..	..	..
Fish	Total Employment	..	..	..	13 240	14 035	11 420	12 633	12 455	..	..	10 939	8 363
	Regulars & Domestics	9 947	9 335	9 710	8 927	8 540	8 419	9 018	8 239	7 795	7 980	..	..
	Casuals	..	..	..	4 313	5 495	3 001	3 615	4 216	..	..	..	..
Border	Total Employment	..	..	..	9 656	9 325	8 823	8 776	8 637	..	..	8 281	7 694
	Regulars & Domestics	5 891	5 517	5 528	5 651	5 321	5 260	5 431	5 253	4 922	5 434	..	..
	Casuals	..	..	..	4 005	4 004	3 563	3 345	3 384	..	..	..	..
Coastal	Total Employment	..	..	..	22 634	22 739	20 997	20 694	20 583	..	..	20 440	16 927
	Regulars & Domestics	17 665	16 443	15 823	14 755	14 920	14 084	14 056	13 893	13 539	13 002	..	..
	Casuals	..	..	..	7 879	7 819	6 913	6 638	6 690	..	..	..	..
CMK	Total Employment	..	..	..	72 579	73 366	61 921	65 618	65 548	..	..	59 265	47 241[2]
	Regulars & Domestics	49 836	46 634	46 221	43 992	43 206	42 059	43 316	41 780	40 171	40 359	..	..
	Casuals	..	..	..	28 587	30 160	19 862	22 302	23 768	..	..	..	..

1. Data not available
2. Includes Hanover magisterial district

(Source: Agricultural Censuses and Volume 7, no. 2, 1960 Population Census)

TABLE 3.13 : REMUNERATION (CASH AND KIND) OF PAID EMPLOYEES IN AGRICULTURE BY SUB-REGION (1957/58 TO 1967/68) (R'000)

SUB-REGION	1957/58		1961/62		1963/64		1966/67		1967/68	
	Cash	Total	Cash	Total	Cash	Total	Cash	Total	Cash	Total
Sundays	1 088	1 502	1 055	1 425	1 100	1 441	1 034	1 522	1 054	1 506
Escarpment[1]	606	906	558	801	667	895	594	939	572	917
Fish	915	1 409	887	1 233	925	1 271	871	1 364	907	1 398
Border	437	674	417	630	524	764	533	855	563	896
Coastal	967	1 401	1 016	1 411	1 096	1 889	1 172	1 806	1 252	1 908
MIDKAR[1]	4 013	5 891	3 933	5 500	4 312	6 260	4 204	6 488	4 348	6 625

1. Excludes Noupoort magisterial district
(Source: Agricultural Censuses)

TABLE 3.14 : GROSS CAPITAL FORMATION (NEW EQUIPMENT PURCHASED AND NEW BUILDINGS AND WORKS ERECTED ONLY) IN AGRICULTURE BY SUB-REGION (1958/59 TO 1967/68) (R'000)

SUB-REGION	New Equip-ment	New bldgs & works	TOTAL	New Equip-ment	New bldgs & works	TOTAL	New Equip-ment	New bldgs & works	TOTAL	New Equip-ment	New bldgs & works	TOTAL
		1958/59			1959/60			1960/61			1961/62	
Sundays	732	528	1 260	903	555	1 458	600	367	967	656	657	1 311
Escarpment	445	223	668	597	275	872	536	239	775	431	330	764
Fish	669	384	1 053	778	529	1 307	574	423	997	497	581	1 078
Border	287	209	496	278	205	483	213	142	355	233	208	442
Coastal	692	230	922	717	292	1 009	592	331	922	426	375	801
CMK	2 825	1 574	4 399	3 273	1 856	5 129	2 515	1 502	4 017	2 243	2 151	4 394
		1962/63			1963/64			1966/67			1967/68	
Sundays	524	441	965	1 073	725	1 798	467	254	721	350	221	571
Escarpment	362	269	631	522	337	859	389	312	701	330	211	541
Fish	491	418	909	776	723	1 499	423	395	818	485	470	955
Border	210	177	387	309	245	554	256	180	436	233	226	459
Coastal	614	303	917	926	488	1 414	1 011	511	1 522	995	561	1 556
CMK	2 201	1 608	3 809	3 606	2 518	6 124	2 546	1 652	4 198	2 393	1 689	4 082

(Source: Agricultural Censuses)

TABLE 3.15 : TOTAL NUMBER OF SHEEP BY SUB-REGION (1954/55 TO 1967/68) (MILLIONS)

SUB-REGION	1954/ 55	1955/ 56	1956/ 57	1957/ 58	1958/ 59	1959/ 60	1960/ 61	1961/ 62	1962/ 63	1963/ 64	1965/ 66	1966/ 67	1967/ 68
Sundays	1,5	1,4	1,4	1,4	1,4	1,3	1,2	1,2	1,2	1,3	1,3	1,1	1,1
Escarpment	1,0	1,0	1,0	1,1	1,0	1,1	1,0	1,0	1,0	1,0	1,0	0,9	1,0
Fish	1,1	1,1	1,1	1,1	1,1	1,1	1,0	1,0	0,9	0,9	0,9	0,8	0,9
Border[1]	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,4	0,3	0,3	0,3
Coastal	0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,4	0,4	0,3
MIDKAR[1]	4,1	4,1	4,1	4,1	4,1	4,0	3,8	3,8	3,7	3,9	3,9	3,5	3,6

1. Excludes sheep on farms in the Bantu reserves
(Source: Agricultural Censuses)

TABLE 3.16 : PRINCIPAL STATISTICS OF PRIVATE MANUFACTURING INDUSTRY BY SUB-REGION (1956/57, 1959/60 AND 1967/68)

SUB-REGION	1967/68				1959/60				1956/57			
	No of Establishments	Total Employment[1]	Net Output (R'000)	Net Output Employee (R'000)	No of Establishments	Total Employment[1]	Net Output (R'000)	Net Output/ Employee (R'000)	No of Establishments	Total Employment[1]	Net Output (R'000)	Net Output/ Employee (R'000)
Sundays	16	212	303	1,4	25	223	197	0,9	33	281	218	0,8
Escarpment	12	217	812	3,7	13	135	496	3,7	13	119	378	3,2
Fish	33	437	505	1,2	33	469	595	1,3	35	560	526	0,9
Border	11	313	597	1,9	16	378	470	1,2	15	677	486	0,7
Coastal	31	725	911	1,3	22	622	503	0,8	26	589	358	0,6
CMK	103	1 904	3 128	1,6	109	1 827	2 261	1,2	120	2 226	1 966	0,9

1. Including working proprietors

(Source: 1967/68 - from data supplied by Department of Planning; other years - estimated from Bureau of Statistics' Special Reports Nos. 240 and 283)

TABLE 3.17 : NUMBER OF PRIVATE INDUSTRIAL ESTABLISHMENTS BY INDUSTRY GROUP WITHIN SUB-REGION (1956/57, 1959/60, 1967/68)

MAJOR INDUSTRY GROUP	INDUSTRY GROUP	1956/57						1959/60						1967/68					
		Sundays	Escarpment	Fish	Border	Coastal	CMK	Sundays	Escarpment	Fish	Border	Coastal	CMK	Sundays	Escarpment	Fish	Border	Coastal	CMK
Food & Food Products	Bakeries	3	2	4	3	5	17	2	2	4	3	5	16	1	1	2	2	3	9
	Dairy produce	-	-	2	1	1	4	-	-	2	1	1	4	-	-	2	1	1	4
	Meat processing	-	1	-	-	-	1	-	1	-	-	-	1	1	2	1	-	-	4
	Other canning	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Animal feeds	-	-	-	-	1	1	-	-	-	-	2	2	-	-	1	-	2	3
	Grain mills	1	-	1	-	1	3	1	-	1	-	1	3	1	-	1	-	-	2
	Other	-	1	-	-	-	1	-	1	-	-	1	2	-	-	1	-	-	1
	Total	4	4	7	4	8	27	3	4	7	4	10	28	3	3	8	3	6	23
Beverages		3	1	2	2	1	9	2	1	2	2	-	7	-	1	2	1	-	4
Tobacco		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Textiles		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clothing, Footwear & Made-up Textiles	Tailors	1	-	3	-	1	5	-	-	3	-	1	4	-	-	2	-	-	2
	Boot & shoe repairers	-	1	1	1	1	4	1	-	2	1	1	5	-	1	3	-	2	6
	Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
	Total	1	1	4	1	2	9	1	-	5	1	2	9	-	1	5	-	3	9
Wood and Cork		5	-	2	2	3	12	2	-	2	3	3	10	-	-	1	2	1	4
Furniture & Fixtures		3	-	2	-	-	5	1	-	3	-	-	4	3	-	3	-	2	8
Paper & Paper Products		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Printing & Publishing		3	2	3	3	3	14	4	2	2	3	3	14	1	1	2	3	4	11
Leather & Leather Products		-	1	-	-	-	1	-	1	-	-	-	1	-	1	-	-	-	1
Rubber Goods[1]		-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	2
Chemicals & Chemical Products	Fertilisers	-	-	1	-	-	1	-	-	1	-	-	1	-	-	-	-	-	-
	Other	-	1	-	1	-	2	-	1	-	1	-	2	-	1	-	1	1	3
	Total	-	1	1	1	-	3	-	1	1	1	-	3	-	1	-	1	1	3
Petroleum & Petroleum Products		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-metallic Mineral Products	Bricks & tiles (clay)	8	1	8	2	4	23	9	1	6	1	3	20	5	1	4	-	1	11
	Other	1	-	2	-	-	3	1	1	2	-	-	4	-	-	2	-	2	4
	Total	9	1	10	2	4	26	10	2	8	1	3	24	5	1	6	-	3	15
Basic Metals		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metal Products		-	-	2	-	-	2	-	-	2	-	-	2	1	1	2	-	6	10
Machinery (excluding electrical machinery)	Agricultural machinery	1	-	2	-	1	4	1	-	1	-	-	2	-	1	-	-	1	2
	Other	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-
	Total	1	-	2	-	1	4	1	1	1	-	-	3	-	1	-	-	1	2
Electrical Equipment		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	2
Transport	Motor industry[2]	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	1	1	6
	Other	3	2	-	-	2	7	1	1	-	1	1	4	-	1	-	-	-	1
	Total	3	2	-	-	2	7	1	1	-	1	1	4	2	1	2	1	1	7
Miscellaneous		1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	2
TOTAL		33	13	35	15	24	120	25	13	33	16	22	109	16	12	33	11	31	103

1. Vulcanising and retreading of tyres excluded by definition in 1956/57 and 1959/60
2. Excluded by definition in 1956/57 and 1959/60

(Source: 1967/68 - from data supplied by Department of Planning: other years - estimated from Bureau of Statistics' Special Reports Nos. 240 and 283)

TABLE 3.18: PRINCIPAL STATISTICS OF PRIVATE CONSTRUCTION INDUSTRY BY SUB-REGION (1956/57 AND 1959/60)

SUB-REGION	1959/60[1]				1956/57[2]			
	No of Establs	Total Employment[3]	Net Output (R'000)	Net Output/ employee (R'000)	No of Establs	Total Employment[3]	Net Output (R'000)	Net Output/ employee (R'000)
Sundays	30	671	500	0,7	30	382	220	0,6
Escarpment	20	189	152	0,8	17	229	112	0,5
Fish	25	419	350	0,8	24	507	316	0,6
Border[4]	..	..	..	..	..	..	..	..
Coastal	19	404	349	0,9	12	323	286	0,9
CMK	94	1 683	1 351	0,8	83	1 441	934	0,6

1. Includes borehole contractors
2. Excludes borehole contractors
3. Including working proprietors
4. No basis existed for estimating employment and output in establishments in the Border sub-region in each year and they have consequently been excluded from the analysis; their contribution is assumed to have been insignificant

(Source: Estimated from Bureau of Statistics' Special Reports Nos. 240 and 283)

TABLE 3.19 : ANNUAL NUMBER OF NEW MOTOR VEHICLES LICENSED : SUB-REGION, REGION, PROVINCE AND REPUBLIC (1956 TO 1969/70)[1]

SUB-REGION	Total all Vehicles	Cars	Total all Vehicles	Cars	Total all Vehicles	Cars	Total all Vehicles	Cars	Total all Vehicles	Cars	Total all Vehicles	Cars	Total all Vehicles	Cars
	1956		1957		1958		1959		1960		1961		1962/63	
Sundays	491	275	725	433	515	330	641	413	611	404	483	289	511	317
Escarpment	283	166	417	258	324	229	381	241	378	264	351	205	313	211
Fish	397	218	712	416	616	443	599	402	533	380	421	280	488	327
Border	212	113	276	173	362	240	276	206	225	160	211	145	233	162
Coastal	432	220	647	378	694	482	715	478	734	498	562	369	725	485
CMK	1 815	992	2 777	1 658	2 511	1 724	2 612	1 740	2 481	1 706	2 028	1 288	2 270	1 502
CAPE	27 376	16 691	37 942	24 536	39 751	27 315	37 324	26 182	19 210	14 050	31 808	22 251	38 799	27 662
SA	86 433	50 250	120 382	76 514	132 437	91 221	119 541	83 323	62 210	47 251	102 907	72 814	133 572	93 228
	1963/64		1964/65		1965/66		1966/67		1967/68		1968/69		1969/70	
Sundays	849	484	696	409	579	353	519	313	440	271	550	350	607	375
Escarpment	453	270	465	289	491	326	427	277	393	248	532	329	574	399
Fish	740	461	708	440	539	325	474	316	518	317	661	448	614	396
Border	402	261	330	203	289	183	281	164	279	175	323	189	364	200
Coastal	1 007	645	1 027	697	929	592	1 038	665	913	581	1 054	649	1 164	687
CMK	3 451	2 121	3 226	2 038	2 827	1 779	2 739	1 735	2 543	1 592	3 120	1 965	3 323	2 057
CAPE	52 753	36 255	57 836	39 638	52 511	36 216	57 423	40 721	55 103	38 001	67 535	45 990	76 464	51 284
SA	185 221	125 406	206 991	137 939	186 441	126 682	207 687	141 056	208 864	136 955	245 619	161 416	294 148	191 135

1. 'Vehicles' here includes all cars, buses, commercial vehicles, motor cycles and tractors, but excludes caravans, trailers, graders etc. From 1960 'cars' include mini-buses ('Kombi's)

(Source: Bureau of Statistics' Annual "Motor Vehicle Statistics" Reports)

TABLE 3.20 : TOTAL PERSONAL INCOME OF WHITES AND COLOUREDS BY URBAN AND RURAL AREAS WITHIN SUB-REGION (1960) (R'000)

SUB-REGION	WHITES				COLOUREDS			
	Urban	Rural	Total	(% Urban)	Urban	Rural	Total	(% Urban)
Sundays	5 150	4 729	9 879	(52)	765	852	1 617	(47)
Escarpment[1]	4 018	4 257	8 275	(49)	374	261	635	(59)
Fish	4 866	5 064	9 930	(49)	494	362	856	(58)
Border	2 531	1 841	4 372	(58)	206	107	313	(66)
Coastal	7 486	4 022	11 508	(65)	383	136	518	(74)
CMK[1]	24 051	19 913	43 964	(55)	2 222	1 717	3 939	(56)

1. Including Hanover magisterial district

(Source: Estimated from Tables of Frequency Distribution of Population by Income Group, Vol. 7, No. 3, 1960 Population Census)

TABLE 3.21 : PRINCIPAL STATISTICS OF RETAIL OUTLETS BY SUB-REGION AND ECONOMIC REGION 08 (1960/61)

SUB-REGION	NUMBER				R'000			
	Establishments	Total Employment	Working Proprietors	Paid Employees	Salaries & Wages	Total Sales	Net Profit	Gross Capital Formation
Sundays	183	934	214	720	408	5 568	315	37
Escarpment[1]	129	577	162	415	154	3 205	226	5
Fish	186	1 008	206	802	442	5 756	301	21
Border	124	614	161	453	193	3 258	161	16
Coastal	252	1 364	338	1 026	625	7 337	515	57
CMK[1]	874	4 497	1 081	3 416	1 822	25 124	1 518	136
ER 08	1 403	8 022	1 435	6 587	5 869	58 006	3 174	411

1. Including Hanover magisterial district

(Source : Distributive Trade Census 1960/61, Report No. 35)

TABLE 3.22 : DISTRIBUTION OF PERSONAL DISPOSABLE INCOME (1958/59) AND TOTAL VALUE OF RETAIL SALES (1960/61) BY SUB-REGION AND ECONOMIC REGION 08

SUB-REGION	PERSONAL DISPOSABLE INCOME (1958/59)		TOTAL VALUE OF RETAIL SALES (1960/61)	
	R million	%	R million	%
Sundays	13,4	25	5,6	22
Escarpment[1]	8,5	16	3,2	13
Fish	11,7	22	5,8	23
Border	6,0	11	3,3	13
Coastal	14,1	26	7,3	29
CMK[1]	53,8	100	25,1	100
ER 08	143,4	-	58,0	-

1. Includes Hanover magisterial district

(Source: Nel and de Coning, 1965, Table 7; and Report No. 35, Part 2, Distributive Trade Census, 1960/61)

TABLE 3.23 : PRINCIPAL STATISTICS OF DIVISIONAL COUNCILS BY SUB-REGION (1965-1970)

SUB-REGION	1965			1966			1967			1968			1969			1970		
	Capital Formation (R'000)	Total Employment (No.)	Salaries & Wages Paid (R'000)	Capital Formation (R'000)	Total Employment (No.)	Salaries & Wages Paid (R'000)	Capital Formation (R'000)	Total Employment (No.)	Salaries & Wages Paid (R'000)	Capital Formation (R'000)	Total Employment (No.)	Salaries & Wages Paid (R'000)	Capital Formation (R'000)	Total Employment (No.)	Salaries & Wages Paid (R'000)	Capital Formation (R'000)	Total Employment (No.)	Salaries & Wages Paid (R'000)
Sundays	53	445	207	56	422	214	83	463	232	97	433	245	300	441	258	308	498	289
Escarpment[1]	150	374	140	65	380	154	49	354	156	161	331	160	115	360	187	253	397	224
Fish	84	331	146	54	360	177	45	453	178	200	408	177	169	604	195	325	579	230
Border[2]	61	274	86	20	263	89	37	288	98	46	267	95	128	223	90	187	214	94
Coastal	133	427	188	130	427	201	81	407	210	147	415	220	334	393	235	358	512	305
CMK[1,2]	481	1 851	767	325	1 852	835	295	1 965	874	651	1 854	897	1 046	2 021	965	1 431	2 200	1 142

1. Includes Hanover magisterial district
2. Includes Middledrift and Keiskammahoek magisterial districts

(Source: Bureau of Statistics' Reports, "Divisional Council Statistics", Nos. 13-04-01/2/3/4/5/6)

TABLE 3.24 : PRINCIPAL STATISTICS OF URBAN LOCAL AUTHORITIES BY SUB-REGION (1967)

SUB-REGION	CAPITAL FORMATION (R'000)	TOTAL EMPLOY-MENT (No)	SALARIES & WAGES PAID (R'000)
Sundays	207	535	303
Escarpment	325	436	258
Fish	168	557	312
Border	18	316	120
Coastal	1 139	892	534
CMK	1 857	2 736	1 527

(Source: Bureau of Statistics' Report, "Local Government Statistics", No. 13-03-02)

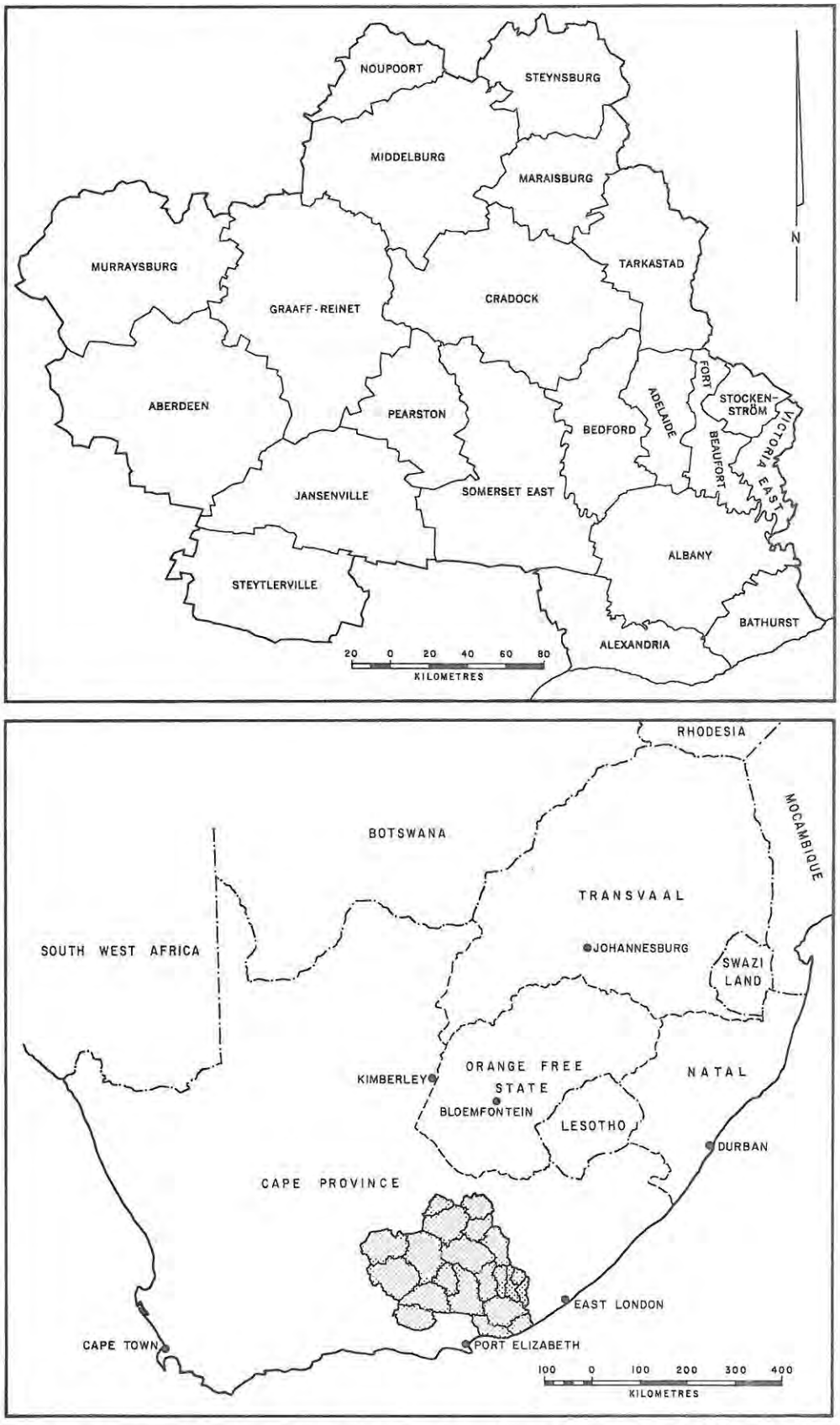


FIGURE 1: THE CAPE MIDLANDS AND KARROO REGION: DEFINITION AND SITUATION
(Adapted from Badenhorst, 1970)

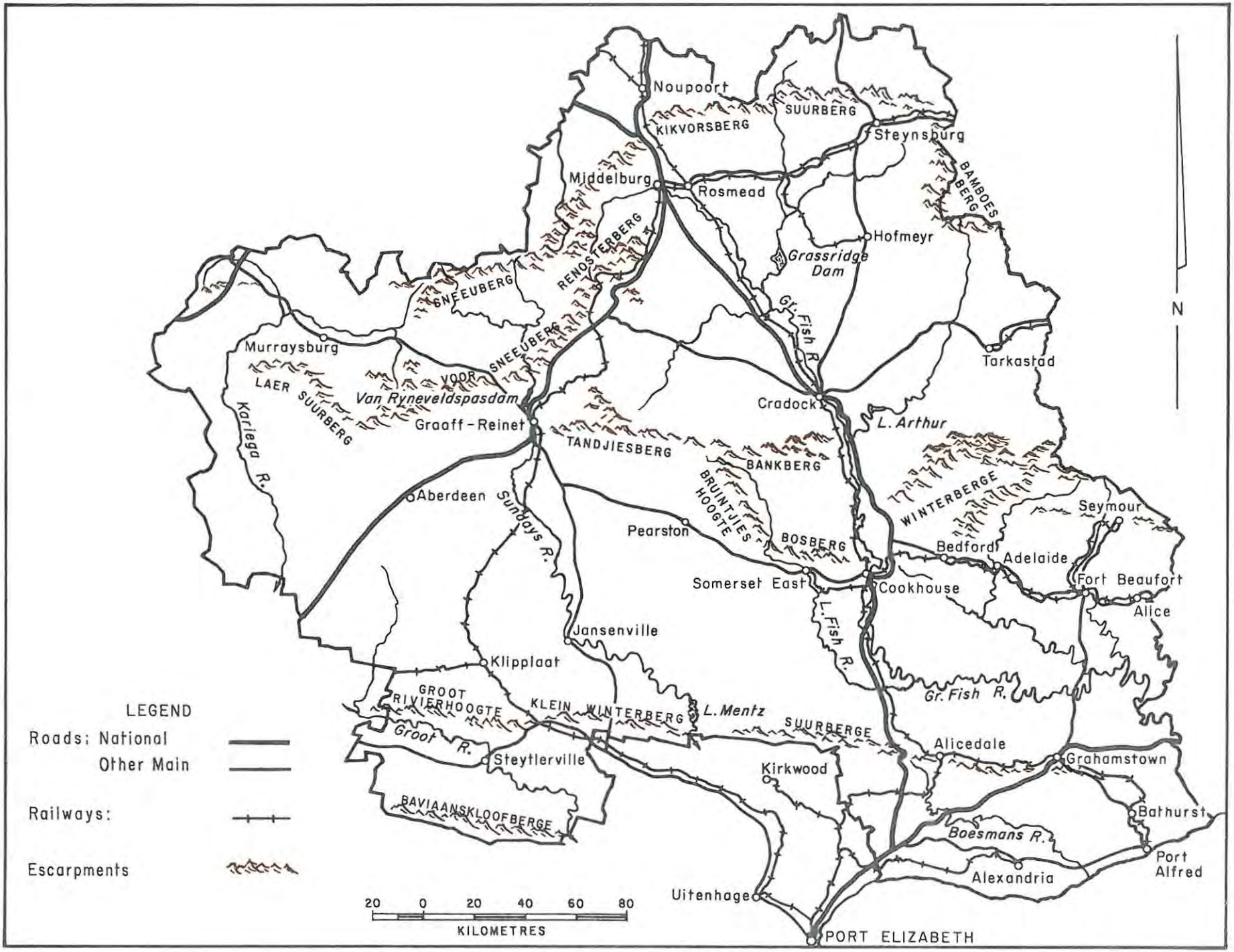


FIGURE 2: MAJOR TOPOGRAPHIC FEATURES

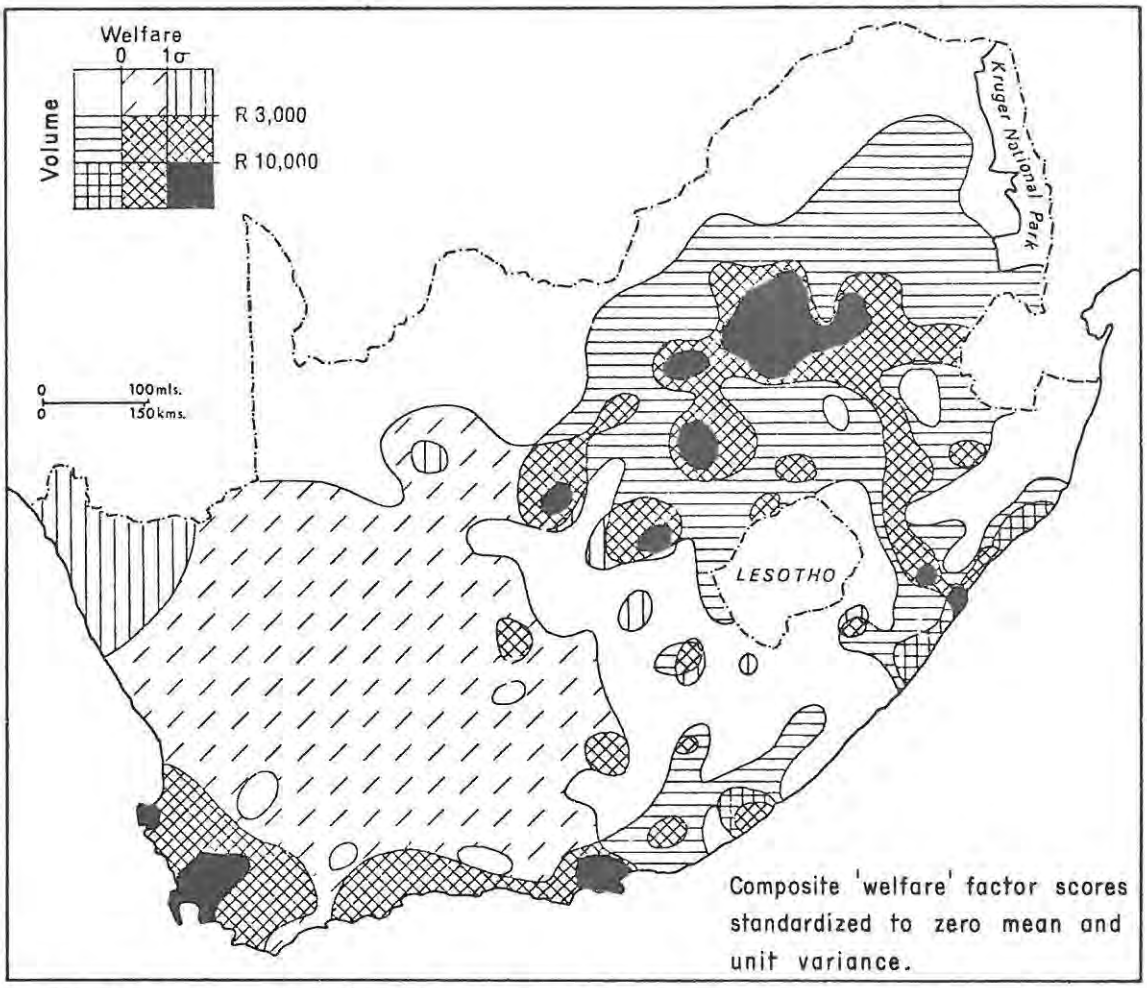
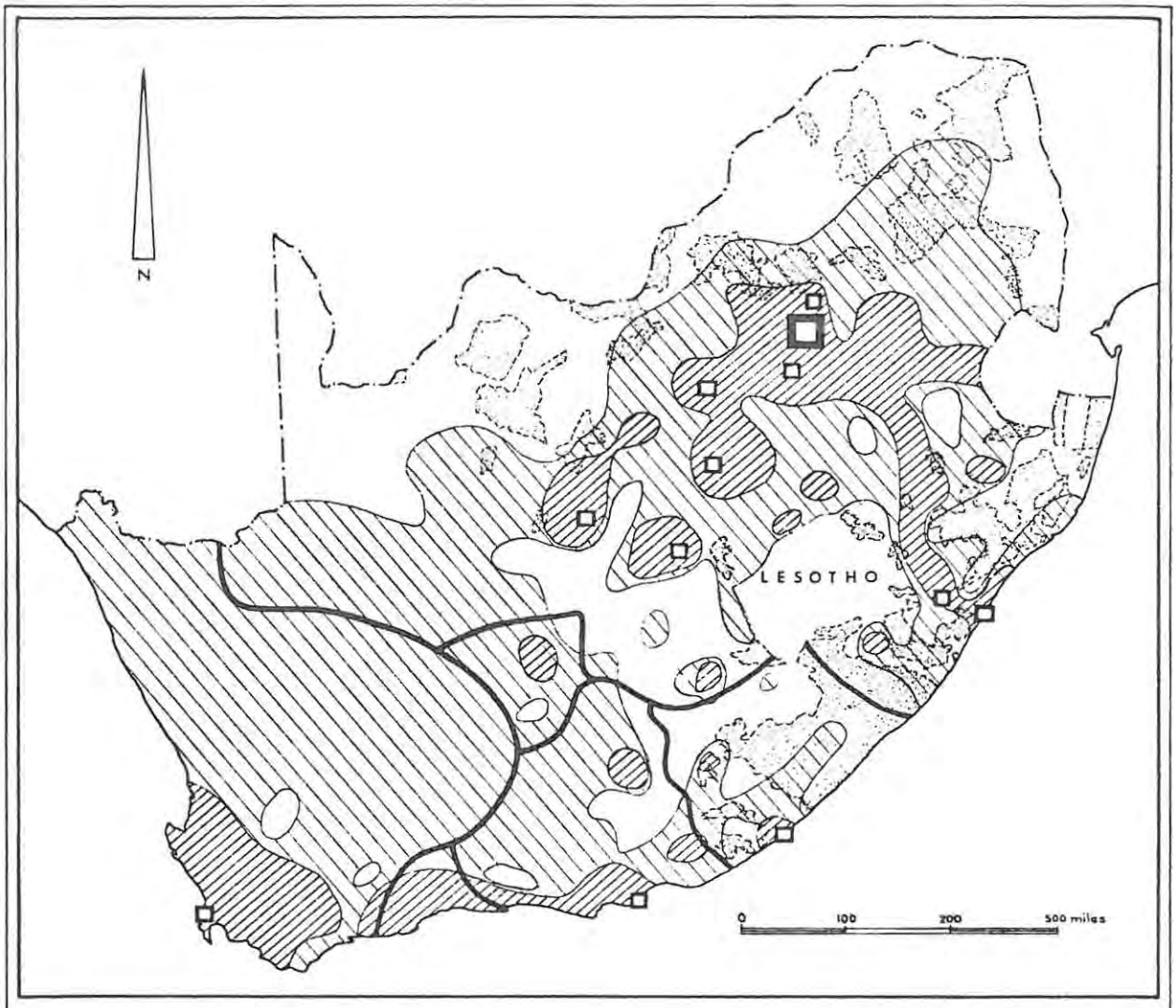


FIGURE 3: 'SOCIO-ECONOMIC' SURFACES IN SOUTH AFRICA
(Reproduced from Board, Davies & Fair, 1970)



ELEMENTS OF THE SOUTH AFRICAN SPACE – ECONOMY

Main functional regional boundaries

PERIPHERAL ECONOMIC SPACE

Inner

Intermediate

Outer

Bantu Areas

Principal metropolitan centre

Other metropolitan centres

Note : Other elements, such as communication networks, although essential parts of the complete structure of the space - economy, have been omitted to improve clarity.

FIGURE 4 : ELEMENTS OF THE SOUTH AFRICAN SPACE ECONOMY
(Reproduced from Davies, Maasdorp & Price, 1971)

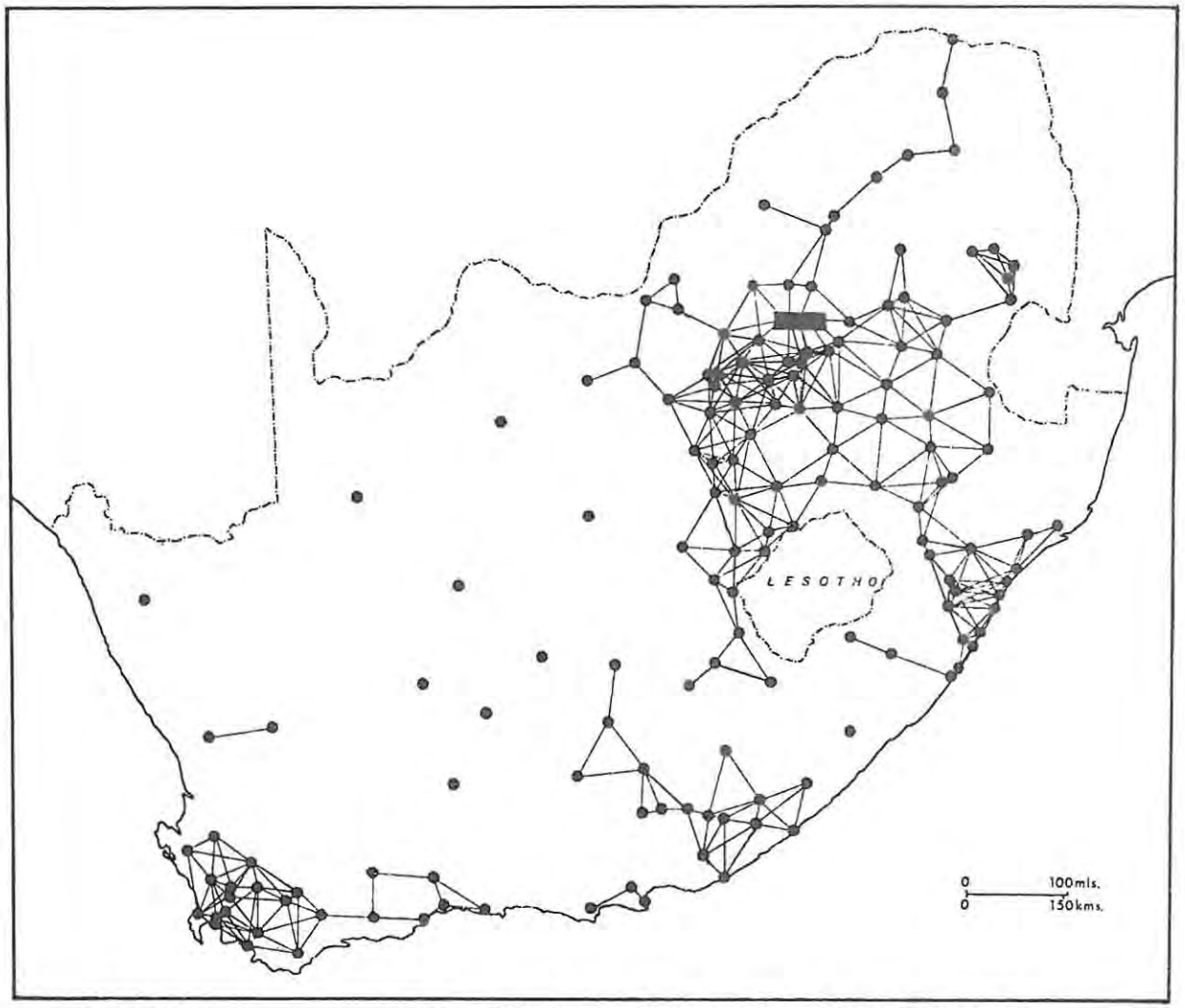


FIGURE 5: THE SOUTH AFRICAN URBAN MESH
(Excluding Local and Low Order Service Centres)
(Reproduced from Board, Davies & Fair, 1970)

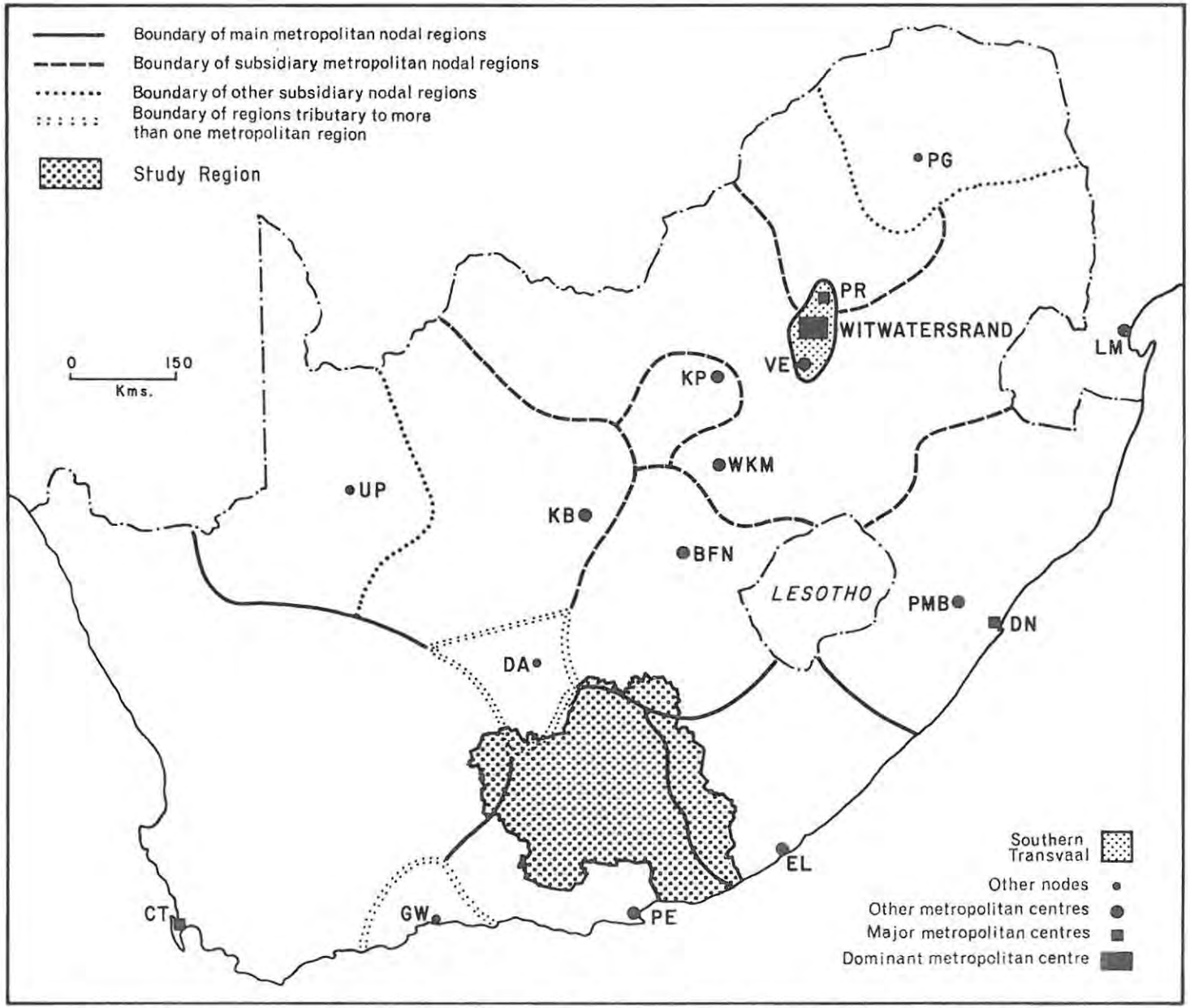


FIGURE 6: THE CAPE MIDLANDS AND KARROO REGION IN RELATION TO THE MAIN FUNCTIONAL REGIONS OF SOUTH AFRICA

(Adapted from Board, Davies & Fair, 1970)

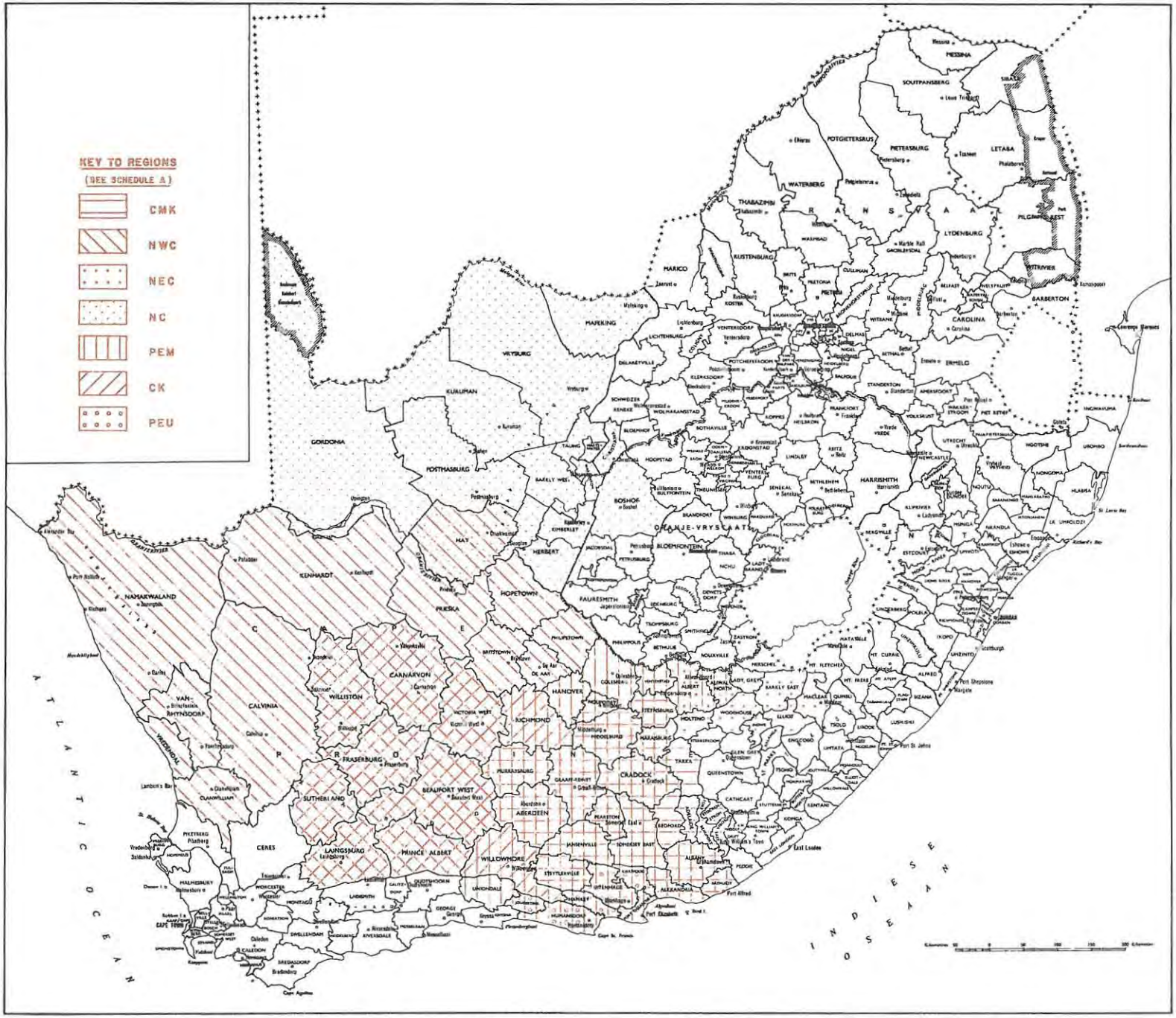


FIGURE 7 : INTER-REGIONAL COMPARISONS: DEFINITION OF REGIONS

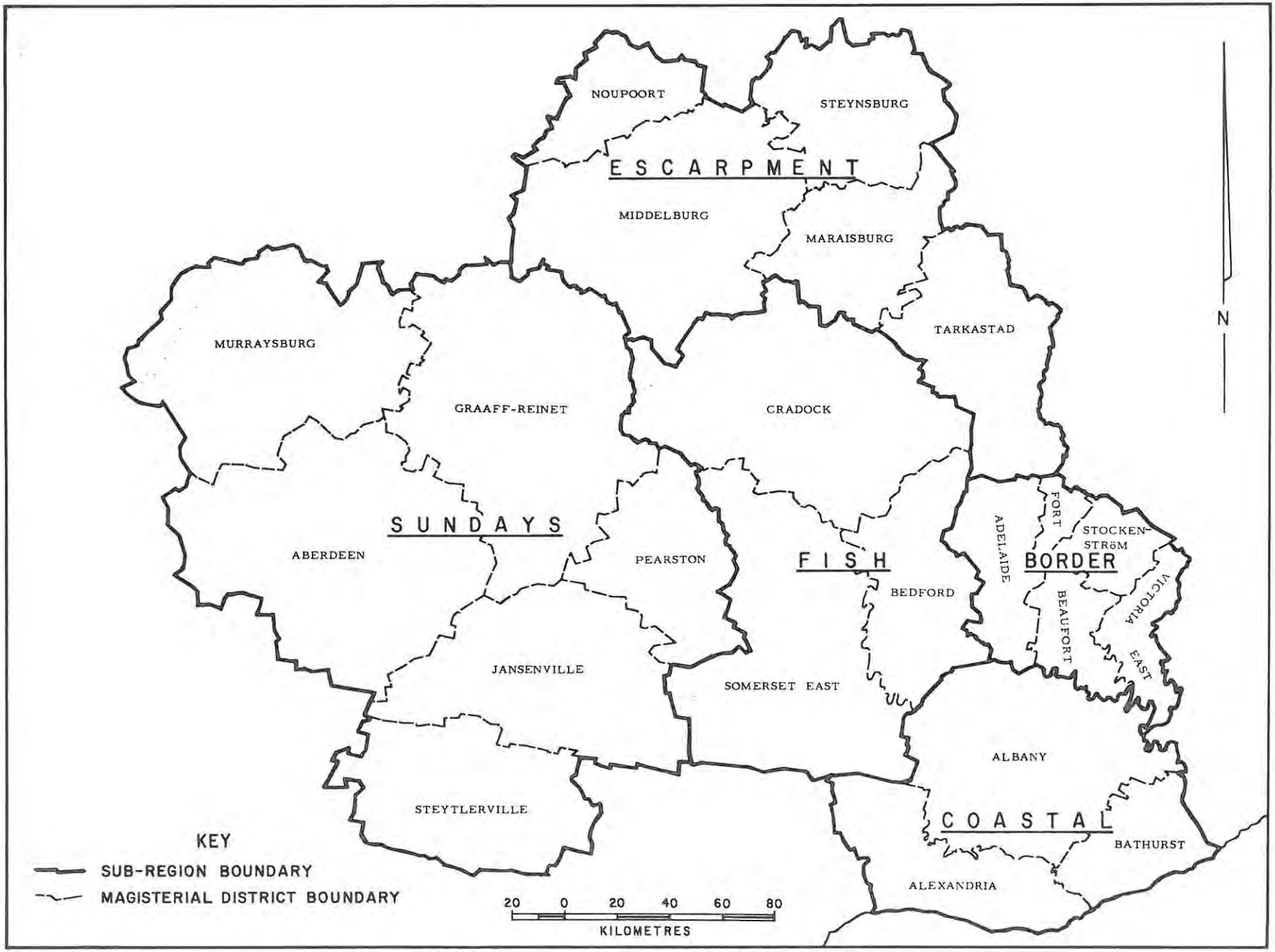


FIGURE 8 : KEY TO SUB-REGIONS

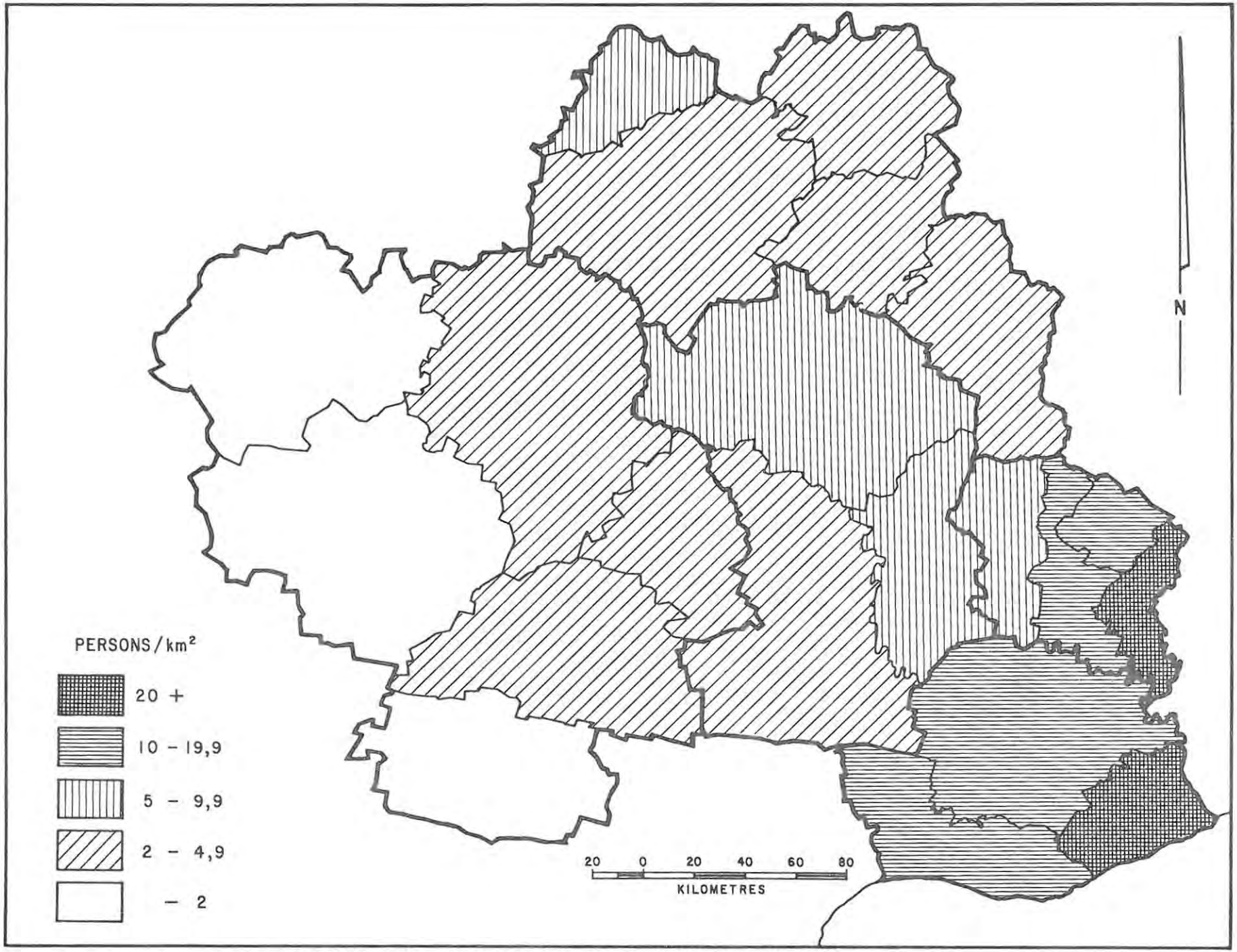


FIGURE 9 : POPULATION DENSITY SURFACES (1970)

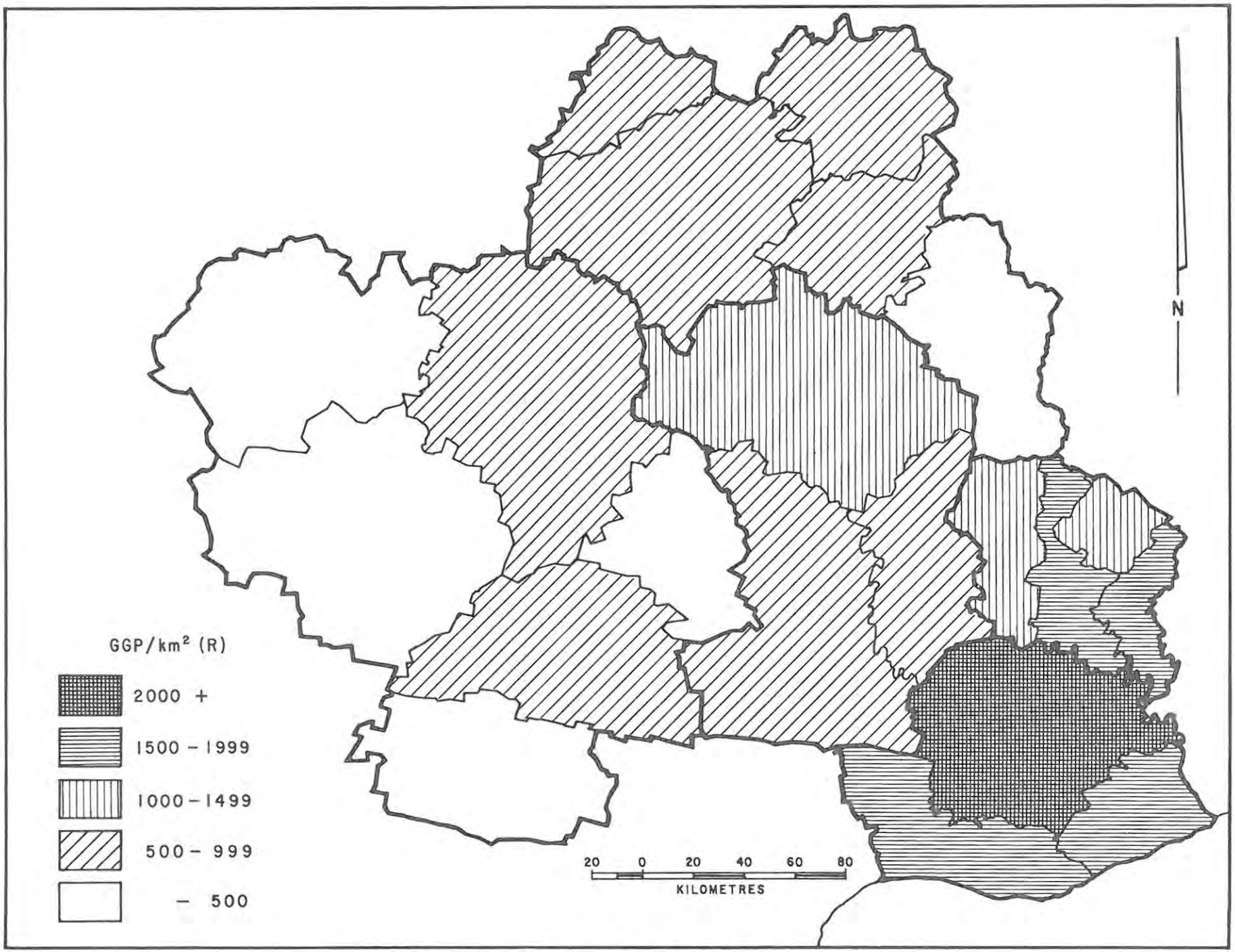


FIGURE 10: 'VOLUME' SURFACES (1959/60)

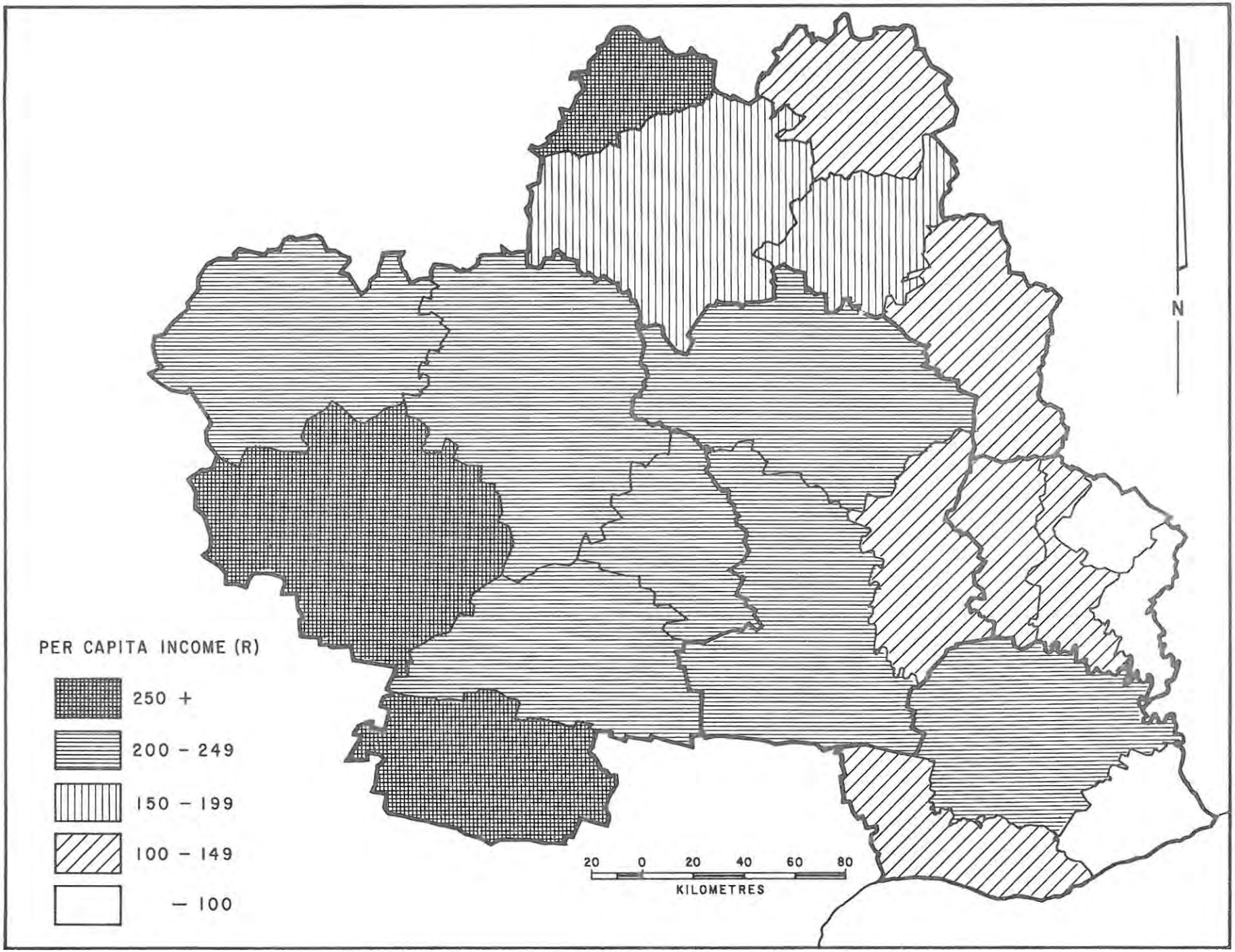


FIGURE 11: 'WELFARE' SURFACES (1959/60)

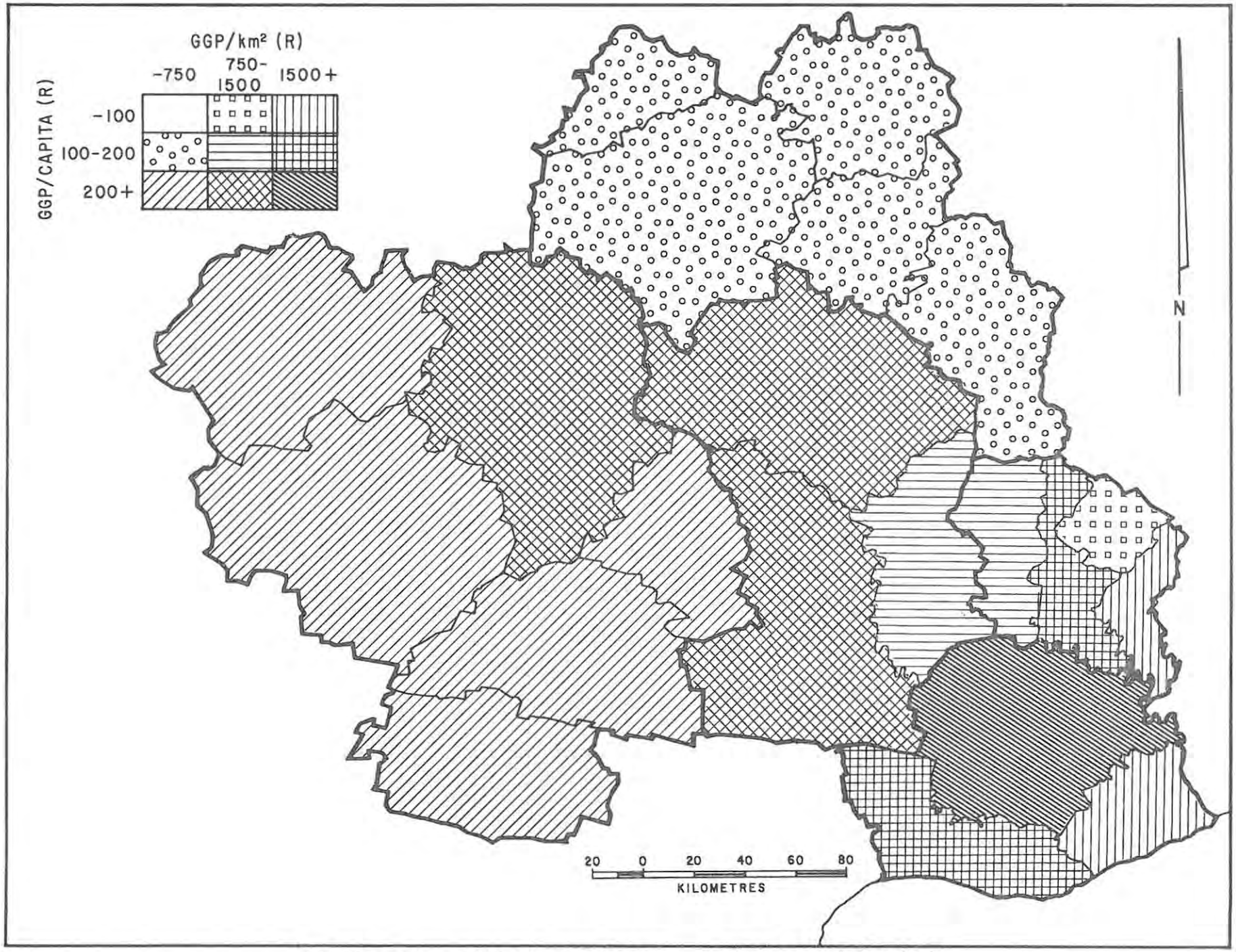


FIGURE 12: 'SOCIO-ECONOMIC' SURFACES (1959/60)

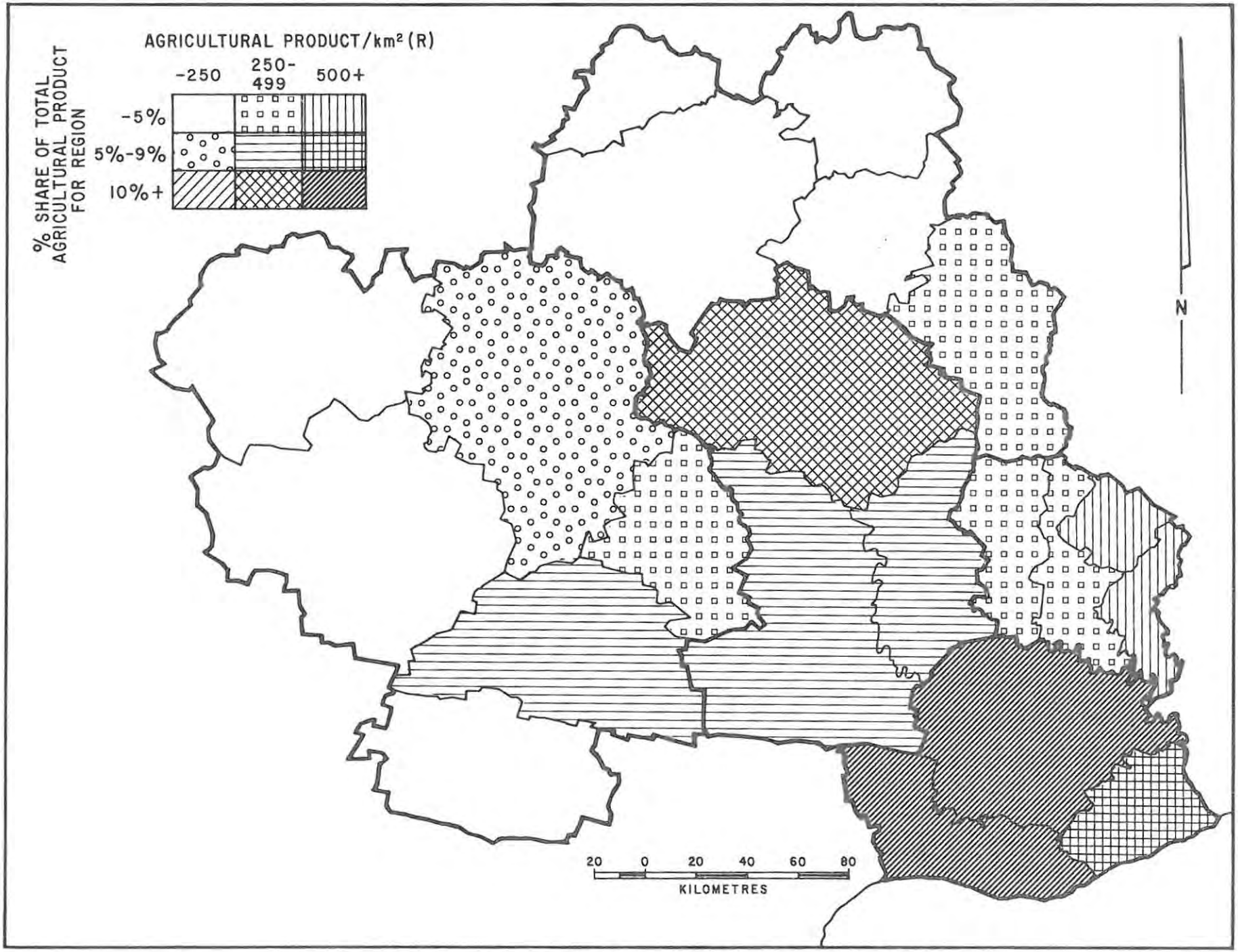


FIGURE 13: 'AGRO-ECONOMIC' SURFACES (1959/60)

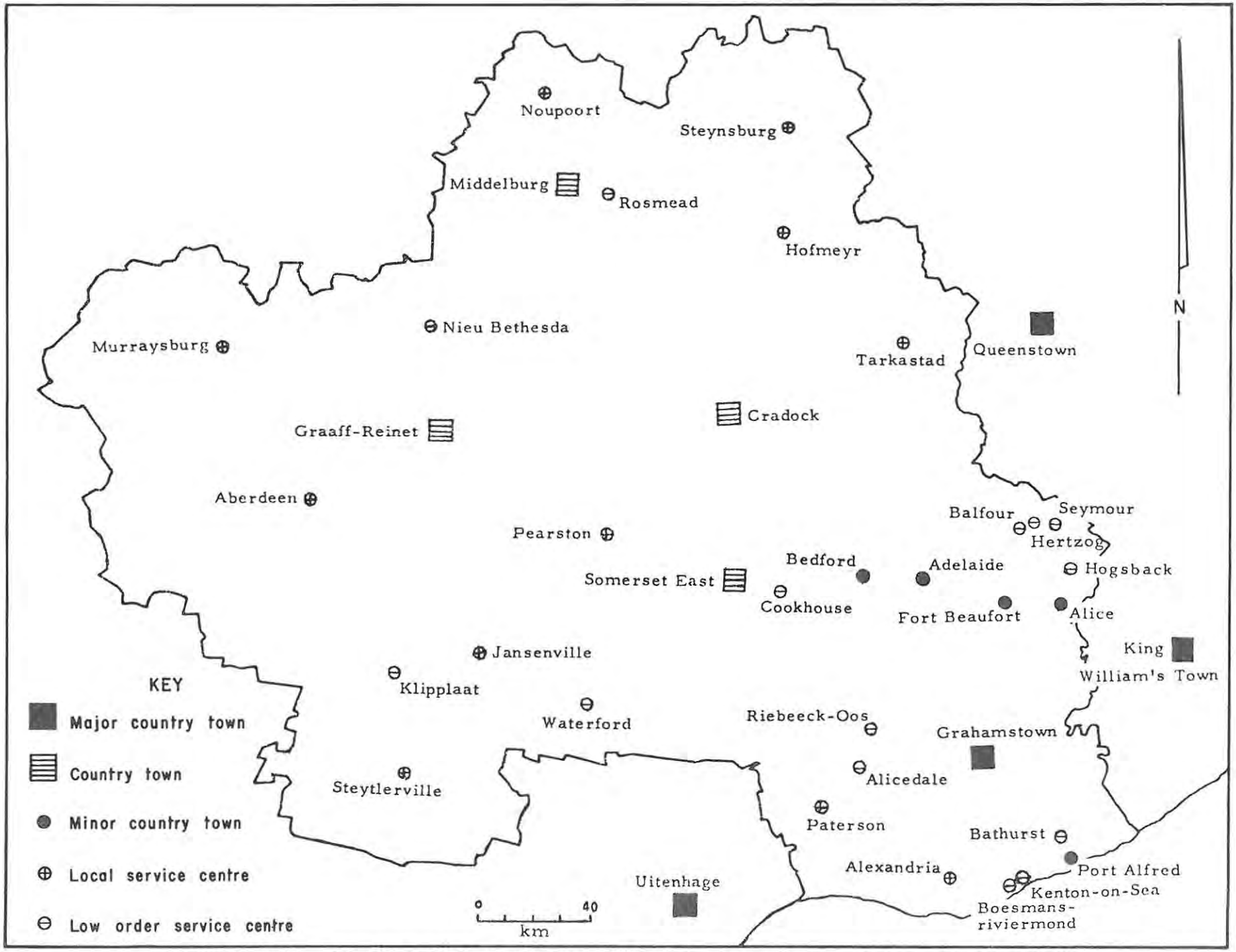


FIGURE 14: HIERARCHY OF CENTRAL PLACES (Adapted from Cook, 1971)

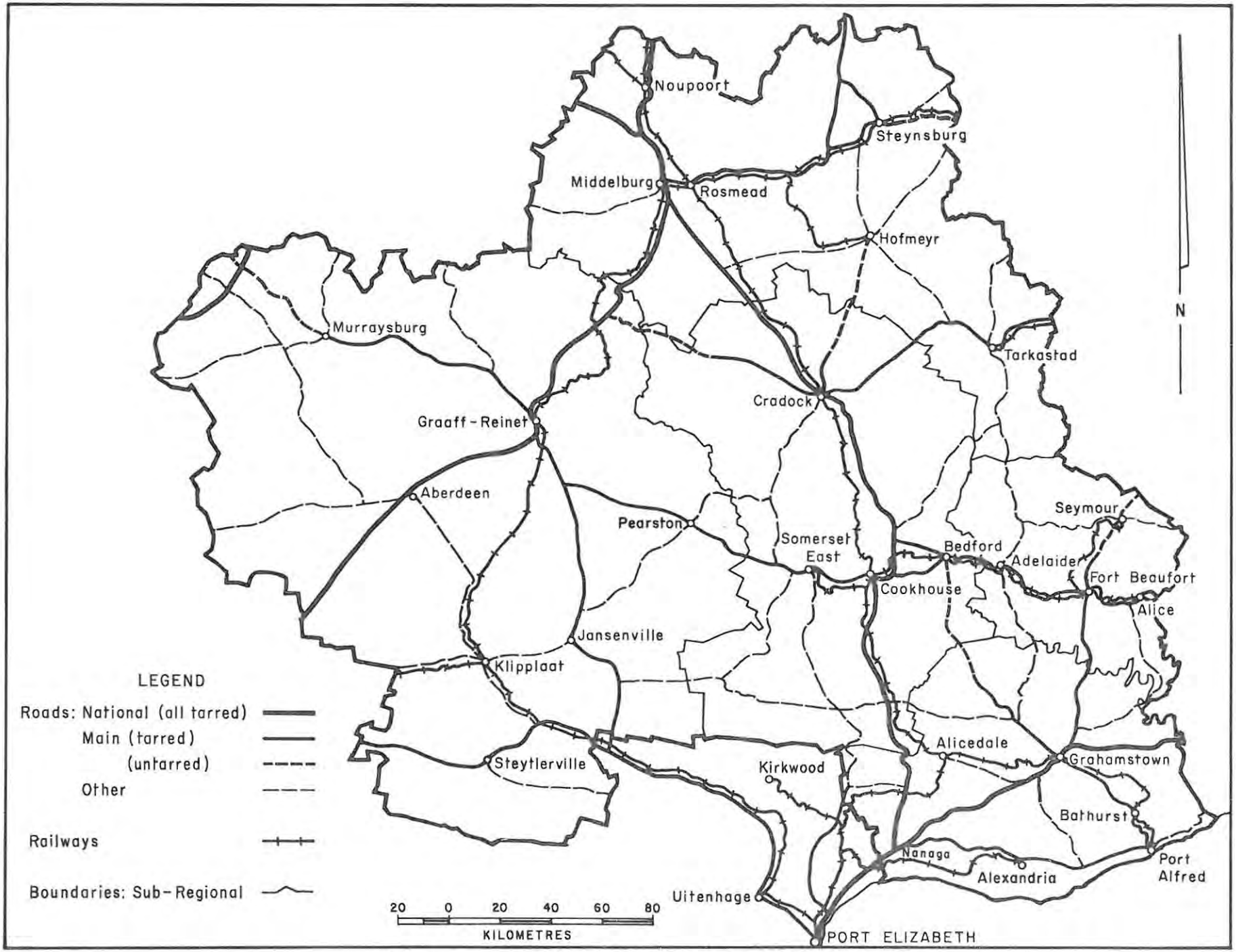


FIGURE 15: ROAD AND RAIL SYSTEMS

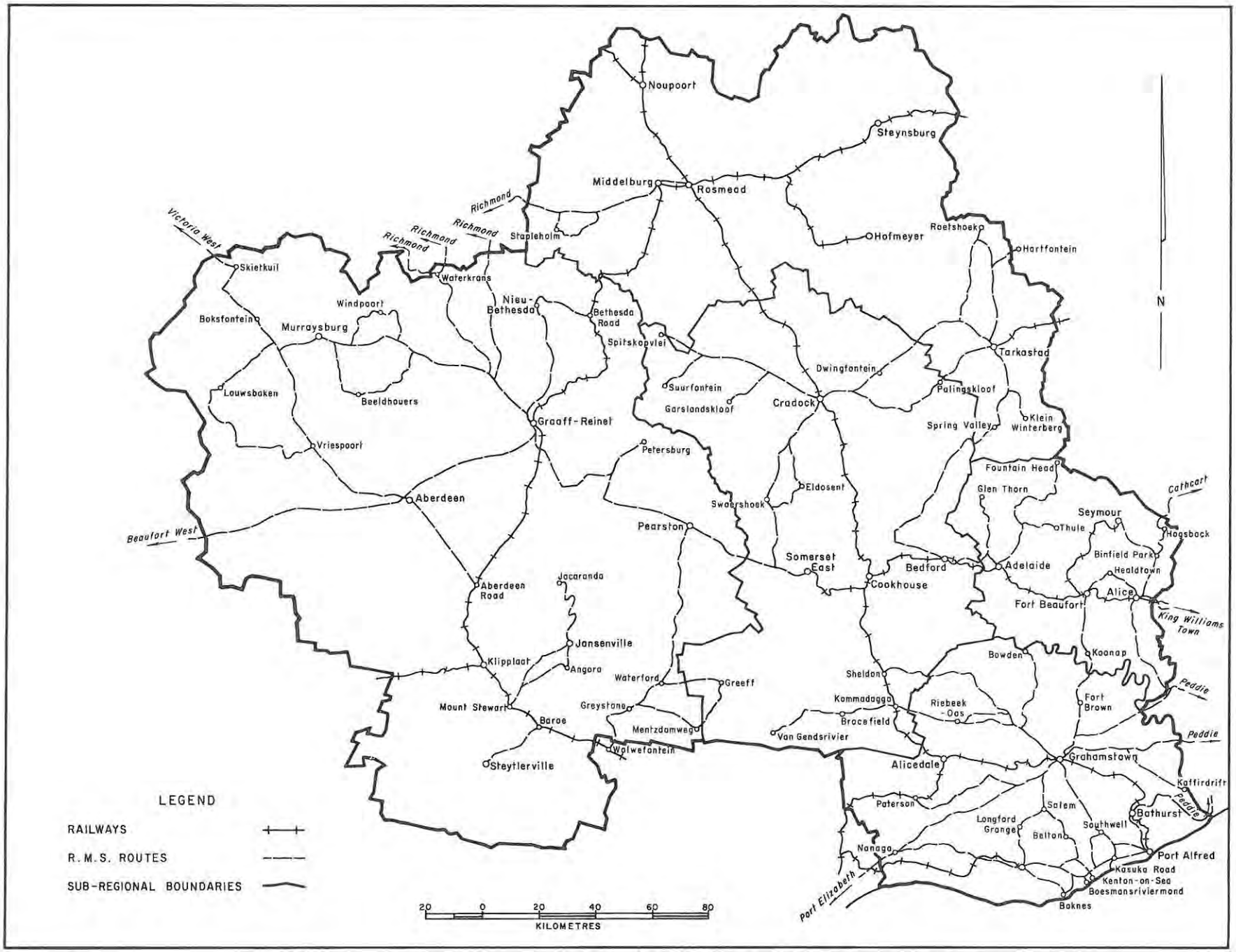


FIGURE 16: S.A.R. ROAD MOTOR SERVICE ROUTES

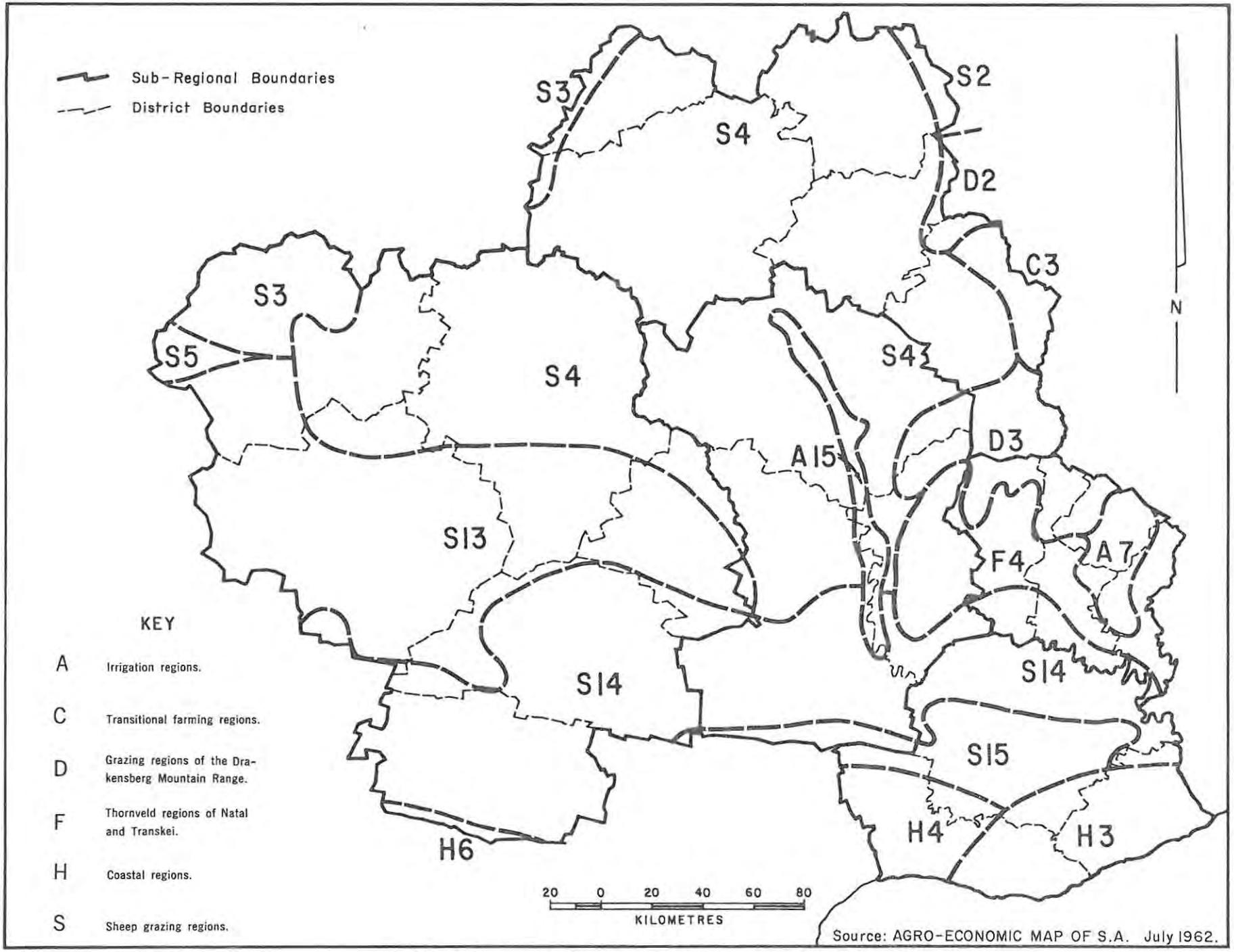


FIGURE 17: AGRO-ECONOMIC REGIONS

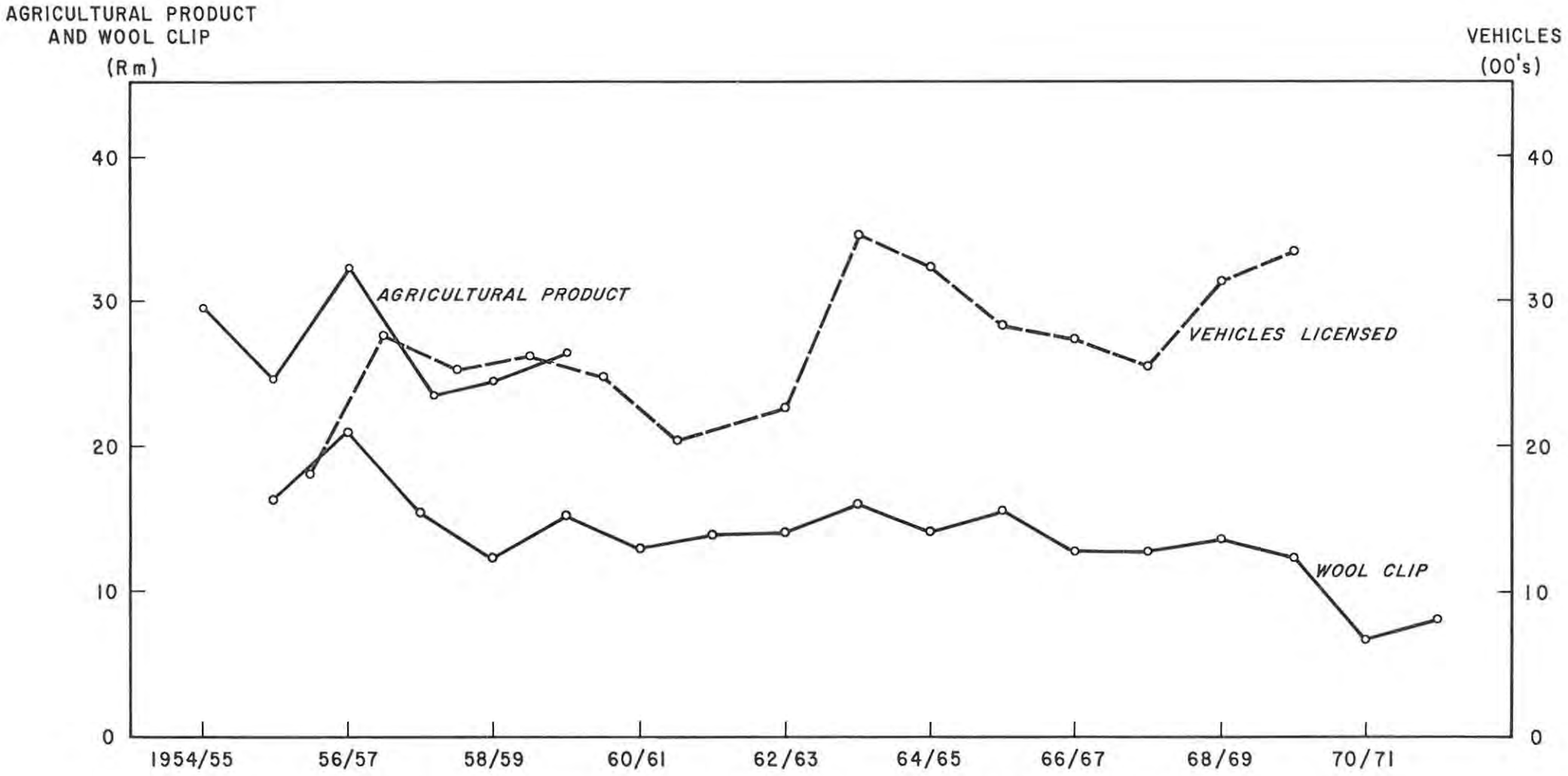


FIGURE 18: RELATIONSHIP BETWEEN GROSS VALUE ADDED BY AGRICULTURE, VALUE OF WOOL CLIP AND NUMBER OF MOTOR VEHICLES LICENSED

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