

GOVERNMENT POLICY AND INDUSTRIAL

LOCATION IN SOUTH AFRICA

by

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## Chapter I

### THE ORIGINS OF THE BORDER INDUSTRIES IDEA.

Political, sociological and economic objectives inevitably impinge upon one another, so that economic proposals cannot be made without taking into account their non-economic implications. It is, therefore, an untenable claim for the economist that once 'he has shown that a particular course of action is to be recommended, for economic reasons, he has done his job.'<sup>1</sup> Hutchison makes a point which, as he remarks, is perhaps rather platitudinous, but nevertheless, is often neglected: 'Only advice and policy which is based on an estimate of the political, sociological and economic effects together of a policy or measure can be sensibly acted on'.<sup>2</sup>

Governments, naturally, pursue social and political as well as economic objectives. The degree to which economic and non-economic objectives harmonise with one another without government interference, however, obviously varies a good deal according to time and place. For instance in the nineteenth century, the priorities of British governments made possible a high degree of individual freedom in the economic sphere. This century, however, as Robbins suggests, has seen a great extension of state activity in the economic sphere,<sup>3</sup> for both economic and non-economic reasons. This tendency, then, is not peculiar to South Africa, but the border industries policy, largely because of its ideological associations and the degree of intervention which it seems to imply, is a particularly controversial example.

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1. J. R. Hicks, Essays in World Economics, 1959, p. x. Hicks, in fact, goes on to say "that if he limits his function in that manner, he does not rise to his responsibilities."
  2. T. W. Hutchison, The Significance and Basic Postulates of Economic theory, 1938, p. 165.
  3. Lionel Robbins, The Economist in the Twentieth Century, Macmillan, London, (1956), p. 4.

If more of one policy objective can be obtained without even partly giving up another, then no policy issue arises, since the objectives are "free goods". But this is not usually the case, and it has, unfortunately, become something of a tradition in certain circles, whenever official intervention conflicts with economic objectives, to assume automatically that governments are irrational, incompetent or even downright wicked. The behaviour of governments, however, is seldom entirely whimsical, and there are thus important tasks for the economist to perform, one of which is to elucidate the ends of policy. The latter are not always clearly formulated, since schemes are often launched without any precise idea of the objectives themselves, let alone a careful assessment of their probable consequences. The other major task is the elucidation of the opportunity costs of alternative policies.

An attempt to state more explicitly both the objectives and implications of policies may, therefore, provide a more solid basis for realistic policy decisions. "Progress", as Popper has said, 'rests... with the clarity of our conception of our ends, and with the realism of their choice.'<sup>1</sup> It is with these thoughts in mind that we approach our problem.

The border industries policy does not represent a radical departure from the approach of earlier South African governments to the problems associated with the massing of Bantu workers and their families in the country's metropolitan areas. On the contrary it must be seen as the current phase in a continuous process of evolution in the country's thinking on racial policy. It is part, almost an inevitable part, of an unfolding logic which appears to underlie the country's political history.

The Natives Land Act of 1913 set aside areas, known as

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1. K. R. Popper, The Open Society and its Enemies, 4th Ed. 1962, Vol. II p.280.

'scheduled areas', which were to be reserved exclusively for occupation by Africans, and at the same time stipulated that no African might acquire land in freehold outside of these areas. In so far as it prevented further acquisition by Europeans of land occupied by Africans, the latter welcomed the measure. But the rights of Africans were diminished in that they had hitherto been free to purchase land anywhere in the Cape and Natal, though not in the Transvaal or Orange Free State. It was felt strongly at the time that the area set aside<sup>1</sup> was inadequate in relation to the size of the African population<sup>2</sup> and a commission was set up in 1916 to study the problem. Only insignificant additions were made, however, until the Native Trust and Land Act of 1936, which enlarged the Native reserves of 1913 by adding to them certain districts,<sup>3</sup> then in the possession of Europeans, which would gradually be transferred to African ownership. The Native Trust was established in terms of the Act to purchase this land, known as 'released areas'<sup>4</sup> for African occupation. The 1936 Act thus brought the total area reserved for African occupation to approximately 12.4 per cent of the country's total land area, and it was envisaged that no further additions would be made.<sup>5</sup>

The poverty of the Native Reserves has been a matter of concern and the subject of study by numerous Government commissions and other official bodies throughout this century. This poverty has for long been seen as lying at the heart of political, social and economic ills affecting white and black alike. As far back as 1932 the Native Economic Commission

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1. About 10½ million morgen or 7.3 per cent of the country's total land area.
  2. Which in 1911 comprised 78.0 per cent of the country's total population.
  3. Measuring about 7 million morgen.
  4. i.e. released from the provisions of the Natives Land Act of 1913.
  5. Subsequent developments are mentioned in Chapter 2 below.

emphasised 'the desirability and necessity in the interest of the country, European and Native alike, of placing a well planned scheme of improvement and development (of the Reserves) in the forefront of the national objectives.'<sup>1</sup> This Commission saw the 'outstanding feature of the Native Reserves, common to all of them in varying degrees' as lying in 'overstocking'; and, in so far as it can be said to have laid down a programme of development, this consisted chiefly in stressing the need for 'education, in the broadest sense of the word', apparently with a view to combatting the 'overstocking evil'.<sup>2</sup> They believed that the problem of relieving the poverty of Natives in urban as well as the rural areas must be tackled in the Reserves.<sup>3</sup> No mention was made of any need for industrialisation, but this is hardly surprising considering the early stage of industrial development of the country as a whole at the time.

The Mine Wages Commission of 1944 also drew attention to the 'overstocked and overpopulated' condition of the Native Reserves and emphasised the social and economic evils of the migratory labour system under which 'a considerable percentage of the Reserve Natives have to work for hire almost continuously, with relatively short breaks, to earn a living'.<sup>4</sup> Another official report published in 1946 points out the inter-relationships between the migratory labour system and low agricultural yields in the Reserves: 'No plan for the rehabilitation of the Reserves can fail to take into account the fact that a considerable proportion of the adult male working force is absent at any one time. Few Native households in the Reserves depend solely on agriculture for their means of livelihood.

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1. Report of the Native Economic Commission 1930-32, U.G. 22 of 1932, The Government Printer, Pretoria, pp. 47-48.
  2. ibid., p. 48.
  3. For an excellent commentary on this Commission's proposal that 'a wise courageous, forward policy of development of the Reserves' be adopted see N. N. Franklin, Economic Welfare and the Development of the Native Reserves, S. A. J. E., Vol. 10, No. 1, March 1942.
  4. U.G. 21 of 1944, para. 207.

Yields from crops and animals are so low that supplementary income must be obtained from elsewhere.<sup>1</sup> Following an analysis of the implications and consequences of the migratory labour system this report recommends that 'the elimination as far as possible of the migratory labour system must be the goal of policy, and must be proceeded with as fast as conditions allow, subject to the need of not dislocating economic life. The first aim must be to confine it to industries which, like the mining industry, do not provide a 'secure basis for urban settlement'. It is indeed probable that it will become less important, as legislation cannot continually prevail against the rural-urban drift occasioned by economic and other forces. Such changes must have a major effect on the Reserves as well as on Native housing and other problems. The only complete solution is to effect an improvement in Reserve conditions and to make provision for a permanent labour force.'<sup>2</sup>

The Social and Economic Planning Council while devoting most attention to the formulation of an agricultural policy of the Reserves differs from the Native Economic Commission in that it emphasises the need to broaden the economic base of the Reserves: 'Though the economic development of the Reserves will for a long time be associated with the diversification and increase of agricultural output, labour will remain for some time the principal export. It would be wrong, however, to regard this as all that is required for Reserve prosperity. The changes that are taking place are largely the result of shortage of land and increased contact with western civilisation, so that the development of other economic activities on western lines is becoming essential in order to increase the total available income.'<sup>3</sup> In support of this contention they mention Colin Clark's attempt

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1. Social and Economic Planning Council, The Native Reserves and their Place in the Economy of the Union of South Africa, U.G. 32 of 1946, p.41, para.170

2. ibid., p.48

3. ibid., p.58, para.240.

to show a direct relation between the degree of industrialisation and income per capita of different countries.

It is interesting to observe, too, that the Council discusses the very problem that caused the greatest dissent among members of the Tomlinson Commission several years later, viz. the freedom of white entrepreneurs to invest in the Reserves:

'At the moment there is little alternative to migration and as a result the majority of the most progressive members of the community are lost to the Reserves. Agriculture rarely provides a sufficient income. Reserve avenues of employment are extremely limited. 'Is there in fact any alternative while the Reserves are looked upon almost solely as reservoirs of migrant labour? Outside interests, with the exceptions provided by Sections 18(3) and 24(1) of Act No.18 of 1936 cannot interest themselves financially in these areas. Yet population is pressing on the means of subsistence. State enterprise and investment alone, can achieve this at present. The alternative is the modification of Reserve policy to allow of private investment, though even in this instance considerable investment in improved means of communication and power would probably be necessary initially. Are these implications fully realised, and is the establishment of a textile factory at Kingwilliams-town on Trust Land a herald of the shape of things to come?'<sup>1</sup>

The Tomlinson Commission Report, published in 1936, introduced a note of heightened urgency into the question of the development of the Reserves. Unlike the earlier reports quoted above, the reasons advanced for embarking upon a large scale programme in the Reserves, were more blatantly political. The Commission saw the survival of White

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1. ibid., pp.58-59, para.241

civilisation as being the primary objective of State policy in South Africa, and it believed that the only means of achieving this was a territorial division of the country into black and white areas. The reasoning which led the Commission to conclude that territorial separation was necessary is contained in essence in the passages below:

'On the part of the European there is an unshakeable resolve to maintain their right of self determination as a national and racial entity while on the part of the Bantu there is a growing conviction that they are entitled to, and there is an ever increasing demand for the fruits of integration, including an even greater share in the control of the country.

'Seeing that a peaceful evolutionary movement towards a common society is out of the question, the policy of integration could lead to problems and dangers of the gravest intensity.

'It is clear that a continuation of the policy of integration would intensify racial friction and animosity, and that the only real alternative is to promote the establishment of separate communities in their own separate territories where each would have the fullest opportunity of self-expression and development.<sup>1</sup>

The Tomlinson Commission laid great stress on the need for industrialisation to absorb the unemployed or underemployed population of the Reserves. It estimated that at the time of its investigation the carrying capacity of the Reserves was 3.6 million but that this could be raised to 10 million over a 25 year period, including migrant workers and their dependents. Economic activity in the Reserves themselves, it

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1. Summary of the Report of the Commission for the Socio-Economic Development of the Bantu Areas within the Union of South Africa, U.G. 61 of 1955, pp.104-105 (Tomlinson Report).

said, would be able to provide a living for 8 million people.<sup>1</sup> The Commission stated that, according to its estimates, this objective implied that an average of 30,000 opportunities of employment would have to be created in the Bantu areas annually, though the actual number would naturally be smaller in the early stages. From the point of view of this study, however, it is especially noteworthy that the Commission reckoned that employment would have to be provided for 20,000 Bantu annually in secondary industry alone.<sup>2</sup> The economic activity arising from this it was agreed, would, according to expectation, stimulate tertiary activities to such an extent that the remaining 30,000 workers would be employed in the latter.

If these goals were met, then it would be possible to accommodate 60 per cent of the country's Bantu population in the Reserves by 1981, and 70 per cent by the end of the century. If the programme outlined by the Commission was not tackled, then no increase in the carrying capacity of the Reserves could be expected, and any increase in population would simply spill over into other parts of the country, so that by the end of the century the Bantu areas would accommodate only about a quarter of the Bantu population.

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1. The Commission's method in arriving at this estimate, however, was of a somewhat questionable sort. It first of all assumed that planning in the primary sector would make possible a collective carrying capacity of 2.14 million persons, and then asserted without any obvious justification, that it was not unreasonable to expect that in a period of 25 to 30 years the Reserves would achieve an economic structure similar to that of Canada in 1941, when about 70 per cent of the population was employed outside of agriculture.
  2. Including the construction industry.

The question whether industrialisation should take place in the Bantu areas themselves or in the so-called "border areas" was one of the most contentious issues raised in the Tomlinson Report,<sup>1</sup> and one important respect in which the Government, in a White Paper on the report,<sup>2</sup> differed from the majority view of the Commission. The Commission defined a border area as 'one where development takes place in a European area situated so closely to the Bantu Areas, that families of Bantu employees engaged in that development, can be established in the Bantu areas in such a way that the employees can lead a full family life'.<sup>3</sup> It was envisaged that such 'European' areas would be situated so close to the Reserves that Bantu workers would be able to travel home to their families inside the Reserves everyday, or at least at very frequent intervals, say, weekly.

The overriding consideration in the Government's decision to reject the majority recommendation of the Commission that industrial development be concentrated mainly inside the Bantu Areas, was essentially political. The objections put by the two dissenting commissioners were that 'the granting of concessions to Europeans to establish industries and to acquire other rights ancillary thereto would open the door to a state of affairs which would be tantamount to the creation of additional 'white spots' in the Bantu areas, and that during the course of time any such concessions would result in the concessionaries claiming rights and privileges, vested and otherwise, which in their opinion, would be contrary to the concepts of the separate development of the Bantu Areas and the principles of their reservation for the Bantu'.<sup>4</sup> But from a strictly

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1. Tomlinson, pp.140-143  
 2. Government Decisions on the Recommendations of the Commission for the Socio-Economic Development of the Bantu Areas within the Republic of South Africa, W.P.F. - '56.  
 3. Tomlinson, p.140, para.4.  
 4. Tomlinson, p.142, para.29

economic point of view also there is one extremely forceful argument for centralising on the development of the border areas rather than the Bantu Areas themselves. The former are at present much more developed from the point of view of social overhead capital, and contain several towns of fairly significant size. Thus the initial capital investment required in the border areas is probably smaller than would be the case in the Bantu areas. In addition it will probably be much easier to attract entrepreneurs and technicians to border areas. In sum, then, the initial costs of industrialisation will probably be lower in the border areas than in the Bantu Areas.

While admitting that border areas development would increase the carrying capacity of the Reserves, the majority report of the Commission favoured the establishment of industries inside the Reserves since, it reasoned, despite initial disadvantages, industries inside the Reserves would result in development to the maximum extent. The principal objection of the Commission to border areas development was that 'it will only partially remove the 'ceiling' for the Bantu . . . . the limitations in the industrial sphere, which apply to them in all other areas, will also be in force here, and under such circumstances it will be particularly difficult to create a class of skilled workers and entrepreneurs among the Bantu.'<sup>1</sup> The second principal objection was that border areas development would cause a tendency for the population to concentrate on the boundaries of the Reserves near the border areas, and that the Bantu will feel that they are merely an appendage of the European community. Internal development on the other hand would give rise to a sounder pattern of population distribution, and would not cause it to shift gradually to the borders. Thirdly, they considered that the social problems of the reserves could be better dealt with by means of internal development. Fourthly, they argued that it would provide a better basis for the eventual independence of the Bantu areas. There can be little doubt that any degree of political independence

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1. Tomlinson, p.141.

given to the Bantu areas can provide very little real independence whilst the bulk of their people earn their living outside those areas.

Despite the majority report's recommendation that the maximum results in terms of the territorial division of the country on racial lines would be achieved by establishing industries inside the Reserves, the Government, in the White Paper referred to, made it clear that it would not countenance such a policy. The border industries policy is thus an attempt to compromise between internal industrial development of the Reserves and the continuation of the rapid rural-urban movement of Africans especially to jobs in secondary industry in the major industrial centres, with its abundant social and political implications, which was (and still is) taking place. It is the logical outcome of a political view which has led to a system of laws which prohibits the exploitation of the resources of the Reserves by private white enterprise, and at the same time seeks to reduce to the minimum the movement of Africans to the 'white' areas, especially to the metropolitan areas. It was in the White Paper of 1956, then, that the Government first publicly declared itself to be in favour of inducing industrial development in the border areas. Since that time, as we shall see below,<sup>1</sup> the Government's commitment to this policy has become much firmer, and the policy and the measures to be adopted in order to implement it have been more clearly formulated. Despite the latter, however, there are, as we shall also see, numerous important issues relating to the border industries policy which need to be clarified, and it is largely to this task of clarification that the present study is devoted.

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"Industrial Decentralisation" vs "Border Areas Industrialisation".

At this stage it seems desirable to touch upon an important distinction, namely, between 'industrial decentralisation' and 'border areas industrialisation'. The two terms have tended to be regarded as virtually synonymous, but the former clearly suggests a broader scope in geographical terms than the latter. It also suggests more strongly that its adoption as a Government policy is dependent for its justification upon economic, social, strategic and similar factors, resulting from excessive concentration of economic activities in a few large centres per se, and not so much dependent on racial policy. In short the term 'industrial decentralisation' is a politically more neutral one than 'border areas industrialisation'. Furthermore the use of the former as a synonym for the latter implies that a case of State induced industrialisation in presently relatively unindustrialised areas exists independently of the policy of separate development, and that therefore the border industries policy also rests to some extent (usually it is implied to a large extent) upon similar factors. This view of the matter is grossly misleading, and as will become plain in due course it makes it much more difficult to explain the intensity with which the Government appears to desire border areas industrialisation.

From a strictly economic point of view it is clear that given the goal of diverting industries from the few relatively heavily industrialised areas to other less industrialised centres, that border areas are at least from the point of view of initial social overhead investment preferable to the Bantu areas themselves. However, the question must be raised whether there are not other areas apart from the border areas which might be considered as more or equally suitable sites for industry, if the aim of the policy were simply that of dispersing industries from congested areas so as to ease the problems of large urban concentrations. There are in fact several centres well equipped with social overhead capital and other facilities for industrial development and  
their/

their neglect by comparison with border areas has been the cause of complaint from interests in these other areas. This neglect is to some extent a reflection of the political bias of this policy, and the obvious fact that the aim of the policy is not simply that of eliminating the social problems of overcrowded areas. On the other hand, it is true that the population density of the Bantu areas is far greater than that of other rural areas,<sup>1</sup> so that the need for non-agricultural employment is greater, and that the Border areas include a large proportion of those relatively undeveloped areas in South Africa which are favourably placed for development. The Viljoen Commission pointed out that 'as the important industrial areas that can be developed in this country lie in the area between the eastern escarpment and the sea, and therefore in the immediate vicinity of the Native reserves, the policy of encouraging the decentralisation of industry conforms broadly with the policy of the Government of developing industries near the Reserves.'<sup>2</sup> Nevertheless, the policies are not identical and the border areas exclude a number of important centres which might well be included in a broader policy of decentralisation.<sup>3</sup>

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1. Population per square mile in the Natal reserves and the Transkei in 1951 was 82, and in the Ciskei, 79, the average density for all Bantu areas being 63. The Transkei was more than twice as densely populated as the Western Province.
  2. Report of the Commission of Enquiry into Policy Relating to the Protection of Industries, The Government Printer, Pretoria, U.G. No. 36/1958, para. 453, p. 55.
  3. In recognition of this, the Government in March 1965 broadened the scope of its programme to include certain areas in which unemployment amongst Coloureds or Indians was thought to be excessive. 'The accent, however, still falls on border areas, on account of the supply of labour from the Bantu homelands, the limited opportunities in relation to the population in the areas concerned, and the social policy of the country.' Permanent Committee for the Location of Industry and the Development of Border Areas, Report of Activities for the Period 1st January, 1966 to 31st December, 1966, pp. 2-3.

### The Major Questions.

Once this distinction is made the obvious question is whether in fact there is a sound case for industrial decentralisation apart from a Government preference, motivated by considerations of race politics as such. The aim of this study is not primarily to question the desirability of the latter goal on moral or political grounds. Its task is to answer two questions: (i) If the Government does induce industrialisation in the border areas by means of subsidisation and other measures, what will be the economic consequences, and how will these consequences vary with the rate at which border industries are induced? (ii) Given the desire on the part of the Government to establish secondary industry in the border areas, what is the most efficient (least costly) way in which it can achieve this (i. e. what specific instruments should it use, what specific industries should be encouraged, etc.)?

'But', as Johansen points out, 'it is possible to go further and consider the public sector in another way. One then tries to explain the actions of the public authorities as determined by, for instance, such things as the various influences of social classes and pressure groups, the social mechanism of selection of leaders of state and municipal institutions, their knowledge or lack of knowledge when taking decisions, etc. This will be a theory about politics'.<sup>1</sup> In a later chapter this approach will be adopted since it is necessary in order to explain the factors which enter into the Government's decision as to how much industry is to be subsidised in the border areas, and to show in a more rigorous way how the Government's political objectives are subject in this case to economic constraints. Some recent writings have demonstrated that decisions of this sort, even though they involve non-economic goals, can be handled within an analytical framework familiar to economists.

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1. Johansen, L. Public Economics, North-Holland Publishing Company, (Amsterdam, 1965), pp. 6-7.

The Major part of the study, however, is concerned with answering the two questions involved in the first approach mentioned above. Our reasons for doing so are well expressed in Johansen's words: 'This is without doubt the simplest: it makes possible a relatively technical analysis of the problems within public economics. The second view requires a far greater element of political and sociological theory'.<sup>1</sup> In addition to being simpler, however, it is believed by the present writer that an analysis of the economic consequences of the border industries policy will enable both the Government and the public to make a more rational assessment of the policy and of the most efficient means of implementing it.

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1. Johansen, L. op. cit. p. 7

DUALISM IN THE SOUTH AFRICAN ECONOMY"Two Nations: The Rich and the Poor"

There is a sense in which the South African economy may be said to be "dualistic". In this respect South Africa is like Italy, to which the following definition of dualism was particularly intended to apply:

"... two sectors have come to co-exist: an advanced sector, where the degree of industrialisation is high, factors of growth are in operation, productivity and wages increase, and per capita incomes are high, or at least well above a certain minimum; and a backward sector, where income per capita is well below that minimum, productivity is low and stagnant, techniques of production are very primitive, and where unemployment and underemployment are persistent features".<sup>1</sup>

This definition lays stress on differences between regions. In addition to these there are of course striking inequalities in South Africa between the living standards of Whites and Africans within all regions. It is this which has led Horwood, who uses the terms "subsistence" and "modern" for the two economic poles implicit in the idea of dualism, to say that "the subsistence economy of South Africa is not as is often averred, confined to the Native territories, but ... extends appreciably into the modern sector as well. And any proposals for raising the living standards of all sections of the population must take cognizance of that fact".<sup>2</sup> But this should not be allowed to obscure the fact that in respect of their material wealth, the inhabitants of the Bantu Areas are much worse off than the urban Africans. While the White-African income

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1. Luigi Spaventa, Dualism in Economic Growth, Banca Nazionale del Lavoro - GR. REVIEW, VOL. 12, DECEMBER, 1959. p. 386.
  2. O. P. F. Horwood, "The Social Framework of Economic Development in a Dual Society: the Case of South Africa". in J. Holleman et al. (Ed.), Problems of Transition (Natal University Press, Pietermaritzburg, 1964) p. 178.

inequality is undoubtedly important both politically and economically, so far as the actual implementation of the policy of separate development is concerned, it is the disparity between the living standards of Africans in the advanced and backward parts of the country which is of primary significance.

Actual conditions in the Bantu Areas and the fundamental causes of these conditions, are discussed in detail in numerous works<sup>1</sup> and it is unnecessary to deal with them further, although they must be taken as an essential background to the problems of industrial development with which this work is concerned. Our attention is for the present directed towards some of the more significant manifestations of these underlying conditions.

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1. For example, W. M. MacMillan, Complex South Africa, (London, 1930); Native Economic Commission, U. G. 22/1932; Witwatersrand Mine Natives' Wages Commission (Lansdown), report U. G. 21, 1944. Social and Economic Planning Council, Report No 9, The Native Reserves and their Place in the Economy of the Union of South Africa, U. G. 32, 1946; D. Hobart Houghton and Edith M. Walton, The Economy of a Native Reserve, being Volume II of the Keiskammahoek Rural Survey, Shuter and Shooter, Pietermaritzburg, 1952; Socio-Economic Development of the Bantu Areas within the Union of South Africa (Tomlinson Commission report summary), U. G. 61, 1955.

The Bantu Areas of South Africa comprise some 13 per cent<sup>1</sup> of the country's land area and in 1960 contained approximately 27 per cent of the total population.<sup>2</sup> They are thus nearly two and one half

1. The actual area has been estimated at 16,760,415 morgen made up as follows:

Scheduled areas (as at 31 December, 1964)	9,745,341
Land acquired by Africans 1913 to 1936 and still in their possession as at 31 December, 1964	1,416,400
Acquired by the Native trust 1936 to September, 1966.	5,154,852
Acquired by Africans 1936 to September, 1966.	443,822
	16,760,415

Source: A Survey of Race Relations in South Africa, 1966, compiled by Muriel Horrell.

2. S. Enke, "South African Growth: A Macro-Economic Analysis", S. A. J. E., March 1962, p. 41, takes a Bantu Areas de facto population of 4.3 million which he attributes to "informed opinion". The country's total population in 1960 was 15,994,181. (Statistical Year Book 1966).

In 1951 the Bantu areas population excluding those temporarily absent was 3.633 million or 28.7 per cent of the total population of 10,908,000. It is noteworthy too that in 1951 42.6 per cent of the total African population was resident in the Bantu Areas. (Tondinson Commission summary, p. 3) whereas if Enke's source is reliable, in 1960 the corresponding figure for 1960 was about 39.0 per cent.

times as densely populated as the rest of the country.<sup>1</sup> The greater population density of the Bantu Areas is by no means compensated for by superior quality of agricultural land or other factors, such as mineral deposits, processable raw materials, or a favourable geographical situation in relation to markets, so that we should expect per capita production in these areas to be very much lower than elsewhere. When, in addition to this, account is taken of the fact that existing methods of production in agriculture, the major economic activity of the areas, are extremely rudimentary compared with methods in the advanced sector, that soil erosion has proceeded at an alarming rate for some time, that there is acute overstocking, and that a large proportion of the males of working age is always absent, it is hardly surprising that "in 1950-51 the Bantu Areas provided only 3.7 per cent of the total geographic income ('adjusted') of the Union"<sup>2</sup> and that "their per capita production of (R25.8) contrasted with (R198.8) for the Union as a whole".<sup>3</sup>

The share of the Bantu Areas in the country's national income was somewhat larger than their proportionate contribution to production, mainly because of the remittances of migratory workers. The Tomlinson

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1. In 1951, according to the Tomlinson Commission (Summary, p. 49) the Bantu Areas carried a population of 3.6 million on 58,000 square miles, or an average of 63 persons per square mile, compared to 27 per square mile for South Africa as a whole. The addition of migrants, temporarily absent from the areas, obviously accentuated these differences.
  2. Tomlinson (Summary), p. 99.
  3. ibid.

Commission found that the average income for a family of six persons living in the Bantu Areas under traditional communal tenure was R85.90 per annum in 1952, slightly more than half of which was derived from farming, the rest being non-farm income, mainly remittances from migrant workers.<sup>1</sup> The proportion of the national income accruing to the Bantu areas appears to have been about 7 per cent.<sup>2</sup>

1.	Family Income in R's p. a.
Income from farming	
Produced and consumed by the family	34.26
Produce sold	9.50
	<hr/>
Total from farming	43.76
	<hr/>
Non-farming income	
Wages (mainly remittances from emigrant workers)	37.82
Miscellaneous	4.32
	<hr/>
	42.14
	<hr/>
Total family income	85.90

Source: Tomlinson Report (full), Table 1, p. 16, Ch. 24, Vol. 10.

2. It is of some interest to compare this with the following extract from the 1965 issue of the South African Institute of Race Relations' annual Survey of Race Relations in South Africa, p. 204:

"According to the issue of Bantu for March, Professor H. J. J. Reynders of the University of Pretoria and D. M. van den Bergh of the Economic Advisory Council had calculated that the net national income of Africans in 1961 was R984,000,000 or 23 per cent of the official national income. Their purchasing power (i. e. less payments in kind) was R788,000,000. The governing committee of the Bantu Investment Corporation, it was stated, estimated that urban Africans commanded fifty per cent of this purchasing power; those in the homelands 28 per cent, and those on White-owned farms 22 per cent". The purchasing power, as defined above, of Africans in the Bantu Areas thus appears to have been about 6.4 per cent of the national income in 1965.

For a number of obvious reasons it is not very meaningful to compare these figures with the incomes of other racial groups in an attempt to assess their relative economic welfare.<sup>1</sup> Even comparisons of incomes of Africans inside and outside the Bantu Areas present difficulties but these are less serious, and, as we emphasised earlier, it is the disparity between African living standards in the advanced and backward sectors of the economy that is of most relevance to this study. Truly reliable statistics on this are not available. F. P. Spooner,<sup>2</sup> however, has put the average family income of the Bantu Areas in 1953-54 at R194, that of Africans on White-owned farms at R240, and of urban Africans at R426. According to this estimate then, the average family income of urban Africans was more than twice as great as that of those in the Bantu Areas. Calculations<sup>3</sup> based on the Tomlinson figures

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1. See Tomlinson (Summary), pp. 99-100.
  2. South African Predicament, (London, Jonathan Cape 1960), p. 174.
  3. According to the estimate by Reynders and Van den Bergh published in March, 1965 (see footnote 2, p. 20 above) all Africans together received 23.0 per cent of the national income. Assume that this per centage also held in 1950-51, when, according to the Tomlinson Commission (Summary, p. 99) Africans in the Bantu areas received about 7 per cent of the national income. Africans outside the Bantu areas thus received about 16 per cent of the national income. As shown above the population of the Bantu areas was about 42.6 per cent of the total African population. Thus the ratio of non-reserve to reserve incomes was about 1.54 i. e. the former were about 54 per cent greater than the latter.

Applying a similar method to Reynders and Van den Bergh's figures, purchasing power per head was about 130 per cent greater for non-reserve than for reserve Africans. This is reasonable given the fact that incomes of the latter include a greater proportion of income in kind.

and certain estimates by Reynders and Van den Bergh, suggest that Spooner's estimate gives a fair reflection of the incomes of Africans in the advanced relative to those in the backward sector of the economy.

Not only is population density high and per capita output low but the former is increasing and it appears that the per capita output may very well be falling. This is so despite a significant rate of outmigration from the Bantu Areas to the advanced sector in response to a rapid rate of growth in the latter, and, despite the Government's efforts to increase agricultural productivity. For instance, the possibility of a declining marginal and average product in the Bantu Areas is suggested by Leistner in his study of labour migration in the Northern Transvaal. He compares population density in the Northern Transvaal reserves in 1951 and 1961 and concludes that over this period it increased from 63.4 to 81.2 per square mile or by 28.1 per cent. His final view of the matter is that:

"... there is no evidence indicating that the outflow of the surplus workers from the Bantu areas has raised significantly the marginal product of those remaining behind and, consequently, wage rates in the developed sector. The reverse seems to be true. Population growth and diminishing carrying capacity of the land have increased rather than decreased the ratio of labour to land, and only a continuous outflow of population has prevented marginal product in the subsistence sector from falling to levels even lower than at present."<sup>1</sup>

If this is so, and there is no evidence to the contrary, attempts on the part of the government to improve agricultural methods in the reserves are not proving sufficiently successful to provide for a larger population

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1. G. M. E. Leistner, Economic Aspects of Bantu Migrant Labour, (Unpublished Ph. D. thesis, University of Stellenbosch, 1963) p. 221.

at a constant or rising standard of living. Given the present state of technology (which includes social organisation), therefore, the reserves are overpopulated and failing a radical change in farming technology, or a considerable increase in non-agricultural employment, they must continue to depend on migration to prevent a further decline in living standards, let alone an improvement.

Enke<sup>1</sup> assumes a marginal product of labour in the Bantu areas equal to 0,8 of the marginal product. With a 1.6 per cent<sup>2</sup> per annum increase in the population of the Bantu areas this implies a 1.28 per cent increase in the output of the reserves. "Per capita output in the reserves will then decrease and per capita consumption will only be maintained through the remittances from relatives working in the modern sector." Enke is in effect postulating that in the face of a growing Bantu areas population, technical progress in the Bantu areas is not taking place sufficiently rapidly to prevent a fall in output per head. This has not been established with any degree of certainty but in view of Leistner's findings, and in the absence of any evidence to the contrary, it is a possibility that cannot be ruled out for the Bantu areas as a whole.

While output per head in the Bantu areas shows few signs of improvement, earnings in the advanced sector are, by all accounts, rising steadily if slowly. Steenkamp<sup>3</sup> writing in mid-1962 summarises the statistics as follows: "In private manufacturing and construction

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1. Stephen Enke, op. cit., pp. 40-41.
  2. Estimated by J. L. Sadie, "The Social Anthropology of Economic Underdevelopment", Economic Journal, June 1960.
  3. W. F. J. Steenkamp, "Bantu Wages in South Africa", S. A. J. E. June, 1962.

there was "a sharp rise of over 50 per cent in the real average income of the Bantu worker during the war years, but practically no increase between 1945-46 and 1957-58. Since 1958-59 and in particular 1959-60, however, a rapid annual rise has taken place".<sup>1</sup> Between 1935-36 and 1960-61 real average incomes of Bantu rose by 82.5 per cent, and of Europeans by 77.6 per cent. Real wages in mining have remained substantially unchanged over a long period while "real wages in metropolitan commerce have shown creditable increases over the last twenty years. Here, too, however, the post-war era witnessed a tendency towards stagnation, real wages actually declining between 1953 and 1960 in all areas except the Western Cape and Johannesburg. In 1961, however, they were sharply raised in most areas."<sup>2</sup>

Steenkamp's figures must be interpreted with care, however, since they reflect average earnings of workers in all grades of skill so that it is not clear to what extent the increases mentioned are due to an upgrading of the labour force as distinct from rising wages for each particular grade. There seems to be little doubt, however, that the potential earnings of migrants have been increasing.

In view of the rapid rate of growth of the Bantu population, and the low productivity of labour in the Bantu areas which has given rise to large scale migration to the urban areas, it is understandable that wage

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1. W. F. J. Steenkamp, *op. cit.*, p. 95. He warns, however, that these figures may overstate the real increases since their calculation involved a deflator based on European family budgets, in which food-stuffs, the prices of which have risen more sharply since 1938 than other consumers' goods, figure less prominently than they do in Bantu household budgets, and that no account is taken of the increase in transport costs that Bantu employees have had to bear in consequence of their rehousing.

2. *Ibid.* p. 98.

levels were static for a long period.<sup>1</sup> Some writers, in fact, advocate that as a matter of policy wages should be kept as low as possible in order to encourage labour intensive production and absorb the maximum number of people into wage employment.<sup>2</sup> "In countries such as India", writes Walter Birmingham, "where there is a serious land shortage in the subsistence sector, maximum wage-employment seems to be the right policy".<sup>3</sup> It is not implied that a deliberate attempt should be made to depress wages in the advanced sector, and it is highly improbable that such a policy would succeed if other forces were tending to raise wages. At the same time a policy of deliberately boosting advanced sector earnings relative to earnings in the backward sector, either by statutory wage fixing, or indirectly via influx control, thus artificially limiting the pace at which wage employment in the modern sector can grow, is also not to

1. It is interesting to compare this with Ghanaian experience. See Walter Birmingham, "The Economic Development of Ghana, in W. Birmingham and A.G. Ford (editors) Planning and Growth in Rich and Poor Countries, (Allen and Unwin, London, 1966), p. 184. where it is shown that "the unskilled labourer's standard of living was virtually the same in 1962 as it had been in 1939".
2. See for example W. A. Lewis, "Economic Development with Unlimited Supplies of Labour," The Manchester School, May 1954, reprinted in A. N. Agarwala and S. P. Singh (editors), The Economics of Underdevelopment; Stephen Enke, "Economic Development with Limited and Unlimited Supplies of Labour," Oxford Economic Papers, June, 1962; and J. C. H. Fei and G. Ranis, Development of the Labour Surplus Economy, (Homewood, Illinois, 1964).
3. Birmingham, op. cit., p. 183.

be recommended.<sup>1</sup> Steenkamp's assertion that "until recently, nearly all substantial advances in the annual rate of increase in Bantu wages in manufacturing and construction were associated with governmental action"<sup>2</sup> is, therefore, of considerable interest and importance. This raises some interesting questions: Would African wages have risen more slowly in the absence of statutory wage fixing? What part, if any, has influx control played in raising advanced sector wages? Have conditions of labour supply excluding influx control been changing in such a way as to raise wages? Has the demand for labour been increasing relative to labour supply recently so that the supply of labour no longer appears to be perfectly elastic and wages are consequently at a point where they will begin to rise more rapidly than in the past?<sup>3</sup> What will happen to wage rates in the advanced sector if influx control is applied as severely as the Government intends applying it in the Western Cape and what will

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1. See Vera Lutz, Italy: A Study in Economic Development (Oxford University Press, London, 1962) where the persistence of the phenomenon of dualism in Italy is explained in terms of trade union activities which raise wages in the advanced sector.
  2. op. cit., p. 95.
  3. It should be noted that more or less constant wage levels over a long period do not necessarily mean that the supply of labour has been perfectly elastic in the sense of static analysis. That is the marginal productivity of labour in the Bantu Areas may in fact be negative sloping at each point of time and yet population growth in the Bantu Areas may result in an apparently unlimited supply of labour at a constant wage rate. It is, therefore, unnecessary to invoke the concepts of disguised unemployment, work sharing, crop sharing, an excess of the conventional minimum income over the marginal produce etc., as is done by Enke and by Fei and Ranis, in order to explain the constancy of wage rates in the advanced sector.

happen to the disparity in incomes between the advanced and backward sectors?

Migration: Causes, Effects and Control.

As is typical of countries in a similar stage of development, urbanisation of all racial groups in South Africa has taken place at a rapid rate throughout this century. The rural white population actually decreased by 8.5 per cent between 1951 and 1960.<sup>1</sup> In the same period, despite influx control, the proportion of the Bantu population in the urban areas increased from 27.9 to 31.8 per cent, and the proportion of Bantu in the total urban population also increased considerably.<sup>2</sup>

The urbanisation of whites and Africans alike, was fundamentally due to the rural-urban income differentials created by the development of mining and manufacturing activity. Closely related to the process of urbanisation is the strong flow of migrants from the Bantu Areas to the advanced sector of the economy, though this has partly taken the form of movements to white farms. As a result of migration to both rural and urban areas in the advanced sector, the proportion of the country's total African population resident in the Bantu Areas declined from 42.6 per cent in 1951 to about 39.0 per cent in 1960.<sup>3</sup> This was simply a continuation of the trend which has been in evidence for several decades.

Consequently, the population of the Bantu Areas has grown at a considerably slower rate than the African population of the country as a

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1. The Statistical Year Book for 1966 gives white urban population in 1951 and 1960 as 553,000 and 506,000 respectively.
  2. The number of urban Bantu in 1951 was 2,390,586 compared with 3,471,233 in 1960.
  3. See footnote 2 p. 18 above.

whole. Migrants may be roughly classified into two broad categories: permanent and temporary. Because of the territorial expansion of certain of the Bantu Areas, it is difficult to obtain a really reliable estimate of the magnitude of permanent migration for all of the reserves together. But the Tomlinson Commission estimated that "Natal, the Ciskei and the Transkei, where the additions made to the areas reserved for the Bantu, were small, lost on an average 20,800 inhabitants annually by permanent migration during the decade following 1936. This average rose to nearly 50,000 a year between 1946 and 1951".<sup>1</sup>

Between 1951 and 1960, according to the Population Census, the population of the Transkei, the largest of the Bantu Areas, increased by 11 per cent compared with an increase in the country's total population of 27.7 per cent.<sup>2</sup>

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1. Tomlinson (Summary), p. 53.
  2. According to the 1960 Population Census, Vol. 1 the population of the Transkei in 1951 and 1960 respectively was 1,269,277 and 1,407,815 and the corresponding figures for the country's total Bantu population were 8,560,083 and 10,927,922. This marked discrepancy in rates of increase cannot be explained by an increase in the number of foreign Bantu since these numbered 603,598 in 1951 and 586,595 in 1960 (latter figures from Statistical Year Book 1966 - p. A-32). Nor is there any reason, so far as the writer knows, to believe that the natural rate of growth was significantly smaller for the Transkei than for the country as a whole.

Had the Transkei's population increased at the same rate as the total, it would have been in the vicinity of 1.62 million instead of the actually recorded 1.41 million in 1960. Since as we shall see below, the increase in the number of temporary migrants was relatively slight in this period, it appears that over the 9.3 intercensal years something like 20,000 persons must have migrated on a long term basis from the Transkei to other areas.

The significance of permanent migration in reducing the rate of population increase of the Bantu Areas, is also reflected in the changing composition of the urban population. Indicative of the increasingly settled character of the Bantu population is the decline in its masculinity ratio from 1.83 in 1936 to 1.61 in 1951 and still further to 1.40 in 1960. In his study of Pretoria, Leistner shows that "the age and sex distribution of the city's Bantu population pointed towards 58.9 per cent of the population being 'settled' in 1946 as against 80.2 per cent in 1960, the remainder being temporary residents".<sup>1</sup> He adds that the term 'settled' may be taken to mean "more or less permanently committed to an existence based on wage earning".

Temporary migration, too, takes place on a large scale, but the available evidence suggests that the number of temporary absentees is not increasing significantly. The Tomlinson Commission put the number of temporary absentees from all Bantu Areas together in 1951 at 569,000 compared with 447,000 in 1936,<sup>2</sup> and, as we noted above, "informed opinion"<sup>3</sup> was that the number of temporary absentees in the early 1960's lay between 400,000 and 500,000, which suggests an absolute decline in the importance of temporary migration during the

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1. G. M. E. Leistner, Economic Aspects of Bantu Migrant Labour (Unpublished Ph.D. thesis, University of Stellenbosch 1963, p. 207).
  2. op. cit., p. 53.
  3. S. Enke, "South African Growth: A Macro-Economic Analysis", S. A. J. E., March 1962, p. 37.
  4. op. cit.

1950's. Two other pieces of evidence, however, conflict with this. According to the Tomlinson Commission there were about 194,045<sup>1</sup> temporary absentees from the Transkei in 1951, whereas fairly recently the Transkeian Department of the Interior estimated the number at 213,000.<sup>2</sup> This represents a relatively slight increase over a period of a little more than a decade. For the Northern Transvaal, Leistner finds "only a small increase in the number of temporarily absent men and even ... a decrease of about 1,000 temporarily absent females".<sup>3</sup> In view of these two estimates, and the fact that the Transkei is large in relation to other areas, it seems safe to say that if the total number of temporary migrants has, indeed, increased this increase has been insignificant compared with permanent migration. The latter, it must be noted, has taken place in the face of an increasingly severe application of influx control measures.

Those who emphasise the political dangers of a growing settled urban Bantu population, tend to favour the somewhat disapproving connotation of terms like "rural-urban drift", for the process of permanent migration whose magnitude we have outlined. It may, however, also be seen as a reflection of "labour mobility", a condition which economists, rightly or wrongly, have traditionally regarded in a favourable light. The textbook case for the movement of factors of production from places of low to places of high return within a country is well known and does not bear repeating in detail. Suffice it to say that it benefits both the factor owners and the economic growth of the country as a whole: without it the population of the Bantu areas today would be very much poorer than it is and the large concentrations of mining, manufacturing and commercial activity in the Witwatersrand and other centres would

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1. op. cit.

2. See the 1965 issue of the S. A. Institute of Race Relations, Survey of Race Relations in South Africa, p. 127.

3. op. cit., p. 207.

have been impossible.

This is not to say that there can never be a sound economic, as well as a social, case for the control of migration. Firstly, it is possible that without control the rate of migration may exceed the capacity of the urban areas to provide employment. This problem is not confined to South Africa, as Walter Brimingham's remarks show:

"The rapid urbanisation now occurring in Ghana suggests that migrants are willing to settle permanently in new places and jobs, indeed want to abandon the traditional life for the attractions of town and city. This adds to the growth potential but imposes on planners the task of absorbing the migrant labour rather more rapidly than the achieved growth rate has hitherto allowed.

"That this is likely to be a problem in Ghana as it is in many countries in the early stages of their economic awakening is indicated by the extent of unemployment discovered by the 1960 Census".<sup>1</sup>

In view of this state of affairs, Birmingham argues that "there is much to be said for leaving the population undisturbed in the traditional economy until the modernising sector can absorb them".<sup>2</sup>

Whether or not uncontrolled migration would lead to excessive migration, in the above sense, in South Africa, and hence to the urban chaos that some fear, there is no evidence that the scale of migration experienced in the past has exceeded the ability of the advanced sector to absorb workers. In fact, there is a strong possibility that the advanced sector could have absorbed migrants at an even more rapid rate than it has done, without adverse effects on the urban wage level.

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1. Birmingham, op. cit., pp. 181-182.

2. ibid., p. 183.

J. De V. Graaff,<sup>1</sup> on the basis of statistical estimates made by Stephen Enke<sup>2</sup> suggests that "if we assume that influx control operates in such a way that the real wage of non-Europeans remains constant, this entails a faster rate of migration from the subsistence sector ... the non-European population of the modern sector should be permitted to grow at 4 per cent a year - that is at about double the natural rate of increase".

The influx control machinery is, in any case, obviously not designed solely to regulate the inflow of migrants in such a way as to prevent excessive urban unemployment. Nowhere is this to be more clearly seen than in the Western Cape where, since the middle-fifties, influx control measures have been increasingly severely applied, culminating in the announcement at the end of 1966 of a scheme to bring about an absolute reduction in the number of Bantu workers in the area. To the extent that this political factor has operated throughout the country, the actual volume of permanent migration will have been unnecessarily small in relation to the ability of the urban areas to employ newcomers. In view of these considerations and in the absence of any evidence to the contrary, there seems to be little doubt that the scale of migration in the past, has been beneficial to both migrants and the country as a whole, at least from an economic point of view.

Secondly, so far as the economic case for influx control is concerned, it is possible that government intervention to curb the expansion of the metropolitan areas can be justified in terms of external economies and diseconomies. This possibility is discussed in some detail in Chapter 5 of this study, but two issues touched on there seem to be particularly relevant in the present context: Even if an economic case for government intervention can be sustained on the basis of external effects,

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1. J. de V. Graaff, "Alternative Models of South African Growth," S. A. J. E. March 1962, p. 45.
  2. op. cit.

(a) it may be that the significance of the latter is only marginal in relation to the actual scale of permanent migration (b) it may be that influx control is not the appropriate means of correcting for the external effects in question, if, indeed, correction is called for.

While permanent migration is generally regarded in a favourable light from an economic point of view, it has become something of a tradition to condemn the system of temporary migration as a moral, social and economic evil.<sup>1</sup> The case against temporary migration on moral and social grounds seems to rest on the age and sex selective nature of the phenomenon. According to the Tomlinson Commission, male migrant workers totalling 503,000 in 1951 represented about 40 per cent of the males of the Bantu Areas between the ages of 15 and 65,<sup>2</sup> and in addition there were estimated to be some 420,000 migrant workers from adjacent territories working in the Republic in 1951.<sup>3</sup> The social objections to this are summarised as follows in a study published in 1946:

"It cannot be right to force the separation of the workers from his family for many months on end. The migratory system is resulting in the breakdown of Native life. Widespread prostitution and marital instability, adult crime and juvenile delinquency, venereal disease and sexual perversions, are among its effects, which are aggravated by the abnormal sex ratios in urban and rural areas".<sup>4</sup>

That the migrant labour system is a highly imperfect social arrangement seems to be undeniable. The real issue, therefore, is whether there is a better alternative available, not whether the system is perfect. If, indeed, the system is an economic evil as well, the

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1. See for instance: Social and Economic Planning Council, Report No 9, The Native Reserves and their place in the Economy of the Union of South Africa, p. 47; D. Hobart Houghton, The South African Economy, Second Edition, Chap. 4.
  2. Tomlinson (Summary), p. 53.
  3. ibid., p. 40.
  4. Social and Economic Planning Council, op. cit., p. 47.

case against it seems to be complete since this would imply that the alleged moral and social evils are not even partly offset by economic advantages. Let us, therefore, examine the economic aspects of temporary migration.

It is generally acknowledged that remittances from migrant workers are of the greatest importance for living standards in the Bantu Areas. For instance, Hobart Houghton and Walton in their study of the Keiskammahoek District reported that "over two fifths of the families draw the greater part of their income from remittances by migrant workers", and that the people of the district were "dependent upon the earnings of migrants for their very existence, and it is poverty which forces them out to work".<sup>1</sup> In the light of this and evidence provided by other studies<sup>2</sup> there is prima facie, something paradoxical about the view that labour migration is economically inefficient and wasteful.

In arguing against the migrant labour system on economic grounds the following points have been made:

(a) There is a huge wastage of manpower due to time spent on travel; in periods of rest or unemployment and in the relatively unproductive time spent in the reserves. The Tomlinson Commission calculated that there are on average 600,000 man years of labour available which are not economically applied.<sup>3</sup>

(b) "from its very nature the migrant system tends to inhibit the acquisition of skills and tends to condemn the workers to being in perpetuity merely undifferentiated units of unskilled labour"<sup>4</sup>

1. D. Hobart Houghton and Edith M. Walton, The Economy of a Native Reserve, Keiskammahoek Rural Survey, Vol 11 (Pietermaritzburg, 1952) p. 112.
2. e.g. Tomlinson (Summary), p. 98; S. A. Institute of Race Relations, A Survey of Race Relations in South Africa 1965, p. 127; Social and Economic Planning Council, op. cit., pp. 41-42; Leistner, op. cit., pp. 173-174.
3. D. Hobart Houghton, The South African Economy, p. 87. (2nd Edition).
4. ibid., p. 88.

(c) it is "indirectly the cause of much labour instability among both the urban and the migrant workers"<sup>1</sup> for three reasons. First, it has set a pattern of intermittent employment which influences the behaviour of the younger members of the permanently urbanised community. Second, it causes labour instability because of its disrupting effect on social and social and family life. Third, the quality of labour management in the urban areas is poor because the majority of employers have come to regard the African worker as not worth taking the trouble over since they come and go and when one leaves there is another to take his place.

(d) Temporary migration is "a potent cause of the perpetuation of poverty at home, for the absence of so many in the prime of life inhibits economic progress and certainly accounts in no small measure for the low agricultural productivity of the district ... Prima facie it might be supposed that large emigration from the Reserve would be of benefit in easing the pressure of population; the emigrants, however, are not a cross section of the community but consist mostly of the active and able bodied members; while those who remain are the infirm, the aged and the children".<sup>2</sup>

These arguments however, are by no means conclusive proof of the economic inefficiency of the migrant system, and on a certain scale it may well be the best arrangement from an economic point of view. Let us look at the matter from the point of view of the individual migrant. The fact that he does not expend as much time in work either in the urban areas or in the reserve as he seems to be physically capable of doing, does not necessarily imply waste. The economically best solution does not require that the migrant spend all his time in either the advanced sector

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1. ibid., p. 90.

2. Hobart Houghton and Walton, op. cit., pp. 112-113.

or the Bantu areas, or that the individual exert himself fully in "productive" activity in the rural homestead, when he is there, for eight or any other specific number of hours per day. Work and the development of the reserves are not ends in themselves, and the economically best solution only requires that he allocate his time between the advanced and backward sectors, and between agricultural labour and apparent idleness when at home, in a way which is optimal in terms of the preferences of himself and his family for income as against leisure and other "non-economic" benefits. It would, of course be foolish to assume that the migrant workers invariably make nice rational calculations and that the very existence of the migrant system is in itself proof of economic desirability. But it can be shown, provided it does not result from legislative restrictions, that the migrant labour system, given the country's existing resources, is perfectly consistent with the maximisation of the real income of the Bantu family, and indeed, of the country as a whole. Efficiency, of course, is a relative matter so that if the charge of inefficiency laid against the migrant labour system is to be sustained it must be shown that under present conditions (not in some ideal and practically unattainable situation) either permanent urbanisation or full time farming are always economically superior from the point of view of the migrant and the economy as a whole.

As is generally conceded, workers migrate to the advanced sector primarily because of their low productivity in the Bantu Areas, and evidently they actually succeed in making a significant contribution to the economic well being of their families in this way. Migration enables the family to obtain the goods and services which it desires at the lowest real cost in terms of labour effort, since the real return to labour in the advanced sector is so much greater than in the Bantu areas, at least during the period when they are away. In most African village communities the absence of able bodied males does have an adverse effect on agricultural output, since contrary to an all too common belief,

men still do perform certain vital farming functions and the marginal product of labour is probably not zero even in the most densely populated areas.<sup>1</sup> But the amount of agricultural output foregone depends very much on the time of the year and the length of the migrants' absence.<sup>2</sup>

The gains to the village community are most obvious in the case of seasonal migration. If the seasonal demand for migrant labour coincides with the off-season in the village economy, so that the loss of agricultural output in the latter falls short of the wages earned, but during the height of the season in the village economy the marginal product exceeds the wage obtainable outside, the output of goods and services is obviously maximised by alternating between the village and outside economies. Since this also increases the supply of labour to other sectors, the latter, and hence the economy as a whole benefit from temporary migration. In these circumstances both permanent migration and full time farming in the migrant's home village, are economically less efficient than temporary migration. With reference to West Africa, Berg argues convincingly as follows:

"In seasonal migrations the benefits far outweigh the costs. This imbalance is true for the individual migrants; their net gains are equal to their earnings in paid employment minus transport costs, their cost of subsistence while in paid employment, and their foregone production in the village economy, which is likely to be negligible. At the same time, the income (or real consumption) per head of those who remain at home is also likely to be higher with migration than without it."<sup>3</sup>

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1. See Hobart Houghton and Walton, op. cit., pp. 141-143, where the shortage of labour in the Keiskammahoeck district during the ploughing season is described.
  2. See for instance: W. J. Barber, The Economy of British Central Africa, (London) 1961, pp. 180-183; William Watson, Tribal Cohesion in a Money Economy: A Study of the Mambwe People of Northern Rhodesia, (Manchester) 1958.
  3. Elliot J. Berg, The Economics of the Migrant Labour System, in Hilda Kuper (Editor), Urbanisation and Migration in West Africa (University of California Press, 1965,) p. 166.

In other cases it is possible that wage earnings are greater than the marginal product of labour in subsistence agriculture even during the height of the ploughing and harvesting seasons, but that the agricultural output foregone exceeds wage earnings if the migrant's absence is longer than some critical period.<sup>1</sup> In such cases the male migrant would tend to be absent longer than in the case of purely seasonal migration, but it would be necessary to return home from time to time in order to maximise his contribution to the family's real income, expressed in terms of their command over goods and services.

Where, as in the South African reserves, the marginal product of labour in reserve agriculture is very low, however, due to a shortage of land, the contribution of the male migrant to his family's income would be maximised by continuous employment in the advanced sector. But it is not simply the individual migrant's own contribution which decides whether family migration takes place. When temporary migration is undertaken the family's total income is equal to (a) the migrant's earnings in intermittent wage employment plus (b) the migrant's contribution to agricultural output when he is at home plus (c) the agricultural output produced by his wife and other members of the family minus (d) the cost of travelling to and from the place of paid employment. Compared with this, permanent migration increases (a) the migrant's individual wage earnings, but eliminates total agricultural output (b) plus (c) and travelling costs (d). It may, however, be possible for the migrants wife and perhaps other members of the family as well to obtain wage employment. So, in general, for family migration to maximise the family's real income of goods and services, therefore, the increase in the wage earnings of the migrant, plus those of other members of the family, must exceed the sum of items (b), (c) and (d). Thus we may say that the greater the urban

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1. Barber, op. cit., Watson, op. cit.

wage rate (hence the greater the increase in wage earnings from full time compared with intermittent wage employment), the better the opportunities of wage employment for other members of the family, the lower the migrants marginal product in reserve agriculture, the lower the agricultural output of his wife and children, and the greater the cost of travel (which depends largely on the distance of the urban area from the rural homestead), the more attractive does family migration become relative to temporary migration and full time farming. Other things being the same, then, permanent urbanisation is stimulated by rising urban wage rates and declining productivity of land in the reserves.

It should be noted, however, that for full time farming to yield a larger real income than temporary migration it is necessary that item (b) above exceed the sum of (a) and (d). That is, the male migrants marginal product in subsistence agriculture must exceed his urban wage earnings minus travelling costs. In view of this, those who are at present temporary migrants, are much more likely, under existing conditions, to want to switch to full time wage employment than to full time farming.

The formula, stated above, for determining whether permanent migration gives the family a greater real income than temporary migration or vice versa, must be slightly modified to take into account two other economic factors. The first is simply that the cost of housing the family in the country is usually negligible compared with the town. Thus the excess of wage income over the combined family income from subsistence agriculture and temporary migration, needs to be corrected for such differences in the cost of living. Secondly, the retention of rights in rural land provides the migrant with a certain measure of security in old age, in case of sickness, unemployment, or any other misfortune in town.<sup>1</sup> The inability to obtain security of tenure and the possibility

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1. See P. Mayer, Townsmen or Tribesmen, (Cape Town, 1961), pp. 230-232; and Monica Wilson, Effects on the Xhosa and Nyakyusa of Scarcity of Land, in D. Biebuyck (Editor), African Agrarian Systems, (London, 1963), p. 382.

of being "endorsed out" of urban areas, increases the value of the rural homestead as an insurance against misfortune, but they are not the sole factors. The retention of land compensates in some measure for the lack of unemployment insurance and of adequate old age pensions. In order to retain rights in the land it may not be necessary for the migrant's family to occupy it continuously,<sup>1</sup> but there are distinct advantages in maintaining the rural homestead. It is clear from Mayer's study that its maintenance and improvement is a frequently stated motive for migration.<sup>2</sup> The more successful is the migrant in achieving this objective, the more independent will he be in his old age, or in the case of any other misfortune. In order to obtain the real economic advantage of greater long term security, which comes from maintaining the productivity of the land at a certain level, occupation by the family may well be necessary. For this reason, apart from others, the excess referred to above, must be still greater. This part of the excess may be seen as a sort of insurance premium

That the factors discussed above are actually taken into account, in deciding whether to bring the family to town or not, is evident from Mayer's study of East London. Of the "cost of living" as a factor in the calculation he writes:

"One man would explain that the high cost of living in town forced him to leave his wife in the country, where she would cost nothing; another, that it forced him to bring her to town, where she could earn something".<sup>3</sup>

Mayer, however, sees a contradiction in these views and concludes that they are, therefore, merely rationalisations of other unmentioned reasons. He seems to draw the same inference from the following:

"Many School peasants when questioned said that it was economically wasteful to bring a wife and children into town, because the whole family will have to live on the earned income there, whereas

1. ibid., p. 211.

2. op. cit., pp. 136-138.

3. op. cit., p. 211.

in the country 'they eat mealies which they plough themselves'.

'In the country a wife needs only matches, salt and paraffin.'

'If I had no mealies at home, I could not afford a family at all.'

But the opposite argument could also be heard: it may seem more economical to bring the wife into town than to keep spending money on fares for the husband to visit her in the country home, or for her to visit him in town."<sup>1</sup>

There is, however, no real incompatibility between these reasons, given by different persons, and each one seems to be perfectly consistent with income-maximising behaviour. Whether it is cheaper for the migrant to bring his wife to town depends partly on the possibility of finding her a job, and the amount she can earn there compared with her contribution to the family income while in the reserve. Where the migrant has land which his wife and children can work productively, conditions will be unfavourable to permanent migration, especially if it is difficult for his wife to obtain a job in town. A lack of productive land, however, will increase the advantage of family migration, especially if urban employment is available for other members of the family. On the other hand, whether land is held or not, if the wife cannot obtain a job in town, it is cheaper to keep the family in the country since there, at least, the cost of housing for the family will be less than in town. The last point quoted from Mayer, is also consistent with income maximisation, since "home visiting" by the migrant involves a loss of wage earnings in addition to travelling costs, whereas his wife's movement to town may result in only a comparatively small reduction in agricultural output which may be more than offset if she can obtain a job in town. It is, therefore, quite unnecessary to infer from Mayer's remarks that migrants are "irrational" or that their

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1. op. cit., p. 212.

behaviour is influenced mainly by "cultural" factors.

Up to this point, we have explained temporary migration exclusively in terms of the desire to maximise the value of goods and services accruing to the family. Nevertheless we cannot rule out "non-economic" considerations altogether. Some Africans clearly do prefer life in the rural village and may be prepared to forego some real income of goods and services for this reason. Labour migration makes a positive contribution to the maintenance and even the improvement of village life.<sup>1</sup> Periodical return satisfies the desire to maintain contact with the village society and has a beneficial effect on family life. Thus even when he could be earning wage income outside, the periods of comparative idleness are not wasted from his point of view. The fact that he does not exert himself as fully in farming activities when he is at home does not imply laziness or irrationality: the truth is that the effort cost of income earned in the reserves is greater than in wage employment. In short, then, while in some cases temporary migration may yield a lower real income than permanent urbanisation, it might maximise the well being of the family. No one maximises real income regardless of cost: even "economic man" is only expected to maximise his command over goods and services subject to "noneconomic" constraints. Nevertheless, this sort of conservatism does tend to conflict with economic growth and raises the issue of "gradualism" versus an enforced breakdown of traditionalism. The taste for village life as against income is itself influenced by economic opportunities and so subject to change over time. Prolonged contact with whites has already raised the consumption aspirations of Africans compared with the early part of

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1. This is stressed particularly by J. van Velsen, "Labour Migration as a Positive Factor in the Continuity of Tonga Tribal Society", Economic Development and Cultural Change, VI11 (April 1960).

this century. The size of the income differential needed to induce permanent urbanisation then, is increased to the extent that village life is valued for its own sake.

How significant conservatism is in explaining the persistence of the migrant labour system, it is impossible to say, but an International Labour Office study<sup>1</sup> thinks it is crucial. With reference to Turkey, Yugoslavia and trans-Saharan Africa, it is argued that:

"dissimilar as they are in terms of economic and social organisation, the root of the problem lies in the lack of connection between the society and the economy, shown by the existence of an underprivileged group or section in the agricultural community which cannot integrate itself into urban life, and therefore returns to the village because it offers some security and a degree of social integration, either through tribal tenure, as in trans-Saharan Africa, or through the ownership of a small farm, as in Turkey and Yugoslavia".

But there is evidence of people who do successfully integrate themselves into urban life and who nevertheless return to their rural homes regularly, and eventually retire there. For instance Professor Mayer finds in East London that the School Xhosa "do not feel, as the Red person so often feels, rejected by the urban Xhosa community; they are not fish out of water; the country home is not the only place where they are subjectively, 'at home' ".<sup>2</sup> It is difficult, then, to explain entirely in cultural terms why some migrate permanently while others return home periodically. The greatest part of the explanation of temporary migration on its present scale probably lies in the economic

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1. Int. Labour Office, Why Labour Leaves the Land (Geneva 1964) p. 180.

2. op. cit., p. 231.

considerations discussed above.

Finally, let us consider Walter Elkan's suggestion that the effectiveness of higher wage rates in inducing permanent urbanisation is insignificant because of the prevalence of the system of communal land tenure, which makes it impossible for migrants to sell their land and realise the capital value of the income which it yields. Thus, he says, even in areas where the output obtainable from a piece of land is small "people cling to their farms tenaciously because if they did not they would forego part of their income".<sup>1</sup>

"If the future income of a farm, however small, cannot be capitalised the farm must exercise a strong pull. So long as a man cannot obtain compensation for vacating his land and cannot normally maintain his right to it unless he or his family are in actual occupation, he has no inducement to vacate it and he is therefore bound to regard it as in some sense temporary".<sup>2</sup>

Elkan regards this as the most important single reason for the existence of migrant labour systems, but there are several difficulties in it. Firstly, in some areas like the Keiskammahoek District many families do have freehold tenure and the right to sell their claim to the land, but there is nevertheless a great reluctance to part with it. Very few sales have been made in the past 100 years and those that have occurred have been due to rather special circumstances.<sup>3</sup> This suggests that other factors apart from the inability

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1. Walter Elkan, Migrant and Proletarians, (Oxford University Press 1960), p. 135.
  2. ibid., p. 136.
  3. Monica Wilson, "Effects on the Xhosa and Nyakyusa of Scarcity of Land;" in Daniel Biebuyck (Editor), African Agrarian Systems, (London 1963), pp. 381-82.

to sell land account for the persistence of migrant labour at least in this area. Secondly, it is difficult to see why inability to sell land should make people want to hang on to it regardless of the size of the income it yields. The greater is the urban wage the greater is the cost of periodical visits home to the family and this cost may, at some point, become sufficiently great in relation to the economic benefits of keeping the land to persuade the worker to take his family with him and forego his rural income. Constrary to Elkan's view, then, the size of the urban wage is a relevant determinant of the rate of permanent migration. Thirdly, the migrant may find it possible to make arrangements for the land to be taken care of during his and his family's absence without losing his right to the land.<sup>1</sup> The inability to sell land, per se, as distinct from the size of the income and other benefits which it yields, therefore, does not provide a particularly convincing explanation of temporary migration.

The upshot of the above discussion is that a large proportion of the volume of temporary migration, in the past and at present, probably has a sound economic foundation. Despite the apparent wastage of man hours the total real income of families in the Bantu areas and of the economy as a whole would have been lower without temporary migration. It is neither necessary nor plausible to explain temporary migration entirely, or even largely, in terms of conservatism which makes people cling to tribal practices, though it is true that in some cases this factor may lead to a conflict between the maximisation of real income and the maximisation of welfare. The preference for rural life is only one, and, apparently, a relatively insignificant consideration, compared with the powerful economic factors which operate. Nevertheless, even where it does enter into the decision

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1. Mayer, op. cit., p. 211.

to migrate temporarily rather than permanently, temporary migration is perfectly consistent with the maximisation of welfare.

To the extent that the choice of temporary migration is freely made, therefore, we cannot take it for granted that the migrant labour system is wasteful, at least under present conditions. Consider the consequences of forcing those who at present maximise their real income by temporary migration to opt either for permanent wage employment or full time farming. In the former case the number of hours worked each year by the male migrant may well increase and in the most favourable case it may be possible for the wife to obtain an urban job. But, as we saw above, real income will be increased by permanent urbanisation only if the increase in the wage earnings of the migrant plus those of other members of the family exceeds the sum of the temporary migrant's contribution to subsistence farming plus that of his family, plus the initial travelling costs involved in temporary migration, plus the real economic benefit of maintaining the homestead for its security value (an activity corresponding to that of unemployment insurance, pension, and sickfund schemes in the advanced sector), plus the higher cost to the migrant (and to the country) of housing in the urban area compared with the reserves. Thus, it appears, an increase in the number of man hours put in by the migrant may be accompanied by a fall in the real income of the family and of the economy as a whole. This simply goes to show the irrelevance of counting the number of hours put in by the male migrant as an index, on its own, of wastage and inefficiency.

It is equally clear that compulsory full time farming may increase the number of man hours put in each year by the male migrant,<sup>1</sup>

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1. Since the effort price of income in agricultural production is greater than in wage employment, however, the number of hours worked in agricultural activity may not increase significantly.

but if his labour in agriculture is sufficiently lower than in temporary paid employment, the latter even though involving on average only, say, six months a year, may well yield to him and the country a larger income. This illustrates the well known fact that labour effort alone has no special value, and the place and type of industry in which it is used is an essential part of an optimum allocation of resources. It follows too, that under existing conditions the fact that the reserves are not as fully developed as they might be in terms of what is physically possible, and that the quality of the soil in some areas may be declining, does not necessarily imply economic waste. Under existing conditions the rate of return on labour and investment by Bantu men is not as productive as it is in other areas better endowed with natural resources and technological knowhow. Indeed, entrepreneurs in the advanced sector do not maintain assets indefinitely if they can obtain a higher rate of return in another industry. Several writers, however, seem to believe that had it not been for the comparatively easy alternative of wage employment in the advanced sector the population of the Bantu areas would have applied itself to "learning the idea of being a whole-time farmer"<sup>1</sup> and that this would have made him and the country better off. According to this view some temporary migration, though perhaps better economically in the short run, is not so in the long run, and it may be desirable to compel migrants to stay at home. They are believed, in effect, to be acting contrary to the long term interests of the economy, and perhaps even contrary to their own. This argument implies that there are significant external economies in agricultural production in the Bantu Areas, so that greater development of the reserves is desirable from a national economic point of view. It may be, as we conceded earlier, that such an economic case exists, but if so, the way to realise

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1. See for instance: PH. Gulliver, Labour Migration in a Rural Economy, (Kampala, 1955), p. 35, and D. Hobart Houghton, The South African Economy, 2nd Edition, p. 93.

the external economies is not to compel migrants to remain behind, so that in effect they bear the costs of increasing the long term efficiency of the economy. Rather the government should, in the light of these external economies, change conditions in the reserves in such a way as to give migrants the incentive to remain behind. Under present conditions, migration takes place precisely because the migrant, like everyone else, calculates on the basis of his own interests. It is highly improbable, as we shall see later in this chapter, that any external economies alone will warrant development of the Bantu Areas on such a scale as to induce all temporary migrants to choose full time farming.

We must add an important qualification to our conclusion that, under existing conditions, (that is, with existing resources) temporary migration is perfectly consistent with economic efficiency. In so far as temporary migration is perpetuated by economically unnecessary influx control and insufficient African housing in the urban areas, and other such factors, so that permanent migration is not available as an alternative, temporary migration is not necessarily the arrangement which maximises the country's output of goods and services. The tightening of influx control in the Western Cape since the mid-fifties, is reflected in a sharp rise in the masculinity ratio in Langa, the largest African township in the Cape Peninsula.<sup>1</sup> Families have been compelled to remain in the reserve, and permanent urbanisation thereby inhibited. The uncertainty produced by the mere possibility of being 'endorsed out' of an urban area, and the inability to obtain security of tenure also encourage temporary migration. Some may regard the adverse effects on the real national product as an acceptable price for the attainment of political objectives, but it must be noted that

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1. Monica Wilson and Archie Mafeje, Langa, Cape Town, 1963, p. 4.

In the period 1954-1961 to which the authors refer the masculinity ratio rose due to the government's refusal to allow the building of further houses for families in Langa. In February 1961, however, it was announced that no additional African women were being permitted to enter the Western Cape. (See Muriel Horrell, *A Survey of Race Relations in South Africa*, 1961, p. 128.)

unless conditions in the reserves are changed radically it is not only the white electorate which will bear the cost of tighter restrictions on labour mobility.

The main conclusions of this section may be stated briefly as follows: Both temporary and permanent migration are fundamentally due to the wide disparity in incomes per head between the advanced and backward sectors of the economy, and have contributed substantially to the country's economic growth and to the well being of the population of the Bantu areas. Contrary to the impression sometimes given in writings on the subject, temporary migration, though far from ideal, is the best available arrangement under existing circumstances for a large number of Bantu workers. Labour migration, whether permanent or temporary, will tend to diminish in importance only if there is a change in the fundamental conditions which cause it. Rising wages in the urban areas and a deterioration in conditions in the Bantu areas will both tend to stimulate permanent relative to temporary migration, whereas, other things being the same, an improvement in conditions in the Bantu areas will tend to encourage full time farming rather than either type of migration.

The system of temporary migration, as we have noted, involves certain undesirable social features. But purely negative measures to keep Bantu permanently in the rural village, as distinct from measures taken to improve economic conditions in the reserves, contribute neither to the well being of the Bantu family nor to the country's economic growth. It follows from our analysis, too, that measures which restrict would-be permanent migrants to a pattern of short-term migration, either by compelling the migrant to return to his rural village at regular intervals, as the "efflux control" measures introduced early in 1968 do, or by refusing permission for the migrant's family to move to town with him, also have a detrimental effect on the well being of the

inhabitants of the reserves and on the country's economy.

The adverse effects on the reserves which would follow from such measures can be mitigated, though not avoided altogether, by a governmental programme of planned development of the border and Bantu areas. The effects of such programme on the country's economy obviously depends on its scale, and the latter in turn presumably depends on the size of the reduction in the rate of migration which it is aimed to bring about, and on the level of per capita income in the reserves which is regarded as the minimum acceptable by the Government. In the section after the next we consider the role of agriculture in a programme for developing the reserves, and this, together with our earlier discussion, provides an essential background for our analysis of the implications of industrialisation, which is the focus of attention from Chapter 3 onwards.

#### An Arithmetical Digression.

It may be interesting, therefore, to digress for a moment in order to contrast the estimated actual tendencies in migration, described above with the goals laid down by the Tomlinson Commission, since there is no unambiguous official statement of the governments specific objectives. It was estimated earlier that the Bantu Areas had a de jure population of 4.8 million in 1960 with between 400,000 and 500,000 of these temporarily absent. This comprised something like 44.0 per cent of the country's total Bantu population. The Tomlinson Commission, rather than visualising a net migration to the advanced sector, aimed at a population of 8 million being dependent solely upon economic activity in the Bantu Areas by 1981. In addition to this they believed that 1½ million reserve inhabitants might be supported in the reserves from income earned outside them, while the numbers of migrant labourers temporarily absent from the reserves would have been reduced to half a million. Thus the reserves would provide an anchorage for

10 million people. Despite this expected increase in the carrying capacity of the reserves, 40 per cent of the expected total Bantu population of 21 million would still be permanently resident outside the reserves by the end of the century. This means that the proportion of the Bantu population still resident in the reserves will have increased from 44 to 60 per cent. These figures thus indicate an increase of 1.5 million to 1 million Africans in the white areas by the year 2000 not a decrease. In order to keep the Bantu population of the white areas down to this level, however, it would nevertheless have to grow at considerably less than its natural rate of increase. The reserves, therefore, by the year two thousand would be required to cope not only with their own natural increase but with net migration from the modern sector as well. Even in present circumstances, as we have seen, output per head in the Bantu Areas shows no sign of improvement.

We may continue this digression on the arithmetic of the Tomlinson goals in a slightly different way, which, however, also illustrates the magnitude of the changes which they envisaged. Let us assume that Spooner's estimates of family income of R426 for urban Bantu and R194 for the Bantu Areas in 1953-54 is reliable or at least that the ratio of the former to the latter was something like 1.12. Assume further that this relationship was unchanged in 1960, though it may be that it has actually increased. According to the Tomlinson goals the population would have been required to be 2.11 times as large in 1981-86 as it was in 1960. Simply in order to maintain the 1960 level of income of the Bantu Areas, therefore, total reserve income would have to increase 2.11 times as well, or by 3.8 per cent per annum between 1960 and 1981. If per capita income of the Bantu Areas is to be increased to the level of the 1960



urban Bantu level, and not merely be maintained at their own 1960 level, however, the total income of the reserves would have to increase 2.12 times between 1960 and 1981 even if there was no population increase. Setting as the target the 1960 urban income levels and taking into account the proposed population increase, the total income of the reserves would have to increase 4.47 times between 1981 and 1986. Over 25 years this involves an annual percentage increase of 7.7 per cent and over 30 years 6.2 per cent. Both of these figures represent an extremely formidable task for even the most dynamic economies. At the end of it, however, it would still be found that living standards in the advanced sector are well ahead of those of the Bantu Areas, because the former will have experienced an unusually low rate of population growth. If income disparities are to be eliminated, therefore, the task grows larger still.

For the purposes of this study, however, it is not necessary at this stage to assume any target as clearly defined as that of the Tomlinson Commission or of more recent proposals.

#### The Need for Industrial Development

There are thus two major ways available for alleviating the problems of absolutely low living standards in the Bantu Areas and of the wide disparity between the incomes of Africans in these areas and those in the advanced sector. They are an increased rate of migration from the Bantu Areas to the advanced sector and an accelerated programme of economic development in the border and Bantu Areas, policies which may of course be used in combination. Continued migration at the rate prevailing in the recent past, given the current degree of development effort in the backward areas, is, according to the evidence presented above, not making a significant

impression on the problems. Given the pace of development in the backward areas, a faster rate of migration is necessary if living standards in the Bantu Areas are to rise at a satisfactory pace, and continued migration at only the present rate will need a greater utilisation of resources for development in the backward areas. Any reduction in the rate of migration obviously requires a correspondingly more rapid rate of economic progress in the border and Bantu Areas, if conditions in the latter are to remain unchanged let alone improve.

No matter whether the problems mentioned are to be resolved mainly by additional employment in the advanced sector or in the border and Bantu Areas, it seems clear that success depends largely on the pace of development of the non-agricultural sectors, particularly in secondary and tertiary activities. The vast majority of those leaving the Bantu Areas are being absorbed into employment in secondary and tertiary activities and it seems probable that this trend will continue. For the country as a whole a relatively small proportion of the increased labour force is likely to be drawn into agriculture and mining. So far as the Bantu Areas themselves are concerned there are severe limitations on the scope for improving living standards via increased agricultural employment. The Tomlinson Commission estimated that approximately half the 1951 population of the Bantu Areas, namely about 300,000 families<sup>1</sup>

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1. They based this on their findings that the average income of families making their full living from farming was R113.2 and concluded that this was a sufficiently large income to attract a Bantu family to full time farming in mixed farming and pastoral areas. It should be noted, however, that the idea that commitment to full time farming depends on the absolute level of income in farming is erroneous. It is the marginal product of work in agriculture relative to that in outside employment which is relevant, so that a high actual or potential total level of farming income is quite consistent with part time farming, though of course the more time spent farming the greater will be the income from this source.

would have to be removed from the land and given employment outside of agriculture if more efficient farming methods were to be introduced and those remaining on the land induced to farm full time. More recently Professor D. Hobart Houghton<sup>1</sup> has suggested that the agricultural carrying capacity of the reserves may be nearer one third than one half of their population.

The number of people on the land which is redundant in the sense that their removal is necessary to enable those remaining to earn an adequate income from farming alone, depends on the level at which this income is set. But given the income objectives of the Tomlinson Commission, the magnitude of changes in agriculture which were required, may be gauged from the fact that with little more than half the number of people engaged in farming in 1981 as in 1951, the Commission thought that an agricultural output at least as large as that of 1951 was possible.<sup>2</sup> It is of course reasonable to expect that a smaller labour/land ratio will increase income per head. But the maintenance of output per acre despite the removal of half the population, implies a spectacular revolution in techniques, unless a considerable number of people at present on the land, especially those not owning land,

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1. The South African Economy, 2nd Edition, p. 76.
  2. In effect the Tomlinson Commission thought it was possible to double output in 30 years while reducing the population by half, or multiply total output five times with the same population or one growing at 1.6 per cent per annum

does not contribute at all to agricultural output. All the evidence, however, is against this.<sup>1</sup> It is true that the men who remain on the land will, according to this plan, be engaged full time in farming and not at all in work outside, but women and children at present perform a great deal of the farm work and this will be considerably reduced if the population on the land is cut by half. It is by no means certain that a technological revolution on the scale implied by the Tomlinson estimates can be achieved, so that given their farm income objectives the proportion of the population for which non-agricultural employment must be found may well be larger than they calculated.

A basic assumption underlying the Tomlinson proposals was that the creation of full economic units is a necessary condition for a significant rate of increase in agricultural productivity. If this is so<sup>2</sup> then the prospects of agriculture in the Bantu Areas making a major contribution to the alleviation of poverty is bleaker still. For even if size is of the essence of the problem, it seems that agricultural improvements will for a long time to come have to be

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1. See for instance D. Hobart Houghton and Edith Walton, op. cit., pp. 141-144. For general treatment of this question see P. F. M. McLoughlin, "The Need for a 'Full Employment' and Not a 'Disguised Unemployment' Assumption in African Development Theorizing," Zeitschrift Für National-ökonomie, December, 1962 and T. W. Schultz, Transforming Traditional Agriculture (New Haven, Yale University Press, 1964).
  2. The significance of economies of scale and the effect of size on technological progress in African agriculture compared with other obstacles to improvement (e. g. social arrangements) are matters about which we know little at present. Recent studies for other countries, however, suggest that there may have been a tendency to exaggerate the importance of the scale of farming operations as an impediment to agricultural progress. See, for example, T. W. Schultz, Transforming Traditional Agriculture, (Yale University Press).

brought about, if they are to be brought about at all, on farms which are smaller than "full economic units", since present experience shows that it is impossible to give any but a very small proportion of farmers "full economic units".

The cornerstone of agricultural policy in the Bantu Areas today, as in the Tomlinson proposals a decade ago, is the betterment areas scheme, the object of which is firstly to halt deterioration in the quality of the land. Considerable progress has been made with this programme of rehabilitation and, whereas in 1952 only 6.0 per cent of the Transkei had been stabilised by 1963 the proportion was 23.0 per cent. Rehabilitation involves first the division of rural locations into arable, grazing and residential areas. It is then calculated for each area the size of an arable plot and the number of cattle units each man should own if economic farming is to be achieved. But because of the large number of people trying to live off the land very few are at present able to have economic units in the dry land areas.

The holders of arable plots are to be granted certificates of occupation with clauses relating to the beneficial use of land. If a man fails to comply with stated conditions he will lose his plot, but if he succeeds his eldest son will be able to inherit.<sup>1</sup> There has been much

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1. It is worthwhile noting that this condition may have the effect of forcing a man to choose between full time farming and full time non-agricultural, since part time farming interrupted by temporary absences in the advanced sector may cause him to lose his plot. Thus his choice of alternatives is restricted and in so far as temporary migration maximises his real income, the strict application of this clause may make individual farmers worse off. It is possible, too, that a farmer whose output is lower than that of another, both producing under the same conditions, may actually be the more capable of the two, and have a lower agricultural productivity because of this fact.

opposition to the rehabilitation programme on the part of Bantu because of fencing and the reduction in the number of cattle which often goes with it in areas that are overstocked. Apart from the oft-mentioned sociological causes of overstocking, this problem probably has a strong economic cause. The fundamental difficulty arises from the fact that there is a divergence between social and private cost in communal grazing, since the cost to the individual of putting one more animal on the land is much smaller than the cost to the village community. Fencing of arable land also involves a loss to owners of stock since it deprives them of grazing which is traditionally theirs. Thus, though these innovations probably result in a better allocation of resources, it is understandable that there should be opposition to them. But the opposition has been politically inspired as well. In addition to the replanning of rural locations the Soil Conservation Board is undertaking the construction of retaining and contour banks, grass strips, grassed waterways, dam walls, and soil and veld conservation fencing.

In the past fears had often been expressed that productivity was being still further reduced by a decline in the quality of the soil. It seems that this decline and the failure to introduce more efficient methods may be the result of either or both of two things:

(a) A voluntary and calculated decision on the part of landholders to allow this productive asset, land, to wear away, because of the low return obtainable on it. This is intensified by increasing population and consequent subdivision of farms. In so far as this was a deliberate choice originally, it is probable that migrancy increased the real income of the reserve family. In short it is suggested as a possibility that even if they possessed the technical knowledge to stop soil depletion they may not want to do so, in view of the attractions outside. In other words the opportunity cost of soil reclamation is too

great even if they possess adequate technical knowledge to achieve it.

(b) Ignorance of more efficient farming methods and soil conservation techniques. The Tomlinson Commission in fact believed that it was due in the part "to prevailing lack of knowledge in connection with soil conservation work" not only on the part of Bantu but on the part of the government agricultural extension officers as well. It has been pointed out that even on white farms husbandry was poor, and burning of the veld, overstocking and soil erosion were widespread until recently. Professor Hobart Houghton suggests, however, that there were other important factors besides this: Ukulobolo, customary division of labour between the sexes; the system of land tenure, perhaps the most significant factor; and communal elements and tradition which were inimical to innovation and initiative. He suggests that agricultural practices may have been satisfactory as long as there was an abundant supply of land, but that once this ceased to be the case the inadequacy of the traditional methods became very apparent. In other words, the declining productivity of the soil is the result of a failure to adapt.

The government thus is involved in a significant programme designed to transform agriculture in the Bantu Areas. But how effective is this betterment scheme proving in counteracting the unfavourable tendencies mentioned and in raising agricultural output? Can it be expected to produce the dramatic results necessary if progressive farming is to make a major contribution to the problem of rural poverty and underemployment? The writer is unaware of any systematic study of this problem, without which little can be said about past achievements and future prospects. Professor Hobart Houghton states that "officials of the Bantu Affairs Department find their experience supports this (the Tomlinson) view. Indeed a senior official went further and is reported in 1958 as saying "I think this is an understatement. The basis of calculation, i. e. £1.15.0.

per bag of grain with a yield of 3.5 bags per morgen, plus £2.10.0 per cattle unit, provides for a fourfold or even fivefold increase with the adoption of improved methods of management. Some of our more progressive dairy men are obtaining £4 and more per month per cow from milk and cream sale. For my part I ceased to think of an economic unit on the minimum basis of £60 and adopt the more realistic viewpoint that such a unit should earn £250-£300 per year'.<sup>1</sup> Is this agricultural officer referring to exceptional cases or is this likely to be the actual effect of rehabilitation and agricultural extension work?

The rate of agricultural development actually achieved will obviously depend largely on the amount spent in the form of soil conservation schemes, irrigation works, fencing, the provision of implements, seeds, fertilisers, breeding stock, the training and payment of demonstrators, the training of farmers, etc. But the effectiveness of this expenditure, equally obviously, also depends on how much success is achieved in gaining the co-operation of Bantu farmers. There is strong resistance to change in the context of the African rural village<sup>2</sup> and it may be easier for an African to acquire new habits in an urban environment while in industrial employment than in the Bantu Areas. McLaughlin, an economist with considerable experience as an agricultural officer in Africa says: "Administrators complain that though new tools are provided, people often refuse to utilize them for social, religious, or other reasons. Surely the key to a theory of economic development is placing more tools effectively -

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1. D Hobart Houghton, "Land Reform in the Bantu Areas and its Effects Upon Urban Labour", S. A. J. E., September 1961, pp. 167-168.
  2. For an outline of some of the sociological difficulties in South Africa's Bantu Areas see J. L. Sadie, "The Social Anthropology of Economic Underdevelopment," Economic Journal, June 1960.

that is, so as to scuttle historical resistances quickly. Rapid destruction means less long-run social damage to fewer people,"<sup>1</sup> Whether this attitude is the right one or not it seems that for political reasons the government would probably be unwilling to disrupt the social structure of the Bantu Areas, so that the chances of really rapid agricultural development are considerably reduced, and dependence on non-agricultural activities correspondingly increased. A proposal by the Tomlinson Commission which would have led to sweeping social change was that the present system of land tenure be gradually replaced by individual freehold tenure and that the sale of land should be subject to the condition that such land rights are used to good purpose. These recommendations, however, were subsequently rejected by the Government.

One possible way of transforming the agriculture of the Bantu Areas is to introduce some profitable cash crop which is sold outside the territories. Clearly an energiser such as cocoa in Ghana, gold in South Africa, wool in Australia, and silk in the early days of Japanese economic modernisation would be an enormous stimulus. Such a cash crop is essential if reserve agriculture is to make really rapid progress since very little can be expected from a system in which the main farmers produce primarily for their own consumption.

Cash crop production in the reserves at present is insignificant. However, in an article in which she compares the response of the Nyakyusa of Tanganyika and the Xhosa to increasing land scarcity

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1. P. F. M. McLoughlin, The Economist and African Economic Development, Institute of Industrial Relations, Reprint No. 139, University of California, Los Angeles, 1964.

Professor Monica Wilson asks why it is that the Xhosa have not taken to cash crop production whereas the Nyakyusa have. She suggests the following answer: "The cause lies partly in the difference in economic tradition: the Nyakyusa were skilled cultivators before the whites came, whereas the Xhosa were primarily pastoralists. But there is another factor which I believe to be important - the competition for markets between white and black in Southern Africa. The Xhosa have had almost no encouragement to produce for a market and become full-time farmers, whereas, in the early 1930's, the Nyakyusa were persuaded to start coffee and the Agricultural Department undertook the marketing of it. Subsistence cultivation offers no attraction to men who can earn considerably more than the value of the crops they grow at home, by working in town; farming will only attract the efficient when they grow a cash crop, as well as feeding themselves. In South Africa, as soon as it is suggested that pineapples, or sugar, or oranges might be grown in the Reserves, there are protests from white farmers, who say that already there is overproduction in these profitable crops."<sup>1</sup>

Essentially this means that given their cost structure, the Xhosa cannot compete with white farmers in the open market. This is an extremely plausible explanation. It is strengthened by the fact that, even in respect of their staple crops such as mealies, wheat, vegetables, etc. the Reserves are net importers. It indicates that Reserve Bantu believe they can obtain their food requirements more cheaply by going out into the modern sector to work for them. A factor which may reinforce this is that at the present volume of production, the marketing channels in the Bantu Areas for mealies, for example, are inadequate, private storage is expensive and traders

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1. Monica Wilson, "The Effects of Land Scarcity on the Xhosa and Nyakysa," op. cit., p. 379.

have become increasingly reluctant to perform this storage function. A larger quantity of staple foods could obviously be produced if more migrants stayed behind either voluntarily, or because of influx control. But this would reduce the living standards of Transkeians unless simultaneously a drastic change were brought about in farming methods. Given the present greater return to wage employment in the white areas, the real marginal cost of food produced in the reserves is greater than that obtained with the money earned by migration. If Professor Wilson's interpretation is correct then of course, such obstacles must be removed<sup>1</sup> if rapid agricultural development is to be achieved.

The Tomlinson Commission also proposed the establishment of towns and rural villages to house the population removed from the land. They observed that migratory labour may serve as an important basis for the establishment of townships, and ought in fact to do so in the initial stages, but that besides this there must also be other permanent bases on which villages and towns can be developed in Bantu Areas. Since the Tomlinson report a number of these rural villages have been established. Professor Hobart Houghton has carried out a study of Kayaletu,<sup>2</sup> a village at the foot of the Hogsback. He reports that no compulsion was used to induce the people to move to Kayaletu and that there was a waiting list of would-be villagers.

The rate of return on investment in the agricultural development of the reserves is, therefore, likely to be low relative to the return on investment in better endowed parts of the country, and in other fields. Nevertheless there is a strong case, on economic apart from other grounds, for a government expenditure on the

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1. *op. cit.*, p. 379.

2. D. Hobart Houghton, *Land Reform, S.A.J.E.* September, 1961.

agricultural development of the Bantu Areas. The case rests on external economies, and in so far as the development programme consisted exclusively of projects fulfilling these conditions it would simultaneously tend to improve the living conditions of the reserves, further the political aims of the present Government, and increase the economic efficiency of the country. The major instance of such external economies arises from the fact that Europeans are debarred from purchasing or hiring land or setting up industries in the reserves. On account of ignorance and for other reasons Bantu do not have access to long term capital markets, and are in any case for the most part unable to provide security for loans. These facts constitute a form of imperfection in the capital market such that private enterprise cannot undertake investments which they might otherwise, even if due allowance were made for risk. This artificial obstacle to the mobility of capital, therefore, reduces the profitability of investments in various projects in the reserves which would be profitable if the obstacles did not exist. Thus the Government has itself created a divergence between social and private costs. Many laws do this, but this one discriminates against a whole class of people, the poorest in the country. Therefore, provided it does so only to the extent necessary to compensate for this obstacle, properly selected Government enterprises undertaken in the reserves can increase the country's economic efficiency. External economies warranting government activity arise in other connections too. Soil conservation schemes or irrigation works may not be profitable investments if undertaken by single investors or small groups of investors, but they may nevertheless yield a rate of return considerably greater than the prevailing cost of capital.

The above does not mean that all possible investment in agricultural development can be justified on the basis of external economies, and, even after taking them into account the scope for

truly economic agricultural development is severely limited. The difficulties in the way of an agrarian revolution in the reserves are thus formidable, including such factors as ignorance, social traditions, the system of land tenure, lack of capital, competition with white farmers and, of great significance if the Tomlinson Commission's view is correct, uneconomically small land holdings. The problem of small plots, however, can only be overcome if alternatives are found for those deprived of their land holdings, so that the opening up of opportunities for employment in non-agricultural activities is essential.

#### The Choice of Location.

As we showed earlier, the present rate of agricultural improvement in the reserves is such that output per head in those territories is probably falling, despite a continuing rapid rate of migration to the advanced sector. In the light of the obstacles to development which we discussed in the last section there is little prospect, even with considerably intensified government efforts to improve agriculture, that this sector will be able to absorb a significant part of the natural increase in the population of the Bantu areas, except perhaps at very low rates of pay. Indeed, as we have already noted, the Tomlinson Commission believed that a marked reduction in the number on the land is necessary if a level of income sufficient to make full time farming a feasible proposition is to be obtained. Any scheme for bringing about a faster rate of increase in the population of the Bantu areas must therefore depend heavily on a programme of planned industrialisation in the reserves and border areas.

In the country as a whole the rate of increase in demand for labour by secondary industry is expected to be substantially greater than in agriculture<sup>1</sup>. There remains the question, however, of where this additional industrial employment will occur - in the advanced

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1. Economic Development Programme for the Republic of South Africa 1966-71, pp. 28-29 and Table C. The latter shows an expected increase in secondary industry of 228.1 thousand between 1966 and 1971 compared with 176.0 thousand in agriculture.

sector or in the border and Bantu Areas. This is the aspect of the problem with which we are primarily concerned in this study. The policy issue for the Government is to decide how and to what extent it should attempt to influence the location of industry, by diverting industrialists from the sites which they would have chosen without intervention to sites which the Government, for one reason or another, prefers.

Chapter 3THE LOCATION OF MANUFACTURING INDUSTRY  
IN SOUTH AFRICA TO 1960

As we noted above,<sup>1</sup> it was in the White Paper of 1956 that the Government first publicly proclaimed itself in favour of a systematic programme of industrial development in the border areas. Administrative machinery designed specifically for the task of implementing border industries policy, however, was only created in mid-1960,<sup>2</sup> when the establishment of the Permanent Committee for the Location of Industry and the Development of Border Areas was announced. The activities of this committee and the results achieved in manufacturing industry in the border areas in the first six and a half years of its life are described in chapter 9. In an attempt to understand the position confronting the Permanent Committee (as we shall refer to it in the future) at its inception, we shall in this and the next chapter undertake a description of major trends in the location of industry up to 1960.

Industrial Expansion in Broad Outline

In the first fifty years after Union, radical changes occurred in the structure of the South African economy. Despite steady progress in the production of primary products and in other sectors, such enormous strides were made in industrial production that the contribution of private manufacturing industry to the country's net national income increased from 7 per cent in 1912 to over 23 per cent in 1960, as Table 1 shows. By 1912, manufacturing industry was still completely overshadowed by mining (particularly gold) and agriculture, whose respective shares of the national income were 27 and 17 per cent. While gold mining did, indeed, greatly increase the demand for manufactured goods, it also, by exerting a considerable strain on the available supplies of manpower and other resources, ensured that the bulk of these

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1. Chapter 1, p. 11.

2. Statement by the Prime Minister on the establishment of industries in the border areas issued on June 2, 1967.

TABLE 1

Percentage Contributions of Major Economic Sectors to the Net Domestic Product

Year ended June	Agriculture, Forestry & Fishing	Mining	Manufacturing	Commerce	Transport	Public Authorities	Other	Net Domestic Product
	%	%	%	%	%	%	%	R millions
1912	17.4	27.1	6.7	13.5			35.3	265.8
1920	20.9	21.3	10.7	16.8			30.3	487.0
1925	21.6	16.9	11.9	15.4			34.2	470.4
1930	13.9	17.3	15.4	14.5			38.9	506.4
1935	13.5	21.0	15.2	13.7			36.6	602.0
1940	11.8	22.8	17.5	14.3			33.6	862.6
1945	12.3	14.4	19.9	14.1			39.3	1,332.6
1950	13.1	13.8	22.1	15.0	8.7	10.3	17.0	2,042.0
1955	13.7	11.7	23.7	14.2	8.8	9.3	20.6	3,363.0
1960	11.0	14.0	23.3	12.7	8.1	10.3	20.6	4,510.0
1964*	9.2	12.5	27.9	12.9	7.7	10.3	19.5	6,096.0

\* Provisional figures

Sources: Union Statistics for Fifty Years, table S-3 up to 1945, thereafter Statistical Year Book 1965 table U-4.

manufactured requirements would be imported, and industrial progress in the pre-Union period was, consequently, extremely slow.

As is well known, the first big leap forward in South African manufacturing was made during the First World War, largely owing to shipping difficulties and the inflated production costs of European suppliers. The natural protection provided by these factors was reinforced to some extent by tariffs imposed in terms of the Union Customs Tariff Act of 1914.

With the return of keen foreign competition after the War the pace of industrialisation slackened. But higher tariff walls after 1925,<sup>1</sup> the establishment of the Iron and Steel Corporation of South Africa in 1928, and a higher gold price, together contributed to further rapid expansion in manufacturing activity in the latter half of the twenties and the post-depression thirties. Between 1924-25 and 1938-39, as Table 2 shows, the number of workers of all races in manufacturing industry more than doubled, increasing from 115 to 236 thousand, and by the latter year secondary industry already provided 18 per cent of the national income. The average annual rate of increase of manufacturing employment was higher in the period 1933-39 than during any period of similar length either before or since.

It was during the Second World War that the manufacturing sector for the first time exceeded the share of mining in the national income (having overtaken agriculture in the 'thirties) and growth proceeded at a fast pace until the early 'fifties. Though not as spectacular as in the period 1933 to 1939, the average annual increase in employment in manufacturing industry was maintained at a high level throughout the period 1939-1955, but a sharp fall off in the rate of growth was experienced after 1955 and lasted until 1963. Nevertheless by 1960 manufacturing employment, on the basis of the Bureau of Statistics new census classification, had reached 637 thousand, nearly three times the level of 236 thousand in 1939, and some thirteen per cent of the country's labour force was employed in industry.

Despite the generally sluggish conditions which persisted till 1963, remarkable industrial progress was made between 1960 and 1965. Manufactur-

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1. Customs Tariff and Excise Duties Amendment Act, No. 36 of 1925.

TABLE 2

Growth of Employment in Manufacturing Industry

	<u>Employment</u>	<u>Percentage Increase Preceding Five Years</u>
1924-25	114, 876	-
1929-30	141, 616	23. 3
1934-35	181, 755	28. 3
1939-40	245, 457	35. 0
1944-45	361, 004	47. 1
1949-50	497, 887	37. 9
1954-55	652, 635	31. 1
1959-60	636, 530	"
1964-65	929, 500	46. 0

Source: Union Statistics for Fifty Years, p. L-3 for years up to 1954-55, thereafter Statistical Year Book 1966, pp. H-33 and H-38.

Note Figures for 1959-60 and 1964-65 are not strictly comparable with those for earlier years. Up to and including 1958-59 the figures refer to the average number of employees engaged in industry throughout the financial year. As from 1959-60 the employees are shown as at the last pay day of September in the financial years concerned viz. for 1959-60 in September 1959 etc. (See Statistical Year Book 1966, p. 89.)

ing employment increased from 637 to 930 thousand,<sup>1</sup> that is, by as much as 48.8 thousand per annum.<sup>2</sup> The country's dependence on industrial expansion for additional employment opportunities, which we emphasised in Chapter 2, is indicated by the fact that, as a percentage of the combined employment in mining, manufacturing, construction, transport and communication, the share due to manufacturing increased from 39.2 per cent to 46.4 per cent. between 1960-61 and 1964-65. The result of this renewed burst of manufacturing growth was that the proportionate contribution of secondary industry to the net national income reached 28 per cent in 1964. This increasing predominance of manufacturing industry bears out the need for industrial development in the border and Bantu areas, if a significantly greater proportion of the country's African labour force is to be employed in those areas.

#### The Emergence of Regional Concentration.

The regional distribution of the increases in manufacturing industry which we have described has been extremely uneven. In 1960, as Table 3 shows, the country's four principal industrial areas<sup>3</sup> together produced some 81.3 per cent of gross manufacturing output and employed 78.5 per cent of the industrial labour force. What is striking too is that despite radical changes in the composition of South Africa's industrial activity, these propor-

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1. Monthly Bulletin of Statistics, March 1967, p. 20.
  2. See G. Marais, "The Development of the Manufacturing Industry Since 1960", Statistical Year Book 1966, (Compiled by the Bureau of Statistics), p. 15.
  3. The Southern Transvaal (including the magisterial districts of Benoni, Boksburg, Brakpan, Germiston, Kempton Park, Krugersdorp, Pretoria, Randfontein, Roodepoort, Springs, Vanderbijl Park and Vereeniging), the Western Cape (including the magisterial districts of Bellville, Cape Town, Hopefield, Malmesbury, Paarl, Simonstown, Somerset West, Stellenbosch, Wellington, Wynberg), and the Durban-Pinetown and Port Elizabeth-Uitenhage magisterial districts.

Table 3: Regional Distribution of Gross Output in Private Secondary Industry

	Cape Western		Port Elizabeth/ Uitenhage		East London		Rest of Cape		Durban/ Pinetown		Rest of Natal		Southern Transvaal		Pretoria		Rest of Transvaal		O.F.S. Republic		Cape Western Port Elizabeth Uitenhage, Durban, Pine- town, S. Tvl. Pretoria		Border and Bantu areas (including East London)			
	R'000	%	R'000	%	R'000	%	R'000	%	R'000	%	R'000	%	R'000	%	R'000	%	R'000	%	R'000	%	R'000	%	R'000	%	R'000	%
* 1924-25	29,470	21.1	6,830	4.9	-	-	-	-	17,514	12.5	-	8.9	48,774	34.9	Included in S. Tvl.	5,416	3.9	5,728	4.1	139,952	102,588	73.3	-	-	-	-
* 1934-35	39,446	17.0	17,772	7.6	2,934	1.3	12,646	5.4	27,198	11.7	17,658	7.6	99,514	42.8	"	"	9,298	4.0	6,598	2.8	232,534	183,930	79.1	-	-	
* 1939-40	63,992	16.5	33,434	8.6	4,690	1.2	20,438	5.3	47,468	12.3	27,764	7.2	164,860	42.6	"	"	13,812	3.6	10,750	2.8	387,210	309,754	80.0	-	-	
* 1940-41	74,516	16.7	34,994	7.8	-	-	-	-	55,884	12.5	-	-	195,464	43.8	"	"	-	-	-	-	446,748	360,858	80.8	-	-	
* 1941-42	86,238	17.4	29,186	5.9	-	-	-	-	62,350	12.6	-	-	220,784	44.6	"	"	-	-	-	-	494,576	398,558	80.6	-	-	
* 1942-43	91,492	17.4	26,398	5.0	-	-	-	-	66,363	12.6	-	-	231,590	44.1	"	"	-	-	-	-	525,020	415,843	79.2	-	-	
* 1943-44	102,810	17.1	30,390	5.1	-	-	-	-	80,370	13.4	-	-	267,674	44.5	"	"	-	-	-	-	601,468	481,244	80.0	-	-	
* 1944-45	115,270	16.9	34,354	5.0	8,552	1.3	39,492	5.8	91,868	13.5	42,280	6.2	303,522	44.5	"	"	27,636	4.0	19,354	2.8	682,320	545,014	79.9	-	-	
* 1949-50	220,278	16.0	113,396	8.2	-	-	-	-	173,200	12.5	-	-	546,350	39.6	61,466	4.5	-	-	51,374	3.7	1,380,244	1,114,690	80.3	-	-	
* 1950-51	269,498	15.1	152,578	8.6	26,180	1.5	90,520	5.1	227,872	12.8	83,876	4.7	728,980	40.9	73,578	4.1	63,770	3.6	63,662	3.6	1,781,516	1,452,506	81.5	-	-	
* 1953-54	333,052	14.6	178,842	7.8	33,234	1.5	125,196	5.5	195,752	13.0	125,052	5.5	902,078	39.4	103,604	4.5	99,448	4.4	85,640	3.8	2,281,898	1,813,328	79.4	-	-	
** 1956-57	378,068	15.2	119,895	4.8	31,999	1.3	-	-	369,791	14.9	-	-	1,031,861	41.6	118,635	4.8	-	-	-	-	2,481,220	2,018,250	81.3	-	-	
+ 1956-57	345,860	15.4	109,114	4.9	29,614	1.3	-	-	344,632	15.4	133,160	5.9	931,056	41.5	93,005	4.1	-	-	-	-	2,241,202	1,823,667	81.4	223,812	10.0	
** 1959-60	439,216	15.4	130,144	4.5	33,328	1.1	-	-	404,734	14.2	-	-	1,147,510	40.3	143,028	5.0	-	-	-	-	2,844,042	2,264,632	79.6	-	-	
+ 1959-60	404,700	15.7	117,870	4.5	29,355	1.1	-	-	378,001	14.7	-	-	1,042,280	40.4	115,794	4.5	-	-	-	-	2,575,552	2,057,945	80.0	272,300	10.6	

\* 21 Classes of manufacturing industry plus construction and electricity, gas and steam.

\*\* 21 Classes of manufacturing industry (excluding the motor vehicle industry) plus construction.

+ 21 Classes of manufacturing industry (excluding the motor vehicle industry).

Source: Published Industrial Census reports supplemented by unpublished information kindly supplied by the Bureau of Statistics.

tions have remained more or less constant over a long period of time. Between 1934-35, by which time this marked degree of regional concentration was already established, and 1959-60, there was no sign of a long run tendency for the forces giving rise to this locational pattern to either increase or diminish.<sup>1</sup>

In the early years of the century, however, and even up to 1924-25 when 73.3 per cent of gross manufacturing output was produced in the four large industrial areas, the degree of concentration was much smaller. The early predominance of the Western Cape in manufacturing industry was due mainly to the fact that it was the first area settled by Whites and, consequently, agriculture in the area was vastly more developed than that of other parts of the country. After 1867, diamond mining at Kimberley, together with customs tariffs imposed at the time, provided an additional stimulus to manufacturing industry in the area. The availability of Coloured labour at the Cape no doubt also facilitated industrial activity.<sup>2</sup> Such manufacturing as there was at the Cape even in 1872 was of only the most rudimentary sort but in other parts of the country factory production was still virtually non-existent.<sup>3</sup>

The lead of the Cape was, therefore, overwhelming at this time, and even after the discovery of gold on the Witwatersrand in 1886, industrial progress in the Transvaal, as in the country as a whole, compared with subsequent periods, was extremely slow. In Natal, though considerable development was experienced in port activity after the discovery of diamonds,<sup>4</sup> it was, in de Kock's words, "only after 1898, when Natal for the first time entered a

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1. Between 1934-35 and 1959-60 the proportionate contribution of the four areas mentioned was never less than 79.1 per cent (in 1934-35) or more than 81.5 per cent (1950-51). Difficulty in determining the trend in this proportion is increased by a discontinuity in the statistics between 1953-54 and 1956-57, the motor vehicle industry being included in the former year but omitted from the latter.
  2. D. M. Goodfellow, A Modern Economic History of South Africa, London, 1931, p. 179.
  3. M. H. de Kock, Economic History of South Africa, Juta 1924, p. 283.
  4. C. W. de Kiewiet, A History of South Africa - Social and Economic, (Oxford University Press, 1941), p. 97.

customs union with the Cape and adopted somewhat higher customs duties, that manufacturing began to make substantial progress."<sup>1</sup>

Thus we find in 1891 something like 18,000 persons employed in 2,000 establishments in the Cape Colony,<sup>2</sup> and relatively little manufacturing industry elsewhere. Between 1886 and 1899, however, the Transvaal government showed interest in fostering manufactures, and in the 1890's important pioneering steps were taken towards the development of an explosives industry which has since come to play such a vital role in the industrialisation of South Africa. Sufficient progress was made in the Transvaal in this period, and especially during the South African War, for the position to have changed quite substantially by 1904 compared with that of 1886. In 1904, according to de Kock, the gross value of manufacturing output was distributed in the following proportions<sup>3</sup>: Cape 46.3, Transvaal 33.1, Natal 18.1, the Orange Free State 2.5. The Transvaal then was beginning to emerge as a serious challenge to the Cape.

As was noted in the previous section, the general pace of industrial development in the country was slow until just before the First World War, but the tendency for the Transvaal as a whole to increase its proportionate contribution persisted and was greatly accelerated during the War, when, for the first time, the Cape Province lost its lead in this field. By 1934-35 the Transvaal contributed 46.6 per cent of gross output, the Cape 31.3, Natal 19.3, and the Orange Free State 2.8 per cent.

The information in the preceding two paragraphs relates to provincial totals, but as would be expected, in view of their predominance, corresponding changes in relative importance are evident for the major industrial areas within each province. Since reaching 42.8 per cent in 1934-35, however, the proportionate contribution of the Southern Transvaal to gross manufacturing output, has remained fairly constant at about 44 per cent. The

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1. op. cit., pp. 285-286.

2. De Kock, op. cit., p. 285.

3. Based on figures presented by de Kock in a table on p 288.

most striking change in the relative size of the four main industrial areas, as Table 3 shows, is the apparent long term decline of the Western Cape's percentage contribution from 17.0 in 1934-35 to 14.6 in 1953-54.

It appears, then, that the increasing tendency towards the concentration of industry in the four largest areas, on which we remarked at the beginning of this section, was due to the phenomenal rate of industrialisation of the Southern Transvaal. The gold mines generated a rapidly increasing demand both for consumers goods and intermediate goods, and given this demand, the geographical position of the Southern Transvaal was extremely favourable to industrialisation. The cost of transportation from the coast provided natural protection against competition from imported goods and from producers situated at the coast. This factor is still an important influence on the industrial development of the Southern Transvaal and hence of the country as a whole. Despite the concentration of industry to which it contributed, and which so many regret now, the insulation of the Witwatersrand from outside competition has probably had a most beneficial effect on the pace of industrial growth in South Africa. It also, by stimulating the construction of railways, roads etc. to the Witwatersrand, has facilitated subsequent development in other sectors, such as agriculture.

Gold mining on a large scale within a single fairly compact area, provided a concentrated market for agricultural and manufactured products. This to a considerable extent offset the disadvantages arising from the limited size of the country's total market at that stage, and the generally low population density. In effect the concentration of demand cut transport costs per unit of output, and generated greater economies of agglomeration and internal economies of scale, than would have arisen had the total market been more evenly distributed.

It is worth noting that today, countries in the early stages of industrialisation are invariably advised to concentrate their efforts in a few carefully selected centres, if possible, so as to take maximum advantage of both internal and external economies. In South Africa this occurred quite spontaneously. The present degree of regional concentration, which goes back to the early thirties, and which was basically due to a highly concentrated

demand, has, therefore, almost certainly been favourable to the country's economic growth. In the late twenties and the thirties, in view of the vast number of Africans seeking alternatives to the overcrowded Reserves, and especially in view of the large number of poverty stricken Whites who were leaving the land and drifting into towns, economic growth was at a premium. It was under those conditions politically unthinkable for any government to risk jeopardising the rate of economic growth through any serious attempt to decentralise industry on a large scale. It may be significant that the Native Economic Commission of 1932, one of whose main concerns was the social problems arising from the simultaneous inflow into the towns of both poor Whites and poor blacks, while recommending that development be undertaken in the Reserves, made no mention of any scheme for industrialisation. Whether for economic, political or other reasons, it appears that by 1956 at least the position in this regard had changed substantially. Perhaps, with the poor White problem very largely solved, and after substantial industrial progress, governments are now in a better position to trade economic growth for political ideology.

The above broad outline of the causes of the present degree of concentration is fully endorsed by the following remarks taken from the report of the Schumann Committee:

"The reasons for this concentration are obvious. In the case of the Southern Transvaal it was basically the discovery of gold and the development of the mining industry that attracted people in great numbers and directly resulted in the establishment of industries manufacturing final products. In the case of other regions, the concentration occurred at the ports - the gateways for import and export trade".<sup>1</sup>

As this passage and our earlier analysis imply, the predominant influence on the pattern of industrial location has been demand, that is, the market.<sup>2</sup> Orientation to raw materials is the decisive consideration in the case of another, smaller, group of activities. In such industries a factory

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1. Report of the Committee on Railway Rating Policy and Industrial Location in South Africa, Johannesburg, April 1964, p. 60.

2. See also D. J. McWhirter, Industry in Greater Durban, p. 62.

will normally be situated at the source of raw materials closest to the market which it is established to serve. When, as happened to be the case in a number of industries (e. g. iron and steel) in the Southern Transvaal, the raw materials source and the market roughly coincide, the attraction of the larger centres becomes still more irresistible.<sup>1</sup> As the Schumann Committee points out,<sup>2</sup> this also applies to the large coastal cities in the case of imported raw materials.<sup>3</sup>

#### Location and the Composition of Industrial Production

At a statistical level, the central fact which emerges so far in this chapter, is the remarkable constancy in the degree of regional concentration between 1934-35 and 1959-60. By contrast with this aggregative constant, however, there have been radical changes in the structure of the country's manufacturing industry and in the regional distribution of individual industrial categories. On the face of it the stability observed is, at least from a statistical viewpoint, due to a coincidence of offsetting movements in the relative size and geographical distribution of the 21 main industrial classes.

As Table 4 shows, the most striking change in the structure of manufacturing output is a sharp reversal in the relative positions of the two largest industrial groups, namely the food, beverages and tobacco group and the metals and engineering group. In 1924-25 the former employed 28.3 per cent of the industrial labour force and the latter 10.7 per cent, but by 1959-60 the corresponding proportions were 17.4 and 24.4 per cent respectively.

In view of the size of these two groups, which overshadow all

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1. The story of the early development of the explosives industry also provides an interesting insight into the forces underlying the concentration of manufacturing in the Southern Transvaal. See H. Schauder, "The Chemical Industry in South Africa Before Union", S.A.J.E., December, 1946.
  2. op. cit., p. 70.
  3. See also McWhirter, op. cit., p. 62.

TABLE 4

## Percentage Contribution of Major Industrial Classes to Total Manufacturing Employment 1924-25 to 1962-63

	1924 - 25		1934 - 35		1944 - 45		1954 - 55		1954 - 55*		1959 - 60		1962 - 63	
		%		%		%		%		%		%		%
1. (Food,	26,621	(23.2	32,594	17.9	60,702	16.8	92,614	14.2	91,825	14.9	95,996	(14.4	103,668	(13.5
2. (Beverages,	3,126	28.3( 2.7	3,980	2.2	8,162	2.3	11,454	1.8	11,454	1.9	14,394	17.4( 2.2	15,915	16.2( 2.1
3. (Tobacco	2,706	( 2.4	2,298	1.3	4,834	1.3	6,870	1.1	6,870	1.1	5,522	( 0.8	4,236	( 0.6
4. Textiles	1,660	1.4	4,078	2.2	7,343	2.0	32,945	5.0	32,945	5.3	36,353	5.5	49,610	6.4
5. Wearing apparel, etc.	11,188	9.7	29,462	16.2	48,825	13.5	76,347	11.7	76,347	12.4	77,345	11.7	90,572	11.8
6. Wood and wood products	4,050	3.5	6,302	3.5	22,615	6.3	30,927	4.7	30,715	5.0	32,138	4.8	36,738	4.8
7. Furniture	4,900	4.3	6,519	3.6	11,273	3.1	20,754	3.2	20,754	3.4	17,632	2.6	19,404	2.5
8. Paper and paper products	504	0.4	1,532	0.8	4,216	1.2	14,029	2.1	14,029	2.3	19,448	2.9	22,988	3.0
9. Printing and publishing	6,878	6.0	8,873	4.9	10,869	3.0	17,397	2.7	17,397	2.8	20,060	3.0	23,048	3.0
10. Leather and leather products	2,699	2.3	2,711	1.5	5,902	1.6	5,415	0.8	5,415	0.9	4,651	0.7	5,300	0.7
11. Rubber products	393	0.3	1,184	0.7	4,986	1.4	10,932	1.7	10,932	1.8	11,275	1.7	13,629	1.8
12. Chemicals and chemical products	9,080	7.9	10,393	5.7	23,206	6.4	33,815	5.2	33,815	5.5	42,065	6.3	45,857	6.0
13. Products of petroleum and coal	734	0.6	1,036	0.6	3,378	0.9	8,857	1.4	8,857	1.4	7,077	1.06	8,590	1.1
14. Non-metallic mineral products	13,972	12.2	22,958	12.6	34,092	9.4	60,695	9.3	60,695	9.9	59,196	8.9	62,508	8.1
15. (Basic metal industries,	7,733	( 6.7	20,084	(11.1	59,075	16.4	29,490	4.5	29,490	4.8	39,117	( 5.9	50,110	( 6.5
16. (Metal products,	3,534	( 3.1	5,164	( 2.8	9,399	2.6	65,232	10.0	64,757	10.5	68,478	(10.3	81,073	(10.5
17. (Machinery,	68	10.7( 0.1	104	15.0(	319		28,473	4.4	26,638	4.3	28,787	24.4( 4.3	36,134	25.2( 4.7
18. (Electrical Machinery	975	( 0.8	2,027	( 1.1	7,697	2.1	23,149	3.5	22,166	3.6	25,736	( 3.9	26,736	( 3.5
19. Transport equipment	8,810	7.7	13,434	7.4	20,640	5.7	56,476	8.7	25,807	4.2	29,779	4.5	37,443	4.9
20. Laundries etc.	2,759	2.4	2,908	1.6	7,627	2.1	14,679	2.2	14,679	2.4	16,420	2.5	17,114	2.2
21. Miscellaneous	2,486	2.2	3,114	1.7	5,844	1.6	12,085	1.9	10,505	1.7	13,309	2.0	18,499	2.4
Total Groups 1 to 21	114,876	100.0	181,755	100.0	361,004		652,635	100.0	616,092	100.0	666,035	100.0	769,173	100.0

\* Two sets of figures are given for 1954-55 to indicate change in scope of the Census, mainly involving omission of certain branches of transport equipment sectors.

Source: Union Statistics for Fifty Years, pp. L-6 to L-26 for 1924-25, 1934-35 and 1944-45 figures; Statistical Year Book 1964, pp. M-16 to M-26 for 1954-55 figures; and Statistical Year Book 1966, for 1959-60 and 1962-63 figures.

others, their rates of growth and distribution have had an important bearing on industrial location. The food, beverages and tobacco sector which was the largest until the eve of the Second World War, is located outside the four largest industrial areas to a relatively greater extent than are other industrial classes. In 1959-60, as Table 5 shows, 42.6 per cent of the gross output of the food sector was situated in the less industrialised areas, and more than half of the output of these areas consisted of food products. By contrast, in 1959-60 more than ninety per cent of the output of the predominant sector, metals and engineering, was produced in the four major industrial areas. These facts, together with the relative decline in food, beverages and tobacco and the remarkable growth of metals and engineering, help us to understand why the degree of industrial concentration has become so great.

In view of its large market for metal and engineering products, and the presence nearby of the major raw materials for iron and steel manufacture, the Southern Transvaal has completely dominated this industrial sector. The rate of growth of the metals and engineering industries has been particularly rapid since the establishment of the South African Iron and Steel Corporation at Pretoria in 1928. Any location outside the Southern Transvaal for the ISCOR plant and for the bulk of engineering establishments, would have been extremely uneconomical at that time.

After the two groups already discussed, the largest is the textiles, clothing and footwear group, which employed 18.4 per cent of the industrial labour force in 1934-35 and 18.2 per cent in 1959-60. Clothing and footwear firms comprise the bulk of this, but, in relation to total manufacturing output, they have declined in importance from 16.2 per cent in 1934-35 to 11.7 per cent in 1959-60. Though very heavily concentrated in the main industrial areas, there was a slight tendency towards decentralisation of clothing and footwear production in the 'fifties.

The textiles industry which was slightly less than half the size of the clothing and footwear sector in 1959-60, developed rather later in the industrialisation process in South Africa than in most other countries. Since the Second World War, however, the rate of growth has been extremely rapid, output having multiplied seven times between 1944-45 and 1959-60. The less

TABLE 5

## Contribution of Four Major Industrial Areas to Gross Output in Each Class of Secondary Industry

	1950/51			1953/4			1956/7			1959/60		
	Western Cape, Port Elizabeth-Uitenhage, Durban-Pinetown, Southern Transvaal (including Pretoria)		Republic	Western Cape, Port Elizabeth-Uitenhage, Durban-Pinetown, Southern Transvaal (including Pretoria)		Republic	Western Cape, Port Elizabeth-Uitenhage, Durban-Pinetown, Southern Transvaal (including Pretoria)		Republic	Western Cape, Port Elizabeth-Uitenhage, Durban-Pinetown, Southern Transvaal (including Pretoria)		Republic
	Gross output R'000	%	Gross output R'000	Gross output R'000	%	Gross output R'000	Gross output R'000	%	Gross output R'000	Gross output R'000	%	Gross Output R'000
1. Food	200,566	60.0	334,210	257,850	58.1	443,428	300,774	59.3	507,262	332,774	57.4	579,722
2. Beverages	25,590	66.0	38,760	28,814	66.3	43,428	51,296	78.4	65,450	63,682	76.1	87,730
3. Tobacco	21,938	85.1	25,776	27,016	84.8	31,864	28,200	75.9	37,132	31,552	80.8	39,028
4. Textiles	43,316	79.2	54,660	60,878	73.9	82,432	81,240	77.8	104,382	94,852	76.6	123,820
5. Footwear, other wearing apparel etc.	144,298	92.1	156,602	174,748	91.4	191,194	182,478	90.6	201,496	191,186	90.0	212,324
6. Wood and cork, except furniture	25,880	70.3	36,826	29,480	60.9	48,394	35,350	64.2	55,044	35,036	64.6	54,270
7. Furniture	36,258	97.6	37,158	45,442	93.3	48,694	46,364	94.1	49,266	48,252	94.7	50,938
8. Paper and paper products	36,470	99.7	36,598	45,814	97.0	47,224	61,768	82.1	75,258	74,168	79.3	93,472
9. Printing and allied industries	34,944	86.0	40,636	46,558	87.1	53,470	60,318	88.2	68,392	68,368	87.8	77,840
10. Leather and leather products (excluding footwear)	15,402	78.7	19,562	12,892	74.9	17,202	13,056	73.7	17,722	17,076	83.1	20,552
11. Rubber products	47,300	90.7	52,154	45,276	86.6	52,276	-	-	11,860	-	-	13,024
12. Chemicals and chemical products	132,004	90.5	145,848	148,522	87.7	169,448	195,584	90.6	215,952	216,892	89.3	242,942
13. Products of petroleum and coal	9,830	87.2	11,270	28,652	90.5	31,676	44,142	82.5	53,510	53,840	72.8	73,924
14. Non-metallic mineral products	42,458	71.0	59,788	62,780	72.7	86,398	83,954	73.6	114,126	96,340	71.8	134,122
15. Basic metal industries	53,710	95.5	56,212	100,838	94.5	106,686	156,796	93.6	167,604	187,174	91.7	204,208
16. Metal products	144,018	88.6	162,608	198,282	90.6	218,764	200,208	95.7	209,258	228,302	95.3	239,490
17. Machinery, except electrical machinery	47,608	93.2	51,060	72,508	95.1	76,262	90,992	95.1	95,648	104,744	93.5	112,032
18. Electrical machinery etc.	47,274	95.6	49,450	65,640	91.3	71,916	88,136	92.5	95,248	102,324	92.1	111,148
19. Transport equipment	104,112	82.1	126,746	148,052	80.5	183,630	31,214	94.6	32,992	28,230	94.8	29,786
20. Miscellaneous industries	108,238	98.3	110,224	36,294	94.4	38,460	46,396	96.0	48,324	58,422	95.5	61,206
21. Construction	99,210	75.1	132,126	134,572	75.9	177,194	196,966	82.1	240,018	206,586	76.9	268,490
22. Personal services	9,316	86.3	10,794	12,014	84.4	14,242	12,324	80.7	15,276	14,290	79.8	17,905
Residual unallocated	-	-	-	-	-	-	13,208	-	-	11,132	-	-
TOTAL	1,429,846	81.7	1,751,068	1,776,730	79.5	2,234,288	2,020,762	81.4	2,481,220	2,265,220	79.6	2,844,044

Source: Compiled from data kindly made available by the Bureau of Statistics.

NOTE: Owing to the regulation that figures for less than four establishments may not be disclosed separately, and the fact that statistics for 1956-7 have already been published on a magisterial district basis, it has been necessary in the case of some industrial classes to exclude the output of a number of establishments from the class total for the four main industrial regions. These establishments are combined in the row 'residual unallocated'. Thus the share of the four main centres in certain cases is understated. Generally this does not distort the true situation seriously. The share of the four main regions in the total output for all 22 classes included above is of course not affected by this difficulty. The establishments omitted from the class totals for the four main centres in 1956-7 are distributed as follows (the class number is given and then the number of establishments is shown in parenthesis): 2(4), 3(2), 4(3), 5(3), 8(5), 9(4), 10(8), 11(4), 12(1), 13(5), 14(4), 15(6), 16(1), 18(3), 19(4), 20(1), 22(3). The establishments omitted for similar reasons from the 1959-60 figures are: 3(2), 4(3), 12(1), 14(1), 15(3), 20(3), 22(1), 11 (all establishments).

industrialised parts of the country show a slight degree of specialisation in this sector, and there were signs of a continuing tendency towards decentralisation. As in the case of clothing, textiles manufacture is relatively highly labour intensive, especially in non-White labour, and the materials used are relatively light, so that any tendency for wage costs to rise in the larger centres compared with the border areas will be favourable to decentralisation.

The non-metallic mineral products group, consisting mainly of bricks and tiles, cement and glass (in that order), employed 8.9 per cent of the industrial labour force in 1959-60. It has grown at about the same rate as manufacturing industry as a whole in the post-war years, and the proportion of output produced in the less industrialised areas remained virtually unchanged in the 'fifties. Thus its overall effect on the degree of concentration has been neutral. Very largely the raw materials used in this sector, are fairly ubiquitous and are heavy relative to value so that production tends to be strongly oriented to local markets. Since producers of these products are, therefore, more evenly distributed throughout the country, in accordance with the distribution of total demand, than are other manufacturing sectors, the rural areas show a fairly high degree of specialisation in this group. It is the third largest component of manufacturing industry, next to food and metals and engineering, outside of the four main industrial areas.

Employment provided by manufacturers of chemical products, which make up the fifth largest industrial class, showed a slight decline in relative importance between 1934-35 and 1954-55. In the latter half of the fifties, however, the rate of growth of this sector accelerated considerably, so that its contribution to total employment increased from 5.6 per cent in 1954-55 to 6.3 per cent in 1959-60. There were signs, then, that the chemical industry was becoming one of the main growth sectors of the economy and significant expansion was expected in the 1960's, especially in view of developments at Sasolburg. In the past, chemicals production had been heavily concentrated in the four largest areas, especially in the Durban-Pinetown area and the Southern Transvaal. Despite the establishment of some significant individual plants in less industrialised parts of the country, there was apparently no significant reduction in the degree of concentration

in the larger centres. Developments at Sasolburg<sup>1</sup>, it was expected, would change this, but since this centre is in effect part of the Southern Transvaal complex, there was not any real promise of "decentralisation", in the accepted South African sense of that word.

A closely related development, with which it is convenient to deal here, is that of the products of petroleum and coal sector. Next to the pulp and paper industry, discussed below, the fall in the degree of concentration from 87.2 per cent in 1950-51 to 72.8 per cent in 1959-60, was more marked than in any other sector. This, however, was also due primarily to the establishment and expansion of S.A.S.O.L.

After chemical products, the wood and wood products sector makes the largest contribution to total manufacturing sector. A large proportion (35.4 per cent) of the gross output of this sector was produced outside the four largest areas in 1959-60, and it was the second largest contributor to the industrial output of the rural areas. It is, therefore, essentially a rural industry, and indeed, in the 1950's there was a considerable increase in the proportion of this industry which was found in the rural areas.

Of the industries included in Tables 4 and 5, the last which merits special comment, is the paper and paper products sector. Though still relatively small, it has made rapid strides in recent years and by 1959-60 employed 2.9 per cent of the industrial labour force, compared with only 1.2 per cent at the time of the Second World War. Employment in the paper industry increased four and a half times between 1944-45 and 1959-60. The most dynamic sub-group was pulp and paper as distinct from paper products. A large proportion of the additional capacity in pulp production was sited in the rural areas, two of the largest new mills being at Felixton and Mandini in Zululand. South Africa's paper industry has come to use an increasing proportion of locally manufactured pulp. In view of this, and the advantages, in terms of internal economies, of operating integrated pulp-paper mills,

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1. See P.E. Rousseau, "The New Industrial Complex at Sasolburg", Optima, June 1965, pp. 63-71.

the tendency for the location of the paper industry to be determined by supplies of timber and water has been strong. The proportion of the total labour force of the paper and paper products sector employed in the four largest industrial areas, thus fell from 99.7 per cent in 1950-51 to 79.3 per cent in 1959-60. The potential for expansion of this industry in the rural areas thus seemed to be very promising.

Finally, an extremely important industry, not listed in our statistical tables, is the manufacture and assembly of motor vehicles which is overwhelmingly concentrated in the Port Elizabeth-Uitenhage area. Increasingly, locally produced raw materials are being used in this industry and, since these, especially steel, are derived from inland sources, there has been a tendency for coastal sites to become relatively less favourable than they were when the proportion of imported materials was greater. The heavy capital investment which the largest manufacturers of motor vehicles, and their suppliers have undertaken in their present sites, however, makes it unlikely that they will seriously contemplate moving. Due largely to the incentive provided by the Government's scheme for increasing the local content of South African produced motor vehicles, it was expected that the motor vehicle components sector would experience extremely rapid growth. There are significant advantages to both component manufacturers and motor vehicle producers themselves of being close to one another, one of the most important of which is savings in inventory costs. The chances, therefore, are that the bulk of the additional capacity in this industry will be situated in the Port Elizabeth-Uitenhage area and on the Witwatersrand.

The findings of this section may be summarised as follows:

The proportion of total capacity located in the four major industrial areas was declining in three fast growing sectors, namely, textiles, pulp and paper, and products of petroleum and coal. In addition, the rest of South Africa shows a certain degree of specialisation in all three of these sectors. Trends in the location of these industries, therefore, were favourable to a reduction in the degree of concentration, but developments in the products of petroleum and coal industry, centred as they were on Sasolburg, did not represent decentralisation in any relevant sense of the word.

In three other fast growing industries, namely, motor vehicles, chemicals, and metals and engineering, however, there was no significant

tendency, if any, for a relative shift towards the less industrialised areas, and the latter were markedly underspecialised in their production. Developments in these sectors, especially in view of their size as well as their rate of growth, therefore, worked against any possibility of an overall decentralisation of industry.

The less industrialised areas are highly specialised in the production of non-metallic mineral products and of wood products, but the rate of growth of both these sectors was almost exactly the same as that of manufacturing industry as a whole. As a result of this, and the fact that the degree of concentration in the non-metallic mineral products sector remained virtually unchanged during the 1950's, the effect of this industry on the overall locational pattern was neutral. In the wood products sector, however, there has been certain degree towards decentralisation, so that, though it grew at only an average rate, it has tended to reduce industrial concentration.

Two major sectors, food and clothing, grew at exceptionally slow rates between 1944-45 and 1959-60. Slow growth together with the fact that the rural areas are highly specialised in food production meant that developments in this sector also militated against an overall decentralisation. But in the clothing industry, in view of the fact that it is strongly located in the large centres, slow growth has tended to favour industrial decentralisation. This was reinforced by the slight relative shift of clothing manufacture towards rural areas.

In the main, then, it was developments in the textiles, paper and paper products, petroleum and coal, wood products, and clothing sectors which helped the less industrialised areas to maintain a relatively constant proportion of total employment and output in South African manufacturing industry. The major obstacles to an increasing proportion were developments in motor vehicles, chemicals, metals and engineering, and the food products sectors.

#### Materials and the Location of Industry.

Earlier in this chapter we argued that the market has been the predominant influence on the location of manufacturing industry as a whole in South Africa. This factor, however, appears to have been rather more significant in the four main industrial areas than in the rest of the country, and, in general, industry in the latter has been much more heavily dependent

on primary raw materials as inputs.

Each of the approximately 120 manufacturing sub-groups has been classified, according to the type of material inputs used,<sup>1</sup> into one of three categories viz., first stage resource users, second stage resource users, and third stage resource users, the latter industries in which being natural resources are of indirect consequence only. A brief description of these categories follows:

- (1) First stage resource users. These are sectors which have a high proportion of primary inputs relative to total material inputs.
- (2) Second stage resource users. This group consists of :
  - (a) industries which obtained a large proportion of their material inputs from the first stage resource users, and include, for example, bakeries purchasing flour from grain mills, confectioners purchasing sugar from sugar mills, and furniture manufacturers obtaining wood from sawmills.
  - (b) some industries which used a significant proportion of primary inputs even if the bulk of their manufactured inputs were not obtained from first stage resource users, e. g. iron and steel, textiles, basic industrial chemicals, and pulp and paper.
- (3) Third stage resource users. These industries are overwhelmingly dependent on inputs from industries other than the first stage resource users.

Broadly speaking, therefore, first stage resource users rely heavily on primary raw materials; the second stage resource users are less heavily dependent on primary raw materials, but nevertheless, in some cases use a significant proportion of primary inputs, or inputs from first stage resource users. As we move from the first to the third stage of

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1. See Appendix A of this study in which details of the method of classification and the specific sub-groups contained in each category is given. The classification used in this section is an adaptation of a similar analysis employed in O. D. Duncan et. al., Metropolis and Region, Johns Hopkins Press, 1960.

production, therefore, we find industries becoming increasingly dependent on manufactured intermediate goods, and less dependent on primary material inputs.

Table 6 shows that in the major industrial areas the third category provided employment for 48.0 per cent of industrial workers in those areas, the second employed 26.7 per cent, and the third 25.3 per cent. In the rest of South Africa, however, the order of importance was just the reverse of this with 60.1 per cent being employed in the first category, 25.3 per cent in the second and 14.7 per cent in the third.

Primary raw materials are, in general, subject to a greater degree of weight loss in the course of processing, than are semi-processed materials, the latter being proportionately more important in the second stage resource user category, and still more so in the case of third stage resource, than in the first stage resource user category. The greater is the degree of weight loss, the greater is the tendency for an activity to be situated at the source of raw materials. First stage resource users, therefore, tend to be more strongly oriented to materials in their selection of location than are second or third stage resource users. It appears, then, that a greater proportion of manufacturing industry in the rest of South Africa<sup>1</sup> is materials oriented, than is the case in the four major industrial regions. This is not surprising since the largest market areas will tend to attract the largest proportion of market oriented industries.

Not all first stage resource users are materials oriented in their location, however, and several of them tend to be widely dispersed<sup>2</sup> in accordance with scattered supplies of the raw material and local markets. If both the markets and the materials are widespread and the materials are heavy relative to value the industry will tend to be dispersed. Examples of this

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1. This is shown in more detail in the following chapter where the structure of manufacturing in the border areas is examined.
  2. See chapter 8 where the localisation coefficient of each sub-group is given.

TABLE 6

Analysis of Manufacturing Employment According to Stage of Production 1959-60 \*

	<u>Major Industrial Areas</u> **		<u>Rest of South Africa</u>		<u>Republic</u>	
	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>	<u>Number</u>	<u>%</u>
1st stage resource users	118,693	25.3	85,909	60.1	193,602	32.6
2nd stage resource users	125,312	26.7	31,544	25.3	156,856	26.4
3rd stage resource users	225,195	48.0	18,305	14.7	243,400	41.0
T o t a l	469,200	100.0	124,758	100.0	593,958	100.0

\* The figures do not include the motor vehicle industry, construction or electricity. For detailed list of industries included in the above categories see Appendix A

\*\* Western Cape, Port Elizabeth and Uitenhage, Durban and Pinetown, and the Southern Transvaal.

Source: Based on unpublished information kindly made available by the Bureau of Statistics.

are flour and grain mills, balanced animal feeds, sawmills, bricks and tiles, and crushed stone. In other cases, however, even where the materials are heavy, subject to weight loss, and widely dispersed, if internal economies of scale are significant, as in cement manufacture, there will tend to be smaller number of plants, each strategically placed to serve a particular regional market. In general, however, the importance of first stage resource users in the less industrialised areas, suggests that they contain a relatively large proportion of materials oriented industry, and industries which, in view of the ubiquity and weight of their raw materials, are oriented to local markets. Third stage resource users on the other hand, which are predominantly located in the major industrial areas, are much freer to site themselves close to their largest market, regardless of whether their source of material inputs happens to coincide with the market area. Second stage resource users are, by an large, in an intermediate position.

#### Some General tendencies affecting location.

The above four sections of this chapter describe the evolution of the locational pattern up to 1960, and suggests the predominant locational forces, operating in both the major industrial areas and the less industrialised parts of the country, which had brought it about. Though, as we have found, there was no discernible tendency for the overall degree of concentration to alter over a long period of time, there is obviously nothing immutable about this state of affairs, even in the absence of government intervention.

It may be useful, therefore, to ask what effect the major locational forces operating on the distribution of manufacturing activity were tending to have by 1960. We have shown above that, in terms of such factors as their relative rates of growth, the trend in the location of their capacity, and the degree of specialisation of various areas in their production, developments in certain sectors were tending to work in favour of industrial decentralisation. The question is whether there was any reason to believe that the number and significance of such industries might become great enough to dominate forces working in the other direction.

The Schumann Committee poses the question: "How will the location pattern develop in the future, and what can be done to influence it?"<sup>1</sup>

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1. op. cit., p. 73.

It answers the first part of the question by saying : "It is practically certain that due to the agglomeration advantages of the existing industrial areas, the present tendency to centralise will continue unless positive steps are taken to promote sound, economic decentralisation."<sup>1</sup> It appears, then, that the Schumann Committee did not believe that the market mechanism alone, reflecting, inter alia, changes in the proportionate contributions of different manufacturing sectors, that is, differences in their rates of growth, changes in technology, and movements in the relative prices of factors of production as between regions, would provide the incentives for a greater decentralisation of industry.

The reasoning which leads the Committee to this conclusion is, unfortunately, not spelled out. At the level of explicit explanation they seem to rely entirely upon the assertion that the tendency to centralisation will continue "due to the agglomeration advantages of the existing industrial areas."<sup>1</sup> It might be noted in passing that supporting arguments for the latter view, which implies that the agglomeration economies of the metropolitan areas are the major obstacle to decentralisation taking place without government intervention, is totally lacking. Indeed, it conflicts with their earlier remark that : "Without any doubt the most important of these (locational) factors is the market"<sup>2</sup> Agglomeration economies, and the market, as such, are logically distinct forces and it is not possible to reconcile the Committee's two, apparently contradictory, viewpoints by arguing that firms are drawn to markets only because large market areas enjoy significant external economies. This issue, relating to the nature and effect of agglomeration economies has important policy implications which are touched on in chapter 5.

The Schumann Committee's view that a continuance of the existing degree of concentration was "practically certain" without State intervention, comes after an analysis of industrial development in terms of a model involv-

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1. op. cit., p. 73.

2. op. cit., p. 69.

ing the classification of industries according to the nature of the materials and the market of manufacturing industries.<sup>1</sup> Their analysis shows that since the Second World War the manufacture of semi-processed goods for further use by secondary industry has assumed increasing significance relative to industrial output as a whole. The structural change which has taken place is reflected by the fact that the gross value of such intermediate goods production increased from 14.2 per cent of the total gross output of all industries in 1938-39 to 36.7 per cent in 1956-57 and that, in the same period, the proportion of industrial output sold to other secondary industries increased from 10 per cent to 39.3 per cent.<sup>2</sup> Events since 1960 suggest that the tendency for the proportion contributed by intermediate products to increase is continuing.<sup>3</sup>

What are the implications of this structural change for trends in the pattern of industrial location, in particular for the regional concentration of manufacturing activity? The Schumann Committee infers from the increasing importance of intermediate goods producers that "any policy of decentralisation will have to be aimed at these industries". It is, indeed, obvious that if one significant group of industries is growing considerably faster than industry as a whole, success in achieving substantial decentrali-

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1. The Schumann Committee's system of materials classification is not the same as that which we employed earlier in this chapter, and in addition they take into account the type of market. It is most unfortunate that the Schumann Committee neither gives an exhaustive list of the items included in each of its categories, nor a precise and rigorous statement of the criteria used by them in classifying industries according to type of materials and market.
  2. Schumann Committee, p. 69.
  3. See G. Marais, 'The Development of Manufacturing Industry Since 1960,' Statistical Year Book, 1966 (Compiled by the Bureau of Statistics), pp. 15-20.

sation of industry depends a good deal on whether producers in this group can be persuaded to establish in the locations preferred by the Government. What is more interesting perhaps, is whether this structural change, as such, tends to favour greater decentralisation without Government intervention. The Schumann Committee did not expressly deal with this question but the remark from their report, mentioned at the beginning of the preceding paragraph, implies that they did not think so.

It may, however, be worth while investigating the implications of the growth of intermediate goods production a little further. At the beginning of the period of rapid progress in this category South African manufacturing consisted very largely of consumer goods production based on South African primary products and imported semi-processed goods, and such non-consumer goods output as there was, was mainly directed towards the needs of mining and agriculture, the two most notable examples being explosives and fertilizers. The location of manufacturing in general was strongly oriented to either primary raw materials in the case of markedly weight losing materials, or to final consumer markets, or to imported semi-processed goods. The market, however, was the predominant influence and consequently manufacturing industry became concentrated in the large urban areas where the demand for consumers goods was greatest.

The size of the country's market for many intermediate goods is not large enough at the start to justify their production domestically, but as the country develops a process involving forward and backward linkage, such as that described by Hirschman,<sup>1</sup> leads to the production of manufactured intermediates. This may account for the particularly rapid rate of growth of the intermediates goods sector in South Africa in recent years. Import replacement was the major force behind the economic growth of South Africa in the period 1947-1957.

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1. A.O. Hirschman, The Strategy of Economic Development (New Haven, Yale University Press,) 1960, pp. 103-104.

With the exception of explosives and fertilizers which developed to meet the requirements of mining and agriculture respectively, other non-consumers goods production developed rather late. For instance, the iron and steel industry made significant progress only after the middle thirties; textiles grew most rapidly in the immediate post-war years; other basic industrial chemicals (apart from explosives and fertilizers) in the late 'fifties; and pulp, paper and paperboard in the early 'fifties. In the early stages of some of these (e. g. textiles, paper and chemicals), the proportion of imported materials was high but is gradually being replaced by local materials. Furthermore, an increasing proportion of South Africa's requirements from these sectors is being produced locally.

What effect on the geographical distribution can we expect these developments to have? It is evident that by 1959-60 at least they had not induced any significant change in the overall degree of concentration, though there are signs<sup>1</sup> that the proportionate contribution of the border areas may have increased slightly between 1956-57 and 1959-60.

Intermediate goods producers may be divided, following the Schumann Committee's procedure,<sup>2</sup> into two broad categories depending on the type of materials used: (a) basic raw material (i. e. primary product) processors (b) intermediate (i. e. semi-processed) raw material processors. Like all users of primary products, we should expect the production of intermediate goods of the first type to be more closely tied to sources of materials than firms using semi-processed inputs. There are two principal reasons for this :

- (i) Primary resource inputs tend to be more heavily weight losing than intermediate manufactured goods in the process of production.
- (ii) Firms processing primary inputs tend to have a smaller range of inputs than those using manufactured intermediates.

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1. Mentioned in the next chapter.

2. op. cit., p. 68.

With reference to the United States in the early 'forties, it was said that "only 20 per cent of the industries covered by the Census of manufacturers are direct processors of basic raw materials", but the same study<sup>1</sup> adds that since most of these use mainly one or two materials, the locational pull towards sources of the predominant materials in this group is on the whole especially powerful when weight loss is involved.

The smaller is the weight loss, the stronger is the pull of the market. If the market is point-form (i. e. spatially concentrated) the attraction of the market is greater than if it is multi-form. Since the market is not generally located in the less developed areas, however, if intermediate goods producers do choose locations in such areas, it will be because they are materials oriented. It is evident already that the development of certain sectors like pulp and paper, basic metals and chemicals is resulting in significant growth outside of the main industrial areas. But this is due solely to the fact that economically exploitable supplies of the required raw materials are available in the rural areas, and that significant parts of these industries tend to be materials oriented. There is nothing in the nature of intermediate goods based on primary raw materials, which indicates that their production will necessarily be more dispersed than that of other manufactured goods, and the prospects for such industries in the less developed areas depend mainly on whether the required materials are present there. It may be, however, that since potentially exploitable natural resources do tend to be more widely dispersed than markets, the rural areas will tend to experience more rapid industrial growth if the production of manufactured goods based on domestically produced raw materials increases as a proportion of total manufacturing output. As was noted above, however, relatively few intermediate goods producers are direct processors of raw materials.

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1. National Resources Planning Board, Industrial Location and National Resources, December, 1942. Washington, United States Government Printing Office, 1943.

Production of the second class of intermediates, those using mainly other semi-processed goods, on the other hand, tends to be much more strongly oriented to markets. In the first place, as we have noted, the proportionate weight loss of the material inputs is much smaller. Secondly, as one writer points out, "industries using partly manufactured goods tend to use many different materials. Industries of this type are therefore rarely located with special reference to any particular material; if the supply of such goods is secured largely from a single area the industry may be attracted there. These industries therefore tend to settle in large industrial centres which offer advantages both for the assembly of the raw materials and the distribution of the product. When the product is more bulky than the materials from which it is made, the pull on the industry of the market is likely to be especially strong. The greater the number of materials used, the greater is the likelihood that the point of minimum transport costs will be close to the market or at some intermediate point between materials and markets rather than adjacent to any particular materials".<sup>1</sup>

In fact, as we shall see in the next chapter, at the end of 1960 there were very few firms in the border areas oriented to supplies of semi-processed materials. The expansion of intermediate goods output based on semi-processed materials, thus, tends to reinforce the tendency towards regional concentration. Intermediate goods production also strengthens the linkage effects between industries and so increases the advantages of clustering.

Certain producers of intermediates may well become oriented to supplies of semi-processed goods available in the rural areas, but these are in the main likely to be in industries in which it is difficult, for either technical reasons or because of economies of integration and scale, to separate one stage of production from another. For instance, the manufacture of paper from pulp, and of steel from pig-iron, is usually carried on in

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1. National Resources Planning Board, Industrial Location and National Resources, December 1942, Washington, United States Government Printing Office, 1943.

the same plant because of economies of scale and integration; and a number of producers of chemical products are tied to the SASOL plant at Sasolburg for technical reasons. But the scope for the economical location of intermediate goods producers in rural areas depends, even in these cases, on the availability of primary product inputs.<sup>1</sup>

This state of affairs, however, may change as the size of markets in other parts of the country expands, and perhaps also as the proportion of manufactures exported increases. Once the size of the market reaches a certain critical level, it will become increasingly possible for market oriented firms of sufficient size to overcome technical indivisibility and other disadvantages of small size and so develop in significant numbers outside the main industrial areas. Perloff asks: "Is it not possible, for example, that California's dramatic showing is partly accounted for by the fact that it had arrived at a point in its development where important intermediate supply and market functions make some operations feasible which were formerly not economic".<sup>2</sup>

The main conclusion of this section so far is that there is nothing in the nature of intermediate goods, as such, which enables us to say with any degree of confidence that, as a result of the structural change taking place, the overall location pattern is likely to change in one particular way rather than another. In particular, there are no grounds for believing that the country was about to witness a spontaneous and significant decentralisation of industry. Indeed, since the rural areas were so highly specialised

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1. Orientation to semi-processed raw materials by satellite industries presupposes that a master industry using primary inputs and producing the semi-processed materials is already established. See Hirschman, op cit, p 102, for discussion of the conditions necessary for creation of a satellite industry through forward and backward linkage.
  - 2 H. S. Perloff, E. S. Dunn, E. E. Lampard and R. F. Muth, Regions Resources and Economic Growth, Baltimore, John Hopkins Press, 1960, p. 396. Perloff's concept of a threshold is reminiscent of Hirschman's discussion op. cit., 102-103.

in the food products sector, the continuing decline in the latter is an important factor in the perpetuation of regional concentration.

We have referred in this section only to materials and market oriented producers of semi-processed goods. Some of these industries, like textiles, however, are strongly influenced by labour costs, and since the latter tend to be lower in the rural areas than in the larger cities, a rapid rate of growth in the production of goods of this sort tends to favour decentralisation. The influence of the materials source is slight in such industries since weight loss is negligible, and its value high in relation to weight. It should be noted, however, that it is the labour intensity of such industries and the lightness of their materials, rather than the fact, as such, that they produce semi-processed goods, which favours their establishment in the less industrialised areas.

While, as was pointed out above, the Schumann Committee was pessimistic about the prospects of industrial decentralisation taking place without government intervention, it appears that they were very hopeful that the growing importance of intermediate goods production would increase the susceptibility of private locational decisions to official inducements. In particular, they discuss the effects of manipulating the railway rating structure.

The Committee, on the basis of a questionnaire survey and a cost analysis which it carried out concludes that "the industries which could possibly be affected by the railway rates structure as far as the location of industries is concerned, are confined to the manufacturers of basic and intermediary raw materials, with the exception of the so-called footloose industries."<sup>1</sup> The significance of the apparent decisiveness of the rating structure in these basic and intermediary raw material processors, is that, since they were expected to contribute a large proportion of additional manufacturing output, "The railway rates structure will in time to come probably play a more important part in industrial location than in the past".<sup>2</sup>

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1. op. cit., pp. 83-84.

2. ibid., p. 84.

It goes without saying that the locational decisions of a very considerable proportion of manufacturing concerns could be influenced by appropriate changes in the rating structure, provided these were sufficiently large. The implication of the Committee's conclusion, therefore, is presumably that at least part of the intermediate goods industries are fairly sensitive to changes in the rating structure, so that relatively moderate manipulations of the structure, as it applies to them, would have a (favourable) decisive effect on their choice of location. The growing relative importance of the intermediate goods industries implies, according to the Schumann Committee's reasoning, then, that manufacturing in the aggregate is tending to become more easily 'divertible', and that the authorities would be advised to concentrate on these industries in their efforts to decentralise industry. This issue is taken up again later in this study. In the present context, it is sufficient to note that the ability to divert an industry does not imply that these industries would have become 'decentralised' without intervention, nor that such diversion, if carried out, would necessarily be conducive to economic efficiency. The discussion of the present and preceding paragraphs, therefore, does not provide any clear indication that the growth of intermediate goods industries was tending through market forces alone, to favour industrial decentralisation.

In conclusion, three other trends which have some interest for the location of industry warrant mention. The first concerns the long term decline in the ratio of imported material inputs to the total value of materials used by South African manufacturing industry. As Table 7 shows, the South African proportion of industrial raw materials rose from 49.2 per cent in 1924-25 to 66.4 per cent in 1955-56. This percentage rose sharply during the Second World War, but dropped equally sharply immediately afterwards when the supply position returned to something closer to normal. From 1948-49, however, the proportion of raw materials obtained from domestic sources increased steadily from 55.5 per cent to 66.4 per cent in 1955-56.<sup>1</sup> As one might have expected, the South African content of raw

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1. The last year for which the writer has been able to obtain comparable statistics.

TABLE 7Source of Raw Materials Used in Manufacturing Industry

	<u>All Materials</u>		<u>Imported Materials</u>		<u>South African Materials</u>	
	<u>R'000</u>	<u>%</u>	<u>R'000</u>	<u>%</u>	<u>R'000</u>	<u>%</u>
1924-25	71,756	100.0	36,466	50.8	35,466	49.2
1934-35	119,732	100.0	53,944	45.1	65,788	54.9
1939-40	202,364	100.0	91,176	45.1	111,188	54.9
1944-45	349,684	100.0	122,659	35.1	233,836	64.9
1948-49	662,712	100.0	294,950	44.5	367,762	55.5
1953-54	1,226,314	100.0	443,314	35.5	783,000	62.6
1954-55	1,359,346	100.0	473,264	34.8	908,232	65.2
1955-56	1,432,614	100.0	482,002	33.6	950,610	66.4

Source: Compiled from information kindly made available by the Bureau of Statistics.

materials was somewhat higher at the ports, which have attracted a large proportion of the industries based on imported materials, than in the interior. In 1953-4 the percentage of total materials used which was obtained from South African sources was as follows: Southern Transvaal 55.4, Durban-Pinetown 47.4, and Port Elizabeth-Uitenhage 36.4.

This process, of course, reflects very largely the substitution of South African made for imported semi-processed goods. Its effect is to reduce the attractiveness of the ports<sup>1</sup> as sites for the production of a wide range of goods, and to favour inland locations, especially the Southern Transvaal which now supplies the bulk of the country's steel requirements.<sup>2</sup> In so far as import substitution results from the use of raw materials in the smaller centres the latter will also continue to expand their manufacturing activity, though this will not necessarily be accompanied by a lessening of the degree of regional concentration.

There has been a tendency for manufacturing industry to contribute an increasingly large percentage of South Africa's exports. This tendency has been especially marked since the late 1930's, and manufactured exports, increased from 3.2 per cent of total exports, including gold, in 1936-37 to 18.0 per cent in 1956-57.

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1. See for instance the discussion of certain firms in East London in the following chapter.
  2. The story of the early development of the explosives industry provides a particularly interesting insight into the process, and of why the Southern Transvaal now dominates S.A. industry. See H. Schauder, "The Chemical Industry in South Africa Before Union", S.A. J.E., December 1946.

TABLE 8

South African exports by main categories

	Products of agriculture, forestry and fishing		Minerals and metals excluding gold		Gold		Manufactured goods	
	R. m.	% of total	R. m.	% of total	R. m.	% of total	R. m.	% of total
1936-7	47.8	(20.1)	16.6	(7.0)	165.6	(69.7)	7.6	(3.2)
1952-3	207.0	(23.4)	210.6	(23.8)	282.2	(31.9)	184.8	(20.9)
1954-5	239.4	(25.2)	192.8	(20.3)	333.4	(35.1)	184.2	(19.4)
1956-7	295.0	(24.7)	286.6	(24.0)	397.4	(33.3)	215.0	(18.0)

Source: Commission of Enquiry into Policy Relating to the Protection of Industries, U.G. 36/1958, p. 46.

The growing percentage contribution of manufacturing industry to total exports is due in part to the fact that output in the manufacturing sector is developing more rapidly than in other sectors of the economy. But it is also due to the fact that an increasing proportion of the gross output of manufacturing industry is being exported, this proportion having increased from 4.7 per cent in 1938-39 to 11.8 per cent in 1956-57.<sup>1</sup> The effect on location of this latter trend is partly in the opposite direction from that associated with the increasing importance of South African source raw materials. But in so far as a considerable part of the increase in manufactured exports has gone to Rhodesia and other countries in Southern Africa, the increase in the exported proportion of the output of manufacturing industry has not worked altogether to the disadvantage of the Southern Transvaal. The expansion of manufactured goods to the United

.../States

1. Schumann Committee, p. 69.

States, Europe and the Far East, however, will no doubt provide some incentive to production at sites, including border areas, well placed from the point of view of raw materials, in Natal and the Transvaal. The development of Richard's Bay as a harbour will probably also tend to reinforce this process.

On the basis of a different classification, namely, the International Standard Industrial Classification, manufactured exports as a proportion of total exports, including gold, declined from 28.1 per cent in 1957 to 27.3 per cent in 1964.<sup>1</sup> This appears to have been the result of a fairly rapid increase in gold exports from 425 million in 1957 to 731 million in 1964, for the proportionate contribution manufactured products to non-gold exports increased slightly during this seven year period. It is expected, however, that the production of gold will increase by only 7.1 per cent in the six years 1965-1971.<sup>2</sup> Thus we should expect the proportionate contribution of the manufacturing sector to national income and employment and also to total exports, including gold, to increase in future. The decline of the gold mining industry which is inevitable unless there is a significant increase in the price of gold, should produce conditions more favourable to a spontaneous decentralisation of industry, for two main reasons. Firstly, it should reduce the rate of growth demand in the Southern Transvaal area. Secondly, unless the ratio of exports to national income is to fall significantly, there will have to be a steady increase in the proportion of manufactured output which is exported.

Finally, it is clear that if manufacturing wage rates for Bantu rise more rapidly in the main industrial areas than in the rural areas, this

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1. Statistical Year Book 1966, Q-4 and Q 11.
  2. Economic Development Programme for the Republic of South Africa, 1966-71, p. 20.

will tend to favour decentralisation<sup>1</sup> even without government assistance. Data presented later in this study suggests that this had not happened to any significant extent up to 1960. Influx control measures if applied more severely than in the past, and changes in wage fixing methods, perhaps together with independent market forces, may very well increase the ratio of urban to rural wages in future. The general level of wages also has a bearing on the location of industry, in that if it rises more rapidly than other costs such as transport, the ratio of the wage bill to net output tends to increase, and the incentive to move to cheap labour areas is intensified, that is, the higher is the ratio of wages to total costs, the larger is the percentage reduction in total costs which results from a given percentage difference in wage rates between high and low wage areas. The subject of labour and border areas industrialisation is reserved for chapter 7.

In the above analysis, the measure of regional concentration has been the proportion of output generated in the four major industrial areas. Areas outside the latter have been lumped together as the 'rest of South Africa' or the 'less industrialised areas' or even on occasion as the 'rural areas'. But as should be clear from our discussion in chapters 1 and 2, the focus of decentralisation policy in the South African context is on the Bantu areas and centres on their periphery, the so-called border areas. Though the analysis so far provides an essential background, the really significant aspect of the locational pattern is, therefore, not the relative distribution of manufacturing capacity between the main industrial areas and the rest of the country, but the proportion of the national total situated in the border and Bantu areas. In the next chapter, then, we shall consider this aspect of industrial location, and the structure of border areas manufacturing industry, in some detail.

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1. Note that an increasing ratio of urban to rural wages, as a factor affecting location is distinct from the possibility of labour oriented industries as a proportion of total industry increasing as a result of a change in the structure of manufacturing industry.

## Chapter 4

### INDUSTRIAL DEVELOPMENT IN THE BORDER AREAS TO 1960

#### Defining the Region

An analysis of the relative importance and the structure of manufacturing industry in the border areas to 1960 would be much simplified if an exhaustive official list of places falling in this category were available. The Government, however, appears to have deliberately avoided committing itself in this way. Some general guidance is provided, however, in a statement issued by the Prime Minister on June 2, 1960. He said:

'By the concept of "border areas" is meant those localities or regions near the Bantu areas, in which industrial development takes place, through European initiative and control, but which are so situated that the Bantu workers can maintain their residences and family lives in the Bantu areas and move regularly to their places of employment. Since labour is not the only factor determining industrial location, however, and since the availability of other locational facilities, such as basic services, is indispensable, it will be necessary to include in the concept of border areas certain centres where additional provision would have to be made for the temporary housing of workers on a weekly basis.

Consequently those regions within approximately 30 miles of the Bantu areas may be regarded as border areas.'

In addition to this broad definition, specific centres are named as border areas in Schedule I of the Prime Minister's statement.

A further indication of the centres regarded as border areas is given by the annual progress reports of the Permanent Committee, which suggest that since its inception it has paid special attention to certain 'growth points' on the periphery of the Bantu areas. Some of the more notable of these are Rosslyn (12 miles north of Pretoria and three miles from a Bantu area); Phalaborwa in the Eastern Transvaal; the Natal area along the railway line and main road from Durban to Johannesburg,

including centres like Pietermaritzburg, Howick, Mooiriver, Estcourt, Ladysmith, Klipriver and Newcastle; Hammarsdale, situated about 30 miles from Durban; and, in the Eastern Cape, the Ciskei area in which the principal centres are East London, King William's Town and Queenstown. In addition there are centres like Rustenburg, Pietersburg, Waterberg, Waterpoort and Tzaneen in the Transvaal, Vryburg in the Cape and several smaller centres in Natal which appear to be regarded by the Permanent Committee as minor growth points.

It is noteworthy that substantial parts of the magisterial districts in which these centres lie are Bantu areas proper, and, since magisterial districts are the smallest regional units for which information is available from the Bureau of Statistics, it is not possible to separate the statistics for border areas manufacturing industry from those for the Bantu areas. It has been decided, therefore, to combine the statistics for border and Bantu in the ensuing analysis. Since one of the principal aims of industrial decentralisation policy in South Africa is the containment of the Bantu population within the border and Bantu areas, this procedure seems to be particularly appropriate. In any case, manufacturing industry in the Bantu areas is insignificant, so that in effect this technical difficulty is negligible. Bearing in mind the definition given by the Prime Minister in 1960, and the areas well known to have been treated as border areas by the Permanent Committee, a list has been compiled of the magisterial districts which will be regarded as constituting the border and Bantu areas for the purposes of this study.<sup>1</sup>

#### The Contribution of Border and Bantu Areas to Manufacturing

According to the statistics discussed in the previous chapter, areas other than the four main industrial areas contributed 18.6 per cent of gross manufacturing output in 1956-57 and 20 per cent in 1959-60.

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1. See Appendix B of this study.

Since the corresponding figures for the border and Bantu areas, <sup>1</sup> given in table 9 below, were 10.0 and 10.6 per cent respectively, it appears that these areas produced slightly over half of the gross output generated outside of the four main industrial areas. Though statistics based on a mere three year period should be treated with caution, <sup>2</sup> it also appears that the rates of growth in the border areas, between 1956-57 and 1959-60, of employment (5.5 per cent), gross output (21.7 per cent) and net output (22.7 per cent) were rather higher than in the country as a whole (for which the corresponding figures were, 1.5, 12.9 and 14.9 per cent). Thus, as table 9 shows the border areas increased their proportionate contribution to the national total both in terms of employment and output.

The structure of manufacturing in the border areas will be examined in more detail in the following sections, but four features, emerging from the 1956-57 figures in table 9, may be noted here:

(a) The average size of industrial establishments, measured in terms of net output per establishment, in the border areas, was smaller (R70.2 thousand) than in the main industrial (R112.8 thousand).

(b) Net output per employee in the border areas (R1154.2) was also lower than in the major industrial areas.

(c) The border areas produced a larger proportion of total gross output than of net output. This is due to the well known tendency for indirect inputs (labour, profits, depreciation etc.) to be a smaller proportion of gross output in primary raw materials processing industries which are dominant in the border areas, than in the higher stages of production.

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1. In future when referring to the statistics based on both border and Bantu areas, we shall speak only of "border areas", since the Bantu areas contain a negligible proportion of industry in relation to border areas.
  2. Separate industrial statistics for the border and Bantu areas can be compiled from Bureau of Statistics data only for the years 1956-57 and 1959-60.

TABLE 9

Manufacturing Industry in the Border and Bantu Areas Compared with  
Major Industrial Areas: Principal Statistics 1956-57 and 1959-60

	1956-57		1959-60		1956-57		1959-60		1956-57		1959-60	
	No. of establishments	%	Total employment	%	Gross output R'000	%	Net output R'000	%	Salaries & wages R'000	%	Gross output R'000	%
Border and Bantu Areas	1,211	12.6	73,714	11.7	223,808	10.0	85,080	9.4	32,796	7.3	272,294	10.6
Four main industrial regions*	6,630	69.0	491,181	77.8	1,823,796	81.4	752,824	83.0	372,776	83.5	2,058,672	79.9
Republic of South Africa	9,611	100.0	630,991	100.0	2,241,202	100.0	906,658	100.0	446,208	100.0	2,575,556	100.0
Border and Bantu Areas	1,344	12.6	77,736	12.2	272,294	10.6	104,358	9.9	37,672	7.5	1,057,474	100.0
Four main industrial regions*	7,392	69.4	498,531	78.5	2,058,672	79.9	864,956	81.8	430,428	85.3		
Republic of South Africa	10,656	100.0	635,431	100.0	2,575,556	100.0	1,057,474	100.0	504,626	100.0		

\* Western Cape, Port Elizabeth/Uitenhage, Durban/Pinetown, Southern Transvaal (including Pretoria)

Source: Compiled from unpublished information kindly made available by the Bureau of Statistics.

(d) The ratio of salaries and wages to net output was only 38.5 per cent in the border areas compared with 49.5 per cent in the metropolitan areas. This does not necessarily mean that in terms of physical output the manufacturing industry in the border areas is less labour intensive than in the main industrial areas. It is true, as we shall see later in this study,<sup>1</sup> that the idea that low Bantu labour costs tend to produce a manufacturing structure in which industries using relatively large amounts of Bantu labour, and adopting Bantu labour intensive techniques, are proportionately more significant than in areas where the costs of Bantu labour are higher, is probably exaggerated.<sup>2</sup> The availability of natural resources and geographical situation are probably more important influences than labour costs, on the location of industry.<sup>3</sup> Nevertheless, the lower salary and wage bill in relation to net output is, in large measure, probably due simply to lower wage rates and not to the use of less intensive use of labour in the border areas.

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1. Chapter 8.
  2. See for instance D. Hobart Houghton (Editor), Economic Development in a Plural Society, Cape Town, 1960, p. 140: "... East London industry was becoming more capital-intensive and less labour-intensive than it had been. This is of interest since one of the alleged advantages of East London as a site for industry is that, situated as it is, close to Native reserves, it enjoys abundant supplies of cheap Native labour". See also our discussion of East London in this chapter.
  3. As is shown in Chapter 8.

Proportionate Contribution to Border Areas Industrial Activity by Province

As table 10 shows, Natal contributed by far the largest share of the total manufacturing activity of the border areas, with 59.2 per cent of the gross output in 1956-57, compared with the Cape 25.0 per cent, Transvaal 13.4 per cent and the Orange Free State 2.2 per cent. It is of considerable interest, too, that the rate of growth of industry in the Natal border and Bantu areas was considerably greater than in the other provinces, so that its percentage contribution to gross output rose to 62.8 per cent in 1959-60, whereas the Cape's fell to 22.6 per cent, and the Transvaal's remained virtually unchanged.<sup>1</sup> The percentage increases in gross output implied by table 10 for the period 1956-57 to 1959-60, are 28.9 for Natal, 10.8 in the Cape, 23.7 per cent in the Transvaal, and 22.4 per cent in all border and Bantu areas together.

If we consider the distribution of border areas employment between the provinces, Natal still emerges as predominant, but not to as great a degree as it was in terms of output, and the rate of growth between 1956-57 and 1959-60 was, as we would expect, again greater in Natal. Natal, the Cape and the Transvaal provided 51.8, 25.8 and 20.4 per cent of total border areas employment in 1956-57, the corresponding figures for 1959-60 being 54.2, 23.8 and 21.3. It is noteworthy, however, that employment in each of these areas increased

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1. According to the statistics the contribution of the Orange Free State fell from 2.2 to 1.3 per cent, but the writer suspects this is due to the incorrect regional classification of a textiles factory into the Western Cape, in the data from which he compiled this table.

TABLE 10

## Border and Bantu Areas Manufacturing Industry by Province 1956-57 and 1959-60

	GROSS OUTPUT			MATERIALS USED		NET OUTPUT		TOTAL EMPLOYMENT		SALARIES & WAGES	
	No. of establishments	R'000	Per cent of Border & Bantu areas total	R'000	Per cent of Border & Bantu areas total	R'000	Per cent of Border & Bantu areas total	No.	Per cent of Border & Bantu areas total	R'000	Per cent of Border and Bantu areas total
<u>1956-57</u>											
Cape Areas	386	55,874	25.0	35,248	25.4	20,816	24.4	19,053	25.8	907	27.6
Natal areas	483	133,160	59.5	81,282	58.6	51,878	60.9	38,162	51.8	18,896	57.6
Transvaal areas	307	29,930	13.4	19,382	14.0	10,555	12.4	15,002	20.4	3,974	12.1
O.F.S. areas	35	4,848	2.2	2,880	2.1	1,966	2.3	1,497	2.0	892	2.7
All Border & Bantu areas	1,211	223,812	100.0	138,792	100.0	85,210	100.0	73,714	100.0	32,796	100.0
<u>1959-60</u>											
Cape areas	423	61,018	22.4	38,580	23.0	22,506	21.6	18,510	23.8	10,108	26.8
Natal areas	541	170,972	62.8	104,366	62.1	66,606	63.8	42,105	54.2	22,332	59.3
Transvaal areas	345	36,754	13.5	22,916	13.6	13,836	13.3	16,551	21.3	4,948	13.1
O.F.S. areas	33	3,556	1.3	2,150	1.3	1,408	1.3	570	0.7	286	0.8
All Border & Bantu areas	1,342	272,300	100.0	168,014	100.0	104,356	100.0	77,736	100.0	37,674	100.0

Source: Compiled from unpublished information kindly made available by the Bureau of Statistics.

considerably more slowly<sup>1</sup> than gross output.

The distribution of border areas employments between provinces, and their relative rates of growth, are of considerable significance for border industries policy, especially in so far as the latter is motivated by the desire for racial separation. The proportion of total employment in each of the provinces, compares with the proportionate distribution of the border and Bantu areas African population as follows:

	<u>Natal</u>	<u>Cape</u>	<u>Transvaal</u>
Percentage of border and Bantu areas employment 1959-60	54.2	23.8	21.3
Percentage of border and Bantu areas African population in 1960. <sup>2</sup>	32.5	37.2	29.0

While the Cape border and Bantu areas had a larger African population than the Natal areas, they provided less than half as many jobs in manufacturing industry. The Transvaal border areas seem to be rather better off than the Cape in terms of industrial jobs relative to African population, but compared with Natal, the Transvaal is clearly in a very poor position. It is highly improbable that the impression this gives of the economic position of the Cape and Transvaal is improved when account is taken of differences in agricultural productivity. The population density of the Transkei and Ciskei is as great as that of the Natal Bantu areas, and considerably greater than that of the Transvaal.<sup>3</sup>

The reasons for the faster rate of growth of manufacturing employment, in the Natal border areas, seems to lie, basically, in

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1. In the Cape, there was an actual decline in employment for some reason which the writer has been unable to discover.
  2. Based on 1960 Population Census. Magisterial districts included are as given in Appendix B of this study.
  3. See Tomlinson (Summary), p. 49.

their better natural resource endowment, and more favourable geographical position. The Eastern Cape border areas on the other hand are very poorly endowed with processable raw materials, and are considerably further from the major metropolitan markets of the country than are either the Natal or the Transvaal areas. The low ratio of industrial employment to population in the Cape border areas, compared with Natal especially, and the poorer prospects for these areas, as suggested by the rates of growth discussed above, posed a serious problem for the authorities when they began in earnest to implement the border industries policy. The problem, in essence, is that, if the aim of the border industries policy is either to redistribute income to the poorest section of the population or to bring about racial separation under a system of independent Bantustans, additional border areas manufacturing employment must be distributed between provinces roughly in proportion to the numbers seeking employment, if it is to be effective. A rapid rate of growth, and relative prosperity in Natal will not be of much value in furthering the aims of the policy in the Transkei and Ciskei border areas.

#### The Composition of Total Border and Bantu Areas Manufacturing Output

Tables 11 and 12 provide a breakdown of the gross output of manufacturing industry in the border and Bantu areas in 1956-57 and 1959-60, together with comparable figures for the four main industrial areas, the rest of South Africa (including the border and Bantu areas), and the Republic as a whole. The six largest percentage contributions to gross output in the border and Bantu areas in 1959-60, were made by food (48.6), pulp, paper and paperboard (7.0), and textiles (6.4), wood and wood products (4.9), chemicals (4.8), and clothing (4.6). These six sectors together contributed 83.0 per cent of the border and Bantu areas gross manufacturing output.

TABLE 11

Gross Manufacturing Output According to Industrial Class and Region 1956-57

Industry class	Bantu & border areas		% of total output in Border & bantu areas	% of Republic class total	Rest of S.A. including border & Bantu areas'				Four major industrial regions				Total Republic		
	No. of estabs.	Gross output R'000			No. of estabs.	Gross output R'000	% of total output	% of Republic class total	No. of estabs.	Gross output R'000	% of total output	% of Republic class total	No. of estabs.	Gross output R'000	% of total output
1. Food	369	102,618	45.9	20.2	928	206,488	49.5	40.7	552	300,774	16.5	59.3	1,480	507,262	22.6
2. Beverages	54	4,124	1.8	6.3	157	14,154	3.4	21.6	115	51,296	2.8	78.4	272	65,450	2.9
3. Tobacco	2	*	*	*	23	3,932	2.1	24.1	14	28,200	1.5	75.9	37	37,132	1.7
4. Textiles	18	16,138	7.2	15.5	29	23,142	5.5	22.2	143	81,240	4.5	77.8	172	104,382	4.7
5. Footwear and clothing	104	11,506	5.1	5.7	286	19,018	4.6	9.4	1,285	182,478	10.0	90.6	1,571	201,496	9.0
6. Wood and cork	186	14,320	6.4	26.0	281	19,694	4.7	35.8	303	35,350	1.9	64.2	584	55,044	2.5
7. Furniture	30	1,062	0.5	2.2	87	2,902	0.7	5.9	375	46,364	2.5	94.1	462	49,266	2.2
8. Paper and paper products	8	*	*	*	11	13,490	3.2	17.9	111	61,768	3.4	82.1	122	75,258	3.4
9. Printing & allied industries	55	2,808	1.3	4.1	143	8,074	1.9	11.8	373	60,318	3.3	88.2	516	68,392	3.1
10. Leather & leather products	8	2,642	1.2	14.9	25	4,668	1.1	26.3	62	13,054	0.7	73.7	87	17,722	0.8
11. Rubber products	2	*	*	*	7	7,360	1.8	62.1	15	4,500	0.2	37.9	22	11,860	0.5
12. Chemicals	25	11,736	5.2	5.4	40	20,368	4.9	9.4	316	195,584	10.7	90.6	356	215,952	9.6
13. Products of petroleum & coal	6	3,202	1.4	6.0	10	9,368	2.2	17.5	24	44,142	2.4	82.5	34	53,510	2.4
14. Non-metallic mineral products	99	8,236	3.7	7.2	308	30,172	7.2	26.4	407	83,954	4.6	73.6	715	114,126	5.1
15. Basic metal industries	5	6,990	3.1	4.2	16	10,808	2.6	6.4	100	156,796	8.6	93.6	116	167,604	7.5
16. Metal products	49	4,258	1.9	2.0	135	9,050	2.2	4.3	845	200,208	11.0	95.7	980	209,258	9.3
17. Machinery	21	2,016	0.9	2.1	65	4,656	1.1	4.9	286	90,992	5.0	95.1	351	95,648	4.3
18. Electrical machinery	47	5,078	2.3	5.3	134	7,112	1.7	7.5	554	88,136	4.8	92.5	688	95,248	4.2
19. Transport equipment	54	364	0.2	1.1	185	1,778	0.4	5.4	67	31,214	1.7	94.6	252	32,992	1.5
20. Miscellaneous industries	21	1,634	0.7	3.4	35	1,928	0.5	4.0	441	46,396	2.5	96.0	476	48,324	2.2
21. Personal services	48	1,246	0.6	8.2	118	2,954	0.7	19.3	200	12,324	0.7	80.7	318	15,278	0.7
Residual unclassified		23,830							62	8,708	0.5				
Total	1,211	223,808	100.0	10.0	1,716	417,406	100.0	18.6	6,630	1,823,796	100.0	81.4	9,611	2,241,202	100.0

TABLE 12

Gross Manufacturing Output According to Industrial Class and Region 1959-60

1. Food	390	133,130	48.9	23.0	950	246,928	47.8	42.6	580	332,774	16.2	57.4	1,530	579,722	22.5
2. Beverages	58	5,639	2.1	6.7	173	20,048	3.9	23.9	120	63,682	3.1	76.1	293	83,730	3.3
3. Tobacco	2	*	*	*	21	5,160	1.0	13.2	16	31,552	1.6	86.8	37	39,028	1.5
4. Textiles	17	17,568	6.4	14.2	29	28,362	5.5	22.9	161	94,852	4.6	77.1	190	123,820	4.8
5. Footwear and clothing	115	12,467	4.6	5.9	314	21,136	4.1	10.0	1,360	191,186	9.3	90.0	1,674	212,324	8.2
6. Wood and cork	191	13,140	4.9	24.5	304	19,234	3.7	35.4	317	35,036	1.7	64.6	621	54,270	2.1
7. Furniture	26	979	0.4	1.9	89	2,686	0.5	5.3	420	24,126	2.3	94.7	509	50,938	2.0
8. Paper and paper products	9	*	*	*	12	19,306	3.7	20.7	122	74,168	3.6	79.3	134	93,472	3.6
9. Printing & allied industries	63	3,642	1.3	4.7	148	9,472	1.8	12.2	399	68,368	3.3	87.8	547	77,840	3.0
10. Leather & leather products	5	3,335	1.2	16.2	15	3,474	0.7	16.9	77	17,076	0.8	83.1	92	20,552	0.8
11. Rubber products	1	*	*	*	2	6,180	1.2	47.4	31	*	*	*	33	13,024	0.5
12. Chemicals	31	13,097	4.8	5.4	51	26,030	5.0	10.7	365	216,892	10.5	89.3	416	242,942	9.4
13. Products of petroleum & coal	4	*	*	*	7	20,086	3.9	27.2	35	53,840	2.6	72.8	42	73,924	2.9
14. Non-metallic mineral products	115	9,059	3.3	6.8	337	37,282	7.2	27.8	435	96,340	4.7	72.2	772	134,192	5.2
15. Basic metal industries	7	10,254	3.8	5.0	17	16,592	3.2	8.1	105	187,174	9.1	91.9	122	204,208	7.9
16. Metal products	61	5,342	2.0	2.2	148	11,188	2.2	4.7	960	228,302	11.1	95.3	1,108	239,492	9.3
17. Machinery	28	2,468	0.9	2.2	91	7,290	1.4	6.5	335	104,744	5.1	93.5	426	112,032	4.3
18. Electrical machinery	72	5,218	1.9	4.7	183	8,824	1.7	7.9	647	102,832	5.0	92.1	830	111,148	4.3
19. Transport equipment	51	437	0.2	1.5	169	1,554	0.3	5.2	69	28,230	1.4	94.8	238	29,786	1.2
20. Miscellaneous industries	30	1,830	0.7	3.0	39	2,468	0.5	4.0	539	58,422	2.9	96.0	578	61,206	2.4
21. Personal services	68	1,501	0.6	8.4	165	3,584	0.7	20.0	299	14,290	0.7	80.0	464	17,906	0.7
Residual unclassified		31,183								11,132					
Total	1,344	272,294	100.0	10.6	3,264	516,884	100.0	20.1	7,392	2,058,672	100.0	79.9	10,656	2,575,556	100.0

\* Denotes that figure has been included in the 'residual unclassified' in order to comply with the disclosure regulations of the Bureau of Statistics.

Source: Compiled from unpublished information kindly supplied by the Bureau of Statistics.

Industrial classes in which the border and Bantu areas increased their proportionate contribution to the national totals between 1956-57 and 1959-60 were food, basic metals, clothing, metal products and the very small leather goods sector, while the position in the chemicals sector remained completely unchanged. In addition there are certain sectors for which separate figures for the border and Bantu areas cannot be given because of the Bureau of Statistics' disclosure regulations. They are tobacco, paper and paper products, rubber products and products of petroleum and coal. Together their contribution to gross output for the country as a whole in these sectors fell from 15.2 to 14.2 per cent. Within this group the percentage contribution of the border and Bantu areas to the paper products sector, seems to have risen markedly for, as is shown in tables 11 and 12, the share of the rest of South Africa rose from 17.9 to 20.7 per cent, and the most significant developments in this sector took place in the border areas. But, due to significant expansion at Sasolburg, the relative importance of the border areas in the products of petroleum and coal sector fell very sharply, so that the percentage contribution of the border areas in the four industries mentioned, taken together, fell. This underlines the fact referred to earlier, that, though development of places like Sasolburg tends to reduce the proportion of industry in the four main industrial areas, it actually militates against decentralisation, in the sense of an increasing proportion of industrial capacity being sited in the border areas.<sup>1</sup>

Gross manufacturing output in the border and Bantu areas increased by R48.5 million between 1956-57 and 1959-60. The great bulk of this increase (62.9 per cent) represented growth in the

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1. The fact that the proportion of the chemicals industry situated in the four major industrial areas fell, while the border areas contribution remained unchanged is explained in the same way.

production of food products, and the second largest proportionate contribution to this increase was made by the basic metals industry (6.7 per cent), followed by paper and paper products.<sup>1</sup> Of the other manufacturing sectors fairly significant percentage contributions to the total increase were made by beverages (3.1), textiles (2.9), chemicals (2.8) and metal products (2.2).

#### Border and Bantu Areas Gross Output by Industrial Class and Province

The class totals for the border areas are presented for each province<sup>2</sup> in tables 13 and 14 below. A significant proportion of the food output is related to ubiquitous activities<sup>3</sup> such as bakeries, dairy products, and flour and grain mills, producing more or less exclusively for regional requirements, but there is also some degree of specialisation in products distributed over a wider area. For instance, in Natal there were sugar mills at Inanda, Lower Tugela, Lower Umfolozi, Umzinto and Hlabisa; large milk products factories at Bergville, Estcourt, Klipriver, Dundee and Newcastle; and meat products at Mooi River and Estcourt. There were also confectionery factories of significant size at Dundee and Wasbank in Natal. In the Cape, significant producers of dairy products were located at Kuruman, Mafeking, and Vryburg, and one of the country's largest confectionery firms was in East London.

Textiles, with about seven per cent of manufacturing output, compared with the almost fifty per cent contributed by food products firms, is the second largest manufacturing sector in the border areas. The Cape border areas, largely due to plants at East London and King

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1. Percentage not available because of the Bureau of Statistics disclosure regulations.
  2. The disclosure regulations of the Bureau of Statistics make it necessary to combine the figures for the Transvaal and Orange Free State.
  3. See chapter 8 for fuller discussion of these proportions and their importance in relation to total manufacturing output.

TABLE 13

Gross manufacturing output in the Border and Bantu areas according to industrial class 1956-7

Industry Class	Cape areas		Natal areas		Transvaal & O.F.S.		All Border and Bantu areas	
	No. of establishments	Gross output R	No. of establishments	Gross output R	No. of establishments	Gross output R	No. of establishments	Gross output R
1. Food	117	27,112,392	137	60,673,040	115	14,833,218	369	102,618,650
2. Beverages	15	662,218	25	2,830,376	14	631,452	54	4,124,046
3. Tobacco	-	-	-	-	2	*	2	*
4. Textiles	8	8,322,012	5	5,243,626	5	2,573,050	18	16,138,688
5. Footwear and clothing	26	3,033,168	62	8,395,752	16	76,504	104	11,505,424
6. Wood and cork	35	904,278	72	6,652,772	79	6,762,776	186	14,319,826
7. Furniture	14	871,830	10	107,008	6	83,974	30	1,062,812
8. Paper and paper products	4	*	4	*	-	-	8	*
9. Printing and allied industries	21	1,121,070	23	1,370,958	11	316,194	55	2,808,222
10. Leather and leather products	4	924,270	4	1,718,504	-	-	8	2,642,774
11. Rubber products	-	-	2	*	-	-	2	*
12. Chemicals	17	6,963,902	7	*	1	*	25	11,736,768
13. Products of petroleum & coal	1	*	5	*	-	-	6	3,201,660
14. Non-metallic mineral products	35	1,615,042	29	4,343,928	35	2,278,178	99	8,236,148
15. Basic metal industries	-	-	5	6,989,094	-	-	5	6,989,094
16. Metal products	20	1,615,744	17	2,354,692	12	284,634	49	4,255,070
17. Machinery	8	1,059,686	4	147,048	9	808,892	21	2,015,626
18. Electrical machinery	18	425,746	22	4,406,210	7	246,428	47	5,078,384
19. Transport equipment	18	105,314	16	131,946	20	127,382	54	364,642
20. Miscellaneous industries	8	200,068	13	1,434,390	-	-	21	1,634,458
21. Personal services	17	456,294	21	562,554	10	227,844	48	1,246,692
Residual unclassified	-	479,230	-	26,159,094	-	5,526,156	-	23,829,954
Total	386	55,873,064	483	133,160,992	342	34,776,682	1,211	223,808,938

TABLE 14

Gross manufacturing output in the Border and Bantu areas according to industrial class 1959-60

1. Food	128	32,962,914	149	82,027,688	113	18,139,656	390	133,130,258
2. Beverages	15	1,129,738	25	3,384,670	18	1,124,568	58	5,638,976
3. Tobacco	-	-	-	-	2	*	2	*
4. Textiles	8	9,814,790	6	*	3	*	17	17,568,266
5. Footwear and clothing	31	2,740,106	68	9,651,952	16	74,702	115	12,466,760
6. Wood and cork	37	1,399,100	75	3,832,178	79	7,908,936	191	13,140,214
7. Furniture	9	820,486	11	90,466	6	67,764	26	978,716
8. Paper and paper products	4	*	5	*	-	-	9	*
9. Printing & allied industries	23	1,328,802	24	1,727,318	16	585,910	63	3,642,030
10. Leather & leather products	2	*	3	*	-	-	5	3,334,534
11. Rubber products	-	-	1	*	-	-	1	*
12. Chemicals	17	*	12	8,413,510	2	*	31	13,096,726
13. Products of petroleum & coal	1	*	3	*	-	-	4	*
14. Non-metallic mineral products	38	1,444,144	30	3,972,290	47	3,642,288	115	9,058,722
15. Basic metal industries	-	-	7	10,254,198	-	-	7	10,254,198
16. Metal products	20	1,410,950	26	3,626,952	15	304,240	61	5,342,142
17. Machinery	8	1,056,602	8	274,504	12	1,137,358	28	2,468,464
18. Electrical machinery	29	589,330	31	4,318,170	12	310,676	72	5,218,176
19. Transport equipment	16	106,608	15	155,366	20	175,492	51	437,466
20. Miscellaneous industries	12	*	17	1,384,258	1	*	30	1,829,832
21. Personal services	25	526,126	27	629,290	16	345,146	68	1,500,562
Residual unclassified	-	5,632,382	-	37,278,570	-	6,494,732	-	31,188,884
Total	423	60,962,078	543	171,021,382	378	40,311,468	1,344	272,294,926

\* Denotes that figure has been included in the 'residual unclassified' in order to comply with the disclosure regulations of the Bureau of Statistics.

Source: Information kindly made available by the Bureau of Statistics.

William's Town, show a fairly marked degree of specialisation in this sector, producing more than half the border areas textiles output in 1959-60. Elsewhere, the more important border area textiles factories were at Estcourt, Klipriver, Ngotshe, and Pietermaritzburg in Natal, and Harrismith in the Orange Free State.

In 1956-57 the bulk of chemicals output was also concentrated in the Cape where soaps and candles, and pharmaceuticals, mainly at East London, were the most important sub-groups. By 1959-60, however, Natal whose chemicals output consisted primarily of tanning extract, produced in a plant at Hanover and two plants at Port Shepstone, and to a lesser extent, carbide produced at Ballengeich in the Newcastle district, contributed more than half the gross output of the border areas in this sector.

In 1959-60 77.4 per cent of the clothing and footwear output of the border areas was produced in Natal which had significant clothing factories at Charlestown in the Newcastle district, Inanda, Klipriver, Hammersdale and a footwear factory at Pietermaritzburg. The Cape contributed 22.0 per cent of the output of this sector largely from clothing establishments in East London and two footwear firms in King William's Town, one of which, however, closed down in 1963.

Production in the basic metals sector took place exclusively in Natal, notably at Newcastle where the African Metals Corporation plant is situated, and at Pietermaritzburg where there is a large producer of aluminium products. In the metal products sector, Natal centres, of which the chief were Estcourt, Newcastle and Pietermaritzburg, together produced 68.0 per cent of the border and Bantu areas output in 1959-60, the rest coming mainly from East London. 82.7 per cent of the electrical machinery sector's output was also produced in Natal, owing largely to the presence in Pietermaritzburg of an important producer of electrical cables, the bulk of the remaining output in all areas being due to electrical contractors. It appears then, that over three quarters of the metals and engineering capacity of the border and Bantu areas was located in Natal.

Apart from a large manufacturer of glass containers at Talana in the Dundee magisterial district, a cement factory in the Marico district of the Transvaal, and a limeworks at Taung in the Cape, output in the non-metallic mineral products sectors, which also was greatest in Natal, was spread evenly and consisted mainly of brickworks. Wood and wood products were produced mainly in Natal and the Transvaal, but, while in the Transvaal most of the plants were sawmills producing building timber, mining timber, boxwood etc., Natal included a large hardboard manufacturer at Estcourt. In the products of petroleum and coal sector, coal products were produced at Vryheid and Dundee in the Northern Natal coalfields area. Leather products included tanneries at King William's Town and Pietermaritzburg. The country's largest rubber products plant, excepting the tyre manufacturers who are excluded from the figures, was situated in the Natal border areas at Howick.

The above description of the contents of border areas output in each industrial class, suggests strongly that, apart from clothing and textiles, the location of most plants was based upon the availability of processable raw materials. Firms oriented to local markets were mainly those like brickworks, electrical contractors, bakers, sawmills, etc. which use fairly ubiquitous raw materials. Food was the predominant sector in all regions and in 1959-60 contributed 54.0, 48.0 and 45.1 per cent of the gross manufacturing output of the Cape, Natal and combined Transvaal-Orange Free State border areas respectively. Though this was characteristic of all provinces, there were some noteworthy differences in their manufacturing. The six largest sectors in each of the regions are listed in order of importance below.

<u>Cape</u>	<u>Natal</u>	<u>Transvaal and Orange Free State</u>
Food	Food	Food
Textiles	Pulp & paper	Wood products
Chemicals	Basic metals	Tobacco
Clothing	Clothing	Non-metallic mineral products
Non-metallic mineral products	Chemicals	Chemicals
Metal products	Textiles	Machinery (mainly agricultural)

The six largest sectors represented the following proportions of total gross output in each region : Cape 84.7, Natal 79.5, and Transvaal-Orange Free State 90.6. It appears, then that manufacturing was least diversified in the Transvaal-C.F.S., and most diversified in Natal. Manufacturing in the Transvaal also appears to have been more heavily dependent on the presence of processable raw materials, for the first three sectors in this province, food, wood products (mainly sawmills) and tobacco, all of which are materials oriented, produced about three quarters of total output, with the cement factory, included in non-metallic mineral products, contributing a large proportion of the remainder. Locally found raw materials also played an important part in Natal where food, pulp and paper and basic metals were the most important sectors, but as in the case of the Cape, clothing and textiles production also contributed significantly, so that the dependence on local raw materials was considerably less than in the Transvaal. The main locational factors which operated in Natal and the Cape are discussed in more detail in the following section.

#### Locational factors in the Border Areas

##### (a) Natal Border Areas

In a detailed study of industrial location in the Tugela Basin

of Natal, which includes a large part of manufacturing activity in the Natal border areas, J. P. Nieuwenhuysen<sup>1</sup> shows clearly that most of the significant manufacturing establishments in that area are oriented to raw materials.<sup>2</sup> Below is the list of industries studied, classified according to whether they were found by Nieuwenhuysen to be oriented to materials, markets, labour, or to miscellaneous factors.

<u>Materials oriented</u>	<u>Market oriented</u>
Milk factories	Mineral Waters
Meat processing factories	Brick and tile factories
Wood and cork, except processing	Stone masonry
Paper and paper products (hardboard)	Tub axle and cup grease and calcium and sodium gluconate
Chemicals (carbide, acetic acid, acetylene gas, calcium acetate and slaked lime)	General engineering
Non-metallic mineral products	
Coal by-products	
Pig-iron	
Metal products (iron stoves etc.)	
<u>Labour oriented</u>	<u>Miscellaneous</u>
Confectionery	Textiles (cotton spinning, weaving & finishing, and hosiery)
Clothing	Brass smelting
	Electricity

Nieuwenhuysen also gives figures<sup>3</sup> showing the relative importance of these locational types in the Tugela Basin and these are reproduced in table 15 below. As the table shows, raw materials

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1. The Industrialisation of the Tugela Basin, unpublished report for the Natal Town and Regional Planning Commission.
  2. For a further description of this area and its industrial potentialities see O. P. F. Horwood and E. Thorrington-Smith, "The Tugela Basin as a Future South African Metropolis," *Optima*, December 1963. Also, a detailed unpublished study of a special aspect of the problem of location in Natal has been made by R. V. Dee, A Study of the Influence of the Railway Rate Structure on the Location of Industry in Natal, with Particular Reference to the Tugela Basin, Report on the Natal Railway Rating Research Fellowship, June 1958-March 1963, submitted to the Natal Town and Regional Planning Commission.
  3. *op. cit.*, table 2, p. 218

TABLE 15

Relative importance of 'locational types' in the Tugela Basin: Gross output, etc., 1958/9

Division	Raw material oriented		Market oriented		Labour oriented		Miscellaneous		Total	
	Amount (R) or No.	Per cent	Amount (R) or No.	Per cent	Amount (R) or No.	Per cent	Amount (R) or No.	Per cent	Amount (R) or No.	Per cent*
Gross output R	26,591,860	67.4	382,510	0.9	2,893,784	7.2	9,744,572	24.6	39,612,726	100.1
Materials and fuel used R	14,751,838	68.8	130,424	0.6	1,824,300	8.5	4,720,914	22.0	21,427,476	99.9
Nett output R	11,840,022	65.3	212,096	1.1	1,069,484	5.9	5,023,658	28.7	18,145,260	100.0
No. employed	10,858	57.0	1,114	5.8	2,252	11.6	5,138	26.5	19,362	99.9

\* Rounded to first decimal point.

Source: J. P. Nieuwenhuysen, The Industrialisation of the Tugela Basin, unpublished report for the Natal Town and Regional Planning Commission, p. 218. The figures were originally obtained from the Bureau of Census and Statistics, except for the numbers employed which were obtained in Nieuwenhuysen's survey of the Tugela Basin, March 1959.

oriented industries in 1958/9 accounted for 65.3 per cent of total net output and employed 57.0 per cent of all employees in the sample covered by Nieuwenhuysen. The 'Miscellaneous' group was the next largest followed by the 'labour oriented' and 'market oriented' groups of firms.

The materials oriented firms as a whole sold a large proportion of their output outside the region and may be said to have constituted the manufacturing 'export base' of the area. The principal raw materials upon which these industries were based were agricultural products in the case of milk and meat processing factories, timber in the case of hardboard and pulp and paper, and coal in the case of carbide, coal by-products, and pig-iron. Only two of these materials oriented firms used mainly semi-processed material inputs, namely, a chemicals firm at Ballengeich whose production was based on the carbide output of another firm in the area, and the firm producing iron stoves etc. at Newcastle which used locally manufactured pig-iron. One of the 'materials oriented' firms, the glass container producer at Talana in the Dundee district, which was originally oriented to sand supplies in the area, now obtains its sand from Pretoria, and provides an instance 'of how a circumstance which originally prompted location in a particular town can disappear, leaving some doubt as to whether a similar location would be chosen if relocation was at all possible'.<sup>1</sup>

The market oriented industries all sold their output chiefly in the immediate local and regional markets, and, with the exception of one firm, selling its output of tub axle and cup grease, calcium and sodium gluconate primarily to the coal mines of Northern Natal, all were in the nature of ubiquitous activities.<sup>2</sup>

The industries classified as labour oriented, clothing and

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1. Nieuwenhuysen, p. 181.

2. See chapter 8 of this study for a list of ubiquitous and widely dispersed industries determined by calculation of localisation coefficients.

confectionery, also sell over a wide area. Clothing production is, of course, a highly labour intensive activity and since transport costs are an extremely small proportion of total costs, wage rates are an important consideration.<sup>1</sup> 'Undoubtedly the principal reason which influenced these three factories to locate in the Tugela Basin was the lack of wage regulation machinery at the time of establishment for the clothing industry in parts of the region'.<sup>2</sup> Nieuwenhuysen adds that 'available information indicates that wages paid in Durban at the time of our survey in 1959 were 60 per cent higher on the average than those being paid by the factories, such as these in the Tugela Basin, which were sited in uncontrolled wage areas. The wages in Durban were in turn lower than those being paid on the Rand'.<sup>3</sup> That low wage rates have been the main cause of the establishment of these clothing factories in the Natal border areas is beyond dispute. The governing factor dictating the choice of Natal rather than some other cheap labour area like the East Cape border areas, however, as in the case of the confectionery factory, was probably the closer proximity of the Natal sites to the major markets.

The industries classified as 'miscellaneous' include spinning and weaving of cotton-rayon yarns, cotton yarn spinning and finishing processes, and ladies hosiery manufacture. It is rather surprising that none of these industries has been classified as 'labour oriented' in view of the importance of labour costs in these industries and the relative unimportance of transport costs. This is especially so since wage rates in the textiles industry in these areas are much lower than in Durban or Johannesburg, due to the greater supply of

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1. See H. A. F. Barker, *The Economics of the Wholesale Clothing Industry in South Africa 1907-57*, for a detailed analysis of location in the clothing industry.
  2. Nieuwenhuysen, p. 200.
  3. *ibid.* Also see H. A. F. Barker, Chap. 10, and Chap. 7 of this study for a fuller discussion of regional wage differentials and their effect on location.

### Bantu labour.

Nieuwenhuysen points out that in all three cases transport costs would have been lower if the firms had been located in Durban. Unfortunately we do not know how significant is the transport cost disadvantage of the Tugela Basin location so that it is not possible to determine whether this disadvantage was offset by a labour cost saving in the locations chosen. No assessment is available of the relative importance and variability between regions of transport costs as against labour costs. Of the first firm, Nieuwenhuysen says, 'The reasons for the plant's establishment at Ladysmith are partly historical and are indeed partly obscured by the time which has elapsed since the factory's inception. Apparently it was the intention of the manufacturers, who took over an old munitions factory, that Ladysmith would act as a vantage point from which both Reef and Durban consumers could be economically served; moreover according to the firms management, establishment was in terms of the Group's policy of "decentralisation of activities".'

In the case of the firms situated at Mooi River and Estcourt, Nieuwenhuysen seems to attach some importance to encouragement received from the State to locate in those areas. For instance, he says of the firm at Mooi River: 'An important consideration may have been the encouragement received from the Department of Commerce and Industries, although this took no tangible or material form, but was apparently in accordance with the State's desire to see industries established outside the existing urban and industrial concentrations'.<sup>1</sup> Likewise, in the case of the firm at Estcourt, Nieuwenhuysen states that the important influence deciding the specific centre in Natal 'was encouragement received from the State to settle in Estcourt in terms of the decentralisation policy'.<sup>2</sup> But the force of these assertions is

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1. op. cit., p. 207.

2. op. cit., p. 209.

considerably weakened when he adds that 'this encouragement did not take any material form by the way of special inducements it seems, and it is therefore difficult to see how purely verbal encouragement can influence such a decision unless that encouragement takes the form of a promise to provide future protection and care for the factory'.<sup>1</sup>

If, indeed, two firms, as significant as those at Mooi River and Estcourt, were influenced in their choice of location simply by some friendly persuasive words from the Government, it would seem that the location of textiles firms, at least, is rather more arbitrary than is commonly supposed. It would imply that in the case of a fairly significant proportion of industry direct controls by the government would have hardly any adverse effect on efficiency and that the actual selection from among a number of more or less equally profitable locations is determined very largely by non-profit considerations. This may, in fact, be so, but since, as Nieuwenhuysen points out, transport costs would have been lower at Durban in the case of these two firms, a labour cost saving at Mooi River and Estcourt, compared with Durban<sup>1</sup> is implied. Basically, then, it must surely have been the lower labour costs in the border areas which made location at Mooi River and Estcourt possible, even if on balance, taking transport costs into account, Durban or Johannesburg may have been equally profitable. It seems to give a truer impression, therefore, if these two firms are labelled 'labour oriented'. Nieuwenhuysen's scepticism about the effectiveness of moral encouragement alone seems to be well justified, though we cannot discount the possibility that in some particular cases, the government, merely by bringing to the attention of a firm advantages of a certain location, which they might otherwise have overlooked, may influence locational decisions.

(b) Cape Border Areas

The Cape border areas as we noted above contributed some

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1. op. cit., p. 209.

22.6 per cent of the total gross output of manufacturing industry in the border and Bantu areas in 1959-60. The largest manufacturing centres<sup>1</sup> in the Cape border areas were, in order of importance, East London, King William's Town, Vryburg, Queenstown, Mafeking and Mount Currie, the combined proportionate contribution of which was 90.1 per cent in 1956-57. The three Ciskei areas alone produced three quarters of the Cape's total. In view of the predominance of East London, the locational forces operating in this centre are of special interest and will be discussed in some detail below.

It appears that manufacturing in the Cape border areas as a whole was less markedly oriented to locally obtainable raw materials than was industry in Natal or the Transvaal. This is due mainly to the influence of East London and King William's Town where, owing to the lack of processable raw materials, other locational factors have been much more important.

The main components of East London manufacturing industry may be summarised as follows: As in all border areas centres, the food sector was easily the largest, representing 46.3 per cent of gross output in 1959-60. It includes one of the largest confectionery firms in South Africa, whose material inputs come primarily from Natal (sugar) and overseas, and the significant pineapple canning industry, which obtains its raw materials from the surrounding area. Much of the rest of this sector consists of bakeries, dairy products, flour and grain mills, animal feeds etc., which are essentially oriented to local and regional markets, and do not constitute part of the manufacturing 'export base' of the area. The textiles and chemicals sectors, neither of which in this area is based upon local raw materials, were respectively second and third largest, and in 1959-60 together accounted for 28.7 per cent of the total gross output of manufacturing industry.

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1. Which respectively contributed 53.0, 8.0, 7.1, 3.6, and 3.4 per cent of gross output in the Cape border areas.

TABLE 16

Principal statistics of manufacturing industry in East London by major group 1956/7 and 1959/60

Industry Class	Establishments		Gross output R'000		Net output R'000		Number employed		Salaries and wages R'000	
	1956/7	1959/60	1956/7	1959/60	1956/7	1959/60	1956/7	1959/60	1956/7	1959/60
1. Food	28	23	11,204	13,598	3,506	4,560	3,865	3,742	1,714	2,172
2. Beverages	2	3	..	..	..	..	..	..	..	..
3. Tobacco	-	-	..	-	-	-	-	-	-	-
4. Textiles	5	5	5,500	5,878	3,070	3,528	2,097	1,934	1,224	1,270
5. Footwear and clothing	14	18	354	458	154	110	183	199	98	108
6. Wood and cork	12	14	586	662	198	252	184	209	126	154
7. Furniture	7	6	610	664	314	350	253	266	210	214
8. Paper and paper products	3	3	..	..	..	..	..	..	..	..
9. Printing and allied industries	5	6	522	858	550	630	224	247	330	394
10. Leather and leather products	2	-	..	-	..	-	..	-	..	-
11. Rubber products	-	-	-	-	-	-	-	-	-	-
12. Chemicals	13	12	6,324	2,550	3,208	1,202	842	592	564	424
13. Products of petroleum and coal	1	1	..	..	..	..	..	..	..	..
14. Non-metallic mineral products	15	13	602	456	360	266	515	418	210	202
15. Basic metal industries	-	-	-	-	-	-	-	-	-	-
16. Metal products	11	11	1,446	1,202	1,000	622	476	497	376	418
17. Machinery	5	3	950	..	292	..	268	..	184	..
18. Electrical machinery	9	16	284	398	168	206	143	156	120	136
19. Transport equipment	2	2	..	..	..	..	..	..	..	..
20. Miscellaneous industries	7	9	94	110	66	78	76	74	46	48
21. Personal services	7	10	300	312	246	242	333	345	140	144
Unallocated residual	-	-	638	2,210	328	848	294	734	172	500
Total	158	155	14,707	29,356	13,460	12,894	9,753	9,413	5,514	6,184

Source: Unpublished information kindly made available by the Bureau of Statistics.

.. Denotes less than four firms in group, hence figures not publishable.

Textiles production consisted to a considerable extent of blankets and women's hosiery, and chemicals of soaps, candles, and pharmaceuticals. Chemicals output was much higher in 1956-7 than in 1959-60, owing possibly to the transfer of a large producer to Durban following a serious fire in the firm's plant. Metal products consisted mainly of general and construction engineering, which are essentially oriented to local requirements, though windmills and farm implements were sold in other parts of the country. Not included in the above figures are a motor assembly plant, which used chiefly imported components, and one of the country's largest manufacturers of motor vehicle batteries and other electrical storage equipment, both of which sell their output nationally. There was also a furniture manufacturer of fairly substantial size apparently oriented to local and regional markets.

What then are the factors which have induced firms to establish themselves in the area? A study of the area published in 1960 contains the following comment:<sup>1</sup>

"In the case of certain industries, particularly those in Group 1 (food) the reason why East London was chosen was the supply of raw materials, the clearest example of this being pineapple canneries. Other firms stated that location at one of the ports was essential, because they used imported raw materials or semi-processed goods from abroad, or because their machinery, which was heavy and bulky, came from overseas. Pressed further for reasons for the selection of East London in preference to one of the other ports they offered a variety of answers. East London was held to be centrally situated with a direct line from the Orange Free State and the Transvaal, and to have the advantage over Port Elizabeth and Durban of being industrially less developed.

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1. D. Hobart Houghton, Economic Development in a Plural Society, pp. 148-9.

"It was therefore easier to secure a factory site with satisfactory railway siding facilities and other amenities. In some cases it was stated that the local authorities at East London appeared to be more accommodating than elsewhere.

"The proximity to markets was the reason given for the location of some factories at both East London and King William's Town, particularly where the Bantu were large consumers. The manufacture of blankets and of the cheaper types of sweets are instances of this. In some cases the industrial development has been undertaken by persons with long trading connections with the Native Territories.

"Other firms stated, inciting the attractions of East London, that owing to the proximity to the Native reserves they expected an abundant supply of Native labour, but most of those which placed labour among the reasons for coming to East London found their expectations unfulfilled, complaining not so much of the quantity but of the quality of the labour available".

It is clear from this passage that the availability of raw materials in the immediate area was of relatively little importance as a locational factor among the firms in East London in 1959-60. Where the availability of materials had played a part, this was usually because, being a port, it was in a convenient position for assembling imported raw materials or semi-processed goods from abroad or from other South African ports, and in the case of products with a national market it had been a suitable centrally situated distribution point. In such cases, however, it was distribution costs which had been the primary consideration, rather than the use of imported materials, since from the latter point of view any one of the other major ports would have been as suitable.

It appears from replies received in a questionnaire survey carried out by the writer in 1961, and from discussions with East London manufacturers, that the replacement of imported by South

African made materials and semi-processed goods is having an adverse effect on the area. One firm stated that it had established in East London because of easy access to raw materials, but added that 'the latter has now assumed less significance as very little is imported, so that the Reef<sup>1</sup> would be the logical place to manufacture as [ a large percentage of ] our market is in the north". Another firm remarked that the 'original owner lived here and started a small factory... Raw materials were largely imported, so the situation at a port was favourable in that respect. Originally this factory served only Border<sup>2</sup> and Eastern Cape areas'. The firm went on, however, to say that 'in present day conditions this would be better situated near its largest market viz., the Reef'. In addition it is obvious that current developments in the motor vehicle industry, with the rapid development of the local manufacture of parts, must be working to the disadvantage of the motor assembly plant in East London, since most of the new motor vehicle component manufacturers are being established in Port Elizabeth where the biggest assembly plants are located, or in the Southern Transvaal. With the substitution of South African for imported steel, too, engineering firms established at East London were finding it increasingly difficult to compete in inland markets, and one firm in this field stated that it had originally chosen East London 'as a progressive centre from which to export finished products and all materials had to be imported', but that 'in recent years the position has altered materially and the policy of the authorities to allow all industry to be located in the Transvaal without any national planning, has so crippled industry at the coast that a company such as ours... must be near the market'.

Essentially the disadvantage of East London, which has been caused or intensified by the substitution of local for imported materials,

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1. A colloquialism for Witwatersrand.
  2. The 'Border area' in this case is the name for East London's immediate hinterland.

is that very often materials have to be obtained from the north and railed back there again in the form of finished products. Thus there is a considerable amount of 'backhaul' which reduces the firm's competitive ability in the north, or if it absorbs these transport costs, reduces its profits. The problem is intensified by the fact that railway rates on finished products are considerably higher than on raw materials.

A striking feature of the replies received from firms responding to the writer's questionnaires, is the number of firms stating that if it were possible they would now establish their plants in another part of the country. In addition to the cases quoted above, where difficulty seems to have been caused to some extent by the growing use of South African material inputs, another firm said: 'Choice [ of East London ] has not been justified. It would have been better had the factory been set up on the Reef or in the Free State, closer to the raw materials and larger markets. As a result of the potential industries not developing in East London as had been hoped our particular industry did not expand as planned.' In this case it seems that it was simply a miscalculation of the growth potential of East London, which has frustrated the expansion plans of the firm. In yet another instance, the location of an East London firm appears to have been unduly influenced by the fact that land plus a factory building was immediately available and that it could commence manufacture sooner than if located elsewhere. This plant was apparently wrongly located from the start and its existence in East London can only be put down to a locational error, since most of its output is sold in the north and the bulk of its materials are obtained from the Transvaal and Natal.

In two instances in particular, businesses were established as small family concerns some years ago. While sales were confined to the immediate regional market there was of course no real difficulty, but with the growth in the size of these plants, they have had

increasingly to look to the north for markets in order to enable them to expand. As the proportion of sales going to the Transvaal has increased these firms have found themselves to be at a disadvantage compared with competitors situated in the Transvaal or Natal. One firm said that as a result it was considering the establishment of a branch plant in the Southern Transvaal once its present plant is employed to full capacity, in order to overcome this difficulty.

It is generally thought that one of the chief advantages of East London as a site for industry is that, situated as it is, close to large Native reserves, it enjoys an abundant supply of cheap Native labour. One might, therefore, expect that this would have attracted some firms to the area, and, in fact, in reply to the questionnaire, several firms did say that labour had been a consideration of particular importance. A close examination of these individual cases, however, suggests that labour has played a relatively small part in inducing firms to establish in the area.

One firm states that it came to East London to be nearer the Native Reserves, bearing in mind the labour troubles on the Witwatersrand prior to 1919. This firm, however, is in an industry which, by the very nature of its product must be oriented to its chief market. In this case the market is primarily the Ciskei and Transkei, which would have been extremely difficult to serve from any other location in view of the importance of transport costs. Indeed, the firm itself mentioned as one of its advantages the absence of competition in the area and the growing importance of the Transkei market. Markets therefore appear to be the primary justification for the firm's continued existence in the area. Another firm states that 'availability of cheap labour was essential', but in this instance too it appears that the central situation of East London and easy access to imported materials, was the original reason for establishing here, and that cheap labour is simply an incidental advantage which, now that the area has become less favourable in those respects, fortunately tends to offset in part the disadvantage it faces on account of high transport costs.

It is rather surprising that in the only cases in which labour was mentioned as the primary consideration in selecting East London, and in which labour does in fact appear to have been important, owing to the lightness of materials and product and the importance of labour costs, it was white female labour and not black labour that was specifically referred to. It is interesting to note that in 1960 in East London and King William's Town manufacturing industry together 31.3 per cent of the white employees were females whereas in Port Elizabeth/Uitenhage the corresponding figure was only 23.2 per cent and in Johannesburg only 26.3 per cent.<sup>1</sup> Apart from the two firms which specifically mentioned white female labour as an important location factor a couple of other large firms also had labour forces made up to a large extent of this sort of labour. While this may partly be accounted for by the generally light nature of manufacturing activity in the area, it is noteworthy that, as is shown in chapter 5, the average earnings of female production workers were considerably lower in East London than in other parts of the country, and this may possibly be due to the absence of alternative employment opportunities in the area. It is also interesting that in 1960, in the age group 20 to 34 the male/female ratio amongst the white population of East London (0.89:1) was considerably lower than in Port Elizabeth (0.98:1) and lower still than in Johannesburg, whereas in the 0 to 19 age group it was considerably higher, having been 1.09:1 in East London compared with 1.03:1 in Port Elizabeth and 1.02:1 in Johannesburg. A possible explanation of this is that, owing to the slow rate at which industry in the area is growing, white males upon reaching working age have tended to migrate to larger and more dynamic centres elsewhere in the country.

The relative importance of the textiles sector in East London may seem to suggest that these firms have been attracted to the area by cheap labour, since wages are an especially significant

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1. Population Census, 1960, Sample Tabulation, No. 1, pp. 8, 11, and 17.

factor in this industry, while transport costs tend to be relatively low and do not differ markedly between one location and another. Unfortunately it has not been possible to obtain adequate statistical information from this sector. However, it is known that blanket manufacture represents a large proportion of textiles output in the area, and, since, in this branch of the industry there is an Industrial Council Agreement which has nation-wide application, it seems unlikely that wage rates as such could have been the main reason for locating in East London. Though an East London site may possibly confer certain labour advantages, such as greater stability, it seems more probable that the principal reason for blanket manufacturing being located in East London is the proximity of the Native Reserves, which at one time, at least, absorbed a significant proportion of the output. Since the type of blanket sold in the Transkei is of rather low quality, transport costs in relation to value of product are probably heavy compared with other sectors of the textiles industry, and a firm selling largely in the Native Reserves would, therefore, tend to be attracted to a site like East London.

In a branch of textiles such as women's hosiery, an important one in East London, transport costs are an extremely small proportion of total selling price, and are an insignificant consideration in the choice of location. This is especially so since the market for this product is widely spread through the country, and the relative insignificance of transport costs in the industry is emphasised by the extensive use made of passenger rail services and even air transport. A recent Wage Board report on the industry shows that the wage levels in East London are virtually on a par with those in the West Cape and are considerably higher than at Estcourt or Parys. The report states that 'in the evidence before the Board, complaints

of unfair competition from the rural factories at Estcourt and particularly Farys were uttered by the producers in East London and Cape Town. The firm in East London employs mainly Europeans at relatively high wages, and the factories in Cape Town have chiefly coloured employees, are subject to an industrial council agreement based on the one for the clothing industry and hence also pay relatively high wages'.<sup>1</sup> As the Board points out 'the composition of the employees labour force has a marked influence on the wage differentials between occupations as well as between areas'.<sup>2</sup> Thus differences in wage rates may, at least in part, be offset by differences in productivity, but it does seem that labour costs as such could not have been an important consideration in the location of this firm in East London.

According to this Wage Board Report the labour force of the East London factory in August 1962 was made up as follows: whites 228 (males 77, females 151), coloureds 34, Asiatics 14, and Natives 34, all employees in the latter three racial groups being males. It is clear therefore that the abundance of Native Labour in the area could not have been responsible for the firm's location in East London. If labour supply played a part at all in this decision, it must have been due to the availability of white females, in view of the apparently large supply of this type of labour in the area. It should be noted too, that the proportion of whites in the labour force and especially white females was probably higher a few years ago than it was in 1962, since the switch from full fashion to seamless stockings has involved the introduction of a different type of production process which requires less highly skilled labour, and as a result non-whites, especially coloured and Indians, have come to replace white females. The central situation of the city relative to the national market probably also played a part in deciding upon this location.

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1. Wage Board Report on the Industry for the Manufacture of Ladies Stockings - Certain areas, dated 21st February, 1963, p. 7.

2. op. cit., p. 13.

The hosiery industry, with its multi-form type of market, very low transport costs, and relatively high labour costs is one that is very free to choose among a large number of alternative locations provided there is an adequate supply of labour. These characteristics together with the fact that the main raw material, nylon, is still largely imported, makes it a type of industry which can very easily be induced to go to a location in the Cape border areas, or in any other border area for that matter. A centre like East London, however, may have something of an advantage over other border areas in the case of an industry of this sort, since apart from other advantages, it offers living conditions which appeal to white executives and skilled employees.

So far as Bantu labour is concerned, it is true that there is an abundant supply of unskilled workers, and, in fact, that an acute unemployment problem exists in East London. But, in the past, Bantu wages have not been significantly lower than in the four major industrial areas of the country. This fact, which is supported by statistics in chapter 7, is partly due to wage determinations under the Wage Act and Industrial Council Agreements which have tended to reduce regional wage differences below those which would have prevailed in the absence of statutory wage fixing. For example, when the industrial council for the clothing industry in the Eastern Cape obtained jurisdiction over the East London area, a wage was set which was only 5 per cent lower than in Port Elizabeth, and as a result the East London clothing industry suffered a severe setback. The view was also expressed to the writer that during wage board investigations into certain other industries, East London employers have often appeared to be unduly ready to accept minimum wages virtually on a par with those in Port Elizabeth. Thus East London's advantage in respect of unskilled labour has not been fully reflected in correspondingly low wages. In recent years, however, the Wage Board has, as a matter of policy, tended to fix wages in

East London which are relatively lower compared with the main industrial areas than they used to be. Wage determinations usually apply only to the East London municipal area, so that wage rates outside this area, but nevertheless in the East London magisterial district, tend to be considerably lower. Thus as the statistics in chapter 7 show, significant differences in wage rates may exist between points only a short distance apart. The view has been expressed that the Xhosa of the Ciskei and Transkei show less aptitude for industrial work than Bantu in some/other parts of the country. It is known, in fact, that at one time an East London firm brought down a number of Zulu workers from Natal for this reason.

A striking characteristic of the manufacturing structure of East London, was the absence of any significant linkage between firms in the area. This contrasts with the close interdependence between motor assemblers, their suppliers and in turn the latter's suppliers in the Port Elizabeth-Uitenhage area, between the metals and engineering establishments of the Southern Transvaal, and between various chemicals producers in Durban. The bulk of East London's manufacturing output was sold in consumer markets. Very little of this output consisted of manufactured intermediate goods, apart from general engineering and maintenance services, the supply of a relatively small quantity of batteries to the motor assembly plant, and the production of metal containers for the canning industry. There is at present no 'master industry' in East London of sufficient size to attract satellite suppliers. As Hirschman has shown, before the establishment of intermediate goods producers can be stimulated through backward linkage, the demand for these goods must reach a certain critical level.<sup>1</sup>

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1. A. O. Hirschman, The Strategy of Economic Development, New Haven, Yale University Press, 1960.

There is, for instance, a motor assembly plant in the area, but it is too small to have exercised any significant pull on suppliers of component parts, with the result that the latter have concentrated in Port Elizabeth.

Since the area seemed unlikely to attract any large establishments oriented to materials or market it was apparently becoming necessary to look mainly to labour oriented activities. The only industry which seemed capable of providing the necessary stimulus to development in East London was textiles, and a sufficient concentration of textiles firms in the area could lead to suppliers of textile chemicals, synthetic fibres etc., being established, as well as textiles users such as knitting mills, clothing manufacturers etc.

Furthermore, the fewer the inter-industry linkages in an area, the weaker is the hold of the area on any particular manufacturing activity, since pecuniary economies<sup>1</sup> are weak. Even without strong inter-industry ties, however, a firm may find it uneconomic to change its location if conditions become unfavourable, since heavy past investment takes a considerable time to wear out or become obsolete, and in any case a firm cannot allow its plant and equipment to run down while it is still in operation. The Port Elizabeth motor industry is a case in point because, as a result of the markedly changed distribution of population and purchasing power since the major motor assemblers were established there, and the increased use of South African components in locally assembled vehicles, the Witwatersrand would clearly be the area chosen if it were possible to disregard past investment. The existence of pecuniary external economies, however, makes relocation even more difficult. The relocation of Poly-Resin after the firm plant was destroyed by fire was made easier by the unimportance of paints and other chemicals producers in East London. The apparent

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1. See T. Scitovsky, "Two Concepts of External Economies", The Journal of Political Economy, April 1954.

dissatisfaction of several firms with East London as a location for their plants and the generally precarious hold that the area has on them, may in part at least be a reflection on the relative unimportance of linkage between manufacturing concerns in the area.

In King William's Town, too, the largest firms are not based on local raw materials, and textiles, shoe manufacture and tanning contribute a very large proportion of this centre's gross manufacturing output. The largest firm in the area and probably one of the largest plants of its kind in the country, Good Hope Textiles, has a labour force consisting prominently of Bantu. Since there is no wage determination or Industrial Council Agreement in this industry, the great abundance of Bantu labour in the area is reflected in low wage rates, and this was undoubtedly the main economic reason for the establishment of the plant in King William's Town. Good Hope Textiles was one of the first deliberate attempts on the part of the government, through the Industrial Development Corporation, to establish an industry on the fringe of a Bantu area. The reasons for selecting this site are stated by the General Manager of the Industrial Development Corporation as follows:

"One of our principles is the encouragement of the decentralisation of industry, a policy which we have always actively followed. An example is the Good Hope Textile Mill at King William's Town, established in 1945 in collaboration with the Calico Printers Association. King William's Town, ... is a relatively small town situated on the border of the Ciskeian Bantu Reserve some 40 miles inland from the Indian Ocean. This region was recognised as a particularly impoverished area with little regular employment for its indigenous people. It was a social experiment on a grand scale, aimed at providing employment for the non-white community in the area. We have in mind, too, that decentralisation would lessen the pressure for services and housing in the congested areas of the main urban centres. It is an experiment which has worked, although the growth period has been long it has been steady and we now have a thriving industry employing some 3,000 Bantu, and a community with a growing industrial and western background."

(Industrial Development in South Africa, address given to the South

Africa Club at the Savoy Hotel, London, on 26th June 1962).

The cotton textiles industry is often regarded as 'footloose', but when competition is keen as it is today, the industry is footloose only in the sense that it can choose between a number of alternative cheap labour areas. In a highly competitive textiles industry it is imperative, as is illustrated by locational tendencies in the United States and India, for a cheap labour area to be selected. It is true, however, that there may have been other cheap labour areas in the country which would have been preferable because of their superior situation in relation to markets and coal supplies, and this is the chief disadvantage of the Ciskei in comparison with the Natal border areas.

The other two most important industries in King William's Town were footwear and tanning. However, in 1963 one of these footwear firms closed down, and it was stated in the annual report of the tannery that 'the geographical handicaps are great and the cost of railage of the company's raw material and finished product, occurring at about 5 per cent of the annual turnover, are such that tanning can never be as profitable in this area as it would be at any point close to the Witwatersrand, Cape Town or Durban'.<sup>1</sup>

#### Concluding Remarks

At the opening of the 1960's, when the Permanent Committee for the Location of Industry and the Development of Border Areas came into existence, about four fifths of the country's output and employment in manufacturing industry was concentrated in the four major industrial areas. There had in fact been virtually no change in the overall degree of regional concentration for a period of some twenty five years. This was so despite marked changes in the composition of manufacturing output, the rapidly increasing relative importance of intermediate goods

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1. Quoted by C. Verburgh in South African Transportation Policy, (Bureau of Economic Research, University of Stellenbosch, 1961), p. 87.

production since the Second World War, a steady proportionate decrease in the use of imported materials, and the increasing contribution of industrial products to the country's total exports. Trends in certain industries, namely, textiles, pulp and paper, petroleum and coal products, wood products, and clothing had tended to reduce the proportion of industry in the main industrial areas, but this tendency had been offset by developments in motor vehicle manufacture, chemicals, metals and engineering and food.

It appears from the statistics presented above that the border areas made slightly faster industrial progress than the country as a whole in the late fifties, due largely to developments in pulp and paper, textiles, food, clothing and chemicals. Food, however, still contributed the largest part of the increase in border areas output.

The distribution of border areas output between provinces was anything but even. Natal contributed by far the largest share of the total manufacturing activity of the border areas, and also achieved the most rapid rate of growth, with the production of pulp and paper, basic metals, chemicals and food products playing a prominent part. The rate of growth in the Cape border areas was much slower and, generally, the prospects for rapid growth in these areas appeared to be much less promising than for Natal. As our discussion of locational factors in the Natal and Cape border areas shows, the former are in a considerably more favourable position to attract industry, both because they are better endowed with processable raw materials and because of their more advantageous position in relation to the country's major markets and export markets. The Tugela Basin region of Natal in particular appears to have especially good long run potential for industrialisation.<sup>1</sup>

But the general locational influences which were operating in

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1. See for instance, T. J. D. Fair and L. P. Green, Development of the "Bantu Homelands", Optima, March 1962; and O. P. F. Horwood and E. Thorrington Smith "The Tugela Basin as a Future South African Metropolis", Optima, December 1963.

1960 did not seem to suggest any immediate prospect of significant industrial decentralisation in the absence of Government intervention. Indeed, as we have noted, the Schumann Committee<sup>1</sup> believed it "practically certain that due to the agglomeration advantages of the existing industrial areas, the present tendency to centralise will continue unless positive steps are taken to promote sound, economic decentralisation". Perhaps this statement is a trifle too dogmatic. There may well be certain forces tending to induce a larger proportion of manufacturing industry to establish itself quite spontaneously in the smaller centres. In particular, due to the decline of gold mining which is inevitable unless there is a marked increase in the price of gold, the development of the Witwatersrand may lose momentum and so ~~make~~<sup>there</sup> for a greater dispersal of industry in future. But the fact remains that ~~did~~ not seem to be any reason to expect a substantial, rapid change in the locational pattern without intervention.

The above, then, was the situation which confronted the Permanent Committee when it was established in June 1960. Basically its task was to influence industrialists to establish their plants outside the larger industrial areas, in particular in the border areas. Bearing in mind our findings in this and the previous chapter, we shall in the rest of this study focus our attention mainly on the implications of Government intervention in the location of industry, whether by means of positive inducements or industrial licensing.

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1. op. cit., p. 73.

Chapter 5  
THE ECONOMIC CASE  
FOR INDUSTRIAL DECENTRALISATION.

One view of schemes for State aided industrial decentralisation is that they can if necessary, be justified solely on economic grounds.<sup>1</sup> This view implies that it is possible for the government, by intervening in the process of industrial location to improve upon the allocative efficiency of the market mechanism and increase the country's rate of economic growth. Others contend that, though the benefits of industrial decentralisation may in the first instance be social or political rather than economic, government intervention designed to secure these benefits will not cause any long run economic harm.<sup>2</sup> Yet another view is that the objectives of decentralisation policy are predominantly social, that it will be necessary to sacrifice material wealth if these are to be achieved, and that the country will and should accept this.

In this chapter attention is focussed on the question whether the case for South Africa's policy of industrial decentralisation can be sustained by economic considerations alone. While, as the discussion of chapter 1 above has already indicated, the policy's aims are evidently mainly political, the answer to this question is crucial if we are to throw light on the probable economic consequences of intervention, whatever

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1. See for instance the particularly forceful statement of this position by W. A. Lewis, The Principles of Economic Planning, Public Affairs Press, Washington, D. C., 1951, p. 78.
  2. See Report of the Commission of Inquiry into Policy Relating to the Protection of Industries, U. G. 36/1958, para 454. While stressing the social disadvantages of concentration the Commission recommends intervention "as long as these do not involve uneconomic considerations". Though the term "uneconomic" is not entirely unambiguous, the statement seems to imply that a significant degree of State induced decentralisation could be achieved without any adverse effect on economic efficiency and growth.

the motives may be. The desirability, indeed the inevitability of continued industrial growth in the border areas is not in dispute. Our concern is with the economic consequences of the State intervening to divert industries from the larger industrial areas to other areas preferred by the Government, when the former would have been selected in the absence of Government intervention.<sup>1</sup> Only if these issues are clearly understood will it be possible to formulate a rational policy of industrial decentralisation.

As Professor Arthur Lewis has observed, "the case against the market economy is not that it does not tend to promote the social good. The dispute is whether state control could not do better, either as an alternative, or as a supplement".<sup>2</sup> It is important to note that this is not a matter of contrasting the results produced by "unfettered" free enterprise with those of a system in which the state plays a part. Obviously the market mechanism is always subject to the constraints of a particular legal and institutional framework and there is no such thing as a "pure" laissez faire system. In the context of this study, the real issue is whether the market mechanism operating within an institutional framework which includes special features like the Permanent Committee, the Physical Planning and Utilization of Resources Act,<sup>3</sup> the powers associated with each and the way in which they are applied, will give a better allocation of resources, than a market mechanism operating in an institutional framework which is the same, except that it is devoid of the special features mentioned.

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1. This is the sense in which the terms 'divert' and 'diversion' are used in the rest of this study. As alternatives to the phrase 'divert industries to the border areas' we shall also use 'induce industrial production in the border areas' and similar phrases. The essence of industries 'diverted to' or 'induced to establish in' the border areas is that they would have chosen some other location in the absence of government intervention.
  2. op. cit., p. 8.
  3. No. 88 of 1967. See chapter 9.

Lewis, for one, clearly believes that state control in the sphere of industrial location can improve upon the performance of the market, for he says: "The truth is that the market mechanism, acting through prices, is wholly incompetent to procure the correct location of industry".<sup>1</sup> Despite its apparent forthrightness, it is not clear whether this statement means (1) that the market mechanism does not perform its functions properly or (2) that while it performs its functions properly the results produced by the functioning of the market are undesirable in themselves.<sup>2</sup>

The primary functions of the market are to solve all the economic problems of allocation of scarce means between alternative ends and to provide incentives to economic growth. If the market is functioning properly, then it tends "to stimulate both economic efficiency and economic growth".<sup>3</sup> The view that the market does not perform its functions properly, therefore, implies that, by adding measures for state control, both economic efficiency and economic growth will be enhanced. The other issue, namely that the results produced by a properly functioning market may be undesirable in themselves, which stems from the fact that economic efficiency and growth are not the only possible objectives of a society, is the subject of chapter 6.

What factors, then, might prevent the market from performing its functions properly? It seems that all such factors, following Professor Johnson's useful distinction, may be divided into "those in which the market operates imperfectly, and those in which a perfectly functioning market would not produce the best results".<sup>4</sup> Essentially, the latter category involves external economies or differences between private and social cost, and owing to the great variety and complexity

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1. op. cit., p. 78.

2. See H. G. Johnson, Money, Trade and Economic Growth, (Unwin University Books, Second Edition 1964), p. 157.

3. op. cit., p. 156.

4. op. cit., p. 157.

of the forms which this phenomenon takes, it will occupy most of the discussion on this chapter. First, however, we turn to apparently economic arguments for government intervention which do not rely on external economies.

#### Imperfections in the Market Mechanism.

In the absence of external effects, a perfect market would result in an optimum allocation of economic resources, in the sense that it would be impossible to make even one person better off without making at least one other person worse off. That is, a Pareto welfare optimum would be achieved.

One of the conditions necessary for a perfect market, however, is that all individuals have perfect knowledge of conditions relevant to their decisions, or, at least, that, given the state of their knowledge of these conditions, individuals believe the marginal costs would exceed the marginal benefits of acquiring additional information.<sup>1</sup> If this condition does not hold, entrepreneurs may very well not make the right locational decision, due simply to ignorance. This might be so even if the criteria used by entrepreneurs in making such decisions were acceptable from a social point of view, since the criteria are being applied to inadequate information. In such cases state intervention of one sort or another which diverted firms to the optimum location could both make the firm better off and improve national economic efficiency.

This argument for state intervention, clearly presupposes that in some cases at least the government can be better informed about conditions in different areas. Assuming there are no external economies

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1. G.J. Stigler, The Theory of Price, Third Edition, (The Macmillan Company, New York, 1966), pp. 2-3, makes some interesting points on the economics of information.

involved in the acquisition of market information, the argument also implies that the firm has neglected to gather additional information when it might profitably have done so, and that the government is aware of this. It is not enough to say merely that the government is better informed, since it is always possible for the government to increase its knowledge, but the latter is seldom costless. If the argument is to be economically based, therefore, the additional benefits of the government's superior knowledge must not exceed the costs it has had to incur to obtain it.

Even when these conditions for economically efficient government action are satisfied, however, it appears that the government really need do no more than disseminate the knowledge to businessmen. In fact, one of the duties with which the Permanent Committee was charged, was "to keep manufacturers who intend to establish factories fully informed of the conditions of production in the various regions of the Union".<sup>1</sup> There seems to be no need for the state itself to make the locational decision, to induce or direct firms to the optimal location, unless a further factor is introduced, namely that the firm in selecting its location uses criteria which are unacceptable to the government.

It seems to be sufficient, too, for the state to confine itself to a similar educative role in those cases where it is suspected that entrepreneurs choose a sub-optimal because their comparative cost calculations are haphazard and incorrect. If the government, indeed, has sufficient information to know that a wrong decision is about to be made because of haphazard calculations, it could presumably point this out to the firm and generally supervise the latter's comparative cost studies.

Whether the scope for government intervention on these grounds

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1. Prime Minister's statement on the Establishment of Industries in the Border Areas, 2 June 1960.

is quantitatively significant is another matter. Lionel Needleman<sup>1</sup> seems to suggest that careless locational decisions are common in Britain: "Location decisions within British manufacturing industry appear often to be unsystematic, if not casual. In their search for sites, firms seldom attempt to obtain any technical advice. In general, firms do not seem to be looking for the best site but for a site that is satisfactory. Once they have found two or three that meet their requirements, they stop looking for further sites, and choose from among the short list they have collected. Decisions to locate in one place rather than another seem rarely to be based on detailed calculations of the costs of operating at the different sites involved". Unfortunately, however, this view is not supported by convincing detailed evidence.

Evidence for South Africa on this question is totally lacking, and there is no way of telling whether a significant number of plants are wrongly located for the reasons mentioned, or whether incorrect calculations have tended systematically to favour expansion in the metropolitan areas.<sup>2</sup> Whatever the facts may be, it is by no means obvious, especially in view of the fog of uncertainty and risk in which business decisions are taken,<sup>3</sup> that the government is in a position to detect and hence prevent such errors. In any case, as we have suggested, the avoidance of haphazard decisions does not seem to require direct governmental intervention.

The position is rather different where the government regards the criteria used by firms in their locational decisions as unsatisfactory.

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1. 'What Are We to Do About the Regional Problem', Lloyds Bank Review, January 1965, p. 50.
  2. Our discussion of East London firm's in chapter 4 suggests that that centre may have benefitted from ill-considered locational decisions.
  3. See Needleman, op. cit., pp. 50-51.

For instance, it is a well known fact that entrepreneurs, like all other individuals, are not concerned solely with maximising their material income at all costs, regardless of the effect on their private lives. Thus it is conceivable that some will deliberately forego the opportunity of greater profits for other benefits. The Chairman of the Board of Trade and Industries <sup>1</sup> has claimed that "the development of industries in the decentralised areas is penalised by psychological factors - by the attraction exerted by the big metropolitan centres on entrepreneurs and executive personnel and even on skilled workers, and especially on the wives of all these people, and in spite of the improved status and standard of living that would be enjoyed by all of them in the decentralised areas". Needleman <sup>2</sup> suggests that in Britain the tendency for potential sites to be rejected for social reasons, even though they may yield greater profits, is likely to increase as the separation of ownership and management in business becomes more widespread. It is, therefore, conceivable that in some particular cases, if the government, by using positive incentives or physical controls diverts a plant from one location to another its profitability and the value of the country's output of goods and services may very well increase.

While there can be little doubt that entrepreneurs prefer one social atmosphere <sup>3</sup> to another, it is not clear whether this is a decisive factor in a significant number of cases or that it systematically militates against industrial development in border areas. <sup>4</sup> Again we know

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1. Address delivered to the Federated Chamber of Industries at the Wanderer's Club, Johannesburg on 5 November 1963.
  2. op. cit., p. 50.
  3. Schools, clubs, entertainment facilities, proximity to holiday home, medical facilities, legal counsel and other factors of this sort are probably taken into account.
  4. It is interesting that the horrors of life in "congested" metropolitan areas are frequently mentioned as good grounds for government intervention.

little about this in South Africa. But Andrews and Brunner,<sup>1</sup> in dealing with the concept of profit maximisation, thought it was not the case that the concept of 'economic man' had been thrown out and that in future the steering of the economy would have to be done by 'reference to psychological and sociological facts which are independent of and so economically irrelevant to any particular situation'. '... the location of a particular industry may have been precisely determined because it suited the managing directors desire for convenient access to a certain golf course or because his wife wanted the week-end home to be in the Lake District. The question is not whether such a factor is, or is not important in the individual case, but whether any particular factor of this kind has systematic effects upon the economic variables...'

'It seems in fact to make much more sense to discuss location theory in terms of costs and market opportunities and to treat other considerations as relevant only where economic criteria are not decisive'.

D. E. C. Eversley supports this view, but adds that 'it is one thing to try to make general models of location in relation to industry at large, especially when a decision has to be taken de novo, and quite another when we are discussing what incentives are required to make a firm change its location...'<sup>2</sup> It appears, according to Eversley, that the real difficulty in Britain has been that psychological and

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1. P. W. S. Andrews and E. Brunner, 'Business Profit and the Quiet Life,' Journal of Industrial Economics, 1962/63, col. 11, pp. 72 ff, quoted by D. E. C. Eversley, "Social and Psychological Factors in the Determination of Industrial Location," in Thomas Wilson (Editor), Papers on Regional Development, (Basil Blackwell, Oxford, 1965), pp. 102-103.
  2. op. cit., p. 103.

sociological factors may have been a significant obstacle to established firms moving from prosperous areas. His views, as he conceded, are 'based on personal impressions, and some of it can only be guessed'.<sup>1</sup> But even if Eversley's contention is accepted, it seems that it is considerably less relevant to our own problem than it is to the British case. In the first place, the rate of growth in Britian has been considerably slower than in South Africa, and the achievement of substantial decentralisation has depended to a greater extent in Britian on the shifting of plants from one part of the country to another. Secondly, though the Government's thinking may be changing,<sup>2</sup> it is part of its declared policy to divert only new industries:

"It cannot be overstressed, however, that the development of these centres [border areas] can succeed only in a climate of general industrial development in South Africa. A programme which merely involves the large-scale transfer of existing industries from the present industrial centres to centres in the border areas would have none of the stimulating and cumulative effects associated with economic development. What is envisaged is that a larger proportion of the new factories should be located and a larger share of the increased output be produced, not in the already over-populated urban centres, but rather in the border areas".<sup>3</sup>

In the absence of evidence to this effect, there seems to be no reason to assume that South African entrepreneunial behaviour is notably different from that of their British counterparts, and it seems reasonable to regard the comments by Andrews and Brunner as applicable to new plants, at least, and perhaps also to those already established. Indeed, since South Africa is a younger country, and, perhaps, not as tradition

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1. op. cit., p. 114.

2. See chapter 10 below where the Physical Planning and Utilisation of Resources Act No. 88 of 1967 is discussed.

3. Prime Minister's statement, 2 June 1960.

bound as Britian in the field of business, they may, if anything, be even more strongly motivated by the desire for profit and less by psychological and sociological factors. While the latter may be decisive in some particular instances, then, there is no reason known to the writer, to believe that these cases are significant in number, or that they tend systematically to reinforce regional concentration of industries. Provided the government can identify these cases, a by no means easy task, profits and the value of goods and services produced may be increased by intervention. Where metropolitan and border areas sites are equally profitable, but social factors favour the former, diversion of the plant will not give any economic benefit, but if it is desired for non-economic reasons, it will at least do no harm.

Finally, in this connection, it is worth noting that in terms of the liberal tradition in economics, the consideration of non-profit factors does not really represent a market imperfection. Even in the analysis of perfect competition the fact that decision makers, consumers, workers and entrepreneurs alike, consider both monetary and non-monetary factors, is readily acknowledged. "The excellence of a moderate income obtained by moderate work" is noted by Marshall.<sup>1</sup> Basic to this tradition is the belief that it is a good thing for an individual to be in a chosen position, and that non-monetary factors are part of the opportunity costs which enter in this choice. Increased output, obtained by forcing workers to work longer hours, and entrepreneurs to choose the profit-maximising location against their will, even though increased net incomes resulted in both cases would not be regarded as an economic improvement by liberal economists.<sup>2</sup> The view that

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1. A. Marshall, Principles of Economics, 8th Edition, 1938, p. 136.
  2. Provided entrepreneurs were compensated, however, intervention on these grounds might be regarded as asseptable, even by liberal economists, so long as they judged the loss of non-monetary benefits by entrepreneurs to be more than offset by social benefits to the community as a whole e. g. a better distribution of income, or an improvement in the quality of life. See for instance E. J. Mishan, The Costs of Economic Growth, Staples Press, London, 1967, where some interesting points relevant to this issue are made.

it is economically undesirable for entrepreneurs to take non-profit factors into account when these conflict with the government's purposes, however, merely represents an alternative, defensible ethical position.

Arguments Based on Economically Relevant External Effects in Static Analysis

(i) The Nature and Policy Implications of External Effects.

Even in perfect competition the market will not perform its functions properly if social and private marginal costs and benefits do not coincide, that is, if there are external effects. The essence of the matter is that external effects prevent producers from behaving in an optimal manner. In a market economy producers are guided by private rather than social returns. Thus if a producer is in a position to increase the output of his product at a cost which is less than the resulting increment to gross remuneration, it will pay him to do so, even though the marginal cost is so great as to offset any gain to the community. Similarly private enterprise may fail to undertake an investment or increase output, because private marginal cost exceeds the private marginal return, even though it is socially desirable to do so.

Perfect competition, therefore, is not a sufficient condition for optimum welfare, and external effects, which can occur in perfect competition, are reflections of the failure of the market to convey the right signals to private economic units. In other words, the rewards which are signalled by the price mechanism do not correspond to the value to society of the additional product which they would produce in each line of activity. Furthermore, perfect competition is also not a necessary condition for optimum welfare since the latter can in principle be achieved in a planned economy just as well as in a competitive market economy. Indeed, the presence of external effects is the basis of most arguments for state control.

The concept of external effects, however, requires more careful definition. Perhaps still one of the best general statements of the meaning of external economies and diseconomies, is that given by

A. C. Pigou:<sup>1</sup>

"Here the essence of the matter is that one person A, in the course of rendering some service, for which payment is made, to a second person B, incidentally also renders services or disservice to other persons (not producers of like services) of such a sort that payment cannot be exacted from the benefitted parties or compensation enforced on behalf of the injured parties."

The principal elements of this definition are that there is a direct interdependence between individuals whether producers or consumers, in the sense that the individual A's activities affect B's utility, and that A is unable to exact payment from B for benefits conferred, or B to obtain compensation from A for harm done by the latter. As we shall see below it will be necessary to broaden this definition to take into account "costs consequent on private production which are voluntarily taken over by third parties e. g. the government".<sup>2</sup> The benefits conferred, for which payment is not exacted, known as external economies, mean that the social value of a good exceeds its private value, whereas the reverse is true in the case of external diseconomies, which involve uncompensated damage inflicted on others. External diseconomies may conceivably be so great that the social value of an additional unit of a good is negative even though its private value is positive.

Pigou, it should be noted, formulated the concepts in marginal terms.<sup>3</sup> It is the difference between marginal social benefits and

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1. The Economics of Welfare, Fourth Edition (Macmillan 1932), p. 183.
  2. Harald Jürgensen, "Private and Social Costs," The German Economic Review, Vol 2, No. 4, 1964, p. 275.
  3. The need for this formulation is clearly demonstrated by W. J. Baumol, Welfare Economics and the Theory of the State, Second Edition, (London, 1965), p. 26.

marginal private benefits which determines whether external economies or diseconomies are present. In perfect competition,<sup>1</sup> in order for a welfare optimum to be achieved, the marginal social costs of each product must be equal to its price, but, without government intervention, it is the private marginal cost which is equated with price. The important implication of this for economic policy is that when social marginal costs exceed private marginal costs, more of the good is produced than is socially desirable, while the reverse situation results in too little being produced.

The traditional prescription for dealing with such situations is that the government should attempt, by means of a system of taxes and subsidies or some other device, to correct for divergencies between social and private marginal costs, and so bring about an improved allocation of resources. For instance, where social cost exceeds private cost the government might impose a tax per unit of output sufficient to cover any incidental damage inflicted on other members of society by the activity, thus raising private marginal costs to the level of social marginal costs and causing a reduction in output.

External effects may, in similar fashion, prevent an optimal distribution of manufacturing activity between different areas, and so provide a prima facie case on economic grounds for government intervention. For instance, part of the costs of a new firm establishing itself on the Witwatersrand may be imposed on other economic units in the area and not reflected in the profit and loss account of the firm in question. If these costs exceed benefits conferred on other economic units for which payment is not received, the firm's activities in the area are on balance subject to external diseconomies. This, however, is not sufficient to establish an economic case for government intervention. If, in addition, however, expansion in the most profitable alternative location, which we shall assume to be in the border areas, entails

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1. In a system of imperfect competition the conditions for a welfare optimum are rather more complex.

external economies, or smaller diseconomies than does expansion on the Witwatersrand, it may be possible for government intervention to improve economic efficiency by adopting a policy of industrial decentralisation.

In short, it is possible that though the Witwatersrand is a more profitable location for a particular firm than is the most profitable site in the border areas, the inclusion of external effects in the calculation may reverse the order.

This possibility that due to external diseconomies private costs do not provide an adequate deterrent to industrial expansion in the metropolitan areas was referred to in the statement announcing the establishment of the Permanent Committee: "In addition it may be expected, the decisions of the entrepreneur as to the location of his plant are not influenced by the cost which the community as a whole is called upon to bear".<sup>1</sup> It is one thing, however, to state the possibility of an economic case on these grounds, but quite another to pinpoint particular cases of external effects, and to find satisfactory methods of correcting for them. We shall now consider several arguments which seem to depend on the phenomenon of external effects, and attempt to suggest what form of government intervention, if any, is desirable. In particular, we shall ask whether the measures at present being used are capable of remedying any misallocation of resources which may arise from the specific divergencies between social and private costs and benefits discussed.

(ii) High cost of land, labour and transport

The Viljoen Commission argued as follows: "The economic costs of concentration are reflected in the subsidation of housing, transport and other public services, in traffic congestion, high urban land values, high local rates, and will in future create increasing difficulties in regard to the availability of labour and the disposal of

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1. Prime Minister's statement, 2 June 1960.

effluent".<sup>1</sup>

In the context of their discussion it seems that they regarded these factors, not merely as obstacles to expansion in the metropolitan areas, but as part of the case for a programme of government induced industrial decentralisation. Indeed, several of these factors do involve external diseconomies which might warrant government intervention, but "high urban land values", "increasing difficulties in regard to the availability of labour," and, "high local rates", which is dealt with in the next section, seem to be in a special category.

High land values and high labour costs, as such, in large industrial centres do not lead to a misallocation of resources which calls for government intervention on economic grounds. When a firm expands on the Witwatersrand, for instance, it will add to the demand for land and labour, so contributing in some measure to a rise in rents and wage rates. Thus, in addition to the costs which the firm bears itself, it imposes on other users of these factors, costs for which payment is not exacted from him, and hence, in terms of our definition, there is an external diseconomy involved. Despite this, however, there will not necessarily be an adverse effect on the allocation of resources, which requires government intervention. For the sort of external economy in question is the "pecuniary" as distinct from the "real" variety, to use Jacob Viner's<sup>2</sup> important distinction. In static analysis<sup>3</sup> pecuniary external economies do not lead to a mis-allocation of resources. The Witwatersrand firm's

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1. Report of the Commission of Enquiry into Policy Relating to the Protection of Industries, U.G. 36/1958, the Government Printer, Pretoria, p. 54, para. 451).
  2. See W.J. Baumol, Welfare Economics and the Theory of the State, Second edition, (G. Bell & Sons, London, 1965) p. 25.
  3. Arguments involving dynamic processes are discussed later in this chapter.

expansion, while it imposes higher wage and land costs on other firms, "has also conferred a benefit on the suppliers of the input and since the benefits and costs which fell on A himself were necessarily equal in magnitude (what purchasers paid the suppliers received) the indirect welfare effects may be taken to cancel out. A has not paid for the indirect consequences of his act, but on balance these consequences were nil".<sup>1</sup>

Variations in rents, wage rates and other factor prices, therefore, are an essential part of the mechanism by which the market performs its functions of allocating resources between industries and regions. Rising factor prices provide an automatic deterrent to the establishment of firms in the metropolitan areas and to location in border areas, and government intervention on these grounds is, therefore, unnecessary. The fact that the "congested" areas continue to grow despite these higher costs, suggests that the economic value of being located in these areas is great enough to make the payment of high rates and wages worthwhile. To say that activity in an area should be discouraged because wage rates are high is like saying that we should curb output in all industries which are able to pay high wages. As we shall see below, however, difficulties may arise if factor prices are inflexible, so that they do not respond properly to changes in the supply and demand, and the price of a factor in one centre relative to that in another centre thus becomes distorted.

(iii) The Cost of Social Overheads.

The Viljoen Commission, as we noted, also mentioned "high local rates" as one of the economic costs of concentration, and another closely related argument for decentralisation is that the costs of public

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1. Baumol, op. cit., p. 25.

services, utilities and other social overheads per inhabitant are greater for large urban areas than for small.

So far as the services provided by local authorities themselves are concerned it seems we should expect costs per inhabitant to fall as city size increases, at least up to a certain size which is optimal from this point of view. Johansen for instance suggests there are probably economies of scale in municipal administration, for the following reasons:

"A municipality must always have a certain administration. Offices must be set up and personnel appointed. If the population of a municipality is too small, the administrative organs will have some difficulty in utilising their capacity, and for a given standard of administrative quality the administration will then prove comparatively expensive per resident within the municipality. In small municipalities, too, every single administrative organ will tend to deal with matters of highly differing kinds, with the result that there will not be much degree of specialisation".<sup>1</sup>

To the writer's knowledge, published empirical evidence relating to the costs of municipal administration in South Africa is not available. It is of some interest to note, however, that Johansen finds the actual position in Norway in 1950 to have been that "the actual administrative expenses per inhabitant were greater in the large municipalities than in the small".<sup>2</sup> But, he adds, "there is no doubt that the standard of administration was higher in the large centres than in the small. At the same time the large municipalities were relatively wealthier, so they undertook a greater number of tasks. They therefore had 'more things' to administer. Finally in the small municipalities relatively

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1. L. Johansen, Public Economics, (North Holland Publishing Company, Amsterdam, 1965), p. 346.

more administrative work was carried out by elected representatives. These factors were studied by the Municipal Divisions Committee, which came to the conclusion that it was 'remarkable' how high administrative expenses were in the smallest municipalities".<sup>1</sup>

Municipal administrative costs, however, are only one aspect of the cost of the services which they provide, and the position may well be different from that described by Johansen when all municipal activities are included. While the cost of land and labour is higher in large centres, so that public services would tend to cost more for this reason, certain services, for instance, the provision of sewerage and the generation and distribution of electricity and gas, are probably subject to significant economies of scale so that the net effect may actually be lower costs for these per inhabitant. Despite the probability of internal economies of scale in the case of some amenities, however, a United Nations study presents data showing that, in Italy at least, social overhead costs per additional worker rise as the size of cities increases. They say:

"Large scale development of industry involves complementary investments in economic and social overheads. A recent Italian study suggests that the costs of social fixed investments made necessary by the addition to a locality of one new worker employed in a new industry may be high and may increase in direct proportion to the size of the population centre in which the industry has been established. The costs to be supported by the State, province and commune for urban public services in the widest sense - streets, lighting, sewers, schools, hospitals, police, communications - and by public and private authorities providing services and utilities - city transportation, gas and electricity for domestic consumption, and telephones - are estimated in this study to vary from 123,000 lire (\$ U.S. 197) in centres of 30,000 inhabitants, to 194,000 lire (\$ U.S. 310) in centres

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1. op. cit., p. 346.

having between 30,000 and 200,000 inhabitants, and to 357,000 lire (\$ U.S. 571) in centres of more than 200,000 inhabitants. These costs are further increased if housing is included in the calculation."<sup>1</sup>

As the passage indicates the figures relate to a number of facilities which, in both Italy and South Africa, are not paid for solely by local authorities. The central and provincial governments in this country are mainly responsible for schools, hospitals, police and communications and in addition contribute substantially to road construction in urban areas. The statistics unfortunately do not specify how the costs of these various items are split between local authorities on the one hand, and the State and provinces on the other hand, and this distinction is crucial in deciding whether a case can be made on the basis of social overhead costs for government intervention in the location of industry.

Even if we were to regard the Italian data presented as evidence that a similar relationship between the cost of public services per inhabitant and city size is likely to hold in South Africa, it is still not clear whether the costs incurred by the municipality itself per inhabitant, increase as city size increases. Let us assume, for arguments sake, however, that the latter relationship does hold in this country. Would this in itself imply that measures to check further expansion in the larger cities are necessarily desirable?

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1. United Nations, Department of Economic and Social Affairs, The Establishment of Industrial Estates in Underdeveloped Countries, (New York 1961), p. 15. The same figures, without mention of the particular items involved are quoted by H. B. Chenery and P. G. Clark, Interindustry Economics, p. 295 where they are attributed to A. Molician, "Industrialisation and Decentralisation," paper presented to the Tokyo Conference on Problems of Economic Growth, April 1957.

To advocate "decongestion" of urban areas in which the costs incurred by the municipality are high, simply because the cost of public services paid for by the municipality itself per inhabitant are high, seems to be no more reasonable than it would be to argue that industry should be discouraged in a certain area simply because wage rates are high. In the first place, electricity provided by municipalities is invariably paid for by users only, and, as in the case of labour, the willingness and ability of firms to pay the price seems to be the best test available of its economic value to them. Likewise water is often charged directly to users and is not paid for out of general revenue.

If services of this sort are excluded, however, it may still be found that the cost of services paid for by the municipality out of property rates increases more than in proportion to population. Nevertheless, since those who contribute property rates income also constitute the municipal electorate, it seems reasonable to assume that they regard the continued expansion of population in the municipal area and the increase in the cost of services which this may entail as worthwhile. It is a feature of our political tradition that local authorities are permitted a certain degree of autonomy in matters of this sort. This is particularly desirable where there are "strong grounds for taking local needs and desires into account, and utilising local knowledge in finding the best solution".<sup>1</sup> The municipalities' freedom, like that of any other decision making unit, is always constrained by the country's legal code, and, in particular, by those regulations which specifically affect local authorities. For instance, they are sometimes compelled to carry out certain measures or activities, or in some cases State grants may depend on their complying with certain standards laid down by law. Within this framework of regulations, however, municipalities

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1. Johansen, op. cit., p. 349.

are usually free to decide whether to extend the services which they provide or not.

There is something to be said, therefore, for regarding a local authority as a self-contained decision making unit. The costs which they impose on themselves may thus be regarded as being "internalised" by the municipality, in particular those who pay property rates. If this principle is accepted it is hard to see that there is any economic ground for concern if municipalities choose to provide facilities costing more than they would in some other part of the country, simply because they do cost more. The cost of such facilities is, in any case, only one aspect of the cost of production in an area, and if, despite a rise in the cost of the former, the industrial sector of the area continues to expand, this may be because the other advantages of the area offset this possible disadvantage. Arguments to the contrary seem to imply that it is economically desirable for the cost of municipal facilities per head of population to be the same in all urban centres'. Whether the cost of services to municipalities rises in smaller or greater proportion than population, a matter on which the writer has no evidence for South Africa, seems to be irrelevant to the economic case for decentralisation, provided these are paid for by the municipalities themselves. It is worth noting, too, that as in the case of Britain, 'there is no real evidence that the so-called "congested" areas wish to discourage further influxes of workers'.<sup>1</sup>

The position is entirely different where the costs imposed on the central and provincial governments per additional worker rise as the city increases. The evidence given above for Italy is not clear on this point, but if it means that the contributions of the state and province do increase with city size, then there does appear to be an external diseconomy, relevant to location policy, involved in the

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1. H. W. Richardson and E. G. West, 'Must we always Take Work to the Workers?', Lloyds Bank Review, January 1964, p. 40.

expansion of large cities. In so far as the costs of social overhead are not borne entirely by the inhabitants of a particular municipal area, a new firm establishing itself in the area imposes costs on taxpayers in general. The costs imposed on others outside the area as a result of expansion of activity represent external diseconomies since, in accordance with the definition given earlier, we include in this term "all costs consequent on private production which are taken over by third parties e.g. government".<sup>1</sup> It is not enough, however, to show that the central or provincial government covers part of the additional social overhead required by each additional worker in a "congested" area. There is an external diseconomy relevant to location policy, only if the central or provincial government's contribution is greater in large than in small centres.

The Viljoen Commission, as we saw above, included "the subsidisation of housing, transport and other public services" among the economic costs of concentration, while the Prime Minister in his statement of June 1960 referred to "the relative increase for the central, provincial and local authorities in the cost of supplying civil and social services, the maintenance of law and order, the organisation of traffic and market facilities and the provision of numerous other services". Indeed considerations of this sort were amongst the major economic arguments advanced by the Barlow Commission<sup>2</sup> in 1937 for the diversion of industry from London.

Again there is a lamentable lack of published empirical evidence for South Africa. Nevertheless, one instance which may be worth mentioning is the provision of public transport for Africans in the larger urban centres. The Deputy Minister of Bantu Administration

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1. Jurgensen, *op. cit.*, p. 275.

2. See Report of the Royal Commission on the Geographical Distribution of the Industrial Population, p. 188.

and Development stated in the House of Assembly early in 1967<sup>1</sup> that the cost to the central government of subsidising transport between African townships and white areas was almost R12 million per annum. These subsidies, as he pointed out, were originally introduced to compensate the South African Railways for erecting rail links to the new townships, most of which are for Africans settled away from the cities under the big resettlement schemes such as Meadowlands near Johannesburg, and Kwa Mashu near Durban, and for running special services to the townships. Bus services run by private companies are also subsidised by the government.

These transport subsidies apply mainly to the larger urban centres because of the great distance of most of the townships from the places of employment, and the cost to the central government per additional worker may be greater in the metropolitan areas than in other centres. It is not clear, however, whether and to what extent the Government is subsidising transport costs from urban townships serving border areas to places of work, for instance, from Umdantsane to East London. As we point out in chapter 6 below the distance between the latter two is very considerable and workers moved from East London to Umdantsane have to incur higher transport costs as a result. The case for government intervention to decentralise industry on these grounds depends on whether the transport subsidy per worker is greater in the metropolitan than in the border areas. In the absence of empirical evidence, however, we shall assume, for argument's sake that no transport subsidy, corresponding to the above mentioned R12 million, is paid in respect of the transportation of Africans to and from their jobs in border industries. It might, of course, be argued that the need for transport subsidies in the metropolitan areas is created by the government's own policy regarding the situation of African townships. But, setting this aside, it seems that

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1. Eastern Province Herald, Port Elizabeth, 19th May 1967.

a genuine external diseconomy in the expansion of large centres may be involved here.

What form of government action is appropriate for coping with this situation, if it is regarded as economically undesirable? As in the case of all problems arising from external effects the appropriate economic solution is that which is cheapest. For instance, in determining whether decentralisation is the appropriate remedy, the relevant consideration is whether the external diseconomy imposed on the government by the establishment of an additional firm in a metropolitan area, is greater or less than the decline in productive efficiency which would result if the firm were, by some means or other, diverted to some other location. Only if the former were greater than the latter would diversion of the firm be economically preferable to the Government accepting the additional transport subsidy which location in the metropolitan area would entail. In other words, diversion would be the cheapest remedy so long as the subsidy per worker required to induce the firm to move elsewhere did not exceed the transport subsidy per worker in the metropolitan area. This is the test which must be applied so long as the present system of subsidising urban Bantu transport facilities is retained, and the only alternatives open to the government would be to divert the firm, or do nothing and bear the subsidy. The latter is likely to be the 'optimal' form of government 'action' in most cases.

The trouble with this solution is that it does not eliminate the external diseconomy in question, and firms who survive the above test and gain entry into the metropolitan areas where transport subsidies are paid, still impose a cost on the government. The latter imposition may be preferable to diversion in most cases, but if the Government wishes to eliminate the external diseconomy it appears that the only sound solution is the abolition of the transport subsidy. It would certainly be economically better than the avoidance of external costs

of this sort by prohibiting the entry of all or even a large proportion of, prospective newcomers to the metropolitan area. The Deputy Minister of Bantu Administration and Education, in the statement referred to earlier, in fact hinted that the subsidisation of urban Bantu transport might be discontinued. Whatever may be said against such a step on other grounds, it is preferable to wholesale diversion of industries, as a means of eliminating the external costs.

Say the government withdrew the subsidy of R12 million per annum on Bantu urban transport services. Unless Bantu workers are to lose as a result of it, either the total wage bill in the areas affected would have to rise by this amount, or employers would have to make increased payments direct to a fund to be used to replace the Government subsidy. Let us say that employers at present making contributions in terms of the Bantu Transport Services Act<sup>1</sup> bore the full burden resulting from the withdrawal of the Government's subsidy. The levy paid in terms of the Act applies to adult male Bantu employees and the rate paid varies from centre to centre with a minimum rate of  $2\frac{1}{2}$  cents per week per employee and a maximum rate of 10 cents. Taking into account the total contributions made to the fund by various centres between 1st April 1965 and 31st March 1966, and the rates per employee applicable in each centre,<sup>2</sup> the writer has calculated that the number of man-weeks in respect of which payment

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1. No. 53 of 1957 (As amended).

2. Based on information contained in the annual reports of the Department of Transport and of the National Transport Commission for the period 1 April 1964 to 31 March 1965 (p. 28) and 1 April 1965 to 31 March 1966 (p. 31).

was made by employers in Durban, Pinetown, Port Elizabeth and certain centres in the Southern Transvaal<sup>1</sup> was 17, 931, 191 in the period mentioned. If only contributors to the Bantu Transport Levy Fund in these areas were to make up for the withdrawal of the R12 million government subsidy, their contributions per male adult Bantu labour would have to increase by an average of just under seventy cents per week.

It is by no means clear that it would be equitable to impose the burden entirely on employers at present contributing to the Bantu Transport Levy Fund, since other workers also use these transport services, or that only employers in the centres mentioned should bear the cost, since the government subsidises transport in other centres as well. But the information contained in the Bantu Transport Services Account for these centres seems to provide a firmer base than any other of which the writer is aware, for an estimate of the maximum impact of the abolition of the Government subsidy on labour costs per worker in the larger centres. In view of the qualifications made in the first sentence of this paragraph, however, it appears that 70 cents per week per worker is the maximum increase in labour costs per Bantu male employee that can be expected on this account.

While employers would obviously not welcome an increase of about R3.00 per month, on average, in their costs per adult Bantu worker, it seems highly improbable that this alone would have a significant effect on the rate of expansion of the areas in which they are situated. Some firms close to the "margin of transference", especially light labour intensive industries, may feel impelled to relocate their

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1. The Southern Transvaal centres included in this calculation are Alberton, Boksburg, Brakpan, Edenvale, Germiston, Johannesburg, Vanderbijlpark and Vereeniging.

factories, perhaps in border areas, and some prospective newcomers to the areas may be put off. But at least then the expansion of old firms and the establishment of new ones in these areas would be determined by the economically efficient criterion of the ability and willingness to pay the higher labour costs. This is obviously more likely to lead to an efficient allocation of resources than direct Government intervention in individual locational decisions. If it is economic efficiency we are after, the market mechanism in this case at least seems to avoid the inevitable element of arbitrariness, the greater scope for mistakes, and the administrative costs involved in direct Government intervention in the location of industry. This is especially so since the external costs are so small. It is possible, however, that when added to other external diseconomies which may be involved in the expansion of the metropolitan<sup>areas</sup>/the case for Government intervention may become more convincing. We must, therefore, consider other possible economic grounds for state control.

One important conclusion to be drawn from this example is that the presence of an external diseconomy of this sort does not mean that induced decentralisation is automatically justified. It is not immaterial what specific method is used to eliminate external effects, and, indeed, if the present system of transport subsidisation is retained, it will probably be economically better in all but a very few cases for the Government to accept the transport costs imposed on it, rather than divert firms to the border areas.

(iv) Smoke, pollution of the atmosphere, noise and effluent disposal.

The Barlow Commission's statement of the economic disadvantages of the concentration of industries and the industrial population in a few large centres is rather similar to that of the Viljoen Commission quoted above except that it includes in addition "smoke, pollution of the atmosphere, and noise which are not only injurious to health but also involve economic loss".<sup>1</sup>

Whereas in the last section we were concerned with costs taken over voluntarily by the central and provincial governments, the "nuisances" mentioned by the Barlow Commission involve costs inflicted on other individual producers and households in the area, and perhaps on municipal authorities as well. Similar considerations, however, must be taken into account in deciding what government action, if any, is necessary to remedy possible inefficiencies in resource allocation which may result from these sources.

As a firm expands or establishes itself for the first time in a particular area, it intensifies the problems of smoke, air pollution, noise etc., (unless by law firms are compelled to take measures which entirely prevent these effects). These factors also tend to influence the expanding or new firm's costs, but the firm in question bears only the average cost per unit of output arising from smoke, noise and other such nuisances. In making its locational decision, therefore, the average cost of these nuisances enters into the firm's calculations instead of the marginal cost, whereas the latter is the relevant consideration from a social point of view. The marginal cost, which is equal to the rise in total costs arising from such nuisances as a result of the firm's activities, whether these costs are borne by the firm itself or by others, exceeds the average cost so that the volume of smoke, noise, etc. tends to exceed the socially 'optimal' level.

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1. Report of the Royal Commission on the Geographical Distribution of the Industrial Population, p. 188.

These problems will arise no matter where the firm is situated, but since large cities are more densely populated than small towns the marginal cost, resulting from increased industrial output, is likely to be higher, and to exceed the average cost by a greater amount, in metropolitan than in other areas. The point is stated as follows by Baumol: "... The magnitude of the external effect of a given act depends not only on the decision of the actor but also on the activity patterns of the persons who are affected. The laundry bill imposed on the people in the vicinity by a smoky factory will vary in size with the number of residents in that neighbourhood. The more people who live there ( a matter which may be entirely beyond the control of the factory's management), the more serious the externality question".<sup>1</sup>

It is apparently some such reasoning as this which must lie behind the advocacy of decongestion on grounds of smoke and other nuisances of this type.

The task of deciding whether corrective action should be taken, and what form it should take, is a complex and difficult one. In particular, once external diseconomies of this type are isolated, which suggest that from an economic viewpoint the expansion of the city is being pushed too far, it does not automatically follow that any measures which slow down growth in the area will lead to an improved allocation of resources.

One possible solution is a law compelling firms to avoid inflicting such external costs upon other individuals. The conditions most favourable to this solution are stated by Jurgensen<sup>2</sup> as follows:

"Where high additional social costs go hand in hand with small economies for the enterprises we shall find the most favourable point of attack for economic measures . The overall social costs of production would decrease since they would be diminished by the high

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1. W.J. Baumol, Welfare Economics and the Theory of the State, p. 31.

2. op. cit., p. 281. See also his arithmetical example of the economies of eliminating dust pollution caused by a cement factory.

additional social costs for households and public authorities and increased only by the smaller additional private costs".

For instance, it may be that the cost of avoiding pollution of a river by a chemicals plant is small in comparison with the damage inflicted on a holiday resort downstream, and it will then be economically desirable to compel the firm to take avoiding action. It may be possible for instance to process the effluent in a way which renders it harmless, or to divert it from the holiday resort in question. It should be noted, however, that even though small compared with the external diseconomies involved, the costs of avoidance may so reduce the profitability of the enterprise as to render it uneconomic in its present location. Whether the latter is the case or not, the mere fact that avoidance costs are lower than the external diseconomy, does not necessarily mean that the complete elimination of the nuisance by a particular firm is the best alternative available. The costs and benefits of this measure must be compared with the alternatives of a partial reduction of the nuisance to an optimal level, and relocation of the plant. The latter will be preferable to measures to eliminate or reduce the nuisance in the present location, if the change in the location of the factory results in an increase in production costs which is smaller than the avoidance cost, or if the net gain from relocation or diversion of the plant is greater than the net gain from partial avoidance. Under the assumed circumstances, therefore, it is possible that the relocation or diversion of a firm will be the best solution available, from an economic point of view. This may be true even if, by forcing it to vacate its present location or preventing it from entering an area, the firm finds it unprofitable to produce at all.<sup>1</sup>

It appears that "in those cases involving high avoidance costs and low additional social costs"<sup>2</sup> it would always be economically undesirable to compel a firm to prevent the damage which it inflicts

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1. Presumably this was the position in the case of the titanium oxide factory situated on the Natal South Coast, which was ordered to close down in 1963.
  2. Jurgensen, *op. cit.*, p. 286.

on others altogether. Likewise the loss of productive efficiency involved in diverting the plant to some other location may exceed the social costs imposed on other economic units in the area. In these circumstances, the best solution, in principle, at least, seems to be the introduction of compensation, in terms of which the offending factories are taxed and the proceeds used to compensate the injured parties. Where the number of injured parties is large, however, the costs involved in determining the loss to each and administering the compensation scheme may render such a scheme uneconomic. Also, as Baumol points out, in view of the fact that the amount of damage inflicted depends very largely on the number of people in the vicinity of the factory "a rule which states that the factory owner should be taxed by an amount equal to the cost of the disadvantages his activity imposes is likely to be neither unambiguous or obviously just."<sup>1</sup> In other words, a reduction in the number of people in the vicinity of the factory presents itself as another possible measure.

If the real national product is to be maximised, it is necessary to select the best of all practicable alternatives; the ideal solution can seldom be achieved. Even though, in a situation in which the external costs imposed are smaller than avoidance costs or the fall in efficiency resulting from the relocation or diversion of a firm, a tax-subsidy scheme may be the best in principle, the latter may not be practicable. Other alternatives must, therefore, be considered. One of these is a tax on firms emitting smoke, based on the marginal social cost of the damage arising from this source, without an accompanying compensation scheme. Thus firms would take the full social costs of their production into account, and people living in the vicinity would be free to choose whether the disadvantages of the smoke nuisance were greater or smaller than the advantages of remaining where

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1. op. cit., p. 31.

they were. Another possibility is the introduction of regulations which will partially reduce the smoke nuisance. This may be worthwhile even though it would be uneconomic to compel firms to avoid altogether the smoke damage inflicted. But whether an economic solution can be found or not, it is clear, in the circumstances envisaged, that the relocation or diversion of the plant would be economically undesirable. It would be better to do nothing, rather than intervene in the location of industry. In practice, a certain amount of harm caused by nuisances such as this, is inevitable, and the larger the town the greater the damage. As one American judge has put the matter, "without smoke, Pittsburgh would have remained a very pretty village".<sup>1</sup>

The foregoing discussion suggests that the detection, estimation, and correction of external diseconomies of this sort is a complex matter. It is possible, as we have shown, that in some particular cases external diseconomies, of the sort discussed in this section, either alone or together with other types of external diseconomies, indicate that government intervention in the location of industry is the appropriate economic remedy. In other cases the appropriate remedy, if the presence of these external effects is to be exploited in such a way as to actually increase economic efficiency, may be one of a number of rather intricate devices. In still others it will be preferable to allow the external diseconomy to persist, rather than adopt any of the practicable methods of "correcting" for these external effects. A policy involving "correction" for external diseconomies of this sort solely by intervening in the location of industry will obviously not lead to the optimal arrangement of resources.

It will, therefore, be necessary to consider each individual case on its merits and unless the external diseconomy is so conspicuous and obviously<sup>2</sup> greater than the loss which would result from re-

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1. Musmanno, J., in *Versailles Burrough vs. McKeespoort Coal and Coke Co.*, 1935, 83, *Pitts. Leg. J.*, 379, 385.
  2. As it was for instance in the case of the titanium oxide plant mentioned in an earlier footnote.

location in or diversion to some other centre, it will require some very nice calculations involving considerable ingenuity in deciding whether Government intervention in the location of industry is the appropriate form of action (or inaction) from an economic point of view. The estimation of the size of the sort of external costs under consideration awaits a large scale research project backed by substantial financial resources. Where the external costs are so large that they obviously exceed avoidance or relocation costs, and these costs can easily be attributed to a particular firm, it will usually be found that other inhabitants of the area will complain, bringing the matter to the attention of the authorities, who have power to intervene,<sup>1</sup> or that some party or parties will take legal action against the offending producer. It is therefore the less obvious cases that might require intervention initiated by the Government, and it is precisely these which present the greatest computational problems in deciding whether to relocate or divert the firm, and how large a subsidy if any should be paid to induce the firm to establish in another area. In the absence of statistical evidence it cannot be said with any degree of conviction whatsoever that significant subsidies, and a substantial diversion of industries to non-metropolitan locations, can be justified on these grounds. Since in the less obvious cases in question the external costs imposed by a firm are likely to be relatively small, the number of cases in which location policy is appropriate, is likely to be correspondingly relatively insignificant. When in addition it is noted

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1. Local authorities, it should be noted, often have the power to deal with such cases themselves. e.g. the case of the Phillips Carbon Black plant in Port Elizabeth. Grahamstown residents a few years ago also complained about smoke emission from the local pottery but the management replied that measures to avoid this would force them to close down. Grahamstown chose to put up with the external costs.

that, in those cases in which Government intervention in the locational process seems to be appropriate, the net economic benefits of such intervention may be greatest if the firm is diverted from say, Johannesburg to Kroonstad, Vanderbijlpark or Parys for instance, rather than to a border area, the likelihood of significant border areas industrial production being justified on economic grounds seems smaller still. While the writer is extremely sceptical about the scope for induced border areas production which can be supported on these grounds, this is essentially a question of fact and the results of a large scale research project, possibly undertaken by the Government, might conceivably present a different picture. It is, therefore, only in very special cases that diversion of firms to border areas will be the best way of dealing with this particular type of external effect. The principle which needs to be applied for the best economic results is expressed by Coase as follows:

"When the change in the location of the factory results in a reduction in production, this obviously needs to be taken into account and needs to be weighed against the harm which would result from the factory remaining in that location. The aim of such regulation should not be to eliminate smoke pollution but rather to procure the optimum amount of smoke pollution, this being the amount which will maximise the value of production".<sup>1</sup>

In addition there are of course various technical difficulties confronting attempts to correct for external effects, whether these are related to the location of industry or not. For instance, on the basis of static welfare analysis, Buchanan and Kafoglis dispute the traditional view that a firm conferring external benefits should be encouraged to increase its output.<sup>2</sup> There is also the lesson of the

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1. op. cit., p. 42.

2. J.M. Buchanan and M.Z. Kafoglis, "A Note on Public Goods Supply," American Economic Review, Vol. 53, June, 1963.

Lipsey-Lancaster theory of the second best that "piecemeal application of single welfare conditions in a situation where not all such conditions can be satisfied may, at least in some cases, serve only to decrease welfare".<sup>1</sup> At the same time, however, the theory of the second best can also be used to call in question partial arguments against government intervention just as effectively as it weakens the case for government activity.<sup>2</sup>

There is the danger, however, that by taking such considerations too seriously we shall be led to complete inaction, since in reality it is impossible to meet all the optimum welfare conditions simultaneously, and improvements are and must be brought about piecemeal. While this is true, we must be equally wary of the view that additional social costs in a particular sphere of the economy always automatically justify government intervention or that any measure which eliminates these costs will serve as well as any other. A careful comparison, in terms of their total effects, of the present situation with the proposed new arrangement of resources is necessary.

(v) Traffic Congestion.

Traffic congestion is probably the most frequently cited argument for industrial decentralisation. Earlier we mentioned the contribution of central and provincial governments to the costs of urban road construction, which may possibly involve an external dis-economy of the sort arising when public authorities voluntarily take

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1. W.J. Baumol, Welfare Economics and the Theory of the State, p. 19. See also E.J. Mishan, The Costs of Economic Growth, p. 55.
  2. Baumol, op. cit., p. 30. This point Baumol attributes to Professor Olson. An example is "criticism of federal farm programmes in an economy in which monopoly power is widespread".

over part of the costs consequent on private production. But this is quite a different problem from traffic congestion as such. Even if the provincial and central governments did not contribute to the cost of roads in large urban areas, or rather, did not contribute more relative to smaller centres than might be economically justified, traffic congestion would still involve an external diseconomy, in the form of costs imposed by additional road users on those already in the area.

The nature of this external diseconomy is much the same as that involved in the case of smoke, air pollution and other similar nuisances. It is very nicely described by E. J. Mishan:<sup>1</sup>

"The extent of the social damage inflicted by traffic congestion, even on itself alone, tends to be underrated by a public which habitually thinks in terms of an average figure rather than in terms of the appropriate marginal concept... Suppose that, over a certain period, just about a hundred cars can use a given stretch of road comfortably. Ten more cars contemplating the use of the road need reckon only the congestion costs to themselves. Ignoring all other social costs and assuming, for arguments sake, that the costs of congestion are the same to each motorist, the increment of cost caused by these ten is eleven times as high as the costs actually experienced by them, and on the basis of which experienced costs the ten make their decision. An unregulated traffic flow thus tends to be too large and, by one means or another, should be reduced to an 'optimal' traffic flow - one at which the marginal, or incremental, cost of congestion is equal to (or no greater than) the value placed on driving in that stream of traffic, bearing in mind the costs of all the alternative modes of travel available.

"The same principle applies to the additional firm that settles in a crowded city, so adding personnel and traffic that further impede the movement of others in the city. The firm, however, need take

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1. op. cit., pp. 75-76.

account only of its relatively negligible share of the additional inconvenience it inflicts on everybody".

The problem arises essentially from the fact that road users do not bear the full burden of the additional costs which their use of roads entails. Indeed, the contribution made by road users to the costs of road building bear little relation to the extent to which they use the roads. There is little incentive to conserve road space and as a result the demand for it tends continually to outstrip ~~demand~~ <sup>supply</sup>.

The basic contribution to road construction costs in urban areas is obtained through the annual license fee and property rates. These are lump sum charges and are quite unrelated to the actual use made of roads by individual motorists. They provide a deterrent to road usage only in so far as they have an income effect, and, once they are paid, the costs of road travel consist solely of petrol, wear and tear, and the drivers time. The price of petrol includes tax which is also used to finance road construction, and the users contribution to this tax revenue will vary roughly in proportion to the mileage covered, though it also depends partly on whether he uses busy or deserted roads. Since a large part of the capital costs of construction are covered by the annual license charge, however, the users contribution to petrol tax revenue is only a very small part of the road construction and maintenance costs which each additional mile of his journey makes necessary. The use of roads, thus, tends to exceed the optimum level for this reason apart from others. Furthermore, the difference in the users contribution to the petrol tax per mile between busy and deserted roads is a poor reflection of the difference in construction and maintenance costs which his usage imposes. Thus the incentive to conserve road space in general, and in particular to conserve space on congested roads, is inadequate.

When the costs of petrol usage, wear and tear, the drivers time, and other costs of delay are taken into account the position is

still more unsatisfactory. For in this case as we have already noted the individual user feels the additional costs of road usage only in so far as they affect himself, whereas these are only a small part of the costs which his journey imposes. When this consideration is added to the divergence between marginal social and private costs, discussed in the preceding paragraph, it appears that significant external diseconomies are involved.

In principle, the problem could be solved by an appropriate system of pricing for road usage. As F. H. Knight pointed out many years ago in dealing with another but closely related problem: "... under private appropriation and self-seeking exploitation... the course of events is very different".<sup>1</sup> Techniques have been developed in recent years for measuring certain of the marginal congestion costs, and the use of these as an aid to the implementation of a road pricing system which would produce the 'optimal' traffic flow has been strongly advocated in Britain. Such a system of pricing would of course not remove congestion altogether, but it would reduce it to the optimal level by discouraging all users for whom the value of road travel was less than its social cost. E. G. West<sup>2</sup> summarises the views of the Smeed Report<sup>3</sup> on road pricing, published in 1964, as follows: "that when practicable there should be a charge for travel in congested areas, so that those who do inflict loss on others are not arbitrarily kept out but are invited to contribute to them. The degree of actual congestion will then depend on how far particular users show themselves willing to pay the charges.

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1. "Some Fallacies in the Interpretation of Social Cost," The Quarterly Journal of Economics, Vol. XXXVIII (1924), reprinted in the American Economic Association's Readings in Price Theory, p. 162.
  2. E. G. West, 'Regional Planning: Fact and Fallacy,' Lloyds Bank Review, April 1966, p. 39.
  3. Road Pricing: The Economic and Technical Possibilities, Ministry of Transport, London, HMSO, 1964.

Under these circumstances there is not likely to emerge any given degree of congestion which is 'just right' and worthy of being made uniform for all areas. Although it may be a shock to be faced with paying the economic cost of using the roads in a particular district, this does not prove that they would not pay it and simply move somewhere else. It all depends on all the cost circumstances (transport being only one) in each locality".

While the Smeed Report regarded the introduction of a satisfactory pricing system as a practically attainable solution to the problem, there are a host of technical difficulties which still need to be overcome. In any event, it seems to be highly improbable that a solution of this sort to traffic congestion in South Africa will be considered in the near future. Other methods of controlling the expansion of the volume of traffic in the large urban areas will have to be used. What is clear, however, is that traffic congestion in the sense of high volume of traffic per mile is an inevitable concomitant of the growth of large urban areas, and by the very nature of things traffic congestion will be greater in some urban areas than in others. If the mere existence of large cities with a high volume of traffic per mile of roads, is to be regarded as a sufficient reason for industrial decentralisation, the logical conclusion is that the degree of traffic congestion should be the same in all centres throughout the country. As in the case of other congestion costs, the problem is to maintain traffic congestion at the optimum level not to avoid congestion altogether.

Large cities like New York and London have developed despite the high average congestion costs which motorists bear, so that it appears that these high average congestion costs were offset by other advantages. The relevant question is how much slower they would have grown had motorists had to bear the full marginal costs of their road usage. The first step necessary is the calculation of the divergence between average and marginal congestion costs. Unlike the nuisances discussed in the last section it seems that the only way, in the absence of an appropriate pricing scheme, to prevent road users from inflicting large traffic congestion costs on others in large, is to

shift users to smaller centres. In so far as these congestion costs are due to additional firms establishing themselves in metropolitan areas, this implies a relocation or diversion of industry. The same general principle discussed in relation to other external diseconomies is relevant here: Ignoring other diseconomies, it will be economically desirable for the government to divert industries from the large industrial areas in those cases in which the resulting reduction in the firm's profits would be less than the difference between the average and marginal traffic congestion costs. E. J. Mishan is of the opinion that certain 'intangibles', which we discuss in the next chapter under the heading of non-economic costs, "are by far the more important part of the external diseconomies inflicted by traffic on the city" but that if we ignore these, the " 'optimal' traffic flow... need not be very different from the existing flow".<sup>1</sup> To the writer's knowledge, there is no evidence that the size of the divergence of marginal and average traffic congestion costs (excluding non-economic aspects) warrants a more significant scale of "decongestion" in South Africa than Mishan believes is needed on these grounds in Britain. Again the decision whether to decentralise industry, and the size of the inducements to be paid, if any, requires a careful assessment of external and internal costs and benefits together for each individual firm.

(vi) Other arguments

In this section, three arguments for a policy of industrial decentralisation, which appear to have rather less substance in them than those discussed in the preceding sections will be dealt with briefly. It should be noted too that these arguments are rather more difficult to categorise than others, since it is not clear that they involve either of the two sorts of factors which at the beginning of this chapter we said might prevent the market from performing its functions properly.

The first of these relates to the fact that the major obstacle to further expansion of manufacturing activity in the Witwatersrand is the growing scarcity of water in the area. The possibility of

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1. op. cit., p. 86 and Appendix C.

developing additional supplies of water and the costs at which this can be done are technical matters which will not be discussed here primarily because, even if the writer were competent to do so, they are not essential to our problem.<sup>1</sup> We are concerned, not with the highly conjectural matter of what effects the future availability of water is likely to have on the industrial development of that area, but with the question whether the possibility of increasing difficulty in obtaining adequate water supplies for the Southern Transvaal is itself necessarily a good reason for diverting industries from that area.

Assume that a growing scarcity of water will be experienced in the Southern Transvaal, and that additional supplies will be obtainable only at higher costs per unit. Referring to a prediction that there will be a huge shortfall in the supply of water to the area served by the Vaal River, Professor Reynders says:

"It is clear therefore that timely action is required in order to ensure that the limited water supplies of this important source is used in the most efficient manner, and to prevent a situation arising in which the further concentration of economic activities will make the supply of sufficient quantities of water very difficult if not impossible to maintain. There is much to be said for the thesis that from an economic point of view, it is better to place a timely curb on further concentration in this area, leaving an elastic margin for expansion, rather than allow the position to develop to a point where no further population could be carried and only then applying measures to avoid expansion".<sup>2</sup>

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1. These aspects of the problem are at present being investigated by the Commission on Water Affairs under the Chairmanship of Dr. S. P. du Toit Viljoen.
  2. H. J. J. Reynders, "The Centralisation and Decentralisation of Secondary Industry in South Africa," Finance and Trade Review, Vol. 11, No. 4, April/May, 1957, p. 222.

Professor Reynders, then, is apparently in favour of checking growth in the Southern Transvaal, but it is not clear what measures he had in mind for this purpose. If he meant that, in view of the difficulties foreseen in supplying water at a reasonable cost to the Southern Transvaal, the government should take steps to build up social overhead capital in other areas where water was relatively more plentiful and cheaper, so that the development of industries would not be impeded by the availability and price of water, then his suggestion seems perfectly acceptable. The need for the government to provide the social 'infrastructure' and a favourable atmosphere within which economic growth can take place is obviously not in dispute, and it would be straining the accepted sense of the term to regard it as 'government intervention'.

If, on the other hand, he means that the government should use physical controls on expansion, or give financial assistance to border industries, simply because of the Southern Transvaal's water problems, his view is more questionable. Neither of these measures represent an efficient way of rationing water supplies or allocating them between different users. Financial incentives for border industries are related predominantly to the amount of fixed capital used and the connection of the latter with water usage is extremely tenuous. Furthermore, such inducements give users in the Southern Transvaal no additional incentive whatsoever to conserve water. A more satisfactory solution seems to be a water charge designed to keep the long term demand for and supply of water roughly in balance. This will of course raise costs to firms, and will tend to shift those close to the margin of transference to locations outside the Southern Transvaal, though not necessarily in the border areas. This, however, would be a cheaper way of solving the problem than either physical controls or border industries incentives. Only if for some technical or social reason, it is decided not to raise water charges, might some form of government intervention in the location of industry be necessary. But if the problem is to be solved in this way, a good deal more decentralisation of industry with all its economic costs, will be necessary

to check the usage of water than if an appropriate system of water charges can be found. The other alternative is for the government to continue subsidising the development of additional water supplies for the Southern Transvaal, a solution which might well be cheaper than the elimination of excess demand by diverting industries, especially since it is by no means certain that it will be as difficult to maintain adequate water supplies to the Southern Transvaal as it seemed it might be at the time Reynders was writing.<sup>1</sup>

The second of the three arguments for "decongestion" considered in this section, was advanced by the Board of Trade and Industries in 1945:

"In so far as the estimates of the future production of gold in the Witwatersrand can be accepted as reasonably correct, there is bound to be a fairly rapid decline in total purchasing power and the demand for goods and services in the near future. This means that many industries now flourishing on the Rand will find it hard to exist when the reduction in gold production sets in. From the long-run point of view there is, therefore, a distinct danger in this concentration of industries in the Southern Transvaal".<sup>2</sup>

This argument the writer finds very hard to understand. The Board presumably was anxious to avoid the problem of declining regions which arose in Britain in the 1920's and which led to the adoption of the 'depressed areas' policy. The curious aspect of the Board's view is that their proposal if adopted would only serve to precipitate the decline in demand in the Southern Transvaal which they foresaw.

Even if a decline in total demand in the area is expected, though there is no apparent reason why it should be, the wisdom of siting

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1. See, for instance, T. J. D. Fair and L. P. Green, "Development of the 'Bantu Homelands', " Optima, March 1962.

2. Investigation into Manufacturing Industries in the Union of South Africa, Report No. 282, Cape Town 1945, pp. 100-101 para. 321.

industries in less profitable locations now, because at some stage in the future some of them might become unprofitable in the Southern Transvaal, is extremely doubtful. It does not seem that we can reasonably assume entrepreneurs to be so lacking in foresight that they will inevitably fail to take these prospects into account, and so make locational decisions detrimental to their own long term interests. This is especially so if sound information pertaining to the future output and demand of the mines is sufficiently publicised. The avoidance of further concentration now itself involves costs which will doubtless be greater than the costs of adjustment which might become necessary if demand falls when the mines die.

In fact, the greater the volume of manufacturing industry in the Southern Transvaal, the easier will the process of adjustment be, since a large manufacturing sector can more easily absorb the resources released by the mines as they decline. To discourage new plants in the region, for the reasons given by the Board, would therefore be most unreasonable. Though initially stimulated by gold mining, manufacturing industry will today not inevitably collapse when the initiating force disappears. We have reached a stage in which manufacturing industry, in large measure, lives a life of its own, and does not depend for its existence solely on gold.

Third, there is the following case for government intervention, advanced by Professor Lewis:

"Prices reflect wages, but wages are bad guides to location, for, wages being sticky, the wage differentials between towns where there is heavy unemployment and towns where there is not are not as wide as a free market would require..... Nor do prices adequately check the cumulative or multiplier processes at work in location. If by some chance accident a big factory migrates from one town to another... cumulative forces are set up. The loss of purchasing power in the town it has left reduces the markets for firms that remain, and causes some to move, their movement in turn driving away still more. And in the town to which it has moved there is a cumulative upswing. Prices are supposed to check these tendencies through rents and quasi-rents, but

these are sticky. This is why when a town starts to run down, it may die....."<sup>1</sup>

The essence of the argument seems to be that there is a divergence between "market" and "shadow" prices,<sup>2</sup> in particular in the price of certain factors in the declining region relative to those in the expanding region. The divergence arises, presumably, because factor prices in a declining region are sticky in a downward direction,<sup>3</sup> so that in those regions they are too high relative to factor prices in prosperous regions. Relative prices, therefore, do not respond properly to changes in demand and supply conditions in factor markets, and so contribute little to the achievement of an equilibrium in the geographical distribution of resources. The burden of adjustment falls heavily on the level of aggregate demand, which falls in the declining areas till it is equal to aggregate supply, and on factor movements from these regions to those which are expanding.

The inapplicability of the particular situation which Lewis has in mind to the South African case should be obvious. Whereas he is here concerned with declining regions we in this country are not, and our problem is to generate industrial development in regions which have hardly known it before, and to create de novo the necessary social overhead capital. It is true that the notion of a divergence between market and shadow prices of the sort described above may have some relevance in the locational problems of this country, but if such a divergence exists it does not arise from the failure of factor prices to fall from some previously attained level in declining areas.

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1. op. cit., p. 78.
  2. See for instance, J. Tinbergen, The Design of Development. This is, of course, a special sort of divergence between social and private marginal costs.
  3. This is presumed since there is no evidence of prices being rigid in prosperous regions in an upward direction, except perhaps during a most severe depression.

Possible causes might be a tendency towards national wage standardisation due to wage fixing by industrial councils or by the Wage Board.<sup>1</sup> But the appropriate remedy for this problem, if regional wage differentials are in fact too narrow in this country, seems to be to widen the differentials between regions, in particular between the metropolitan and border areas, not the subsidisation of border industries. Indeed, through the Wage Board and the Permanent Committee the Government appears fully able to prevent an undue narrowing of wage differentials and border areas. The Government has committed itself to the principle "wage differentiation in respect of the border areas"<sup>2</sup> and the Wage Board and Permanent Committee have been charged with the responsibility of applying it. This issue is discussed in greater detail in chapter 7 below. It is possible that for welfare reasons the Government might not wish to set wages at a level as low as variations in regional labour market conditions might allow in which case wage differentials would not be "as wide as a free market would require", to use Lewis' expression. In this case the subsidisation of border industries might be undertaken, but it seems reasonable to regard the basis of subsidisation in these circumstances as "non-economic" rather than economic, and consequently we deal with it in chapter 6 below.<sup>3</sup>

It is of some interest to compare Arthur Lewis' remarks with

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1. See, for instance, the discussion in chapter 4 above of wage fixing in East London, and also chapter 7 below.
  2. Prime Minister's statement, 2 June, 1960.
  3. Where we also note the problems involved in making a clear distinction between "equity" and "efficiency" considerations in resource allocation problems.

a rather novel argument for tariff protection advanced by E. E. Hagen. He bases it on the "empirically observed fact that in any economy in which per capita income is rising secularly, the output of manufacturing and mining grows secularly relative to agriculture. . . . As a result of this secular trend, except in the case of perfect geographic and occupational mobility of labour wages in manufacturing must be higher than in agriculture. This is true even in the long run and even assuming complete absence of monopoly in all markets. As a result of this wage disparity, manufacturing industry having a real comparative advantage will be undersold by imports when foreign exchanges are in equilibrium. Protection which permits such industry to exist will increase real income in the economy".<sup>1</sup>

This disparity according to Hagen consists of a 'real' and of an 'unreal' part. The 'unreal' part compensates the worker for the higher expenses of city life, and the greater disutility of factory work, and it may also reflect differences in the quality of labour. The 'real' part represents the excess of the manufacturing wage over transfer costs and may be paid in order to overcome frictions, such as the need to learn new skills, to leave friends and acquaintances and to abandon an old way of life for an unknown new one. The case for protection seems to be that this latter group of obstacles to mobility will eventually fall away. By contrast with Lewis then Hagen is apparently arguing that wage differentials between agriculture and industry tend to be "too large" by the "real" portion of the disparity. It is not clear, however, on the basis of what principle the 'real' and 'unreal' elements of the disparity mentioned above can be distinguished from one another.<sup>2</sup>

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1. E. E. Hagen, 'An Economic Justification for Protection', Quarterly Journal of Economics, <sup>NOVEMBER</sup> 1958, pp. 497-8.
  2. See D. W. Goedhuys, 'Social and Private Cost in the Infant Industry Argument', S. A. J. E., Vol. 31, No. 2, June 1963, pp. 134-135 for some critical remarks on Hagen's view.

The Interdependence of Investment Decisions,

While pecuniary external economies and diseconomies do not result in a missallocation of resources under the assumptions of a state analysis, it seems to be widely accepted that they are a real obstacle to economic efficiency in disequilibrium economics. Such external effects play a prominent part in the literature on the economic development of backward countries and regions. Indeed most of the significant "theoretical" generalisations about the problems of developing countries involve the idea that pecuniary external effects are widespread and substantial, and that they must be taken into account if resources are to be allocated in a way which will give a rapid rate of growth. They imply various techniques for speeding up economic development. Thus in development problems, while real or technical external effects are still relevant, we must in addition take into account pecuniary external effects.

Scitovsky who did a great deal to clarify this distinction, presents the case for considering pecuniary external effects, as follows:

"Profits in a freely competitive industry lead to investment in that industry, and the investment in turn tends to eliminate the profits that have called it forth. Thus far, then, investment tends to bring equilibrium nearer. The same investment, however, may raise or give rise to profits in other industries, and to this extent it leads away from equilibrium. For example, investment in industry A will cheapen its product, and if this is used as a factor in B, the latter's profits will rise. This then is a case when the price reduction creates . . . . . pecuniary economies benefitting firms. . . . .

". . . . The profits of industry B created by the lower price of factor A, call for investment and expansion in industry B, one result of which will be an increase in industry B's demand for industry A's product. This in its turn will give rise to profits and call for further investment and expansion in industry A, and equilibrium is reached only when successive doses of investment and expansion in the two industries have led to the simultaneous elimination of profits in

both....

"We conclude, therefore, that only if expansion in the two industries were integrated and planned together would the profitability of investment in each one of them be a reliable index of its social desirability".<sup>1</sup>

This seems to be merely a more rigorous statement of Rosenstein-Rodan's version of the balanced growth doctrine, the essence of which is that a group of investments which would be profitable and may therefore not be undertaken by individual investors, who do not take account of external economies. In Scitovsky's example the fundamental source of the disequilibrium seems to be the existence of significant internal economies of scale in industry A. If its capacity is utilised at only a low level, its output is expensive and the expansion of firms using this output as an input is inhibited. B will not produce because of this; consequently A lacks an adequate market to sell at a price which will give a profit and also will not produce. If A could be assured that B will take a certain volume of its output, and B knew that A would sell at a low price if B bought this volume both might become established and make satisfactory profits. The obvious question about the quantitative significance of resource misallocation which occurs as a result of uncoordinated decision making arises. Hardly anything is known about this phenomenon. It is also not clear why it should be a particular impediment to growth in undeveloped rather than advanced countries and regions, except, perhaps that a given increase

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1. Tibor Scitovsky, 'Two Concepts of External Economies', Journal of Political Economy, April 1954, p. 148.
  2. P.N. Rosenstein-Rodan, 'Problems of Industrialisation of Eastern and South-Eastern Europe,' Economic Journal, June-September, 1943.

in capacity represents a smaller proportionate increase in areas already possessing large total productive capacity, so that the "lumpiness" of investments is not as great a problem in the latter. Scitovsky's argument also seems to emphasise pecuniary external economies to the neglect of pecuniary external diseconomies which is particularly likely to arise if there is a "big push" in a backward region where skilled labour and other key factors, including capital in some cases, are scarce. In other words the concerted attack along many fronts which this argument seems to imply, requires a fairly substantial volume of those very resources, the scarcity of which is in most cases the fundamental reason for the underdeveloped condition of the regions in question.

Despite these unanswered questions of fact and theory, we shall merely continue our attempt to give a faithful explanation of the need to coordinate investment decisions stressed by Scitovsky, and others, on the assumption that it is a theoretically valid case which may have some relevance for policy in particular instances. The interdependence of investment decisions therefore makes necessary coordination of these decisions by the government, if resources are to be efficiently allocated. Without such coordination certain commodities may continue to be imported into a country whereas if considered in conjunction with other industries, taking inter-industry relations into consideration, they may be producible more cheaply at home.<sup>1</sup> Private coordination is conceivable, but "the drawback to private coordination is the large amount of capital required for an integrated investment, which is often not available to a single firm in an underdeveloped country, and which if made, leads to a monopolistic position

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1. Hollis B. Chenery, *The Interdependence of Investment Decisions*, in *The Allocation of Economic Resources*, edited by Moses Abramowitz, (Stanford University Press, Stanford 1959) pp. 82-120.

because of the difficulties of entry. These arguments do not apply so strongly to foreign investment for export, where such integration is very common".<sup>1</sup>

It appears from the above, that in some cases the mere co-ordination of investment decisions is sufficient to bring into existence a group of industries, each viable as a member of a group, even though one or more may be unprofitable when considered in isolation. This, it seems, is because coordination has the effect of removing what Koopmans has called "secondary uncertainty",<sup>2</sup> thereby increasing the rate of return after discounting for risk. Thus no subsidy may be required even on a temporary basis. It is merely necessary to co-ordinate investment decisions, that is, to follow Rosenstein-Rodan's prescription that "the whole of the industry to be created is to be treated and planned like one huge firm or trust".<sup>3</sup>

This argument, applied usually to underdeveloped countries, is of obvious relevance to regional development, for it implies that, if we consider certain industries in isolation location A may seem preferable to location B, but, considered as part of a complex of industries, B might emerge as preferable to A. Co-ordinated planning may in fact actually increase the tempo of the whole country's growth, since, though on an industry by industry basis A may have been better than B, it is possible that in neither area would production have actually been profitable on this basis.

In a detailed study of a petro-chemicals complex for Puerto Rico, Isar, Schooler and Vietorisz argue that "the possibility exists that orthodox comparative cost analysis of each sector individually

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1. Chenery, *op. cit.*, p. 114.

2. T. C. Koopmans, Three Essays in the State of Economic Science, (New York, Mc Graw - Hill), 1957.

3. Rosenstein-Rodan, *op. cit.*, reprinted in A. N. Agarwala and S. P. Singh, (editors), The Economics of Underdevelopment, p. 248.

might indicate negative or inconclusive results for Puerto Rico when analysis of these sectors in combination might yield positive results. Such a situation can arise because of economies of scale and integration, urbanisation economies, by-product relations, and other positive agglomeration factors".<sup>1</sup> We conclude, therefore, that because of pecuniary external economies it is conceivable that government co-ordination of investment decisions per se, that is, without necessarily being accompanied by subsidisation, may in some cases be able to improve upon private location decisions, and so increase the rate of growth of the national real product. This, however, clearly presupposes a high degree of co-ordination, so that all the activities comprising a particular complex of industries can be simultaneously and without delay established at the optimum, equilibrium levels of output dictated by the inter-industry relations.

We can do no more than state this possibility as an example of one type of phenomenon which might provide an economic basis for government induced decentralisation. But as we have said, very little seems to be known anywhere about whether failure to take into account external effects leads to a significant deviation from the optimal allocation of resources. One problem is that it is in practice extremely difficult to distinguish between internal economies of scale and historically decreasing costs. The selection of industrial complexes which might thrive in border areas if the individual units comprising them were properly co-ordinated requires a great deal of highly sophisticated empirical research as the study by Isard, Schooler and Vietorisz, quoted above, shows. In South Africa to the writer's knowledge, no one has made a systematic attempt to provide similar information relevant to locational decisions, and we have no idea whether

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1. N. Isard, E. W. Schooler and T. Vietorisz, Industrial Complex Analysis and Regional Development (John Wiley and Sons, New York 1959) p. 26. See also Walter Isard, Methods of Regional Analysis (Technology Press and John Wiley, 1960) chapter 9.

such possibilities of beneficial co-ordination are important and numerous, or whether the argument is interesting mainly as an intellectual curiosity. It should be noted, too, that the version of the argument with which we have dealt does not require subsidisation, but only co-ordination. The case in which subsidisation of an industrial complex might be justified is dealt with in the section headed "infant areas" below.

In chapter 3, we have already touched on the possibility of linking an intermediate goods producer to a supplier processing basic raw materials, in underdeveloped regions, like the border areas. A difficulty we noted there is that usually in the case of firms using intermediate inputs a variety of different types of inputs is used, and that unless the latter are all obtainable in one fairly compact area, there is a strong tendency for such firms to be market oriented.

#### The Infant Industry Case.

Government induced decentralisation may also be economically justifiable in terms of the infant industry argument. The infant industry argument is well known, but it will be set out here in order to emphasise the rather stringent conditions which must hold if it is to provide a basis for economic tariff protection or subsidisation of firms in the border areas.

The latter, essentially, derives from a special case of the external effects phenomenon. As we noted above, a divergence between social and private cost may justify government intervention in the form of taxes, subsidies, or other measures. Such intervention may be warranted more or less indefinitely if the divergence is permanent, but a feature of the infant industry argument is that, in the circumstances envisaged by it, only temporary assistance is necessary to overcome external effects.<sup>1</sup> The short run effect of

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1. In international trade theory the distinction is made between the Graham case for permanent protection and the infant industry argumen. See Jacob Viner, Studies in the Theory of International Trade, (Harper, New York, 1937) p. 482.

infant industry protection on the national real product is adverse, but long term, it enables the protected commodity to be acquired more cheaply than would have been possible without some initial protection. In principle, protection should be removed at this stage. The essential feature of the infant industry argument is a dynamic learning process, which presents the prospect of inefficient domestic industries becoming more efficient than foreign competitors after a period of temporary protection.

Bastable,<sup>1</sup> however, pointed out that the mere prospect of overcoming a historical handicap is not enough. He laid down the condition that the ultimate saving in costs should compensate the community for the high costs of the learning period. It is necessary that, when a suitable discount factor is applied to the early excess costs and to the eventual cost savings, the commodity still should be worth producing.

Murray C. Kemp<sup>2</sup> shows in diagrammatic terms that the case most favourable to the Mill-Bastable infant industry argument is that of static increasing costs, that is, decreasing returns to scale within the individual firm. He makes four assumptions:

- (i) factors of production are in perfectly elastic supply to the industry;
- (ii) factor prices are constant in time;
- (iii) abroad the industry is mature, that is, it has nothing further to learn from experience; and
- (iv) all static economies and diseconomies are internal to the firm.

(iii) is not essential - "it is only the difference between the stage and rate of progress at home and abroad that is relevant".<sup>3</sup> What is really significant for our purpose is the fourth assumption which "differentiates the infant industry dogma, the essential feature of which is the postulation of a dynamic learning process, from those protectionist

1. See Murray C. Kemp, 'The Mill-Bastable Infant Industry Dogma', *Journal of Political Economy*, Vol. LXVIII, February 1960.

2. *ibid.* p. 66.

3. Kemp, p. 66.

arguments which rely upon static external economies and diseconomies of production".<sup>1</sup>

In accordance with assumption, (iii) we think of the "world" price, as being constant through time. Initially the minimum average cost of domestic firms is greater than the world price and a subsidy is paid to the industry to cover this difference. The minimum average cost of domestic production, however, falls over time as firms learn with experience, the rate at which it falls depending on the time rate of learning. As the minimum average cost falls the subsidy is lowered until, when cost equals the world price, the subsidy is abolished. Thereafter, the domestic cost falls below OP and if the cost savings, discounted at some appropriate rate, during this phase are greater than the discounted value of the social losses incurred during the early learning period the Bastable test is met.

This argument is valid only in the case where new entrants benefit from the experience of established firms. For in this case when domestic costs fall to the level of the world price new firms will be able to enter the industry on an equal footing with the pioneer firms, and the entire benefit of falling costs would be passed on to consumers. The pioneer firms, as a result, would not be at any advantage as a result of their experience during the early learning period, and would make no more than normal profits, so that over the whole life of their operations they will register losses. It follows therefore that firms would not pioneer production in this industry unless protection was provided during the early learning period. Subsidisation is thus a necessary condition for the establishment of the industry, and the reaping of the benefits of lower costs of production after the initial learning period. 2

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1. ibid.

2. cf J. E. Meade, Trade and Welfare, The Theory of International Economic Policy, Volume II, (Oxford University Press, London 1955), pp. 255-257.

When the learning process is internal to the firm the Mill-Bastable infant-industry argument does not hold. For in this case a subsidy covering the full difference between the world price and domestic cost would not be required, as it would be impossible for new firms to enter on an equal footing with established firms. Thus the prospect of later profit may be sufficiently attractive to pioneer firms to induce them to shoulder the losses involved in the initial learning period.

Most authorities on the infant industry argument regard it as resting upon a divergence between social and private marginal costs. For instance, Myint writes: "Thus the infant industry argument, which further postulates that the neglected industry A may enjoy decreasing cost as it expands, can therefore be regarded as a particular case (although a highly dramatic one) of the divergence between social and private costs".<sup>1</sup> D. W. Goedhuys, however, claims to have shown that "the justification of the infant industry argument (in circumstances where it is justified) rests not on social cost being lower than private cost but on being equal to it, with the prospect of both falling to lower levels in due course".<sup>2</sup>

Kemp's version of the infant industry argument, however, does seem to the present writer to involve a divergence between social and private net costs. In the case where firms learn only by the experiences of other firms and the Mill-Bastable test is passed, it is socially desirable that the industry be established but it will not pay private enterprise on its own to commence production. This fact alone suggests that there must be a divergence between social and

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1. H. Myint, 'Infant Industry Arguments for Assistance to Industries in the Setting of Dynamic Trade Theory', in International Trade in a Developing World, edited by R. Harrod and D. Hague, p. 174.
  2. 'Social Cost and Private Cost in the Infant Industry Argument', S.A.J.E., June 1963, p. 133.

private cost in some sense. All payments made by firms in the early learning period are running costs from the private point of view, since in the circumstances described they will never be able to recover their losses in a subsequent period. But from a social point of view the whole amount paid to factors of production cannot be regarded as a running cost, and must be seen as a form of capital investment on which a return will accrue in the future. For, unless these firms' payments exceed their receipts in the early learning period, the benefits of future cost savings will never be received by the community, but if private firms do accept these losses the community will benefit eventually. The firms themselves, however, do not enhance their future earning power by accepting losses initially. There is thus a higher rate of return for the community than for private enterprise so that social net cost is lower to the former than to the latter. Since the rate of return to private enterprise on the investment in learning is zero, the initial investment will not be undertaken without some form of protection from the Government. Though the infant industry argument does appear, then, to depend on a divergence between social and private cost, the dynamic nature of the learning process, which makes time an essential feature of the argument, requires that it be sharply distinguished from protectionist arguments which rely upon static external economies and diseconomies of production.<sup>1</sup>

In the case of the dynamic learning process underlying the infant industry argument, it is necessary to discount the losses in the early learning period and the cost savings in subsequent periods in order to find the present value of the net saving or loss. If the result is a net saving then the social cost per annum will appear as a

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1. See G. von Haberler, The Theory of International Trade (London 1936), pp. 206-8, and Viner, op. cit., pp. 480-82.

negative amount. In effect this means that a certain amount of the cost savings eventually achieved could be taken (taxed) away from the community by some outside power and the community would still be no worse off than it would have been had the industry not been nurtured into existence. In the infant industry case, therefore, protection actually has a beneficial long run effect on the economy. Even if the Mill-Bastable tests are not satisfied, however, where a dynamic learning process of the sort described occurs, it does mean that the required subsidy per annum does fall over time, so that the initial tax burden is not permanent. It may be possible to withdraw the subsidy as soon as the industry begins to produce at the world price, and even if the net saving is negative the subsidy cost per unit of output in the initial learning period may be very small, spread over the life time of the industry.

Quite apart from the difficulties involved in deciding whether the infant industry argument applies in a particular case, and of removing the tariff or subsidy after the industry has grown up, a good deal of scepticism amongst economists whether the scale on which tariffs are actually used in the real world can be justified on this basis and on the basis of other types of external effects, (perhaps requiring permanent protection)<sup>1</sup>. It is clearly possible that some degree of tariff protection against foreign competition, and also some degree of subsidisation of industries in underdeveloped regions within a country, may be supported by the infant industry argument. The fact remains, however, that there is no evidence to show that either the use of tariff protection against foreign competition or protection provided in the form of subsidies to 'decentralised' industries, can to any significant extent be justified on these grounds.

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1. See for instance H. G. Johnson, 'The Cost of Protection and the Scientific Tariff', Journal of Political Economy, August 1960, pp. 340-341.

### Infant Areas.

We have been considering the infant industry argument in relation to an individual industry, as is usually done. However, it may also be applied to a group or complex of industries in the same area. We mentioned above the case in which mere co-ordination without subsidisation would enable an improvement in location to be brought about. But this presupposes a high degree of co-ordination, so that all activities are simultaneously and without delay established at the final levels dictated by the inter-industry relations. In fact, however, some producers would have to come into operation before others and early starters may be at a cost disadvantage for this reason. This is especially likely to be the case in activities in which internal economies of scale are significant over a large range of output, such as an electricity generating concern (though it need not be a public utility). At an early stage of development demand may be so small that no electricity can be sold at prices that cover production costs. The electricity company is, therefore, subsidised, and price is drastically cut to a level comparable, say, with that prevailing in advanced industrial areas. Demand begins to increase as other firms in the planned group come into operation, but it does not rise immediately to the level necessary to cover costs at the prevailing price. When the whole complex is established, however, the firms in it, are so much more efficient than competitors in other areas that the initial loss of efficiency reflected by the existence of the subsidy is offset, that is, net savings discounted at the prevailing rate of interest are positive. Thus the electricity company generates pecuniary external economies and, even though electricity is not actually produced more efficiently than elsewhere, it makes possible the expansion of other potentially efficient industries. Without a subsidy to the electricity company the group of industries would not come into existence. There is an initial adverse effect on the real product but the subsidy can be removed eventually and the long run effects are favourable. (It may be thought that no subsidy is necessary, because, if the group of industries expands and is sufficiently efficient, they will be able to pay

a higher price for electricity so that early losses can be more than offset. But in fact private enterprise is unable or unwilling to wait so long before making profits).

Temporary subsidisation may therefore be justified in such circumstances, as in the infant industry case. It should be noted, however, that the two cases result from quite different sorts of external effects. We can see this clearly if we extend the argument of the previous paragraph to the area as a whole. It may be that the costs of all producers in the area are affected by the general level of economic activity.<sup>1</sup> As output in the area expands a pool of skilled labour develops, hospitals, schools, entertainments, engineering workshops, transport services, shipping centres etc. improve, and the costs of basic services like electric power, water, gas etc. fall. So as a particular industry expands it confers benefits on other industries in the area and these are called agglomeration economies (diseconomies). As the general level of activity expands in this way, therefore, there is a tendency for the costs of all producers to rise or fall.

Thus we find one writer suggesting in the case of Britain that "although control of location which directed industry to depressed areas might involve some initial cost, this would not persist as there would be cumulative effects of development, resulting in the areas becoming the ideal location for industry".<sup>2</sup> This might be called the infant area argument. It resembles the infant area argument in that it involves short run losses but long run gains which are sufficient to offset the initial losses.

It may be too that a dynamic learning process similar to that of the infant industry case, but applying now to all industries together, not merely to one, contributes to the tendency for long run costs to fall.

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1. That is, not only, as in the infant industry case, as firms acquire experience with the passage of time.
  2. S.R. Dennison, The Location of Industry and the Depressed Areas, (O.U.P., London 1939), p. 120.

For instance in a new, hitherto undeveloped, area little may be known about difficulties peculiar to the area which may be encountered. Thus potential pioneer firms may apply too great a discount factor for risk in assessing their prospects in the area, simply because of the absence of a precedent of success in the area and the feeling of uncertainty which this engenders.<sup>1</sup> A successful pioneer firm may thus reduce the risk factor applied by others in future and so be followed by a number of imitators.<sup>2</sup> The firm may also make real progress in acquiring knowledge of local conditions, and in learning how to cope with them, and this knowledge may very well be freely available to other firms, whether in the same industry or not. In these cases the similarity between the infant industries and the infant areas arguments is very close. But in addition some of the factors making for agglomeration economies are a function of size, as such, and not of time as in the infant industry case proper. Furthermore in the latter case the relevant economies are external to the firm but internal to the industry; agglomeration economies on the other hand are external to all firms and all individual industries in the region but internal to the region.

The notion of infancy, when applied to a region as a whole, is much less precise than when applied to a single industry. Indeed, the above outline of what we have chosen to call the "infant areas" argument, is simply an attempt to provide a plausible and firmer

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1. See Lionel Needleman, *op. cit.*, pp. 50-51 on the uncertainty surrounding locational decisions.
  2. In Schumpeter's terms; the opening up of a new region is also an innovational activity, and there his remarks about the clustering of innovations to apply to it as well.

basis for the following sort of assertion; which comes in this case from the Prime Minister's statement<sup>1</sup> announcing the border industries policy:

"There are great advantages for the industrialist in establishing his undertaking in an already developed industrial area. Facilities such as water power, transport, housing and social amenities are already available. It is fairly easy to obtain skilled labour, to repair machinery, and to replace parts. The manufacturer also maintains close contact with buyers, with financial institutions and with the authorities. In a large industrial area, specialisation among industries is also easier and all types of auxiliary industries exist.....

"The process of concentration is, therefore, a cumulative one, and unless the Government influences the climate of location, the developed areas will tend to develop still further, simply because they are already developed, and the undeveloped areas will remain in this state because they are undeveloped".

The essence of the idea seems to be that big centres have an advantage over small centres because the former have gathered momentum in their development. The attractive power of large centres is so great that the development of smaller centres is inhibited, and what is required is that the government, through a concentrated effort, should create the same momentum in certain less developed areas and so break the hold of the larger centres over them. Once this is done future progress is relatively easy for, as Dennison has said "once development in the depressed areas [is] initiated, the cumulative character of industrial growth [will] remove the need for further inducements".<sup>2</sup> Or, in Arthur Lewis' more picturesque

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1. 2 June 1960.

2. S. R. Dennison, The Location of Industry and the Depressed Areas, (C. U. P. , London, 1939), pp. 103-104.

terms: "You have, as it were, to begin by rolling your snowball up the mountain. Once you get it there, the rest is easy, but you cannot get it there without first making an initial effort".<sup>1</sup>

We dealt above with the case where firms were subsidised indirectly, by not being required to pay the full costs of electricity. This enabled them to establish themselves in the area, so providing the incentive for the emergence of other amenities, which in turn reduced their costs and so stimulated further expansion. The initial subsidies, however, could equally well have been paid directly to individual pioneering manufacturing concerns in the area. Subsidies are required it seems, because without them, given the initial lack of facilities, no firm will begin production at all, since they cannot appropriate the full value of the benefit which it creates. Pioneer firms thus need to be subsidised if the full potential of the area is to be realised. These subsidies serve to neutralise the advantage which rival centres gain from the mere fact that they began to develop first. In this form the relevance of the argument for border industries policy is more easily seen.

But what must be obvious about this sort of argument is that it cannot be used to justify assistance to firms in any area one pleases to choose, or to justify assistance to any firm in the area chosen.

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1. The Industrialisation of the British West Indies, Caribbean Economic Review, May 1950.

It is interesting to note, however, that elsewhere Lewis argues that once an area begins to decline, this decline becomes cumulative straight away. The volume of activity in the area, therefore, seems to be relevant only in determining whether upward movements become cumulative; there is thus a noteworthy asymmetry (inconsistency?) about the argument as presented by Lewis. See his Principles of Economic Planning, p. 78.

King William's Town is obviously not undeveloped simply because of the absence of agglomeration economies. Hence it can apply only to areas showing sufficient promise of being able to support themselves in due course, and, as we have already suggested, if the assistance given is to be economically based, there must be good reason to believe that the initial subsidies will yield a satisfactory return in the long run. Furthermore, the argument should not be interpreted to mean that any firm which generates external economies, in the ways described, should be assisted. Each and every firm must be capable eventually of standing on its own feet, except perhaps in those special cases in which there is very good reason to believe that the discounted present value of the benefits which it confers on other firms, exceeds the discounted present value of its losses.

The requirements for economically beneficial industrial decentralisation on these grounds are, therefore, rather stringent, and the scope for government action of this sort accordingly may be very limited. In addition, it must be remembered that, while we have no evidence of the quantitative significance of agglomeration economies as an independent locational factor, it appears from our discussion in chapter 3, that the market followed by raw materials were the predominant factors bringing about the present degree of concentration. As we stressed there, too, the market and agglomeration economies, as such, must not be confused, and regarded as a single locational factor, for they are logically quite distinct.

Agglomeration economies are simply forces which tend to reduce costs from the level at which they would otherwise stand. But they are not the sole determinant of costs, and, indeed, have probably played a relatively small part in determining the location pattern in South Africa. The infant areas argument discussed here, and as presented by Lewis for instance, tends to encourage the belief that it is mainly the lack of agglomeration economies in the border areas which stands in the way of their development, so that large scale expenditure by the government will necessarily put selected border areas on

a par with the Southern Transvaal, that growth will necessarily become self-sustaining, and that this expenditure will necessarily be economically justified. While it may be that the past tendency towards regional concentration will continue, it is by no means clear that this will be solely "due to the agglomeration advantages of the existing industrial areas", as one passage in the Schumann Committee Report seems to suggest. Considering that we have no real idea of the significance of agglomeration economies as such, and since there is no evidence that they are significant, large scale schemes for decentralisation, based on the infant areas idea, seem to be full of economic uncertainties and risks.

Apparently because of the alleged importance of agglomeration economies, Mr L.P. McCrystal<sup>1</sup> says that "the development of towns with minimum populations of 200,000 - when these towns are far from metropolitan areas - is suggested since tentative empirical evidence indicates that this is the order of magnitude of town size which is required to support the necessary services". But since the availability and cheapness of the services referred to, whatever they may be, is not the only cost determinant, we obviously cannot assume that having fostered the development of a town of this size, firms in it will necessarily be capable of supporting themselves. Similarly, while it may be universally true that the cost of public services per unit - reaches a minimum when a town reaches a size of, say, 200,000, which may therefore be regarded as the optimum size from this point of view, the optimum town size obviously depends on other considerations as well, in particular on factor endowment, which, of course, varies considerably from one town to another.

The emergence of depressed areas in Britain, containing declining or slow growing towns of significant size, like Glasgow for

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1. L.P. McCrystal ' Measures to promote Decentralisation of Industry', Standard Bank Review, August 1967, p.9.

instance, is clear evidence that there is nothing necessarily "cumulative" about growth and that size as such is not a guarantee of continuing prosperity.

Finally, an apparent element of paradox in the infant areas argument should be noted. If indeed agglomeration economies are as potent a cost-reducing force in the metropolitan areas as the argument implies, would it not be desirable to encourage their further expansion? After all it is because of agglomeration economies that countries are advised to concentrate on a few industrial centres to start with, as we noted in chapter 3. The Viljoen Commission pointed out, too, though in a different context, namely in connection with the strategy for decentralisation: "Because of the limited scope of the South African market, and the long distances that separate the main centres, the concentration of industry in a few centres can effect considerable economies".<sup>1</sup> We argued earlier that the concentration of the country's industry in four main areas probably enhanced the country's rate of economic growth. Whether and why the time has now come for a policy of government intervention to divert industries to decentralise industry is an intriguing question. It is not without interest too that while on the one hand the potency of agglomeration economies in large centres is so much stressed in this argument for decentralisation, on the other hand the diseconomies of congestion are also advanced in support of the same policy.

Perhaps this apparent contradiction can be resolved in the following way: As town size increases, at first average net agglomeration effects (economies minus diseconomies divided by output) are positive and rising and are, therefore, exceeded by marginal net agglomeration effects, but at some level, due to increasing diseconomies, average net agglomeration effects reach a peak. Thereafter they fall so that they exceed marginal net agglomeration effects, and the latter may eventually become zero and, perhaps, even negative. Say a

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1. Viljoen Commission, para. 454, p. 55.

promising border area is in the rising phase of the average net agglomeration effects curve but the Witwatersrand is in the falling phase. Since the border area has only just begun to develop, its average net agglomeration effects may be smaller than those in the Witwatersrand, and since it is the average size of agglomeration economies which determines the cost reducing effect per unit, the Witwatersrand has a cost advantage on this score. But this situation is quite consistent, in the circumstances envisaged, with marginal agglomeration effects being greater in the border areas, and even with negative marginal net agglomeration effects in the Witwatersrand. The marginal benefit from agglomeration effects may, therefore, be greater in a border area than in a large centre, but the border area does not develop, because of its lower average net agglomeration effects. The payment of a subsidy per unit of output, to a border area, equal to the excess of the marginal net agglomeration effects in the border areas compared with the Witwatersrand, may therefore have a beneficial effect on economic efficiency. Whether it is true, however, that this situation actually prevails, and whether the subsidy based on it would result in a significant degree of decentralisation, would obviously not be easy to determine.

#### Concluding Remarks.

We have shown that if external effects of various sorts are present, it may be possible in some cases for governmental measures of various sorts to bring about improvements in the allocation of resources. The optimum form of government "action" depends on the particular type of external effect, and must be chosen from several possible alternatives. One of these alternatives is intervention in the location of industry, and this will be the most appropriate measure in certain special circumstances described above. In those cases in which such intervention in the location of industry is called for, this does not necessarily involve the diversion of industries to border areas.

West's remark with reference to traffic congestion that "we cannot argue that, because London is congested, the same is true of the whole of the South East, in Essex, or Kent or Sussex"<sup>1</sup> is of some relevance in this connection. Some location on the periphery of the Southern Transvaal complex might well maximise the economic benefits of decongestion relative to any decline in productive efficiency associated with diversion of a firm.

Only in certain special circumstances, which, at least in principle, can be fairly clearly defined, will the diversion of firms to border areas be the best or "second best" remedy for diseconomies associated with congestion. It is conceivable, too, that the infant industries and infant areas cases, discussed above, may also provide opportunities for economically beneficial industrial decentralisation. But if border industries policy is to be justified on the basis of economic considerations it is not enough to point to mere possibilities. External effects are present in all economic situations but this does not mean for instance that every underdeveloped country or region would be advised to embark on a programme of forced industrialisation. What is necessary is the isolation of individual firms, the diversion of which would result in an economic improvement, and this raises all the problems of measuring and comparing all relevant costs, both internal and external, in alternative locations. If diversion of a large scale is to be sustained on economic grounds, it must be shown that such individual cases are numerous and important. This has not been done in South Africa.

Furthermore there is no apparent reason why we should believe that such individual cases are numerous and important in this country. As one writer has remarked in the context of location policy: "Some

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1. op. cit., p. 39.

recent rediscoverers of Figou have drawn conclusions from this part of his analysis leading to enthusiastic and confident programmes for social engineering, based on the assumption that the ordinary market has failed over a very large field. . . . " <sup>1</sup> He is, however, extremely sceptical about this view of things. Likewise S. R. Dennison suggests that we take seriously the possibility that "the degree of divergence between the optimum and actual patterns of location is not as great as is usually believed by upholders of a policy of control". <sup>2</sup> As we show in chapter 8, too, the proportionate loss of efficiency, that is rise in private production costs, resulting from the diversion of industries appears to rise very steeply as we push the volume of diverted output or employment beyond a fairly low level. Unless external effects also rise rapidly, becoming an increasingly great relatively to private costs, the economic loss from a social point of view will also rise steeply. But the increase in private costs resulting from diversion seems to bear little relation to the size of congestion costs avoided by decentralisation. Furthermore, inducements to border industries, related in the main to the volume fixed capital investment, seem to be a very blunt and inappropriate device for remedying such external effects as may justify decentralisation. These considerations suggest that it would be wise to treat claims regarding the economic advantages of this policy with a good deal of reserve. Even if a certain degree of decentralisation might be economically beneficial, we are obviously safe in rejecting outright any suggestion that decentralisation on the scale which some official pronouncements seem to envisage will not cause some economic harm. The question of how much damage is likely to result we leave till later.

In conclusion, the following comment by Professor Johnson is of some interest and suggests an approach to the problem which we shall investigate in the next chapter. He says:

"Existing theory of economic welfare already suggests one approach to a scientific tariff. This would be a tariff which would correct divergencies between marginal social and marginal private

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1. E. G. West, Lloyds Bank Review, April 1966, pp. 40-41.

2. op. cit., p. 118.

costs... . wherever such divergencies of social and private costs could appropriately be remedied by the tariff. By extension a scientific tariff of this kind could comprise using the tariff where the most appropriate remedy is somehow ruled out and where the tariff would produce some improvement....

"Such a concept of the scientific tariff follows directly from the modern theory of welfare economies. But it is not the concept of a scientific tariff which tariff advocates who use the term seem to have in mind. Instead, these people want to use the tariff as a means of promoting non-economic objectives of various kinds, identified in one way or another with the effects of the tariff in domestic production and consumption of certain products".<sup>1</sup>

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1. H.G. Johnson, 'The Cost of Protection and the Scientific Tariff,' Journal of Political Economy, August 1960, pp. 340-341.

## Chapter 6

### ECONOMIC COSTS AND NON-ECONOMIC BENEFITS:

#### A CONCEPTUAL FRAMEWORK.

We now turn to the second type of objection to the market mechanism, namely, that even if it performs its functions properly the results achieved by the functioning of the market are undesirable in themselves. This allegation stems from the indisputable fact that the objective of economic efficiency and rapid growth may conflict with other objectives of a political or sociological nature, and that the market mechanism will not necessarily produce the best balance between them. As we observed at the beginning of this study, it is seldom possible to obtain more of one objective without even partly giving up another: if it is possible, no policy issue arises. Economic efficiency and rapid growth while they increase material wealth may impair the quality of life,<sup>1</sup> disrupt established social relationships, and even cause serious political problems. It is therefore a perfectly legitimate function, indeed a duty, of Government to ensure that the non-economic costs of economic growth do not become excessive.

Thus we find the Barlow Commission<sup>2</sup> writing as follows on the problem of industrial concentration:

"... when the problem becomes social in texture rather than economic, then modern civilisation may well require a regulating activity of some kind to step in and take reasonable measures for the

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1. See E. J. Mishan, The Costs of Economic Growth, for a strong attack on "growthmania" in the advanced countries.
  2. op. cit., p. 194. It may be noted that the first paragraph of this quotation implies that "a regulating activity of some kind" may not be necessary if the problem does not become "social in texture".

protection of the general national interests.

".... An enlightened national conscience may well be heard to insist that while successful prosecution of industrial activities is vital to the life of the nation, due attention must be paid to social needs, and consideration given to the question how, with the co-operation of industry and those engaged in its management, grave social evils where shown to exist can be mitigated or removed".

It is clear from the above passage and from other parts of their report that while they thought certain incidental economic benefits might accrue, the Barlow Commission's recommendation of a policy to "loosen up the central areas of congestion" was strongly influenced by social and strategical factors". Hence they were prepared if necessary to go beyond the limits dictated by economic considerations alone in order to secure these non-economic benefits. The principle laid down by the Barlow Commission is of course perfectly sound, since as we have pointed out there is no good reason why economic growth should be the foremost objective of State policy in Britain, South Africa, or anywhere else for that matter. It is, therefore, of little value to conclude merely that since induced industrial decentralisation if carried out on a significant scale, will tend to have adverse economic effects, it is not to be recommended. This was for long the approach of the economist in discussions of tariff protection when in fact the aims of tariff protection were largely non-economic.<sup>1</sup> The real issue is whether the political and social benefits of industrial decentralisation in South Africa exceed the benefits of the higher level of economic efficiency and growth which may have to be foregone. Disagreement on both the value of the political and social benefits on the one hand, and the economic costs on the other hand, are responsible

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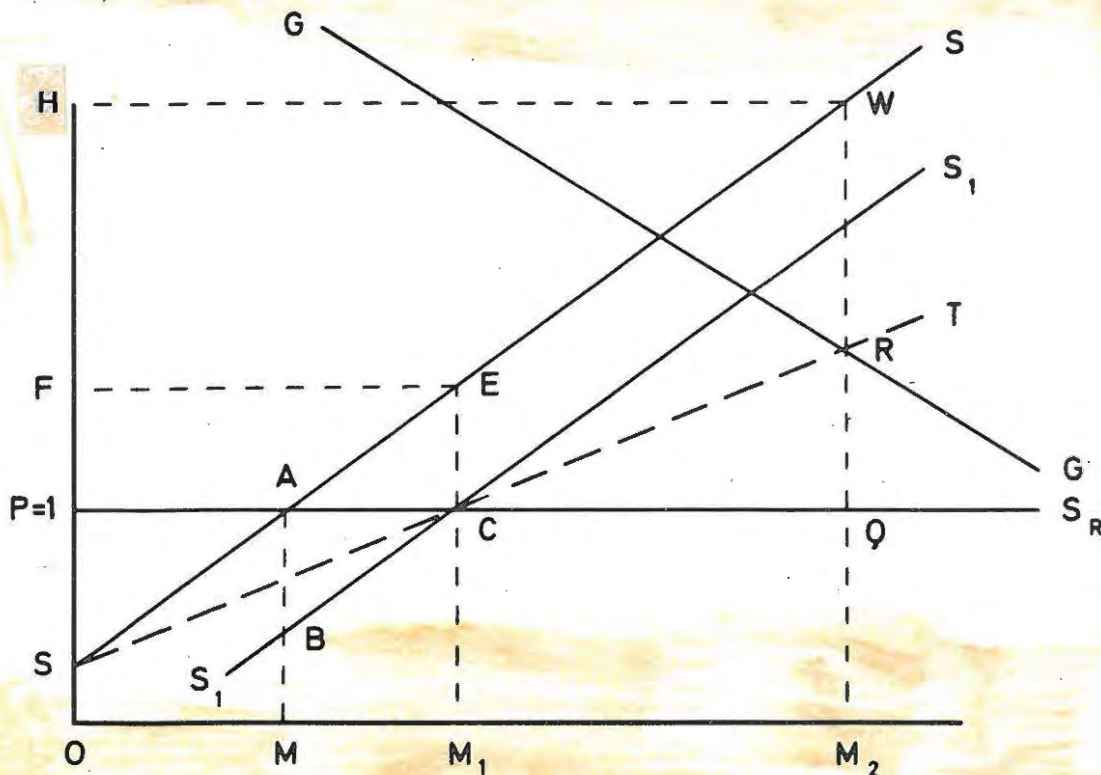
1. A convincing statement of this view is contained in H. G. Johnson, "The Economic Theory of Protectionism, Tariff Bargaining and the Formation of Customs Unions," paper read to the International Trade Workshop of the University of Chicago, November, 1964. (Since published in the *Journal of Political Economy*, LXXIII, 3 June, 1965).

for the controversy surrounding border industries policy. Since disagreement on the former is largely the result of fundamental differences in political faith and judgment, the economist can do little to resolve them. Nevertheless it may be of some value in formulating and assessing policy if we attempt to set out the issues in the starkest terms possible.

The traditional techniques of economic analysis are surprisingly useful for this task. In order to bring out the issues as vividly as we can, we shall regard the government as a "buyer" of border areas industrial production, and it may be supposed that, like any buyer, it has a demand curve for the "good" it is buying. The nature of this demand curve is discussed a little later on, but for the moment we shall confine ourselves to a consideration of the nature and derivation of the supply curve with which the Government is confronted. In fact, as we shall see, it is much easier, though not easy, to say something fairly definite about the supply curve in question and much of this study, including the preceding chapter, is concerned with this aspect of the Government's decision regarding the amount of border areas industrial production it will "buy".

Under ideal conditions, and given sufficient research manpower, it would be possible to construct a cardinal supply curve showing the maximum amount of additional industrial output which would be produced in the border areas at various "prices". The diagram below may help to elucidate the ensuing discussion.

The diagram includes a device familiar in international trade theory. Along the horizontal axis is measured the average aggregate addition to industrial production in the border areas per annum. The concept of border areas industrial production as an aggregate poses the problem of valuation since it is obviously not possible to use physical units. We shall value border areas industrial production in the prices prevailing in each industry in the least cost location



outside the border areas, in other parts of South Africa.<sup>1</sup> If the border areas producer is the only one of its sort in the country, then the price used in valuing its output is that which would prevail in the least cost location outside the border areas if a producer existed there.

Likewise on the vertical axis the price and cost of aggregate border areas industrial production are expressed as proportions of prices either actually prevailing, or those which would prevail, in the least cost location in other parts of South Africa, in the circumstances mentioned above. Assume all industries can produce in other parts of South Africa at constant costs,<sup>2</sup> and make the long

1. This corresponds to the procedure used in some discussions of international trade theory, in which domestic production is valued in "unit values at world market prices". See for instance Johnson, op. cit.
2. This is not essential to the argument, but simplifies the task of exposition.

run equilibrium price per unit of output equal to unity in all these industries. The ratio of border areas prices and costs to the non-border area prices can either be less than, greater than or equal to unity depending on whether the least cost location for the country as a whole is in the border areas, is not in those areas, or whether the border areas site is exactly as efficient as the most efficient (least cost) site elsewhere in the country.

In the diagram, therefore,  $OP$  is the price of the perfectly elastic supply of industrial production from the rest of South Africa,  $PS_R$  is the supply curve for the rest of the country (i. e. for non-border areas), and  $SS$  shows the average annual aggregate addition to industrial production which will be generated in the border areas at various prices, where the latter are all expressed as a proportion of  $OP$ . For instance the price  $OF$  exceeds  $OP$  in the proportion  $PF/OP$ , and since  $OP$  is equal to unity, the proportional marginal excess cost of  $OM_1$  units of additional border areas output over the marginal cost of production in the rest of the country is simply  $PF$ . In other words  $PF$  is the proportional marginal shortfall in the efficiency of the border areas for industrial production compared with the rest of the country.

In chapter 8 we attempt to construct an index of marginal excess private cost for each of 130 manufacturing sectors. It is useful, however, to clarify a number of issues in purely conceptual terms before that task is undertaken.

Some special features of this <sup>curve</sup> supply/need to be emphasized. First, it relates not to the total amount of industrial production in the border areas, but to the addition to border areas industrial production which is generated per annum, on the average, over a certain number of years. That is, it shows the absolute average annual rate of growth of industrial production in the border areas, as a function of the revenue per unit expressed as a proportion of prices in non-border areas received by manufacturing concerns in the border areas.

Second, the supply curve is an aggregated supply curve in the sense that it relates not to a single firm, but to all actual and potential border areas firms together. Just as the supply curve of a particular industry is the aggregate of the supply curves of the individual firms making up the industry, so SS, the supply curve of additional industrial production as an aggregate, can be broken down into a number of industry supply curves. Third, SS slopes upwards towards the right for the following reasons: (i) it is assumed that all industries are producing subject to increasing marginal production costs; (ii) as each industry's output expands the geographical extent of the market will increase so that transport costs per unit of output expand; and (iii) as industrial production in the border areas increases, industries less and less suited to location in the border areas will have to be sited there. While we have drawn SS as a smooth steadily rising curve, it is clearly more likely to be a stepped line, but a curve of the latter sort would merely be an inconvenience and adding nothing essential to the analysis.

Fourth, the position of SS, in particular the fact that it cuts  $PS_R$  at some positive level of production, is partly explained by the fact that some industrial output can be produced in the border areas more cheaply than in other parts of the country, so that the border areas represent the best location for these units of output. These industries, in other words, do not require any government assistance to induce them to go to the border areas. The amount of additional industrial production generated by such industries per annum is OM, and producers of all these OM units, except the last, should be prepared to pay the government a tax rather than lose the right to establish themselves in border areas. The latter is clearly true of most sugar mills in Natal, for instance. Such additional industrial production is not, therefore, the result of government intervention, and if firms producing these intra-marginal units do receive border areas

inducements, the latter are superfluous. Only additional industrial production in excess of OM units would require inducements and when, as in the last chapter, we ask whether government intervention is justified on economic grounds we refer to those cases in which firms will not produce in the border areas unless the government diverts them to these areas. For the moment we assume that when industries are diverted, this is done exclusively by the use of 'positive incentives,'<sup>1</sup> that is by means of direct and indirect subsidies of various sorts.<sup>1</sup>

In the absence of government intervention, the average annual increase in border industries output would be OM. Our problem in chapter 5 was whether there was any case on economic grounds for government action to induce units of output in addition to OM.

Let us consider the effect of a subsidy per unit of output on the supply curve SS. A proportional subsidy equal to PF per unit of output, say, is made available to industrial producers in the border areas. Costs per unit of border areas additional industrial production thus fall by PF, and the supply curve falls vertically throughout its length by this amount. The relevant supply curve allowing for the subsidy is  $S_1S_1$ , and the annual increase in border areas output rises to  $OM_1$ . The amount of induced border areas production thus, is  $MM_1$  units.

Assuming for the moment that external effects and other factors which might otherwise justify subsidisation of this sort on economic grounds, are absent, there is a loss of productive efficiency which is reflected in a fall in the real product. The total amount paid in subsidies is PCEF, part of which, PAEF, represents the redistributive effect of the subsidy, and not a real loss in economic efficiency. The total social cost of the extra  $MM_1$  units induced is, therefore, simply equal to the area ACE which is the producer cost. Unlike a tariff, a subsidy does not result in any loss of consumers'

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1. The effect of physical control is dealt with in chapter 10.

surplus by users of the products protected, as there is no increase in the price of products produced by firms diverted to the border areas. Thus the total excess private and (under the present assumptions) social cost of the assistance given to border industries by means of subsidisation is ACE, and the proportional marginal excess private cost of production is equal to the vertical distance between SS and  $PS_R$  namely EC (=FP). The latter is simply the excess of the marginal cost of  $OM_1$  units to private producers in the border areas (without the subsidy) over the price of that unit when produced outside the border areas.

If an average annual increase over and above OM is to be achieved in the border areas, therefore, a subsidy must be paid to producers, and the subsidy required per additional unit of output increases as output is increased. It might be noted, however, that if instead of paying a proportional subsidy of PF per unit only sub-marginal units had been subsidised, just to the extent necessary to induce their production in the border areas, the total subsidy payment would have been ACE, equal to the producer cost instead of PCEF and no income distribution effect would have been involved. The total social cost is thus the same in both cases.<sup>1</sup>

The above remarks are not meant to suggest that border industries are in fact assisted by the Government in either of the two ways discussed. Nor is it suggested that these forms of assistance should be used, since they would be appropriate only if the government's objective were to generate a given amount of induced industrial output in the border areas at the lowest possible total cost, or the maximum amount possible at some predetermined total cost. If the objective were to achieve these aims with the smallest increase in the tax bill then the method described in the preceding paragraph would be preferable.

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1. Politically, though, it obviously makes a difference whether an amount ACE or PCEF has to be raised in taxes for this purpose. Hence inducements to border industries are given "on a selective basis".

In fact, however, the Government does not give subsidies based directly on the additional output contributed by firms in the border areas. Instead, as we shall see, they rely upon a limited range of indirect subsidies such as tax rebates and low interest loans which in the main are related to the amount of fixed capital used by the assisted firms. The appropriateness of these measures, however, cannot be fruitfully discussed until we learn more about the real objectives of the policy.

Now it is clear that, in terms of the above discussion, the government may be regarded as a buyer of industrial production, if it induces an addition to productive capacity in excess of  $OM$ . From one point of view the price it pays is equal to the tax revenue needed to pay the subsidies given to border industries. Let us assume that the government is sufficiently discriminating to avoid subsidising intra-marginal units. In this case, if it uses a subsidy proportional to the increase in total output, it is necessary to pay a "price" per unit of additional border areas output of  $MM_1$  equal to  $CE$ , the marginal excess cost of  $OM_1$  units. On this basis the supply curve facing the government as a "buyer" of additional industrial production is  $AS$ , with  $AS_R$  as the horizontal axis and the perpendicular through  $A$  as the vertical axis.  $AS$  thus relates induced (bought) additional border areas industrial production per annum to the subsidy ("price") paid per unit. If the government subsidises sub-marginal units only to the extent that is absolutely necessary, however, we no longer have a conventional supply curve (relating price per unit to quantity), but, on the system of axes just described, a line  $AS$  relating the quantity induced to the total amount paid which in the case of  $AC (=MM_1)$  units is equal to  $ACE$ , or to the marginal subsidy  $CE$ .

Up to this point in the present analysis we have been implicitly abstracting from the possibility, discussed in chapter 5, that (i) permanent subsidisation may be justified by divergences between social and private costs, that is by external effects, so that subsidy payments

in respect of units of border industries output which are sub-marginal from a private point of view, might tend to increase the national real product rather than diminish it; (ii) temporary subsidisation, based on some variant of the infant industry argument, though initially unfavourable to economic efficiency may have a beneficial effect on the national real product in the long run.

We now consider the effects of taking into account the first possibility. The vertical distance between  $SS$  and  $PS_R$  represents the marginal excess private and social cost of border areas industrial production under the assumption that there are no external effects. External economies (diseconomies) attaching to the diversion of industries to border areas, however, would cause the marginal excess social cost to be lower (higher) for a particular level of output than the marginal excess private cost. If net external economies were positive (negative) for all levels of border areas industrial production, therefore, a curve drawn to reflect marginal costs of additional border areas output from a social rather than a private viewpoint would be below (above)  $SS$  throughout. Let us call the new curve  $ST$ .

$ST$  obviously cannot lie wholly below  $PS_R$  since this would mean that all new industrial establishments in the country should be sited in the border areas and subsidised in order to maximise the national real product. But it is possible, indeed the official view seems to be that it is highly probable, that at least some level of proportional subsidisation is justified on economic grounds in the sense that it would increase the national real product. This, as we noted above, has not been established beyond doubt, but we shall assume, for the sake of argument, that it holds good. Thus it seems plausible to assume that  $ST$  lies below  $PS_R$  for all levels of production up to  $OM_1$ , say, and thereafter rises above it.<sup>1</sup>  $ST$ , therefore, passes

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1. We have drawn  $ST$  on the assumption that the absolute size of marginal external economies resulting from border industries production increases as the level of production increases, but that marginal external economies are a constant proportion of marginal private costs, i. e.  $\frac{EC}{EM_1} = \frac{WR}{WM_2}$ .

through C and the level of induced additional border areas output per annum, which is justified on economic grounds, when external economies are taken into account, is  $MM_1$ .

We shall, for argument's sake ignore all the problems, discussed in the preceding chapter, associated with the detection, measurement, and correction of external effects if they are to be exploited for the economic benefit of the country. We shall, for the same reason, also ignore the fact that subsidies relating simply to output or capital usage (as in the case of the present border areas incentives), or even to employment ( a possibility discussed below) are unlikely to be the appropriate method of diverting industries, where diversion is called for, to correct for the external effects. Under these assumptions we may conclude that if  $MM_1$  units are diverted to the border areas by a subsidy of EC permit, the average annual increase in border areas industrial production of  $OM_1$  will be optimal from a social point of view. Whereas at the additional output level  $OM_1$  the marginal excess private cost is EC, the marginal excess socialcost is zero.

If for some reason the Government were to induce a greater increase in border areas industrial production than  $MM_1$ , say  $MM_2$ , the proportional subsidy, required per unit of induced production would be PH (equal to the marginal excess private cost). Due to the external effects, the subsidy is greater than the marginal excess social cost, but since the latter is now positive, the diversion of the  $M_1M_2$  involves an economic loss. If more than  $MM_1$  units of industrial production are to be diverted to the border areas per annum, therefore, there should be some non-economic benefit to compensate for the positive marginal excess social cost. In other words, if  $MM_2$  units are diverted the total economic loss from the point of view of society as a whole is CQR. Unless non-economic benefits (somehow valued in the same units) exceed this, it will not be worth the cost.

The SS curve includes firms which benefit from the type of external economies associated with variants of the infant industries case. Production by some of these firms involves an excess private cost in the early learning period and will, therefore, not be undertaken

without assistance. Nevertheless when the external economies are taken into account the costs to society are lower than the marginal costs of private firms. Some production in this category will thus be economically worthwhile from a social point of view, while other production units which do not pass the Bastable test described in chapter 5, may nevertheless involve a smaller marginal excess social cost than SS suggests. Thus the average annual reduction in private costs due to the external economies resulting from the dynamic learning process associated with infancy, causes SS to fall vertically by an amount equal to this average annual reduction. Correspondingly, since the price required per unit of output of infant industries in the border areas falls with each successive year, we may regard SS as relating the annual increase in output in the border areas to the average of the prices received per unit over the whole life of the infant industries. Thus this special type of external economy has the same effect as other external economies resulting from border areas industrial production, and the divergence of ST from SS may therefore be regarded as showing the combined effect of all types of external economies.

On the basis of marginal social costs, therefore, the average annual increase in border areas industrial production warranted by economic considerations alone is  $OM_1$  and the optimal volume of diverted industrial production is  $MM_1$ . That is it is economically desirable for government action to induce  $MM_1$  units of production over and above the annual increase  $OM$  which would have come about had the market been left to itself. The subsidy required on the marginal unit is  $EC$ , but the marginal excess social cost is zero. The size of the subsidy required on the marginal unit, and the excess social cost, however, both increase as the volume of induced border areas production increases, and when the latter is  $MM_2$  the size of the subsidy required on the marginal unit and the marginal excess social cost are  $QW$  and  $QR$  respectively.

Some other determinants of the position and slope of the SS curve, which have important implications for government policy should

also be noted. The slope of SS depends partly on the elasticity of the supply curves of border areas firms, that is, on the proportionate increase in border areas industrial production relative to the proportionate increase in price; and partly on the rate at which new firms are established in the border areas in response to increases in price. The steeper the slope of SS, the greater will be the size of the subsidy required on the marginal unit for any given volume of induced industrial production. If, as our analysis of chapter 8 below suggests, the marginal excess private costs rise very sharply after a certain point, as firms increasingly unsuited to location in border areas have to be diverted, the tax costs of inducing border areas industrial production rise correspondingly steeply. Assuming, as we have done, that marginal external economies are a constant proportion of marginal private costs, the slope of ST will increase in the same proportion as the slope of SS increases, and accordingly, the marginal excess social costs of any particular volume of induced decentralisation also rise steeply. The economically optimal scale of induced border areas industrial production, determined by the intersection of ST and  $PS_R$  is correspondingly reduced.

It follows that if, as we show in chapter 8, marginal excess private costs rise steeply as the volume of induced border areas industrial production increases, the same will be true of marginal excess social costs. Thus, while the diversion of industries might possibly be carried out on a certain (probably small) scale without imposing an undue strain on tax resources and on industrial efficiency, it appears that if carried beyond this level marginal excess private costs and marginal excess social costs rise very sharply. The analysis of chapter 8, therefore, suggests that the costs of government intervention since 1960 (discussed in chapter 9), though not insignificant, may not be a good guide to the probable effects of any significant intensification of

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decentralisation measures. The costs might well rise in a greater proportion than the increase in the average annual volume of diverted industries. These, however, are questions of fact, which are dealt with later, and we now return to the task of this chapter which is to clarify issues, in particular to elucidate in general terms, the nature of the costs and benefits of government intervention in the location of industry.

The position of the supply curve depends also on a consideration discussed in chapter 4, namely the distribution of border areas industrial production between different specific centres in the border areas. Our SS curve has been drawn on the assumption that government intervention will divert firms to those particular sites in the border areas which are best suited to the firms in question, (even though no border areas site would have been chosen without intervention) so that the marginal excess private costs of induced border areas industrial production on any particular scale are minimised, or, if there are economic benefits resulting from diversion, so that these benefits are maximised.

But if the Government merely attempts to divert industries in such a way as to minimise the economic costs of a particular volume of border areas industrial production (or employment) or to maximise the latter at a given cost, the resulting distribution of additional productivity capacity between different border areas centres may be unsatisfactory in view of the non-economic objectives of the policy. For instance, the cost criterion might indicate that a large proportion of induced additional capacity should be sited in border area centres, like Rosslyn, which are close to large cities,<sup>1</sup> and in, say, the Natal

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1. This is particularly likely since, as we show in chapter 8, the cost of diverting industries from locations in the metropolitan/<sup>areas</sup>, when these represent the least cost locations, tends, other things being equal, to be smaller the shorter the distance between such locations and the border areas sites to which the industries are diverted.

border areas, rather than in the Transvaal or Eastern Cape border areas. But if the distribution resulting from this criterion is unsatisfactory from other points of view, the Government may prefer to pay a higher total price, in terms of subsidies and loss of productive efficiency, for a particular aggregate amount of additional border areas productivity capacity for the benefits of a better distribution between border areas centres. For instance, it may be prepared to give larger inducements to firms in what seems to be regarded as the problem area, the Ciskei.<sup>1</sup> This will increase the marginal excess private and social cost of a particular volume of diverted industries. In other words, the slope of both SS and ST will increase. In other words, any particular SS curve with its corresponding ST curve implies a specific proportional distribution between individual border areas. The greater the departure from the least cost distribution the steeper will SS and ST be. The Government clearly regards the border areas intended to provide employment for Transkei and Ciskei Bantu as presenting the greatest difficulties, and has given them special concessions<sup>2</sup> not available to other border areas. Nevertheless, the volume of additional employment induced in these centres since 1960 has been relatively small. There have been hints though that increased emphasis will be placed on these centres in future, and this will clearly have a bearing on the marginal excess social costs of measures to industrialise the border areas.

The reason for regarding these centres as representing a problem area is apparently that in relation to available jobs, and development potential the Bantu population is very large, as we showed in chapter 3. This is another indication, if further indications are needed, that economic considerations play a negligible part and that as a result even quite small amounts of induced decentralisation are likely to involve economic loss.

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1. See chapter 9, p. 390

2. See chapter 9, p. 367

But as we acknowledged at the outset, it is sometimes desirable to forego economic benefits for non-economic benefits, and we cannot object to border areas policy simply because it appears that some economic harm may result. While a good deal more can be said about the economic costs of border areas industrial production and more will be said later in this study, it is necessary now to turn our attention to the demand side of the problem. Little further progress can be made in our discussion unless we do so. We are, therefore, concerned now with the non-economic benefits of decentralisation policy. For reasons that will emerge shortly, if they are not already apparent, the discussion of non-economic benefits is absolutely essential to an assessment of the economic implications of this policy, and is not in the nature of a digression in the context of a study primarily concerned with the economics of industrial decentralisation.

The government has a preference for border areas industrialisation as against industrialisation in other areas.<sup>1</sup> In the technical language of economics, it has a 'taste' for border areas industrial production. The chief benefit which the Government and hence the electorate derives is the gratification of a political desire to bring about racial separation, which is seen as necessary to ensure the survival of the white minority in South Africa. Because of the non-economic value attached to border areas industrialisation the Government is prepared to sacrifice a certain amount of real product as the necessary price of greater political security.

Border areas industrial production can, therefore, be regarded as a 'collective consumption good' or 'public good'<sup>2</sup> desired by the white electorate. The amount of the good demanded at various prices depends on the marginal valuation attached by the Government to different

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1. This postulate is modified below.

2. See for instance Leif Johansen, Public Economics, (North-Holland Publishing Company, Amsterdam, 1965), Chap. 6; and W. J. Baumol, Welfare Economics and the Theory of the State, Second Edition (London, 1965), pp. 19-24. See also H. G. Johnson in an article "The Economic Theory of Protectionism, Tariff Bargaining and the Formation of Customs Unions," quoted above.

quantities of the good. The nature of this demand curve is an intriguing question which could occupy a book on its own. It would, however, be neither fitting nor especially rewarding for us to attempt to go into the details of this matter in the context of our present problem. It seems safe to say, however, that it is anything but a solid line, that it involves a considerable degree of uncertainty, and that it is liable to shift its position quite substantially from time to time. Also it is undoubtedly true of objectives of this sort that they are not arrived at as a result of attempts to make careful and precise, let alone quantitative, assessments of their probable effects. Certainly this is true of the electorate who are not in a position to make a rational assessment of each policy adopted by the Government, when indeed it might be irrational for them to try to do so, and who, therefore, by and large, are simply involved in choosing between slogans.<sup>1</sup> The dangers of treating policy problems in any naive mechanistic sort of way are stressed by Professor Hutchison who says:

"It is the diffusiveness and imprecision of the objectives of policies, and inevitably high degree of uncertainty as to the ramifications of their effects which make it dangerously misleading to try to represent policy problems simply as calculations, and to evade or underestimate the role of uncertainty attitudes and judgment".<sup>2</sup>

The demand curve GG which we have drawn in our diagram, and which is based on the marginal valuation attached to different quantities of induced border areas industrial production, is therefore, purely illustrative. It merely summarises the facts that the Government does attach a positive value to border areas industrialisation for political reasons, so that it prefers more to less of it, that it is unlikely to increase the

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1. See Anthony Downs, "An Economic Theory of Politics in a Democracy", Journal of Political Economy, LXVI (April 1957), pp. 135-150.
  2. T. W. Hutchison, Positive Economics and Policy Objectives, (Allen and Unwin, London 1964), p. 184.

volume of diverted industries in total disregard of other considerations, including the marginal excess social cost, and indeed, that even if it did want to do so there is a physical limit to the resources which it has at its disposal for this purpose. The scale of preferences of an individual for different combinations of consumers' goods is not necessarily arrived at by conscious rational calculation, but given the prices of these goods and his income level, this does not prevent us from saying some quite useful things about the problem of 'consumers' choice. We are merely stating the fact, fundamental to all economic problems that there is an opposition between ends and means which has to be resolved in some way or other.

A comment by Hutchison<sup>1</sup> again has relevance in this connection. He says:

"Like consumers or housewives, 'policy makers base their acts consciously or unconsciously on preferences'<sup>2</sup> We are not concerned here with the political process by which policy-preferences and preference -, or social -, welfare functions are, or should be, arrived at, or with whence they are ultimately to be derived by the economist, or with questions of political constitution - making or voting procedures".

With  $F$  as the origin of the system of axes  $GG$  shows the marginal valuation attached by the Government to different quantities of induced border areas industrial production. We assume that the Government seeks to maximise the country's 'real income' which consists of utility derived from both private and public consumption, rather than the real product defined as total production of privately appropriable goods and services. If the Government acts rationally in pursuit of this goal it will induce border areas industrial production to the point where the marginal collective utility of such production is equal to the marginal social cost of this collective consumption good. Thus in our diagram,  $OM_2$  is the equilibrium average annual increase in border areas industrial production,  $MM_2$  is the equilibrium induced portion of the latter,

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1. op. cit., p. 178.

2. C.E. Lindblom, 'Policy Analysis', American Economic Review, June 1958, p. 302.

the marginal excess cost and the marginal valuation are equal to  $RQ$ , the marginal excess private cost is  $WQ$ , and the total subsidy bill is  $AQW$ .<sup>1</sup> Though the Government will be maximising the country's real income, as defined, according to its own utility function, it will not be maximising the national real product, since maximisation of real income requires a sacrifice of real product in order to gratify the preference for collective consumption of border areas industrial production.

A preference for border areas industrial production does not, of course, necessarily imply that a sacrifice of real product will be necessary to satisfy it. If  $GG$  cuts  $S$  at  $C$  or to the left of  $C$ , then no policy problem arises since increased economic efficiency and increased border areas industrial production are compatible with one another up to  $MM_1$  units of induced border areas industrial production. But we show  $GG$  lying entirely to the right of  $C$  because in view of the considerations mentioned at the end of chapter 5 it is highly improbable that a significant degree of industrial decentralisation can be sustained on economic grounds alone, and the indications are that the Government envisages border areas industrialisation on a large scale. There is as we noted also no empirical evidence to show that external economies relevant to location policy are numerous and widespread. It is true that the Government has not committed itself to any specific target rate of increase in border areas industrial production. It has, however, proclaimed its intention of stopping the influx of Bantu in the larger urban centres, and of eventually reversing the direction of the flow. Assuming that this tightening of influx control measures will be accompanied by a corresponding readiness to induce border areas industrial production on a scale sufficient to employ all those Bantu who as a result will need to be employed elsewhere, the scale of development implied is apparently considerable, doubtless greater than the average annual increase ( $OM_1$  in the diagram) which maximises the national real product.

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1. Assuming subsidies are given only on sub-marginal units in the border areas, and just to the extent necessary to offset the private cost advantage of the least cost location.

Our postulate that there is a collective preference for border areas industrial production, requires to be modified slightly. Since border areas policy is seen as an important instrument for bringing about separate development, a more appropriate postulate is that the Government has a preference for employment in the border areas. In particular, it is a preference for the employment of Bantu workers in the border areas. The benefit to be derived from border areas industrial production is, therefore, employment of Bantu workers in those areas rather than in 'white' areas.

Explicit recognition of the precise nature of the preference for border areas development is of considerable importance if the types of assistance given and the industries selected for assistance are to be those most appropriate to the task. For, after all, the appropriateness of specific instruments cannot be properly assessed except in relation to the aims which they are intended to achieve. Furthermore, the consequences of government induced decentralisation depend very much on the specific instruments adopted. The more appropriate are the latter the less costly will be the attainment of the objectives of the policy at any particular level. And there is little point in evaluating the consequences of pursuing an objective, on the assumption that instruments other than those best adapted to the task are to be used. This is one of the most important justifications for our discussion of motives in the present analysis.

In his analysis of the scientific tariff structure Johnson has remarked that "the precise source of the preference for industrial production will influence the form of expenditure of resources through government action, and especially the distribution of resources so spent among particular industries".<sup>1</sup> The preference for border areas

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1. We are in effect referring to the scientific subsidy structure as compared with the scientific tariff structure. See H.G. Johnson, "The Cost of Protection and the Scientific Tariff," Journal of Political Economy, September, 1960.

industrial production is a derived preference, the source of which is the primary preference for Bantu employment in the border areas. Given this primary preference, it follows that the Government should attempt to equate the marginal social cost with the marginal valuation in collective consumption of employment in the border areas. The marginal cost of an additional unit of employment in the border areas, however, will differ from one industry to another, depending on the labour requirement per unit of output, and the elasticity of supply and demand in each industry. For instance, the greater is the labour coefficient of an industry the smaller is the subsidy per worker represented by a given subsidy per unit, and, therefore, other things being equal, the lower is the marginal cost per unit of employment in the border areas. Thus, other things being equal, industries with a higher labour coefficient should be paid a larger subsidy per unit of output if the marginal cost of employment in the border areas is to be made equal for all industries and hence the total cost of any amount of border areas employment minimised.<sup>1</sup> Equality of marginal cost of employment in all industries thus is the rule for the distribution of resources spent by the government among particular industries. The optimum general level of subsidy, subject to this rule, is given by the equality of the values of the marginal social utilities derived from employment in all industries with the marginal social costs of employment in all industries. It is obvious that these criteria can easily be modified to allow for the assumption that it is primarily Bantu employment and not employment in general which is the benefit sought by the Government from border areas industrialisation. The problem of specific instruments and of the most suitable industries for diversion is taken up again and developed more

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1. See Johnson op. cit., p. 343: "The scientific tariff rate on a commodity whose production constitutes a desirable way of life will be higher the higher its labor requirements per unit of output, the higher its free trade ratio of domestic output to consumption, the higher its elasticity of supply, and the lower its elasticity of demand".

fully in chapter 9 below.

While the evidence presented in chapter 1 and more recent official statements,<sup>1</sup> show beyond doubt that the dominant motive of border industries policy is racial separation, and that any other benefits which might result would be purely incidental, we cannot disregard the possibility that there may be other non-economic benefits which can be obtained from industrial decentralisation. These may provide a sound basis for government intervention in the location of industry even in the absence of the objective of separate development or any economic justification. The following statement from the report of the Viljoen Commission, while reinforcing the view that the border industries policy is primarily an instrument of separate development policy, mentions a number of factors which the Commission may perhaps regard as independent and sufficient reasons for inducing industrial development in the border areas. After summarising the economic costs, they say:

"Far more important are the social costs of concentration. The urbanisation of the African has led to the massing of large numbers of Natives who have broken from tribal relations that had given their lives content and meaning and have congregated in the large industrial cities. The massing of large numbers of people who are inadequately fed, whose family and social life are disintegrated, who are forced to travel long

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1. For instance, the Deputy Minister of Bantu Administration and Development has said that the flow of Bantu labour "must be reduced, then it must be stopped, and then it must be turned back... the government is in deadly earnest about this and is absolutely determined that it will succeed". He indicated that development in the border and Bantu areas would be needed to employ labour no longer needed in the cities. Reported in the *Financial Mail*, March 10, 1967, p. 632. He is also reported to have said that to allow the inflow of Bantu labour into the Witwatersrand and the Western Cape would mean the 'Suicide of the White Nation'. *Evening Post*, Port Elizabeth, March 7, 1967.

distances to and from their work, and who consequently fall an easy prey to immorality and political subversion, represents the social cost of industrialisation in this country"<sup>1</sup>

The statement seems to imply that, quite apart from the greater political stability to which it may contribute, and which, it is arguable, will benefit all in the long term, border areas industrialisation will avoid certain adverse effects on the well-being of individual African families which arise from their presence in large urban centres.

Let us consider the fact that Africans in the large industrial centres are forced to travel long distances to and from work. First, it is by no means clear that the distances travelled to and from work by Bantu employed in border industries will be shorter than those involved in the larger urban areas. Umdantsane the large township constructed to house workers employed in the East London - King William's Town area is a considerable distance from the places of employment of some of the inhabitants. Writing of urban townships of this sort, situated within the borders of the African reserves, Muriel Horrell says:

" 'Homeland' townships are often further away from the towns where the workers are employed than are the municipal townships, and transport and other living costs may be higher. The writer estimated that African families in East London may be involved in additional costs ranging from R2.80 to R8.95 per month, depending on where the workers are employed.

"As mentioned above, some workers may have to commute for considerable distances, returning home at weekends only and living in the towns where they are employed during the week. This will be the case at the Seloshesha township at Thaba 'Nchu, which will eventually serve the Free State goldfields - 180 miles away - as well as Bloemfontein, 40 miles distant, and Thaba 'Nchu itself".<sup>2</sup>

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1. Report of the Commission of Enquiry into Policy Relating to the Protection of Industries, U.G. 36/1958, p. 54.
  2. A Survey of Race Relations in South Africa, 1965, pp. 193-194.

The reference to the Free State goldfields and Bloemfontein is quoted here, not because these can be regarded as border areas, as defined in chapter 4, but because it does suggest that a shortening of travelling distances cannot easily be accepted as one of the objectives of border industries policy.

Even if travelling distances to and from work are shorter in the border areas, it should be noted that Africans will not necessarily be better off in this account. The avoidance of lengthy journeys may be regarded as conferring a net benefit on workers only if conditions of employment in the border areas are at least as favourable in other respects as in the large metropolitan centres.

Other parts of the passage from the report of the Viljoen Commission, in particular the references to the "Natives who have broken from tribal relations that have given their lives a content and meaning", and to the disintegration of family and social life, may be intended to suggest that these problems would be lessened in border areas, and that either Africans would feel themselves to be better off on this account in border areas, or at least that in the view of the Government they would in fact be better off. First, however, it appears that the families of border industries workers will be permitted into the urban townships like Umdantsane on a permanent basis only if the head of the family is a householder in the area, that is, if he owns a house. One of the conditions necessary for this, however, is that he "renounce rights to land holdings (including arable plots) elsewhere in any Bantu or Trust area".<sup>1</sup> Those who do not choose to do this "may live in hostels (if available), or as lodgers in houses owned or rented by others, but may not have their families with them except for visits."<sup>2</sup> Will the family life of workers in this category be any better in the urban townships situated within the borders of the Bantu areas, than in the large industrial cities? "Home visiting"<sup>3</sup> may well be rather easier for some workers than it would be if they were employed in Johannesburg, say, but the rural land holdings for most are likely to be a considerable distance

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1. Muriel Horrell, *op. cit.*, p. 192.

2. *ibid.*

3. See P. Mayer, *op. cit.*

away, and regular and frequent contact with the family may well involve substantial transport costs even in border area townships.

In the case of the initially landless or those who renounce rights to land elsewhere, it is possible to have the family living permanently in the urban township. But would not heads of family in this category also be likely to take their families with them to the large industrial areas if they were employed there? Our analysis of chapter 2 suggests that the landless do have a stronger incentive to permanent urbanisation with their families. If they do not take them is this or is it not largely due to influx control regulations?<sup>1</sup> If indeed, influx control is a significant reason for the separation of workers in the larger cities from their families, can the possibility of bringing the members of such disintegrated families together in urban townships like Umdantsane be regarded as a benefit of border areas industrialisation, which is independent of the political benefit discussed above?

Perhaps we should see the disrupting of tribal relations, that is, the fact that members of the Bantu population "have had to sever their communal ties in their traditional habitations",<sup>2</sup> as a disadvantage of employment in the large industrial areas which is additional to the problem arising from the breakup of the family. Professor Mayer's excellent work<sup>3</sup> on the process of urbanisation shows that it is extremely dangerous to generalise about Africans as a whole. In a large number of cases, it appears, newcomers to towns regard life there as preferable to the tribal relations and they are only too happy to sever their "communal ties". So far as second and third generation urban dwellers are

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1. We showed in chapter 2 that the increasingly severe application of influx control in Cape Town during the 1950's was associated with a sharp rise in the masculinity ratio in Langa.
  2. Prime Minister's statement, 2 June 1960.
  3. op. cit.

concerned, most have not had any first hand experience of life in the traditional society and consequently do not feel deprived of it.

Very little seems to be known about the social strains and tensions experienced by Natives massed together in large numbers and whether these tensions are greater in the townships of the large industrial areas than they are in a township like Umdantsane, which has already grown to a significant size.<sup>1</sup> It appears, also, to be at least questionable whether communal ties can be any more easily maintained in Umdantsane than in Johannesburg, and, presumably, if the Government succeeds in generating substantial industrial employment in the border areas, the urban townships there will increasingly acquire the characteristics of the African townships in Johannesburg and other large centres. It is hard to see how the need for adjustment to town life and factory employment and the severing of communal ties can be avoided whether additional manufacturing employment is provided in the large industrial centres or in the border areas. Industrialisation always involved urbanisation and this in turn demands adaptation by migrants to a new way of life. If the potential benefits of economic growth are to be realised it may be that these difficulties must be faced.

Let us say though, that there is a certain group of Africans who would prefer life in a border areas urban township to life in Johannesburg, other things being equal. At present the migrants decision to move is an entirely free one and he is under no legal compulsion to settle in the large industrial centres. On the contrary, he moves despite official discouragement. It seems reasonable to assume, therefore, that they reckon the economic advantages of urbanisation to outweigh any social disadvantages that go with it. The readiness of workers to live in Johannesburg, even if the atmosphere there is regarded by them as

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1. See Muriel Horrell, A Survey of Race Relations in South Africa 1967. There are according to this survey 6087 dwellings in Umdantsane and an official population of 40,000. But Mr. David Lazarus the Mayor of East London has claimed that the de facto population is between 80,000 and 100,000.

unsatisfactory, is of course perfectly understandable. For after all material poverty is itself a social evil, and the poorer is a people, other things being equal, the greater is the value it attaches to additional material income relative to an improvement in the friendliness of its surroundings. Indeed, a number of the social problems encountered in the urban areas have their origin in poverty as such, as the Viljoen Commission's reference to "people who are inadequately fed" suggests, and consequently cannot be solved merely by denying them access to the large industrial centres and instead diverting them to the border areas. If those Africans who prefer life in the border areas residential townships to the townships of Cape Town and Johannesburg, but for economic reasons would choose the latter, are not to be worse off in border areas, they must actually be employed there at real wages which, taking into account this possible non-economic benefit, are equivalent to those prevailing in the metropolitan areas. Border areas development which proceeded at a slower pace than is necessary to achieve this minimum requirement can hardly claim to have as one of its objectives an improvement in the African's social environment. Clearly no champion of "decongestion" in Britain could convincingly claim that a worker unemployed or employed on very poor terms in North-east England is necessarily better off because he is spared the "over-crowded" conditions of London.

An important characteristic of certain of the alleged social evils of industrial concentration is worth noting. If it is felt that more weight should be given to social conditions as distinct from productive capacity, it does not follow automatically that industrial decentralisation is the only or the cheapest remedy available. Several social problems can be remedied at least in part by expenditure in the congested areas themselves to improve amenities. The Board of Trade and Industries report referred to earlier states:

"The social aspects of undue concentration in large cities are well known. Unless adequate housing, good food, hospital facilities, and other social amenities are provided for, it must have an undermining

effect on the physical and moral well-being of the working population and thus on the long term productivity of the nation".<sup>1</sup>

This statement implicitly recognises the possibility of dealing with certain social problems at the urban end. The optimal remedy depends on whether the additional costs involved in raising conditions to an acceptable level in the congested areas are greater or less than the economic cost of diverting industries to border areas. It is also apparent that adequate housing, hospital facilities and other social amenities can only be maintained at a satisfactory standard if sufficient sums of money are spent on them. "The increase in crime and the additional services needed to counter these evils"<sup>2</sup> may also fall in some measure in the same category. It would be interesting to know whether "the increase in crime" implies an increase in the crime rate in the large urban centres compared with the urban townships serving the border areas, and if so, whether the crime rate in the metropolitan areas could be significantly reduced by reducing the size of the African population of those areas, without giving rise to worse social evils, including those associated with poverty, elsewhere.

The following remarks by L. P. McCrystal also seem to be relevant within the present context:

".....in developing countries, acute problems are generated by urbanisation as a result of the fact that people from rural areas stream into the cities in advance of any job opportunities being available for them there. The overcrowded, insanitary and unpleasant conditions to which this phenomenon gives rise throw a heavy burden upon the local authorities concerned, resulting in extraordinarily large outlays having to be borne by local taxpayers".<sup>3</sup>

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1. Report No. 282, Investigation into Manufacturing Industries in the Union of South Africa, 1945, para. 321, pp. 100-101.
  2. Prime Minister's statement, 2 June 1960.
  3. Measures to promote decentralisation of industry, The Standard Bank Review, August 1967.

It should be noted that strictly speaking these considerations, which we have already touched on in chapter 2, constitute an argument for influx control rather than for the diversion of industries to the border areas. For the essence of the diversion of industries is that it reduces the number of jobs in the large cities relative to the number that would otherwise have been available, and it clearly would not be sensible to say that industries should be diverted from the large cities because there are not enough job opportunities for workers there. In chapter 2, it was agreed that it might be advisable to adjust the rate of inflow of people to the metropolitan areas to the rate at which jobs were becoming available. The evidence, however, did not indicate that there was any imbalance in this respect, and, in fact, it seemed that given the demand for labour in the larger centres, the rate of inflow of workers might even stepped up without adverse effects on wage rates.

A somewhat different line of argument for inducing industrial production in the border areas is based on the need for greater equity in the distribution of income. Isard and Smolensky for instance argue that "while national goals such as a large increase in per capita income may be sensible for countries in which regional differences are not great, for countries in which regional differences in income are great, the goal of reducing such differences may have high priority, even higher than a rapid rise in national income per capita. In Italy for example, national goals must yield at least in part to regionally oriented goals".<sup>1</sup> Given the fact that the Bantu areas contain the poorest section of South Africa's population this argument is certainly worth examining in some detail.

Support for a more even distribution of income seems to explain the fact that many who oppose the policy of territorial separation are

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1. W. Isard and E. Smolensky, Application of Input Output Techniques to Regional Science, in Structural Interdependence and Economic Development, edited by T. Barna, London 1963, p. 107.

nevertheless strongly in favour of governmental measures to develop the backward sector of the economy. But where income redistribution is the main consideration the emphasis is usually placed on agricultural and industrial development inside the Bantu areas themselves. Nevertheless border areas industrialisation might in some circumstances have a favourable redistributive effect, and also, since social overhead capital is more fully developed there, it may be cheapest to concentrate on these areas initially.

In Southern Italy, some workers migrate very readily to the North, to other countries in Europe and elsewhere in the world, while others show a strong resistance to moving over long distances. Mobility also varies a good deal amongst Bantu workers. There will be some who for some reason or other cannot, or choose not to, migrate to the urban areas, and many of these will experience a low level of income as a result. Factors which may cause this are for instance a positive preference for life in an area near friends in a particular locality, inability to obtain a wage on which the whole family can be supported in the city, ignorance about job opportunities or even sheer inertia. We cannot include a consideration like "inability to get a job in an established industrial area" as a factor here, for we are examining the case for diverting industries to border areas, and as we noted above the diversion of industries reduces the number of jobs in large cities relative to the number that would otherwise have been available.

Border areas industrial development, therefore, will tend to improve the living standards of those potential industrial workers in the border and Bantu areas whose resistance to migration is very strong. Thus it appears that if tax revenue is utilised to subsidise border industries, a redistribution of income from taxpayers to certain persons in the border and Bantu areas, that is from richer to poorer, will tend to occur. Border areas policy, then, need not rest entirely upon the goals of separate, increased economic efficiency, and the social evils associated with congestion, discussed above. A more equitable distribution of income may

be regarded as a desirable end in itself.

To the extent that subsidised border industries does not consist entirely of projects which can be justified on one of the economic grounds discussed in chapter 5, however, there will tend to be a conflict between allocative efficiency and equity. It is well known that because of the interconnection between income distribution and resource allocation, there are serious pitfalls involved in speaking as if problems of equity and efficiency can always be distinguished unambiguously.<sup>1</sup> The problems arise basically from the fact that an altered income distribution tends to alter relative prices. It is nevertheless meaningful to distinguish between equity and efficiency in the case, which is likely to be most common, in which as a result of redistributive measures the national real product, whether measured in terms of the initial relative prices or in terms of those prevailing after the income redistribution, is smaller either in absolute terms or relative to what it might have been without these measures.

In the face of such a conflict it may be considered worthwhile to forego some degree of economic efficiency for the sake of a more equitable distribution of income. That is even in the absence of a policy of separate development we might want to push the annual average increase in border areas industrial production beyond the economically optimal level,  $OM_1$  in the diagram. We may visualise a demand curve reflecting the marginal valuation of the income redistribution benefit derived from border areas industrial production. This may also lie to the right of C, though not necessarily as far to the right as GG. Indeed there are reasons to think that relatively little decentralisation to border areas would be desirable on these grounds.

In a poor country the marginal valuation of this benefit, expressed in terms of economic growth foregone, tends to be lower than in rich countries. Johnson argues that "the higher the level of income reached, the less serious will be any slowing down of the rate of growth brought about by redistribution policies. An advanced country can afford to sacrifice some growth for the sake of social justice. But the cost of

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1. See for instance E. J. Mishan, The Costs of Economic Growth, (Staples Press, London, 1967), pp. 48-50.

greater equality may be great to any economy at a low level of economic development that wishes to grow rapidly. . . . I should add that the problem may not in fact be as serious as I have made it out to be, since in the course of time rapid growth tends in various ways to promote a more equal distribution of wealth".<sup>1</sup>

In quoting this passage it is not intended to suggest that we should not concern ourselves about the problem of income distribution in South Africa. No doubt several desirable improvements could be brought about in this respect. The point is simply that the costs of redistribution policies cannot be taken lightly in a country like South Africa which has a very low per capita income compared with the countries of Western Europe and the United Kingdom. Furthermore, the size of the redistribution benefits relative to costs is likely to depend a great deal on the particular type of redistributive measures adopted. There are reasons to believe that in the case of attempts to redistribute income by means of subsidised border areas industrialisation, the benefits tend to be low relative to costs.

Firstly, the beneficial effects of border areas development on the living standards of those potential industrial workers in the border and Bantu areas who show a strong resistance to migration, will be felt mainly by those living in or in the immediate vicinity of border areas industrial centres themselves. The benefit felt by those further away from the border areas, for instance, by those living well inside the Bantu areas will not be as great, especially if their poorer economic circumstances are in the first instance due to their strong resistance to migration. In other words, for those living in reserves remote from the border areas, the obstacles (excluding legal ones) to migration to industrial employment in the larger cities may not be significantly greater than those impeding movement to the border areas.

The fact that the subsidised industrial development is taking place mainly in centres outside of the border areas therefore, lessens the beneficial redistributive effect. It does less to overcome the obstacles to

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1. Money, Trade and Economic Growth, p. 159.

mobility, which are the source of the regional income distribution problem, because the border centres are usually completely surrounded by 'white' farming areas, with the reserves being situated several miles away. For the same reason the potential stimulus provided by industrialisation to Bantu agricultural development is minimised. The transport costs on the produce of potential Bantu market gardeners, for instance, are higher, and competition from white farmers is keener than would be the case if the industrial activity being fostered were inside the reserves themselves.

Secondly it may be noted that what is involved is not merely a redistribution of income from the white taxpayers to Bantu workers in the border areas. As is all too evident from the existence of firm influx control measures, certain workers prefer the higher wages in the cities to the lower earnings in the border and Bantu areas, despite possible obstacles to movement. The diversion of industries to the border areas, therefore, in effect involves a shifting of income from such Bantu whose opportunities for finding employment in the larger industrial centres are reduced. Only those who prefer lower wages in the border areas to higher wages in the cities gain. The gain of the latter is, therefore, partly offset by the loss of the former.

It is indeed important to note that whereas separate development can be achieved only by the economic development of the border and Bantu areas, living standards in the reserves tend to be raised both by such economic development and by migration to other areas including the metropolitan areas, for the reasons discussed in chapter 2. Thus a conflict between the objectives of separate development and income redistribution arises at some level. In other words the scale of border areas development required by political objectives may well exceed that which can be justified on the basis of income distribution effects. It may be that from the latter point of view, the scale of induced border areas development which has occurred since 1960 is not excessive. But as we show in chapter 9 below, the rate of development to the end of 1966 falls well short of that needed to achieve certain of the Government's proclaimed objectives in the sphere of separate development.

Furthermore, it is obvious that while border areas development if carried out on a certain scale may have a favourable effect on living standards in the Bantu areas this will tend to be counteracted by measures which check the rate of migration to the larger urban areas. In the present circumstances in South Africa, border areas development is apparently seen as a means of employing not only those who show a strong resistance to long distance migration, that is, as a means of redistributing income, but also as a means of employing those who are perfectly willing to move and indeed also some who are already settled in the cities. A certain amount of border areas industrialisation, therefore, is needed simply to compensate those refused admission to or endorsed out of urban areas when they would have been able to obtain employment there. In view of this, any contention that in the South African case a desire for a more equitable distribution of income is a primary consideration does not appear convincing.

In a situation in which Bantu workers are admitted into the larger industrial centres at the rate at which the latter can provide employment for them, it may be plausible to argue that the encouragement of border industries represents an attempt to provide employment for the inhabitants of the Bantu areas at a faster rate than would otherwise be possible and so to achieve a more even level of per capita income between regions. That is, the income distribution argument can be convincing only if induced border areas development gives rise to such an improvement in employment conditions that those who might otherwise have been employed in the advanced sector, including the metropolitan areas, now choose of their own accord to take jobs in the border areas. The mere existence of various types of influx control measures, and evidence of the stringency with which they have been and are to be applied,<sup>1</sup> indicates that border industries policy cannot be

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1. For instance, to mention only one striking case, there is the decision to freeze Bantu employment in the Western Cape at the level which prevailed at the end of August 1966 initially, and then to bring about a reduction in this level at the rate of 5 per cent per annum.

reasonably seen as a device whose primary purpose is to redistribute income, or that this will be an effect incidental to the pursuit of some other objective. Comparisons with welfare motivated regional development policies in, for instance, Italy, to which the remarks by Isard and Smolensky quoted above refer, are therefore most misleading since workers from Southern Italy capable of obtaining employment in the North are not debarred from migrating if they wish to do so. The fact that in some cases decentralisation measures may plausibly be seen as a device for redistributing income does not mean that this is necessarily the case in South Africa.

It is therefore not possible to accept the following interpretation of border industries policy:

"The socio-economic advancement of the Africans has always been the underlying humanitarian ideal behind the plan for border industries.

"Initially it will provide employment where none existed before, and to a certain extent it has already been successful in this aim. Permanent industrial employment for 41,000 non-whites of whom Africans are in the majority, has been created. . . ."<sup>1</sup>

In any case as we show in chapter 9 below the whole of this increase in non-white employment cannot be attributed to Government intervention. The Permanent Committee reports, themselves, indicate that a significant proportion of the increase took place in unassisted firms. Furthermore, as we shall show, it is not clear to what extent employment increases in assisted firms themselves is attributable to the inducements given by the Government. Employment in firms which have actually been diverted to the border areas is to some extent also simply a substitute for employment in the same firms elsewhere.

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1. Trade Union Council of South Africa, Fact Paper, The Industrial Development of the Border Areas of South Africa, April 1966, p. 68.

One consequence of accepting "the socio-economic advancement of the Africans" as the dominant aim of border industries policy is that "the location of Rosslyn, so close to Pretoria" is seen as "an anomaly in this plan to spread industries more equitably". Once the policy is properly interpreted such anomalies disappear.

Generally, there is a tendency to overlook the fact that the development of border industries is not the only possible way of providing industrial employment for the 'surplus' labour of the border and Bantu areas. This would be so only if Bantu workers could not be attracted to the larger urban centres at the wage rates which employers there were prepared to offer. Some writers on British regional problems also seem to overlook this sort of consideration. For instance, Needleman argues that "rather than allowing pools of unemployed labour to persist in the outlying regions, it would be worthwhile to give very much greater inducements to firms than have hitherto been offered".<sup>1</sup> Needleman implies that it would be economically beneficial to take work to the workers. The basic weakness in Needleman's accompanying analysis is that it contrasts the effects of investment in the depressed areas with the alternative of doing nothing. He does not compare estimates of costs and benefits of subsidising employment in the depressed areas with the other obvious alternative, namely, encouraging the movement of workers.

It may be noted that the 'pools' of Bantu labour in the backward regions of South Africa<sup>2</sup> are a reflection of structural employment, due essentially to a lack of complementary factors of production.

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1. Needleman, *op. cit.*, p. 55.

2. L. P. McCrystal, 'Measures to promote decentralisation of industry,' Standard Bank Review, August 1967, p. 3 presents a view similar to Needleman's. He says "conditions of apparent over-full employment of labour and capital are generated when, in point of fact, if the country is looked at as a whole, there may be enough labour to sustain the economy's growth rate at a higher level than is being achieved under conditions of localised economic growth".

The country's stock of productive capital and skilled labour is inadequate to provide employment for the whole Bantu labour force at the wage rates prevailing in the modern sector of the economy. It is not necessarily best from an economic point of view to use additions to the quantity of these scarce factors in the border areas rather than elsewhere. The strong flow of migrants from the backward to the advanced sector of the economy described in chapter 2, and the consequent need for controls on migration, indicate that in South Africa, at least, economic growth is not hampered by inadequate regional mobility of the Bantu labour force.

In this connection, it is interesting to note the following comment by Richardson and West on the tendency in Britain to stress almost exclusively "the principle of bringing work to the workers":

'..... in order to have a high rate of growth there has to be a high degree of labour mobility. N.E.D.C. recognises this "If the necessary deployment is to be carried out smoothly and to the best advantage, measures will have to be taken to facilitate mobility of labour and to avoid the hardship of redundancy". (Conditions Favourable to Faster Growth, para. 39). The encouragement of such mobility clearly works in the opposite direction to the widely accepted aim of "regional balance". It follows that if we want a faster rate of growth we must be prepared to accept its consequences'.<sup>1</sup>

Finally, reference must be made to strategical considerations as a basis for industrial decentralisation. The Barlow Commission after arguing that "due attention must be paid to social needs", says: "Similar reasoning applies with increased force where much of the danger of destruction of property, and of death to the civilian population, from air attack is the direct result of urbanisation and the great aggregations of population. Such danger may menace the life of the nation,

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1. H. W. Richardson and E. G. West, "Must we always Take Work to the Workers?" Lloyds Bank Review, January 1964, p. 35.

and no one, industry least of all, would deny the right of the nation to take proper steps for its own protection in such a case"<sup>1</sup> This view is indisputable but as the Barlow Commission clearly recognises there are obviously limits to what one should be prepared to pay, in terms of reduced industrial efficiency, for greater security in time of war. The strategical dangers of industrial concentration in South Africa and measures necessary to reduce them should be the subject of a detailed investigation on its own. It may well be found that "strategical needs might be reasonably met by decentralisation within narrow limits, limits too narrow, however to meet the social and economic disadvantages"<sup>2</sup> or for that matter to meet the needs of separate development. It is noteworthy that neither the Viljoen Commission Report nor the Prime Minister's statement announcing the establishment of the Permanent Committee makes mention of strategical considerations. It does not appear either that in implementing decentralisation policy since 1960, strategical factors have been included to any significant extent in the criteria used in selecting 'growth points' or the industries to be assisted.

One conclusion to which the discussion of this chapter leads, then, is that border industries policy cannot be convincingly explained in terms of objectives like redistributing income, shortening travelling distances within urban areas, maintaining communal ties in tact, or alleviating the social evils associated with large population concentrations. The objective which overrides all others is racial separation. It must be stressed that this search for motives has been undertaken because it is impossible to evaluate the specific measures adopted, the industries assisted, and the scale of border areas development which is apparently desired unless

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1. Report of the Royal Commission on the Distribution of the Industrial Population (Cmd. 6153, 1940), pp. 194-195.
  2. ibid., p. 196.

the dominant motive for the policy is made explicit.<sup>1</sup> There is little point in evaluating border industries policy except in terms of the Government's own criteria. Any attempt to substitute other criteria for those of the Government would involve us in a discussion of the merits of racial separation as a political programme. In other words we would then be asking whether the Government should attach as much value to territorial separation as it does. But as we acknowledged at the outset this is essentially a matter of political judgment and belief, and the economist can claim no special competence in this field.

Andrew Shonfield provides us with the following useful reminder:

"The notion of a national plan which is somehow the expression of the 'general will', i. e. serves the deeper spiritual need of the community rather than merely making it more productive in turning out an undifferentiated mass of goods, fits readily into the mainstream of French thought - running right through from Jean-Jaques Rousseau to Pierre Massé, the head of the Commissariat du Plan in the 1960's".<sup>2</sup>

While the nature of the Government's preference for border areas industrialisation seems to be clear, certain additional information is necessary if we are to assess the economic implications of decentralisation policy. We need to know more about the Government's scale of preferences, in particular about the way in which, whether consciously or unconsciously, different combinations of rates of economic growth and border areas industrialisation are ranked on a scale of better and worse. This would enable us to derive the demand curve GG in our diagram

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1. Hutchison, op. cit., p. 179, quotes the claim by Seers that he has "known cases where the main achievement of an economist, but not a negligible one, has been simply to let a minister think aloud about his problems and bring to the surface his real motives and his judgments on social and economic policy...".
  2. Modern Capitalism, (Oxford University Press, London 1965), p. 83n.

Hutchison in emphasising the need to elucidate the utility functions of policy makers says:

"... however difficult it may be to obtain a full range of precise and consistent indifference curves, or preference functions, the 'rational' application of systematic economic knowledge to policy must depend on making the best attempts possible. To the extent that these attempts are inadequate or incomplete the application of economic knowledge to policy is 'irrationally' or, at any rate, inadequately based, and one is simply launching policies with no clear and precise ideas of the objectives one is trying to arrive at. Therefore, one of the first necessary tasks in elucidating the choice of policies is to elicit, as precisely as possible, whether from a minister or from the public, the answers on which preference functions can be drawn up".<sup>1</sup>

Unfortunately in the present case much too little is known about this preference function. It is true that certain official statements such as those mentioned above<sup>2</sup> give some indication of the degree of racial separation desired. But the light these shed on the preference function referred to is limited. In the first place political strategy may sometimes inhibit complete candour in a government's public announcements. In addition, however, even if these indications of a strong desire for racial separation can be taken to reflect an equally powerful desire for border areas industrialisation, it is not clear how much economic growth the Government is prepared to forego for the implied degree of industrial decentralisation. 'Demand' is not merely a desire for a good; it is this desire backed by a readiness and ability to pay.

Indeed it is by no means clear that the economic implications of border industries development on the scale required to employ those

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1. *op. cit.*, p. 179.

2. See footnote p.232 above.

Bantu workers denied permission to work in the urban areas is fully appreciated.<sup>1</sup> It is here perhaps that economic analysis can be of most use. The rate at which an additional 'unit' of racial separation can be obtained in exchange for foregone economic efficiency and growth is the main focus of attention in the remainder of this study. Our treatment of the 'supply' side of the problem in this chapter is intended to break down any Utopian traces of what Isaiah Berlin has described as 'the natural tendency of all but a very few thinkers to believe that all the things they hold good must be intimately connected, or at least compatible, with one another'.<sup>2</sup> 'This simply means forcing recognition that choice "positively" is, or may be, necessary'.<sup>3</sup>

We have shown that up to a point the various possible objectives of industrial decentralisation may be compatible with one another. For instance external effects may be such that if appropriate measures are introduced decentralisation will actually increase the value of the national real product. Decentralisation for economic reasons may, therefore, incidentally reduce possible social evils, bring about a more even distribution of income and foster separate development. But the magnitude of development called for by economic considerations may be lower than the community thinks is warranted on grounds of equity or for political reasons, and it will actually have to pay a price in terms of economic growth to obtain the latter two types of benefits. After the economically optimal point ( $OM_1$ ) has been reached, the objectives of income re-

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1. The Financial Mail, March 10, 1967, p. 632, for instance, reports on the address by the Deputy Minister of Bantu Administration and Development to organised industry in the Western Cape as follows: 'Whereas he had earlier in the morning, scoffed at critics who warned that artificial labour shortages would retard development ("the story of lower productivity because of less labour is so much nonsense") he subsequently conceded that, with enforced decentralisation, it was possible that there would be slower growth in the Western Cape and the Witwatersrand.
  2. Two Concepts of Liberty, 1958, p. 13n. quoted by Hutchison, op. cit., p. 179.
  3. Hutchison, op. cit., p. 180.

distribution and separate development may be compatible with one another over a certain range, but various pieces of circumstantial evidence seem to indicate clearly that separate development as such is the overriding consideration. How much of this latter objective it will be prepared to actually "buy" depends on the rate at which separate development can technically be substituted for economic growth compared with the rate of substitution which the Government considers worthwhile. In view of our ignorance about the latter aspect, which we have already remarked upon above, we have been forced to focus our attention mainly on the opportunity costs of border areas industrialisation. In chapter 8 a statistical analysis is presented which should give us a fuller appreciation of the probable economic costs associated with various degrees of induced industrial decentralisation. Since we lack any detailed knowledge of the Government's preference function and hence of the precise position of GG, its demand curve for induced border areas industrial production, we shall have to assess the consequences of the policy on the basis of a number of alternative assumptions regarding the volume of additional employment which the Government will actually attempt to induce in the border areas. These assumptions, together with the results obtained in chapter 8 will, it is hoped, give some indication of the economic and perhaps also the political implications of using border industries policy as an instrument of separate development.

## CHAPTER 7

### LABOUR AND THE INDUSTRIALISATION OF BORDER AREAS.

#### Introduction.

To the industrialist, balancing the advantages of rival sites for his factory, one of the major attractions of the border areas is their abundant supply of unskilled Bantu labour. In some instances, as we saw in Chapter 4, manufacturing activities are sited in the border areas primarily because of the availability and cheapness of unskilled labour. This is so despite the fact that the cost of other factors such as auxiliary services, transportation of materials and finished products, fuel and skilled labour, may be higher than elsewhere.

But such cases in which unskilled labour is the decisive consideration, are relatively few compared with the total number of manufacturing plants. The pull of markets and materials is far stronger than that of labour resources and the evidence of Chapter 3 suggested that in South Africa the market has been the most powerful single influence on the location of industry. Labour orientation is therefore relatively uncommon, and orientation to unskilled labour less common still.

In the border areas themselves we have found, too, that low unskilled wage rates have been the decisive consideration in relatively few cases.<sup>1</sup> This seems to apply to the international division of labour no less than to the location of industry within a country. B. C. Swerling

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1. See for instance the discussion of the Natal and Ciskei border areas in Chapter 4.

has observed that "world trading relationships depend to a greater degree on the unequal distribution of natural resources than on comparative endowments of labour and capital".<sup>1</sup> This is not to say that labour costs do not play a part in international or inter-regional trade. The greater are wage differentials between regions or countries the more likely is a particular industry to be drawn to the least labour-cost location. As we observed earlier, the general level of wages also has a bearing on the location of industry, in that, if it rises more rapidly than other costs, such as transport, the ratio of the wage bill to net output tends to increase, and the incentive to move to cheap labour-areas is intensified. An increasing stock of capital per worker, provided it is not offset by labour saving technical progress (and technical progress tends to have a labour saving bias) is one factor which will tend to increase the ratio of labour costs to net output, and so increase the importance of low wage locations. Another is an autonomous change in the product-mix of manufacturing activity, which increases the relative importance of those industries in which the labour cost ratio is comparatively high. Technical change which reduces the locational significance of skilled labour resources, that is, which leads to a 'dilution' of labour, will also tend to increase the attractiveness of the border and Bantu areas.

While tendencies of this sort, working in favour of orientation to unskilled labour resources may be operating in South Africa, other considerations, including the availability of skilled labour, usually predominate. The industrial development of the border areas therefore, depends in the main on their natural resource endowment, in the case of materials oriented industries, on the size of markets in the same region, and on their geographical situation relative to the country's

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1. 'Capital Shortage and Labour Surplus in the United States,'  
Review of Economics and Statistics, August, 1954, p. 289.

larger market areas.<sup>1</sup> Nevertheless, the existence of relatively abundant and cheap supplies of unskilled labour is a fact of some significance in selecting industries suitable for diversion from the larger centres to the border areas and for the economic effects of state induced industrial decentralisation in South Africa.

The larger the ratio of unskilled labour costs to net output in a metropolitan location, the greater will be the fall in these costs relative to total production costs as a result of diversion to a border area. Other things being equal, then, the proportionate marginal excess private cost of induced border areas industrial production will be smaller the greater is the ratio of unskilled labour costs to net output. Provided allowance can be made for the fact that "other things" are not equal, it appears that we should be able to rank industries according to the marginal excess private costs of diverting them to the border areas. In other words it may be possible to develop an ordinal supply curve corresponding to the cardinal supply curve SS of the previous chapter. An attempt to do this is made in Chapter 8 below. It also appears that if the attractiveness of locations enjoying cheap unskilled labour is increasing, because of any of the factors mentioned above, the supply curve of border areas industrial production SS will tend to shift towards the right, so reducing the marginal excess private costs of diverting production to the border areas. Preparatory to the supply curve analysis presented in Chapter 8, we shall set out in this chapter some information regarding regional wage differentials in South Africa and conclude with comments on the significance for industrial location of labour resources, in particular the labour resources in border areas.

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1. This applies equally to the location of industry in the Southern United States. See G. E. McLaughlin and S. Robock, Why Industry Moves South. (National Planning Commission of the South, 1949).

Regional Wage Differentials in Manufacturing Industry: 1934-35 to 1959-60

Table 17 shows the average earnings level of industrial workers according to racial group and sex, in each of a number of regions of the Republic for selected years between 1934-35 and 1956-57. Where available, figures are given on the same basis for 1959-60. In addition, these average earnings levels in each region have been expressed as percentages of the corresponding figure for the Southern Transvaal in Table 18.

This information, it should be noted relates to all manufacturing industries together and there will doubtless be variations in relative earnings differentials between individual industries. But our subsequent discussion of certain specific industries suggests that the results obtained from our initial aggregated treatment of earnings in manufacturing industry are a fairly reliable reflection of the position in most industrial classes.

Male Bantu labour, which is numerically the most significant type of labour, is of particular interest in the context of the present study. Average earnings varied relatively little between the four main industrial classes, but it is noteworthy that the highest level, which prevailed in the Western Cape, was 7.6 per cent higher than in the Southern Transvaal in 1953-54. In line with our discussion of East London above,<sup>1</sup> we also find that average earnings were only 3.4 per cent lower in this centre than in the Southern Transvaal. This is of some interest in view of the usual supposition that owing to its much less developed condition and its proximity to the Ciskei and Transkei reserves, East London has the advantage of an easy supply of labour at low wage rates. It appears that in the past, if East London has had any labour advantage, it has been mainly in the availability rather than in the cost of male Bantu workers.

The ranking of the main industrial areas, in terms of average earnings of male Bantu workers, apparently held unchanged between 1944-45 and 1953-54 except that in 1950-51 the level was slightly higher in the Southern Transvaal than in the Durban-Pinetown complex. There does, however, appear to have been a fairly consistent and steady

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1. Chapter 4, pp. 123 ff.

TABLE 17: Average earnings of production workers in manufacturing industry by race, sex and region.

Region	Year	Whites			Natives			Asiatics			Coloureds		
		Males R	Females R	Persons R	Males R	Females R	Persons R	Males R	Females R	Persons R	Males R	Females R	Persons R
Western Cape	1934-35	-	-	301.2	-	-	116.0	-	-	239.2	-	-	164.8
	1944-45	750.0	302.0	607.2	220.2	157.2	219.8	391.6	257.8	359.2	359.4	242.0	313.4
	1950-51	1009.2	464.2	880.6	271.6	236.2	271.2	613.4	392.6	601.4	479.4	339.8	420.8
	1953-54	1306.0	609.8	1161.4	322.0	291.6	321.8	729.4	394.6	635.6	580.0	532.0	508.8
	1956-57	1876.2	830.2	1596.2	346.2	297.8	345.8	928.6	474.8	842.8	611.0	428.2	533.0
	1959-60	-	-	1788.4	-	-	387.8	-	-	-	-	-	-
Port Elisabeth/Uitenhage	1934-35	-	-	279.8	-	-	102.0	-	-	228.4	-	-	171.6
	1944-45	646.0	291.2	310.8	209.4	138.0	208.6	332.0	293.6	327.4	317.4	212.8	293.8
	1950-51	963.8	455.8	836.4	258.0	207.4	255.8	513.2	340.6	466.0	447.4	306.8	406.0
	1953-54	1209.8	586.4	1074.4	309.8	209.6	302.8	617.6	445.6	573.0	542.6	297.8	463.4
	1956-57	1826.4	727.8	1438.4	328.8	346.4	330.2	772.6	374.4	660.0	565.6	321.2	474.8
	1959-60	-	-	-	-	-	392.4	-	-	-	-	-	-
East London	1934-35	-	-	319.4	-	-	91.2	-	-	186.0	-	-	147.4
	1944-45	774.2	310.2	580.6	200.4	175.4	200.2	343.6	185.8	260.4	264.2	160.6	216.2
	1950-51	892.2	422.8	752.4	239.2	84.8	234.0	475.8	313.6	375.2	350.8	282.0	333.0
	1953-54	1174.8	523.2	979.2	289.0	178.0	282.2	469.8	187.2	268.6	376.4	215.2	295.4
	1956-57	1666.6	694.4	1290.6	312.0	132.4	273.0	523.2	430.6	462.4	411.8	340.6	377.2
	1959-60	-	-	-	-	-	-	-	-	-	-	-	-
Durban/Pinetown	1934-35	-	-	401.8	-	-	85.6	-	-	223.2	-	-	-
	1944-45	924.0	219.0	829.6	207.4	175.2	207.2	300.8	155.0	295.2	396.2	244.2	443.6
	1950-51	1178.8	469.8	1101.6	252.4	283.8	252.6	416.8	219.6	406.0	723.4	334.6	554.0
	1953-54	1448.4	621.6	1278.4	300.4	238.0	299.6	510.0	287.8	497.2	835.0	413.9	641.4
	1956-57	1401.4	922.8	1327.8	319.6	238.4	318.4	535.6	304.8	533.2	940.2	411.6	638.6
	1959-60	-	-	1999.0	-	-	373.0	-	-	-	-	-	-
Southern Transvaal	1934-35	-	-	466.4	-	-	87.0	-	-	219.8	-	-	171.4
	1944-45	832.0	407.4	735.2	196.8	201.0	196.0	497.8	311.4	456.6	368.4	280.8	323.6
	1950-51	1382.8	580.8	782.0	255.4	301.4	258.4	679.4	393.8	573.8	404.0	423.4	262.6
	1953-54	1504.6	735.8	1375.0	299.2	358.0	300.8	685.0	505.0	618.0	597.8	513.8	551.6
	1956-57	2062.8	944.0	1804.8	345.2	367.8	346.2	796.4	528.2	703.4	655.8	512.2	587.6
	1959-60	-	-	2025.6	-	-	392.8	-	-	-	-	-	-
Rest of Cape	1934-35	-	-	236.0	-	-	64.8	-	-	316.0	-	-	116.4
	1944-45	504.8	268.6	457.8	134.0	87.8	131.4	311.4	-	311.4	212.6	145.4	198.4
	1950-51	811.0	402.8	739.9	182.4	154.6	180.8	434.4	216.6	408.0	281.6	209.8	265.2
	1953-54	1068.6	546.2	986.6	316.4	134.4	214.0	512.6	-	512.6	336.2	248.4	315.2
	1956-57	1460.2	667.2	1243.2	244.6	103.4	222.8	574.6	624.0	577.2	389.0	263.0	359.8
	1959-60	-	-	-	-	-	-	-	-	-	-	-	-
Rest of Natal	1934-35	-	-	396.8	-	-	56.6	-	-	86.6	-	-	181.6
	1944-45	768.0	320.2	733.8	134.8	75.0	134.4	254.6	122.6	253.4	332.4	347.2	351.8
	1950-51	1098.8	491.8	1025.2	172.8	147.8	172.6	357.4	138.8	355.2	486.8	380.2	466.6
	1953-54	1298.2	552.8	1263.8	198.2	141.8	168.2	454.2	177.0	449.2	595.2	448.0	578.4
	1956-57	1925.4	846.8	1764.2	233.4	62.4	218.6	529.6	254.2	524.8	798.6	455.0	759.4
	1959-60	-	-	-	-	-	-	-	-	-	-	-	-
Rest of Transvaal	1934-35	-	-	412.8	-	-	62.8	-	-	150.6	-	-	86.8
	1944-45	667.4	297.0	635.2	108.4	78.2	108.2	358.2	-	358.2	185.2	210.0	185.4
	1950-51	1065.8	812.6	1017.6	145.4	102.4	145.0	396.6	165.0	374.0	309.2	211.6	300.8
	1953-54	1372.8	536.0	1333.8	177.4	123.8	175.8	372.0	154.0	529.2	359.4	216.4	343.6
	1956-57	1886.2	815.8	1742.8	245.0	147.4	242.0	702.6	277.8	646.4	464.2	251.0	435.0
	1959-60	-	-	-	-	-	-	-	-	-	-	-	-
Orange Free State	1934-35	-	-	308.0	-	-	63.6	-	-	-	-	-	107.4
	1944-45	628.0	317.6	575.8	132.6	95.0	132.2	-	-	-	225.2	120.0	220.0
	1950-51	1135.4	433.4	1063.6	182.4	148.6	182.2	-	-	-	328.8	231.2	293.2
	1953-54	1383.4	490.4	1311.4	219.0	178.2	218.4	665.0	-	665.0	366.4	336.6	362.2
	1956-57	1776.6	810.6	1617.0	424.0	306.2	401.6	720.6	-	720.6	252.0	177.4	249.6
	1959-60	-	-	-	-	-	-	-	-	-	-	-	-
Total Republic	1934-35	-	-	389.8	-	-	82.0	-	-	119.4	-	-	158.2
	1944-45	778.4	355.2	677.0	183.6	160.8	183.2	294.2	199.6	29.0	335.8	238.2	300.6
	1950-51	1109.6	517.6	1001.0	232.8	242.6	234.4	413.8	283.2	404.2	443.4	338.6	403.2
	1953-54	1410.0	660.0	1295.2	277.8	271.2	277.8	503.6	333.4	493.0	529.0	399.0	478.8
	1956-57	1885.8	858.0	1648.8	311.0	265.4	309.2	550.8	360.0	534.2	573.6	414.4	510.4
	1959-60	-	-	-	-	-	-	-	-	-	-	-	-
Cape Border Areas	1956-57	1588.6	698.8	1284.6	251.6	123.4	234.4	-	-	-	-	-	-
	1959-60	-	-	1468.4	-	-	288.6	-	-	-	-	-	-
Natal Border Areas	1956-57	1942.4	858.2	1772.4	233.8	134.6	222.8	-	-	-	-	-	-
	1959-60	-	-	1857.8	-	-	256.2	-	-	-	-	-	-
Transvaal Border Areas	1956-57	1622.4	740.4	1472.8	154.8	84.0	151.4	-	-	-	-	-	-
	1959-60	-	-	1663.4	-	-	256.2	-	-	-	-	-	-
Cape Border Areas - East London	1956-57	1453.2	713.8	1272.2	206.4	94.0	199.8	-	-	-	-	-	-
	1959-60	-	-	1474.2	-	-	230.6	-	-	-	-	-	-

NOTE: Figures for years up to 1953-54 include all sectors of secondary industry, including construction and electricity. Figures for 1956-57 include construction but exclude electricity and in addition differ from those for the earlier years in so far as certain modifications were made in the scope and method of the Industrial Census between 1954-55 and 1956-57. The 1959-60 exclude both construction and electricity but are otherwise comparable with 1956-57. Average earnings figures for 1956-57 include working proprietors. This affects only the average earnings of whites significantly.

Source: Published Industrial Census reports supplemented by unpublished information kindly supplied by the Bureau of Statistics.

TABLE 18

Average earnings of production workers in manufacturing industry  
by race, sex and region. (Index numbers, Southern Transvaal = 100)

		WHITES			NATIVES			ASIATICS			COLOUREDS		
		Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
		%	%	%	%	%	%	%	%	%	%	%	%
Western Cape	1934-35	-	-	64.4	-	-	133.3	-	-	108.8	-	-	96.1
	1944-45	90.1	74.1	82.6	111.9	78.2	111.6	78.7	82.8	78.7	97.6	86.2	96.3
	1950-51	73.0	80.0	112.6	106.3	78.4	105.8	90.3	99.7	104.8	95.1	80.3	91.0
	1953-54	86.8	82.9	84.5	107.6	81.5	107.0	106.5	78.1	102.8	98.7	103.5	92.2
	1956-57	91.0	87.9	88.4	100.3	81.0	99.9	116.6	89.9	119.8	93.2	83.6	90.7
	1959-60	-	-	88.3	-	-	96.6	-	-	-	-	-	-
Port Elizabeth/ Uitenhage	1934-35	-	-	60.0	-	-	117.2	-	-	103.9	-	-	100.1
	1944-45	77.6	71.5	69.5	106.4	68.7	105.9	66.7	94.3	71.7	86.2	75.8	96.3
	1950-51	69.7	78.4	107.0	101.0	68.8	99.8	75.5	86.5	81.2	88.8	72.5	87.8
	1953-54	80.4	79.7	78.1	103.5	58.5	100.7	90.2	88.2	92.7	92.3	58.0	84.0
	1956-57	88.5	77.1	79.7	95.2	94.2	95.4	97.0	70.9	93.8	86.2	62.7	80.8
	1959-60	-	-	-	-	-	99.9	-	-	-	-	-	-
East London	1934-35	-	-	68.5	-	-	104.8	-	-	84.6	-	-	86.0
	1944-45	93.1	76.1	79.0	101.8	87.3	101.6	69.0	59.7	57.0	71.7	57.2	66.4
	1950-51	64.5	72.8	96.2	93.7	28.1	91.2	70.0	79.6	65.4	69.6	66.6	72.0
	1953-54	78.1	71.1	71.2	96.6	49.7	93.8	68.6	37.1	43.5	64.0	41.9	53.6
	1956-57	81.0	73.6	71.5	90.4	36.0	78.9	65.7	81.5	65.7	62.8	66.5	64.2
	1959-60	-	-	86.1	-	-	98.4	-	-	57.4	-	-	130.2
Durban/ Pinetown	1934-35	-	-	112.8	-	-	105.2	60.4	49.8	64.7	161.8	87.0	136.2
	1944-45	111.1	53.8	140.9	98.8	94.2	98.5	61.3	55.8	70.8	143.5	79.0	119.8
	1950-51	85.2	80.9	100.2	100.4	66.5	99.6	74.5	57.0	80.5	142.1	80.5	116.3
	1953-54	96.3	84.5	73.6	92.6	64.8	92.0	67.3	57.7	75.8	143.4	80.4	108.7
	1956-57	67.9	97.8	98.7	-	-	95.0	-	-	-	-	-	-
	1959-60	-	-	50.6	-	-	74.5	-	-	143.8	-	-	67.9
Rest of Cape	1934-35	-	-	62.3	68.9	43.7	66.7	62.6	-	68.2	57.7	51.8	60.9
	1944-45	60.7	65.9	94.6	71.4	51.3	70.5	63.9	55.0	71.1	55.9	49.6	57.3
	1950-51	58.6	69.4	71.8	72.3	37.5	71.1	74.8	-	82.9	57.2	48.3	57.1
	1953-54	71.0	74.2	68.9	70.9	28.1	64.4	72.1	118.1	82.1	59.3	51.3	61.2
	1956-57	70.8	70.7	85.1	-	-	65.1	-	-	39.4	-	-	106.0
	1959-60	-	-	99.8	68.5	37.3	68.2	51.1	39.4	55.5	95.7	123.6	108.0
Rest of Natal	1934-35	-	-	131.1	67.7	49.0	67.3	52.6	35.2	61.9	96.6	89.8	100.9
	1944-45	92.3	78.6	91.9	66.2	39.6	55.9	66.3	35.0	72.7	101.3	87.2	104.9
	1950-51	76.6	84.6	97.8	67.6	17.0	63.1	66.5	48.1	74.6	121.8	88.8	129.2
	1953-54	86.3	75.1	-	-	-	-	-	-	-	-	-	-
	1956-57	93.3	89.7	-	-	-	-	-	-	-	-	-	-
	1959-60	-	-	135.2	93.6	64.2	93.0	84.8	91.0	90.2	76.2	83.5	81.3
Pretoria	1934-35	-	-	105.6	99.1	68.5	98.4	113.1	89.3	116.6	76.8	57.3	74.5
	1944-45	-	-	100.8	87.5	65.4	87.0	117.4	43.7	128.1	83.1	52.1	82.1
	1950-51	79.9	77.1	-	-	-	-	-	-	-	-	-	-
	1953-54	101.4	77.7	-	-	-	-	-	-	-	-	-	-
	1956-57	94.8	88.6	-	-	-	-	-	-	-	-	-	-
	1959-60	-	-	88.5	-	-	72.2	-	-	68.5	-	-	50.6
Rest of Transvaal	1934-35	-	-	86.4	55.1	38.9	54.9	72.0	-	78.4	50.3	74.8	56.9
	1944-45	80.2	72.9	130.1	56.9	34.0	56.6	58.4	41.9	65.2	61.3	50.0	65.0
	1950-51	77.1	140.1	97.0	59.3	34.6	58.4	83.5	28.5	85.6	61.1	42.1	62.3
	1953-54	91.2	72.8	96.6	71.0	40.0	69.9	88.2	52.6	91.9	70.8	49.0	74.0
	1956-57	91.4	86.4	-	-	-	-	-	-	-	-	-	-
	1959-60	-	-	66.0	-	-	73.1	-	-	-	-	-	62.7
Orange Free State	1934-35	-	-	78.3	67.4	47.3	67.1	-	-	-	61.1	42.7	67.6
	1944-45	75.5	75.5	136.0	71.4	49.3	71.1	-	-	-	65.2	54.6	63.4
	1950-51	82.1	74.6	95.4	73.2	49.8	72.6	97.1	-	107.6	62.3	65.5	65.7
	1953-54	92.1	80.2	89.6	122.8	83.8	116.0	90.5	-	102.4	38.4	34.6	42.5
	1956-57	86.1	85.9	-	-	-	-	-	-	-	-	-	-
	1959-60	-	-	-	-	-	-	-	-	-	-	-	-
Cape Border Areas	1956-57	77.0	74.0	71.2	72.9	33.6	67.7	-	-	-	-	-	-
	1959-60	-	-	72.5	-	-	73.5	-	-	-	-	-	-
Natal Border Areas	1956-57	94.2	90.9	98.2	67.7	36.6	64.4	-	-	-	-	-	-
	1959-60	-	-	91.7	-	-	65.2	-	-	-	-	-	-
Transvaal Border Areas	1956-57	78.7	78.4	81.6	44.8	24.3	43.7	-	-	-	-	-	-
	1959-60	-	-	82.1	-	-	41.9	-	-	-	-	-	-
Cape Border Areas ex- cluding East London	1956-57	70.4	75.6	70.5	59.8	25.6	57.7	-	-	-	-	-	-
	1959-60	-	-	72.8	-	-	58.7	-	-	-	-	-	-

Source: Based upon Table 17.

tendency for average earnings in the Southern Transvaal to rise relative to those in the other main industrial centres between 1944-45 and 1953-54. The tendency, according to our figures, was accelerated between 1953-54 and 1956-57, so that average earnings in the Western Cape in the latter year were only very slightly higher than in the Southern Transvaal, and the level in the Durban-Pinetown and Port Elizabeth-Uitenhage areas were the lowest of all the major industrial areas. The writer has certain reservations about the comparability of the data for 1956-57 with that for earlier years, but since they do not apply to the years 1944-45, 1950-51 and 1953-54, it seems we may conclude that there was a tendency in the 1950's for average earnings of male Bantu workers in the Southern Transvaal to rise relative to the other industrial centres.

Despite this apparent trend, the differences between the larger centres were relatively small and are unlikely to have had any significant bearing on locational decisions when the choice lay between one of the main industrial areas. Regional earnings differentials assume significant proportions only when one compares the less developed parts of the country with the metropolitan areas. Excluding the four main industrial areas, in 1953-54 average earnings in the Cape, Natal, Transvaal and Orange Free State were respectively 72.3, 66.2, 59.3, and 73.2 per cent of the level prevailing in the Southern Transvaal. Provided earnings differentials are not offset by significant differences in productivity, it appears that firms can achieve significant savings in the cost of their Bantu labour by establishing themselves in the smaller centres. With the exception of the Transvaal, (excluding the Southern Transvaal) in 1956-57, the relative average earnings in the less developed regions were remarkably constant over the period under consideration.

The regional earnings differentials become more significant still if we take border areas on their own. Compared with the figures for all the less developed centres together, the average earnings of male Bantu in border and Bantu areas in the Cape (excluding East London)

and the Transvaal were 59.8 and 44.8 per cent respectively of the Southern Transvaal level in 1956-57. Virtually the whole of Natal outside Durban and Pinetown is regarded as either a border or a Bantu area so that the figure of 66.2 per cent given in the preceding paragraph applies here too.

Though East London is officially classified as a border area its average earnings for male Bantu, 90.4 per cent of the Southern Transvaal level in 1956-57, was considerably higher than the average for the Cape border and Bantu areas taken as a whole. This indicates quite clearly that it is misleading to generalise about relative average earnings in the border areas apart from saying that they are on the whole considerably lower than in the metropolitan areas. It is a striking fact, that average earnings for male Bantu vary quite significantly over very short distances, even when they are employed in the same industry. The number of male Bantu employees in manufacturing industry, their average earnings, and the relationship of the latter to the Southern Transvaal level, are given in Table 19 for a number of specific magisterial districts which fall within the border and Bantu areas.

It is noteworthy that average earnings in King William's Town, where manufacturing is dominated by a cotton textile factory, were nearly 25 per cent lower than in East London, although these two centres are only about 40 miles apart. With the exception of Queenstown, there appears to be a marked direct relation between the number of industrial workers and the average earnings level in the Cape border and Bantu areas. It is probable too, that proximity to the reserves has a bearing on the average earnings in a centre.

Likewise, in Natal average earnings were considerably higher in Pietermaritzburg than in most other magisterial districts. The second highest average rate of pay occurred in the Mtunzini district, which, though fairly low down the list in terms of the number of male Bantu employees and surrounded by reserves, contains large, highly

TABLE 19

Average earnings of Bantu males in certain Magisterial Districts  
in the Border areas in 1956-7

	Number of employees	Average wage level R p.a.	% of Southern Transvaal
<u>Southern Transvaal</u>		346.2	100.0
<u>Cape</u>			
East London	4,563	312.0	90.4
King William's Town	2,944	237.4	68.8
Queenstown	612	255.2	73.9
Warrenton	1,045	209.6	60.7
Vryburg	629	190.0	55.1
Mt. Currie	395	156.2	45.3
Umtata	259	161.4	46.8
<u>Natal</u>			
Pietermaritzburg	6,499	308.6	89.4
Kliprivier	2,074	198.0	51.4
Hlabisa/Lower Umfolozi/Wongoma	3,590	217.2	62.9
Newcastle	1,997	215.0	62.3
Estcourt	1,783	191.6	55.5
Dundee	1,696	256.4	74.3
Umzinto	1,558	251.8	73.0
Lions River	1,481	214.2	62.1
Mtunzini	1,293	278.4	80.7
Port Shepstone	1,282	199.0	57.7
Vryheid	979	163.6	47.4
Inanda	642	226.4	71.4
New Hanover	865	169.8	49.2
Richmond	419	141.4	41.0
Alfred	251	121.2	35.1
Camperdown	63	175.0	50.7
<u>Transvaal</u>			
Pilgrimsrest	2,610	126.6	36.7
Nelspruit	2,183	123.8	35.9
Letaba	1,849	133.6	38.7
Piet Retief	1,713	171.4	49.7
Rustenburg	1,606	211.8	61.4
Sibasa/Soutpansberg	960	125.4	36.3
Pietersburg	795	214.4	62.1
Barberton	640	162.2	47.0
Potgietersrust	497	174.8	50.6
Brits	365	222.4	64.4
Lydenburg	181	151.0	43.8
Warmbaths	133	157.6	45.7

Source: Bureau of Statistics, Industrial Census 1956-7, Special Report No. 240.

capital intensive, sugar and pulp and paper mills, which must pay fairly high wages. On the other hand in the Klipriver district where the number of employees is larger and a textiles factory is the predominant industrial activity, average earnings were only 51.4 per cent of the Southern Transvaal level. The correlation between the number of employees and average earnings appears to be much looser in Natal than in the Cape. It is interesting that despite fairly substantial employment of Bantu males in the Transvaal at Pilgrimsrest, Nelspruit, Letaba and Piet Retief/Rustenburg average earnings were only 36.7, 35.9, 38.7 and 36.3 per cent of the Southern Transvaal level, and were lower than in any of the other districts listed except Alfred in Natal where only 251 were employed. Among the Transvaal border areas with a relatively large manufacturing employment, average earnings were highest at Rustenburg where there is a cigarette factory.

Wages in the clothing and textiles firms at Hammarsdale were reported in 1963 to be substantially lower than in Durban firms in the same industry, only 30 miles away: "One of the clothing factories [at Hammarsdale] employs about 500 Africans at weekly wages starting at R3.25 and rising to R7. While the top rate is about 28 per cent below the comparable rate for a Durban factory, hours are longer (45 compared with 42½), overtime rates are lower and the Hammarsdale workers do not enjoy the fringe benefits that industrial council agreements have established for employees in controlled areas."<sup>1</sup> The ratio of Hammarsdale to Durban wages in the clothing industry appears to be of much the same order as that between King William's Town and East London mentioned above. It is also said that a large disparity in wage levels exists between another border areas "growth point", Rosslyn, and Pretoria, though they are only 12 miles apart.

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1. The South African Financial Mail, September 20, 1963, pp. 111-112. It should be noted that the racial composition of the labour force differs between Hammarsdale and Durban.

The tendency for wage rates to differ quite substantially between centres within a relatively small geographical area is, of course, not peculiar to South Africa and has been noted in several other countries. McLaughlin and Robock who associate wage levels with town size write as follows: "Wage differentials between large and small towns are often confused with the North-South differential ... These small town plants in both the North and South have about the same wage rates but a significant differential exists between the small town and the metropolitan areas."<sup>1</sup> Broadly speaking a similar relationship between earnings levels and townsize seems to prevail in South Africa. But for reasons outlined earlier<sup>2</sup> we should also expect to find a tendency for unskilled wage rates to be lower for those centres closer to the Bantu areas and for them to be lowest of all inside the latter. Due to the very low agricultural productivity of the Bantu areas incomes per head are much lower than elsewhere in South Africa, as the obstacles to short distance migration are likely to be smaller than in the case of long distance migration. Gustav Ranis has found that in the early days of industrialisation in Japan the going wage rate "differed with local differences in the total remuneration on the soil. Labour recruiters found their task easier in the poorer inland regions than in the maritime provinces where fishing and other forms of by-employment raise the opportunity cost of labour. This market, moreover, had interesting discriminating monopsony-power, competitive-seller characteristics. The overall supply of labour might be characterised by a step function consisting of a series of perfectly elastic segments rather than the commonly assumed horizontal curve at a given (subsistence plus placement cost) wage rates".<sup>3</sup>

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1. G. E. McLaughlin and S. Robock, Why Industry Moves South, p. 70.
  2. Chapter 2, pp. 38 39 and Chapter 5, pp. 184 - 187.
  3. Gustav Ranis, 'Factor Proportions in Japanese Economic Development', American Economic Review, September 1957, p. 596. See also A. Tang, Economic Development in the Southern Piedmont, 1860-1950, (Chapel Hill, University of North Carolina Press, 1958.)

Regional Earnings Differentials in Some Specific Industries.

Regional wage differentials of roughly the same magnitude as those discussed above emerge when similar calculations are made for individual industries. It appears, therefore, that the regional differentials revealed when all manufacturing activities are taken together cannot be explained to any significant extent by variations between regions in the 'industry-mix'.

TABLE 20

Average Earnings of Male Bantu Workers by Region  
in Certain Industries 1953-54

(Index Numbers, Southern Transvaal Average = 100)

	<u>Food</u> <u>%</u>	<u>Textiles</u> <u>%</u>	<u>Wood products</u> <u>%</u>
Western Cape	92.4	86.5	115.4
Port Elizabeth/Uitenhage	92.6	61.9	107.3
East London	87.9	98.9	80.1
Durban/Pinetown	87.2	88.1	98.4
Southern Transvaal	100.0	100.0	100.0
Pretoria	91.3	72.3	103.3
Rest of Cape	61.1	59.7	66.0
Rest of Natal	58.2	55.5	51.0
Rest of Transvaal	54.0	48.2	44.6
Orange Free State	55.0	106.7	86.2

Source: Calculated from unpublished information kindly supplied by the Bureau of Statistics.

Table 20 shows that, despite individual differences in the ranking of regions according to their average earnings levels, the food, textiles and wood products sectors in 1953-54 had a good deal in common. Excluding the main industrial areas, average earnings relative to the Southern Transvaal in the food, textiles and wood products industries respectively were as follows: 61.1, 59.7 and 66.0 in the Cape (excluding East London); 58.2, 55.5 and 51.0 in Natal; and 54.0, 48.2 and 44.6 in the Transvaal. In each case, therefore, average earnings were lower in Natal than in the Cape but higher in Natal than in the Transvaal, and the differential was roughly the same for all three of these industries. Also it is noteworthy that in both Natal and the Transvaal the differential was greatest in the wood products sector and smallest in the food sector.

The clothing industry is of particular interest in view of the importance of labour costs and the fact that growing labour problems in the predominant centre appear to be causing a tendency towards decentralisation.<sup>1</sup> In recent years government assistance to clothing firms in the border areas may have accelerated this process, but labour supply and cost have apparently exerted an independent influence.

Table 21 is reproduced from H. A. F. Barker's extremely detailed study of the clothing industry.<sup>2</sup> As Barker points out, these figures 'reveal that the average weekly wage rates in the coastal areas - Cape Western, Cape Eastern and Natal - were respectively only 82, 79 and 72 per cent of those of the Witwatersrand, while the corresponding percentages for the weekly median wage rates were still lower at 75, 76 and 69 per cent respectively. For Kimberley and Kroonstad the percentages were 65 (average weekly wage) and 60 (median weekly wage) while the average weekly wage in the other uncontrolled regions was only 33 per cent of the corresponding rate on the Witwatersrand'.<sup>3</sup>

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1. See above, Chapter 3, p. 79, Table 5.

2. The Economics of the Wholesale Clothing Industry in South Africa (1907-1957), (Pallas Publications, Johannesburg 1962). Table X111, p. 108.

3. op. cit., p. 127.

TABLE 21

Number of employees in the clothing industry, according to area and race, and average and median wages paid at August 1955

Area	Employees					Area percentages of total employees	(6) Average weekly wage R	(6) Median weekly wage R
	European	Coloured	Asiatic	Native	Total			
Witwatersrand (1)	5,693	4,764	345	6,655	17,457	42.2	13.20	13.42
Cape Western (2)	2,008	12,604	602	297	15,511	37.5	10.83	10.08
Cape Eastern (3)	271	857	131	54	1,313	3.2	10.48	10.28
Durban and environs (4)	269	1,310	3,597	324	5,500	13.3	9.53	9.20
Kimberley and Kroonstad	85	619	30	81	815	2.0	8.69	8.08
Other areas (5)	40	60	29	644	773	1.8	4.35	8.08 (7)
All areas	8,366	20,214	4,734	8,055	41,369 (8)	100.0	11.48	10.08
Racial percentage for all races	20.0	48.9	11.4	19.5	100			

Source: H. A. F. Barker, op. cit., Table XIII, p. 108, which in turn was based upon statistics in Wage Board report dd. 1st May, 1956, Tables IV and VI in the annexures and para. 24, pp. 54 and 55-57.

(1) Witwatersrand includes Johannesburg, Germiston, Benoni, Boksburg, Brakpan, Krugersdorp and Springs.

(2) Cape Western includes the magisterial districts of the Cape, Wynberg and Bellville.

(3) Cape Eastern includes Port Elizabeth, East London, Uitenhage and King William's Town.

(4) Includes Verulam.

(5) "Other areas" includes Charlestown, Port Shepstone, George, Umtata and Standerton.

(6) Including cost of living allowances.

(7) The available data does not permit of ascertaining the median weekly wage for "Other areas".

(8) The total number of clothing industry employees in 1953-4, according to the latest available results of the Census of Industrial Establishments (published in Special Report No. 217) was 49,849. The figures here quoted for August 1955, are collated from the manufacturers' returns received by the Wage Board and the total of 41,369 indicates a coverage of about 83 per cent - not a substantial drop in the numbers employed.

These figures it should be noted relate to the average wage level in different centres taking all racial groups and both sexes together. While this sort of comparison may be useful in the clothing industry, it tells us little about the order of wage differentials that can be expected in other industries in the rural areas, in view of variations in the race and sex characteristics of the labour force. Barker attributes the higher level of wages in the Witwatersrand partly to the higher proportion of white workers in the industry in that region. But in addition average wage levels in the Transvaal clothing industry apparently increased much more rapidly than in the coastal regions between 1940 and 1955, despite a sharp fall in the proportion of whites in the Transvaal labour force and an increase in the proportion of Bantu.

"In 1940 when the proportion of Europeans employed in the Transvaal clothing factories was about 70 per cent, the prescribed wages of female machinists were 22 per cent higher than those in the coastal areas. But by 1955, when the percentage of European employees was only 32.6 the wage disparity in favour of the coastal factories had increased to 30 per cent for the Eastern Cape, 33 per cent for the Western Cape and 46 per cent for Natal."<sup>1</sup>

Barker explains this trend in the following terms:

"Cape Town and Port Elizabeth both had ample supplies of suitable coloured labour, while Durban was similarly well endowed with Indian workers. But in proportion to their needs, both Johannesburg and Germiston were less favourably situated. For their labour requirements they were obliged to augment an increasingly inadequate supply of Europeans - in competition with the attractions of distributive, clerical and other industrial occupations - with limited numbers of coloureds and a growing proportion of untrained natives of lesser suitability for the work."<sup>2</sup>

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1. *op. cit.*, p. 128.

2. *op. cit.*, p. 129.

He points to the faster rate of increase of female employees in industry in the Witwatersrand than in the coastal areas as further evidence of the pressure on the Witwatersrand's labour resources. The impression given by this analysis is that forces operating in the labour market at least at the less skilled levels, are tending to offset the Southern Transvaal's other locational advantages in the clothing industry. As our analysis of relative wages in manufacturing industry as a whole shows there was also a tendency for the average earnings of male Bantu to increase faster in the Southern Transvaal than in other centres between 1944-45 and 1956-57. This is clearly in keeping with Barker's view of the situation in the Witwatersrand labour market. In part the gains made by Bantu in the Southern Transvaal may be due to a general tendency to upgrade workers in order to replace white labour which was becoming increasingly difficult to obtain. But it may also be evidence of growing difficulty in obtaining labour of all types in the Southern Transvaal area. A tendency of this sort, together with the steadily increasing proportion of Bantu workers in manufacturing industry will obviously tend to increase the attractiveness of sites in the border areas, not only for certain branches of the clothing industry but for other of the more labour intensive industries as well. Other things being equal, the cost of diverting industries to the border areas would tend to decline.

#### Regional Wage Policy.

The writer's purpose in this chapter and the next is, as stated earlier, to throw light on the 'divertibility' of industries, that is, on the ease or difficulty with which industries may be induced by the Government to establish themselves in the border areas rather than in locations which they would otherwise have selected. As we have noted, and hope to demonstrate more clearly in Chapter 8, regional wage

differentials, and changes in them, have an important bearing on this question. These differentials, however, are not determined solely by differences in the cost of living in various parts of the country or by local peculiarities in the demand for, or the supply of labour services, as they are in a classical economic model. In reality they depend on a complex set of political, sociological and economic factors.

An issue which has caused considerable controversy is Government policy regarding the disparity between wage rates in the metropolitan and rural areas, in particular the border areas. In 1960 the Government committed itself to the "maintenance of the principle of wage differentiation in respect of border areas, in so far as such differentiation can be justified on grounds of lower productivity and lower costs of living". "The purpose of wage differentiation" it was stated, "is not to facilitate unfair competition among various regions but to assist in the removal of factors inhibiting the decentralisation of industry. With this intention, minimum wages in border areas in respect of which industrial councils do not at the moment have jurisdiction will be determined as at present in terms of the Wage Act, on the recommendation of the Wage Board. When industrial councils do exist no change is envisaged. Industrial councils are expected, however, to assist the government in the implementation of the policy of decentralisation ... and particularly in so far as industries which employ large numbers of Natives are concerned. Since industrial councils do not have all the data and information at their disposal to enable them to determine their wage policy in the border areas, the initiative in this connection will be entrusted to the Permanent Committee. It will be the duty of this committee, after consultation with the Wage Board, to establish a liaison with the industrial councils through the department of labour."<sup>1</sup>

Even prior to 1960, if a region or a particular type of labour was not covered by an industrial council agreement, wages were set by the Wage Board in terms of the Wage Act of 1925, when the Board was asked to do so by the Minister of Labour. According to the statement

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1. Prime Minister's statement on the establishment of industries in the border areas, 2 June, 1960.

quoted, however, the Government intended, in effect, to put the determination of all wages in the border areas in the hands of the Wage Board, and the Permanent Committee whether an industrial council previously had jurisdiction over them or not. The statement also suggests an increased determination to resist attempts by industrial councils to extend their area of jurisdiction to include centres in the border areas.

The obvious implication of the statement is that the Government believed that if wage fixing were left to industrial councils the regional differentials established would tend to be, in some sense, undesirably small. Despite the assurance that "unfair" competition would be avoided, this policy has met with vehement opposition from employers, and, in great measure also, from employees in the larger industrial centres, especially on the Witwatersrand. This conflict is of course not a novel feature of industrial relations in South Africa. Indeed, one gathers from Barker's work,<sup>1</sup> a long, bitter struggle by employers in the clothing industry to limit the size of regional differentials had been in progress more or less continually since at least 1926. The focal point of this struggle has gradually shifted from the wage differentials existing between the Witwatersrand and the coastal centres, to those existing between all the controlled areas on the one hand and the uncontrolled areas on the other, though the former issue, it seems, is still very much alive.<sup>2</sup> Instead of achieving the greater uniformity of wage rates which they had been seeking for so long, the threat to Witwatersrand clothing manufacturers of keener competition from producers released from the need to comply with "civilised wage standards" seemed to have increased. In view of its high labour intensity, the difficulties inherent in the creation of a satisfactory regional wage structure appear in a more acute and obvious form in the clothing industry than in any other, and it is, therefore, an instructive example, to which we return shortly.

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1. H. A. F. Barker, *op. cit.*, Chapter X.

2. See Barker, *op. cit.*, p. 403, where he calls for the establishment of a 'national industrial council for the whole industry.'

Collective wage settlements have tended to reduce the size of regional differentials in those advanced countries having strong trade union movements. Some observers in the United States for instance consider that national wage standardisation has created difficulties for certain localities, and generally has had an adverse effect on the development of less prosperous regions. In order to counter these adverse effects of small regional differentials, Buchanan and Moes<sup>1</sup> have suggested a device involving subsidies to firms in less prosperous regions. In Britain, too, there has been a tendency to rationalize and reduce differentials between the areas brought under one agreement. But, according to D. J. Robertson the index of actual earnings in different parts of the United Kingdom, presented in the table below indicate that the differentials established by collective settlements have been nullified by competitive forces. He says:

"... Workers earnings have ... tended to settle down to reflect regional differences in the balance of supply and demand for labour ... The result of the inter-action of these processes is that we now have a pattern of regional differentials in earnings which corresponds in broad measure to the relative prosperities of different parts of the country, while, at the same time, we have a much more uniform pattern of collectively determined wage rates which allows for little differentiation between areas."<sup>2</sup>

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1. J. M. Buchanan and J. E. Moes, "A Regional Countermeasure to National Wage Standardisation," American Economic Review, June 1960, pp 434-438.
  2. The Economics of Wages, pp. 124-125. (LONDON, MACMILLAN 1961.)

Earning Index for each Region of Great Britain

<u>Region</u>	<u>Earning Index</u> <u>Great Britain = 100</u>
North	95.5
East and West Ridings	96.9
North Midlands	98.5
East	101.0
London and South East	108.1
South	100.7
South West	96.3
Midlands	100.8
North West	98.6
Wales	98.0
Scotland	93.0

Source: C. E. V. Leser, 'Earnings in British Regions', *Scottish Journal of Political Economy*, 1954. The index is based on Census of Production Data.

The actual earnings differentials reflected in this table<sup>1</sup> are apparently rather narrower than those which we showed earlier exist in South Africa. This is probably attributable to the fact that compared with this country, the British economy is more integrated, the degree of regional imbalance is lower, the mobility of labour is greater due to the smaller land area, and the less prosperous regions include some fairly large centres which already have a tradition of industrial activity, but which have tended to decline, or at least to expand less rapidly than other parts of the country. It is, therefore, easier for the market mechanism to prevail against any tendency towards national wage standardisation. It should be noted that if the market is to produce differentials wider than those between agreed minimum wages in different regions, either the minima established for the more

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1. Reproduced from D. J. Robertson, *op. cit.*

prosperous regions must have been so low as to have been ineffective from the start, or a certain amount of 'wage drift' must occur in the prosperous regions after the minima have been determined. 'Wage drift' however takes time and unless accompanied by increases in productivity implies rising labour costs and prices.

One possible interpretation of the governments policy announcement, then, is that they wished to avoid the adverse effects of national wage standardisation to which we have referred. But is there any objective way of determining the 'right' degree of differentiation in regional wage levels or is it a purely arbitrary matter? Is it not merely a matter of the relative bargaining strengths of different groups, small differentials favouring some interest groups and large differentials favouring others? Is there for instance an economically 'right' regional wage structure or is there no special merit in having differentials which reflect differences in cost of living, productivity and peculiarities in local labour market conditions?

Lewis' contention, discussed in Chapter 5, that government intervention in the location of industry is justified on economic grounds because "wage differentials between towns where there is heavy unemployment and towns where there is not are not as wide as a free market would require"<sup>1</sup> implies that a regional wage structure determined by market forces does possess some special merit. So do the remarks by Buchanan and Moes and by D. J. Robertson in the works mentioned above. Lewis as we noted is concerned with the relationship between wages in prosperous and declining regions, and the unduly small differentials resulting from downward wage rigidity in the latter. It appears that he would regard the workings of the market in this case as unsatisfactory because it does not lead to the fall in wages in the poorer regions which is necessary for the market's equilibrating function to work properly. It appears, too, that he would regard the market as satisfactory if such a fall took place, even though it meant an absolute fall

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1. Principles of Economic Planning, p. 78.

in real wages for those actually employed in the poorer areas, below some previously attained level. Presumably, therefore, he would be even readier to oppose a tendency for wages in poorer areas to be pushed up to some higher level not previously attained.

What is the basis of the this preference for regional differentials reflecting market forces? Fundamentally it is that too narrow a gap exaggerates the real marginal social cost of labour in the poorer relative to the richer areas and results in a misallocation of resources. This of course is well known, but in the light of some views expressed on regional wage policy in South Africa it may bear repeating. Assume for arguments sake that, allowing only for differences in cost of living and in productivity, wage rates are perfectly uniform throughout the country in each industry. There are, however, obstacles to the mobility of labour due to what Professor Hicks has called the "indirect attractions of living in a particular locality"<sup>1</sup> which include such things as travelling costs, the disability caused by the need to adopt to a new job and learn new skills, to leave friends and abandon an old way of life for an unknown new one, and even sheer inertia. Obstacles of this sort impede movement not only from agriculture to industry in general, but from one industrial centre to another, and their magnitude tends to vary directly with the distance which has to be travelled. Now this does not mean that those who wish to move between regions should not be permitted to do so. It simply means that if these frictions are to be overcome, workers must have an adequate incentive to move. In the case of Bantu workers in the Ciskei, a larger real wage rate is required to induce movement to Johannesburg than migration to King Williams Town.

All but perfectly mobile workers and those who actually prefer life elsewhere, would rather obtain employment of a somewhat lower wage rate in the poorer static region than work in an expanding region at the uniform wage rate. But they are prohibited from offering their services at a rate

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1. J. R. Hicks, The Theory of Wages, Second Edition (Macmillan, London 1963), p. 74.

less than the latter. If, at the prevailing uniform rate it is not possible for all those wanting employment in the poorer area to obtain it, they have no alternative but to migrate, even though by doing so they will feel themselves worse off than they would have been in the poorer area at a lower wage rate. At the same time if lower wages were permitted in the poorer area new firms would tend to be attracted to the area and firms already established there would tend to expand, thus providing additional employment. Thus both the additional workers employed and the firms employing them would be better off than with uniform wage rates, and, it might be noted, the country's rate of economic growth enhanced. The lower the wage necessary in the poorer area if there are to be enough job vacancies to employ all those seeking work there, the greater the number of workers who will feel the better wage conditions in the expanding areas adequate to overcome the "indirect attractions of living in a particular locality", and they will accordingly migrate.

Furthermore, if the capacity of the prosperous region to absorb workers at the prevailing uniform wage rate, is less than the number who cannot be employed at this rate in the poorer areas, a problem of unemployment will arise, when it might not have done so, or might have been less serious, in the absence of national wage standardization. It goes without saying that if a "rate for the job" is set for all workers in a particular category regardless of where they are employed, so that productivity differences are not taken into account in the wage structure all the adverse effects described will be still further accentuated. If workers from the poorer area are less productive than others, their chances of obtaining employment will be jeopardised not only in their home localities, but in the expanding areas as well.

Considerations of the sort just discussed presumably underly both the remarks from Lewis quoted above and the following comment by the Board of Trade and Industries .<sup>1</sup>

"The comparatively low wages in rural areas in most countries has been due to the fact that such areas usually produce a surplus population and that special incentives to migration towards urban areas

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1. Report No. 282, p. 100.

are necessary, while living conditions are also such that a lower wage rate in rural areas is often preferred to a somewhat higher rate in cities".

There are important reasons why regional wage differentials would need to be larger in South Africa than elsewhere. As we have seen, there have been considerable disparities over long periods of time in the average earnings of Bantu males in different regions, the level in the Cape (including East London), the Transvaal and Natal border areas being lower by 27.1, 55.2 and 32.3 per cent respectively than in the Southern Transvaal. In view of the apparent relative constancy of these figures over time it seems that they may correspond roughly with variations in local supply and demand conditions for Bantu labour. When in addition to this we bear in mind that a particular type of job in an industry may be performed by different racial groups in different areas, it is clear that the regional wage differentials for that job may have to be quite substantial to reflect differences in productivity and variations in local labour market conditions. Some of the factors which make for large regional wage disparities in South Africa and which create serious problems in setting wages are nicely summarised in the following remarks by the Wage Board:

"the problem of safeguarding existing factories and encouraging the establishment of new ones meets with difficulties. These are connected mainly with the peculiar racial composition of the population and the equally peculiar dualistic structure of the economy. The ethnic complications arise from the fact that the different racial groups have different living and wage standards. Hence if as is the case in this industry, one locality employs whites, another uses coloureds or Indians and another takes on Bantu to perform the same work, there are bound to be ethnic wage differentials that, rightly or wrongly, tend sooner or later to generate conflict. Then, again, in an economy with a pronounced dualistic character, where a developed sector faces an undeveloped one, geographical differentials will be a prominent feature

of the wage structure. In the stockings industry, this complicating factor is likewise present. Now, when the two factors of multi-racialism and economic dualism operate in combination, the wage problem becomes the more difficult. In other words, when in the metropolitan areas of the developed sector whites or even coloureds, but in the towns of the undeveloped sector Bantu are employed in the same occupations, very large wage differentials may arise."<sup>1</sup>

It is of course very difficult to determine in any objective way what the size of regional wage differentials should be. In view of the factors which we have indicated, and given the racial composition of the labour force in different regions, we should expect these differentials to be quite substantial. Disputes as to whether the regional differences are too large or too small in a particular industry, however, seem to arise mainly from a failure to agree on the criteria which should be used in establishing minimum wage rates in different regions. It is, therefore, of interest to examine the main objections put by opponents of the country's regional wage policy and some of the criteria which they have suggested should be applied in setting wages.

Terms appearing frequently in critical comments are those such as "fairly established", "civilised wage standards", "fair competition" and, of course, "unfair competition". The most systematic and thorough statement of the case against current regional wage policy is contained in the work by H. A. F. Barker referred to above. Barker does not deny that some regional differentiation in wage rates is justified but contends that the differentials actually prevailing are in some sense too large and, by implication, that the differentials which would be established if uncontrolled areas were included in industrial council agreements, and, in particular, if there existed a single national industrial

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1. Wage Board Report on the Industry for the Manufacture of Ladies Stockings, February 1963.

council in the clothing industry, would in some sense be preferable.

First, it is clear that Barker's criterion of the appropriate structure is not the same as that of Lewis, namely, what "a free market would require". He does not explicitly set out his view of the appropriate criteria but asserts *inter alia* that "in principle there can be no objection to a wage differentiation which does not exceed the current disparity in regional costs"<sup>1</sup> and further on: "Even were it possible to fix wages and other working conditions so that regional costs were equalised, that would still be tantamount to an official invalidation of the original decisions made by existing manufacturers on the location of their plants. When wages are arbitrarily fixed at levels which do more than bring regional cost to parity, that amounts to more than virtual exploitation of the original locational advantages secured by capital investment and labour and becomes a differential tax on existing manufacturers, to promote State objects of which the cost should be borne by the whole community".<sup>2</sup>

According to this view, then, wage rates should be set so that manufacturers in high wage areas<sup>3</sup> can retain the overall cost advantage which originally made them choose their present locations. At worst, wage differentials should be no greater than those which will equalise the costs of production of firms in different parts of the country, and clothing manufacturers in the border areas should definitely not be allowed to pay wage rates which will give them an overall cost advantage

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1. *op. cit.*, p. 402.

2. *op. cit.*, pp. 411-412.

3. In the context of his discussion, it appears that this really means manufacturers on the Witwatersrand. See for instance the paragraph in the middle of p. 411 of Barker's study.

over manufacturers in the larger centres. There is no need to dwell upon the fact that this criterion has no economic justification whatsoever. It is obvious that even if a particular location is optimal initially, market forces may eventually swing the balance in favour of other centres. The argument that a regional wage differential which puts some clothing manufacturers in the larger centres at an overall cost disadvantage "merely diminishes the productive power of society"<sup>1</sup> is, indeed, a most extraordinary one. As we have already noted, Barker himself concedes that the slower rate of increase in wage rates in the coastal centres, compared with the Witwatersrand, is due to the more abundant resources of suitable Coloured and Indian labour in those centres. It appears then that the regional wage differentials are probably no more than what "a free market would require" and that they simply reflect the real cost of labour in different areas. The truth seems to be that in certain branches of the clothing industry the competitive position of other areas is improving due to market forces, and that certain manufacturers on the Witwatersrand are in the uncomfortable position of having to adapt to these changing circumstances.

It is difficult to escape the conclusion that Barker's concern is primarily with the interests of clothing manufacturers on the Witwatersrand. For he complains not only of unfair competition between controlled and uncontrolled areas but also of what he evidently considers the excessively large wage differentials between the Transvaal clothing industry and the coastal centres. Since wage rates in the coastal centres are determined by industrial councils, it appears that it is not the absence of collective bargaining through industrial councils, and the lack of safeguards for workers interests which this might entail, which is the main point at issue. Barker recommends the establishment of a national industrial council for the clothing industry arguing that "it is difficult

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1. Barker, *op. cit.*, p. 412.

to understand how the multiplication of such independent and virtually competing bodies [ regional industrial councils ] can be expected to remedy a condition of unequal wage structures, in which the negotiating parties to each council have dissimilar interests ..."<sup>1</sup> This indeed is the crux of the problem. There are divergent regional interests and it appears that only manufacturers on the Witwatersrand and perhaps also workers there, stand to gain from smaller differentials between this area and the coastal centres. So far as the disparity between the larger urban areas and the rural areas is concerned, Barker complains that to a considerable extent these are based on the lower wage requirements of native workers, not on locational disadvantages per se".<sup>2</sup> But as we have argued it is desirable that the regional wage differentials reflect the lower supply price of workers in the border and Bantu areas. This is not to recommend discrimination on racial grounds. On the contrary, adequate regional differentials are necessary if workers in poor regions are to be allowed to offer their labour rates which give them a chance of obtaining employment. This is not inconsistent with their being permitted to migrate to higher paid jobs in larger centres if these are available.

Whatever guiding principles are established for setting regional wage differentials, they are always difficult to apply precisely in practice. There is inevitably an element of arbitrariness involved. In setting wages for the clothing industry the Wage Board distinguished between several different areas. Their report<sup>3</sup> stated that the regional classification "tries to keep in account such factors as the general industrial development of the area, the type of labour available, the experience of the employees in the factories concerned, the nature of the clothing manufactured and therefore the market for such clothes, the general level at every place and the non-statutory wage regulating instruments

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1. *op. cit.*, p. 412.

2. *op. cit.*, p. 403.

3. Wage Board Report on the Clothing Industry - Certain Areas dd. April, 1961, p. 39. See also Wage Board Report dd. 11.5.1962 on wages in firms producing soap, candles, edible oils and fats.

(including possible exemptions) applicable to such places and the financial condition of the enterprises". It appears that the Wage Board also took into account the racial composition of the labour force in the area and in its recommendations on the clothing industry placed Umziato in a relatively high category "because it is close to Durban and has a good type of labour, namely Indians at its disposal."

It is impossible to apply these criteria in a perfectly consistent way and some anomalies must arise. But on the face of it the criteria mentioned are those which must be applied if some sort of rationality is to be instilled into the regional wage structure. Even if, as some allege, the Wage Board sets wage minima which are too low it seems to the writer that there is less danger in this than minima which are too high. If the Board sets a minimum wage rate in a particular firm in a rural area which is 'too low', yet a clothing firm paying the minimum rate is able to satisfy its need for labour and make a profit, this would suggest there were a number of potential industrial workers in the area who preferred 'a lower wage in the rural areas to a somewhat higher wage in the cities'. Both employer and employed apparently benefit. If on the other hand, Bantu workers preferred to migrate to the larger centres and the firm could not obtain a satisfactory labour supply it would be forced to raise its wages. The possibility of migration is the safeguard against exploitation of labour in the border areas.

It is true that, owing to influx control and other restrictions on the geographical mobility of Bantu labour, the alternative of migration to the metropolitan areas is not always open to workers in the reserves and border areas. But it is hard to see how a greater degree of uniformity in the wage rate in different regions can solve the problem arising from such restrictions. Indeed, it appears that unless offset by a sufficient amount of Government subsidised employment, unduly high wage rates in the border areas will simply aggravate the difficulties of finding work for those Bantu unable to migrate. Those who disapprove of these implications of measures restricting the mobility of Bantu labour should direct their arguments against these measures. The appropriate solution to the problem is clearly not the establishment of smaller wage differentials

between regions.

The above remarks should not be construed as an argument for excessively high regional wage differentials. In particular, the present writer is not recommending, as some observers have done, that the manipulation of regional wage differentials is the most efficient manner of bringing about industrial decentralisation. If wage rates in the metropolitan areas were increased sharply, this would obviously reduce the number of Bantu who could be taken into wage employment in these areas. The number of workers dependent on the border and Bantu areas for employment would therefore increase and the wage rate in the backward areas of the country would be depressed. The rise in the wage rate in the metropolitan areas relative to the backward areas would consequently increase the cost advantage of the latter areas in a number of lines of production, and so tend to increase the proportion of manufacturing industries establishing in the less developed parts of the country. But this would be achieved only at the cost of perpetuating and intensifying the economic dualism described in Chapter 2, and at the cost of lower Bantu living standards. It is noteworthy that the tendency for wage rates to be pushed up too rapidly in certain sectors of the economy is the crux of Mrs. Lutz's explanation<sup>1</sup> of the persistence of economic dualism in Italy.

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1. op. cit. The essentials of the argument are contained in her Chapter 2.

### Wage Rates and Labour Supply as Locational Factors.

As we observed earlier, in the case of the vast majority of locational decisions, markets and materials, not labour costs, are the predominant considerations. The emphasis in the previous section of the clothing industry may therefore tend to exaggerate the importance of labour costs and supply in determining the overall locational pattern. It also exaggerates the likelihood of a marked reduction in the degree of regional concentration taking place as a result of market forces alone, without some form of financial assistance from the Government. Within the clothing industry itself certain sectors obtain significant advantages from being sited in the largest market areas and regional wage differentials would have to be very substantial before they would be persuaded to transfer their production activities to the border areas. In manufacturing industry as a whole the effect of increasing regional differentials depends in similar fashion on the proportion of industries in which labour costs are important relative to other costs.

It is clear too that potential labour cost savings in the border areas do not depend on labour intensity in general, and it is the significance of unskilled labour costs which counts. In underdeveloped countries and regions it is usually relatively easy to obtain workers capable of performing repetitive tasks or even tasks requiring a greater degree of judgment. A United Nations report comments as follows on the position in Africa:

"The main difficulty lies at the levels in the factory hierarchy, foreman, plant supervisors, technicians and skilled mechanics, maintenance engineers, experts in materials, designers, research workers, production and programme engineers, works managers and all the various executive and administrative decision making personnel normally responsible for organising and maintaining the smooth flow of production".<sup>1</sup>

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1. Process and Problems of Industrialisation in Underdeveloped Countries, United Nations, Department of Social and Economic Affairs. (New York, 1955), p. 41.

The supply of workers of this sort is extremely meagre in the border areas compared with the larger industrial centres. Some of the types of labour mentioned need considerable training and experience while others require in addition, a fairly high general educational level. It is improbable that the Bantu and border areas themselves will be able to provide a significant proportion of the demand for labour of this sort, especially if border industry development takes place on a substantial/<sup>scale</sup>and even if efforts to train Bantu are intensified. Firms in the border areas will, therefore, have to rely heavily on the importation of white workers either from overseas or from other parts of the country, to fill such posts.

But it is well known that skilled workers, by and large, show a preference for the larger industrial centres. In reply to a questionnaire sent by the writer to firms in the cotton and woollen textiles industry, numerous complaints were made about the shortage of skilled workers in this industry in all parts of the country, but the position appears to be more difficult in the rural areas. One Western Cape firm made the point that 'the recruiting of trained personnel from overseas is considerably easier if the mill is near a big city'. Another Cape Town firm said that its European overseas staff prefer Cape Town and on the question of border areas location it said 'it would be impossible to get our white overseas staff to live outside Cape Town'. A firm situated in a border area centre also referred to 'the difficulty in obtaining skilled European labour due to being situated in a small town plus shortage of reasonably priced houses at nominal charges'. There is thus some reason to believe that, even if wages for this type of worker are not in fact higher in the border areas than in the larger cities, it would be more difficult to meet requirements at any given wage in the border area than in a metropolitan location.

The overall labour cost ratio is, therefore, not necessarily a good index of the relative importance of labour cost savings which can be achieved in the border areas. Naturally the proportion of skilled workers in the labour force varies from one industry to another, but no South African statistics for individual industries are available to

illustrate this. Where the skilled labour has to be moved to the border areas, the wages necessary and the difficulties in obtaining suitable personnel may offset the savings in the cheaper semi-skilled and unskilled labour available in the new location. Thus the concentration of skilled workers in the large centres may act as a brake on the movement of industry to the border areas, particularly when the proportion of highly skilled workers is large. We are here abstracting from other factors reducing the importance of semi-skilled and unskilled labour resources, like raw materials and markets and strong linkage effects in large industrial concentrations, which are taken into account in the following chapter.

In our analysis of divertibility in the following chapter we shall use the ratio of white to total employees as a rough measure of the proportion of skilled workers in the labour force of each industry. This measure of course has obvious limitations, since not all whites are skilled and some skilled jobs, though relatively few, are performed by Coloureds, Indians and Bantu.<sup>1</sup> Nevertheless this measure provides a very useful first approximation as an indicator of the difficulties which may be expected in various industries in border areas locations on account of the scarcity of highly skilled workers there.

There are two trends which may be tending to reduce the significance of this obstacle to border areas development. Firstly, the mechanisation of manufacturing industry has in the past steadily reduced the proportion of operations that require the all round skilled worker of the craftsman type and replaced them with workers who, while they require a high degree of skill in some operations or groups of related operations, are not the all round craftsmen of the less mechanised era.

It was found in Great Britain in the 1930's that "in most firms investigated the period of training required to train workers for a particular process is comparatively short. In some cases it was a

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1. See Report of the Department of Labour for 1956, p. 27.

matter of days only. In others it would involve several weeks, or perhaps months, but apart from those industries which involve an apprenticeship there were no cases of firms in which an appreciable proportion of the workers needed periods of training approaching those necessary for the craftsman skill so often found in the declining industries. Broadly speaking it can be said that a number of weeks is the time usually required."<sup>1</sup> The Federation of British Industries in its evidence to the Royal Commission on the Distribution of the Industrial Population placed the factor of availability of labour supplies next to nearness to the market as a locational factor but added that this "may have a different meaning to what it possessed in earlier times. Such labour now tends to connote adaptable and relatively inexpensive, rather than highly skilled, labour, and consequently industries enjoy a wider range of choice of location than was probably the case in the past, provided they are able to find an area where the quantity of labour is ample".<sup>2</sup>

It seems likely that this trend has operated in South Africa as well, tending to reduce the pull of skilled labour resources in the case of particular industry. But as against this, it should be noted, increasing mechanisation while it may reduce the proportion of skilled workers in the total labour force, tends also to reduce the overall relative importance of labour costs, and the latter is also a significant factor influencing the pull of plentiful supplies of cheap semi-skilled and unskilled labour. For reasons which we discuss in the following chapter, any shift in the structure of manufacturing industry towards heavy industries may also reduce the importance of labour resources generally as a locational factor and increase the cost involved in diverting industries towards cheap labour areas.

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1. S. R. Dennison, The Location of Industry and the Depressed Areas, p. 78-79.
  2. Quoted by Dennison, op. cit., p. 79.

TABLE 22

Racial Composition of the Labour Force in Secondary Industry \*

	<u>Whites</u>	<u>Total</u> <u>Non-Whites</u>	<u>Coloureds</u>	<u>Asiatics</u>	<u>Bantu</u>	<u>All</u> <u>Races</u>
	%	%	%	%	%	%
1924-25	33	67	18	7	42	100.0
1929-30	36	64	15	6	43	100.0
1932-33	41	59	15	6	39	100.0
1934-35	40	60	12	5	43	100.0
1939-40	36	64	13	5	46	100.0
1944-45	30	70	14	4	52	100.0
1949-50	30	70	14	4	53	100.0
1954-55	27	73	13	4	56	100.0
1959-60	26	74	-----18-----		56	100.0
1964-65	24	76	-----20-----		56	100.0

Source: Union Statistics for Fifty Years, G-7, for all years up to 1954-55; Statistical Year Book, 1966, pp. H-33, H-38 and H-39 for 1959-60 and 1964-65.

\* Manufacturing industry (including the motor industry), plus construction and electricity in all years, except for the 1964-65 figures which do not include the relatively small electricity sector.

The changing racial composition of the labour force shown in the table above is not due entirely to changes in production techniques, and in the structure of manufacturing industry. It is due in large measure to the upgrading of non-white labour, for the general shortage of white workers has forced firms to employ Bantu in jobs for which they were at one time thought to be unsuitable. Professor Hobart Houghton writes that "in the post-war period of full employment, white workers were able to move into preferred occupations, creating in certain less attractive jobs an acute labour crisis. In these cases, the employers, in order to maintain output, engaged non-whites in jobs previously filled by whites. The fact that these non-whites were able to fill these vacancies enabled the economic progress to continue unchecked".<sup>1</sup> The successful absorption of non-white workers in the metropolitan areas may make industrialists more confident of their ability to operate successfully in the border areas and at the same time to benefit from the lower wage rates there, than they were in the past.

Whether as a result of an upgrading of Bantu labour, or changes in technique and the structure of manufacturing which require a lower general level of skill, it appears that the proportion of non-whites in the manufacturing labour force is likely to continue to increase steadily in the future. This is due simply to the fact that the natural rate of increase of the non-white population is more rapid than that of whites, and the additional economically active members of both these groups will depend very largely on manufacturing industry for employment in future. The increasing relative importance of non-whites in the industrial labour force can be avoided only if the rate of immigration from overseas is stepped up substantially, or if legal restrictions are placed on this process. The effect of the latter, however, would be a cumulative

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1. D. Hobart Houghton, 'Economic Dangers of Separate Development,' Optima, Dec. 1959, p. 190.

increase in the number of unemployed non-whites. Barring this latter possibility the cost of Bantu labour should become an increasingly important consideration, and the potential labour cost savings obtainable from location in border areas should increase, especially if the level of skill required continued to fall because of mechanisation. It must be emphasised, however, that, despite this tendency the proportion of industry in which labour costs are the decisive consideration may remain relatively small.

Reports on the efficiency of Bantu labour in the border areas vary considerably. Evidently the Cyril Lord management has "discovered that the training of African weavers and spinners had not been as easy a task as they may previously have imagined. The result of this inexperience has been a higher than normal percentage of loomstate production was second-grade cloth," and "another manufacturers experience showed that fully 7 or 8 years had to elapse before Africans could be qualified in more sophisticated production".<sup>1</sup> On the other hand it is reported that "at Rosslyn a button factory owner favourable compared his labour with the best he had employed overseas."<sup>2</sup>

On the basis of discussions with firms in the Natal border areas, Barker concludes that "clothing manufacturers who elect to open factories in the Natal rural areas with Bantu labour must expect lower standards of output and quality, below what would be normal in similar urban undertakings, but that the duration and extent of the disparity, so far as it is dependent on the element of labour alone, has tended to be overemphasised . . . The advantage of paying lower wages in rural areas is therefore, likely to be more than offset initially by handicaps of the type already mentioned."<sup>3</sup> But he adds that "the experience already gained by management is sufficient to show that, with proper training and suitable breakdown of manufacturing process, Bantu garment

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1. See Trade Union Council of South Africa, Fact Paper, The Industrial Development of the Border Areas of South Africa, p. 56.
  2. Ibid.
  3. Op. cit., p. 165.

workers are capable of reaching a satisfactory standard of efficiency in factory production of lower and medium grade articles, mainly of the utility type, within periods of a few months to a year depending on natural aptitudes. After a year or two of further experience, initially untrained Bantu males from the Native Reserves were found to match the quantity and quality of output of efficient urban males of longer standing in the industry."<sup>1</sup> Even in the clothing industry, however, difficulty is experienced in obtaining satisfactory supervisory personnel and it was reported in 1963 that one firm in Hammersdale was transporting a number of Indian supervisors from Durban each day.

In support of Barker's view there is the experience, going back to the late 1940's, of the Dunlop factory in Durban where it was found that after the introduction of scientific methods of selection and proper training "not only has the turnover been reduced and a better average standard of employee obtained, but Natives have been successfully trained on work which at first was considered beyond their general capacity".<sup>2</sup>

On the specific question of labour turnover in the border areas, views also appear to differ. Sadie felt that labour turnover would be lower than in the large industrial centres because "workers will no longer be migratory workers". But it should be borne in mind that a large proportion of Bantu workers in the metropolitan areas are not migratory.<sup>3</sup> Also in East London, which is a border area, a large proportion of workers consists of temporary migrants,<sup>4</sup> probably larger than in the metropolitan areas. Thus centres on the periphery of the reserves may not be less

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1. op. cit., p. 163.

2. The Department of Economics, University of Natal, The African Factory Worker, (Oxford University Press, 1950), p. 101.

3. Professor. D. Hobart Houghton, The South African Economy, p. 86, for instance mentions that a "large textile factory in Uitenhage found in 1962 that 100 per cent of its employees lived with their wives and families in the town".

4. ibid.

dependent on migrants than employers in the large centres. Furthermore whether labour turnover is higher amongst migrants than amongst settled urban dwellers seems to depend very much on the area considered. Mrs. Glass, for instance, finds that "a higher proportion of men with low urbanisation rates separate and that these men have a higher resignation rate than men who are not urbanised".<sup>1</sup> As against this, however, Hobart Houghton has found little difference in East London in the labour turnover amongst migrants and non-migrants. Labour turnover there seems to have been more closely related to other factors on other factors such as age and marital status: "It would seem, therefore that labour instability and high turnover cannot be directly attributed to the migratory system".<sup>2</sup>

Perhaps the difference between these findings may be done to the fact that migrants in East London can return more quickly and at less expense to their homes in the Ciskei and Transkei, so that they indulge in "home visiting" periodically over weekends and during their normal annual vacation. As Professor Mayer has shown the frequency with which "home visiting" takes place does depend on the distance of the rural homestead from East London.<sup>3</sup> They might thus retain their connections with firms in East London, and on average, work approximately the same number of months per annum in these firms as second and third generation town dwellers. They might nevertheless be classified as migrants because their wives and children were living in the rural homestead, and they had not severed their ties with the country. Thus it may be that in general, when labour migration is undertaken over long distances, and periods of absence from both the reserves and urban employment are consequently longer, turnover rates may be higher among migrants than amongst urbanised Bantu. While it may be that turnover is higher amongst migrants

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1. Y. Glass, The Black Industrial Worker, (Preliminary Report, National Institute for Personnel Research; 1960), p. 24.
  2. Hobart Houghton, op. cit., p. 90.
  3. P. Mayer, op. cit., p. 95.

than amongst non-migrants on the Witwatersrand, say, whereas this is not the case in East London, no satisfactory evidence is available on the comparative rates of turnover between these and other centres. Given the available evidence, however, it does not appear that any useful generalisation can be made about the present or probable future rates of turnover in the border areas compared with the metropolitan areas. But it is quite likely that methods of selection and training, the availability of housing,<sup>1</sup> and restriction on permanent settlement by entire families have an important bearing on the matter.

Unfortunately no systematic comparative study of labour efficiency in different areas has been undertaken. But there is no apparent reason why, with adequate training and selection Bantu workers in the border areas should not reach the same standards as Bantu workers elsewhere within a reasonably short period of time, and in due course be able to fill large proportion of the positions at a higher level. Provided differentials are set which adequately reflect not only their lower productivity compared with both black and white workers elsewhere at the present stage, and until these differences are eliminated, but also<sup>2</sup> differences in the real opportunity cost of labour effort in different regions, discussed earlier, the labour resources of the border and Bantu areas should provide a strong incentive to the establishment of labour intensive industries and the exploitation of processable raw materials in the border areas. In view of the trends described above the significance of this incentive may well increase over time, and the cost of diverting

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1. In a factory established in the border areas about 17 years ago, labour turnover was high initially, but this was before adequate housing was provided near the plant, and fairly recently it was reported by them that their turnover is 32 per cent per annum and the absentee rate on the average 3 to 4 per cent per week.
  2. Since differentials allowing for productivity differences only merely equalise labour costs.

industries to these areas will tend to fall.

Professor Arthur Lewis in pressing the case for industrialisation of the West Indies provides us with this useful reminder:

"Whenever a new country begins to industrialise the old hands look on and sneer, 'Those people will never make a success of industry' they say, 'they are lazy, unpunctual, dreamy, undisciplined ...' They sneered at Russia, at the end of the nineteenth century, at Japan, at Italy. And in each case they were soon to be astonished by the rapid growth of productivity as people grew accustomed to the industrial way of life."<sup>1</sup>

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W. A. Lewis, *The Industrialisation of the British West Indies*, Caribbean Economic Review, May 1950.

Chapter 8THE 'DIVERTIBILITY' OF MANUFACTURING INDUSTRIES.Introduction.

It is clear that virtually any industry is 'divertible' in the sense that it may be influenced by Government assistance to site itself in a border area rather than in some other centre which would have been chosen in the absence of special incentives. An industry is economically divertible to a border area site, however, if in that location it does not operate at marginal social costs of producing and distributing the product which are higher than in the location which would otherwise have been chosen. Where diversion of an industry is uneconomic, there will be an excess marginal social cost, as defined in Chapter 6, involved.

It appears that it would be ideal if those responsible for implementing border areas policy, had a complete schedule of the marginal social costs of carrying on each and every type of activity in the border areas, expressed as a proportion of the corresponding marginal social cost for the least cost site in other areas. If they possessed, in addition, satisfactory projections of the national rate of growth in each of these manufacturing activities, they would be able to construct a functional relationship between marginal social cost of industrial production in the border areas and the average annual increase in border areas industrial production. Construction of the empirical counterpart of the curve ST, showing the marginal social cost of the annual rate of increase of border areas industrial production, would then be possible. As we have shown such a curve indicates how much growth in border areas industrial production would take place without subsidisation, how much could be economically subsidised and, generally, how the marginal excess social cost (whether positive or negative) varied with the average annual increase in border areas industrial production (or employment). The data giving ST would show those industries and the volume of output in each, which would give any particular average annual addition to border areas industrial production

or employment at the least possible total excess social cost. This information would clearly be of great assistance to the Government in deciding how large a volume of production or employment it was worthwhile diverting to the border areas per annum.

But the obstacles to the construction of such a schedule are so enormous as to be virtually insuperable. One of these problems we encountered in chapters 3 and 4, namely, that of predicting what the future rate of industrial expansion in the border areas was likely to be, both in absolute terms and relative to other areas in the absence of Government intervention. We encountered it in asking the question whether there were any forces evident in 1960 which suggested that the degree of industrial concentration would increase, rather than decrease or remain unchanged, if private enterprise was left to its own devices. But as we suggested there, to answer this question would require a detailed knowledge of the natural resources of the border and Bantu areas, their probable future rate of discovery, the technical and economic possibilities inherent in these resources, and of future rates of growth in specific industries, factors which are virtually impossible to assess for a longish period of time with even a fair degree of precision. Any attempt to do this would be of so speculative a nature as to be practically worthless. Nevertheless the evidence examined in chapters 3 and 4 did not suggest that a significant reduction of the degree of regional concentration was about to take place spontaneously, without government intervention, and this is an important fact to which we return at the end of this chapter.

Because of the difficulties involved in predicting the future rate of growth in the border areas with any precision, in chapters 5 and 6 we focussed our attention on the case for and the effects of diverting industries and this we shall continue to do in the present chapter. In this chapter we are concerned in particular with the following question: In the case of those industries which would not establish themselves in the border areas without Government intervention, how large will be the marginal and total excess private costs<sup>1</sup> of compelling them to do so?

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1. As defined in chapter 6.

We deal with private rather than social costs because determination of the latter involves measuring the external effects relevant in each case. The identification and measurement of external effects is, as we mentioned in chapter 5, an enormous task requiring a large scale research project on its own. Once marginal excess private costs are obtained, however, they can subsequently be corrected for external effects as and when information on the latter is acquired.

Also we cannot hope to compile a complete schedule of marginal excess private costs measured in absolute terms. To do this it would be necessary to carry out a comparative cost study for each and every manufacturing activity in South Africa. Nevertheless it appears possible, as we hope to show, to give a useful indication of the relative size of the marginal excess private costs of diverting different manufacturing activities to the border areas, when the latter would not have been selected without government intervention. What we shall seek in this chapter, then, is some precisely defined index of the excess private costs (the vertical distance between AS and  $PS_R$  in our diagram) of diverting each of the 130 manufacturing sectors listed in the Census of Industrial Establishments. This index we shall call the 'divertibility index'. What is envisaged is a schedule of such divertibility indexes for a particular year, which will enable us to rank industries in order of the marginal excess private costs of diverting them, and which will give us an estimate of the marginal excess costs of diverting each sector relative to the corresponding value for each other industry.

Thus even if we cannot say that the excess private costs of diverting activity X to the border areas is 'so much', and in Y it is 'so much', both expressed in absolute terms, it would be useful if we could give even a rough indication of whether it is likely to be say, twice or half as much in activity X as in activity Y. This, too, should indicate those industries upon which attention should be focussed by those responsible for implementing border industries policy if a particular rate of induced industrialisation is to be achieved as cheaply as possible.

Given the actual national rates of growth of output or employment in each sector over some specific past period it should also be possible to establish a functional relationship between the average volume of diverted border areas industrial production and the index of marginal excess private cost, over that period. It is obviously a matter of some importance for policy to know whether the marginal excess private costs of diverting industries to the border areas are likely to increase slowly or rapidly as the volume of diverted output or employment is increased. It should be remembered, too, that, for the reasons given in chapter 6 a rapidly rising marginal excess private cost (steep AS curve) implies a correspondingly rapid rate of increase in marginal excess social costs (steep CT curve).

The Labour Cost Ratio, the Racial Composition of the Labour Force and Divertibility.

The basic proposition upon which our ranking of industries in terms of 'divertibility' is based, is that the greater the ratio of labour costs to net output in an industry, the stronger, other things being equal, will be the attraction exerted by a cheap labour area upon that industry. The reason for this is that the labour cost saving as a percentage of total costs which can be achieved by establishing in a cheap labour area, given the regional differential in wage rates, depends ceteris paribus, on the amount of labour costs per unit of output. Thus we regard a high ratio of salaries and wages to net output as a favourable indicator of divertibility, since it indicates that the potential percentage saving in total cost savings already provides some incentive to location in a cheap labour area.

We must, however, take account of the fact that other things are not equal and that though two industries may have exactly the same labour cost ratio the marginal excess private costs of diverting them may differ a good deal. The first modification of the basic proposition stated above, therefore, is due to a consideration mentioned in chapter 7, namely, that the size of labour cost savings, given the regional wage differential, depends not only on the labour intensity of production, but also on the proportion of these costs which are paid to workers of a type already fairly readily available in the border areas. A high proportion

of skilled workers in the total labour force is an unfavourable indicator of divertibility, since skilled labour is one of the chief obstacles to economic growth in South Africa as a whole at present, and the shortage is especially acute in the border areas. Since we have no satisfactory independent information regarding the degree of skill required in South African manufacturing industries, the racial composition of the labour force is used as an index. A high ratio of non-white employees to total employees is, therefore, regarded as a favourable indicator of 'divertibility'.

Thus, the labour cost ratio and the ratio of non-whites to total employees together indicate the potential per centage saving in total costs, due to labour cost savings, which may be achieved by establishing in a border area location. The value of these indicators and certain others which are needed for the task of this chapter have been calculated on the basis of information published by the Bureau of Statistics for the year 1960-61<sup>1</sup> and are presented in the Appendix to this chapter. The relationship between the racial composition of the labour force and the ratio of salaries and wages to net output (the labour cost ratio) for the 129 manufacturing sectors listed in the industrial census report for 1960-61 is illustrated in Table 23.

As the appendix to this chapter shows, for instance, diamond cutting and polishing, watches and clocks, and furriers are the most conspicuous examples of industries which require a high proportion of white (skilled) labour, the proportion of non-whites in the total labour force being 22, 37 and 36 respectively. Thus these industries together with several others appear in the column headed "50 or less" on the far left hand side of Table 23. Other industries with a low non-white labour component are drugs and pharmaceutical preparations (50 per cent), 'all other machinery' (50 per cent), electrical machinery and motors (50 per cent), optical and photographic goods (52 per cent) and stationery (51 per cent). From the point of view of skilled labour requirements, therefore, all these industries have a low divertibility index, but the further to the right is the position of any industry in

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1. Special Report No. 257, Industrial Census 1960-61.

TABLE 23  
Relation between the racial composition of the labour force and the labour cost ratio in South African manufacturing industries 1950-60  
Number of non-white workers as a percentage of the total labour force

Labour cost % of net output	50 or less	51 - 55	56 - 60	61 - 65	66 - 70	71-75	76 - 80	81 - 85	86 - 90	91 - 95	
18				Flavouring Essences M		(Cement) H					18
19-20						Condensed Milk H			Tanning Extract H Coke etc. H		19-20
21-22				Polishes etc. L	Tea blending L	Tobacco L					21-22
23-24						Musical instruments M			Chaff cutting H		23-24
25-26									Sugar mills H		25-26
27-28						(Butter & cheese) H	(Deer) M		Wattle bark printing H		27-28
29-30						Paper & paper board H		Other clothing L	Rock lobster, fish H preserving and other fish products		29-30
31-32	Pharmaceuticals L Motor & other spirits H			Coffee roasting etc. M		Yeast H					31-32
33-34				Other basic chemicals H	Distilleries etc. M (Paints) etc. M / Soap M	Jelly etc. L		Other knitting mills M			33-34
35-36						Cooking fats H	(Animal feeds) H Fertilisers H	Pickles, sauces, etc. M (Flour & grain mills) H	(Crushed stone) H	Cotton textiles M	35-36
37-38								Crude oil cake etc. H		Salt works M	37-38
39-40									Woolen textiles Linenworks H	Cotton ginning H	39-40
41-42			Iron and steel H	Ties L				(Jam, canned, preserved & dried fruit etc.) M		(Timber preserving) M	41-42
43-44	(Office machinery) L			Other chemicals M	Disinfectants H	(other non-metallic mineral products) H (Blacksmithing) H	(Aerated water) L		Ropes etc. M		43-44
45-46				All other electrical machinery H	(Ice cream) M Sweets & chocolates M	(Glass) M Other plastic products M Headed etc. metal products H	(Wood carving etc.) H Tin ware M Rubber products H	Blankets M // Bicycles H (Footwear repairs) L			45-46
47-48	All other machinery M				Basic non-ferrous metals H	Paper bags etc. L Insulated cables & wires H		Felt, padding etc. H Toys, sporting goods L	Peanut roasting L Wool scouring M	Sausage casings L Bags and sacks L	47-48
49-50	Watches & clocks L						Soft furnishings L	Hosiery L Cables, fencing wire, etc. H			49-50
51-52	Furriers L					(Bespoke tailoring) L Explosives & carbide H Imitation jewellery L	Plaster & other composite boards M	(Other wood products) M	Brushes & brooms L		51-52
53-54		(Rubber stamps) L		Railroad equipment H+	Millinery L			General & small leather goods L Sheet metal products M	Tanneries H Modelling in cement M		53-54
55-56				Jewellery L				(Bakeries) L / Travel goods L Womens & girls clothing L Buttons etc. L		Bricks & Tiles) H+	55-56
57-58				Agricultural machinery H+	(Marble, stone) M All other metal products M	Hats & caps L (Picture frames) L	(Meat products) H+ (Furniture) M	Mens & boys clothing L	Ladies handbags L (Saw mills) H+		57-58
59-60											59-60
61-62	(Printing) L Electrical machinery & motors M	Industrial mining & construction machinery H		(Signwriting, posters) etc. L	Metal pipes H	Footwear L		Bone milling & bloodmeal H (Electroplating) M			61-62
63-64									(Electrical contracting) L		63-64
65-66		Optical & photographic goods L									65-66
67-68	Diamond cutting L			Scientific & controlling instruments M							67-68
69-70				(Ship & boat building, & repairs) L							69-70
71-72									Vinegar L Plywood etc. M		71-72
73-74								Harness & saddlery M			73-74
75-76		Stationery L		Canvas goods L							75-76
77-78											77-78
79-80	(Assembly & repair of aircraft) L										79-80

Source: See statistical appendix to Chapter 8.

Table 23 the more favourably placed is it in this respect. Thus by contrast with the industries mentioned, those like cotton textiles, salt works, cotton ginning etc. which appear on the far right of the table have a non-white labour proportion of between 91 and 95 per cent.

As we have stressed several times it cannot be taken for granted that the racial composition of the labour force is a reliable indication of the unskilled total employees ratio, because of the fact that not all whites are skilled and not all non-whites are unskilled. The problem is also complicated by the industrial colour bar which reduces the vertical mobility non-white labour. Furthermore the effect of the colour bar on each particular non-white group varies from one part of the country to another. Mary Piercy has pointed out that:

"an outstanding fact which makes it unwise to generalise and which creates problems in central legislation and administration dealing with labour, is that both custom and evolution in the allocation of work have been modified according to the work force available district by district. The wide local variations in the racial composition of the population partly determine what work force has been used by industry locating in particular areas. There are considerable numbers of non-whites, particularly coloureds and Asiatics in the Western Province and in Natal, holding jobs of various skills and craftsmanship, to which they would not be admitted elsewhere. Industry has in fact been built up on varying local labour supply".

A firm in the border areas may therefore be expected to employ a larger proportion of Bantu than another firm producing similar products in one of the large urban centres. The greater freedom of employers in the border areas to use Bantu labour in semi-skilled and skilled jobs, occupied by other races in other areas, may stimulate efforts to train Bantu workers for the more skilled jobs and so in some measure help to alleviate the present shortage of skills which exists throughout the country. Also in an industry in which the proportion of whites is great,

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1. Mary J. Piercy, "Statutory Work Reservation - requirement of a static or of an expanding economy?", S. A. J. E., June 1960.

but women constitute a large part of the labour force, it may be easier to substitute non-whites for whites. Each industry must, therefore,<sup>be</sup> carefully examined to see whether, in fact, non-whites cannot, in the border areas, fill some jobs performed by whites in the larger centres.

These qualifications, however, may not be as serious as they seem at first sight. It is not unreasonable to suppose that in those industries in which the cost benefit offered by the use of non-white instead of white labour have been greatest, the breakdown of the industrial colour bar will have gone furthest, and that a high white/non-white ratio is, therefore, a fairly good index of the importance of skilled relative to unskilled labour as between industries.

Also, the lower down on Table 23 does an industry appear, the greater is the ratio of salaries and wages to net output. Thus we find that the labour cost ratio is lowest in cement, condensed milk, tanning extract and coke, all very capital-intensive industries which appear in the top row of Table 23 and highest in assembly and repair of aircraft, stationery, canvas goods etc., which appear in the bottom row. The lower the row in which an industry appears, therefore, the greater, other things being equal, will tend to be the potential labour cost savings as a percentage of total costs if the industry is sited in a cheap labour area. But given the labour cost ratio, the greater is the proportion of non-whites in the labour force the greater will tend to be the relative importance of labour cost savings obtainable by establishing in a border area. Thus, for instance, though having about the same high labour cost ratio as canvas goods, harness and saddlery, it appears, would gain more from a border areas location since it has a greater proportion of non-whites in its labour force. Generally, the closer is an industry to the lower right hand corner of the table the smaller will tend to be the excess marginal private costs of diverting it.

In the light of the foregoing it is now possible to rank industries

in order of their suitability for diversion to border areas, by taking into account both the labour cost ratio and the proportion of non-white workers in the labour force, and by ignoring for the moment the fact that other factors apart from labour costs also determine location. If industry A is more labour intensive than B, but B employs a greater proportion of non-whites, the saving in labour costs achieved by locating in the border areas, as a percentage of net output may be the same in both cases. For instance if Bantu wages are 40 per cent<sup>1</sup> lower in the border areas than in the metropolitan areas, and if in the latter area the ratio of white to Bantu wage rates is 4:1,<sup>2</sup> then if in industry A in the metropolitan area the labour cost ratio is 60 per cent and the labour force is 39 per cent Bantu, and in industry B the corresponding percentages are 58 and 40, then as a result of lower Bantu wage rates both industries can achieve cost savings equal to the same per centage of net output by establishing themselves in the border areas. Thus under these assumptions, a 2 per cent smaller labour cost ratio if compensated for by a 1 per cent higher proportion of Bantu workers, puts both industries in the same position so far as their divertibility is concerned.

We could superimpose on Table 23 a number of 'indifference curves' each representing different combinations of labour intensity and non-white labour content, which result in an equal attraction to border areas on account of potential labour cost savings. Since on the assumptions made in the previous paragraph a 2 per cent smaller

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1. This is based on the discussion of regional wage differences in chapter 7 above.
  2. Table 17 in chapter 7 above the ratio of the average earnings of white males to those of Bantu males in 1953/54 to be 4.05 in the Western Cape, 3.9 in Port Elizabeth/Uitenhage, 4.8 in Durban/Pinetown, and 5.0 in the Southern Transvaal.

labour cost can be compensated for by a 1 per cent higher proportion of Bantu workers, these indifference curves would be linear with a positive slope of 2. The further towards the right is the 'indifference curve' on which a particular industry falls, the more suitable is that industry in terms of labour costs, for diversion to the border areas. Moving towards the left from one 'indifference curve' to another the industries encountered become increasingly less suitable, either because the labour cost or the non-white proportion of the labour forces or both have fallen. By drawing in these indifference curves then we could rank industries on the basis of potential labour cost savings.

But this method of ranking industries in terms of labour cost savings potential as a proportion of total costs is rather cumbersome since Table 23 does not show the precise point on our indifference map representing the combination of labour cost ratio and the racial composition of the labour force for each industry. The best method of obtaining a precise divertibility index for each industry on the basis of these two factors seems to be to calculate arithmetically the distance from the origin of the particular indifference curve on which each industry lies. As we pointed out above, on the assumptions made about the Bantu regional wage differential and the white/Bantu wage rate ratio in the metropolitan areas, a labour cost ratio/non-white labour proportion combination of 60 and 39 per cent respectively is equivalent to a combination of 58 and 40 per cent respectively. This is because the labour cost ratio 'substitutes' for the non-white labour ratio along our indifference curves at a rate of 2 per cent for 1 per cent. Thus we can express all combinations in labour cost ratio equivalents by multiplying the non-white labour proportion by 2 and adding this product to the actual labour cost ratio. Thus both industries A and B have divertibility indexes of 138 (i. e.  $60 + 39 \times 2$ ; and  $58 + 40 \times 2$ ) on the basis of these two factors.

This calculation has been made for all the 129 sectors and the results are presented in the appendix to this chapter.<sup>1</sup> The greater is

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1. pp.482-3 below

this index the more favourable are conditions for diversion of the industry to a border area at a low marginal excess private cost, other things being equal. The industries could, therefore, be ranked in descending order of the size of this particular index of divertibility. But it seems that little would be gained by doing so, for according to this index on its own 'ladies handbags' and 'saw mills' are about equally divertible, and 'brick and tiles' has a higher divertibility index of this sort than either of the first two mentioned. This, however, seems highly improbable, and it is clearly about time another consideration, namely, the weight of materials used was introduced into the discussion.

#### The Weight of Materials and Divertibility.

The divertibility of industries to the border areas depends not simply on potential labour cost savings but on the size of such savings in relation to any additional transport and other costs resulting from diversion. Transport costs are by far the most important of these non-labour costs in the locational decision because of their greater variability between locations. For instance, capital costs may in some cases be a larger proportion of total costs than are transport costs, but capital costs, determined by interest rates and depreciation usually vary much less between locations than do either labour or transport costs. In other words, capital is much more mobile than labour and infinitely more mobile than most natural resources. Very often when transport costs are a small proportion of total costs, this is precisely because the least transport cost location has been chosen and it does not necessarily imply that transport costs are an insignificant consideration.

To deal with this problem of labour orientation, that is of locating plants in cheap areas away from their minimum transport cost locations, Alfred Weber<sup>1</sup> invented the 'labour coefficient'. Weber states the

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1. Alfred Weber, Theory of the Location of Industries, translated with an introduction and notes by Carl J. Friederich, (University of Chicago Press, 1958), Chapter IV.

following theorem: 'A location can be moved from the point of minimum transportation costs to a more favourable location only if the savings in the cost of labor which this new place makes possible are larger than the additional costs of transportation which it involves'.<sup>1</sup> Our concern in this chapter is with the excess of the increase in transport costs per unit of output over the decrease in labour costs per unit of output, that is with the excess private costs per unit of diverted manufacturing activities. The smaller this excess the less uneconomic will the diversion of industries be.

The labour coefficient is the ratio of the labour cost per unit of product at existing locations to the locational weight of that unit. The locational weight is the sum of the required weights of localised raw materials. Ubiquitous raw materials are not included in the locational weight, since in their unprocessed state they need never be transported. And in Weber's analysis all weights are expressed as 'ideal weights', that is, actual weight adjusted so as to have the effect of equalising transport rates on all materials and products (e. g. a ton of a commodity which incurs a rate twice as great as a standard commodity is considered to have an ideal weight of two tons.)

The labour cost saving in Weber's analysis depends on the amount of labour costs incurred per unit of output and the 'percentage of compression' of wage rates achieved by the cheap labour region relative to the rates used in computing the coefficient. This yields the labour cost saving per unit of product. Then the denominator (locational weight per unit of product) must be multiplied by the transport rate and the net additional distance involved in location away from a minimum transport site. This yields the additional transport cost incurred by locating in the cheap labour region. Only if the labour cost saving is greater than the additional transport cost would it be to the industry's

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1. op. cit., p. 103.

advantage to locate in the cheap labour region, other costs being equal or insignificant. In other words, the greater is the labour cost per unit of product, the greater the regional wage differential, the smaller the locational weight, the smaller the transport cost rate, and the shorter the distance of the cheap labour location from the minimum transport cost point, the greater will be the attractiveness of the cheap labour location for the industry. Other things being equal, therefore, the higher an industry's labour coefficient, the more likely it is that the labour cost savings it could achieve in a cheap labour area will exceed the additional transport costs incurred in not locating at a minimum transport cost site.

It would be ideal if we could obtain labour coefficients for all South African manufacturing sectors, following the steps outlined by Weber, as summarised in the preceding two paragraphs. But the calculation of Weber's labour coefficient for even one activity would be an extraordinarily difficult task. We can, however, obtain a useful index of divertibility using Weber's basic idea and such statistical information as is available to us.

We have already obtained a measure of potential labour cost savings which corresponds to the numerator in Weber's coefficient, except that his labour cost saving depends only on the amount of labour costs incurred per unit of output and does not involve the complicating factor of the racial composition of the labour force. This as he points out is greater the greater the regional wage differential, but our calculations are based on a single given wage differential of 40 per cent between border and metropolitan areas. Also as we should note his denominator is larger, the greater the distance of the cheap labour location from the minimum transport cost point. Thus, for instance, for a given industry it would be easier to divert firms from Johannesburg or Pretoria to Rosslyn, or from Durban to Hammarsdale, than it is to divert them from any major centre (which would otherwise have been selected) to the, say, Tugela Basin or, especially, to the Ciskei. Provided the regional wage differential is not sufficiently greater for

the Ciskei than for the Natal border areas, the marginal excess private costs of diverting a firm from Johannesburg to a Natal border area will be lower than that of diverting it to King William's Town. To simplify matters, therefore, we shall take the distance of the privately preferred location from that preferred by the Government as given for all the industries considered, and will comment on the implications of this procedure later.

A variable corresponding to Weber's locational weight still has to be found. As is shown below heavy industries usually use capital equipment which gives a high horse-power per worker ratio. The reason for this is that, heavy materials are usually handled by means of correspondingly powerful equipment. The higher the horse-power per worker, therefore, the more significant transportation costs tend to be per unit of output, and the more likely is it that the minimum transportation cost point will be selected. The heavier the industry in terms of this measure the greater will tend to be the increase in costs resulting from the diversion to a border area. A low horse-power per worker ratio is, therefore, regarded as a favourable indicator of divertibility.

It might be noted in passing that if the diversion of a heavy industry to a border area involves a positive excess private cost, it is unlikely that the initial cost disadvantage will eventually fall away due to a learning process like that which forms the basis of the infant industry argument. For, improvement over time in labour efficiency is one of the major sources of external economies in the infant industry case. Labour costs in an infant industry would, therefore, need to be significant to make increasing labour efficiency an important factor, but in fact heavy industries tend to be characterised by a low labour cost ratio. If they are diverted to a non-optimum location heavy subsidisation over a long period of time may be necessary.

Let us examine the statistical relationship between the capital intensity of an industry and the weight of materials processed per year.

TABLE 24

## ORDER OF INDUSTRIES IN WEIGHT OF MATERIAL USED PER YEAR PER OPERATIVE IN GREAT BRITAIN IN 1935

For eighty-one industries where data can be estimated

Order	Industry	Weight*	Order	Industry	Weight*	Order	Industry	Weight*
1st	Retail and Wholesale Bespoke Tailoring	0.66	27th	Rope	9.60	55th	Furniture	33.3
2nd	Wholesale Tailoring	0.68	28th	Tool	10.7	56th	Bread	32.3
3rd	Mackintosh	1.01	29th	Machine Tool	11.6	57th	Wholesale Bottling	35.0
4th	Corsets	1.19	30th	Marine Engineering	12.2	58th	China	35.6
5th	Hosiery	1.48	31st	Motor Manufacturing	12.3	59th	Rail Carriage	36.2
5th	Elastic Webbing	2.05	32nd	Manufactured Stationery	12.5	60th	Brewing	40.8
7th	Aircraft	2.17	33rd	Textile Machinery	13.2	61st	Wire	43.0
8th	Boot and Shoe	2.31	34th	General Hardware	13.3	62nd	Paint	43.4
9th	Tobacco	2.40	35th	Domestic Hollow-ware	13.7	63rd	Construction Engineering	44.2
10th	Cutlery	2.57	36th	Rubber	13.8	64th	Foundry	50.1
11th	Hats	3.10	37th	Cardboard-box	14.5	65th	Aluminium, smelt, roll	50.2
12th	Printing	3.59	38th	Tin-box	14.7	66th	Soap	53.0
13th	Cotton Weaving	3.70	39th	Asbestos	14.8	67th	Tube	55.3
14th	Textile Packing	4.45	40th	Jute	15.1	68th	Tinplate	65.4
15th	Brass Finishing	4.50	41st	Biscuit	15.3	69th	Fish Curing	68.0
16th	Lace	4.80	42nd	Cocoa	15.4	70th	Paper	89.0
17th	Linen (G.B. and N.I.)	5.00	43rd	Agricultural Machinery	16.2	71st	Glass	99.0
18th	Needle	5.10	44th	Prime Movers	16.2	72nd	Other Chemicals	128.0
19th	Wool	5.50	45th	Electric Cable	18.0	73rd	Oil and Tallow	130.0
20th	Electric Light Fittings	5.90	46th	Leather Tanning	18.6	74th	Building	170.0
21st	Cotton Spinning	6.00	47th	Wallpaper	20.6	75th	Butter, Margarine, etc.	171.0
22nd	Safe and Lock	6.40	48th	Starch and Polish	22.5	76th	Cattle Food	231.0
23rd	Printing Machinery	7.00	49th	Chain, Screws, Forgings	24.0	77th	Seed Crushing	251.0
24th	Silk and Artificial Silk	7.30	50th	Bacon Curing	25.5	78th	Fertilizer	287.0
25th	Canvas	8.00	51st	Shipbuilding	25.5	79th	Iron and Steel**	330.0
26th	Electric Machinery	9.40	52nd	Linoleum	28.8	80th	Grain Milling	357.0
			53rd	Copper, Brass, Smelt, Roll	29.2	81st	Coke and By-products	1680.0
			54th	Preserved Food	29.7			

\* Tons per worker per year.

\*\*Blast Furnaces and Iron and Steel Rolling and Smelting.

Source: P. Sargent Florence, Investment, Location and Size of Plant, Table 1, p.10.

TABLE 25

## HORSE-POWER PER WORKER IN SOUTH AFRICAN MANUFACTURING INDUSTRIES 1959-60

Order	Industry	Horse-power per worker	Order	Industry	Horse-power per worker
1st	Furriers	.1	64th	Glass making, bottle making, etc.	2.0
2nd	Ladies handbags	.2	65th	Professional, scientific and controlling instruments	2.0
3rd	Millinery	.2	66th	Other plastic products	2.2
4th	Sausage casings	.2	67th	Furniture and fixtures	2.2
5th	Electrical contracting	.2	68th	Wool scouring	2.4
6th	Imitation Jewellery	.2	69th	Ice cream and ices	2.5
7th	Mens' and boys' clothing	.3	70th	Other knitting mills	2.5
8th	Ties	.3	71st	Soap and candles	2.5
9th	Bespoke tailoring	.3	72nd	Paints, varnishes, etc.	2.5
10th	Women's and girls' clothing	.3	73rd	All other metal products	2.5
11th	Tents, tarpaulins, etc.	.3	74th	Inks, matches, glue, etc.	2.6
12th	Watches and clocks	.3	75th	Preservation of timber	2.7
13th	Rubber stamps	.3	76th	Marble, stone, slate, etc.	2.7
14th	Signwriting, posters, etc.	.3	77th	Spinning, weaving etc. of cotton	2.8
15th	Soft furnishings	.4	78th	Ropes, cordage, twine, etc.	2.8
16th	Picture frames	.4	79th	Plaster and composite board	2.9
17th	General and small leather goods	.4	80th	Beer and malt	3.0
18th	Office machinery	.4	81st	Other wooden products	3.0
19th	Repair of aircraft	.4	82nd	Blacksmithing	3.1
20th	Jewellery	.5	83rd	Preparation and preserving of meat	3.3
21st	Tea blending and packing	.5	84th	Bricks and tiles, etc.	3.3
22nd	Umbrellas, etc.	.5	85th	Agricultural machinery	3.3
23rd	Travel goods	.5	86th	Aerated waters and soft drinks	3.4
24th	Peanut roasting	.5	87th	Felt, padding, wadding, etc.	3.4
25th	Boot and shoe repairs	.6	88th	Manufacture, assembly and repair of bicycles	3.4
26th	Vinegar	.7	89th	Railroad equipment	3.5
27th	Hosiery and other knitted clothing	.7	90th	Rubber products	3.6
28th	Boot and shoe factories	.8	91st	Lime works	3.6
29th	Bags and sacks	.8	92nd	Industrial mining and constr. machinery	3.6
30th	Toys, sporting accessories, etc.	.8	93rd	Headed and threaded articles	3.8
31st	Bakeries	.9	94th	Other non-metallic mineral products	3.8
32nd	Mens' and boy's hats and caps	1.0	95th	Sawmills, etc.	3.9
33rd	Drugs and pharmaceutical preparations	1.0	96th	Cables, fencing wire, etc.	3.9
34th	Blacking, polishes, blanco, etc.	1.0	97th	Tanneries and fellmongering	4.4
35th	Jelly, custard and pudding powder	1.1	98th	Disinfectants, etc.	4.4
36th	Aerated waters and soft drinks	1.1	99th	Butter and cheese	4.5
37th	Tobacco	1.1	100th	Balanced animal feeds	4.6
38th	Ship and boat repairs	1.1	101st	Metal pipes	4.7
39th	Buttons, buckles, etc.	1.1	102nd	Insulated cables and wires	4.7
40th	Brushes and brooms	1.2	103rd	Wattle bark grinding	4.7
41st	Stationery	1.2	104th	Condensed milk and milk powder	5.0
42nd	Diamond cutting and polishing	1.4	105th	Flour and grain mills	5.0
43rd	Paper bags, cardboard boxes, etc.	1.5	106th	Tanning extract	5.0
44th	Printing, publishing & allied industries	1.5	107th	Explosives and carbide	5.1
45th	Saltworks	1.6	108th	Other food industries	5.2
46th	All other electrical machinery	1.6	109th	Crude oil, cake and meal	5.3
47th	Harnesses and saddlery	1.7	110th	Compound cooking fats	5.4
48th	Modelling in cement.	1.7	111th	Rock lobster and other fish products	5.7
49th	Canning and preserving fruit	1.8	112th	Wood carving, wood turning, etc.	6.0
50th	All other machinery	1.8	113th	Smelting & refining of non-ferrous metals	6.3
51st	Electroplating	1.9	114th	Coke (including coal gas), etc.	7.6
52nd	Electrical machinery and motors	1.9	115th	Fertilisers	8.0
53rd	Tinware	1.9	116th	Yeast	8.9
54th	Plywood including laminated boards	1.9	117th	Bonemilling and bloodmeal	9.3
55th	Blankets	1.9	118th	Other basic industrial chemicals	10.0
56th	Spinning, weaving etc. of wool	1.9	119th	Crushed stone	11.3
57th	Sweets and chocolates	1.9	120th	Chaff cutting, etc.	13.6
58th	Pickles, sauces, etc.	2.0	121st	Sugar mills	16.8
59th	Flavouring essence	2.0	122nd	Iron and steel	17.1
60th	Coffee grinding, etc.	2.0	123rd	Paper and paperboard	18.6
61st	Distilleries, wineries	2.0	124th	Cement	26.2
62nd	Coffins	2.0	125th	Motor & other spirits for fuel, etc.	44.1
63rd	Other paper products	2.0			

Source: Unpublished information kindly made available by the Bureau of Statistics.

per worker. Professor Sargent Florence<sup>1</sup> has calculated the latter measure for 81 British industries for the year 1935. His results are presented in Table 24 above. Table 25 above contains a list of South African industries in ascending order of their horse-power per worker ratio in 1959-60. A comparison of Sargent Florence's weight per worker per year ratios and the South African horse-power per worker ratios shows a striking direct relation between the former and the latter. For instance 27 of the 125 South African industries listed in Table 25 had a horse-power per worker ratio of 4.5 or more and these may be regarded as the very heavy group. For only 10 of these 27 industries, however, is there an industry with an identical or very similar title in the British data given in Table 24. It is striking, however, that all of these 10 industries were amongst the eleven heaviest in Britain in 1935. This appears to be extremely convincing evidence for regarding horse-power per worker as a good indicator of weight of materials processed per worker per year in South African industries.

The inverse ranking of the ten very heavy industries for which both weights and capital intensity are available, based on Tables 24 and 25 respectively, is presented in Table 26. We naturally should

TABLE 26.

	Inverse ranking in terms of weight of materials per operative from Table 24	Inverse ranking in terms of horse-power per worker from Table 25
Paper and paperboard	11	
Other basic industrial chemicals	10	7
Compound cooking fats	9	15
Crude oil, cake and meal	9 or 13	16
Butter and cheese	7	26
Balanced animal feeds	6	25
Fertilizers	4	10
Iron and steel	3	3
Flour and grain mills	2	20
Coke and by-products	1	11

1. P. Sargent Florence, Investment Location and Size of Plant, (Cambridge University Press, 1948).

not expect to find anything like a perfect correlation between the weight of materials and capital intensity amongst these ten industries, and the main point which it is wished to make, is simply that in general the more capital intensive an industry is the heavier it tends to be.

The industries which deviate most markedly, but nevertheless not too seriously, from what is otherwise a fairly consistent relation between weight and capital intensity, are butter and cheese, balanced animal feeds, and flour and grain mills. These three are all industries which tend to be widely dispersed and on the small side, compared with the other heavy industries. Thus it may be that the heaviness of these industries and the widespread nature of their markets and raw materials cause them to be dispersed and operated on a relatively small scale, and that this restricts the scope for greater capital intensity.

In addition, it has been possible to obtain a direct measure of the weight of materials used expressed in tons per worker per year for a certain number, though not all, South African manufacturing sectors for the year 1957-58, and the results of these calculations are presented in Table 27. Included in this table are six other industries having a horse-power per worker ratio of 4.5 or more, but which did not seem to have a close counterpart in the British classification given in Table 24. These six are cement (997.2 tons), sugar mills (763.1 tons), tanning extract (184.5 tons), chaff-cutting, bone milling etc. (177.7 tons), condensed milk and milk powder (88.0 tons) and rock lobster (72.7 tons). As Table 27 shows these were amongst the heaviest of the 30 South African sectors for which actual weights are available so that again the relation between the weight of materials processed and horse-power per worker is confirmed. Cement, the heaviest industry listed in Table 27, had the second highest horse-power per worker ratio as Table 25 reveals. Sugar mills were second highest in terms of weight and fifth highest in terms of horse-power per worker. Generally, the correlation is very good. The remaining 11 industries with a horse-power per worker of more than 4.5, for which neither British

TABLE 27

WEIGHT OF MATERIAL USED PER YEAR PER EMPLOYEE  
IN SOME SOUTH AFRICAN MANUFACTURING INDUSTRIES IN  
1957-58

	<u>Tons per year per worker</u>
Preparation and preserving of meat	101.8
Butter and cheese	53.6
Condensed milk and milk powder	88.0
Ice cream and ices	12.5
Jam, canned, preserved and dried fruit	15.9
Rock lobster, fish preserving and other fish products	72.7
Flour and grain mills	222.8
Bakeries	24.5
Sugar mills and refineries	763.1
Sweets and chocolates	8.7
Balanced animal feeds, chaffcutting, bone milling etc.	177.7
Compound cooking fats	76.1
Coffee roasting and chicory grinding, tea blending and packing	14.7
Wool scouring and cotton ginning	7.4
Blankets, cotton and wool spinning and weaving	2.2
Paper bags, cardboard boxes and mounts	19.0
Stationery and other paper products	14.9
Printing, publishing and allied industries	5.6
Tanneries and fellmongering	13.3
Rubber products	1.9
Fertilisers	343.5
Tanning extract	184.5
Soap and candles	15.2
Paints, varnishes, lacquers and distempers	7.4
Drugs and pharmaceutical preparations	0.6
Bricks and tiles	81.4
Cement	997.2
Headed and threaded articles	24.1
Sheet metal products	14.9
Tinware	9.9
Cables, fencing wire and wire products	11.0

Source: Compiled from Industrial Censuses, 1956-57 and 1957-58,  
Special Report No. 249.

nor South African weights are available, also appear to be of a very heavy nature.<sup>1</sup>

At the other end of the scale of heaviness and capital intensity, the correspondence between the 1935 British and the 1959-60 South African census classification and nomenclature is much poorer and, therefore, comparison of British weights and the South African horse-power per worker ratios is much more difficult. But it nevertheless does seem that the industries with low horse-power per worker ratios in South Africa are of a very light nature. For instance, as Table 25 shows, there were 30 industries in 1959-60 with horse-power per worker ratios of less than 1.0. Of these 14 were either in the wearing apparel (including footwear) or textiles groups, and two were in the leather goods sector. That these are very light industries is indicated by the data in Table 24 which shows that in Britain in 1935, 16 of the 17 textiles and clothing industries listed were amongst the 27 industries with the lowest weight of materials per worker per annum, only jute manufacturing (40th) being heavier than this.

Nearly all of the 27 most capital intensive South African industries listed in Table 25 above are heavily dependent on primary raw materials. Weight loss in the process of production is thus considerable in some cases, and as a result this industry tends to be drawn to the source of raw materials e.g. sugar mills, tanning extract, wood pulp, chaff cutting etc., coke and by-products, rock lobster (and fish preserving etc.), food and other products. In other cases (flour and grain mills, cement, crushed stone, butter and cheese, balanced animal feeds) weight loss is not as significant, but nevertheless the considerable weight and/or bulk of the materials in relation to value often results in plants

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1. Some of the more important of these are motor and other spirits for fuel, crushed stone, basic non-ferrous metals, explosives and carbide, wattle bark grinding, insulated cables and wires, and metal pipes.

being established at the market or at the source of materials closest to the market. If internal economies of large size are not sufficient to compensate for higher transport costs of regionally concentrated or centralised production, plants in the industry will tend to be widely scattered throughout the country. On the other hand where the materials are not widely scattered throughout the country, and the optimum size of plant is very large, the erection of plants may be restricted to a few points, either at the source of materials or at the principal markets e.g. iron and steel, motor and other spirits, basic non-ferrous metals, explosives and carbide, insulated cables and wires, and metal pipes. Or, as in the case of the condensed milk and milk powder industry, perishability of materials may dictate a location near the source of raw materials.

The essential conclusion of this section so far, then, is that capital intensity, as measured by horse-power per worker is directly related to the weight of materials processed per worker per annum, and, therefore, that the higher is the former ratio, the more costly will it be to divert the industry, other things being equal. A low horse-power per worker ratio may, therefore, be taken as a favourable index of divertibility.

The fact that highly capital intensive industries do not appear to be easily divertible is most unfortunate from the point of view of the objective of rapid industrialisation in the border areas. Capital intensive industries have certain characteristics which are highly desirable in a programme for industrial development in an underdeveloped area. As Hirschman has shown, they often have strong linkage effects and thus are able to make an important indirect impact on employment and income.<sup>1</sup> In addition there is a tendency for capital intensity to be associated with large size, when the latter is measured in terms of the number of employees per establishment, so that a capital intensive plant often provides employment for a substantial number of people even though

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1. A.O. Hirschman, The Strategy of Economic Development, pp. 106-7.

the number of workers per unit of output may be small.<sup>1</sup> Furthermore, in continuous process plants, such as steelmaking and oil refining, which are usually capital intensive, the worker is " 'paced' by the equipment he serves" and "he cannot fall behind the conveyor line or drift away for an unscheduled break". Thus in an area where labour is not disciplined to industrial work the capital intensive continuous process industries represent a way of overcoming labour inefficiency.<sup>2</sup>

The difficulty involved in diverting capital intensive industries to border areas by means of financial inducements, it may be noted, is quite unconnected with the relative capital/labour endowment of the border areas. In other words, it is not due essentially to a shortage of capital relative to labour, with the consequent need to conserve capital resources by fostering labour intensive industries and using labour intensive techniques of production. It is due to a quite distinct consideration as we have shown, namely, the fact that capital intensive industries tend to be 'heavy' in the sense that they process heavy materials and that transport costs tend to rise fairly sharply as a capital intensive industry is diverted from its minimum transportation cost location, this increase usually overwhelming any accompanying decrease in labour costs.

It is clear, however, that while capital intensive industries are not easily divertible, they are not necessarily unsuitable for location in the border areas. As we have shown they tend to be strongly

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1. See F. Sargant Florence, The Logic of British and American Industry, (Routledge and Kegan Paul, London, 1953), p. 69.
  2. See Stephen Enke, 'Capital Intensity as a Mitigation of Inferior Labour: A General Theorem', S.A. Journal of Economics, September 1961, pp. 231-4. Even in a country like South Africa in which unskilled labour is relatively cheap and abundant, there is evidence that in some firms more highly mechanised techniques have been adopted for this reason. For instance, Good Hope Textiles at Zwelitsha, have overcome some of their labour problems in this way.

attracted to markets or materials, so that if the necessary materials or markets are found in a border area, a heavy capital intensive industry may very well be suitable for development in the area. Certain of the highly capital intensive industries such as sugar mills, pulp and paper, tanning extract, and condensed milk and milk powder are in fact prominent in the border areas, and it appears that certain other highly capital intensive industries like iron and steel, coke and by-products, fertilizers, some basic industrial chemicals, and non-ferrous metals (e.g. copper) have good potential in these areas. The view that capital intensive industries will generally not find it profitable to site themselves in the border areas and that they should, therefore, usually be established in the metropolitan areas, seems to be groundless. It is apparently based on a theory of regional specialisation, which takes into account only the relative capital/labour endowment and which neglects the regional distribution of natural resources, the weight of the materials used, and whether they involve weight loss in the process of production or not. In fact, as we showed in chapters 3 and 4 above, it seems that a large part of the stimulus to industrialisation in the border areas will come from capital intensive industries, since some of the most significant of the expanding industries in the border areas are of this nature. Where a capital intensive industry is unsuitable for establishment in the border areas, the reason must be sought, not in the limitations on capital intensity imposed by the abundance of labour relative to capital (in other words the relative scarcity of the latter) in the border areas but in the geographical distribution of markets and materials.

What a low divertibility index due to the high capital intensity of an industry simply means is that if the necessary raw materials or markets are not found in the border areas, they are unlikely to be influenced by Government inducements to establish there, unless these inducements are extremely large. Generally, therefore, capital intensive industries are unsuitable for diversion to the border areas.

It is, therefore, necessary to modify the indexes calculated in

the preceding section on the basis of potential labour cost savings as a proportion of total costs, by taking into account the horse-power per worker ratio. A possibility which immediately suggests itself is that of dividing the index incorporating only the labour cost ratio and the racial composition of the labour force by the horse-power per worker ratio to obtain a rather less refined but possibly still useful version of Weber's labour coefficient. This possibility and others will be considered below, but before doing so it will be convenient to deal with a type of manufacturing activity which is already so widely dispersed as to make further dispersal neither necessary nor practicable.

#### Ubiquitous and Widely Dispersed Industries.

While a high capital intensity reduces the divertibility of an industry, it does not follow that a low capital intensity and the lightness of materials associated with it ensures a favourable divertibility index. This applies even if both the labour cost ratio and the proportion of non-whites in the labour force are large. Electrical contracting, for instance, appears very close to the lower right hand corner in Table 23 above, and as Table 25 shows it has the fifth lowest horse-power per worker ratio. But it is nevertheless obviously not divertible at all, since it is in the nature of a residentiary activity in which customer contact is essential. Activities like electrical contracting, motor vehicle repair, signwriting, bespoke tailoring, rubber stamps and posters, fall in the same category, and customers situated in a metropolitan area cannot be served by firms engaged in such activities if they are situated in border areas. Certain other activities like bakeries, flour and grain mills and brickworks, in which close customer contact is not as essential as in those mentioned above, also tend to be as widely dispersed as they can be given the minimum economic scale of production and the size of regional markets for their goods and services. Generally, then, there is a category of industries which are so ubiquitous or widely dispersed that Governmental measures to 'decentralise' them are neither necessary nor practicable.

Some of these widely dispersed industries are also fairly capital

intensive owing to the weight of materials and so, for this reason as well, may be unsuitable for diversion, by means of various financial inducements, from the location which would have been chosen in the absence of Government intervention to one preferred by the Government. The heaviness of materials or products, which results in high transportation costs, is often itself a cause of scatter. But in other cases, scatter is the result rather of the necessity for close contact with customers, or the perishability of the product or materials, so that like electrical contracting and bakeries some of these industries may be of a light sort. The latter would not be shown to be unsuitable in terms of the capital intensity index discussed in the previous section, and it is, therefore, necessary to identify separately those industries which tend already to be dispersed.

Such industries may be identified by the size of their localisation coefficients, since if an industry is widely dispersed its localisation coefficient tends to be low. As we shall see a low localisation coefficient does not necessarily mean that the industry is residentiary in character, or otherwise unsuitable for inclusion in a programme of industrial decentralisation, since there may be some special economic cause of the location pattern of an industry within a particular country. A low localisation coefficient, however, does create a strong presumption against the suitability of an industry for diversion to the border areas unless special economic reasons can be given to explain it.

The localisation coefficient is a 'measure of relative regional concentration of a given industry compared to some total national magnitude such as population, land area, manufacturing employment, or income. It is essentially a comparison of the percentage distribution by region of employment in the given industry with the regional percentage distribution of the base magnitude, for example total national manufacturing employment.'<sup>1</sup>

The localisation coefficients given below have been calculated

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1. Walter Isard, Methods of Regional Analysis, (New York, Wiley 1960), pp. 251-52.

by (1) subtracting for each region <sup>1</sup> the percentage share of total employment in the given industry in 1959-60 from the percentage share of the country's economically active population in 1960 (2) adding all positive differences, or all negative differences; and (3) dividing the sum of the positive (or negative) differences by 100. The limits to the value of the coefficient are 0 and 1. If the industry is distributed regionally in exactly the same proportion as the base magnitude the value will be zero, and if the entire industry is concentrated in one region, the value will approach unity. Thus if an industry has a very low coefficient, this indicates that it is already dispersed.

The percentage distribution of the country's economically active population in 1960 between the eleven regions into which the country has been divided by the writer for the purpose of calculating localisation coefficients is given in Table 28. Using this information, together with the percentage regional distribution of employment in each of the 129 South African industrial sectors, localisation coefficients have been calculated in the manner described above. In Table 29 the 129 sectors are listed in ascending order of the size of their localisation coefficients. It will be noted that the size of the localisation coefficient ranges from 0.124 in the case of flour and grain mills to 0.890. It is extremely difficult to know where to draw the line between highly dispersed industries which cannot be dispersed further and other industries, and the choice of a precise dividing line must to some extent be arbitrary. In making a final selection of widely dispersed industries of this sort it may be useful to compare the order obtained in Table 29 with data for Britain and the United States.

The rank order of industries in terms of localisation coefficients appears to vary somewhat from one country to another, but there are a

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1. The eleven regions upon which the calculations are based are:
    - (a) Ten of the economic regions used by the Bureau of Statistics, their code numbers being 01, 02, 08, 18, 30, 40, 41, 42, 43, 44.
    - (b) The eleventh region consists of all other magisterial districts together.

TABLE 28

Regional Distribution of South Africa's EconomicallyActive Population 1960

	<u>Economic Region Code number</u>	<u>Percentage of Economically Active Population</u>	<u>Magisterial districts comprising region</u>
1.	01	5.9	Belville Cape Town Simonstown
2.	02	2.2	Wynberg Ceres Montagu Paarl Robertson Somerset West Stellenbosch Tulbach Wellington Worcester
3.	08	2.6	Port Elizabeth
4.	18	1.6	Uitenhage
5.	30	5.1	East London King William's Town
6.	40	9.5	Durban
7.	41	6.3	Pinetown Johannesburg Benoni Boksburg Erakpan Germiston Kempton Park Springs
8.	42	3.8	Krugersdorp Oberholzer Randfontein Roodepoort
9.	43	3.8	Pretoria
10.	44	1.4	Vanderbijlpark Vereniging
11.		57.7	All other magisterial districts

Source:

Compiled from Population Census 1960, Sample Tabulation nos. 1, 2, and 5.

TABLE 29

## Localization coefficients of South African Manufacturing Industries for 1959-60

0.124	Flour and grain mills	0.659	Other food industries
0.135	Sawmills, etc.	0.660	Other plastic products
0.201	Cement	0.662	Peanut roasting
0.209	Coke	0.665	Optical and photographic goods
0.211	Blacksmithing	0.666	Brushes and brooms
0.232	Coffins	0.673	(All other electrical machinery Signwriting, posters and showcards)
0.248	Marble, stone, slate, etc.	0.674	All other paper products
0.257	Rubber products	0.677	All other machinery
0.260	Butter and cheese	0.680	Bags and sacks
0.267	Preparation and preserving of meat	0.681	Headed and threaded articles
0.269	Motor and other spirits, fuel, etc.	0.685	Other basic industrial chemicals
0.285	Cotton ginning, fibre working, etc.	0.688	(Coffee roasting and chicory grinding Wood carving, wood turning, etc.)
0.291	Saltworks	0.689	Spinning, weaving and finishing of other woollen products
0.313	Beer, Native beer and malt	0.691	Tobacco
0.318	Crushed stone	0.692	(Soap and candles Other miscellaneous industries)
0.328	Aerated waters and soft drinks	0.693	Harness and saddlery
0.336	Bakeries	0.694	Women's and Girls' clothing
0.343	Lime works	0.696	Flavouring essences
0.346	Preservation of timber	0.698	Tents, tarpaulins, etc.
0.350	Wattle bark grinding	0.699	(General and small leather goods Industrial, mining and construction machinery)
0.353	Chaff cutting, compressed fodder, etc.	0.702	(Tinware Electroplating)
0.362	Paper and paperboard	0.711	Felt, padding, wadding, etc.
0.367	Bonemilling and bloodmeal	0.712	Stationery
0.372	(Tanning extract Sugar mills)	0.713	Electrical machinery and motors
0.377	Condensed milk and milk powder	0.719	Manufacture and repair of watches and clocks
0.393	Agricultural machinery	0.725	(Soft furnishings Other chemical industries)
0.400	(Boot and shoe repairs Balanced animal feeds)	0.727	Jewellery and related articles
0.413	Modelling in cement	0.728	Compound cooking fats
0.439	Paper bags, cardboard boxes, etc.	0.729	(Blankets Imitation jewellery)
0.444	Rock lobster, fish preserving, etc.	0.730	Rubber stamps
0.455	Bricks and tiles, earthenware, etc.	0.731	Mens' and Boys' hats and caps
0.462	Bespoke tailoring	0.738	Toys, sporting accessories
0.473	Electrical contracting	0.744	Woolscouring
0.490	Glass making, bottle making, etc.	0.747	(Disinfectants, insecticides, etc. Plywood, including laminated boards)
0.496	(Ice cream and ices Boot and shoe factories)	0.749	Yeast
0.529	Other non-metallic mineral products industries	0.755	Manufacture, etc. of bicycles
0.535	Smelting and refining of non-ferrous metals	0.762	Blacking, polishes, etc.
0.545	(Other wooden products Crude oil-cake and meal etc.)	0.766	Professional, etc. instruments
0.555	Spinning, weaving and finishing of other cotton products	0.768	Sausage casing
0.558	All other metal products	0.769	Travel goods, etc.
0.559	Printing, publishing, etc.	0.778	Iron and steel, etc.
0.568	Office machinery	0.780	Ties
0.584	Cables, fencing wire, etc.	0.786	Tea blending and packing
0.585	Drugs and pharmaceutical preparations	0.795	Umbrellas, etc.
0.597	Picture frames	0.796	Assembly and repair of aircraft
0.599	(Pickles, sauces and condiments Hosiery and other knitted clothing)	0.798	(Explosives and carbide Buttons, buckles, etc.)
0.603	Plaster and other composite boards	0.802	Distilleries and wineries
0.604	(Jam, canned, preserved etc. Other knitting mills Fertilisers)	0.815	Ropes, cordage, twine, etc.
0.608	Furniture and fixtures	0.817	Millinery
0.618	Insulated cables and wires	0.826	Ladies handbags
0.620	Mens and boys clothing	0.837	Furriers
0.628	Tanneries and fellmongering	0.839	Metal pipes
0.630	Vinegar	0.845	Diamond cutting and polishing
0.636	(Sweets and chocolates Paints, varnishes, etc.)	0.890	Jelly, custard and pudding powder
0.650	Sheet metal products		
0.655	Musical instruments		
0.656	(Ship and boat building and repair Railroad equipment)		

Source: Based on statistics kindly made available by the Bureau of Statistics

number of industries which are widely dispersed in South Africa, Britain and the United States and it is these with which we shall concern ourselves mainly. Professor Sargant Florence<sup>1</sup> has published localisation coefficients for 124 manufacturing industries in Great Britain calculated on the basis of 1930 data. The 31 industries which he found to have localisation coefficients of less than 0.29 are listed in Table 30.

The British industrial census classification of 1930, however, was markedly different from the present South African classification so that several of the categories listed above have no closely corresponding South African counterpart e.g. apron, cocoa, aluminium, tix-box, conveyors, gasworks, laundry etc. However, several others listed by Sargant Florence do have a closely corresponding category in the South African census: shoe repairs, electricity supply, aerated waters, grain milling, brewing, bread (bakeries), bacon curing, timber (sawmills), paint, furniture, building, printing, brick and glass. In South Africa shoe repairs had a localisation coefficient of 0.400, aerated waters 0.328, brewing 0.313, bakeries 0.336, preparation and preserving of meat 0.267, sawmills 0.135, paint 0.636, furniture 0.608, printing 0.559, bricks and tiles 0.455, and glass 0.490. All of these, then are amongst the 45 industries with the lowest localisation coefficients in South Africa, with the exception of furniture and paint which nevertheless have fairly low coefficients.

Using a very different approach, Hoover<sup>1</sup> has based a measure of cluster and scatter of plants in various industries on the number of counties in the United States in which any plant of that industry was found. Hoover, however, points out that 'industries with only a few establishments are naturally likely to be found in fewer locations, so in order to

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1. Edgar M. Hoover, 'Size of Plant, Concern and Production Center,' in a National Resources Planning Board Report entitled Industrial Location and National Resources, Table 15. pp. 252-3.

TABLE 30

Industries with Coefficients of Localisation of less than  
0.29 in Great Britain in 1930

<u>Coefficient of localisation</u>	<u>Industry</u>
0.08	Shoe repair
0.09	Water works
0.14	Electricity supply
0.18	Aerated waters
0.20	Grain milling
0.21	Construction engineering
	Brewing
0.22	Bread
	Leather tanning
	Building material
0.23	Apron
	Bacon curing
	Gasworks
	Cocoa
0.24	Timber
	Wholesale bottling
	Paint
	Aluminium etc.
0.25	Furniture
	Building
	Wood crates
	Paper
	Tin-box
	Printing
	Foundry
0.26	Rope
0.27	Preserved food
	Conveyers
0.28	Brick
0.29	Glass
	Biscuit

Source: P. Sargent Florence, Investment Location and Size of Plant,  
 (Cambridge University Press 1948).

make allowance for this and get a truer measure of cluster tendency' he corrects this measure by working out how far each industry deviates from the expected likelihood, owing to its total number of plants. He publishes a table of the 56 industries with the most extreme deviations toward county scatter, the first 30 of these being listed below:

1. Gas, manufactured
2. Flour and grain mills products
3. Ice, manufactured
4. Breweries, non-alcoholic
5. Poultry dressing and packing, wholesale
6. Oil, cake and meal, cottonseed
7. Printing and publishing, newspaper and periodical
8. Railroad repair shops, steam
9. Clay products (excluding pottery)
10. Ice cream
11. Feeds prepared for animals and fowls
12. Condensed and evaporated milk
13. Butter
14. Agricultural implements and including tractors
15. Grease and tallow, excluding lubricating grease
16. Wood preserving
17. Cooperage
18. Carriages, wagons, sleighs and sleds
19. Planing mills products made in planing mills not connected with saw mills
20. Foundries
21. Fertilizers
22. Concrete products
23. Cement
24. Wood, turned and shaped and other wooden goods n. a. c.
25. Boxes, wooden, excluding cigar boxes
26. Vinegar and cider
27. Lumber and timber products
28. Brooms
29. Liquors, malt
30. Saddlery, harness and whips

Several of the industries listed above are also included among those with localisation coefficients of less than 0.29 according to Sargent Florence's calculations. In addition, however, there are several which are not given by Sargent Florence, but which do have counterparts in the South African classification. These are given below together with the South African coefficient: ice cream 0.496, animal feeds 0.400, condensed and evaporated milk 0.377, butter and cheese 0.260, wood preserving 0.346, fertilizers 0.604, cement 0.201, wood carving and turning 0.688.

On the basis of the South African coefficients and of the industries listed by Sargant Florence and Hoover, a number of industries have been selected as rather conspicuous examples of ubiquitous or dispersed industries and these have been listed in Table 31, together with the amount of employment provided by each in 1960-1.

In the case of these widely scattered plants the predominant determinant of location is transport costs. If transport costs on raw materials are the predominant factor, these can be minimised by locating the industry in fairly close conformity with the distribution of materials. On the other hand, if delivery costs on the product are preponderant, these can be minimised by locating the plant in fairly close conformity with the distribution of markets.

It is difficult to make a clearcut distinction between the widely dispersed industries listed above, on the one hand, and other industries in which transport costs are relatively heavy, on the other hand. When the market is a concentrated one, such as for some manufactured intermediate product, then if the cost of transporting the finished product is great, production will also tend to be concentrated. When the materials or markets are fairly widespread, however, the chief limit on scatter is imposed by economies of large scale production. The extent to which an industry's location resembles that of the distribution of materials or markets is thus limited by the dependence of cost upon size. The higher costs of smaller plants impose a definite lower limit on the degree of localisation. Thus, though certain industries may not be represented in a large number of magisterial districts, they may have a strong tendency to dispersion. For instance, paints and cement both have a very strong tendency to be oriented to regional markets, but because of the relatively small size of most regional markets these industries are not represented in a large number of magisterial districts. Nevertheless in both figures for Great Britain and the U.S.A. given above, cement and paints are shown to be widely dispersed industries. Table 29 also shows cement to have a very low localisation coefficient. There is, therefore, little point in the State attempting to induce industries of this sort to

TABLE 31

Employment in Residentiary and other Widely DispersedSouth African Industries, 1960-61Employment 1960-1

1.	Preparation and preserving of meat	3,894
2.	Butter and cheese	3,445
3.	Ice cream and ices	2,085
4.	Jam, canned, preserved and dried fruit	12,753
5.	Flour and grain mills	13,924
6.	Bakeries	18,712
7.	Balanced animal feeds	2,427
8.	Beer, native beer and malt	3,393
9.	Aerated waters	5,865
10.	Boot and shoe repairs	1,841
11.	Bespoke tailoring	2,290
12.	Sawmills, carpentry and joinery	27,941
13.	Wood carving, wood turning, etc.	171
14.	Preservation of timber	677
15.	Picture frames and coffins	957
16.	Furniture	17,212
17.	Printing, publishing and allied industries	20,476
18.	Paints, varnishes, lacquers, etc.	4,063
19.	Bricks and tiles	26,605
20.	Glass	5,884
21.	Cement	4,200
22.	Marble, stone, slate, etc.	2,109
23.	Crushed stone	3,638
24.	Electrical contracting	8,484
25.	Blacksmithing	1,037
26.	Personal services	16,160
	Total ubiquitous and dispersed industries	210,153
	Total all South African manufacturing industries	638,189 *

\* Excludes the motor vehicle industry.

Source of employment figures: Industrial Census 1960-1, Special Report No. 257.

establish in the border areas since they already tend to develop in any area where the demand is sufficient. In some instances, however, where an industry is not ubiquitous, but is situated so as to serve large regional markets, it may be possible to induce a firm to establish its plant in one part of the region it is to serve rather than another.

The residentiary, ubiquitous or widely scattered activities listed in Table 31, therefore, cannot be included in a scheme for diverting industries to the border areas. Despite the fact that we have included only the more conspicuous examples of this type of activity, the volume of employment provided by them in 1960-61 was quite substantial. In the aggregate they employed 210, 153 workers out of a total of 638, 190 employed in manufacturing industry as a whole (excluding construction and electricity) in 1960-61. It appears, therefore, that activities employing 32.9 per cent of the industrial labour force in 1960-61 were almost completely place-bound. In Table 23 above these widely dispersed industries are placed in parenthesis to indicate that they are not included in the ranking of industries undertaken in the following section. Thus a substantial proportion of manufacturing industry can be ruled out of consideration for diversion to the border areas. The growth of these industries in the border areas depends basically on the expansion of the general level of economic activity in the areas.

Apart from the widely dispersed industries listed in Table 31, there are a number of other activities such as foundries, general engineering workshops, and motor vehicle repairs which are also widely dispersed owing to the weight of materials, perishability, or the importance of customer contact. But these are not given in Table 31, either because as in the case of motor vehicle repairs the information necessary for the calculation of coefficients has not been available to the writer, or because the manufacturing sectors in which they are included in the industrial census data do not, taken as a whole, have sufficiently low localisation coefficients. Thus the list in Table 31 includes only the more conspicuous of the widely dispersed industries for which separate data is available.

### The Range of Divertible Industries.

We are now in a better position to rank industries in terms of their divertibility to border areas. In the light of the discussion of the preceding section our task is reduced to that of ranking industries employing some 67.1 per cent of the manufacturing labour force in 1960-61. Two alternative procedures for doing this will be considered.

The first possibility is to use the divertibility index given in the appendix to this chapter, which simply takes into account the labour cost ratio and the non-white labour ratio, in order to rank 'light' industries only, on the grounds that attention will have to be concentrated on these if diversion of industries is to be achieved at a moderate excess social cost. In Table 23 above industries with a horse-power per worker ratio of 3.0 or more bear the suffix 'H' denoting heaviness, with the exception of those in the 3.1 to 4.0 horse-power per worker group which have a labour cost ratio over 50 per cent, which have the suffix 'H\*' indicating that they are marginal cases compared with the 'H' industries. Industries with a horse-power per worker between 1.6 and 3.0 are marked 'M' and those with values between 0.1 and 1.5 'L' to denote medium weight and very light industries respectively. Thus, a horse-power per worker of 1.5 or less may be regarded as a favourable indication for diversion, 1.6 to 3.0 as neutral, and over 3.0 as unfavourable.<sup>1</sup>

In Table 32 below the 48 industries (excluding widely dispersed industries) with horse-power per worker ratios of less than 2.0 are listed in descending order of the index given in the appendix to this chapter which is based on the potential labour cost savings as a proportion of total costs, which may be obtained by establishing in a border area rather than in one of the larger industrial centres. Variations in the horse-power per worker ratio between these light industries themselves have had no bearing at all on the order in which they are listed.

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1. This particular approach is used by P. Sargant Florence, *op. cit.*

Provisional Selection and Ranking of Light Industries in  
Terms of Suitability for Diversion to Border Areas  
(Based on Potential Labour Cost Savings)

		No. employed in 1960-61 <small>**</small>
1.	Plywood including laminated boards	2,413
2.	Vinegar	169
3.	Harness and saddlery	350
4. *	Ladies Handbags	1,061
5. *	Bags and sacks	2,200
6.	Sausage casings	269
7.	Modelling in cement	5,484
8.	Brushes and brooms	1,254
9. *	Mens' and boys' clothing	28,295
10. *	Women's and girls' clothing	20,583
11.	Buttons, buckles, etc.	522
12.	Travel goods	1,102
13.	Peanut roasting	325
14. *	Woolscouring	1,778
15. *	Cotton textiles	14,857
16.	General and small leather goods	692
17.	Sheet metal products	6,923
18. *	Hosiery	6,965
19.	Toys, sporting goods, etc.	1,117
20. *	Ropes, cordage and twine	1,703
21. *	Woollen textiles	5,233
22. *	Blankets	6,324
23. *	Boot and shoe factories	16,922
24.	Plaster and other composite board	3,715
25. *	Soft furnishing	1,823
26.	Tinware	4,623
27.	Pickles, sauces and condiments, etc.	1,007
28. *	Other knitting mills	903
29. *	Other clothing	625
30.	Other paper products	2,469
31. *	Mens' and boys' hats and caps	1,107
32.	Imitation jewellery	293
33.	Other plastic products	3,219
34.	Canvas goods	1,042
35.	Paper bags, cardboard boxes, etc.	7,372
36.	All other metal products	42,600
37. *	Millinery	1,036
38.	Sweets and chocolates	7,617
39.	Stationery	1,654
40.	Jelly, custard and pudding powder	338
41.	Tobacco	4,672
42.	All other electrical machinery	10,044
43.	Other chemicals (Inks, matches and glue)	3,039
44. *	Ties	355
45.	Soaps and candles	893
46.	Musical instruments	1,102
47.	Electrical machinery and motors	6,402
48.	All other machinery	259
	Total of light industries	234,750
	Total of all South African secondary industries, including construction electricity and personal services	796,443

\* Included in clothing or textile groups.

\*\* Bureau of Census and Statistics, Industrial Census 1960-61, Special Report No. 257.

In 1960-61 these 48 lightest industries provided employment for 234,750 workers or 36.8 per cent of the total number of 638,190 employed in South African manufacturing industry.

Of the light industries listed, however, those in the textiles and wearing apparel groups accounted for 111,770 workers or 14.0 per cent of total employment in manufacturing industry in 1960-61. It appears, therefore, that the industrialisation of the border areas must depend heavily on these two groups. Fourteen of the specific industries, in these two major groups, including all of the more important ones like mens' and boys' clothing, womens' and girls' clothing, cotton textiles, woollen textiles, and boot and shoe factories were amongst the 30 industries in the ranking. The largest single sector in this list of light industries was "all other metal products" with a labour force of 42,600 or 5.3 per cent of total employment in manufacturing industry. This sector, however, was fairly low down on the list in 36th place, and consists of a large number of different products subject to a variety of locational influences. Of the other industries the largest was "all other electrical machinery" with 1.2 per cent of total manufacturing employment, but since its labour force was predominantly white and it was not outstandingly labour intensive, it ranked only 42nd. Another relatively large industry was electrical machinery and motors which employed 0.8 per cent of all manufacturing workers, but this fell low down on the list of industries suitable for diversion.

It cannot be concluded from the above that industries accounting for 36.8 per cent of total manufacturing employment are 'footloose' in the sense that it makes little difference whether they are established in the border areas rather than in some other centre. The divertibility of industries generally diminishes as we move down the list, and the excess private cost of diversion to border areas of industries near the bottom of the list may be quite substantial. For instance the largest sector listed, namely, all other metal products, which employed 42,600 people tends to be strongly oriented to markets and materials and it is improbable

that a large proportion of the types of activities included in this sector could easily be diverted to border areas. Table 32, therefore, should be simply regarded as including those industries upon which attention might be concentrated if subsidy payments relative to additional induced employment in the border areas is to be minimised.

The justification for considering only light industries so far is simply that, compared with these, the diversion of heavier industries is likely to involve a larger increase in transport costs per unit of output relative to any labour cost saving per unit of output. This seems particularly likely since industries with a high horse-power per worker ratio also tend to have a low labour cost ratio, as an examination of 'H' and 'H\*' industries in Table 23 above shows. But the ranking procedure used so far does have the disadvantage that an industry in the medium weight category, though being heavier, may have a labour cost saving potential which is so much greater than that of a light industry, that the excess social costs of diverting the latter may be greater than those involved in diverting the former. Within the light group of industries, too, the ability of our ordering to reflect the actual relative ease or difficulty of diverting different industries is restricted by, amongst other things, our failure to take into account differences in the weight of materials. Furthermore any decision regarding the size of the horse-power per worker ratios which are to mark off 'light' from 'medium' industries and 'medium' from 'heavy' must necessarily be arbitrary.

The tobacco industry provides an example of the sort of factor which might require a modification of the ranking given in Table 32. The labour cost ratio of this industry is low, but it is probably the lightest of all industries, gauged in terms of weight of product per unit of value. Transport costs are therefore an extremely small proportion of total costs, and this industry may be easier to divert to the border areas than, for instance, "all other metal products" though the latter actually has a higher ranking in Table 32. The reason for this is that while

cigarette manufacture is highly mechanised, and as a result has a low labour cost ratio, the machinery is intricate, specialised and expensive rather than particularly powerful. Unlike most other highly capital intensive industries the high degree of mechanisation is not caused by the need to process heavy and bulky raw materials. Though this industry may be divertible to the border areas, however, in view of its extremely light nature, the additional employment generated in this way and consequently also salaries and wages, will be low relative to additional output.

Another important consideration is that the rate of growth of 'light' industries may not be sufficiently rapid to enable the diversion of industries to take place on the scale necessary to achieve certain non-economic objectives, so that rather heavier industries may have to be considered for diversion even though this might raise the marginal excess private cost of induced border areas employment. It would, therefore, be useful to have a comprehensive ranking of all industries in terms of relative divertibility costs, so that the cost implications of increasing the scale of intervention in the location of industry could be more easily seen.

With these considerations in mind an index which takes into account both potential labour cost savings and the weight of materials simultaneously has also been calculated. The horse-power per worker ratio of each industry has been divided by its index of potential labour cost savings, given in the appendix to this chapter, to obtain an overall divertibility index. The latter index corresponds to the reciprocal of Weber's more refined labour coefficient. Unlike the latter, and unlike the index calculated earlier on the basis of potential labour cost savings, therefore the lower (higher) is our new divertibility index the more (less) favourable are the prospects of diversion to a border area. In Table 33 the 129 South African industrial sectors are listed in ascending order of the size of this index so that as we move down the list the marginal excess private costs of diverting industrial production and employment to the border areas tend to increase. The residential and other widely

TABLE 33

## Relationship Between Divertibility Index and Proportion of Manufacturing Employment Diverted

Number <sup>ⓧ</sup>	INDUSTRY	(1)	(2)	(3)	(4)
		Divertibility Index <sup>***</sup> (Index of marginal excess costs)	Employment <sup>+</sup> 1960-61	Accumulated <sup>++</sup> Total Employment 1960-61	Figure in Col.3 as percentage of total of 431,568
46	Furriers	.000 806	222	222	0.51
47	Ladies handbags	.000 851	1,061	1,283	2.97
2	Sausage casings	.000 854	269	1,552	3.60
118	Imitation jewellery	.000 995	293	1,845	4.28
48	Millinery	.001 041	1,036	2,881	6.68
107	Electrical contracting	.001 234	(8,484)		
41	Mens' and Boys' clothing	.001 315	28,295	31,176	7.22
45	Women's and girls' clothing	.001 382	20,583	51,759	11.99
52	Tents, tarpaulins, sails and other canvas goods	.001 477	1,042	52,801	12.23
44	Bespoke tailoring	.001 515	(2,290)		
127	Signwriting, posters and showcards	.001 604	(1,042)		
43	Ties	.001 796	355	53,156	12.32
69	General and small leather goods	.001 818	692	53,848	12.48
124	Rubber stamps	.001 923	( 65)		
57	Picture frames	.001 951	( 345)		
50	Soft furnishings	.001 960	(1,823)		
68	Travel goods, etc. (leather)	.002 262	1,102	54,950	12.73
13	Peanut roasting	.002 283	325	55,275	12.81
116	Manufacture and repair of watches and clocks	.002 419	135	55,410	12.83
112	Assembly and repair of aircraft	.002 649	( 443)		
117	Jewellery and related articles	.002 762	1,101	56,511	13.09
19	Vinegar	.002 868	169	56,680	13.13
40	Boot and shoe repairs	.002 884	1,841	58,521	13.56
129	Other miscellaneous manufacturing industries	.002 955	639	59,160	13.71
22	Tea blending and packing	.003 086	977	60,137	13.93
102	Office machinery	.003 149	( 377)		
35	Hosiery and other knitted clothing	.003 286	6,965	67,102	15.55
51	Bags and sacks	.003 404	2,200	69,302	16.06
115	Optical and photographic goods	.003 550	628	69,330	16.06
122	Toys, sporting accessories, novelties, etc.	.003 686	1,117	71,047	16.46
10	Bakeries	.004 109	(18,712)		
39	Boot and shoe factories	.004 494	16,922	87,969	20.38
42	Mens and boys hats and caps	.004 901	1,107	89,076	20.64
125	Buttons, buckles, etc.	.004 932	522	89,598	20.76
123	Brushes and brooms	.005 286	1,254	90,852	21.05
28	Aerated waters and soft drinks	.005 555	(5,865)		
109	Ship and boat building and repairs	.005 583	(1,406)		
20	Jelly, custard and pudding powder	.005 978	338	91,190	21.13
29	Tobacco	.006 748	4,672	95,862	22.21
63	Stationery	.006 779	1,654	97,516	22.60
80	Blacking, Polishes, blanco, whiting, etc.	.006 944	574	98,090	22.72
67	Harness and saddlery	.007 112	350	98,440	22.81
23	Saltworks (including saltpans)	.007 272	2,477	100,917	23.38
88	Modelling in cement, etc.	.007 488	5,489	106,406	24.66
62	Paper bags, cardboard boxes and mounts	.007 537	7,372	113,778	26.37
78	Drugs and pharmaceutical preparations	.007 575	6,022	119,800	27.76
54	Plywood, including laminated boards	.007 818	2,413	122,213	28.52
120	Electroplating	.008 225	( 944)		
97	Sheet metal products	.008 256	6,923	129,136	29.92
6	Jam, canned, preserved and dried fruits	.008 490	(12,753)		
32	Blankets	.008 837	6,324	135,460	31.39
33	Spinning, weaving and finishing of other woollen products	.008 837	5,233	140,693	32.60
98	Tinware	.009 313	4,623	145,316	33.68
108	All other electrical machinery, apparatus and supplies	.009 356	10,044	155,360	36.00
7	Pickles, sauces and condiments	.009 756	1,007	156,367	36.23
12	Sweets and chocolates	.010 160	7,617	163,984	38.00
64	Other paper products	.010 204	2,469	166,453	38.53
85	Glass making, bottle making, glassbeveling, silvering	.010 362	(5,884)		
60	Furniture and fixtures	.010 426	(17,212)		
114	Professional, scientific and controlling instruments	.010 526	597	167,050	38.71
30	Woolscouring	.010 666	1,778	168,828	39.12
65	Printing, publishing and allied industries	.011 111	(20,476)		
126	Other plastic products (miscellaneous)	.011 167	3,219	172,047	39.87
26	Distilleries and wineries	.011 494	5,399	177,436	41.11
58	Coffins	.011 560	612	178,048	41.24
105	Electrical machinery and motors	.011 801	6,402	184,450	42.74
56	Preservation of timber	.012 053	( 677)		
104	All other non-electrical machinery	.012 244	259	184,709	42.80
36	Other knitting mills	.012 437	903	185,612	43.01
37	Ropes, cordage, twine, fish and other nets	.012 556	1,703	187,315	43.40
21	Coffee roasting and chicory grinding	.012 738	1,664	188,979	43.79
34	Spinning, weaving and finishing of other cotton products	.012 844	14,857	203,836	47.23
100	All other metal products (except machinery and transport)	.013 157	42,600	246,436	57.10

TABLE 33 - continued

Number*	INDUSTRY	(1) Divertibility Index** (Index of marginal excess costs)	(2) Employment <sup>+</sup> 1960-61	(3) Accumulated <sup>++</sup> Total Employment 1960-61	(4) Figure in Col.3 as percentage of total of 431,568
5	Ice cream and ices	.013 368	(2,085)		
87	Plaster and other composite boards	.013 679	3,715	250,151	57.97
59	Other wooden products (except furniture)	.013 824	(1,119)		
18	Flavouring essences	.013 888	313	250,464	58.04
84	Bricks and tiles (clay), earthenware and pottery	.013 924	(26,605)		
121	Musical instruments	.013 939	1,102	251,566	58.29
90	Marble, stone, slate, etc.	.014 285	(2,109)		
76	Soap and candles	.014 792	4,893	256,459	59.42
77	Paints, varnishes, lacquers and distemper	.015 060	(4,063)		
81	Other chemical industries	.015 204	3,039	259,498	60.13
119	Diamond cutting and polishing	.015 217	956	260,454	60.35
1	Preparation and preservation of meat	.015 566	(3,804)		
38	Felt, padding, wadding, etc.	.015 813	2,585	263,039	60.95
111	Manufacture, assembling and repair of bicycles	.016 113	1,040	264,079	61.20
27	Beer, Native beer and malt	.016 483	(3,393)		
113	Blacksmithing	.016 666	(1,037)		
89	Lime works	.016 666	2,598	266,677	61.79
53	Sawmills, carpentry and joinery	.016 666	(27,941)		
70	Rubber products	.017 733	4,969	271,646	62.94
99	Cables, fencing wire and wire products	.018 396	5,394	277,040	64.19
101	Agricultural Machinery	.018 644	5,124	282,164	65.38
31	Cotton ginning, fibre working, dyeing of wool, etc.	.019 004	453	282,617	65.49
66	Tanneries and fellmongering	.019 213	2,538	285,155	66.07
110	Railroad equipment	.019 337	4,952	290,107	67.22
96	Headed and threaded articles	.019 895	2,068	297,175	68.86
92	Other non-metallic mineral products	.020 320	(2,124)		
103	Industrial, mining and construction machinery	.021 176	23,843	316,018	73.23
128	Wattle bark grinding	.022 815	469	316,487	73.32
95	Metal pipes	.023 380	7,506	323,993	75.07
14	Balanced animal feeds	.023 589	(2,427)		
79	Disinfectants, insecticides, etc.	.024 043	1,978	325,971	75.53
106	Insulated cables and wires	.024 607	2,868	328,839	76.20
9	Flour and grain mills, including macaroni, etc.	.024 752	(13,924)		
72	Tanning extract	.025 252	1,127	329,966	76.46
75	Crude oil-cake and meal, etc.	.025 603	1,852	331,818	76.89
73	Explosives and carbide	.026 153	7,549	339,367	78.64
3	Butter and cheese	.026 162	(3,445)		
8	Rock lobster, fish preserving and other fish products	.028 078	4,373	343,740	79.65
55	Wood carving, wood turning, etc.	.029 126	( 179)		
17	Compound cooking fats	.030 000	2,664	346,404	80.27
4	Condensed milk and milk powder	.030 120	1,799	348,203	80.68
94	Smelting and refining of non-ferrous metals	.033 157	6,879	355,082	82.28
83	Coke (including coal gas), bituminous and allied emulsions	.039 583	1,355	356,437	82.59
71	Fertilisers	.040 816	3,877	360,314	83.49
16	Bonemilling and bloodmeal	.042 081	79	360,393	83.51
24	Yeast	.050 028	434	360,827	83.62
91	Crushed stone	.054 589	(3,638)		
74	Other basic industrial chemicals	.061 349	7,369	368,196	85.32
15	Chaff cutting, compressed fodder, lucerne, meal milling	.067 661	250	368,446	85.38
11	Sugar mills and refineries (including syrup)	.083 582	11,546	379,992	88.05
61	Paper and paper board	.104 494	8,237	388,229	89.96
93	Iron and steel, etc.	.110 322	33,296	421,585	97.69
86	Cement	.159 756	4,200	425,725	98.65
82	Motor and other spirits for fuel, lubricating oils and greases	.347 244	5,843	431,568	100.00

\* See statistical appendix to this chapter.

\*\* Column (3) in Appendix  
Column (4) in Appendix

+ Industrial Census 1960-61, Special Report No. 257.

++ Omitting residentiary activities shown in parentheses.

dispersed activities which we isolated in the previous section are included in the list but, as in Table 23 above, they appear in parenthesis to indicate that regardless of their divertibility index they cannot be considered for diversion.

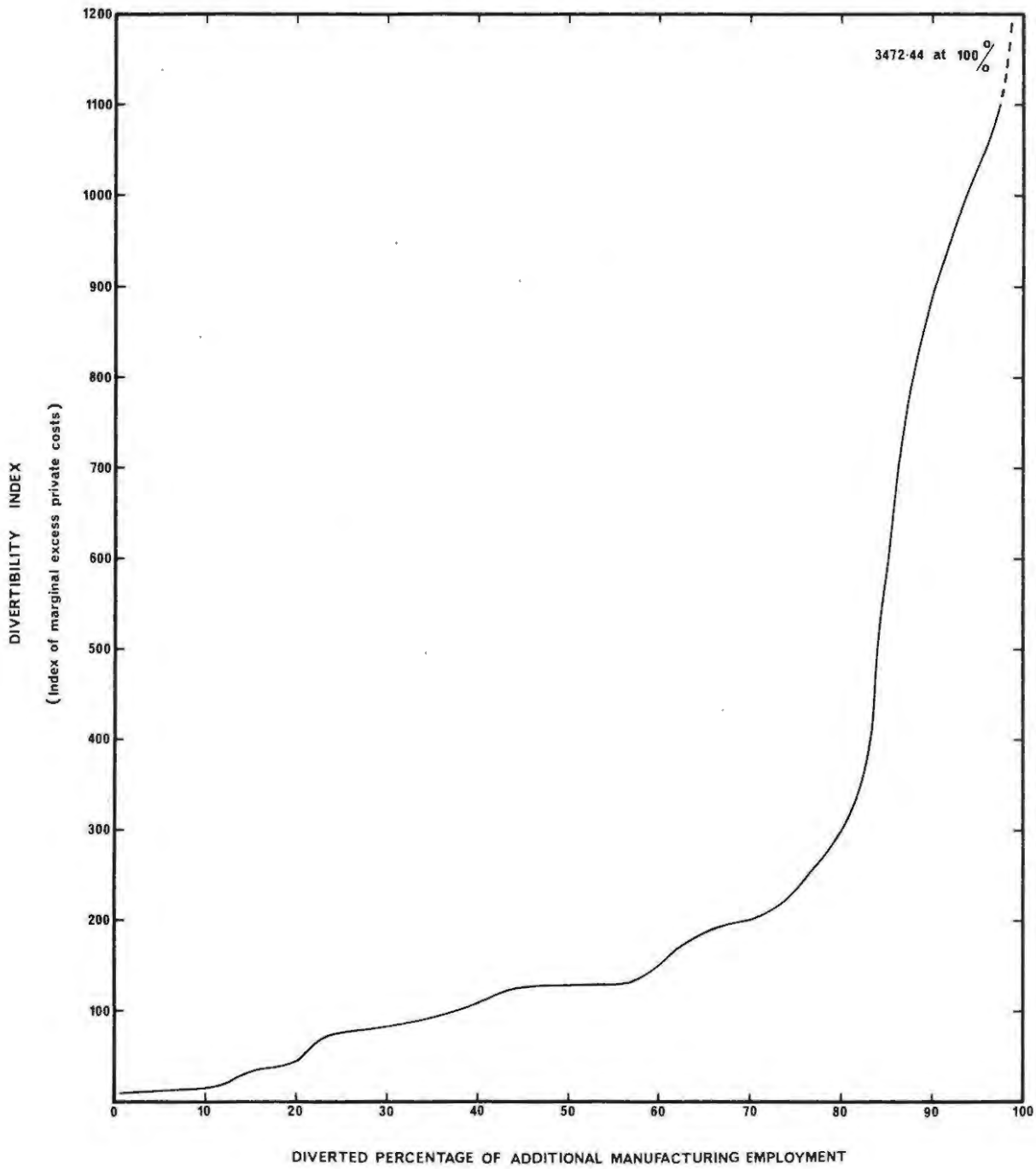
It is found in Table 33 that all of the 48 light industries listed in Table 32 are amongst the 57 industries (excluding the widely dispersed ones) with the most favourable (lowest) divertibility indexes. The order in which the 48 light industries appear, however, is rather different from that of Table 32. As we should have expected in view of our earlier remarks, the tobacco sector has risen on the scale compared with the earlier ranking, as have certain branches of the wearing apparel sector like ladies handbags, ties, mens and boys hats and caps, due to their extreme 'lightness'. Plywood however which shows up better than any other industry in terms of potential labour cost savings, drops well down the list in the new ranking because of its relatively high horsepower per worker ratio.

The divertibility index of any industry X relative to that of any other industry Y may be regarded as showing the marginal excess private cost of diverting employment in industry X to the border areas relative to the corresponding excess cost for Y. The value of this relationship is that even though we do not give the expected marginal excess private costs for each industry in absolute terms, if we obtained information of the latter sort for a few individual sectors, it would enable us to gauge roughly the magnitude of marginal excess private costs for sectors for which such information was not available. It appears from Table 33 that the marginal excess private cost of diverted employment in the 'headed and threaded articles' industry (with an index of 199) is nearly twice as great as in 'sweets and chocolates' (102), and slightly more than twice as great in the latter as in 'buttons, buckles etc.' (49). This relationship can be used to obtain some idea of the rate at which the marginal excess private costs of diverting employment rise as the average annual volume of diverted border areas employment is increased.

In Table 33 the volume of employment in each of the 129 sectors in 1960-61 is shown, together with the corresponding cumulative employment figure. For instance, the cumulative total of 54,950 in the 'travel goods' row is the sum of employment in the travel goods sector and in all the sectors (except those in parenthesis) listed above it. The cumulative total in each row can be expressed as a percentage of total manufacturing employment of 431,568 in all sectors listed (again excluding those in parenthesis). The accompanying graph has been obtained by plotting the divertibility index in Column (1) of Table 33 against the cumulative employment percentage in Column (4). For convenience all the divertibility indexes given in Table 33 have been multiplied by 10,000 in the graph and throughout the ensuing discussion. Thus in the graph the divertibility index ranges from 8 in the case of furriers at the top of the list to 1598 for 'cement'. The index for 'motor and other spirits for fuel etc.' of 3492 is so much larger than any other that it is not shown on the graph. As the discussion below shows we may reasonably regard the curve obtained in this way as indicating the relationship between the marginal excess private costs of diversion and the percentage of additional employment which is diverted.

In 1960-61 the total volume of employment in all the industries listed in Table 33, including those, in parenthesis, was 628,259. Manufacturing employment as a whole including those sectors mentioned

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1. This figure does not include other food industries, other clothing tyres and tubes, seat covers, etc. (motor vehicles), retreading, springs etc., batteries, manufacture and repair of motor vehicles, caravans trailers etc., motor vehicle parts and accessories, automotive engineering workshops, automotive electricians, manufacture and repair of radiators, of panel beaters and spray painters, or personal services (laundries etc). In 1960-61 employment in these sectors amounted to about 30 thousand.



in the footnote on the preceding page increased by 39.95 per cent between September 1960 and June 1966.<sup>1</sup> At the time of writing a detailed analysis of the latter figure into the various sub-groups is not available, but it seems safe to assume that employment in the industries listed in Table 33 grew at approximately the same rate, since they comprise the bulk of total manufacturing employment. On this assumption employment in the industries listed would have increased by approximately 250,989 between September 1960 and June 1966, that is, at an average annual rate of 43,650.<sup>2</sup> But part of this increase was in those ubiquitous, residentiary and other widely dispersed activities appearing in parenthesis in Table 33. In 1962-63 these industries contributed 28.9 per cent<sup>3</sup> of employment in industries listed in Table 33. If these residentiary activities had contributed this same proportion of the increase in employment in the listed industries, their average annual contribution to the increase of 43,650 calculated above, would have been 12,615, and the average annual increase in the non-residentiary activities listed would thus have been 31,035. Let us assume, however, in order to put the position in a slightly more favourable light from the point of view of the potential volume of divertible employment in this period, that residentiary activities contributed only about 24 per cent of the increase in employment between 1960 and 1966. In this case, the average annual increase in employment in the non-residentiary activities listed in Table 33 would have been about 33,051 between.

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1. Manufacturing employment in September 1960 was 688,843 (See Statistical Year Book 1964, p. M-7 and explanatory note on p. M-69) and in June 1966 was 963,800 (Bulletin of Statistics, Quarter Ending, March 1968, Table B-7 and explanatory note p. 35).
  2. The average annual increase in employment in the industries not included in Table 33 would thus have been about 4,168.
  3. Based on data in Statistical Year Book 1966, pp. M-30 to M-37.

1960 and 1966. This appears to be the maximum amount of manufacturing employment which might have been considered for diversion in the period 1960 to 1966, excluding the sectors mentioned in the footnote on the preceding page.<sup>1</sup>

Let us further assume for the moment that the proportionate contributions of each manufacturing sector to the total average annual increase in employment of 33,051 over the period, was the same as its proportionate contribution to total manufacturing employment in 1960-61. As we shall see, this assumption, like another which is discussed in the next two paragraphs, tends to understate the marginal excess costs of diverting industries to the border areas and needs to be modified later on, but for the time being it is convenient to proceed on this basis. We may then regard the accompanying graph as indicating the way in which the marginal excess private costs of diverting employment to the border areas rise as the diverted proportion of the average annual increase in employment rises. In the period under consideration, 1960 to 1966, this average annual increase is equal to 33,051, but the functional relationship depicted in the graph and Table 33 may equally well be applied to any expected future annual increase in manufacturing employment in non-residential manufacturing industry. Though the functional relationship may, of course, change over time with changes in the structure of manufacturing industry and changes in fundamental market conditions, evidence presented below suggests that the structure of manufacturing industry is changing in such a way as to raise the marginal excess private costs of diversion rather than lower them.

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1. Since additional employment in the latter sectors was relatively small and the industries involved, mainly the motor vehicle industry, do not appear to be easily divertible to border areas, their omission does not detract from <sup>the</sup> ensuing argument.

In order to minimise the total excess private costs of any particular average annual volume of diverted employment, we should according to this analysis divert employment in the industry at the top of the list until the marginal excess private costs of doing so is equal to the marginal excess private cost of diverting employment in the industry listed immediately below it; then the diversion of employment in the latter should be carried to the point at which the marginal excess private cost of doing so is equal to the corresponding costs in the industry third on the list; and so on, until the desired total average annual increase is achieved. In other words, though the marginal excess private costs of diverting employment in the industry at the top of the list may be lower than in the next sector, up to a point, the marginal excess costs of diverting the entire annual increase in the top industry may exceed the corresponding costs of diverting a part of the average annual increase in employment in the industry immediately below it. Indeed, it seems that for most consecutive pairs of industries this is almost certain to be the case. For instance the marginal excess private costs of diverging the whole of any addition to employment in the 'mens and boys clothing' sector is bound to exceed the marginal excess costs of diverting a small proportion of the 'sweets and chocolates' sector, even though the former has a divertibility index of 13.2 and the latter an index of 101.6.

There does not seem to be any way in which this aspect of 'diminishing returns' can be taken into account in the present analysis. For simplicity's sake, therefore, we shall assume, for the moment, that the marginal excess private costs of diverting employment in a particular industry are constant. The marginal excess private costs of diverting employment will, therefore, rise only because, given the limited annual addition to employment in each sector, industries less and less suitable for diversion to border areas have to be brought within

the scope of decentralisation policy, as the scale of the desired annual volume of diverted employment is increased. We assume, then, that to minimise costs, all the additional employment in the most easily divertible industry at the top of the list is diverted; plus all the additional employment in the industry immediately below it; and so on, until the desired average annual increase in diverted employment is achieved.

On these assumptions the graph depicts the way in which the marginal excess private costs of diverting manufacturing employment rise as the diverted percentage of the average annual increase of 33,051 rises. The results may be summarised as in Table 34 below.

Table 34.

Relationship between Percentage of Additional Manufacturing  
Employment Diverted and the Divertibility Index  
of the Marginal Sector.

<u>Percentage of Additional Jobs Diverted</u>	<u>Number of Jobs Diverted</u> (Based on annual increase of 33,051)	<u>Divertibility Index of Marginal Sector</u> (Index of Marginal Excess Private Costs).	<u>Name of Marginal Sector. Diverted.</u>
10.0	3,305	13.8	Womens and girls clothing.
20.0	6,610	44.9	Boot and shoe factories.
30.0	9,915	84.9	Jam, canned fruit, etc.
40.0	13,220	114.9	Distilleries and wineries.
50.0	16,526	131.6	All other metal products.
60.0	19,831	152.0	Other chemical industries.
70.0	23,136	211.8	Industrial, mining and construction machinery.
80.0	26,441	300.0	Compound cooking fats.
90.0	29,746	1044.9	Paper and paperboard
100.0	33,051	3472.4	Motor and other spirits etc.

The table shows that the difficulty (and hence the excess cost) involved in diverting industries, at first increases more than in proportion to the percentage of the total average annual increase in employment which is diverted. For instance in order to divert 10.0 per cent of the 33,051 total increase in employment it is necessary to go down the list only as far as the 'women's and girls clothing' sector which has a divertibility index of 13.8, if the entire increase in the sectors listed down to this one are diverted. If the diverted percentage is doubled to 20.0, however, it is necessary to go down as far as the 'boot and shoe factories' sector which has a divertibility index of 44.9, more than three times as large as that of 'women's and girl's clothing'. As the diverted percentage increases by half from 20.0 to 30.0 the divertibility index almost doubles from 44.9 to 84.9. Thus the divertibility index (which is directly related to the marginal excess private costs of diversion) rises quite rapidly as the diverted percentage of employment is increased.

Diverting employment in the clothing industry is a very much easier proposition than in the boot and shoe manufacturing industry, and the excess private costs of diverting all additional employment in the latter would doubtless be very considerable in absolute terms. Table 34 shows that the marginal excess private costs of diverting employment in the boot and shoe sector are three times as great as in the women's and girl's clothing sector. To reach a diverted percentage of 50.0 a good proportion of the large 'all other metal products' sector would have to be diverted,<sup>1</sup> even if all additional employment in all the industries listed above 'all other metal products' were diverted as well. The marginal excess private cost of reaching this level would, therefore, probably be very large in absolute terms and is certainly much higher than at a level at which it is still possible to concentrate to a great extent on diverting employment in various branches of the clothing and textiles industries. For instance if 10 per cent of additional employment were diverted this could, under our present assumptions, be achieved almost entirely by diverting employment in the

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1. This can be seen by examining Table 33.

clothing industry as Table 33 shows. The next 10 per cent of diverted employment would incorporate additional branches of the clothing industry, but other sectors, apart from clothing, would also have to be diverted so that excess costs would begin to rise fairly steeply.

Under the assumptions we have made then the graph and Tables 33 and 34 may be regarded as showing the 'supply schedule' which faced the Permanent Committee in its capacity as a 'buyer' of border areas employment in the period 1959-60 to 1965-66. Table 34, for instance, shows that if they had diverted 50.0 per cent of the average annual increase in total manufacturing employment between 1959-60 and 1965-66 the index of marginal excess private costs (divertibility index) would have been almost 10 times as great as in the 'women's and girl's clothing' industry, and that at this relative cost the average annual volume of diverted employment would have been 16,526.

There are, however, certain reasons to believe that the graph and tables 33 and 34 considerably understate the marginal excess private costs involved in diverting any particular percentage of the increase in total manufacturing employment. Firstly, our list includes in fairly favourable positions sectors like 'saltworks' and 'distilleries and wineries', which escaped elimination in the preceding section but which are clearly completely placebound. Also, though not as strongly tied to particular natural resources, the efficiency of a sector like 'optical and photographic goods' would obviously be seriously impaired if diverted from the major market centres. These are obvious cases but others like 'electrical machinery and motors', and as we have already noted, 'all other metal products' are also to a great extent tied to the major markets.

Secondly, our assumption that the marginal excess private costs in each sector are constant, so that we would divert the whole of the annual employment increase in the industry at the top of the list in Table 33, then one below it, and so on, obviously understates the rate at which excess costs rise as the percentage of diverted employment increases. It is clear, for instance, that the entire annual increase in employment in the textiles industry could not be diverted unless all

the expanding textiles firms already established outside the border areas either shifted lock stock and barrel to the border areas, or established branch plants in those areas. In fact, then, efforts to divert employment would have to be confined, in the main, to new firms, and since the additional employment generated by these is only part of the total increase, it would probably be an extremely difficult task to divert 50 per cent of this total increase.<sup>1</sup> Thus, to have diverted 50.0 per cent of 33,051 additional jobs, that is 16,526 jobs, we should probably have had to go considerably further down the list of industries, intervening in more and more unsuitable industries, than the estimate based on our assumptions suggests. Though we do not possess adequate data about the absolute size of marginal excess private costs, it appears from the sort of industries further down the list suggests that the costs would probably be extremely high.

Furthermore, it should be noted that some increase in border areas employment takes place without Government intervention and, as our discussion in chapter 4 showed, the border areas employed 12.2 per cent of the industrial labour force in 1959-60. The diversion of industries involves persuading firms to establish themselves in the border areas when they would not otherwise have done so. That employment in each sector which would have arisen spontaneously in the border areas is, therefore, by definition not divertible, so that to divert any particular percentage of the total average annual increase in manufacturing employment involves bringing within the scope of planned decentralisation still less suitable industries than Table 33 suggests.

Thirdly, it seems that the heavier industries, appearing lower down the list of sectors in Table 33, are growing more rapidly than those higher up the list. Table 35 below gives the percentage increase in employment between 1956-57 and 1962-63 in industries grouped according to the value of their divertibility indexes.

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1. See chapter 10 below for a fuller discussion of this issue.

Table 35

Percentage Increase in Employment between  
1956-57 and 1962-63 in Manufacturing Industries Classified

According to Divertibility Index

<u>Divertibility Index</u>	<u>Proportionate Contribution of Industries in Group to Total Manufacturing Employment in 1960-61</u>	<u>Percentage increase in Employment 1956-57 to 1962-63</u>
8.1 - 44.9	20.4	20.7
49.0 - 111.7	19.5	22.8
114.9 - 152.0	20.2	29.2
152.2 - 300.0	20.2	20.9
301.2 - 3472.4	19.7	27.9

Notes: The figures in this table relate to all the sectors listed in Table 33 excluding the widely dispersed ones which appear in parenthesis. The percentage increases in employment are derived from figures in Industrial Census 1956-57 (Special Report No. 240) and Statistical Year Book 1966, pp. M-30 to M-37.

The sectors with divertibility indexes between 114.9 and 3472.4 (that is the less easily divertible industries), which contributed 60.1 per cent of employment in the manufacturing sectors under consideration in 1960-61, grew more rapidly than the industries with divertibility indexes below 114.9 (that is the industries involving smaller marginal excess costs of diversion). It appears, therefore, that the assumption made above that increases in employment between 1959-60 and 1965-66 were distributed between individual sectors in exactly the same proportions as was total employment in 1960-61, understates the marginal excess private costs of diverting any particular percentage of the average annual increase in manufacturing employment.

The tendency for the less easily divertible industries to grow more rapidly than the others is evident also from statistics on the rate of growth in industrial production between 1957 and 1965 as given in Table 36.

Index of the Physical Volume of Industrial Production 1965.  
and the Divertibility of Certain Major Industrial Sectors

<u>Name of Sector</u>	<u>Index</u> (1956-57=100)	<u>Weight</u> (1965)	<u>Divertibility Index</u> <u>of Major Parts of Sector</u>
Products of petroleum and coal	311.0	2.40	3472.4
Transport equipment	258.1	4.50	Not available
Textiles	250.1	5.00	32.9, 88.4, 128.4
Miscellaneous	218.6	2.40	..
Pulp, paper and paperboard	264.6	2.46	1044.9
Printing	210.2	4.00	Not divertible
Electrical machinery	202.7	4.70	118.0
Base metals	199.8	8.70	1103.2
Metal products	187.7	9.60	131.6
Machinery	184.0	5.40	211.8
Chemicals	179.4	9.10	147.9, 261.5 408.2, 613.5
Non-metallic mineral products	177.9	5.90	1597.6 and not divertible
Wood products	146.3	2.20	Not divertible
Clothing	144.4	8.30	13.2 and 13.8
Food	142.0	14.30	Wide range
Rubber	137.5	2.60	177.3
Furniture	134.1	1.90	Not divertible
Leather	118.9	.50	192.1

Source: Based on information contained in Statistical Year Book, pp. M-49 and M-50.

These sectors, which in 1965 had a combined weight of 93.96, are arranged in descending order of the rate of growth of industrial production. It is worth noting that generally the most rapidly growing sectors are the least easily divertible, that is, have the highest divertibility indexes. The clothing industry, the largest of the relatively easily divertible industries, has in recent years been the slowest growing of all the significant manufacturing sectors apart from food. Of the lightish industries only the rate of growth of textiles compares favourably with that of the fastest growing sectors. But even within this sector only the hosiery and other knitted clothing branch had a particularly low divertibility index (32.9) and the largest sector 'spinning weaving and finishing of other woollen products' had a divertibility index (128.4) which was high relative to clothing. The textiles industry is by no means completely footloose. For the rest the most significant of the fast growing sectors like products of petroleum and coal, pulp and paper, base metals electrical machinery, machinery, and chemicals have high divertibility indexes, which suggests that the costs of diverting them would be extremely high. The same probably holds for the transport equipment industry, though the writer has not been able to obtain the information necessary to calculate the divertibility index for this industry.

Changes in the divertibility of manufacturing industry as a whole clearly depends on the relative rates of growth of industries with favourable and unfavourable divertibility indexes. The figures given in Tables 35 and 36, and our discussion of them, suggest that the divertibility of manufacturing industry as a whole is tending to decrease, and that the ability of the Government to divert any particular volume of additional industrial production is not improving with the passage of time.

Generally, then, the assumptions made in deriving the graphical relationship between the divertibility of industries and the percentage of total employment diverted, and in compiling Table 34, seem to put the prospects for government intervention in a considerably more favourable light than is actually warranted. Once they are removed, as we

have seen, the general impression gained from the analysis that the marginal excess private cost of diverting industries rises steeply, is reinforced rather than weakened. The 'supply curve' depicted in our graph tends to understate the marginal excess private cost of diverting any particular percentage of increased manufacturing employment.

In this connection too, there is the fact noted earlier that the excess costs involved in diverting industries depend on the particular location chosen by the Government. The excess costs of diverting industries from Pretoria to Rosslyn or from Durban to Hammarsdale are likely to be relatively small. The diversion of industries from any of the major industrial areas to border areas in the Ciskei, which are less well situated in relation to the larger market concentrations and to supplies of primary raw materials, is likely to be rather more costly. Thus the greater the proportion of employment diverted to centres more remote from the metropolitan areas, the more steeply will our 'supply curve' rise. Any tendency to concentrate to a greater degree on such areas in the future, therefore, will tend to magnify the costs of planned decentralisation.

Finally, it must be emphasised that the relationship established above between the diverted percentage of additional industrial employment refers only to certain manufacturing sectors. As was mentioned it excludes all the residentiary and widely dispersed activities listed in Table 31, all branches of the motor vehicle industry and the personal services sector. The marginal excess private costs of diverting a certain percentage of total manufacturing employment is, therefore, greater than that of diverting the same percentage of employment in the industries included in our calculations. Furthermore, if we were concerned with the diversion of a particular percentage of all secondary industry the construction and electricity sectors have to be included, and these sectors are not divertible.

#### Inter-industry Relationships and the Divertibility of Industries.

The interdependence between activities may tend either to increase or decrease the costs of diverting various industries to the border areas. It is possible that the ranking given above, which is essentially derived

from a series of rather abbreviated industry by industry comparative cost studies would be altered if inter-industry relationships were taken into account.

In some cases a common location with plants within the same industry is found to be most economical because of, for instance, special facilities and services, including skilled labour, and advice shared in common. These industries, therefore, tend to be highly localised, and are often characterised by high localisation coefficients.

If an industry is highly localised at present because of strong interdependence between firms within it (that is, because of significant external economies) it may therefore be difficult to induce single new plants to establish in areas outside of those in which the main concentration already exists. In such cases if decentralisation is to succeed a drastic wholesale transference of a number of existing plants in the industry may be necessary, so that the industry remains highly localised, but in a different region.

In the highly industrialised countries of the world there are several striking examples of extremely localised industries e. g. the textiles industry of Lancashire and Cheshire, the metal industries of Birmingham in the United Kingdom and the manufacturing belt of the United States, the clothing industry of New York, London and Paris, the footwear industry of New England, and the chemicals industries of New York and other Middle Atlantic States of the United States.

Thus in the South African clothing industry, which is apparently one of the most easily divertible manufacturing industries, gauged in terms of lightness, labour intensity and type of labour, there seems to have been certain important advantages in being concentrated in one or two large centres. The agglomeration economies which result in the marked regional concentration of the clothing industry, tend at least in part to offset the advantages of cheap labour in the rural areas.

External economies, however, may also play a part in industries for which the localisation coefficient is relatively small. Apart from plants within the same industry tending to seek a common location due to the external economies this results in, plants in one industry may be strongly linked to producers in other industries. Thus even industries which appear to be easily divertible in terms of the criteria used in the

previous section, may be prevented from developing in the border areas because of strong linkage to producers in the other industries, and the latter may be tied to markets or materials in the metropolitan areas.

It is possible then, that in some cases industry by industry comparative cost studies which do not take into account inter-industry relationships understate the marginal excess private costs of diversion. On the other hand, as we showed in chapter 5, there are some industries which may seem unsuitable for establishment in the border areas when considered individually, but which, when combined with other activities may appear to be suitable. Incorporation of inter-industry relationships into the analysis may, therefore, tend either to increase or decrease the marginal excess private costs of diverting a particular industry, as compared with calculations which neglect these relationships. But there does not seem to be any way of telling whether the incorporation of inter-industry relationships tends systematically to raise or lower the costs of diverting manufacturing industries. Thus we cannot say whether the curve depicting the relationship between the diverted percentage of additional employment is raised or lowered, made steeper or flatter where inter-industry relationships are taken into account. There does not, however, appear to be any reason why it should systematically have one effect or another on the marginal excess costs of diverting any particular percentage of additional employment.

#### Marginal Excess Social Costs.

Because of our inability to quantify external effects the discussion of this chapter has been concentrated on the private rather than social marginal excess costs of diverting manufacturing employment. In terms of the diagram presented in chapter 6 we have attempted to develop an index of the disparity between  $PS_R$  and  $SS$  rather than between  $PS_R$  and  $ST$ , except that in the graph given in this chapter, employment is measured on the horizontal axis rather than industrial production. The private excess marginal costs may exceed the social

costs if there are positive external effects associated with border areas industrial production. How much lower or higher the curve of marginal social excess costs will be we cannot say until the external effects have been isolated and measured, but as we have emphasised there is no clear evidence that the disparity between private and social excess costs is significant. Whatever the case may be in this regard, however, a steeply rising marginal excess private cost curve implies a correspondingly steeply rising excess social cost curve. For, there is no reason to believe that the net external economies associated with industrialisation in the border areas are proportionately greater per unit of employment in those industries in which the excess private costs of diversion are great than in those in which they are small. Thus our present analysis suggests that the marginal excess social costs of diverting employment also rise sharply as the volume of diverted employment increases.

#### Concluding Remarks.

The results obtained provide additional support for the following view, stated by Hutchison:

"It seems uncertain just how far there is diminishing social utility or welfare from the intensive fulfillment of the various objectives of policies. But there are clearly, over certain relevant ranges, increasing opportunity costs - in terms of foregoing other objectives - of fulfilling one particular objective more intensively. At lower levels of fulfillment objectives may be compatible or complementary. But opportunity costs often seem to rise sharply at the higher levels".<sup>1</sup>

It cannot be expected that the ranking of industries given in Table 3<sup>3</sup> will reflect perfectly the correct ordering of sectors in terms of the ease or difficulty with which they may be diverted. Determination of the exact order awaits a lengthy series of detailed comparative cost studies of individual industries, a task which requires manpower and financial resources on a scale possessed only by the Government in this

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1. op. cit., p. 181.

country.

If a broad view of the problem is to be obtained, however, simplifying assumptions of the sort which have been made in this chapter are indispensable. It is suggested that the procedures adopted provide an ordering of industries which is in fact roughly what one would have expected on the basis of what is generally known about the locational characteristics of different industries. Apart from giving an indication of the relationship between the rate at which the costs of diversion increase as the volume of diverted employment increases, it may be seen as a guide to those industries upon which attention should be concentrated if any given employment goal is to be reached at the lowest cost, and for which more detailed individual comparative cost studies might be required.

The need for such individual comparative studies, and perhaps also of "industrial complexes", in view of the phenomena discussed in chapter 5, is obvious if a full appreciation of the absolute marginal costs, as distinct from the marginal costs of diverting employment in one industry relative to that of another, is to be obtained. Considering the apparently substantial scale of induced decentralisation in South Africa the amount of work of this sort which has been undertaken is grossly inadequate. The Permanent Committee and the Industrial Development Corporation have undoubtedly gained some experience of the magnitude of the costs of decentralisation in the course of implementing Government policy. But, as is shown in the following chapter, the number and variety of industries assisted so far, and their quantitative significance measured by the additional employment generated, has been relatively small, compared with what seems to be contemplated.

The following remarks by Gavin Macrone are of some interest in this connection:

"An essential part of regional policy, however, must be to determine the costs of interfering with the natural pattern of growth by regions and if possible to indicate what regional distribution of

growth would give minimum costs. It is obviously not adequate to leave the decisions on the location of economic activity entirely to businessmen, since their actions will naturally be based on the industrial costs which affect them. If the state intervenes in such decisions, its case for doing so is that it can take into account all the other aspects of cost both economic and social which do not affect the firm. But this intervention may do more harm than good if the state has no analysis of costs to show the effect of diverting growth to a variety of different locations".<sup>1</sup>

Finally, it is extremely important to note that even if, as our analysis suggests, there is relatively little scope for diverting industries without incurring excess private and social costs, and the excess costs of diversion rise steeply with the volume of diverted employment, the possibility of a rapid rate of growth in the border areas is not necessarily ruled out. For as was shown above, certain heavy industries, highly unsuitable for diversion to the border areas, have featured prominently in the industrial development of the border areas in the past decade and even earlier. Some of these such as paper and paper board, sugar mills, condensed milk and milk powder, and tanning extract appear near the bottom of Table 33 and have very unfavourable divertibility indexes. Certain branches of the fertilizers, iron and steel and 'other basic industrial chemicals' sectors, which are in the dozen least easily divertible industries, are also reported to have good potential for future expansion in the border areas. If either the necessary markets or materials or both are found in the border areas there is no reason why heavy, capital intensive industries should not operate successfully there.

The diversion of industries, as has been stressed repeatedly, refers to intervention by the Government aimed at inducing firms to establish themselves in the border areas when they would otherwise have chosen locations elsewhere. A low overall divertibility of manufacturing employment is, therefore, perfectly consistent with rapid border areas

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1. 'Next Steps in Regional Planning', in T. Wilson (Editor), Papers on Regional Development, (Basil Blackwell, Oxford), 1965, pp. 126-127.

development. Low divertibility is, indeed, perfectly consistent with a spontaneous tendency for the degree of regional concentration of manufacturing industry to fall, that is for the proportionate contribution of the less industrialised areas to manufacturing employment and output to increase.

It is clear, however, that if a substantial increase in the proportionate contribution of border areas to manufacturing employment is to take place, either a substantial proportion of additional manufacturing employment must be diverted, or there must be a substantial spontaneous tendency towards decentralisation, or the combined effect of these two processes must be sufficient to achieve the desired result. The question of what might be expected to happen to the regional concentration in the absence of Government intervention is, therefore, crucial. It was with this question that we were mainly concerned in chapter's 3 and 4 above. If the Schumann Committee's prediction that "the present tendency to centralise will continue unless positive steps are taken to promote sound, economic decentralisation" is accurate, the burden of bringing about a substantial increase in the proportionate share of the border areas in the country's manufacturing employment, falls squarely on Governmental measures to divert to and, generally, induce industrial expansion in the border areas. On the evidence examined in chapter 3 too, there did not seem to be any reason to expect a substantial, rapid change in the locational pattern without government intervention. In the light of this, and considering the scale of decentralisation apparently desired by the Government, the assessment of the effects of Government intervention in the location of industry is a problem of some importance. Thus while the emphasis in chapters 5 to 8 of this study has been on the apparently narrow question of the diversion of industries through Government intervention, when the findings in this regard are considered in conjunction with those of chapters 3 and 4, the perspective of the study is broadened considerably.

## CHAPTER 9

### STATE INTERVENTION 1960 - 1967.

The analysis contained in the foregoing eight chapters of this study provides a basis for the following assessment of decentralisation policy in the period 1960 - 1967. This period begins with the announcement by the Government in mid-1960 of its approval of certain 'positive' measures for encouraging border industries, together with an assurance that "no compulsory measures will be applied to force industrialists to establish themselves in Border Areas", and ends shortly before the Physical Planning and Utilization of Resources Act No. 88 of 1967 had been written into the statute books. The principal task of this chapter is to trace out the events which lie between these two important milestones in the evolution of Government policy relating to the location of industry. The implications of the system of industrial licensing introduced by the Physical Planning and Utilization of Resources Act are examined in the next chapter.

#### 'Positive Measures' for Industrial Decentralisation.

The preference for intervention via the market mechanism, rather than by means of physical controls, which is reflected in the Government's policy statements of mid-1960, was also expressed by both the Tomlinson and Viljoen Commissions. The Tomlinson Commission laid down the principle that "in a policy of decentralisation to promote industrialisation of the Bantu areas, the aim should not be to force industrialists to move into the Reserves but to attract them voluntarily by providing facilities such as transport, power, water and urban development".<sup>1</sup> The Commission felt that the application of a policy of licensing might "give rise to all sorts of undesirable repercussions", and it therefore, declared itself "unable to support it".<sup>2</sup>

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1. Tomlinson (Summary), p. 136.

2. ibid, p. 139.

Instead, the Tomlinson Commission recommended a number of positive measures, which, in view of subsequent experience of attempts to decentralize industry, there is some point in noting. The measures recommended were the creation of social overhead capital, loans to prospective industrialists, direct participation by the Government in certain cases, the establishment of industrial estates, the dissemination of information relating to the opportunities and facilities available, and the promotion of "co-operative action in industry" by means of a Bureau for Small Business. The provision of social overhead facilities, they argued, "must not await the establishment of industries but ... at least some of them should precede industrial development and ... timely planning of these facilities should be undertaken".<sup>1</sup> The commission, however, explicitly rejected the use of tariff policy to foster industries in Bantu Areas, and was also opposed to the payment of direct subsidies to "individual enterprises situated in specific areas" since it might "lead to all sorts of adverse repercussions in regard to those enterprises which are not subsidised".<sup>2</sup> Indeed it appears that they were opposed to any form of preferential treatment for industries in the Bantu areas.<sup>3</sup> The Commission, therefore, seems to have believed that it was merely the lack of social overhead capital, factory buildings and credit facilities which stood in the way of large scale industrialisation of the Reserves.

There is little doubt that the Tomlinson Commission seriously underestimated the difficulty of decentralizing manufacturing production. They appear to have thought that the manufacturing sector consisted very largely of extremely 'mobile' or 'footloose' activities, operating so close to the margin of transference that virtually only the provision of basic facilities was necessary to persuade a significant number of enterprises to exploit the potential, but unutilized, natural advantages of the

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1. op. cit., p. 138.

2. ibid., p. 139

3. ibid., p. 139

Reserves. Whatever their actual views may have been in this regard, experience in the 1960's, when substantially stronger inducements were being offered to border industries, suggests that the Commission's recommended measures were no match at all for the ambitious goals which they sought to attain. This is especially so in view of the fact that the Commission's majority report visualised development inside the Bantu areas rather than in the somewhat better placed border areas.

The Viljoen Commission, too, recommended that only 'positive measures' be used to encourage the establishment of factories in the border areas, and listed five ways in which a greater degree of decentralisation might be achieved.<sup>1</sup> These proposed measures resemble those suggested by the Tomlinson Commission in that they do not really involve preferential treatment for border industries. The provision of social overhead capital, the maintenance of the existing locational advantages of the border areas, the dissemination of information, and the elimination of unwarranted discrimination against border areas in the railway rating structure, are the sum and essence of the Viljoen Commission's proposals.

This Commission, unlike the Tomlinson Commission, did not establish any clear cut employment target, but it seems that it envisaged a substantial programme of border areas industrialisation. Underlying their reasoning too, therefore, there is the apparent belief that the location of industry is within fairly broad limits an arbitrary process, so that relatively mild forms of intervention can produce significant results. The Viljoen Commission's optimism regarding the responsiveness of manufacturing activities to their proposals is further emphasised by the condition which they laid down, that these positive measures should be used to foster industries only "as long as these do not involve uneconomic considerations".<sup>2</sup>

As we have noted already, the Government in mid-1960 still adhered to the principle, laid down in the reports of the two commissions

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1. Commission of Enquiry into Policy Relating to the Protection of Industries, U.G. 36/1958, p. 55, para. 459.
  2. op cit., p. 55, para. 454.

referred to, explicitly stating that no 'compulsory measures' would be employed. It added that "there can be no question of a large scale shifting of existing factories to Border Areas; which would disrupt the countrys economy".<sup>1</sup> Nevertheless the positive measures announced in 1960 went very much farther than those proposed by the Tomlinson and Viljoen Commissions, and in effect involved a system of subsidies to specific firms in the border areas.

But even the measures of 1960, after about three years of experience on the part of the Permanent Committee, came to be regarded by the Government as inadequate for the task in hand. Observers who expressed doubts about the effectiveness of border industries policy in the early stages of the Permanent Committees activities, had been told that the lack of bouyancy in the economy as a whole was hampering the Governments efforts, that it takes a considerable time to get a project to the production stage from the moment it first appears on the drawing boards, and that a certain amount of time is necessary before a programme of decentralisation gains momentum.<sup>2</sup> Thus immediate success could not be expected. Nevertheless, by mid-1963 the Government itself had come to the conclusion that "more persuasive measures" were needed, and accordingly these were announced in May 1964. Though these "more persuasive measures" involved more generous allowances, the types of incentives involved were essentially the same as those introduced in 1960. It is noteworthy that even at the end of 1963 the Government still felt itself to be in a position to declare that no form of compulsion was contemplated.

The inducements approved in 1960 together with the changes made in 1964, may be conveniently listed under five separate headings

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1. Contained in the statement by the Prime Minister arising from the meeting of the Economic Advisory Council, July 26-27, 1960.
  2. See, for instance, the Permanent Committee report, dated 25 October 1962, on progress made in the border areas development programme.

as follows:

1. Social Overhead Capital.

The actual provision of public services is an essential prerequisite for industrial development, and indeed of economic development of any sort. Without adequate facilities of this kind it would be impossible for industries to establish themselves in border areas, even if the latter were in other respects the most suitable locations. Desirable structural changes in the geographical distribution of manufacturing industry would thus become impossible. Investment in social overhead capital, to provide the necessary public services is, therefore, a well accepted function of the government, the provincial administrations and local authorities. The mere fulfillment of this function, however, does not necessarily confer any special advantages on the areas in which such investment is undertaken, and cannot be regarded as necessarily involving a special incentive to border area industrial development. Under this heading of social overhead capital, therefore, we are interested only in the Government's attempts to give border areas preferential treatment, to supply them with public services on particularly favourable terms by means of subsidies of one form or another. In this connection the following measures are relevant:

- a) It was announced in 1964 that the Treasury was prepared to grant loans at low rates of interest to local authorities to assist them in providing shunting yards and railway sidings at "certain selected points of growth". Since this reduces the amount of revenue which must be raised from local rates in order to pay for these facilities, it represents a form of indirect subsidy to border industries.
- b) It was also announced in 1964 that the Department of Water Affairs would supply water to municipalities in border areas at a price not including the capital costs of providing the water. This measure in effect makes water available to border industries on the same terms as those applying to farmers.
- c) Where necessary, water is supplied by the Department of Water

Affairs directly to large consumers at special tariffs. For example, at Hammarsdale water is made available from local sources and ultimately from the Midmar Dam at 15 cents per 1,000 gallons. This charge includes reception, treatment and disposal of all factory effluents.

The Permanent Committee will apparently also negotiate with the Electricity Supply Commission for the provision of power to industrial undertakings on a subsidised basis in exceptional cases.

d) Financial assistance up to R10,000 per property may be extended to industrialists in the provision of houses for Key White personnel employed in border industries.

## 2. Tax Concessions.

a) Increased investment allowances in respect of depreciation on machinery plant and buildings.

Provision was made in the Consolidated Income Tax Act zNo. 58 of 1962 for the granting of the following investment allowances to manufacturing concerns in border areas: (i) A maximum of 30 per cent on new or unused machinery and plant, compared with the maximum of 20 per cent applicable to firms in other areas. This allowance could also be granted on used machinery, except that the cost of such used machinery might not be greater than the original cost of the machinery or plant, when new, less depreciation already written off in previous years in terms of the Income Tax Act. (ii) A maximum of 20 per cent on factory buildings, compared with the maximum of 10 per cent applicable to firms in other areas.

In May 1964 the maximum investment allowances on machinery and plant on the one hand, and factory buildings on the other hand, allowable to manufacturing concerns in the border areas, were raised to 35 and 25 per cent respectively. An investment allowance of 35 per cent on machinery, for instance, means that a firm can write off 35 per cent of the cost of machinery in the year in which it comes into use, in addition

to the depreciation allowance permitted in that year in terms of the income tax code for normal wear and tear, without any reduction in the percentage allowances permitted in succeeding years. Thus an investment allowance of 35 per cent in the year of acquisition represents a net addition to the total allowance granted over the life of the equipment. The total depreciation allowances permitted for tax purposes over the lifespan of the equipment taking into account both the investment allowance and the normal wear and tear allowances, is thus 135 per cent.

Before March 1966, firms outside the border areas were entitled to an investment allowance of 20 per cent on machinery and plant. Thus between May 1964 and March 1966 the additional investment allowance on machinery and plant which might be granted to border industries was 15 per cent. After March 1966, however, the investment allowance on machinery and plant in firms outside the border areas was abolished, so that the net advantage of border industries in this respect became the full 35 per cent allowed to them.

Likewise since March 1966 firms outside the border areas have not been entitled to the investment allowance of 10 per cent on factory buildings. Thus the additional investment allowance currently available to border industries is equal to the full 25 per cent mentioned above.

b) Initial allowance in respect of used machinery and plant.

The Consolidated Income Tax Act No. 58 of 1962 also makes provision for an initial allowance of 15 per cent in respect of used machinery and plant, subject to certain conditions laid down in the Act. Prior to this the initial allowance was given only on unused machinery and plant. In 1964 this initial allowance was increased from 15 to 30 per cent. This means that a firm can write off 30 per cent of the cost of machinery in the year of acquisition, in addition to any investment allowance and the allowance for normal wear and tear laid down in the Act. Unlike an investment allowance, however, the initial allowance in the first year is offset by smaller allowances in succeeding years, so that no more than the original cost is written off over the life of the equipment. Nevertheless, an initial allowance, by permitting a firm

to write off its fixed capital more quickly than it would otherwise be able to do for tax purposes, increases the present value of the firms net earnings. It should be noted, however, that this can confer a significant advantage on the firm only if it succeeds in making profits in the early years of its operations in border areas.

c) Allowance in respect of costs of power, water and transport.

Both newly established firms and expanding ones in the border areas may be permitted to deduct a maximum additional amount equal to 10 per cent of the cost of power, water (unless supplied direct by the Department of Water Affairs) and transport, for a minimum period of five years.

d) Allowances in respect of the costs of moving from other areas to border areas.

Another measure introduced in 1964 provides that firms moving to the border areas from other centres may be allowed to write off, at double the actual amount, the extra administration and manufacturing costs incurred as a result of the move. That is, the firm may be allowed to write off the administration and manufacturing costs incurred at the old site, plus an amount equal to twice the excess of these costs in the border areas site over those incurred in the original location. The tax rebate related to this excess, the size of the excess being determined by the Permanent Committee, applies to each of the first five years of operating in the border areas.

e) Allowance in respect of firm's expenditure on employee's housing.

Industrialists in border areas who incur expenses in connection with the erection of housing for their employees, or in assisting employees with the purchase of housing for their occupation, may be allowed to deduct 35 per cent of such expenses in the first year in which the houses were completed or acquired, and 10 per cent of such expenses in each of the nine years of assessment after that. Industrialists in other

areas may only deduct 25 per cent of such expenses for the year in which the expenses were actually incurred, and none thereafter. It appears though that unless the Act is amended, tax allowances in respect of these expenses apply only in respect of housing erected or purchased before 31st December, 1968.

### 3. Financial Assistance.

#### a) Leasing of fully serviced factory premises.

The Industrial Development Corporation is prepared to erect factory buildings to the specifications of individual firms, and to undertake the provision of all services, including fencing, effluent pre-treatment works, on-site roads, loading bays, parking areas, transformers, electrical distribution, and air conditioning. Lease agreements run initially for 15 years and give the lessee the option to renew or purchase the premises outright at any time during the currency of the agreement.

The rent payable is:

#### (i) for industries other than textile industries:

- 6% per annum on the cost of land and levelling;
- 8% per annum on the cost of the buildings, and
- 13% per annum on the cost of services;

#### (ii) for textile industries:

in certain circumstances for the first five years limited to:

- 2% per annum on the cost of the buildings; and
  - 7½% per annum on the cost of the services;
- thereafter as in (i) above.

The purchase price, if the option to purchase is exercised, is determined as follows:

- (i) during the first 15 years - original cost, plus the cost of replacement and renewal work less depreciation calculated at 2 per cent per annum on the cost of buildings, plus 7½ per cent per annum on the cost of services.

(ii) after 15 years - market value, or the cost applicable if the option is exercised immediately prior to the expiration of the 15 year lease, whichever is the higher.

In addition to factories built to the specifications of individual concerns the Industrial Development Corporation may undertake the construction of general purpose factory buildings in advance of requirements and the provision of the necessary facilities such as roads, rail sidings etc.; in areas outside municipal boundaries. Two of the most noteworthy projects of this sort have been carried out at Rosslyn and Hammarsdale, where industrial estates have been established by the I. D. C.

b) Equity and loan capital.

Manufacturing concerns in the border areas may obtain long term loans at a rate of interest of 6 per cent per annum from the Industrial Development Corporation, whereas in other parts of the country the charges on loans from this source are somewhat higher. In addition the Industrial Development Corporation is entitled to purchase shares in border area undertakings, and has used this power to a considerable extent.

#### 4. Labour Concessions.

a) As we noted in Chapter 7 above, the Government has pledged itself to maintain the principle of wage differentiation in favour of border areas, in so far as this can be justified on grounds of lower productivity and lower costs of living. But it is doubtful whether adherence to this principle can be regarded as constituting preferential treatment for border industries. Indeed as we suggested earlier, in Chapter 7, when setting minimum wages in the border areas there is a good case for taking into account not only productivity and cost of living, but the mobility of workers as well. Nevertheless, it may be noted that the Government is prepared to grant industries in border areas an exemption from Wage Determinations and Industrial Council Agreements.

b) Another advantage under this heading which we also remarked upon in Chapter 7, is that the legal and conventional restrictions on the use of Bantu labour in the border areas in skilled jobs are likely to be substantially less stringent than they are in other parts of the country. Here again, however, it would be rather extraordinary to regard this as a special incentive conferring preferential treatment on the border areas, since all it means is that there are to be fewer legal and conventional obstacles to the efficient use of labour in the border areas than there are elsewhere in the country.

c) The government has also committed itself to the task of raising the productivity of Bantu labour by means of trade schools in border and Bantu areas. In 1964 it was announced that much more attention would be given to the setting up of technical and vocational schools for Bantu workers, who may even receive a subsistence allowance during the period of training. It appears that the training of workers in the border and Bantu areas is seen not only as a device for stimulating border areas development, as such, but also as an important way of coping with the country's skilled labour shortage and helping to maintain the rate of economic growth.<sup>1</sup>

##### 5. Transportation.

a) A committee drawn from the South African Railways and Harbours administration and the Permanent Committee was established in 1964 to make recommendations regarding exemptions from certain provisions of the Motor Carrier Transportation Act, 1930, to enable firms in the border areas to use motor transport more freely than is permitted in other regions.

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1. See, for instance, Department of Planning, Economic Development Programme for the Republic of South Africa 1964 - 69, Government Printer, Pretoria, pp. 77-78

b) Certain concessions in respect of railage rates have been given on an ad hoc basis to a few individual firms. The most significant step taken under this heading, however, was the announcement in April 1964, that all industrial products manufactured in the Transkei and Ciskei border areas and consigned to other parts of the country would qualify for a 10 per cent rebate on railage and on South African Railways road transportation rates. The cost of this rebate is borne by the Treasury, as it has apparently been agreed that the Railways will not grant special railage rates unless they are reimbursed by the Treasury.

#### 6. Customs Tariff Protection.

Where prospective industries for establishment in border areas consider it essential to obtain customs tariff protection for their products, or remissions of customs duty on imported raw materials, they may negotiate with the Board of Trade and Industries for such protection or remissions even before they commence production.

The measures listed above, with the exception of those relating to regional wage differentiation, the relaxation of the industrial colour bar, and tariff protection, comprise an assortment of indirect subsidies which are granted "on a selective" basis to individual regions or firms. They are indirect subsidies in the sense that they take the form of remissions of tax revenue by the State, the provision by some Government departments of a basic service at sub-economic rates to either private enterprise (as in the case of water and rail transport) or to local authorities (as in the case of low interest loans for the construction of rail sidings and water schemes), or the remission of revenue by a Government agency like the Industrial Development Corporation (as in the case of low rentals and interest rates). In the case of the reduced transport charges, the Treasury makes good the revenue foregone by the South African Railways.

With the exception of measures 1(a), 1(b), 4(b), 4(c) and 5(a), assistance is given "on a selective basis" to specific firms establishing themselves in the border areas for the first time, or carrying out extensions to existing plant. That is the concessions which may be given

to individual firms are not granted automatically to all firms investing in the border areas. In other words, in the case of such concessions, they are granted or refused only after consideration of the special circumstances of each individual applicant. While we are told that concessions are given "on a selective basis", however, it is not clear what the basis of selection is, or whether there is an attempt to apply in a consistent way a clearly defined set of criteria. The anomalies and problems, including wastage of resources, which might arise in this connection are touched on later in this chapter after we have considered in turn, in the following three sections, the impact of Government intervention on border areas employment, the actual scale of assistance to border industries in the first  $6\frac{1}{2}$  years of the Permanent Committee's existence, and the efficacy of the present set of positive inducements.

#### The Impact of Government Intervention 1960-66.

In considering the impact of Government intervention on the rate of industrialisation in the border areas between 1960 and 1966, we shall focus attention exclusively on employment statistics, rather than on gross output, net output or capital formation. Apart from the difficulty of obtaining sufficiently reliable information about the other variables, the rate of increase of employment in the border areas is the most relevant consideration, in view of the orientation of the policy.

According to the report of the Permanent Committee for 1966, the increase in manufacturing employment in the border areas between June 1960 and December 1966 was 57,100 of whom 44,600 were Bantu. That is, in these  $6\frac{1}{2}$  years manufacturing employment in the border areas increased by an average annual amount of 8,784. Since the number employed in manufacturing industry in the country as a whole increased by an average annual amount of about 46,483 between 1960

and 1966,<sup>1</sup> it appears that some 18.9 per cent of the national increase in manufacturing employment took place in the border areas in the period under consideration.

Table 37, which has been compiled from information contained in the Permanent Committee's annual progress reports, shows the volume of additional employment in the border areas at various stages since June 1960. Where available, increased employment in firms actually assisted by the Permanent Committee is given separately from the corresponding figures for unassisted firms. According to the Permanent Committee's figures, in the period June 1960 to December 1964 employment in assisted firms increased by 24,000 which was 57.1 per cent of the total increase of 42,000. A similar breakdown of additional employment is not available for the whole  $6\frac{1}{2}$  year period, but if we assume that the proportionate contribution of assisted firms was the same in the period June 1960 to December 1966 as the Committee's figures indicate it was for the period June 1960 to December 1964, this would mean that the increase in employment in assisted firms in the full  $6\frac{1}{2}$  year period was about 32,604 out of a total of 57,100. On this basis, then, it seems that the average annual increase in employment in assisted industries in the period June 1960 to December 1966 would have been approximately 5,016 out of a total increase of 8,784.

Can the whole of the increase in employment in assisted firms be reasonably regarded as additional to the increase in employment which would have taken place in those firms had they not been assisted? In its report for 1966 the Permanent Committee makes the following claim: "Over the past  $6\frac{1}{2}$  years Government assistance in one form or another has led to the establishment of 98 new industries. The corresponding figure for expansions of existing undertakings in border areas

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1. See the calculations in Chapter 8 above.

Additional Employment and Direct Investment in Border Areas

Manufacturing Industry from June 1960 to Dec. 1966

Period	Additional Employment				Additional Direct Investment (R millions)	
	Bantu	White	Coloured + Asiatic	Total		
1) Assisted firms only - new plus expansions	June 1960 to Dec. 1961	1,239	72	..	..	3.08
	June 1960 to Dec. 1962	1,850	..	..	..	..
	June 1960 to Dec. 1964	19,000	..	..	24,000	65.0
2) Unassisted firms only - new plus expansions	June 1960 to Dec. 1964	14,000	..	..	18,600	35.0 +
3) Assisted plus unassisted firms - new plus expansions	June 1960 to Dec. 1964	33,000	..	..	42,000	100.0 +
	Jan. 1960 to Dec. 1965	41,000	..	..	52,000	177.0
	June 1960 to Dec. 1966	44,600	..	..	57,100	220.0

Source: Compiled from information contained in the annual Progress Reports of the Permanent Committee for the Location of Industry and the Development of Border Areas.

is 61".<sup>1</sup> Since 98 and 61 was, according to the report, the total number of new and expanding firms respectively, assisted by the Permanent Committee, the statement quoted implies that the whole of the increase in employment in assisted firms should be attributed to Government assistance, and would not have occurred without it.

If we accept this implication of the Permanent Committee's claim as a true reflection of what actually occurred, it would mean that Government intervention was responsible for an average of about 5,016 additional jobs per annum in manufacturing industry in the border areas between June 1960 and December 1966. In other words, it would imply that about 10.8 per cent of the increase in manufacturing employment in the country as a whole in this period occurred in the border areas because of Government intervention. Since the increase in assisted and unassisted border areas manufacturing employment together appears, as we noted above, to have been about 18.9 per cent of the national increase, it would then follow that only about 7.1 per cent of the national increase in manufacturing would have taken place in the border areas without government intervention.

There are, however, reasons for doubting whether Government intervention could in fact have accounted in so large a measure, and spontaneous development in so small a measure, for the increase in manufacturing employment which occurred in the border areas between 1960 and 1966. In the writer's view, it would be most surprising if no increase at all in employment would have taken place in the assisted firms if they had received no help from the Government. While the Permanent Committee's claim implies that only about 7.1 per cent of the country's increase in manufacturing employment would have occurred in the border areas without Government intervention, the combined proportionate contribution of the border and Bantu areas to total manufacturing employment in 1956-7, was 11.7 per cent according to our estimates of Chapter 4, and in 1959-60 was 12.2

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1. Italics not in the original.

per cent. These figures suggest that the proportion of manufacturing employment occurring in the border and Bantu areas together was tending, if anything, to increase even before the establishment of the Permanent Committee. It seems not unreasonable, therefore, to assume that at least 12.2 per cent of the national increase in manufacturing employment would have accrued to the border and Bantu areas together between June 1960 and December 1966, even without the use of special incentives.

As we noted earlier, however, manufacturing employment within the Bantu areas themselves in 1960, was a negligible proportion of the total, and it appears that increases in manufacturing employment in those areas since 1960 have also been extremely small. Thus our assumption, which appears to be a very reasonable one on the basis of past performance, that 12.2 per cent of the national increase in employment would have occurred spontaneously in border and Bantu areas together between 1960 and 1966, implies that a proportion not much lower than 12.2 per cent would have occurred spontaneously in the border areas alone in the same period. Let us, therefore, assume that if 12.2 per cent of the national increase in manufacturing employment occurs in the border and Bantu areas together without assistance, the corresponding proportion for the border areas alone is 11.0 per cent.

Given the latter figure and our earlier calculation (based on the Permanent Committee's estimates of border areas employment, and information published by the Bureau of Statistics on manufacturing employment in the country as a whole), that assisted increase in employment in the border areas amounted to 18.9 per cent of the total increase, it is unlikely that more than 7.9 per cent of the national increase would have occurred in the border areas alone as a result of Government intervention, compared with the proportion of about 11.8 per cent implied by the Permanent Committee's reports. In absolute terms this amounts to an average annual volume of induced border areas employment between June 1960 and December 1966 of 3,672 (i. e. 7.9 per cent of 46,483),

compared with the figure of approximately 5,016 implied by the Permanent Committee's information.

We should consider the possibility that the Permanent Committee's figures underestimate the amount of additional employment which occurred spontaneously in unassisted border industries in the period under consideration. While the Permanent Committee reported giving assistance to 98 new undertakings and 61 expanding ones, during the 6½ year period, and stated that it was "aware of a further 90 new undertakings and expansions of existing undertakings which had been launched in the border areas without assistance", it emphasised that it was not aware of all new industries and expansions which had taken place in the border areas. But it seems highly improbable that the border areas could have obtained significantly more than an 18.9 per cent share of the increase in manufacturing employment between 1960 and 1966. A Bureau of Statistics bulletin dated 15th February, 1967 shows that between the end of September 1961 and the end of June 1964, manufacturing employment increased by 145,510 of which 124,914 or 85.8 per cent of the total occurred in the 10 'economic regions'<sup>1</sup> comprising the country's four main industrial areas.

Whatever the precise volume of Government induced border areas employment may have been between 1960 and 1966, the Permanent Committee reports make no attempt whatsoever to demonstrate the basis of their assumption that the entire increase in employment in assisted firms was due to Government assistance. Since it would be most extraordinary if their assumption was in fact an accurate description of the facts, it clearly requires some justification.<sup>2</sup> In the absence of any convincing

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1. The code numbers of the 10 economic regions are 01, 02, 03, 08, 30, 40, 42, 43, 44.
  2. To take just one example of factors casting doubt on the Committee's assumption, it is reported that East London firms, with the exception of the Wilson Rowntree factory, maintain that the special concessions had little or no bearing on expansion decisions. See the South African Financial Mail, October 13, 1967, pp. 107-109.

attempt to justify the assumption, it is clearly much more reasonable to take it that the actual volume of additional employment attributable to Government assistance in the period June 1960 to December 1966 was less than the approximately 5,016 implied by the Committee's assertion. Our analysis suggests that the actual figure was probably closer to 3,000 than to 5,000, and is based essentially on the assumption, which appears to be much more reasonable than the Committee's, that the border areas would have secured a proportion of total additional employment at least as great as that attained in the past even without special help from the Government. This question, regarding the impact of Government intervention in the first  $6\frac{1}{2}$  years, has a bearing on the prospects for large scale industrial decentralisation in the future, as we shall note in the next section, and it is unfortunate that the Permanent Committee's reports treat it so cavalierly.

It is interesting to note that not only does the Permanent Committee seem to claim that all the additional employment in assisted firms was in fact due to the assistance received by the firms, but their report for 1966 seems to imply that Government intervention was responsible to a significant degree for additional employment in unassisted firms. For immediately after stating that 90 new undertakings and expansions of existing undertakings were launched in the border areas without assistance, the report asserts: "It is clear that having created confidence in the border areas, Government expenditure and other assistance have resulted in considerable investment by the private sector in those areas." However, if a significant proportion of the increased employment in unassisted firms and the whole increase in assisted firms was due to Government intervention, the implication is that without such intervention still less than 7.1 per cent of the total increase in manufacturing employment would have taken place in the border areas. In the light of our earlier remarks, however, it is clear that this is highly improbable.

In view of the importance of its implications, yet another remark by the Permanent Committee, in its report for 1966, warrants attention. They say: "There are indications that the climate for the establishment

of industries in the border areas has improved considerably, particularly since 1964." It is not clear upon what this assertion is based, but it does seem to suggest that some sort of 'take off' point had been reached and that in future the stimulation of border areas industrialisation would be easier and hence less costly. Is there any sign that the improved climate to which they refer manifested itself in an actual increase in the number of new establishments and expansions or in the rate of increase of employment?

The number of assisted and unassisted new and expanding firms in the border areas is given below:

	June 1960 to December 1964.	June 1960 to December 1966.
New undertakings established with assistance	60	98
Expansions carried out with assistance	33	61
New undertakings established and expansions	28	90

These figures, which are derived from the Permanent Committee's own reports, indicate that in the first  $4\frac{1}{2}$  years of its existence the Committee assisted 60 new undertakings, and in the next two years 38 undertakings, so that the average number per annum was 13.3 in the former period and 19 in the latter. The corresponding average annual figures for assisted expansions were 7.3 and 14. The increase in the number of unassisted new and expanding firms after 1964 was still greater than this, being 6 per annum in the first  $4\frac{1}{2}$  years of the period under consideration and 31 in the last two.

These figures seem to bear out the Permanent Committee's contention, but they must obviously be interpreted with care. Firstly the number of new undertakings plus expansions is an extremely rough indicator of the magnitude of progress in terms of output or employment in the border areas. Secondly, even if changes in the number of unassisted new establishments and expansions were a reliable indicator

of real growth, it is by no means clear that this is due to a long term improvement in the climate of confidence in the border areas, as the Permanent Committee's statement implies it is, rather than to cyclical forces.

Consider the way in which employment increased over the  $6\frac{1}{2}$  year period. In the first  $4\frac{1}{2}$  years, that is to the end of 1964, manufacturing employment increased by 42,000 or an average amount of 9,333 per annum, whereas in the next two years together it increased by 15,100 which gives an average of 7,550 per annum. Thus it appears from the Permanent Committee's own figures that the average rate of growth was faster before the end of 1964 than after. Indeed it appears that the largest increase for any one year occurred in 1964 itself, and that growth was particularly rapid in the second half of 1964.

The Permanent Committee's own figures, therefore, do not suggest that the climate for the establishment of industries in the border area actually produced a rate of growth greater than in the period June 1960 to December 1964, even if certain unrevealed criteria permit one to say that this climate improved considerably after 1964. Indeed, the evidence seems more consistent with the possibility that variations in the rate of industrial expansion in the border areas have been determined to a greater extent by cyclical movements in manufacturing employment in the country as a whole than by increased incentives, or by an improvement in the climate for investment in the border areas, which abruptly increased the readiness of businessmen to invest in the latter rather than elsewhere.

TABLE 38

Manufacturing Employment in South Africa 1959-60 to 1965-66

	<u>Number Employed</u>	<u>Percentage Increase</u>
1959-60	636,530	-
1960-61	657,129	3.2
1961-62	678,304	3.2
1962-63	755,807	11.4
1963-64	845,800	11.9
1964-65	929,500	9.9
1965-66	963,800	3.7

Source: 1959-60 to 1964-65: Statistical Year Book 1966, pp. H-33 and H-38; 1965-66 figure Bulletin of Statistics, Quarter Ending September 1967. Table B-7. n. 20.

The variations in the rate of increase in manufacturing employment in the country as a whole, shown in Table 38 above, conform closely with the way in which employment increased in the border areas over the same period. The rate of increase in manufacturing employment appears to have been greatest between 1962-63 and 1963-64.

Likewise, the evidence does not show that there was a long term improvement in the confidence of the private sector in those areas after 1964, since border areas employment increased much more slowly in 1966 than in 1965, and this decline, as the table shows, coincides with a marked reduction in the rate of increase in manufacturing employment in the country as a whole. Cyclical variations in general business conditions, therefore seem to have been the predominant influence on variations in the rate of industrialisation of the border areas.

The most important conclusions which may be drawn from the analysis of this section are: (1) that though the precise amount of additional employment attributable to Government assistance in the period June 1960 to December 1966 is uncertain, it is almost certainly lower than the figure of approximately 5,472 which is implied by the Permanent Committee's remarks, and the actual number attributable to this factor is probably closer to 3,000; (2) that the overall rate of expansion of employment in border areas, though apparently a larger proportion of the total increase than before, was small in absolute terms and does not seem to have been anything like as high as that required by the Government to achieve its social objectives. In the latter connection it is interesting to note the following remarks from the Permanent Committee's report for the period June 1960 to June 1965; "As indicated, border industries succeeded in employing 8,200 Bantu per year over the past five years. When compared with the average annual entry of 41,000 Bantu into secondary industry for the years 1961/62 to 1963/64, this figure is still too low." (3) that the evidence for the period 1960-66 does not indicate that a sort of 'take off' point has been reached, or that we should, therefore, expect private enterprise to become more responsive to special incentives in future with a consequent reduction in the

difficulty of inducing border areas employment, or that there are signs of a spontaneous tendency for a significantly greater proportion of additional manufacturing employment to occur in border areas in future than occurred in the past.

The significance of these conclusions is discussed further in the following section.

#### A Note on the Costs of Border Industries 1960-1966.

The task of determining the costs to the country of each additional industrial job actually induced by the Government in the border areas between 1960 and 1966 is an extremely difficult one. Indeed, it appears that, given the sources of information available to the present writer, primarily the annual progress reports of the Permanent Committee, it is not possible to calculate these costs sufficiently accurately for the results to be of any real value in this study. Quite apart from the problem of determining the volume of additional border areas employment, attributable to Government intervention, which we encountered in the previous section, a fairly definite money value can be attached to the assistance given to border industries in the case of only a few of the positive measures listed earlier. However, as we shall see, the precise costs of induced employment in the period 1960-1966 turn out to be largely irrelevant to many of the more significant of the questions with which we are concerned in this study. Nevertheless, before returning to the latter point later in this section, we shall consider the extent to which the costs incurred in the  $6\frac{1}{2}$  year period under review can actually be measured, given the information available to the writer.

Table 39 summarises the amount of assistance actually given to firms in the border areas in the form of tax allowances, subsidised rentals and loans, and direct investment by the Industrial Development Corporation, in the period June 1960 to December 1966. Let us first consider the value to border industries of tax allowances since, as we shall see, it is rather easier to attach a definite value to these than to other forms of assistance.

TABLE 39

## Summary of Financial Assistance to Border Industries, June 1960 to December 1966

(R thousands)

	June 1960 to Dec. 1961	1962	1963	1964	1965	1966	June 1960 to Dec. 1964	June 1960 to Dec. 1965	June 1960 to Dec. 1966
1. Value of loans, share capital and factory buildings contributed by the I. D. C.	850	5,000	3,640	13,000	11,800	7,400	22,500	34,800	41,700
2. Value of investment in land and buildings on which tax concessions were granted		875	1,500	27,000	5,900	35,700	29,700	35,600	71,300
3. Value of tax concessions granted on land and buildings.		26	45	800	187	2,200	858	1,027	3,200
4. Value of tax concessions on cost of power, water and transport									
5. Investment by Government in Housing for White personnel.				202	138		735	890	2,200
6. Cost of housing for White personnel provided by industrial concerns.									1,100
7. Tax allowance in respect of housing for White personnel.					324				695
8. Loans to local authorities at 2 per cent for 20 years.				125	125				385
9. 10 per cent railage rebate on goods produced in the Ciskei and Transkei border areas.					90			310	(May 1965 to Dec. 1966) 527

Source: Annual progress reports of the Permanent Committee for the Location of Industry and the Development of Border areas.

The value of investment in land and buildings on which tax concessions were granted amounted to R71.3 million over the whole  $6\frac{1}{2}$  year period, as Table 39 shows. All but R2.375 million of this total relates to the last three years of the period under consideration, the greatest amount in any single year taking place in 1966. The actual value of the tax concessions, themselves, based on these investments in land and buildings was R858 thousand in the first  $4\frac{1}{2}$  years of the programme. A separate figure for tax allowances on investment in land and buildings is not available for subsequent years, but as the table shows, such concessions, plus the value to industrialists of the tax rebate resulting from the deduction of 10 per cent of the cost of water, power and transport amounted to R3.2 million over the whole  $6\frac{1}{2}$  year period. In addition tax concessions valued at R695 thousand over the whole period were granted in respect of the cost of housing for white personnel provided by industrialists themselves. The total value of tax concessions to the end of 1966, therefore, was R3.895 million, all but R800 thousand of which relates to the last two years. It should be noted, however, that this does not mean that industrial profits were increased by the full amount of R3.895 million in the period being examined, since the value of investment allowances is spread over a number of years, depending largely on the time pattern of profits earned before tax, and the value of the tax rebate on white housing is spread over a period of ten years in the manner described earlier. The amount of R3.895 million, therefore, overstates the discounted present value of the cost of these types of inducements.

Table 39, it may also be noted, does not reflect the full amount of the tax allowance in respect of investment in land and buildings, but only that portion which is due to the enhanced investment and initial allowances given to border industries. It appears that in the period 1960-64 these additional tax allowances on land and buildings comprised some 2.9 per cent of the value of investment in land and buildings on which tax concessions

were granted. Over the whole  $6\frac{1}{2}$  year period the additional tax allowances on land and buildings plus the tax allowance on the cost of water, power and transport comprised 4.5 per cent of the value of investment in land and buildings on which the enhanced tax concessions were granted. All types of tax allowances together then should enhance profit earnings by the firms receiving them by an amount of about R3.895, over a period of a number of years.

Apart from these tax concessions, the only other form of assistance to which it is possible to attach a fairly definite value so far as the writer can see, is the reduction of railage charges on goods railed from the Ciskei and Transkei. The Permanent Committee in its progress report for 1966 states that the estimated cost to the Treasury of the 10 per cent railway rebate on industrial products for the Transkei/Ciskei area, which came into operation on 1st May 1964, was R527,000 for the period ended 31st December 1966.

The value of loans, share capital and factory buildings contributed by the Industrial Development Corporation amounted to R34.2 million between June 1960, when the Permanent Committee was established, and December 1966. By the latter date a further R7.5 million had been committed by the I. D. C. but had not yet been taken up. Of the total amount of R34.2 million, only R9.49 million relates to the first  $3\frac{1}{2}$  years of the life of the Permanent Committee, as compared with R24.710 million in the three year period 1964-66. The annual rate of assistance in this form thus increased considerably after 1963 with the maximum amount for any one year occurring in 1964. But apart from this fact, that the annual rate of assistance in the form of share capital, subsidised rentals, and loans increased sharply in the last 3 years compared with the first  $3\frac{1}{2}$  years, we are unable to glean anything of real interest from these statistics. There appears to be no way of calculating the monetary value of the element of indirect subsidisation involved in these forms of assistance. A major obstacle to such calculation is the fact that the Permanent Committee reports do not indicate to what extent the total

capital assistance of R34.2 million provided by the I. D. C. consisted of each of the three components, share capital, loans, and investment in factory buildings. Clearly direct investment by the I. D. C. in border industries need not involve any significant element of subsidisation at all, since it will not necessarily obtain a lower rate of return on such investment in border areas than it does on a similar type of investment elsewhere. By contrast, since the low interest loans and subsidised rentals presumably do yield a lower return than the highest otherwise obtainable, these sorts of assistance do involve a cost to the community. It is therefore, necessary to obtain a breakdown of the capital assistance given to border industries into its three categories if a reliable estimate of the costs of such assistance is to be made.

In addition to the capital assistance provided directly to firms in the border areas by the Industrial Development Corporation, low interest loans were made to local authorities for the construction of shunting yards and railway sidings. Up to the end of 1946, loans totalling R385 thousand repayable over 20 years at an interest rate of 2 per cent, had been made to local authorities for this purpose. The cost of this assistance could be calculated by taking an interest rate which reflects the full economic value of such loans, but since the amount involved is so small relative to the assistance given directly to firms by the I. D. C. the calculation is hardly worth making.

Furthermore, the Government has also undertaken considerable expenditures on social overhead capital. This expenditure, unlike the specific inducements mentioned above, which are given to specific individual manufacturing concerns, contribute in a general way to the improvement of the environment for private industrial development in the border areas. It involves the provision of water, sewerage, electricity, housing for both whites and Bantu, recreational facilities, schools, public buildings, dams etc. It is extremely difficult to obtain from the Permanent Committee's reports a figure representing the total amount of expenditure by the Government on social overhead capital in the border areas. But the

Minister of Economic Affairs is reported <sup>1</sup> to have said in April 1968 that the Government had spent R86 million in the border areas, and that this amount was distributed as follows: Natal R2.8 million, Eastern Cape R46.0 million, the rest of the Cape R0.4 million, the Orange Free State R0.8 million, and the Transvaal R36.1 million. In addition the Electricity Supply Commission had invested R45 million. The Industrial Development Corporation also contributed to the building up of social overhead capital by providing capital for investment in housing for white personnel and by developing the industrial township at Hammarisdale, but this expenditure apparently cannot be determined separately as it is included in a total amount of R52.4 which also covers loans to and share capital purchased in private concerns, plus <sup>an</sup> amount spent on the provision of factory buildings by the I. D.C.

All of the expenditure on social overhead capital is presumably an attempt to generate in the border areas those external economies, the lack of which is said to be a major impediment to growth. But neither these global figures, nor, for that matter, a detailed catalogue of public projects undertaken in the border areas since 1960, would tell us very much about the profit increasing effects of such expenditure or about the monetary value to industrial establishments of this form of assistance. Nor can these expenditures be regarded as representing the opportunity costs of industrial decentralisation. It is not possible to tell whether, or to what extent, the return on public investment projects in the border areas is likely to be lower than the return on similar investments elsewhere in the country. It should be noted, too, that the services generated by this investment, benefits not only border industries but other users including farmers, commerce etc. and cannot be debited entirely

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1. The Natal Mercury, April 27, 1968.

to the account of decentralisation policy. Also, since comparable information for the years prior to 1960 is not available, it is not clear whether or to what extent investment in social overhead capital in the border areas has increased as a proportion of the total social overhead investment in the country as a whole. We should, in any case, expect a certain amount of investment in social overhead capital in the border areas due to the natural economic growth of those areas. Finally, while the total amount of R428 million which is reported to have been invested in the border areas by the Government, the I. D. C. ESCOM, and private manufacturing industry together, may seem a "staggering amount" it represents only 3.5 per cent of the gross domestic fixed investment, of the country as a whole between 1960 and 1967.<sup>1</sup>

Thus it appears that on the basis of the information considered, the total costs of the measures adopted by the Government to assist industries in the 1960 and 1966 period cannot be estimated with any sort of precision. If these costs could be calculated and if the additional employment attributable to Government assistance alone could also be fairly precisely determined, we should then be able to estimate the costs per additional job of Government intervention during the period under consideration. For instance it might turn out that Government intervention alone had been responsible for, say, 3,672 jobs per annum during the 6½ year period and that the costs to the community per job had been, say, R300. The latter figure is assumed purely for illustrative purposes. Whatever the usefulness of this sort of information might be, it is clear that it cannot be applied in any straightforward way to determine what the total costs would have been had a greater volume of employment been diverted to the border areas by means of Government assistance. For instance, it cannot be argued that since, say, 3,672 induced jobs cost R300 each or a total amount of R1,101,600 that five times as many

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1. See South African Reserve Bank, Quarterly Bulletin, No. 87, March 1968, p. S-67.

Government induced jobs, that is 18,360, would have cost R5,508,000. For, as the functional relationship developed in Chapter 8 shows, the greater the percentage of the countrys additional manufacturing employment which is diverted to the border areas, the greater is the marginal excess private and social cost of diversion, and hence the total cost of induced border areas employment increases more than in proportion to the volume of induced employment.

It seems clear that industrial decentralisation policy between 1960 and 1966 did not impose a significant strain on the country's resources, and that it did not hamper economic growth to any significant extent. But this does not mean that if the volume of diverted employment had been multiplied five times that it would have been possible to say the same. As the volume of diverted employment was increased, total costs would have risen, both because even at a constant average cost the total cost would have risen five fold, and because in fact average costs would have risen.

A rough idea of the relationship between total costs and the volume of diverted employment may be obtained as follows: As we showed in Chapter 8 the average annual increase in employment in all manufacturing industries was about 46,483 between 1960 and 1966, and the corresponding figure after deducting non-divertible residentiary and ubiquitous activities was 33,051. The functional relationship developed then was based on the latter figure. An average annual volume of 3,672 Government induced jobs in the border areas is 11.1 per cent of the total number of non-residentiary activities of 33,051, and the 'divertibility index' or index of excess private marginal cost for this percentage is 13.8. A five fold increase in the volume of Government induced jobs, that is, to 18,360 or a diverted percentage of 55.5 per cent, however, raises the index or excess private marginal cost to 131.6. Assuming, as we did above for illustrative purposes, that 3,672 induced jobs cost R300 each, the total cost if the volume of diverted employment had been increased five fold in the manner described, would have been approximately:

Rands  $\left[ 18360 \times 300 \times \frac{131.6}{13.8} \right]$  which is equal to R49, 572, 000, compared with a total cost of R1, 101, 600 for 3, 672 jobs. Thus a five fold increase in the scale of induced decentralisation would have multiplied costs not five times but forty five times. It is of course obvious that if the average cost of 3, 672 units had been greater than R300, the absolute size of the costs of assistance would have been greater for both 3, 672 and 18, 360 units than our calculations suggest.

This purely illustrative example of the relation between the total costs of generalising the approximately 3, 672 jobs, which we have estimated actually resulted from Government intervention between 1960 and 1966, with the total costs which would have been incurred if 18, 360 had actually been attributable to Government assistance, probably overstates the rate at which the total costs of assistance rise as the diverted percentage increases. For we have implicitly assumed that the value of assistance given on each unit or induced employment would be equal to the marginal excess private costs of the total volume of induced employment. That is we have assumed that just as the buyer of a product in a competitive market pays a price equal to the marginal cost of producing the whole output, so the Government as a 'buyer' of border industries employment pays a price (subsidy) per unit equal to the marginal excess costs of the whole volume of employment diverted. But of course the Government is not in the position of a competitive buyer. By giving assistance 'on a selective basis', it is in effect practicing a form of price discrimination, and the closer this approximates to perfect price discrimination, so that each border industry receives a subsidy on each additional unit of employment no greater than is just sufficient to induce it to provide that additional unit, the more closely will the total subsidy cost be approximated by the sum of the marginal excess private costs of border areas employment, and the less closely by the marginal excess private cost of the unit with the highest transfer cost multiplied by the total number of units.

But the question is whether the Government has the information necessary to keep total subsidy payments down to this absolute minimum level by practicing perfect price discriminations. The greater the number of jobs it seeks to induce, over and above those arising spontaneously in the border areas, and hence the greater the number of applications for assistance it has to process, the less likely will it be that the Government will be able to keep costs down to this absolute minimum level. Already, even with the relatively small scale of effective decentralisation of the first  $6\frac{1}{2}$  years, we observe that assistance in the form of a 10 per cent railage rebate is given to all firms in the Ciskei border areas, without any detailed consideration of the relationship between the value of assistance received by each Ciskei firm and the number of additional jobs, if any, provided by each firm as a result of it. As we noted earlier it has been reported that most industrialists in the East London area maintained that the concessions which they received had had little or no effect on their expansion decisions. If this is true it means that the form of discrimination necessary to minimise subsidy costs (both direct and indirect) is not being rigidly applied.

Firms naturally would like the largest concessions which they can obtain from the Government, whether these concessions have a bearing on their locational and expansion decisions or not, and by skilful bargaining they may be able to obtain concessions in excess of the minimum necessary to induce them to provide the volume of additional employment which the Government desires they should. Only if it could acquire detailed comparative cost information about the production activities of each and every firm assisted, could it avoid granting assistance which is excessive in the sense just stated, but this would have required a very large staff if applications giving 18,360 new jobs had had to be processed between 1960 and 1966. When the volume of induced decentralisation is relatively small, as it was in the period considered, the granting of such excess assistance may matter little so far as the total subsidy costs are concerned.

At higher levels of induced decentralisation, however, when the strain on the countrys resources is greater, such 'wastage' may be extremely burdensome .

It was argued in Chapter 8 that there is no evidence that the curve relating the diverted percentage of employment to the index of marginal excess private costs was changing its shape in a fashion favourable to the location of industry, as a result of changes in the composition of industrial production. Nevertheless, as the size of the national increase in manufacturing employment increases the costs per unit of inducing, say, 3,672 jobs per annum in the border areas will probably fall, since this number will be a lower percentage of the national increase in manufacturing employment. For instance with a national increase five times greater than that of 1960-66 the costs per unit of diverting 18,360 jobs may be much the same as the average cost applying to 3,672 jobs in the  $6\frac{1}{2}$  year period considered. Thus it will become easier over time to divert any particular absolute volume of additional manufacturing employment. But, it is clear from the whole orientation of border industries policy in South Africa, that it is the proportion of the national increase which is the focus of the Governments attention, and not any particular average annual increase in border areas employment measured in absolute terms. And there is no doubt that the proportion of the national increase which occurred in the border areas in the first  $6\frac{1}{2}$  years is regarded as completely inadequate relative to the Governments objectives.

This proportion, as we noted at the end of Chapter 8 may be increased in one of two ways, that is, either by a spontaneous tendency for decentralisation to occur as a result of the operation of ordinary market forces, or as a result of a greater proportion of Government induced border areas employment. As we noted, however, the Schumann Committee was pessimistic about the former possibility, and there did not seem to be any good reason, on the basis of the evidence for the period up to 1960, to believe that a substantial tendency

towards decentralisation would occur without Government intervention. Furthermore, the Bureau of Statistics data, mentioned in the previous section, for the period 1961/62 to 1963/64 indicated that, whether the proportion of the national employment increase occurring spontaneously in the border areas actually increased or not, the percentage contribution of the country's four largest industrial areas to the country's manufacturing employment actually rose. Thus the overall degree of industrial concentration showed no signs of falling even by mid-1964.

In view of this, it appears that if there is to be a really substantial increase in the proportion of manufacturing employment occurring in the border areas in the near future, and not merely an increase of a few per cent, it would be unsafe to assume that a spontaneous tendency towards industrial decentralisation could be relied upon. A substantial increase in the proportion of additional manufacturing employment in the border areas almost certainly requires a substantial increase in the diverted percentage of manufacturing employment. And this unquestionably will require significantly larger inducements for border industries, a fact which the Permanent Committee itself apparently appreciates. For, reporting on the progress made to the middle of 1965, the Committee says:

"During the past five years good progress has been made with the development of border areas. By far the greatest industrial growth rate is, nevertheless, still within the metropolitan areas. In pursuance of the Government's policy to accelerate the development of retarded areas in the country, the existing measures to attract industries to the decentralised areas will have to be intensified."

The remarks quoted, then, implicitly recognise both that an increase in the proportion of manufacturing employment going to the border areas depends on Government action, and that it will involve a larger cost for each additional job than was the case in the first five years. The less significant the increase in this proportion which is contemplated, the smaller the cost increase required and the more

relevant would be the cost experience of the first  $6\frac{1}{2}$  years, if it could be properly assessed. If, however, a significant increase in the proportion is desired, a correspondingly significant increase in the costs of each additional job will be necessary, and the relevance of the cost experience of the first  $6\frac{1}{2}$  years would be reduced accordingly. Since, as our discussion in the concluding chapter of this study shows, the increase in the scale of industrial decentralisation required, compared with the very limited amount achieved in the first  $6\frac{1}{2}$  years, is large, the probable cost of such an increase can only be meaningfully discussed in the light of a functional relationship, such as that developed in Chapter 8 above, between the diverted percentage of manufacturing, employment and the marginal excess private costs of diversion.

Finally, it should be noted, the relevance of past costs is still further reduced if, apart from its size, the geographical distribution of induced employment in the past is regarded as unsatisfactory, and if greater emphasis is to be given to less favourably placed border areas in future. As was mentioned earlier, any tendency to concentrate to a greater extent on more remote areas like the Ciskei border areas, in future, and to lesser extent on better situated centres like Rosslyn and Hammarsdale, will tend to raise the costs of planned decentralisation. It is, therefore, of some interest to note the following, contained in the Permanent Committee Report for 1966:

"As both the Transkei and Ciskei are dependent for the border areas, on towns in the region from East London to Queenstown, it has become necessary to create opportunities for employment on a large scale in that region in order to provide for the substantial population pressure experienced from the nearby Bantu homelands. The Department of Planning is at present taking steps to investigate the possibilities of an industrial area at Berlin where land is readily available."

In the first  $6\frac{1}{2}$  years, by contrast, the Permanent Committee's efforts were concentrated in large measure on development of centres like Rosslyn and Hammarsdale which are close to existing industrial areas.

Of the border areas further away from the four major industrial areas, those in Central Natal, with their better geographical position and richer natural resource endowment, compared with centres close to the major Bantu areas of the Transvaal and Cape, have made the most rapid progress in the past. The proposed attempt to alter the distribution of the additional border areas employment in favour of the problem areas of the Transvaal and Cape, may, therefore, be expected to reinforce the tendency for costs to rise as the overall scale of decentralisation is stepped up.

#### The Efficacy of the Special Incentives.

The desired result of border industries policy is an accelerated rate of expansion of manufacturing employment in the border areas. The efficacy of the present system of inducements, and the criteria applied in deciding whether and to what extent particular projects should be assisted, must therefore be judged in the light of this objective. This is clearly a question of some importance, since the better adapted are the inducements to this purpose the lower will be the costs of attaining the objectives of the policy at any particular level.

Ackley and Dini<sup>1</sup> have attempted to assess the impact of the incentives offered to firms in Southern Italy by taking a number of hypothetical firms, making assumptions about their capital structure, turnover etc., and on this basis calculating the difference which each of the

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1. G. Ackley and L. Dini, "Tax and Credit Aids to Industrial Development in Southern Italy," Banca Nazionale del Lavoro - Quarterly Review, December 1959, pp. 339-68.

incentives makes to the costs of a firm in the South compared with a similar firm in the North. Adopting this procedure they come to the conclusion that "assuming equal operating costs and returns - when full advantage is taken of the agevolazioni [ facilities or special aids ], they could increase a 'normal' 6 to 9 per cent profit rate before taxes by a further 5 to 6 per cent. For highly profitable enterprises - profit rates of 15 to 20 per cent before taxes - the agevolazioni would appear to add another 7 to 9 per cent before taxes. After taxes, the effect is still more striking".<sup>1</sup>

The inducements which Ackley and Dini take into account in making their calculations are the following:<sup>2</sup> (1) Reduction of registration fees and mortgage taxes on deeds relating to the first transfer of ownership of land and buildings required for the new or additional investment. (2) Exemption from payment of customs duties on imports of machinery and building materials for new or expanded plants. (3) Reduction by 50 per cent of the turnover tax on machinery, building materials and other goods required for new or additional investment in the South. (4) Direct investment subsidies which may be granted to new or expanded small and medium-sized enterprises (i. e. those employing 500 or fewer workers) located in communities in the South in which population is less than 200,000 and in which there is a deficiency of industrial activity. These subsidies consist of : (a) Up to 20 per cent of the cost of buildings and of works necessary to connect them with roads and railways, water supply, sewers, electricity and gas etc. (b) Up to 20 per cent of the cost of acquisition and installation of machinery, where

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1. op. cit., p. 359.

2. op. cit., pp. 342-345.

advantage is not taken of the exemption from customs duties. (5) Exemption from income tax of up to 50 per cent of profits declared by enterprises and invested in new and additional facilities in Southern Italy. This exemption is available for up to 50 per cent of the cost of the new or additional investment. The income tax rate is normally 18 per cent so that investment in the South may include "Free" capital to the extent of 9 per cent of the amount invested, when it is made by a profitable Italian enterprise. (6) Medium term loans at special interest rates for up to 70 per cent of the cost of new investment by small and medium sized enterprises. (7) Exemption from income tax on profits earned on the new investment for a period of 10 years. As noted above the normal central Government rate was 18 per cent.

Two other forms of assistance which they mention but do not include in their calculations, perhaps because of the difficulty of attaching a value to them, are (a) reductions of freight rates of up to 50 per cent for the transportation of machinery, materials, and supplies for the construction or expansion of plant and equipment, or their removal to Southern Italy, and (b) participation of the Sicilian Regional Administration in the equity capital of enterprises, up to a limit of 25 per cent.

By contrast, the principal incentives given directly to border industries in South Africa are the various tax allowances listed earlier, subsidised rentals on land and buildings, and low interest loans, the railage rebate for Ciskei firms and the contribution of equity capital by the I. D. C. The latter two will be left out of consideration for the same reasons which presumably led Ackley and Dini to neglect the similar Italian inducements. What must be obvious then is that the remaining three border industries incentives, tax rebates, subsidised rentals and low interest loans are a much less potent combination than the seven measures taken into account by Ackley and Dini in making their calculations. The total exemption from income taxes for a period of ten years in Southern Italy is a much stronger inducement than all the border areas tax allowances together, and low interest loans are common to regional development policy in both Italy and South Africa. In addition, however,

the Southern Italian inducements include what is probably the most significant inducement of all those listed, the direct investment subsidies. We should, therefore, expect the profit increasing effect of the subsidies available directly to border industries to be considerably smaller than the profit increasing effect calculated by Ackley and Dini and mentioned above.

The writer has taken one of the hypothetical examples used by Ackley and Dini, in which they make the following assumptions: a basic capital cost of 1000, sales of 1250, gross profit of 250, half the fixed capital of 750.00 is borrowed at a rate of interest of 8 per cent in the North and 3 per cent in the South. So as to facilitate the comparison which it is desired to make, it is assumed here that 8 per cent and 3 per cent are the interest rates applying to non-border and border areas respectively, though this overstates the benefit received by border industries in this respect. Following the procedure used by Ackley and Dini, the writer finds that the rate of profit on capital before tax is only 1.2 per cent higher in the border areas than for similar plants elsewhere. This compares with a 5 per cent increase in the profit rate before tax in Southern Italy on the basis of the same hypothetical example. The beneficial effect on the border industries profit rate would be increased by taking into account the subsidised rentals, but since the investment in land and buildings in the example used by Ackley and Dini is only about a quarter of total investment in fixed capital, the overall picture would not be changed significantly by incorporating subsidised rentals into the calculation. Thus the beneficial effect on profits before taxes of inducements available to border industries is significantly smaller than those applying to Southern Italy.

The results obtained by Ackley and Dini obviously do not mean that the rate of profit on capital will be increased by between 5 and 9 per cent if a particular new plant is established in the South rather than in the North. As they point out, their estimates were made on the assumption that costs and sales would be the same in the two regions. But this of course is hardly likely to be the case. Unless non profit,

that is, psychological and social, factors play a decisive part in a significant number of locational decisions and tend systematically to favour location in the Italian North (a possibility discussed at some length in Chapter 5 above and for which there appeared to be no evidence) we may take it that the need to grant assistance to Southern industries indicates that entrepreneurs expect their costs to be higher there than elsewhere. Ackley and Dini, thus, adopt an alternative approach, and seek to determine how large a percentage excess of production costs in the South over those in the North can be offset by the agevolazioni.

They find that in the case of a firm with a given capital investment, and sales of 1250 in both North and South, and production costs of 1000 in the North, production costs could have been 9.0 per cent higher in the South without giving the Southern firm a lower rate of profit after tax. Alternatively assuming sales of 2500 in both North and South and costs of 2250 in the North, production costs in the South could be 4 per cent higher than in the North, and yet either location would yield the same rate of profit. The permissible proportionate excess cost is lower in the latter than in the former because of the tendency of the inducements to favour capital intensive activities. As we saw above the beneficial effects of inducements on the profit rate before tax was several times higher in Italy than in South Africa. Despite the higher tax rate in South Africa which tends to increase the importance of tax concessions in South Africa, compared with Italy, the total exemption from taxes in Southern Italy, as against the investment and initial allowances in South Africa, results in a greater tax saving for the Southern Italian firm compared with a firm in the border areas. Thus, whereas the permissible cost excess calculated by Ackley and Dini amount to 9 per cent and 4 per cent respectively in the two cases they have chosen, the corresponding percentages for South Africa, are substantially lower.

It appears then from these and our earlier calculations that the Italian incentives are some three or four times as strong as those which

we have considered in making the calculations for South Africa. If all the incentives had been incorporated into our calculations the profit increasing effect of the assistance available to border industries would doubtless have been greater. But even without a measure of the full benefit available to border industries it is clear that it is significantly smaller than that conferred on firms in Southern Italy by the inducements applying to them.

Despite this fact, attempts to divert industrial capacity from the North to the South in Italy have not met with notable success.<sup>1</sup> It is therefore, not surprising that the results achieved in South Africa have been as meagre as we have shown them to be. Even allowing for possible differences in the functional relationship between marginal excess private costs and the diverted percentage of additional manufacturing employment in Italian, compared with South Africa, it is clear that the level of the incentives offered to border industries will have to be increased considerably if a significant proportion of industrial employment is to be diverted to border areas. As we have stressed repeatedly, the greater the degree of industrial decentralisation sought, the greater will have to be the increase in the inducements to border industries above their present level.

Precisely how much greater the assistance offered to border industries must be in order to increase the scale of industrial decentralisation to any particular desired level we cannot say on the basis of the available information. The problem might possibly be approached by trying to determine how many of those plants which would establish themselves in border areas without intervention, would incur additional total costs, processing and transport costs together, not exceeding the

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1. See Vera Lutz, *op. cit.*, p. 122-129.

approximately three to four per cent, which our calculations above suggest is the maximum permitted by the present inducements, if the rate of profit in the border areas is not to fall below that obtainable in the best alternative site. We could then attempt to assess the number and significance of such firms whose additional costs in border areas would not exceed a higher proportion of, say, six to eight per cent permitted by a doubling of the general level of the incentives, and so on.

The level of the assistance required, however, obviously depends on the nature of the incentives used. As we observed at the beginning of this section, the better adapted are the inducements to this purpose the lower will be the costs of attaining the objectives of the policy at any particular level. To put the same thing in a different way, the more appropriate the measures adopted, the greater will be the results achieved at any particular total cost to the community.

In the light of this, two features of the present set of inducements are especially noteworthy. Firstly, so far as the assistance given directly to border industries is concerned there is a heavy emphasis on tax rebates. Ackley and Dini's investigations showed that the most important incentives available to the South were the direct subsidies on machinery and plant, the customs exemption, the loans at special interest rates, and the tax exemptions on reinvested profits. They stated: "The exemption from income tax of profits earned in new Southern enterprises is of lesser importance, except where the Southern enterprise is already profitable. We question the effectiveness of this particular provision except on psychological grounds, an argument often advanced".<sup>1</sup>

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1. op. cit., pp. 364-5.

This is a point of some significance. It means that if a firm would not have made a profit in the border areas before tax (after taking the other inducements into account) the profits tax exemption does nothing to increase the profitability of the enterprise and therefore has no impact on the location of industry. Thus the profits tax rebate can provide an effective incentive only in the case of those investments which would make a profit before tax, that is on those firms whose additional total costs in the border areas would not exceed by more than one or two per cent the total costs which would have been incurred in the best alternative site. This clearly limits the effectiveness of the measure to the most mobile or footloose industries, which are capable of operating more or less equally successfully in either a border area or one of the larger industrial areas. This helps further to explain why no conspicuous success has been achieved yet and why, as the Permanent Committee clearly appreciates, it will be necessary to raise the amount of assistance if the proportion of additional manufacturing employment occurring in the border areas is to increase in future. If industry is to be decentralised on such a scale that activities which would make losses without Government intervention have to be diverted, it is necessary that inducements other than tax rebates be utilized more fully. At present, the inducements affecting profits before tax appear to be very small, and are unlikely to have a decisive bearing on the location of a large volume of activities.

The other noteworthy feature of the present set of inducements is that the majority of them are dependent in some way or another upon the use of capital. Low interest loans, subsidised rentals, and all the tax allowances, with the exception of those relating to the cost of water, power and transport and the concession given only to firms moving to border areas from other areas, tend to encourage the use of capital. The more capital intensive the industry and the production technique it uses, the greater is likely to be the size of the assistance

received relative to total costs of production. Thus, in general, the proportionate cost reducing effect of the incentives per unit of output, tends to be greater the greater the degree of capital intensity.

The types of subsidies used can only be regarded as appropriate or inappropriate in relation to some given end. It was for this reason that we took some trouble earlier on, in Chapters 5 and 6, to establish the precise nature of the objective of border industries policy. If the objective had been found to be an increase in economic efficiency, then as we argued, we should have required a complex array of subtle measures designed to correct for those external affects relevant to locational decisions. Maximisation of output on the other hand would have required that assistance to firms be proportional to their output. As it happens, however the objective of border industries policy is to increase the amount of employment, in particular Bantu employment, in the border areas.

In Chapter 6, we considered the effect of relating the subsidy payment to output. If this was done then, it was noted, the greater the labour coefficient of an industry, the smaller would be the subsidy per worker represented by a given subsidy per unit, and, therefore, other things being equal, the lower would be the marginal cost per unit of employment in the border areas. Thus, other things being equal, industries with a higher labour coefficient should be paid a larger subsidy per unit of output, if the marginal cost of induced employment in the border areas is to be made equal for all industries, and hence the total cost of any amount of induced border areas employment minimised. Subject to this rule, the optimum level of subsidy, is given by the equality of the values of the marginal social utilities derived from employment in all industries with the marginal social costs of employment in all industries. Since it is specifically Bantu employment with which the policy is concerned, the rule should be amended to take this into account: Other things being equal, industries with a higher Bantu

labour coefficient should be paid a higher subsidy per unit of output than those with a lower coefficient, if the marginal cost of induced employment in the border areas is to be made equal for all industries, and hence the total cost of any particular amount of border areas employment minimised. In short, other things being equal, when an output subsidy is employed greater preferential treatment should be given to Bantu labour intensive industries.

In fact, however, an output subsidy is not included among the border industries inducements. We assumed in Chapter 6 that the only form of inducement to border industries was an output subsidy, simply in order to provide a preliminary general criterion for granting assistance to individual industries. It was also desirable to avoid becoming involved in the question of the optimum subsidy types prematurely, or to assume what we had not yet firmly established, namely, that it is Bantu employment as such for which the Government is prepared to pay a price.

But the rule devised above is an extremely useful basis of comparison. For, by contrast, the effect of the types of measures actually used is that heavy users of capital will receive the largest inducements in absolute terms, those with the highest capital/labour ratio will receive the largest subsidy per unit of labour, and those with the highest capital/output ratio the largest subsidy per unit of output, if the same inducements are given to every assisted industry. It is not logically necessary for the industry with the highest capital/labour ratio also to have the highest capital/output ratio, since it is possible for capital in such an industry to be so highly productive that its capital/output ratio is lower than in another industry in which the capital/labour ratio is lower. As a matter of fact, however, there is a high direct correlation between these two ratios, and, therefore, a high inverse correlation between the capital/labour ratio and the labour/output ratio. Thus the effect of applying the present inducements in the same way to all industries is that, other things being equal, industries receiving a large subsidy per unit of output will tend to have a correspondingly low labour coefficient. This result is

the very opposite of that required by the marginal rule stated above, and consequently, instead of leading to a least cost situation tends to generate any given amount of employment at the maximum cost.

It must be stressed, however, that this conclusion holds with certainty only if the present inducements are applied in the same way to all assisted industries, that is, if all borrowed the same proportion of their total capital from the I. D. C. at the same rate of interest, if all received the same tax rebates etc. Is it possible that without abandoning the heavy emphasis on allowances related to capital usage, a more satisfactory result can be achieved by varying the percentage applicable to different industries? In principle this could be done by giving larger percentage allowances to the more labour intensive industries.

For instance in Britain, where as Thomas Wilson points out, industrial location policy also relies mainly on forms of assistance which are related primarily to capital expenditure, the criterion for determining the eligibility of firms for such assistance "is still the possibility of expanding employment. The development districts are chosen with regard to the number out of work (initially  $4\frac{1}{2}$  per cent or more). The assistance provided to a particular firm within one of these areas roughly depends in turn on the number of jobs it is expected to offer."<sup>1</sup>

It appears, too, that the Italian government in granting industrial credits to firms in the South has used additional employment as one of its criteria. Vera Lutz informs us that ISVEIMER, the major credit institute for the Southern Italian Mainland; "reports having given specially favourable consideration, among applicants of otherwise equal merit, to those submitting projects which were expected to give much employment, or which were to be located in particularly poor industrially backward areas, and so on".<sup>2</sup>

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1. Thomas Wilson, Planning and Growth, (Macmillan; London, 1964) p. 130.

2. V. Lutz. op. cit., p. 117.

It is by no means clear, however, that this form of discrimination between industries overcomes the fundamental problem, unless labour coefficients are not influenced significantly by the relative prices of labour and capital. For if the capital related allowances were applied more intensively to industries with a high labour coefficient, the tendency to substitute capital for labour in these industries would still be present. It may well be that in the labour intensive industries, the scope for an economic substitution of capital for labour in response to a fall in the price of capital, is greater than in more capital industries. Thus, this tendency to encourage the use of capital, which tends to raise the costs of any particular amount of additional employment, is not eliminated. Apart from this difficulty discrimination between industries in respect of the percentage capital allowances given, is a cumbersome procedure, requiring an increase in the discretionary power of a Government department and, therefore, involving an intensification of the problems associated with discretionary control in the economic sphere. As the scale of the decentralisation programme is increased, the difficulty of exercising this discretion in a consistent way will be magnified.

It is not being argued that concessions related to capital expenditure do not tend to encourage employment in the border areas. Rather, the point is that the use of capital allowances has certain undesirable effects and that we should, therefore, at least consider whether there are more appropriate practicable types of inducements available. If only a small degree of decentralisation were required by the Government, the wastage resulting from the use of inefficient instruments might be negligible. But it appears, decentralisation is required on such a large scale that even if the most efficient methods are used the burden on the community will be considerable. Under these circumstances it is clearly worthwhile taking some trouble to avoid any unnecessary addition to the burden.

So far as a profits tax rebate is concerned, it seems preferable to allow a straightforward reduction in the rate of taxation on profits or a complete tax holiday for a specified number of years in border areas, as is done in Southern Italy, rather than to use investment and initial allowances. A. R. Prest writes as follows: "The cheapening of the cost of capital implied in accelerated depreciation, etc., produces both a bias in favour of capitalistic methods of production inside any one firm and relatively greater encouragement to those industries which are more than normally capital intensive. This is obviously a point of great importance for employment and output levels in countries which are relatively poorly endowed with capital and relatively well endowed with labour."<sup>1</sup> A straight profits tax concession is at least neutral with respect to the capital intensity of different industries and the type of technique used, and so avoids the undesirable effects mentioned by Prest.

Preferable even to such neutral inducements, however, are ones biased in the right direction from the point of view of the benefits sought from the border industries policy. Vera Lutz, noting the undesirable tendency for the Italian inducements to encourage capital intensity says: "If a larger employment effect had been desired, part at least of the weight of the subsidies would have had to fall on labour costs. One possibility here would have been to relieve the Southern employer from contributions to the Family Allowance Fund, and to place this burden, instead of some other, on the national exchequer. In 1958 family allowances cost Southern industry and other non-agricultural activities - in spite of a sizeable subsidy from Northern firms - some 60 million lire."<sup>2</sup>

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1. Fiscal Survey of the British Caribbean, (H. M. S. O., 1957), pp. 27-28.

2. op. cit., p. 121.

Since the opportunity to provide a similar form of relief to border industries does not exist, it may be worthwhile considering the possibility of a subsidy proportional to labour costs. A subsidy of this sort was suggested by A. R. Prest<sup>1</sup> for use in the British Caribbean, and subsequently by J. E. Meade<sup>2</sup> for Mauritius. In the context of regional development policy, Colin Clark<sup>3</sup> has recently suggested the use of a system of regional pay-roll taxes and rebates to encourage the decentralisation of industry in Britain. Given the fact that Governments prefer, for political reasons, to provide assistance by foregoing revenue rather than by direct payments to firms, it may very well be more feasible for this reason to introduce a system of tax rebates related to the size of the wage bill rather than a direct subsidy calculated on the same basis.

It may be that because of the terms of our treaty arrangements with GATT, or for other political or administrative reasons, schemes involving direct subsidies or tax rebates related to the wage bill, cannot be seriously considered by the Government. The purpose of our discussion of the efficiency of the present set of inducements has simply been to suggest that considerations be given to the possibility of devising practicable alternative measures of a more neutral sort, which do not exert the capital using bias of most of those currently in use. Whatever the degree of industrial decentralisation the Government may have decided to bring about, it is clearly desirable that it should be done by inflicting as little damage on the community as possible. The more ambitious their aims, the more necessary is it to seek the instruments most appropriate to the task.

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1. Prest, op. cit., p. 102.

2. Mauritius: a case study in Malthusian Economy", Economic Journal, September, 1961.

3. Industrial Location and Economic Potential, Lloyds Bank Review, October, 1966, pp. 1-16.

Some Other Sources of Difficulty.

The Permanent Committee grants or refuses assistance to individual firms on a selective basis, that is, in the light of each applicant's particular circumstances. In order to avoid inconsistency and arbitrariness, however, it is clearly necessary that applications be considered in the context of a fairly sharply defined set of rules and criteria. In this regard there are several issues which seem to call for attention and which we shall now touch on very briefly.

Firstly there is the question whether a definite time limit should be set on the receipt of assistance by each individual concern, so that only firms considered capable of making a profit without the Government's help, after a specified number of years, be assisted. Thomas Wilson makes the following interesting observation:

"In Great Britain the assistance offered relates in the main to capital expenditure rather than running costs. The principle behind this seems to be that firms assisted should be able to carry on without Government help. More generally this assumption is necessary if the policy is to be justified by the severe test of its effect on total national output. It is necessary to believe that help of this kind will finally permit a breakthrough in the regions that have benefited. Indeed it is necessary to go further and to suppose that expansion in these areas will ultimately be more promising than expansion in what are now the more prosperous areas."<sup>1</sup>

Wilson's view seems to be perfectly sound except in one respect. As we showed in Chapter 5, if external effects are present it may be possible for the Government to increase economic efficiency by taking various steps, including the subsidisation of border industries, to 'correct' for these external effects. Some of these external effects

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1. Planning and Growth (Macmillan, London, 1964), p. 132.

may be of a purely temporary sort, like those associated with the infant industry argument, and hence, on economic grounds, assistance related to such effects can be justified for only a limited period. Indeed as we noted in Chapter 5, and as Wilson's remarks confirm, it is necessary that infant industries of this sort tend with the passage of time to become more efficient in border areas than they would have been if sited elsewhere. But there may be divergences between social and private cost of a more lasting sort, and economic efficiency will it seems be enhanced by continuing assistance related to these divergences for as long as they persist.

It is nevertheless true, that unless assisted industries are within a reasonable period of time able to earn satisfactory profits without aid, the total size of the assistance given each year would grow cumulatively as more and more new firms were assisted. Unless the amount of assistance which can be justified on the basis of external effects of a durable sort is significant, the burden of the total assistance given will increase steadily. In fact, however, as we noted in Chapter 5, there is no evidence whatsoever that the number and significance of such external effects is great enough to support a substantial programme of industrial decentralisation. Thus from an economic viewpoint it is necessary that the great bulk of assistance given be designed so that it either falls away automatically or is deliberately withdrawn after a reasonable period of time.

This, however, would limit the effectiveness of the inducements to firms likely to suffer only temporary cost disadvantages in border areas, and which will ultimately be able to stand on their own feet. To insist on continuing assistance to such cases, however, may render it impossible to achieve that degree of industrial decentralisation which the Government regards as optimal from a social point of view. Just as some writers in the field of international trade theory doubt that a significant proportion of tariff protection can be justified by the infant industry argument, so should we be sceptical of similar arguments in

in the context of regional development policy. As Wilson's comments suggest the test of economic efficiency is a severe one. It is virtually certain that the cost of decentralisation cannot be prevented from becoming cumulative if a large scale programme is undertaken. It follows that it might defeat the purposes of the border industries policy if the Permanent Committee were to accept as one of its rules that all recipients of aid should be able to earn satisfactory profits without help after a reasonable period of time, or, what is essentially the same thing, that assistance always be 'justified by the severe test of its effect on total national output'.

A second issue involves the attitude of the Government to the granting of assistance to firms already established in the border areas, as distinct from new border industries. As was noted above, the Government has granted concessions to a significant number of established industries. And, indeed, there is much to be said for this, since many of these older firms suffer from precisely the same sort of difficulties as the new firms, and it may be argued, assistance which prevents the closing down or contraction of an old plant, or enables it to expand when it might not otherwise have done so, may have as beneficial an effect on employment relative to cost, as assistance provided to a firm establishing itself in the border areas for the first time. Nevertheless the granting of assistance indiscriminately to old firms in the border areas would raise the costs of decentralisation unnecessarily, and in order to avoid this the marginal rule developed in the last section should be adhered to as closely as possible.

Thirdly, there is the problem of "unfair competition" between assisted firms in the border areas and those operating elsewhere. In his statement of June 2, 1960, the Prime Minister said: "The Union of South Africa forms a single common market in which competition is the spur to efficiency, progress and a rising standard of living. It is to be expected that during the process of economic development the same type of industry would in the course of years show a different rate of growth in the different regions, and that some measure of

readjustment would have to take place in some industries in certain areas. It is the natural traditional and worldwide means of selection of industrial locations."

This appears to have been a warning to existing firms that they should be prepared to face competition from border industries. Subsequently, however, in one of the Permanent Committee's progress reports, the following remark was made: "It is the policy of the Government and of the Permanent Committee, as far as possible to encourage industrial decentralisation in the border areas on a complementary and not on a competitive basis."

The Government appears in fact to have been careful about the effects of competition from border industries on firms elsewhere. For instance, the Government has shown considerable reticence about providing assistance to firms in the clothing industry, perhaps because of the latter's strong opposition even to the Government's policy of regional wage differentiation. But this sort of consideration, if persisted with, will clearly seriously restrict the scope for successful Government intervention in the location of industry. The clothing industry, though a relatively slow growing sector now, is easily the most significant of the more easily divertible industries, as we say in Chapter 8, and failure to exploit fully the scope for decentralisation in this, and other/mobile industries strongly concentrated in the metropolitan areas will tend to increase the costs of the whole scheme, and drastically diminish the prospects of diverting a significant proportion of additional manufacturing employment. The problem of inter-regional competition will probably tend to be magnified as the rate of decentralization is increased.

CHAPTER 10THE ADVENT OF INDUSTRIAL LICENSINGroduction.

Almost exactly seven years after the Government had given the assurance that "no compulsory measures will be applied to force industrialists to establish themselves in Border Areas", the Physical Planning and Utilization of Resources Act No. 88 of 1967 became law. As we suggested early in the last chapter, there has been a consistent tendency for South African opinion to underestimate the difficulty, and hence the costs, of inducing industrial decentralisation on a large scale. In the light of experience during the sixties it is now clear that the measures proposed by the Tomlinson and Viljoen Commissions were hopelessly inadequate to the task. Even the measures introduced in 1960, though significantly stronger than those proposed by the two commissions mentioned, were soon seen to be much too mild, and were superseded by the "more persuasive measures" of May 1964. Little more than a year later we find in a report of the Permanent Committee the statement that "the existing incentive measures to attract industries to the decentralised areas will have to be intensified", since, though "border industries succeeded in employing 8,200 Bantu per year over the past five years," "this figure was considered to be too low "compared with the average annual entry of 41,300 Bantu into secondary industry for the years 1961/62 to 1963/64".

Experience, it appears, was gradually forcing the Government to the conclusion that their earlier estimates of the costs, and hence of the level of assistance required for a significant programme of industrial decentralisation were much too low, and that considerably more drastic measures were needed. In the Permanent Committee report covering progress made up to June 1965 we already find the

following hint of what is to come: "According to the Department responsible for the implementation of decentralization in England, the negative measures applicable in the large cities, supplementary to the incentive measures in underdeveloped areas, are essential for effective decentralisation." It is especially noteworthy, however, that the Physical Planning Act (as we shall call it henceforth), passed in mid-1967, was not accompanied by any increase in the size of the inducements offered to border industries.

Whatever else may be said about the Physical Planning Act, it can no longer be argued that the powers which it confers on the Minister of Planning are insufficient to check the further expansion of manufacturing industry in the major industrial areas. But it is still necessary to consider the probable effects of using these powers to prevent industrial concerns from becoming established or expanding in certain proclaimed areas. And the possibility remains that the costs of bringing about "decongestion" or "decentralisation", whether by this means or any other, are still being underestimated by the authorities. For one thing is clear about a system of industrial licensing of this sort, and it is that while physical controls may alter the incidence of the costs of decentralisation, they cannot avoid them.

The most significant provision of the Physical Planning Act is that enabling the Minister of Planning to prohibit the establishment or expansion of any factory in any area proclaimed a 'controlled area' in terms of the Act. Factories may be established or extended in such areas only with the prior written approval of the Minister of Planning. The only factories exempted from the need to obtain a permit to establish themselves in controlled areas, are those which do not employ Bantu labour. In all areas, whether declared controlled areas or not, permission is required to establish factories on land which has not yet been zoned for industrial purposes under a town planning scheme or proclaimed an industrial township.

The definition given in the Act of an extension of a factory is

particularly noteworthy and is crucial to an understanding of the effects of using the provisions of the Act to curb "congestion". It is simply "any increase in the number of Bantu employees in such factory".

The purpose of the Act, therefore, is primarily to reduce the rate of inflow of Bantu into certain of the country's larger cities. The Government is apparently not opposed to the continued growth of the controlled areas, despite the congestion costs which are said to accompany such growth, provided it can be achieved without an increase in the number of Bantu workers. Indeed, industrialists are frequently exhorted to expand in metropolitan areas by the introduction of more capital intensive techniques, so as to eliminate the need to take on additional Bantu labour.

With effect from 19th January 1968, thirty seven magisterial districts were declared controlled areas. The districts concerned in the Cape are Port Elizabeth - Uitenhage, and those comprising the Western Cape industrial area as defined in Chapter 3. In the Transvaal all the magisterial districts comprising the Southern Transvaal industrial area, plus a number of other districts contiguous to this area, including some quite significant ones like Klerkskorp, Potchefstroom and Sasolburg are controlled areas. It is of considerable interest to note, however, that the important industrial centres of Durban and Pinetown are not amongst these 37 controlled areas. The Government apparently, now regards virtually the whole of Natal, including Durban and Pinetown as a border area.<sup>1</sup> The fact that this legislation was felt to be necessary suggests that an attempt will be made to curb the industrial expansion of the metropolitan areas more drastically than it has been possible to do in the past. But it is of course still too early to say exactly how extensively the Minister will use the powers which the Act gives him. We shall, therefore, confine ourselves to consideration of the probable

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1. See the remarks by the Minister of Planning, reported in the Daily News, Durban, on January 27, 1968.

effects of applying these measures with various assumed degrees of severity.

First, it should be noted that the objective of checking the expansion of the larger industrial areas is logically distinct from that of increasing the rate of growth of industrial employment in the border areas. An increased readiness to give effect to the former objective, does not necessarily imply a correspondingly increased readiness to ensure that alternative employment opportunities are available in the latter. For, as we shall show, there is no economic mechanism which automatically ensures that whenever plans to increase Bantu employment in the metropolitan areas are upset by the Physical Planning act, an equal additional number of employment opportunities for Bantu arises in the border areas instead.

It is, indeed, possible that the Physical Planning Act signifies a shift of emphasis in Government policy from the objective of providing increased industrial employment in the border areas, to that of merely ensuring that Bantu employment does not increase in the cities, and that the Government is prepared to allow a significant imbalance to arise between the number of Bantu employees denied employment in industry in the controlled areas, as a result of the licensing system, and the number of additional workers who can be employed in manufacturing industry in the border and Bantu areas. But this would imply that the Government was prepared to contemplate a long term cumulative increase in the numbers of Bantu forced to seek employment in manufacturing industry in the border and Bantu areas, because of the application of the Act, relative to the number of employment opportunities arising in those areas. For both political and economic reasons it seems unlikely to the present writer that this prospect will be acceptable to the Government, and we shall, therefore, assume initially that the Government's intention is that any loss of employment opportunities for Bantu in the controlled areas, resulting from physical controls, should be made good by a corresponding increase in suitable employment opportunities in manufacturing industry in the border and Bantu areas.

In considering the effects of physical controls on the rate of industrial expansion in the border areas, and in the country as a whole, it is convenient to consider the effect of prohibitions on the establishment of new plants in controlled areas separately from the effects of prohibitions on the expansion of existing plants.

#### Restrictions on new Establishments.

As we noted in Chapter 5, in the case of locational decisions for new plants in which non-pecuniary considerations are decisive, or where ignorance and carelessness lead to the selection of non-optimal locations, prohibitions on the establishment of plants in the sites preferred by private enterprise may very well lead to their establishment in border areas, and in the process both increase the firms' rate of profit and the country's rate of economic growth. In such cases then prohibitions do not reduce the rate of growth and the reduction in potential manufacturing employment in the controlled areas is compensated for by an equal (or perhaps even greater) amount of additional Bantu employment in border areas. A system of licensing then may serve a useful purpose in this respect, by forcing those firms giving undue weight to non-pecuniary factors or making haphazard comparative cost studies, to consider their locational decisions more carefully. Without repeating our fuller discussion of Chapter 5, we may recall, however, that there was no evidence that the number of such cases was significant, or that non-profit factors and locational mistakes tended to favour industrial concentration in any systematic way. Indeed, if they were numerous, we should have expected relatively small inducements to bring about a significant degree of industrial decentralisation. In fact as we have seen little was achieved in the first  $6\frac{1}{2}$  years, and the Permanent Committee in arguing the case for greater incentives in recent years has itself begun to stress the greater difficulties of decentralising industry

in South Africa than elsewhere. They say, for instance: "It appears however, to be a much easier task to create favourable conditions for development in Shannon in Ireland for instance, than to bring about similar circumstances in certain remote areas of the Republic of South Africa with its long distances and very little in between."<sup>1</sup> Thus if, as Andrews and Brunner<sup>2</sup> believe, non-pecuniary factors and locational errors exert a negligible influence on the overall locational pattern in Britain, where industrial decentralisation often means shifting industries mere tens of miles, how much more negligible must they be in South Africa.

In all other cases, we may expect that firms debarred from establishing in controlled areas will make smaller profits in border areas, or in an unproclaimed non-border area, than they would have made in their preferred location in a controlled area. Let us take it that of all the sub-optional locations, one in a border area involves the smallest increase in costs compared with the preferred location. Will the firm, debarred from a controlled area, then establish itself in the border area or not? This clearly depends on how much lower the profit rate is expected to be in a border area. Though smaller than it was expected to have been in the preferred controlled area, the rate of profit may yet be sufficient to induce the firm to establish itself in a border area rather than not establish at all. The rate of profit will presumably be sufficient to induce establishment in border area if, allowing for differences in risk, it is expected to be greater than the return obtainable on other investments in South Africa or abroad. In any event it is obvious that there is for each manufacturing activity a minimum expected rate of return necessary if entrepreneurs are to have sufficient incentive to invest. Provided the expected profit rate in border areas is not less than this

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1. Progress report covering the period July 1960 to June 1965.
  2. See p.148, Chapter 5 above.

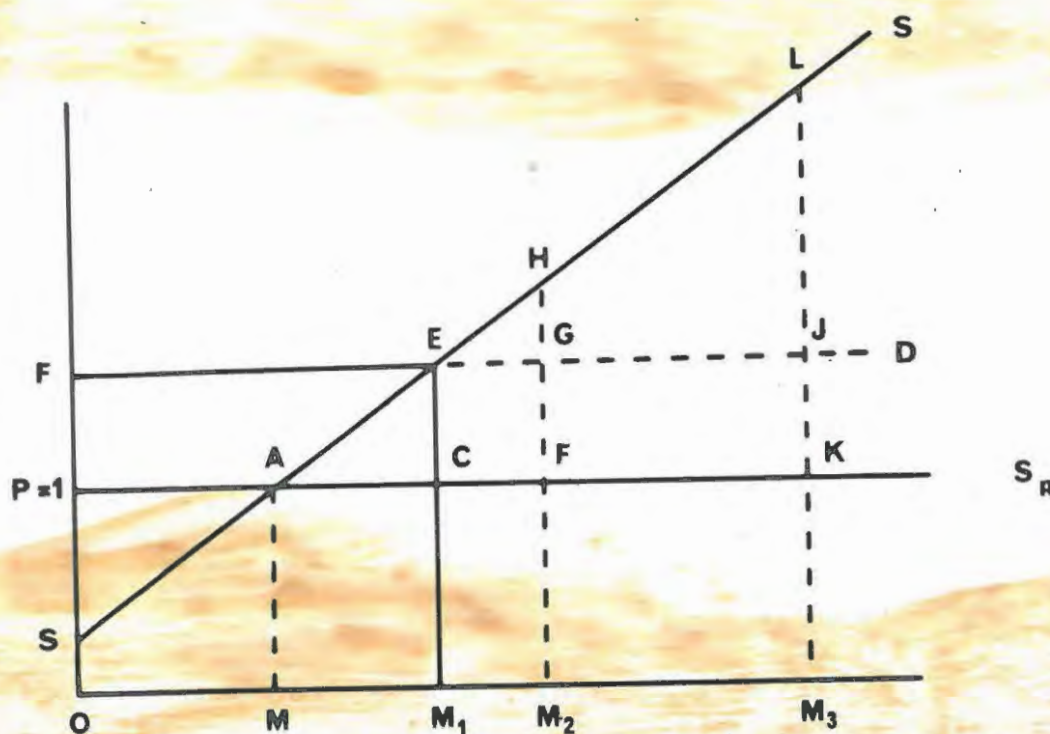
minimum level, the firm may still establish itself there, and provide as much employment, or perhaps not much less, than it would have done in the controlled area which it would have chosen in the absence of Government intervention.

There may, thus, be a number of potential new plants which would maximise profits in a controlled area, but which could earn in a border area a rate of profit in excess of the minimum rate required to induce investment in the plant rather than not to establish it at all. Even without incentives, therefore, prohibitions on the establishment of such plants in controlled areas would not inhibit establishment altogether. But it is certain that the volume of industrial investment in this category is not unlimited. No matter how carefully selected prohibited firms were, the greater the number of plants per period of time refused permission to establish themselves in controlled areas, the greater will be the difference between the profitability of the least mobile of these in the preferred controlled area, and profitability in the best border area site. This follows simply from the fact, demonstrated in Chapter 8, that the marginal excess private costs of diverting industries to the border areas rises with the proportion of production or employment diverted.

Used in moderation (and with great skill), therefore, the powers contained in the Physical Planning Act may not actually inhibit the establishment of the plants affected, even if these are not given any inducements. But used more extensively than this, it will become necessary to include plants which will not expect to earn a rate of return sufficient to induce investment. That is, it will become necessary to include firms which, faced with the choice of establishing themselves in the border areas without assistance and not establishing at all, will opt for the latter. By means of a similar argument it can be shown that if initially financial inducements of a certain level are being used on their own, the introduction of a skillfully used system of physical controls might

be able to increase the proportion of output sited in the border areas, compared with the proportion which would have been sited in border areas if positive inducements of the initial size had been employed alone. But, as in the case assumed above, in which no assistance is given, it can also be shown that the increase in the proportion of diverted production or employment which can be contributed simply by the introduction of physical controls, without increasing the size of the accompanying positive inducements, is not unlimited. If, with any given size of positive inducements, these limits are exceeded, the only results will be that the rate of industrial growth of the country will be retarded, and there will be a tendency for the number of Bantu workers denied employment in the border areas as a result of the physical controls, to exceed the increased demand for Bantu labour in the border areas. In general, then, the greater the percentage of the national increase in employment it is wished to divert to the border areas (that is, not merely prevent taking place in controlled areas) the greater must be the level of the subsidies offered.

The above argument and much of the discussion which follows can be usefully illustrated in the accompanying diagram.



The labelling of the axes is precisely the same as in the diagram presented in Chapter 6 above, and the meaning of the SS curve is precisely the same as it was there. It shows the average annual addition to industrial production which will be generated in the border areas at various prices, where the latter are all expressed as a proportion of  $OP$ , the price either actually prevailing, or which would actually prevail in the least cost location in other parts of South Africa. For instance, as before, the price  $OF$  exceeds  $OP$  in the proportion  $PF/OP$ , and since  $OP$  is equal to unity, the proportional marginal excess private cost of  $OM_1$  units of additional border areas output over the marginal cost of production in the rest of the country is simply  $PF$ .

$OM$  is the average annual increase in border areas industrial production which will take place spontaneously without any subsidisation by the Government. As we showed in Chapter 6, a proportional subsidy equal to  $PF$  per unit of output will lower the whole supply curve  $SS$  sufficiently to induce an average annual increase in border areas industrial production equal to  $MM_1$  units, which is additional to the increase of  $OM$  units which would have occurred spontaneously. The total amount of subsidies given would then have been represented by the area  $PCEF$ , of which  $FAEF$  is simply an income distribution effect and  $ACE$  the producer cost. The same volume,  $MM_1$ , of induced border areas industrial production could have been achieved by means of subsidies totalling  $ACE$ , if instead of paying a proportional subsidy of  $PF$  per unit, only the  $MM_1$  sub-marginal units had been subsidised and then only to the extent necessary to induce their production in the border areas. This is presumably what the Government attempts to do when it grants assistance to border industries 'on a selective basis.' The subsidy bill would thus have been smaller but the private producer cost would have been unchanged. As we pointed out in the last chapter, however, it is highly improbable that the Government will possess the information necessary to keep the total value of subsidies down to the minimum level, such as

ACE for  $MM_1$  units of induced border areas industrial production. It is much more likely that the actual value of assistance necessary to induce  $MM_1$  units of production will lie between ACE and PCEF. The Government has, it appears, not even been able to avoid assisting some of the intra-marginal OM units since, as noted earlier, it is hard to believe that no additional employment would have been offered by those firms which were actually assisted, if they had not received any assistance at all.

Let us take it, however, that the Government is able to keep the costs of assistance down to the minimum necessary for any particular volume of induced border areas industrial production. And let us say that the size of the inducements currently offered to border areas are such that they can cover a proportional marginal excess private cost in border areas industrial production as high as CE, but no higher. Then, by discriminating in the way described above, giving assistance equal to the marginal excess private cost of every unit in excess of OM units, and so rendering the production of each of these units just as profitable in border areas as in the best alternative location, a maximum of  $MM_1$  units of border areas industrial production would be induced in border areas. The SS curve depicted, clearly refers to some specific period of time, since as the economy as a whole grows, it would tend to shift to the right. That is, with general economic growth the average annual increase in border areas industrial production, expressed in absolute terms, which would take place spontaneously, would naturally increase even if it did not increase as a proportion of the additional industrial production taking place in the country as a whole. Let us say, therefore, that the SS curve depicted refers to the ten year period beginning in January 1968, when the first 37 controlled areas were proclaimed, and that over this period the present set of inducements is sufficient to increase the average annual addition to border areas industrial production by  $MM_1$  units over and above the addition of OM units taking place spontaneously.

Associated with the  $MM_1$  units of production diverted to the border areas, there is a certain amount of diverted employment, which may be expressed as a proportion of the national increase in manufacturing employment. Say the Government regards the latter proportion as inadequate, as it seems to believe the proportion actually achieved in the period June 1960 to December 1966 to have been. It might then attempt to induce a greater average annual increase in border areas industrial production than  $MM_1$ , by introducing a system of industrial licensing like that provided for in the Physical Planning Act, while leaving the size of the special inducements available to individual border industries unchanged.

Without the Physical Planning Act and without any increase in the size of the inducements the whole average annual increase in the country's industrial production, other than the  $OM_1$  units, would take place outside of the border areas, since for units in excess of  $OM_1$  the marginal excess private cost is greater than the maximum subsidy  $CE$  available at present. This difference, which we may call the marginal uncompensated excess private cost, on units of border areas industrial production greater than  $OM_1$ , is the vertical distance between the portion of  $SS$  to the right of  $E$ , namely  $ES$ , and the horizontal line  $ED$ . The positive inducements thus divert  $MM_1$  units of industrial production to the border areas, and the marginal uncompensated excess private cost on each of these units is equal to zero. The Government, however, now prohibits the establishment of certain new plants in the controlled areas, and the marginal uncompensated excess private cost on these units is positive. If these units are produced in border areas, therefore, the rate of profit will be lower than it would have been if the plants had been allowed to establish themselves in the preferred controlled areas. However, if the firms whose establishment in controlled areas is prohibited are very carefully selected, the marginal uncompensated excess private cost will be very small at first, and may not reduce

the rate of profit below the minimum level referred to above. It is clear, however, given the positive slope of the SS curve, which we established in Chapter 8, that if the volume of production in prohibited expansions is pushed beyond a certain level, the marginal uncompensated excess private cost will become so large that it will swallow up the firms profits and so inhibit its establishment altogether.

Say that the maximum volume of production which can be prohibited in controlled areas by prohibiting the establishment of new plants, without inhibiting the establishment of these plants altogether, is  $M_1M_2$ . That is,  $M_1M_2$  units of industrial production can actually be diverted to the border areas by means of direct controls. The marginal uncompensated cost on this volume of prohibited production is FGE and the total uncompensated cost is EGH. That is, profits on the  $MM_2$  diverted units are lower by an amount EFH than they would have been without physical controls. A point which we might note here, then, though we shall return to it later, is that the cost of diversion by means of physical controls falls more heavily on manufacturing industry itself than in the case of diversion by means of special inducements since the latter are borne by taxpayers as a whole. The disincentive effect on industrial production is, therefore, greater in the former case than in the latter.

If plants which together have a potential productive capacity in excess of  $M_1M_2$  units are debarred from establishing in the border areas, industrial production equal to this excess will be lost to the economy because the marginal uncompensated excess costs on these units will reduce the rate of profit below the minimum necessary to induce investment. Say, for instance, that new plants which together have a productive capacity of  $M_1M_3$  are refused permission to establish themselves in the border areas. A volume of production in new plants, equal to  $M_2M_3$  will, therefore, not take place at all, since the uncompensated marginal excess private costs on these units will reduce the rate of profit to too great an extent. The essential point at this stage, however, is that with positive inducements of a given size, such as those available to border industries at present, the additional amount

of induced border areas industrial production which can be contributed by direct controls is not unlimited.

With the present maximum proportional subsidy, represented by CE in the diagram, then, the difference made by direct controls is represented by  $M_1M_2$ . We have deliberately made  $M_1M_2$  small in relation to the volume of industrial production which would take place in the border areas without direct controls, on the basis of spontaneous growth and growth induced by subsidies alone. For one thing, as we saw in Chapter 8 above, the index of marginal excess private costs of diverting production and employment to the border areas tends to rise steeply even at a relatively low level of diverted production. With a given level of inducements, therefore, the uncompensated marginal excess private costs of production in the border areas will also rise steeply, and the rate of profit on additional units of border areas industrial production will fall correspondingly sharply. Thus it seems unlikely that the mere addition of physical controls could make a substantial contribution to the volume of production, and hence of employment, which can be diverted to the border areas. That is, it is unlikely that a substantial increase in induced border areas industrial production can be achieved, without a correspondingly substantial increase in the size of the inducements offered to border industries.

It is of some interest in this connection to recall the fact, noted earlier, that the percentage excess of costs in Southern Italy over those in the North, permitted by the inducements offered to firms in the South, is considerably greater than that permissible between sites in the border areas and sites elsewhere, given the inducements offered to firms in the border areas. Yet, as we noted, the results achieved by even these larger inducements in Italy have been extremely meagre. This suggests that in the case of the vast majority of significant firms in Italy the rate of profit would be more than just a few percent lower in the South than in the North without inducements. If the same is true of South Africa, the application of physical controls is soon likely to affect plants on which the rate of profit in border areas is less than the

minimum level necessary to induce investment.

If the scope for increasing the amount of industrial production diverted to backward areas like Southern Italy or South African border areas by means of physical controls, without increasing the size of the inducements offered to firms in those areas, were really substantial, then there would be no need to be unduly concerned about the possible adverse effects of such controls. But it appears that W. A. Lewis, for one, is sceptical about the scope for using restrictions in congested areas to persuade firms to establish in backward or depressed areas, when, given the prevailing size of the special inducements, these firms do not freely choose to site themselves in the latter areas. For he says:

"When areas are scheduled for restriction, it is important to restrict only the mobile industries, which will not be gravely handicapped if they locate elsewhere; other industries should have freedom to locate where they please. And when we are seeking to develop particular regions it is better to proceed by inducement than by direction. We have rightly decided that the best way to encourage new industries is to provide the basic services that they require, especially using the happy invention of the trading estate, and to subsidise such services if necessary. If industry will not come to an area even when special efforts are made to reduce the cost of working there, it is dangerous to direct it there, for there must be something basically wrong with the area."<sup>1</sup>

Thus if sufficient industries will not move to border areas, given the size of the present inducements, the only way to ensure that they do is to raise the level of the inducements. In South Africa, the Government is not in a position to plan by direction, that is, to compel a firm to establish itself in a border area unless perhaps, the firm is controlled by a Government agency like the Industrial Development Corporation.

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1. The Principles of Economic Planning, p. 79.

At the most it can prevent the firm from establishing in particular "congested" areas. If, however, as the Barlow Commission<sup>1</sup> observed, "the employer is to be asked to submit to anything like control or direction in his choice of location" this carries with it the possible consequence that if "for any reason due to location or not, the venture turns out badly, there is a risk that claims for compensation may be put forward, a risk which would have to be foreseen and steps taken against it".

#### Restrictions on Expanding Firms.

In the foregoing analysis of the effects of direct controls on the rate of industrialisation in the border areas, we have deliberately spoken as if these controls applied only to plants wishing to establish themselves in a particular controlled area for the first time. For there are a number of special features connected with prohibitions on the expansion of existing plants which do not arise in the case of new plants, and which make it impossible to treat the two cases in precisely the same way.

The special features referred to stem partly from the fact that the Physical Planning Act defines an extension of a factory as "any increase in the number of Bantu employees employed in such factory." In view of this definition there seem to be four alternatives open to a firm which is refused permission to extend its factory in a controlled area. It may either (a) increase production in the existing factory, solely by increasing its usage of factors of production other than Bantu labour (b) locate the entire plant in a border area (c) establish a branch plant in a border area (d) not increase production at all.

As we noted earlier, members of the Government have on numerous occasions stated that in order to reduce the rate of growth of the Bantu population of the larger cities, employers would have to make less use of Bantu labour and more use of mechanisation and automation. Industrialists, then, are encouraged to increase their output by adopting the first of the four alternatives. If a particular firm in a

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1. op. cit., p. 193.

controlled area is refused permission to take on more Bantu labour, it will indeed have an incentive to substitute other factors of production for Bantu labour. But the marginal cost of increasing production in this way will exceed the marginal cost of increasing production when the firm is free to employ more Bantu labour. This need not be true if employers habitually employ Bantu labour wastefully, in the sense that they would make larger profits if they used less labour of this sort. There is, however, no more evidence to show that this is a widespread feature of manufacturing industry, than there is to show that industrialists habitually make excessive use of capital, white workers or any other factor of production. Until such evidence is produced, there is an overwhelming case for presuming that restrictions on the use of Bantu labour will increase the costs of expanding in a particular site.

The size of the excess of the marginal costs of expanding output without increasing the number of Bantu workers, over the costs of expanding output with the help of additional Bantu labour depends essentially on two things: (a) the elasticity of substitution of other factors of production for Bantu labour, and (b) the size of the increase in production which is undertaken. For an expansion in output of any particular size, the excess referred to will be smaller, the greater the elasticity of substitution of other factors for Bantu labour. And, given the size of the elasticity of substitution the excess will be smaller, the smaller the amount by which output is increased in the existing factory. Thus the greater the size of the increased output which would have taken place in the absence of restrictions on the use of Bantu labour, the greater the increase in costs which will result if it is carried out without additional Bantu labour. It follows, therefore, that even if at first, when the planned increase in output is small, the firm succeeds in realising its plans without an increase in Bantu labour, it will not be able to continue expanding indefinitely in this way. Eventually the costs of increasing output in the present site must exceed those of producing in another area

where there are no restrictions on the use of Bantu labour. And even before that point is reached costs will be higher, and hence either profits will be lower, or prices higher, or both, and the increase in output, therefore, smaller than it would otherwise have been. If restrictions on the use of Bantu labour actually stimulate the rate of technical progress, that is if new technical knowledge results from these restrictions then the cost raising effect of the restrictions will be mitigated to some extent. But since we do not have convincing scientific evidence to this effect, it is clearly safer not to depend on this possibility.

The Government, when it appeals to firms in the controlled areas to mechanise, presumably does so because it fears that the costs of expanding by relocation or by the establishment of branch plants will be still greater than the costs of expansion in controlled areas without extra Bantu labour. And, as we shall see shortly, there is good reason to expect that this will be so in the case of a significant number of expansions. Thus, owing to restrictions on the use of Bantu labour, expansion in the existing site will involve greater production costs, but industrialists may nevertheless find this alternative preferable to relocation, establishment of branch plants, or not expanding at all. Indeed, it is probable that when faced with restrictions on the use of Bantu labour, many firms will expand in their existing sites, even though they are unlikely to expand by as much as they would have done had the restrictions not applied.

This has an extremely important implication for Government policy. Whenever, the firm's profits are maximised by expanding without increasing its Bantu labour force, rather than by relocating or establishing a branch plant, this results in a net loss of employment opportunities for Bantu workers. The more successful are industrialists in substituting other factors of production for Bantu labour in the controlled areas, the more acute will be the problem of finding employment for Bantu workers in border areas. That is, since in this case direct

controls do not result in the diversion of manufacturing employment to the border areas, as relocations or branch plant establishments would tend to do, an imbalance arises between the number of Bantu workers denied employment in the controlled areas and the number compelled to seek work in border areas. This imbalance can be avoided only if, as a result of the direct controls, the country's rate of economic growth increases, and with it the demand for labour in the border areas, but for, the reasons mentioned above, the rate of growth is more likely to be reduced than increased by direct controls. While the substitution of other factors for Bantu labour tends to mitigate the adverse effects of direct controls on the rate of economic growth, therefore, it does not solve the other fundamental problem of providing employment for the Bantu labour force.

This is the first reason, then why the imposition of direct controls on the expansion of plants already established in controlled areas is likely to make only a very small contribution to industrial development in the border areas.

As we noted above, the greater the size of the increased output which would have taken place if there had been no restrictions on the use of Bantu labour, the greater the increase in costs which will result if this increase is brought about without any additional Bantu labour. This means that it will become increasingly difficult for factor substitution to mitigate the adverse growth effects of direct controls. If alternative (a) were the only one available, therefore, the larger the planned additional output from existing plants affected by direct controls in any particular period of time, say a year, the greater would be the amount of this planned increase which would be inhibited. That is to say, the additional costs involved would eventually swallow up profits to such an extent that industrialists would not find it worthwhile to bring about more than a small part of the increased output that would have taken place in the absence of restrictions. The marginal rate of profit will fall below the level which would otherwise have prevailed, and which would have been sufficient to induce expansion, and units of production which might otherwise have been

realised, will be lost.

There are, of course, two possible ways in which these adverse effects on economic growth can be avoided or at least reduced, namely, by relocation of the plants to which the restrictions apply or the establishment of branch plants in the border areas. There appear however, to be two conditions which must be satisfied if either one of these two alternatives is to be chosen by firms which are refused permission to expand in their existing sites. Firstly, the revenue expected from the extra production (i. e. production over and above that carried out on the old site) must yield a rate of return on the additional capital necessary to produce the increase in output, in excess of the minimum obtainable in other fields of investment. Secondly, the former rate of return must exceed the return obtainable on the additional capital required to expand in the original site without any increase in Bantu labour. The latter condition, it seems, in effect means that the marginal costs of expanding by relocation or by establishing a branch plant in a border area must not exceed the marginal costs of expanding in the old site without any increase in Bantu labour. There is the distinct danger, however, that neither of these two conditions will be met, or that though the second is satisfied, the first is not.

First, consider the possibility of transferring the entire plant from a controlled area to a new site in the border areas. The entrepreneur must obviously compare the costs and returns of making this transfer. If the plant is moved three main types of costs may be incurred: (a) capital losses (b) costs of actually transporting equipment to the new site (c) higher production costs. Factory buildings and certain types of equipment are not movable and would have to be sold at their market value in the old location. If the latter is less than the operating value of this part of fixed capital, which is the present value of the net income stream expected from using it in the existing location, there is a loss of capital equal to the difference between the two sorts of valuation. The more specialised the factory buildings and

equipment, the greater will this loss be. For if the firm in question is considering moving, because of the difficulties confronting it, it is unlikely that it will be purchased by a firm producing the same product. The cost of actually transporting the movable equipment, plus stores etc., and of installing it in the new location is also in the nature of a capital cost, but it is likely to be small relative to the capital loss resulting from the sale of immovable fixed capital. Finally, there is the possibility that production costs, that is processing plus transport costs, will be higher in the new location. Unlike a new firm, a firm relocating its plant in a border area will lose part of the capital value of the investment in the training of a labour force which it has undertaken, and of the capital value of the contacts with suppliers and customers which it has built up over a period of time in the old site. The presence of these customers and suppliers may have been amongst the advantages to the firm of establishing in the controlled area in the first place, or some of them may have been drawn to the area because of the presence there of the firm in question. Either way it is clear that the loss of these contacts will involve a greater loss to an established firm if it shifts, than they would to a firm which has not yet built up these contacts but which is refused admission to a controlled area.

Because of these relocation costs it is likely to be significantly more difficult to induce an established plant of a particular sort, wishing to produce an output (initial plus increase) of a particular size, to transfer its whole operation to a border area, than it is to induce a potential new plant of exactly the same sort, wishing to produce an output of exactly the same size, to site itself in a border area. Thus, with inducements of a given size, the uncompensated excess marginal costs of producing output of any particular sort and size in the border areas in a relocated plant, are considerably greater than they would be in the case of a plant which was not previously established in a controlled area. If prohibitions are applied to the expansion of existing plants then, and the firm can choose only between alternatives (a) and (b), the chances of growth being stifled are considerably greater than when

new plants of the same sort are refused permission to site themselves in controlled areas.

Again we may visualise a spectrum of cost conditions, with the marginal excess private costs of expanding by relocation rising as the volume of relocated production increases. Some firms, like a clothing firm in the Natal midlands and a textiles firm in Umtata, have transferred their plants from larger industrial areas, even without physical controls. Relocations of this sort contribute to the growth of industrial production in the border areas, and this contribution is reflected in the average annual increase of  $OM_1$  units which, in our diagram, would take place at the present level of inducements, without any restrictions on the use of Bantu labour. And others, in industries like ladies handbags, for instance, which are very light, and have high labour cost and non-white labour ratios, must be very close to the margin of transference.

Still other plants might actually be able to achieve a saving in production costs by transferring to border areas, but may be deterred from doing so by the costs of relocation. Indeed, as we noted earlier, some firms in East London believe that though their location may have been optimal initially, it is no longer optimal and that, but for location costs, they would establish themselves in the Southern Transvaal. These relocation costs are very real ones, and it is wrong to believe that we can drastically remodel the geographical distribution of manufacturing industry because the present distribution "is due to fortuitous historical circumstances".<sup>1</sup> In matters of location as in all other aspects of economic life, the decisions of the

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1. In the light of the discussion in Chapter 3 above, it is, in any case, highly questionable whether "fortuitous historical circumstances" (unless one regards the discovery of gold as falling under this heading) have had a significant bearing on the overall locational pattern. The growth of firms established by chance in bad locations tends to be impeded by competition from plants which are better situated.

past have helped determine the data of the present. However regrettable it may be, we never have the opportunity of undoing the decisions of the past and starting with a clean slate. Furthermore, there is no evidence that a significant number of the firms at present in controlled areas feel that they are wrongly located, and that, but for relocation costs, it would be advantageous for them to shift to border areas. It appears, then, that the marginal excess costs of expansion by relocation are likely to be particularly high. Other things being equal, the more favourable the divertibility index of an industry as calculated in Chapter 8 above, the smaller will be the excess marginal costs of expansion by relocating in a border area.

As in the case of new plants, then, the more favourable the divertibility of an industry, as calculated in Chapter 8 above, the smaller will be the marginal excess costs of expansion by relocation in a border area. But the fact remains that the marginal excess costs of transferring an already established plant to the border areas, will be greater than the costs of establishing a new plant of exactly the same sort and size in the border areas in those cases in which a location in a controlled area is optimal. Thus, while restrictions on the use of Bantu labour can check the rate of expansion of firms in controlled areas, they are most unlikely to induce a significant number of firms to transfer plants to the border areas, unless they are supported by a sharp increase in the assistance offered by the Government.

Let us now consider the possibility that restrictions on the use of Bantu labour by expanding firms will lead to the establishment of branch plants in border areas, and so avoid, or at least mitigate, the problems of maintaining the rate of growth and providing employment for Bantu workers. It follows from our analysis of Chapter 8, that the lighter the industry, and the higher the labour cost and non-white labour ratios, the smaller, other things being equal, will be the marginal excess costs of establishing a branch plant in the border areas. In this respect there is a similarity between the problem of diverting the

additional output of an expanding firm and diverting a new plant. But there is an important difficulty which is peculiar to the former and does not arise in the case of new plants.

The difficulty in question is that the size of the planned increase in output, may be small in relation to the optimum scale of production for this product. If the increase in demand giving rise to the desire to expand output is only marginal, in comparison with the output produced in the present location, the chances of a branch plant being established will probably be slight. Other things being equal, the greater is the optimum scale of production for the commodity, the less profitable is it likely to be to expand output by establishing a branch plant in a border area.

It appears from an examination of Table 33 above, that those industries with extremely unfavourable divertibility indexes, that is those near the bottom of the list, tend to be operated on a very large scale compared with other industries. Generally, there seems to be a positive correlation between the scale of production and the size of the divertibility index,<sup>1</sup> the latter taking into account the weight of the industry, and the labour cost and non-white labour ratios. Broadly speaking, then, the more capital intensive the industry, the greater tends to be the optimum scale of production. Thus if a particular industry appears to be difficult to divert because of an unfavourable divertibility index, this difficulty tends to be reinforced in the case of branch plant establishments by a large optimum scale of production.

As economic development takes place, and the size of individual regional markets grows, there is a natural tendency for more and more branch plants to be established in the less advanced areas. But we are here concerned with the effects of attempts to accelerate this process

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1. The writer has not been able to calculate plant size for each of the industries listed in Table 33. Sargent Florence, in *The Logic of British and American Industry*, p. 69 finds a very high correlation between the degree of mechanisation (measured by horse-power per man) and size of plant. Since in our analysis the divertibility index is positively correlated with horse-power per worker, the former will also be positively correlated with the size of plant.

by means of restrictions on the use of Bantuh labour in plants already established in controlled areas. It appears from the remarks above, that all the difficulties of diverting new plants from their preferred sites in controlled areas to border areas, by means of physical controls alone, without any increase in the size of the inducements offered, apply in the same if not in fuller measure to the use of such controls to induce firms to expand through the establishment of branch plants in border areas, rather than to expand in their present sites. As in the case of new plants, the immediate effect of applying the restrictions to expanding firms, unless this is done on a small scale, is more likely to be a stifling of growth than the establishment of branch plants.

We should also note a particular characteristic of investment which tends to reinforce our conclusion that the immediate effect of restrictions on the expansion of existing firms will be to cause a loss of potential industrial output. It is that entrepreneurs will not normally undertake an investment until they feel reasonably confident that the demand which this investment is designed to satisfy will be sufficiently enduring to warrant it. Let us say that there is an increase in demand for the firms product and the firm strongly believes the increase to be a permanent one. In this case, provided the firms existing plant is being utilized at the optimum level, it may undertake additional investment in fixed capital. But if there is any doubt about the permanence of the increase in demand the firm will prefer to increase its output to meet the demand simply by intensifying the degree of utilization of the existing equipment. If for this purpose it wishes to use more Bantu labour, but is not permitted to do so, expansion will not take place in the existing site, or will not take place on the scale it would have done without restrictions. In view of the uncertainty assumed, the firm will clearly not relocate the plant or establish a branch plant, and there will be an irrevocable loss of industrial production.

Alternatively, let us assume that the increase in demand which occurs is permanent and that the firm confidently believes it to be so, but that the increase takes place unexpectedly. There will, therefore, be a time lag between the increase in demand and completion of the investment which the firm might undertake. In these circumstances, if the firm is not permitted to increase the degree of utilization of existing plant to the extent desired, by taking on additional Bantu labour, there will also be a loss of industrial production. Even if, perchance, the firm felt it would be more profitable to make the investment in a branch plant in a border area rather than expand its old plant, without additional Bantu workers, it could not do so immediately. Indeed the time lag referred to is likely to be even longer in the case of the establishment of a branch plant than in the case of extensions in an existing site.

Finally, there is the fact that purely temporary increases in demand which are believed to be temporary will not lead to additional fixed investment, and will normally be met by increasing the size of the labour force. Production for such purposes will obviously be hampered if the firm is refused permission to employ more Bantu labour. This last difficulty may possibly be overcome by introducing a system allowing for temporary increases in the size of the Bantu labour force, with the understanding that the firm will revert to its original size within some specified period of time. But it will be by no means easy to determine whether a particular increase in demand is temporary or not. While the output of some industries is subject to a highly predictable seasonal fluctuation in demand, this is not true of most industries, and in addition there is the fact that seasonal fluctuations generally take place about an upward trend in demand.

It appears, then, that because of the possibility of adopting alternative (a) (the substitution of other factors for Bantu labour) and the impediments to relocation and branch plant production, the scope

for actually diverting the planned additional output and employment of expanding firms to border areas by means of direct controls alone, without larger inducements is proportionately less even than in the case of plants seeking to establish themselves in controlled areas for the first time. It is therefore, of some interest to note that, whereas manufacturing employment increased by 28.7 per cent between 1959/60 and 1963/64, the number of industrial census returns received by the Bureau of Statistics increased by only 10.5 per cent.<sup>1</sup> This latter percentage may be taken as an indicator of the percentage increase in the number of manufacturing establishments. If the size distribution of new establishments taking place between 1959/60 and 1963/64 was approximately the same as the size distribution of establishments existing at the beginning of the period, these figures would seem to suggest that additional employment resulting from the expansion of existing plants was nearly twice as great as that resulting from the establishment of new ones. More specifically, the figures suggest that the expansion of existing plants accounted for something like 63.5 per cent of the income in manufacturing employment between 1959/60 and 1963/64.

This has some rather interesting implications. Firstly, it means that a decentralisation policy aimed at diverting new plants only, is bound to be very restricted in scope relative to the total volume of additional production and employment. Efforts to induce decentralisation would in that case be confined to establishments providing only a third of the additional employment, and even these would be subject to the rising marginal excess costs which were shown in Chapter 8 to be associated with diversion. Furthermore, one part of this additional employment in new firms cannot be diverted because it relates to residential activities, and another part cannot be diverted, in the sense in which we have used the term, because it would have taken place in the border areas in any case, even

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1. Bureau of Statistics, news release dated 15th February, 1967.

without Government intervention. Secondly, the fact that expansion of existing plants apparently contributes such a large proportion of the total increase in manufacturing employment, means that the task of diverting any particular proportion of the total increase in manufacturing employment, taking old and new together is an extremely difficult one. For as we have already emphasised the possibility of substituting other factors of production for Bantu labour in the existing site, and the impediments to relocation and the establishment of branch plants, reduce the likelihood that direct controls will result in the diversion of employment to border areas, unless the level of inducements is raised considerably. To put it differently, the marginal excess private costs of diverting any particular proportion of the planned increase in production and employment in existing plants to controlled areas, are likely to be significantly greater than the marginal excess private costs of diverting the same proportion of the output and employment of plants wishing to establish in controlled areas for the first time. Thus the size of the financial inducements needed to achieve the former is likely to be considerably greater than that needed for the latter purpose.

#### Some Long Run Considerations.

The conclusions drawn from the analysis, which was carried out before we took into account the special features connected with the application of restrictions on the use of Bantu labour to expanding firms, are, therefore, reinforced by the subsequent analysis. But we should note two factors which will tend to make the SS curve shift to the right over time, as a result of the application of direct controls, and which, therefore, tend to raise the average annual increase in border areas industrial production which will take place over a specific period of time, without any increase in the size of the inducements offered.

Firstly, there is the fact that with the general economic development of a country the demand for a particular product will tend to increase. Thus, even though the short run effect of restrictions on the expansion of a particular plant may have been to inhibit expansion altogether or to a significant degree, the increase in demand which takes place subsequently as the country develops economically, will tend gradually to improve the profitability of establishing a branch plant. Similarly, a firm which was refused permission to establish a plant in a controlled area for the first time, and which as a result did not establish itself at all, would subsequently find the border areas appearing less and less unprofitable than they seemed before. In the case of the branch plant, this occurs partly because a growing demand eventually overcomes any difficulties of establishment which were due to significant internal economies of scale in production. But for all firms affected by physical controls, the border areas become more attractive as demand increases, since these controls themselves will in effect have given firms in the border areas a monopoly of the increase in output in certain industries. Thus they will be able to raise prices without fear of competition from non-border areas, and with the growing pressure of demand they will eventually be able to sell a sufficiently larger output to make production worthwhile, despite the fact that production costs and hence selling prices will be higher in the border areas than they would have been in the controlled areas had physical controls not been applied. In effect what tends to happen is that the costs of production in border areas, though greater in absolute terms, fall relative to the costs of expanding in controlled areas, given the restrictions on the use of additional Bantu labour, so that the SS curve moves to the right.

Secondly, in the diagrammatic analysis above, we assumed that  $M_1M_2$  represented the actual additional number of units of production which can be diverted to border areas simply by the introduction of direct controls, without raising the size of the inducements offered above the level of CE per unit of output in border areas. If prohibitions were imposed on more units than these, then, as we argued,

the result would not be the diversion of employment to the border areas but a loss of employment opportunities for Bantu workers. These displaced workers would thus become dependant upon the border and Bantu areas for employment. The greater is the number of units in excess of  $M_1M_2$  to which the restrictions are applied, the greater will be the imbalance between the number of Bantu workers unable to obtain employment in controlled areas because of the restrictions, and the number of additional industrial jobs offered to Bantu in the border areas.

The effect of this imbalance, will be to depress the wage rate in the border areas relative to other parts of the country. The wage rate in border areas will clearly not be able to rise as rapidly as in the controlled areas, owing to the fact that in the border areas the supply of Bantu labour will be increasing faster than demand whereas the opposite will hold true in controlled areas. If the imbalance referred to becomes sufficiently large per period of time, due to very severe application of restrictions on the location of industry in controlled areas, the wage rate in border areas could even fall in absolute terms. The essential point, however, is that the wage rate will fall in border areas relative to the controlled areas.

The effect of this decline in relative wages will tend to be to shift the SS curve towards the right. As was explained in Chapter 6, any particular SS curve relates to a given set of factor prices. A fall in the price of any one of these factors, therefore, will lower the curve, and as a result the average annual increase in border areas industrial production, attainable with inducements of any particular size, will tend to increase. Other methods of reducing the rate at which Bantu migrate to controlled areas, whether they take the form of the more conventional type of influx control or the recently announced scheme of efflux control, will tend to have precisely the same effect.

Thus there are these two major factors tending to shift the SS curve to the right over time and so to increase the average annual addition to border areas industrial production. It may be then that

without any increase in inducements, the introduction of restrictions on the location of industry will contribute a larger increase than  $M_1M_2$  to average annual volume of induced border areas industrial production. In effect it appears that it might be possible to divert more than  $M_1M_2$  units of industrial production to the border areas per annum on average, and hence to divert more job opportunities for Bantu than those associated with  $M_1M_2$  units of industrial production.

It is clear, however, that shifts in the SS curve resulting from the operation of the forces described, cannot be regarded as an unmixed blessing. In the first place, as we have noted, the shift in SS takes place partly at the expense of a decline in the wage rate in border areas relative to the rate applying in controlled areas. We should make a clear distinction here between two types of Bantu workers whose living standards are affected by the restrictions on the location of industry. First, there are those who would not have migrated to controlled areas even in the absence of the restrictions, but would have sought and obtained employment in the border areas. If in the new conditions they are able to obtain employment they could be worse off in absolute terms than they would otherwise have been. But they will almost certainly find that owing to keener competition for jobs their wage rates will not rise as fast as they would have done, and that they will be lower relative to the wages paid in the controlled areas.

Secondly, there are those who would have migrated to the controlled areas even at the earlier, smaller regional wage differential. In line with our argument of Chapter 2, there is a strong presumption that these workers would have been economically better off had they in fact migrated. With the application of direct controls, they will be deprived of the opportunity of migrating to metropolitan areas and they will undoubtedly be worse off in absolute terms than they would have been in the absence of the restrictions. The fact that the wage differential between border areas and controlled areas will tend to

be larger than the differential which would have been sufficient to induce them to migrate, simply adds to their loss.

The extent to which wages will fall in border areas relative to those applying in controlled areas, depends partly on how sharply the growth of Bantu employment in the controlled areas is reduced as a result of the restrictions, and partly on the elasticity of demand for Bantu labour in the border areas. Because of the restrictions on the use of Bantu labour in the controlled areas, it may, for instance, be necessary for the average annual increase in border areas industrial production to rise to  $OM_3$  if all the displaced Bantu workers are to be employed in the border areas. If the maximum size of the inducements offered is left unchanged at CE per unit of output, this will require the SS curve to shift towards the right till it passes through J. If, say,  $OM_1$  is the average annual increase in border areas industrial production which would have taken place if the present inducements alone had been used, and  $OM_3$  represents an increase twice as great as  $OM_1$ , the fall in wage rates necessary to employ all those workers kept out of the controlled areas by the provisions of the Physical Planning Act will probably be very considerable.

In fact, however, the wage rate in border areas is likely to be fairly inflexible in a downward direction in the short run, and the decline in this rate relative to the rate applying in the controlled areas is likely to result, rather, from a slower increase in the wage rate in border areas compared with the controlled areas. It will obviously take some time for changes in the regional wage differential to take place in this way in response to changing supply and demand conditions in different parts of the country. Thus even if there is some positive border areas wage rate which would ensure that all workers denied employment in the controlled areas are employed in the border areas instead, it is never likely to be reached. As a result, unless the size of the inducements offered to border industries can be raised to the level required to induce an average annual increase in border areas industrial

production of  $OM_3$  restrictions on the use of Bantu labour in the controlled areas will simply raise the volume of unemployment amongst Bantu workers. In addition as we noted above, even those displaced workers who manage to obtain employment in the border areas will be worse off in absolute terms.

In the last few pages we have mentioned two types of forces which will tend to shift the SS curve towards the right. It is no less important to note, however, that there will be powerful forces working against this tendency. For several fairly obvious reasons the country's rate of economic growth will tend to fall, and this fall will be greater the more stringently are the restrictions under consideration applied. If somehow the Government succeeded in diverting  $MM_3$  units of industrial production per annum to the border areas the total excess costs of producing these units in the border areas would be equal to  $AKL$ . That is to say, costs of production and hence prices will be higher than they would have been in the absence of restrictions on the growth of the controlled areas, and consequently the rate of industrial expansion will be reduced. This latter result also follows simply from the fact that the available resources will not be allocated as efficiently, and hence total output will be lower than it might have been. An important factor limiting the ability of firms to raise prices in an attempt to protect their profit margins is competition with foreign producers in both domestic and export markets.

Unless the size of the inducements can be raised to the required level, therefore, there will be a reduction in the rate of industrial expansion in the country as a whole if the application of restrictions on the growth of the controlled areas exceeds the limits stated above. Hence our earlier conclusion remains unchanged: It may be possible to increase the amount of industrial production diverted to the border areas merely by introducing a system of industrial licensing, that is,

without any increase in the size of the inducements offered to border industries, but the scope for diversions of this sort is small in relation to the national increase in industrial production.

#### Financial Inducements vs. Direct Controls.

By using direct controls, the Government can reduce the total volume of financial assistance necessary to reduce the rate of increase of the Bantu population of the controlled areas by any particular amount. This seems to be the main advantage which can accrue to the Government from the relevant provisions of the Physical Planning Act. For it is clear that the real costs of reducing the inflow of Bantu workers cannot be reduced in this way, and in fact it is likely that these costs will be increased. The most the authorities can hope to achieve is to shift the incidence of the cost in such a way as to make it more acceptable to the electorate.

This point may be usefully illustrated by reference to the diagram presented in this chapter.  $MM_1$  is the average annual increase in border areas industrial production which is induced by positive measures, and the total minimum subsidy cost required for this purpose is represented by the area ACE. To induce a further  $M_1M_2$  units by means of positive incentives alone would raise the subsidy cost of AFH. As we have suggested, however, it might be possible by means of direct controls, to increase the diverted amount of industrial production from  $OM_1$  to  $OM_2$  without raising the maximum subsidy per unit of border areas output above CE. If this were done, the total minimum subsidy cost would rise to only AFGE instead of to the larger amount of AFH. Thus there is a saving in subsidy costs equal to EFH as a result of the use of direct controls.

The total real cost of diverting this additional amount of industrial production to the border areas, however, is not reduced and is

equal to AFH. All that has happened is that the amount EGH is borne by the factors of production used by the firms affected by physical controls. In particular the rate of profit and the wage rate will be adversely affected. When positive inducements alone are used, the burden falls on taxpayers as a whole, and manufacturing industry bears the cost only in so far as it contributes to tax revenue. When direct controls are used to obtain the additional  $M_1M_2$  units of border areas industrial production, however, the cost falls more heavily on manufacturing profits, and the disincentive effect on industrial production is greater than when positive inducements alone are employed.

If restrictions are applied in excess of the limits envisaged in the preceding two paragraphs the shift in the incidence of the cost is still more marked than before. Say the Government wishes to keep out of the controlled areas a certain number of Bantu workers and that this could be done if a further  $M_2M_3$  units of industrial production were diverted to the border areas. To divert this amount of production by means of positive inducements alone, however, would require additional subsidies totalling at least an amount represented by the area FKLH. It may be that the Government for some reason or other, cannot increase the size of the inducements offered to border industries, but that it nevertheless uses the provisions of the Physical Planning Act to keep out of the controlled areas the number of Bantu workers mentioned. Since the result is mainly a stifling of growth in the controlled areas, the total subsidy cost increases hardly at all above AFGE. Thus taxpayers, as such, do not bear the cost of keeping the specified number of Bantu workers out of the urban areas. Instead it takes the form of a strong disincentive effect on industrial production. The impact of such measures on Bantu wages rates and employment were described above. It is true that other members of the public will not escape unharmed, since there will be a reduction in the country's rate of growth and a tendency for the prices of manufactured goods to rise. But the proportion of the burden falling on industrialists and Bantu

workers is clearly greater than it would have been if the rate of expansion of the controlled areas had instead been reduced by diverting industrial production to the border areas. For in the latter case it would have been necessary to increase the inducements, and taxpayers, as such, would have paid a much larger proportion of the cost.

The fact remains that there may be a certain amount of scope for increasing the amount of industrial production actually diverted to the border areas without raising the level of the inducements. But it may be noted, in order to realise this potential the authorities would have to be extremely skilful in applying the provisions of the Physical Planning Act. It would have to assess the probable consequences of refusing permission to establish or expand in a controlled area, and if this is to be done in a consistent way it would need to analyse in detail the locational characteristics of each applicant. Will the Government be able to acquire the information necessary for this purpose? Clearly the task is not an easy one, and will become more difficult the greater the number of applications which it is required to process. The more applications there are, the greater are the chances of inconsistent and incorrect decisions being made, and the greater will tend to be the delay in replying to each applicant. Given the shortage of persons with the qualifications necessary to perform the task of selection properly, it will be both difficult and costly for the Department of Planning to process the number of applications likely to be received in very active business conditions.

The potential referred to can only be exploited if the Minister discriminates carefully between individual firms. If, however, local authorities are prevented from creating new industrial zones then it is inevitable that some highly immobile industries will also be restricted. Permission has already been refused the Port Elizabeth Municipality to establish an industrial township at Perserverance in the Swartkops

Valley between Port Elizabeth and Uitenhage.<sup>1</sup> When a deputation representing Port Elizabeth interests met with the Minister to appeal against his decision, it appears that certain methods of mitigating the effects of the refusal were discussed.<sup>2</sup> One of these was the possibility of transferring Coloured persons from the Transkei to Port Elizabeth and the greater use of Coloured labour generally. Another was the possibility of using Africans from the Ciskei who it was suggested would be able to return to their families at weekends. Considering that King Williams Town, the heart of the Ciskei is 150 miles from Port Elizabeth by road, however, it appears that the latter proposal is hardly likely to be a practicable solution to the problem.

It is worth noting, too, that if an industrialist is refused permission to establish or expand a plant in a controlled area, his bargaining power in negotiating for assistance tends to be increased. If he is prohibited from establishing or expanding in a controlled area, and the Government wishes him to shift to a border area instead, he will be in a position to argue that the Government must take the responsibility of ensuring that his venture in the border areas does not fall. As the Barlow Commission has pointed out, if "for any reason due to location or not, the venture turns out badly, there is a risk that claims for compensation may be put forward, a risk which would have to be foreseen and steps taken against it".<sup>3</sup> The position is obviously quite different if the Government would be quite content to prevent the establishment or expansion of a firm in a controlled area, regardless of whether the firm actually shifts to a border area or not. The consequences of such an attitude have been outlined above.

By contrast, when positive inducements alone are used the decision whether to accept the assistance offered and produce in a border area, or to site the factory elsewhere without assistance,

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1. Reported in *The Natal Mercury*, Durban, February 19, 1968.
  2. Reported in *The Natal Mercury*, Durban, February 20, 1968.
  3. *op. cit.*, p. 193.

belongs to the industrialists alone and consequently the responsibility is entirely his. It is true that even where positive inducements alone are used, and a particular venture turns out badly, the Government may feel it necessary to provide additional assistance, especially if for political reasons it has come to identify the firms interests with its own. But where direct controls are used the firms position in negotiating for assistance is strengthened right from the start. Furthermore, where positive incentives alone are used, and the firm chooses a site in the border areas, it does so presumably because it believes that this will maximise profits. Because of the difficulties involved in selecting the firms to which direct controls are to be applied, and the consequent danger of bad decisions by Government officials, economists generally favour leaving the process of selection to the market mechanism. It is virtually impossible for a Government department to know as much about each and every manufacturing activity as the industrialists concerned do themselves. It is well to bear in mind, too, that the production function is not an objective fact but is clouded in a great deal of uncertainty.

Professor Lewis, in a book which makes a very strong case for planning, comes out firmly in favour of using the market mechanism rather than direct controls. During an examination of the pros and cons of planning by direction, he says:

"There is nothing in the case for planning which requires the choice of methods that put industrial managers in a straight jacket."<sup>1</sup>

And further on he writes:

"The obvious moral of all this is that our aim should be to preserve free markets wherever possible. The manager of an industrial establishment, whether private or public, should be left free to adjust his concern to market conditions, and to make it with whatever combination of resources he can most cheaply buy. This does

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1. op. cit., p. 16.

not mean that he will be free of control, on the contrary, he is the servant of the market which controls everything he does. Neither does it limit the scope for planning. For the state can do all the planning it wants by controlling in its turn the market which controls the entrepreneur. The state can plan as much as it wants, but it should plan not by direction but by manipulating the market." <sup>1</sup>

The difficulty in some situations, however, may very well be that the state cannot in fact do "all the planning it wants by controlling in its turn the market which controls the entrepreneur." It would be possible for the state to do all the planning it wants, entirely through the market mechanism, only if the subsidies required for this purpose do not exceed the amount that tax payers can be persuaded to contribute. If the state wants to plan more than this, the alternative of planning by direction, which shifts the costs of the planning objective from tax-payers to others, may be more attractive.

#### In Search of a Policy Objective.

We have argued above that it will not be possible to divert a significantly greater proportion of additional manufacturing employment to the border areas without an increase in the size of the inducements offered. If an attempt is made to reduce sharply the rate of growth of the Bantu industrial labour force in controlled areas, without increasing the size of the inducements, the country's industrial progress will be severely hampered and the problem of unemployment amongst Bantu workers will be intensified. It is evident from the Permanent Committee's report for 1965 that the Government was not at that stage satisfied with the increase in employment in the border areas, and a significantly faster rate of increase was required. The Permanent Committee itself recognised

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1. ibid., p. 20.

that if this was to be achieved, "the existing measures to attract industries to the decentralised areas will have to be intensified".

In fact, however, no increase in the size of the inducements offered has taken place. Indeed, it is noteworthy that the total amount set aside in the budget estimates for the fiscal year 1968-69, has not increased compared with the amount for 1967-68. This is so despite the fact that the Government apparently still seeks to increase the rate of progress in the border areas, and it is especially clear that it wishes to bring about a sharp reduction in the growth of the Bantu industrial labour force in the Western Cape, Port Elizabeth/Uitenhage and the Southern Transvaal complex.

Does this mean then that the Government intends pursuing its objectives simply by means of direct controls, without any increase in the size of the inducements offered? Are we in the situation mentioned above in which the state wants to do more planning than can be done through the market mechanism, given the limitations on the tax resources available for this purpose? Is the Government therefore, prepared to give priority to the objective of reducing the expansion of the Bantu industrial labour force of the controlled areas, irrespective of whether or not the manufacturing concerns affected establish plants in the border areas instead? If this were so, it would imply that the degree of territorial separation of the races which the Government is prepared to bring about depends not simply on the cost to the country, but also, in an important way, on the incidence of these costs. For as we have noted, the use of direct controls, rather than positive inducements alone, does not avoid the costs of keeping Bantu out. of the controlled areas, but merely alters the incidence of these costs. Or does the Government simply fail to appreciate both the need for larger inducements if restricted firms are actually to establish or expand in the border areas instead, and the probable consequences of pursuing its objectives by means of direct controls, without any change in the level of inducements?

A difficulty with which we have been faced throughout this study is the absence of any clear indication from the Government of the degree of industrial decentralisation which it actually intends bringing about. We have therefore couched the discussion in general terms, in an attempt to cover various possible alternative degrees of industrial decentralisation. It might be useful in concluding this chapter, however, to consider briefly the implications of one or two official statements regarding the Government's intentions.

According to a recent press report, the Permanent Committee has estimated the increase in the employment of Bantu males between 1960 and the end of 1967 in manufacturing industry in the border areas to have been about 5,000 per annum. The Committee, however, states that about double this number was necessary simply in order to cope with the number of Bantu men from the reserves coming on to the labour market. This was apparently based on the Committee's estimate that the number of Bantu men from the reserves coming on to the labour market in the period 1960 to 1967 was 35,000 per annum, and the assumption that, since only one quarter of the Bantu men in the economy as a whole are employed in secondary industry, three quarters of the 35,000 males would have obtained employment in non-industrial activities if one quarter had been employed in manufacturing industry. Thus they say it would have been necessary to provide employment for at least an additional 9,000 African males per annum to keep pace with the increase in the labour force of the reserves.

The procedure adopted by the Permanent Committee in calculating the amount of industrial employment needed to contain the population of the reserves is highly questionable. But let us take it that they would have been satisfied with 9,000 additional industrial jobs per annum for Bantu males in the period 1960 to 1967. This number is some 80 per cent higher than the increase of 5,000 per annum which

they estimate was actually achieved. As we noted in Chapter 9, the average annual increase in employment in the border areas in the period 1960 to 1966, taking all races and including both male and female Bantu, was about 8,784. It appears then that it would have been necessary to raise the total average annual increase to something like 15,731 in order to provide employment for 9,000 additional Bantu males per annum.

As we estimated in Chapter 9, it seems reasonable to take it that something like 5,112 jobs per annum arose spontaneously in the border areas in the period 1960 to 1966. To achieve an increase of about 15,731 per annum, therefore, it appears that it would have been necessary to divert about 10,619 jobs from other areas to the border areas, compared with the approximately 3,672 which we estimated were actually diverted in the period under consideration. In Chapter 8, we estimated that the average annual increase in employment in non-residential manufacturing industries in the country as a whole was 33,051. It appears then that it would have been necessary to divert about 32.1 per cent of the latter to the border areas, compared with the approximately 11.1 per cent which we estimated was actually achieved.

This means that in order to provide 9,000 additional jobs per annum for Bantu males in the border areas between 1960 and 1966, it would have been necessary to divert an amount of employment approximately equal to the national increase in employment in all the non-residential activities from that at the top of the list in Table 33 above down to the 'blankets' sector. For the reasons mentioned in Chapter 8, in order to divert any particular percentage of the additional employment in non-residential activities, it would be necessary to include in the decentralisation programme a considerably greater number of sectors than Table 33 suggests. As was also argued in Chapter 8, the marginal excess costs of diversion increase significantly as the diverted percentage of non-residential activities increases. Had an attempt been made to divert 32.1 per cent of the increase in employment in non-residential activities, which the Permanent Committee's estimates seem

to imply was necessary in order to stop migration from the reserves, the volume of financial assistance required would have been substantially greater than that which was actually necessary in view of the relatively small number of jobs which seems to have been diverted to border areas between 1960 and 1966.

Despite the heavy cost, however, it is quite possible that the country would have been able, and perhaps quite willing, to provide larger inducements, to a larger number of firms, than they were actually called upon to do. But even if an average annual increase of 15,731 in manufacturing industry in the border areas would have been sufficient to contain the population of the reserves (which is subject to serious doubt), it would have been quite consistent with the continued expansion on a fairly substantial scale of the Bantu labour force in the metropolitan areas. Since the national increase in employment in residentiary and non-residentiary manufacturing activities per annum was about 46,843 between 1959-60 and 1965-66, employment in non-border areas including controlled areas could still have increased by 31,112 per annum, assuming that the use of positive inducements alone would not have had a significant adverse effect on the overall rate of growth.

By contrast with the Permanent Committee's relatively modest objectives, we find the statement by the Minister of Planning that he is "not prepared to grant permission [in terms of the Physical Planning Act] west of a line between Colesberg and Humansdorp if this means the employment of Bantu labour".<sup>1</sup> Subsequently,<sup>2</sup> without reference to any specific region, he stated that "no permission will be granted to any industrialist if there is any increase in the Bantu labour", and "we must see to it that the number of Bantu employed in the metropolitan areas is pegged at the figure of today and is reduced in years to come".

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1. The Natal Mercury, Durban, October 13, 1967.

2. The Daily News, Durban, January 27, 1968.

Can these remarks be taken to mean that all Bantu workers who would have been employed in the metropolitan areas, excluding Durban (where the restrictive measures do not apply to land which has already been zoned for industrial use) will in future be employed in border areas?

It appears from figures published by the Bureau of Statistics,<sup>1</sup> that between 1961/62 and 1963/64, about 71.1 per cent of the national increase in manufacturing employment took place in the Western Cape, Port Elizabeth/Uitenhage and the Southern Transvaal. If, over the whole period 1960-66 they received more or less the same proportion, the average annual increase in employment in these areas would have been about 33,790. If none of the jobs for Bantu workers, included in this total, had been permitted to arise in the three areas mentioned, and if instead they were to have been employed in border areas, it would have been necessary to divert virtually the whole of the 33,790 jobs to manufacturing industry in the border areas. For Bantu labour in the present conditions must be complemented by other types of labour if it is to be employable. But 33,790 is greater than the national increase of 33,051 in non-residential manufacturing industries, so that it would clearly have been very difficult, probably physically impossible, to actually divert the whole of the increase in manufacturing employment in the three major industrial areas mentioned, to the border areas. The reason for this, of course, is that the estimated annual increase of 33,790 took place in residential as well as non-residential activities and the former cannot be diverted.

Residential activities contributed about 27.3 per cent of the total manufacturing employment in 1960-61. Let us say, so as to be on the conservative side, that such activities contributed only 15 per cent of the increase in manufacturing employment in the Western Cape,

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1. Statistical News Release dated 15th February, 1967.

Port Elizabeth/Uitenhage and the Southern Transvaal between 1960-66. Thus out of a total estimated increase of 33,790 per annum in these three areas together, at least 5,068 would have been in residentiary activities. If no additional Bantu employment had been permitted in the latter the amount of employment available to Bantu in the country as a whole would have been reduced. At the most only the difference between 33,790 and 5,068 jobs, that is 28,722, could have been considered for diversion to the border areas. But clearly the task of actually diverting all of these would have been an extraordinarily difficult one. It would have meant diverting all the additional employment in all manufacturing industries in these areas from the most mobile to the heaviest and most capital intensive ones.

For instance, if all Bantu labour is to be kept out of the controlled areas, and is actually to be employed in manufacturing industry in the border areas, it would be necessary to divert all the additional employment in industries such as iron and steel, cement, pulp and paper, explosives, Sasolburg, and also in all activities which, though not of a residentiary nature, are strongly oriented to the large markets offered by the major industrial areas. The additional employment in the latter industries is probably very substantial, for as we noted in Chapter 2, the market has been the predominant factor determining the locational pattern of manufacturing industry in South Africa. The costs of diverting 28,722 jobs per annum are prohibitive, and any attempt to do it would seriously disrupt the whole economy. As we noted above it requires positive inducements to divert industries, as distinct from merely stifling them, but the amount of tax revenue required to divert employment on this scale is probably beyond the capacity of the country. Indeed, as we noted above, the diversion of even the 19,619 employment opportunities, which we estimated would have been necessary to achieve the Permanent Committees relatively modest aims, would have required substantial increases in financial assistance to border industries, and as experience has shown, could not be achieved with the present inducements.

Since it would have been impossible to divert all additional manufacturing employment to the border areas, it follows that if a total embargo had been placed on the employment of more Bantu workers, this would have dislocated economic life in South Africa and have led to large scale unemployment. Even if the size of the inducements had been increased this could not have been avoided, but if such an embargo had been introduced while leaving the inducements unchanged the effect on manufacturing industry would have been still more devastating. Confronted with such an embargo most industries, especially those mentioned specifically in the last paragraph, would not have established branch plants in or transferred their factories to border areas.

Indeed, a total embargo would cause so much damage to the economy and to the living standards of Bantu that the possibility of it being imposed would not deserve serious consideration but for the remarks, quoted above, by the Minister responsible for implementing the provisions of the Physical Planning Act. Also it appears that equally drastic measures have been contemplated in Italy. Writing of the situation in Italy in the early 1960's Vera Lutz comments as follows:

"The armoury of instruments was now nearly full. It looked as though Parliament had provided for almost every stimulus to private industry in the South - other than unlimited gifts - that could be devised. One very extreme measure, it is true had been avoided. A proposal was being voiced in influential circles in 1956 that a law should be passed placing a ban - for private and public enterprises alike - on the establishment of new industrial plants, and the expansion of old ones, in the North until a sufficient amount of industry had been developed in the South. This counsel of despair was fortunately set aside before it could give rise to action."<sup>1</sup>

Apart from the difficulties mentioned, there are other reasons for doubting whether the remarks of the Minister of Planning which we

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1. Op. cit., p. 120.

quoted above should be taken at their face value. For instance the Minister himself has more recently adopted a rather less uncompromising position, in making the following remarks: "This is an invitation [to industrialists] to have a talk with us, not as enemies, but helpful friends, who will do everything possible to advise them... Naturally, many of them will be industries which cannot be established in border areas, and there we will be only too happy to direct them to metropolitan areas."<sup>1</sup> In addition, there is the fact that since the relevant provisions of the Physical Planning Act came into effect on January 19, 1968 the number of firms actually refused permission to establish or expand in controlled areas has been fewer than industrialists feared, in view of the Ministers earlier statements. He is reported<sup>2</sup> to have said that on 22 February there were 94 applications "under consideration". By 10 May, 84 of these had been finalised, permission being granted in 59 cases and refused in 13. Twelve applicants were told that they had applied for exemption unnecessarily, and in the case of the other ten "further particulars called for were being awaited". Between 22 February and 10 May the Minister received a further 433 applications, 168 of which were granted and 28 refused. Forty five applicants were told that they need not have applied, while 193 were still being considered.

The situation described, clearly contains certain unsatisfactory features. The possibility of costly delays, referred to earlier, is in evidence and it appears that there was a build up of applications "under consideration" but unfinalised, between 22 February and 10 May. Furthermore, 41 out of the 268 finalised applications, which were actually necessary in terms of the Act, were refused. This proportion, though it falls well short of a complete embargo, is not insignificant

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1. The Daily News, Durban, March 21, 1968.

2. The South African Financial Mail, May 17, 1968, p. 602.

and, depending on the type and size of the establishments or expansions refused, the costs to industrialists might have been quite substantial. Unfortunately we do not as yet know anything about the nature of the firms affected. The fact that the criteria used by the Minister in deciding whether to grant or refuse permission are not known also has serious disadvantages, and must introduce a most undesirable element of uncertainty into business planning.

Despite these unsatisfactory features, the fact remains that the number of refusals is considerably less than the Minister's earlier statements might have led one to expect. Does this mean that the Government does not really mean to place anything like a total ban on the employment of additional Bantu workers in controlled areas, despite repeated statements to the contrary? Whatever the answer to this question may be, it seems clear that the size of the reduction in the growth of the Bantu industrial labour force in the controlled areas which is required by the Government, is significantly greater than that actually contributed by border industries policy between 1960 and 1967, and is also greater than that which would have been achieved if the 9,000 jobs per annum, which the Permanent Committee estimates would have stopped the flow from the reserves, had been provided in the border for Bantu males over this period. We must also note that as yet there has been no significant increase in the size of the inducements available to border industries. In the light of these facts it seems that we cannot completely discount the possibility that the Government will act in a way which will have the effect of shifting the costs of its policies on to industrialists and Bantu workers, whether it intends its actions to have this effect or not.

It would be of great value if a realistic target were to be selected on the basis of a careful assessment of the facts, and if it were made known to the country's industrialists. The uncertainty caused by contradictory official statements of the Government's intentions is not conducive to sound long term planning by manufacturing concerns. It may be that an initial approach to this problem

could be made along the lines suggested by our analysis in Chapter 8 above. The statistics included in Table 33, and the subsequent analysis based on the table, relate to manufacturing industry in the country as a whole. In view of the recent announcement of specific controlled areas, however, it would be useful to construct a similar table relating only to the controlled areas. If industrial statistics for each magisterial district and for each of the 130 odd manufacturing sectors were available for a recent year, it would be possible to analyse the composition of the increase in employment in the controlled areas between, say, 1959-60 and 1966-67. By separating residentiary from non-residentiary activities, and ranking the sectors in terms of mobility or divertibility, it would then be possible to make a detailed analysis of what might have happened if the increase in Bantu employment in the controlled areas had fallen short, by various assumed amounts, of the increase that actually took place in the period 1960-67. It seems that some such exercise as this must be performed if a full understanding is to be obtained of the probable consequences of using the restrictive provisions of the Physical Planning Act to bring about a reduction of any particular size in the rate of growth of the Bantu industrial labour force in controlled areas. In the light of such an analysis, it would be easier for the Government to make a realistic decision regarding the optimum reduction in the rate of expansion of the controlled areas, and whether it was desirable to increase the size of the inducements offered to border industries.

As we observed at the beginning of this chapter, there has been a consistent tendency to underestimate the inducements necessary to bring about large scale industrial decentralisation. The restrictive provisions of the Physical Planning Act are certainly adequate to the task of checking the further expansion of industry in the controlled areas. But there is still the danger that the costs of bringing about decentralisation in this way are not fully appreciated.

Chapter 11.

"WHAT PRICE ECONOMIC GROWTH?"<sup>1</sup>

Before 1929, price stability held pride of place amongst the objectives of economic policy in capitalist societies. The Great Depression and the Keynesian Revolution in economic thinking, however, shifted the emphasis to another objective, the maintenance of a high and stable level of employment, which often conflicts with that of price stability. After the Second World War, probably largely due to the cold war between East and West, a third objective came to be emphasised in both rich and poor countries, a rapid rate of economic growth.

This emphasis on economic growth has aroused a good deal of criticism. Perhaps the most celebrated of the protests against excessive preoccupation with growth in Professor J. K. Galbraith's The Affluent Society<sup>2</sup> which attacks the 'conventional wisdom' of continuing to stress economic growth in a society as affluent as that of the United States. The essence of his argument seems to be that a greater part of the country's resources must be devoted to improving the quality of life and less to increasing the quantity of goods and services available to an already affluent society.

More recently E. J. Mishan<sup>3</sup> has strongly condemned what he calls "growthmania" which he alleges is so prevalent in the West, and

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1. Title of a book edited by Klaus Knorr and William J. Baumol, (Prentice-Hall, 1961).
  2. The Affluent Society, (Houghton Mifflin Co., Boston, 1958).
  3. op. cit.

has seriously questioned the value of greater material prosperity when it takes the form very largely of television sets and an unnecessarily large assortment of automobiles, and when it is accompanied by the 'ugliness of the irresistible spread of steel and concrete' and an 'increasingly complex, frantic and wearing' way of life.<sup>1</sup> Mishan argues that in Britain much more emphasis must be given to the costs of economic growth.

Whatever relevance these attacks on growthmania may have for countries like the United States and Britain, they obviously do not apply with anything like the same force to the poorer countries of the world where the major obstacle to an improvement in the quality of life is the shortage of consumption goods. Mishan, for one, is apparently perfectly well aware that for most of the world, commodities like bread, rice and micheles, and even the most elementary forms of education are much more relevant benefits of economic growth than are electric toothbrushes and television sets. He, therefore, qualifies his argument with the following comment:

"One may concede the importance of economic growth in an indigent society, in a country with an outside population wherein the mass of people struggle for bare subsistence. But despite ministerial twaddle about the efforts we must make to 'survive in a competitive world', Britain is just not that sort of country. Irrespective of its 'disappointing' rate of growth, or the present position of the gold reserves, it may be reasonably regarded, in view of its productive capacity and skills, as one of the more affluent societies of the West, a country with a wide margin of choice in its policy objectives".<sup>2</sup>

In short then the 'marginal benefit' of economic growth is higher in poor countries, simply on account of their lower per capita incomes. Given the fact that South Africa's per capita income is less than two

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1. *op. cit.*, p. x.

2. *op. cit.*, pp. 4-5.

fifths that of the United Kingdom, it would seem that the benefits of economic growth are considerably greater in this country, and that the margin of choice in its policy objectives is not nearly as wide as it is in the more affluent countries.

Faster growth naturally means a greater rate of increase in the living standards of all sections of the population. This may matter little to the white population which already enjoys a living standard surpassed only by that of the two or three most prosperous countries, but some would be inclined to attach a very high value to an improvement in the living standards of non-whites, in view of their present relatively low level. For non-whites, especially the inhabitants of the Bantu areas, the improved health and better education which economic growth can make possible are obviously important benefits. But let us put aside all the considerations which make an improvement in living standards a desirable end in itself. It is not that these considerations do not matter, and indeed even the prosperous white population clearly wants a still higher standard of living for its own sake. Rather we shall put such considerations aside simply in order to emphasise that there are sufficiently good reasons apart from this why the white electorate, with whom the choice between growth and other possible conflicting objectives lies, might in their own interests attach a high value to the benefits of economic growth.

The choice between economic growth and conflicting political objectives is not simply a choice between "economic" and "non-economic" objectives. While economic growth in the sense of an increase in the country's capacity to produce goods and services may conflict with some goals of society, the attainment of certain other goals, even those which would normally be regarded as essentially "political" in nature, is not merely consistent with, but actually requires, economic growth. In great measure, economic growth is not desired simply for the rising living standards which it brings, as an end in itself, but as a means of attaining certain "political" objectives. To this extent

growth is itself a political goal and the real clash is between those political objectives which require economic growth and those which conflict with it. To say that economic growth must be sacrificed for social or political reasons is, therefore, simply to say that social and political objectives which require growth must be sacrificed for those which conflict with it. Let us consider briefly two important political objectives of the former sort, which may be regarded as amongst the benefits of economic growth.

Firstly, though not necessarily in order of importance, there is the effect of growth on the strength of the state in its external relations. In this connection it is worth noting that even in the United States, notwithstanding the strictures of the "anti-growth" school, the need to achieve a high rate of growth for this purpose is regarded by some observers as sufficiently urgent to warrant a deliberate effort to improve the performance of the United States in this respect.

As Klaus Knorr has pointed out, the rate of growth of the real G. N. P. in the Soviet Union is estimated to have been more than twice as great as in the U. S. A. in the 1950's.<sup>1</sup> This together with the fact that the U. S. S. R., with a national income only about half the size, in 1960 had a military output which approximated that of the U. S. in absolute terms,<sup>2</sup> is regarded by Knorr and other writers in the same book, as a serious threat to the long term security of the U. S. and hence to the West as a whole. Two other related benefits of rapid economic growth are what Knorr calls "system reputation", that is "the image of the performance of the American economy (and indirectly, of the American political, social and cultural arrangements) as evaluated in the minds

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1. Knorr and Baumol, op. cit., p. 4.

2. ibid., pp. 8-9.

of foreigners in terms of their own values,<sup>1</sup> and the capacity to provide foreign economic aid. They therefore propose various measures for increasing the rate of economic growth in the U.S., even though this would involve certain other social and political costs.

Circumstances, and hence the optimum rate of growth obviously vary a great deal from country to country. South Africa does not bear the burden of having to defend the West. Nor for that matter does Britain have as large a role to play as the U.S. in this respect, and she may therefore be able to afford the luxury (necessity?) of "little Englandism". But in view of the hostile attitude of the rest of the world towards South Africa, the United Nations' embargo on the supply of arms, the long term if not immediate possibility of a substantial military threat to the white-controlled states of Southern Africa, and the potentially important political role of foreign economic aid to neighbouring black states and even to those further north, is not continued rapid economic growth of the utmost importance to the security of South Africa? How much value does the white electorate attach to growth for these purposes? Would the loss of the potential benefits related to her external security, which would be involved in a reduction in the rate of growth of the G. D. P. from a maximum long term rate of 5.5<sup>2</sup> per cent to a rate of, say, 4.5 per cent be considered worthwhile, taking into account the alternative objectives that such a reduction might enable the country to satisfy? Would a reduction to 3.5 per cent be worthwhile?

Secondly, there are the possible beneficial effects of economic growth on race relations within South Africa. As we noted in Chapter 6, there is a tendency for economic growth to spontaneously reduce the degree of inequality in the distribution of income. This of course is a gradual process, and is likely to be particularly slow in the early stages of development when there is a large amount of underemployed, low grade labour to draw upon. Several considerations, such as the

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1. Ibid., p. 9.

2. The maximum potential rate estimated in the Economic Development Programme for the Republic of South Africa 1966-1971.

marked decline in the proportion of Africans resident in the Bantu areas,<sup>1</sup> the shortage of skilled labour which has become acute in recent years, and the tendency, which we noted in Chapter 2, for the average earnings of non-whites to rise more rapidly since the late 1950's, seem to suggest that the rate at which the degree of inequality in the distribution of income declines with economic growth, may become more pronounced in future.

Thus we should expect the differences between the incomes of the "haves" and the "have-nots" to decline at least in relative terms, and this may well have the effect of lessening racial tensions. Indeed, some writers believe that there is a very close relationship between the stage of economic development and the conditions necessary for successful political democracy. Van den Bogaerde<sup>2</sup> finds that in the case of the existing democratic countries, there is a close relationship between the timing of the introduction of the universal franchise and the stage of economic development which they had reached, since, he seems to argue, class conflict is only reduced sufficiently to make a universal franchise workable when certain institutions, characteristic only of industrialised societies, have been developed, and people have acquired a common interest in political stability and the maintenance of law and order. Whatever doubts one may have about the validity of the more deterministic features of such stages-of-economic-and-political-development theories, it may nevertheless be true that a reduction in the degree of income inequality does contribute to a lessening of social tensions, and this requires economic growth.

In the short run, however, economic growth cannot be expected to make any significant impact on the equality of income distribution

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1. About 39.0 per cent in 1960 compared with 78.0 per cent in 1911.
  2. F. van den Bogaerde, Suid Afrika in die Politiek-Ekonomiese Proses (Van Schaik, Pretoria 1966).

even if the long term tendency discussed above is in operation. Nevertheless greater affluence itself, as Professor Galbraith has suggested,<sup>1</sup> may take a good deal of the sting out of inequality. Are a high level of employment and a rapidly rising standard of living conducive to racial peace? To what extent are the apparently calmer conditions of recent years in South Africa compared with the early 1960's due to the boom which began in late 1961, and to what extent to other factors? One astute observer of the South African scene has told the writer that he believes the racial peace of recent years can be attributed entirely to the country's prosperity. Perhaps this is too simple a view of the situation, but it is surely true that economic strength is one of the Governments greatest assets and that a 5.5 per cent rate of growth is, therefore, better from this point of view than 4.5 per cent and that 4.5 per cent is better than 3.5 per cent. This is particularly clear when one takes into account the rapid increase of South Africa's population, and that a growth rate of 5.5 per cent over the period 1966-1971 was expected to give an increase of 2.7 per cent per annum in income per head.<sup>2</sup> The rate of increase of per capita income would, therefore, fall to under two per cent with a rate of growth of the G. N. P. of 4.5 per cent, and to under 1 per cent with a growth rate of 3.5 per cent. What would the effect of such reductions be on the political situation in South Africa?

On political grounds alone, then, it appears that the white population might want to attach a high value to the 'marginal benefits' of economic growth. Economic growth, however, also has its costs, and it may be that these costs are reckoned to be so high in South Africa that

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1. op. cit., Chapter XXIII

2. Economic Development Programme for the Republic of South Africa 1966-1971, p. 13.

even though the marginal benefits of growth are higher than in the more affluent and politically less isolated countries of Europe, the optimum rate of growth is no higher here, and perhaps even lower. For instance, we may be prepared to leave ourselves a little more rather a little less vulnerable to external threats if the costs of avoiding this are sufficiently great.

Economic growth in South Africa requires a continued increase in the African population of the more dynamic parts of the country, namely the present major industrial regions. That is, up to a certain point, the greater is the desired rate of growth, the greater is the proportion of additional industrial capacity and hence of all sections of the population which must be situated in those areas. That this is so, follows from the argument of this study that the greater the proportion of the additional industrial employment which is diverted to the border and Bantu areas, the greater the marginal costs in terms of a loss of productive capacity. Hence, taking the viewpoint of the Government, a cost of having a little more economic growth, rather than a little less, is that a larger proportion of the additional employment of Bantu in industry must occur in the 'congested' areas. Or, to look at it from the point of view adopted in earlier chapters, the cost of diverting industries to border areas for the purpose of bringing about separate development is a reduction in the maximum potential rate of growth. The benefit derived from doing this is that discussed in Chapters 1 and 6 above, and the demand for this benefit is reflected in the curve GG in the Diagram of Chapter 6. This curve, however, tends to be lowered by the benefits of growth which we discussed above.

That a diversion of industries involves a cost in terms of growth was argued in detail above. It is also accepted by a number of leading authorities<sup>1</sup> in the field, that unless state intervention in the location

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1. Including a number who are for various reasons in favour of attempts to decentralise industry e.g. Thomas Wilson, Planning and Growth, pp. 125-128; M. C. MacLennan, "Regional Planning in France", in Thomas Wilson (editor), Papers on Regional Development, (Basil Blackwell, Oxford 1965), p. 75, the Barlow Commission op. cit., W. A. Lewis, Principles of Economic Planning; Vera Lutz, op. cit.

of industry is confined to a limited number of carefully selected industries economic growth will be seriously impaired. Yet there are some commentators in South Africa who appear to doubt it, and this seems to be due to a misunderstanding of what the sort of argument we have presented means or, rather, does not mean.

It is, of course, true that continued economic growth and state intervention in the location of industry are compatible with one another. We have not argued that such state intervention will stop growth entirely, let alone cause an absolute decline in the national income. Continued economic growth is probably even compatible with a fairly high degree of forced industrial decentralisation. We have simply been saying that the greater is the proportion of additional manufacturing capacity which is diverted to the border and Bantu areas, the greater will be the loss of potential productive capacity, and hence the lower will be the rate of economic growth. Furthermore, we are not even saying that a "rapid" rate of economic growth is incompatible with the diversion of industries to border and Bantu areas, if by "rapid" growth we mean one close to the maximum potential rate of 5.5 per cent growth in the G. D. P., estimated by the Department of Planning for the period 1966-1971. For if diversion is carried on on a small scale it need not have a significant adverse effect on economic growth, as the experience of the past few years shows.

Whether rapid growth is compatible with "separate development", however, is a rather different matter. It depends obviously on what is meant by "separate development". If it simply means continued attempts to foster growth in the border and Bantu areas in order to reduce the rate of Bantu migration to the metropolitan areas, then of course a high rate of growth is compatible with separate development for the reasons given in the last paragraph. But if it means Government intervention in the geographical distribution of economic activities on a scale sufficient to reduce the black/white population ratio to 1:1 in

the Southern Transvaal industrial complex, or to bring to an end the expansion of the Bantu industrial labour force in that region, or some similarly ambitious scheme, the compatibility of rapid economic growth with separate development is much more doubtful. Indeed as we suggested in the last chapter the attainment of such goals, if not actually impossible (which they probably are), would gravely hamper the country's economic expansion. The ambitious goals mentioned above are in fact those normally associated with the concept of separate development.

Some may be inclined to deny the conflict between growth and Government intervention in the location of industry on the basis of historical experience. For instance, there is the case of the United States where, despite the increasing proportion of the country's national income taking the form of public expenditure, and the great extension of government control and regulation in many spheres of economic life, growth has continued (though of course at a relatively slow rate) and per capita incomes have risen steadily. Three important points which this sort of argument seems to overlook may be stated briefly as follows:

(a) State intervention is not a homogeneous thing, and there are a great variety of forms which it can take. It is, for instance, obviously nonsense to put state intervention to establish the Iron and Steel Corporation of South Africa, the increasing number of South African industrial concerns controlled and run by the Industrial Development Corporation, and state control of electricity supply and the railways, on the same footing as intervention in the location of industry by application of the provisions of the Physical Planning Act. Not all state intervention is necessarily economically harmful in the sense that it involves a deviation from the optimum allocation of resources. If this were not the case we should expect the most highly socialised countries to be the least efficient. In fact the arguments against

socialism are not primarily economic, but political, and even those economies which come closest to being 100% state owned know that they cannot shift industry from optimum to non-optimum locations without causing an adverse effect on production. And even in those countries most firmly committed to private enterprise it is of course recognised that there are some functions which can only be efficiently performed by the state. Finally, in those cases where state intervention does shift resources from their most productive uses, some types of intervention are more damaging in this respect than others.

(b) A small degree of intervention of the non-optimum sort, in each of a wide variety of different aspects of economic life is not as damaging economically as large scale intervention in one field, such as industrial location, for the simple reason, mentioned near the end of Chapter 8 above, that whereas "at lower levels of fulfillment objectives may be compatible or complementary", at the higher levels "opportunity costs seem to rise sharply".

(c) Increasing government intervention, as in the United States, is often the result of economic prosperity. Progressive taxation alone tends automatically to increase the share of the country's resources in the hands of the public sector. Also as countries grow richer they seem to want, and are able to pay for, more and more things of a sort which are often best provided by government action e.g. education, social programmes like the U.S. anti-poverty campaign, urban renewal schemes, space research etc.

There seems to be only one thing which might enable forced decentralisation to take place on a significant scale without reducing the rate of growth below its long term maximum level, and that is a reduction in the ratio of private consumption to the national income by means of increased taxation. In this case the proportion of the national income available for productive investment by the Government and private individuals might be unaffected and the additional tax revenue could be used to subsidise border industries so as to leave them with

the same costs as they would have had in their optimum locations, and hence with the same incentives to produce. How much additional tax revenue would have to be raised would depend on the degree of industrial decentralisation envisaged, and it must be remembered, as we noted earlier, that these costs of subsidisation would tend to become cumulative. We cannot say exactly how much additional tax revenue would be necessary for various degrees of industrial decentralisation, but the relatively insignificant results achieved with the existing measures suggest that it would have to be very large indeed to divert a substantially greater proportion of additional manufacturing capacity.

The question, then, is whether the South African electorate can be made to feel that the need for substantial industrial decentralisation is sufficiently urgent to induce them to accept higher taxes. Is it within their capacity to cut consumption sufficiently to achieve the more ambitious targets without a fall in the rate of growth? If they believe that these ambitious targets cannot be reached, will they feel that significant decentralisation short of those targets is worth paying for? Will they not instead look for alternative approaches to the political problems which decentralisation is designed to solve? Is the failure to increase the size of the subsidies to border industries, and resort to physical controls a sign that the Government believes the electorate will not bear the cost?

Historical experience, therefore, does not conflict with the finding in this study that forced industrial decentralisation involves a cost which rises more than in proportion to the percentage of additional capacity which is diverted. Indeed as we noted briefly earlier there is one aspect of the situation which tends to raise the growth costs of diverting any particular proportion of manufacturing industry, compared with countries like Great Britain and Ireland, and consequently tends to raise the optimum rate of growth. The following comments

by Vera Lutz<sup>1</sup> on the situation in Italy, apply equally well to South Africa:

"Some of the current notions about the possibilities of diverting future industrial expansion from Northern to Southern locations are inspired by recent English practice in controlling the geographical distribution of industry. It is doubtful, however, whether the policy actually followed by the Board of Trade in the case of the United Kingdom has involved diverting industry away from the optimum or preferred locations in anything like the degree that would be necessary in order to reach that distribution between Southern and Northern Italy which is at present regarded as desirable by much of Italian opinion. Displacements of a few tens of miles are likely to be a very different thing from displacements of several hundred. The distance between the plain of Lombardy and the Ionic seaboard, for instance, is 600 miles."

It is true that some border areas are relatively close to the major industrial areas and in fact it appears that for the time being at least Durban and Pinetown have virtually acquired border areas status. But the exemption of Durban and Pinetown from certain provisions of the Physical Planning Act and the proximity of certain border areas to major industrial areas, does not overcome the problem of achieving a geographical distribution of additional border areas employment which is in keeping with the aims of the policy, which arises from the fact that the distances over which industry must be diverted to achieve this, especially in the case of the Transkei and Ciskei border areas, are very considerable.

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1. op. cit., pp. 143-144.

There seems to be at least one basis on which it may be argued that the costs of planned industrial decentralisation, as set out in this study so far, are overstated. Firstly, it may be argued that while the short-term effect of attempts to decentralise industry will be to slow down the rate of growth, if we take into account the possibility of political upheaval if industrial decentralisation is not achieved, this policy may actually result in a faster rate of growth in the long run than would take place without it. Put this way, the argument for industrial decentralisation may in a sense be seen as an economic one. There is no way of testing the validity of this sort of prediction, but if industrial decentralisation on a large scale is required for this purpose, we shall almost certainly have to accept a considerable reduction in the rate of economic growth, with all the political difficulties that this would bring. Those who insist on the absolute necessity of large scale decentralisation for the prevention of political catastrophe, therefore, seem to present us with an extremely gloomy view of South Africa's future.

In this chapter we have simply tried to show the nature of the choice between economic growth and industrial decentralisation, which the country has to make. The considerations mentioned do not, of course, represent anything like an exhaustive list of the costs and benefits of economic growth. But they are, perhaps, sufficient to show that statements by people in responsible positions to the effect that "the economy must be changed, bent or even broken to ensure something so vital as the survival of the nation" are nonsensical and dangerous. A broken economy can hardly ensure the "survival of the nation" and is much more likely to hasten its collapse. If growth and industrial decentralisation both contribute towards the "survival of the nation" then, since they conflict with one another, the problem is to select that blend of economic growth and industrial decentralisation which, of all the attainable blends, is best suited to the task.

What are the government's present intentions in this regard? Does it seek to achieve the spectacular sort of industrial decentralisation implied by numerous statements made by the Deputy Minister of Bantu Administration and Development during 1967? Does it intend applying the Physical Planning Act in the extremely severe way promised by the Minister of Planning in his statements of October 1967 and January 1968, quoted in the last chapter? Or is the address by the Minister of Bantu Administration and Development, at Potchefstroom in March 1968, in which he stated that the crux of government policy lay not in "the spectacular removal of people to their various homelands" but rather in "the process of freeing the Bantu people from guardianship and anchoring them to their homelands traditionally, spiritually and politically",<sup>1</sup> a truer reflection of the Government's thinking at present?

Does Mr. Botha's statement mean that we should now regard the more spectacular forms of industrial decentralisation in the same light as Schumpeter sees Disraeli's particular brand of imperialism? Schumpeter says:

"We can see that Beaconsfield was quite right in not taking a single practical step in the direction of practical imperialism and that his policy was based on good sense. The masses of the British electorate would never have sanctioned an imperialist policy, would never have made sacrifices for it. As a toy, as a political arabesque, they accepted imperialism, just as long as no one tried it in earnest."<sup>2</sup>

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1. Reported in *The Natal Mercury*, Durban, March 21st, 1968.
  2. J. A. Schumpeter, "Imperialism as a Social Atavism", in Harrison M. Wright (editor), *The "New Imperialism"*, D. C. Heath and Company, Boston, (1961), p. 50.

Whatever the case may be, it is a matter of the greatest importance to the country that a realistic target for industrial decentralisation should be established on the basis of a thorough examination of the facts, and that industrialists should be informed both of the volume of industrial decentralisation envisaged and the criteria to be used in implementing the policy. Quite apart from the effects of actually implementing the border industries policy, the present state of confusion may itself seriously hamper industrial expansion. No country as dependent as South Africa is on manufacturing industry for its future economic growth can afford to take this risk.

APPENDIX AA Classification of Industries According to Type  
of Raw Materials and Market

Table A-1 provides an analysis of the intermediate inputs of each of the forty manufacturing sectors included in the input-output table for South Africa for 1956-57.<sup>1</sup> The primary, manufactured and service industry inputs of each of the forty sectors were first expressed as percentages of the sectors total intermediate inputs. Those sectors which were found to have a very high proportion of primary inputs relative to manufactured inputs were classified as first stage resource users.

Of the remaining sectors the following two types were classified as second stage resource users : (a) industries which obtained a relatively large proportion of their material inputs from the first stage resource user manufacturing industries e. g. bakeries (70.2 per cent of inputs from 1st stage resource users), confectioners (26.6 per cent) and furniture manufacturers (13.87 per cent); (b) industries whose intermediate inputs consisted to a significant degree of primary inputs even though their manufactured inputs were not obtained predominantly from first stage resource users e. g. iron and steel basic industries (19.8 per cent), basic industrial chemicals (15.8 per cent), and pulp, paper and paperboard (14.3 per cent).

All sectors, which were overwhelmingly dependent on industries other than first stage resource users and primary industries, were classified as third stage resource users.

Using the information contained in Table A-1 as a guide, each of the 129 sub-groups given in the industrial census for 1959-60 was then classified as either a first, second or third stage resource user. It was on the

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1. See D. C. Krogh, "An Input-Output Analysis of the South African Economy - 1956-57", S.A.J.E., December 1961.

TABLE A-1

Classification of Forty Manufacturing Sectors According to Predominant Type of Raw Material \*

No. +	Description of Industry	(1)		(2)		(3)		(4)	(5)	(6)	Stage of Production
		Primary Resource Inputs		Manufactured Inputs		Service Industry Inputs		Total Inter-mediate Inputs	Purchases from 1st stage resource user manufacturing industries	Purchases from 2nd stage resource user manufacturing industries	
		Rm.	%	Rm.	%	Rm.	%	Rm.			
6.	Slaughtering and meat products	109.84	51.7	15.02	7.0	87.78	41.3	212.64			1st stage
7.	Dairy Products	28.08	56.4	9.60	19.3	12.12	24.3	49.80			1st
8.	Fruit and vegetable products	10.72	27.0	18.30	46.1	10.68	26.9	39.70			1st
9.	Fish and other sea products	6.26	35.6	3.16	18.1	8.14	46.3	17.56			1st
10.	Grain mill products	110.66	76.1	6.72	4.6	28.04	19.3	145.42			1st
11.	Bakery products	1.08	2.5	32.70	75.9	9.30	21.6	43.08	70.2	5.7	2nd
12.	Sugar factories and refineries	28.92	43.3	18.50	27.7	19.40	29.0	66.82			1st
13.	Chocolate and sugar confectionery	1.42	6.1	12.24	53.0	9.54	40.9	23.30	26.6	26.4	2nd
14.	Miscellaneous food preparations	35.02	36.8	37.37	39.3	22.68	23.9	95.02			1st
15.	Distilleries and wineries	4.46	7.5	21.34	36.0	33.48	56.5	59.28			1st
16.	Breweries and soft drink industry	4.70	19.2	9.02	36.9	10.74	43.9	24.46			1st
17.	Tobacco manufacturers	16.02	34.8	7.76	16.9	22.20	48.3	45.98			1st
18.	Spinning, weaving & finishing of textiles	13.80	17.1	29.50	36.4	37.62	46.5	80.92	.4	36.0	2nd
19.	Knitting mills	0.04	.02	10.72	41.5	15.20	58.5	25.96	.54	41.0	3rd
20.	Cordage, rope, twine n.e.c.	2.76	23.2	4.76	40.0	4.38	36.8	11.90	.84	39.2	2nd
21.	Footwear, except rubber footwear	.02	.04	25.66	56.2	20.02	43.8	45.70	1.88	54.3	3rd
22.	Clothing and other wearing apparel	0.04	.03	32.86	56.6	63.66	43.4	146.56	1.77	54.8	3rd
23.	Made-up textile goods except 22			10.10	44.6	12.54	55.4	22.64	1.15	43.4	3rd
24.	Wood and cork except 25	13.52	29.2	19.44	41.9	13.38	28.9	46.34			1st
25.	Furniture and fixtures	.32	.05	26.46	45.6	31.92	54.4	58.70	13.87	31.7	2nd
26.	Pulp, paper and paperboard mills	3.00	14.3	7.96	37.8	10.06	47.9	21.02	4.3	33.5	2nd
27.	Articles of pulp, paper and paperboard	0.06	.16	29.00	79.6	7.44	20.4	36.50	.82	78.8	3rd
28.	Printing, publishing and allied industries			23.72	50.1	23.62	49.9	47.34	1.52	48.6	3rd
29.	Tanneries and leather products	0.06	.4	11.82	82.1	2.60	17.9	14.48	53.04	29.1	2nd
30.	Rubber products	10.56	22.3	21.84	47.0	14.34	30.7	46.74	.68	46.3	3rd
31.	Basic industrial chemicals	15.34	15.8	48.62	50.2	32.96	34.0	96.92	8.87	41.3	2nd
32.	Miscellaneous chemical products	10.84	9.7	56.06	50.0	45.16	40.3	112.06	5.85	44.1	3rd
33.	Products of petroleum and coal	20.30	15.3	12.32	14.5	93.20	70.2	132.82			1st
34.	Structural clay products, pottery, china and earthenware	4.12	20.1	4.48	23.0	11.64	56.9	20.44			1st
35.	Glass and glass products	1.08	6.2	9.02	51.6	7.38	42.2	17.48	3.43	48.2	2nd
36.	Cement	6.86	28.6	4.80	20.1	12.28	51.3	23.94			1st
37.	Non-metallic mineral products n.e.c.	8.42	30.7	10.76	39.2	8.28	30.1	27.46			1st
38.	Iron and steel basic industries	14.46	19.8	36.18	49.6	22.30	30.6	72.94	7.73	41.9	2nd
39.	Non-ferrous metal basic industries	.56	1.5	27.58	77.0	7.72	21.5	35.86	.78	76.22	2nd
40.	Metal products except 41, 43 and 44	.56	.4	112.96	75.3	37.24	24.7	150.76	2.41	72.9	3rd
41.	Machinery except 42	.64	.5	48.0	37.0	81.62	62.6	130.26	2.39	35.0	3rd
42.	Electrical machinery, apparatus & supplies	.08		60.06	54.2	50.86	45.8	111.00	2.39	51.8	3rd
43.	Transport equipment except 44	.08		19.0	67.7	9.12	32.3	28.20	2.76	64.9	3rd
44.	Motor vehicles and repair	.02		106.76	55.3	86.42	44.7	193.20	.41	54.9	3rd
45.	Miscellaneous manufacturing industries	17.62	25.2	12.24	17.5	40.06	57.3	69.92	5.03		

+As in the input-output table for 1956-57.

\*Percentage figures show purchases in each category as a percentage of total intermediate inputs.

Source: Based on D.C. Krogh's "An Input-output Analysis of the S.A. Economy - 1956-57", South African Journal of Economics, December 1961. Table I.

basis of this classification and unpublished regional statistics supplied by the Bureau of Statistics that Table 6 in Chapter 3 above was compiled.

Industries may also be classified as either "final" or "non-final" depending upon the nature of their market. Whether an industry was designated as "final" or "non-final" was determined by the volume of intermediate demand relative to total supply. For this purpose capital formation was treated as part of intermediate demand, contrary to usual practice. Thus the demand of households, public authorities and exports together, as a percentage of total supply, was the deciding factor. Professor Krogh's input-output analysis formed the basis of this classification too.

Taking into account the nature of both raw materials and market, the following schedule has been compiled.

1st stage resource users: non-final markets

Flour and grain mills

Balanced animal feeds

Chaff cutting, compressed fodder, and lucerne milling

Bonemilling and blood meal

Woolscouring

Cotton ginning, fibre working, dyeing of wool etc.

Sawmills

Coke and by-products

Bricks and tiles, earthenware and pottery

Glass, bottles, containers, sheet glass, glass bevilling, etc.

Cement

Plaster and other composite boards

Modelling in cement

Lime works

Marble, stone, slate etc.

Crushed stone

Other non-metallic products

Tanneries

Fellmongering

1st stage resource users: final markets

Canned and preserved meat and meat extract  
Bacon, ham, polonies and sausages  
Sausage casings, tallow, dripping and lard  
Butter and cheese  
Condensed milk, milk powder and other edible milk products  
Ice cream and ices  
Jam, canned, preserved and dried fruit and vegetables etc.  
Pickles, sauces and condiments  
Crayfish canning, fish preserving and other fish products  
Sugar mills and refineries  
Sweets and chocolates  
Peanut roasting  
Compound cooking fats, margarine and edible fats  
Flavouring essences  
Vinegar  
Jelly, custard and pudding powder  
Coffee roasting and chicory grinding  
Tea blending and packing  
Saltworks  
Yeast  
Other food industries  
Distilleries and wineries  
Breweries and malt  
Aerated waters  
Tobacco  
Motor and other spirits

2nd stage resource users: non-final markets

Spinning, weaving and finishing of other products  
Spinning, weaving and knitting of other cotton, rayon, etc.  
Rope, cordage, twine, fish and other nets  
Felt, padding, wadding, etc.  
Plywood, including laminated boards  
Wood carving, wood turning and similar wooden articles

Preservation of timber  
Other wooden products  
Pulp, paper and paperboard  
Fertilisers  
Tanning extract  
Explosives and carbide  
Other basic industrial chemicals  
Crude oil cake, and meal  
Paints, varnishes, lacquers, and distempers  
Lubricating oils and greases  
Iron and steel basic industries  
Non-ferrous metal basic industries

2nd stage resource users: final markets

Bakeries  
Blankets  
Boot and shoe factories  
Boot and shoe repairs  
Picture frames  
Coffins  
Furniture and fixtures  
Harness and saddlery  
Travel goods  
General and small leather goods

3rd stage resource users: non-final markets

Paper bags, cardboard boxes and mounts  
Stationery  
Other paper products  
Printing, bookbinding, engraving etc.  
Disinfectants, insecticides etc.  
Agricultural machinery emplements and parts  
Office machinery  
Industrial, mining and construction machinery  
All other machinery (n. e. c.)

Metal pipes and fittings  
Headed and threaded articles, including washers  
Sheet metal products  
Cables, fencing wire and wire products  
All other metal products n. e. c.  
Electrical machinery and motors  
Insulated cables and wire  
Electrical contracting and all other electrical repairs  
All other electrical apparatus  
Ship and boat building and repairs  
Manufacture and repair of railroad equipment  
Manufacture and repair of aircraft  
Blacksmithing  
Rubber products

3rd stage resource users: final markets

Hosiery and other knitted clothing  
Other knitting mills  
Mens and boys clothing  
Mens and boys hats and caps  
Ties  
Bespoke tailoring  
Womens and girls clothing  
Furriers  
Ladies handbags  
Millinery  
Other clothing factories  
Soft furnishings  
Bags and sacks  
Tents, tarpaulins, sails and other canvas goods  
Soaps and candles  
Pharmaceuticals  
Blackening, polishes, blanco, whiting etc.  
Other chemical industries

Tinware

Manufacture, assembly, and repair of bicycles

~~Motor vehicles.~~

What is the significance of the classification from a locational point of view? First stage resource users, as we noted in Chapter 3, tend to be closely tied to raw material supplies, for two reasons (a) basic raw materials tend to be more heavily weight losing than intermediate manufactured goods (b) firms processing primary inputs tend to have a smaller range of inputs than those using manufactured intermediates. On the other hand, as we also noted, industries using partly manufactured goods tend to use many different materials and are therefore rarely located with special reference to any particular material. These industries tend to settle close to the markets they are to serve especially in the larger centres which offer advantages both for the assembly of the raw materials and the distribution of the product.

If, as the Schumann Committee report suggests has been the case, manufacturing industries using basic and semi-processed raw materials and producing for non-final use are increasing in importance relative to total industrial output, does this provide any ground for expecting a spontaneous tendency toward decentralisation? We argued in Chapter 3 that it did not except in so far as the less industrialised areas contained the major sources of supply of the materials required by industries producing intermediate products from basic raw materials. Producers of intermediate goods from semi-manufactured materials (second and third stage resource users producing for non-final markets) would tend to be attracted to less industrialised areas only if there was an adequate market there.

While it is not clear why the sort of structural change referred to should lead to spontaneous decentralisation, some writers do feel that it renders industry more "shiftable". For instance Greenhut says "that the company which first fabricates the crude material, or the company which fabricates the goods for the consumer market, cannot regard the source of supply or the consumer market as shiftable. This company's

location is, therefore, adopted with the knowledge that it cannot cause the material source or the consumer site to move towards its site. . . . . As soon as several stages of production are considered, the location of the semi-finished material becomes shiftable, and a cross interdependence arises between the initial processors, the intermediate processors, and the fabricators of the finished consumer goods."<sup>1</sup>

Thus, while consumer markets change only slowly, intermediate goods markets can be shifted within a much shorter period of time through coordinated action, due to the interdependence of activities. It is claimed that the present concentration of industry in the four major centres is one of the chief forces making for further concentration. The border areas it is argued suffer from the fact that they lack markets for intermediate inputs and hence lack producers of manufactured intermediates. If industrial growth is a function of the degree of industrialisation already achieved in an area then industrialisation appears to be a precondition for further industrialisation. This, according to one school of thought, is the impasse in which many underdeveloped countries and regions find themselves. The solution seems to be the coordinated establishment of users and producers of intermediate goods so that sources of supply and demand are created simultaneously. This of course is the essence of the idea discussed in Chapter 5 in the sections headed "The Interdependence of Investment Decisions", and "Infant Areas". It may well be that a growing relative importance of intermediate manufactured goods increases the scope for the successful coordination of investment decisions to bring about industrial decentralisation!

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1. M. L. Greenhut, Plant Location in Theory and in Practice (Chapel Hill 1956), pp. 108-109.

2. This, indeed, seems to be the Schumann Committee's view. See, for instance, Report of the Committee on Railway Rating Policy and Industrial Location in South Africa, p. 73, para. 295.

Appendix B.Magisterial Districts Comprising "Border and  
Bantu Areas" in this StudyCAPE PROVINCE

Barkly-East	Komga	Stockenström
Cathcart	Kuruman	Stutterheim
East London	Lady Grey	Taung
Elliot	Maclear	Victoria-East
Fort Beaufort	Mafeking	Warrenton
Glen Grey	Middledrift	
Herschel	Peddie	
Indwe	Queenstown	
King William's Town	Sterkstroom	

TRANSKEI (included in the Cape border and Bantu areas in the analysis)

Matatiele	Idutywa	Libode
Mount Ayliff	Kentani	Lusikisiki
Mount Currie	Ngamakwe	Nggeleni
Mount Fletcher	Tsomo	Port St. Johns
Mount Frere	Willowvale	Engcobo
Qumbu	Elliotdale	St. Marks
Tsolo	Mquanduli	Xalanga
Umzimkulu	Umtata	Flagstaff
Butterworth	Bizana	Tabankulu

NATAL

Alfred	Msinga	Utrecht
Babanango	Ndwedwe	Vryheid
Bergville	Newcastle	Weenen
Camperdown	New Hanover	Eshowe
Dundee	Ngotshe	Hlabisa
Estcourt	Paulpietersburg	Ingwavuma
Impendle	Pietermaritzburg	Lower Umfolozi
Inanda	Polca	Mahalabatini
Ixopo	Port Shepstone	Mtanjanani
Kliprivier	Richmond	Mtunzini
Kranskop	Umlazi	Nkandla
Lionsrivier	Umvoti	Nongoma
Lower Tugela	Umzinto	Nqutu
Mapumulo	Underberg	Umbombo

TRANSVAAL

Barberton  
Brits  
Letaba  
Lydenburg  
Marico

Nelspruit  
Pietersburg  
Piet Retief  
Pilgrimsrust  
Potgietersrust

Rustenburg  
Sibasa  
Soutpansberg  
Warmbad  
Waterberg

ORANGE FREE STATE

Harrismith  
Zastron

APPENDIX TO CHAPTER 8

Statistical Indicators of the 'divertibility' of South African Manufacturing Industries to Cheap Labour Areas\*

INDUSTRY	Salaries & Wages as a percentage of net output	Non-White employees as a percentage of all employees	Horse-power per worker	Divertibility Index Based on Potential Labour Cost Savings**
	(1)	(2)	(3)	(4)
<u>FOOD (except beverages)</u>				
1. Preparation and preserving of meat	58	77	3.3	212
2. Sausage casings	48	93	.2	234
3. Butter and cheese	28	72	4.5	172
4. Condensed milk and milk powder	20	73	5.0	166
5. Ice cream and ices	47	70	2.5	187
6. Jam, canned, preserved and dried fruit, etc.	42	85	1.8	212
7. Pickles, sauces and condiments	35	85	2.0	205
8. Rock lobster, fish preserving and other fish products	29	87	5.7	203
9. Flour and grain mills, including macaroni, etc.	38	82	5.0	202
10. Bakeries	55	82	.9	219
11. Sugar mills and refineries (including syrup)	25	88	16.8	201
12. Sweets and chocolates	47	70	1.9	187
13. Peanut roasting	47	86	.5	219
14. Balanced animal feeds	35	80	4.6	195
15. Chaff cutting, compressed fodder, lucerne, meal milling	23	89	13.6	201
16. Bonemilling and bloodmeal	61	80	9.3	221
17. Compound cooking fats	36	72	5.4	180
18. Flavouring essences	18	63	2.0	144
19. Vinegar	72	86	.7	244
20. Jelly, custard and pudding powder	34	75	1.1	184
21. Coffee roasting and chicory grinding	31	63	2.0	157
22. Tea blending and packing	22	70	.5	162
23. Saltworks (including salt pans)	38	91	1.6	220
24. Yeast	31	73	8.9	177
25. Other food industries			5.2	
<u>BEVERAGE INDUSTRIES</u>				
26. Distilling and wineries	34	70	2.0	174
27. Beer, Native beer and malt	28	77	3.0	182
28. Aerated waters and soft drinks	44	77	1.1	198
<u>TOBACCO</u>				
29.	21	71	1.1	163
<u>TEXTILES</u>				
30. Woollscouring	47	89	2.4	225
31. Cotton ginning, fibre working, dyeing of wool, etc.	37	92	4.2	221
32. Blankets	45	85	1.9	215
33. Spinning, waaving and finishing of other woollen products	39	88	1.9	215
34. Spinning, weaving and finishing of other cotton products	36	91	2.8	218
35. Hosiery and other knitted clothing	49	82	.7	213
36. Other knitting mills	33	84	2.5	201
37. Ropes, cordage, twine, fish and other nets	43	90	2.8	223
38. Felt, padding, wadding, etc.	47	84	3.4	215
<u>FOOTWEAR, OTHER WEARING APPAREL &amp; MADE-UP TEXTILE GOODS</u>				
39. Boot and shoe factories	63	75	.8	178
40. Boot and shoe repairs	46	81	.6	208
41. Mens and boys clothing	58	85	.3	228
42. Mens and boys hats and caps	58	73	1.0	204
43. Ties	41	63	.3	167
44. Bespoke Tailoring	52	73	.3	198
45. Womens and girls clothing	55	81	.3	217
46. Furriers	52	36	.1	124
47. Ladies handbags	57	89	.2	235
48. Millinery	54	69	.2	192
49. Other clothing	30	84		198
50. Soft furnishings	50	77	.4	204
51. Bags and sacks	47	94	.8	235
52. Tents, tarpaulins, sails and other canvas goods	75	64	.3	203
<u>WOOD AND CORK (except furniture)</u>				
53. Sawmills, carpentry and joinery	58	88	3.9	234
54. Plywood, including laminated boards	71	86	1.9	243
55. Wood carving, wood turning, etc.	46	80	6.0	206
56. Preservation of timber	42	91	2.7	224
57. Picture frames	57	74	.4	205
58. Coffins	63	55	2.0	173
59. Other wood products	51	83	3.0	217
60. Furniture and fixtures	57	77	2.2	211
<u>PAPER AND PAPER PRODUCTS</u>				
61. Paper and paperboard	30	74	18.6	178
62. Paper bags, cardboard boxes and mounts	49	75	1.5	199
63. Stationery	75	51	1.2	177
64. Other paper products	40	78	2.0	196
65. Printing, publishing and allied industries	61	37	1.5	135

INDUSTRY	Salaries & Wages as a percentage of net output (1)	Non-White employees as a percentage of all employees (2)	Horse-power per worker (3)	Divertibility Index Based on Potential Labour Cost Savings (4)
<u>LEATHER AND LEATHER PRODUCTS</u>				
66. Tanneries and fellmongering	53	88	4.4	229
67. Harness and saddlery	73	83	1.7	239
68. Travel goods etc.	55	83	.5	221
69. General and small leather goods	54	83	.4	220
<u>RUBBER PRODUCTS</u>				
70.	45	79	3.6	203
<u>CHEMICALS AND CHEMICAL PRODUCTS</u>				
71. Fertilisers	36	80	8.0	196
72. Tanning extract	20	89	5.0	198
73. Explosives and carbide	51	72	5.1	195
74. Other basic industrial chemicals	33	65	10.0	163
75. Crude oil-cake and meal, etc.	39	84	5.3	207
76. Soap and candles	33	68	2.5	169
77. Paints, varnishes, lacquers and distemper	34	66	2.5	166
78. Drugs and pharmaceutical preparations	32	50	1.0	132
79. Disinfectants, insecticides, etc.	45	69	4.4	183
80. Blacking, polishes, blanco, whiting, etc.	22	61	1.0	144
81. Other industries, etc.	45	63	2.6	171
<u>PRODUCTS OF PETROLEUM AND COAL</u>				
82. Motor and other spirits or fuel, lubricating oils and greases	31	48	44.1	127
83. Coke (including coal gas) bituminous and allied emulsions	20	86	7.6	192
<u>NON-METALLIC MINERAL PRODUCTS</u>				
84. Bricks and tiles (clay), earthenware and pottery	55	91	3.3	237
85. Glass making, bottle making, glass bevelling, silvering, etc.	47	73	2.0	193
86. Cement	18	73	26.2	164
87. Plaster and other composite boards	52	80	2.9	212
88. Modelling in cement, etc.	53	87	1.7	227
89. Lime works	40	88	3.6	216
90. Marble, stone, slate, etc.	57	66	2.7	189
91. Crushed stone	35	86	11.3	207
92. Other industries	43	72	3.8	187
<u>BASIC METAL INDUSTRIES</u>				
93. Iron and steel, etc.	41	57	17.1	155
94. Smelting and refining of non-ferrous metals	50	70	6.3	190
<u>METAL PRODUCTS (Except machinery and transport equipment)</u>				
95. Metal pipes	61	70	4.7	201
96. Headed and threaded articles	47	72	3.8	191
97. Sheet metal products	54	82	1.8	218
98. Tinware	46	79	1.9	204
99. Cables, fencing wire and wire products	50	81	3.9	212
100. All other metal products	58	66	2.5	190
<u>MACHINERY (except electrical machinery)</u>				
101. Agricultural machinery	57	60	3.3	177
102. Office machinery	43	42	.4	127
103. Industrial, mining and construction machinery	62	54	3.6	170
104. All other machinery	47	50	1.8	147
<u>ELECTRICAL MACHINERY, APPARATUS AND SUPPLIES</u>				
105. Electrical machinery and motors	61	50	1.9	161
106. Insulated cables and wires	49	71	4.7	191
107. Electrical contracting	66	48	.2	162
108. All other	47	62	1.6	171
<u>TRANSPORT EQUIPMENT</u>				
109. Ship and boat building and repairs	69	64	1.1	197
110. Railroad equipment	53	64	3.5	181
111. Manufacture, assembling and repair of bicycles	45	83	3.4	211
112. Assembly and repair of aircraft	79	36	.4	151
113. Blacksmithing	46	70	3.1	186
<u>MISCELLANEOUS MANUFACTURING INDUSTRIES</u>				
114. Professional, scientific and controlling instruments	68	61	2.0	190
115. Optical and photographic goods	65	52	.6	169
116. Manufacture and repair of watches and clocks	50	37	.3	124
117. Jewellery and related articles	55	63	.5	181
118. Imitation Jewellery	53	74	.2	201
119. Diamond cutting and polishing	68	12	1.4	92
120. Electroplating	61	85	1.9	231
121. Musical instruments	23	71	2.3	165
122. Toys, sporting accessories, novelties, etc.	47	85	.8	217
123. Brushes and brooms	51	88	1.2	227
124. Rubber stamps	54	51	.3	156
125. Buttons, buckles, etc.	55	84	1.1	223
126. Other plastic products	47	75	2.2	197
127. Signwriting, posters and showcards	63	62	.3	187
128. Wattle bark grinding	26	90	4.7	206
129. Other industries	51	76	.6	203

\*Based on Industrial Census 1959-60, Special Report No.250.

\*\*For each industry this index equals percentage in Col.2 multiplied by 2 plus percentage in Col.1.

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