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THE MOTOR INDUSTRY IN DEVELOPING COUNTRIES - PATTERNS OF GROWTH AND LOCATION

Developing countires are important to the motor industry, and the motor industry is important to developing countires. The truth of these propositions stimulates interest in examining the seemingly unlikely but complex relationship between a capital intensive growth industry which employs highly sophisticated engineering techniques and the economically less advanced countires where both capital and skills are at a premium.

The importance of developing countries to the motor industry may be explained in one word, markets. In 1966 the motor vehicle population of Africa, Asia and Latin America combined was 20.8 million,[1] about 13.5 percent of the world total. Not only did this represent a sizable market, but it was also a market that was expanding at almost twice the rate of the motor vehicle market in developed countries. Between 1950 and 1966 the average annual rate of growth of vehicle registrations in these three continents was 11.7 percent, compared with only 6.2 percent a year in North America, Europe and Australasia. At the beginning of the period the developing continents' share of motor vehicles was 6.2 percent (3.5 million), at the end, 13.5 percent. These facts are baldly the reason for the motor industry's interest in developing countries.

All developing countries need motor vehicles. The sales and servicing divisions of the motor industry are almost as ubiquitous in distribution as is the motor vehicle itself, so all countires have at least an embryonic motor industry. There are apparent large rewards accruing to developing countires if they can encourage expansion of the motor industry within their borders. It is easy to point to savings of foreign exchange of vehicles are first assembled and then manufactured at home, to chuckle at the thought of some large international corporation sinking vast capital sums into plant and machinery w hich will turn out not only motor vehicles but skilled personnel as well. But it isn't as simple or as clear cut as that and there is always a debit side, at least in the form of greatly inflated prices for vehicles arising from high local costs of manufacture.

The object of this paper is to examine and define stages in the growth of the motor industry in developing countires, and to show how these stages are related to patterns of location. In construction of the model the experience of field work on the motor industry conducted in South Africa, East Africa and

Zambia is drawn upon, as well as material in the few published sources dealing with the industry in other parts of the developing world. The outstanding problems of the industry at the various stages of its development are discussed, and the question of policy decisions for governments of developing countires in this field is raised.

Some definitions:

For the purposes of this study the motor industry is defined as that part of the industry dealing with passenger cars, trucks and buses. Cars include both saloon and stationwagon types, trucks range from light vans and pick-ups on the one hand to multi-ton lorries on the other. Buses include mini-buses designed to carry less than ten persons and large double deckers used for urban transportation. Motor cycles, tractors and trailers are excluded even though they are often manufactured or marketed together, especially in developing countries. For example Ford of South Africa manufacture tractors as well as cars and trucks in a single factory complex; in Kampala the Uganda Company showroom in Kampala Road usually has on display a Ford tractor alongside its Ford cars and vans.

It is important to distinguish between private and commercial uses of motor vehicles when analysing demand. In production the line needs to be drawn between passenger cars and light commercials with their high unit cost, high degree of sophistication and finish, and high volume production, on the one hand, and the lower volume medium to heavy trucks and buses on the other. Differences in these respects have an enormous bearing upon suitability for assembly or manufacture in developing or small scale economies.

Official statistics, usually based on registrations, vary so greatly from country to country that direct comparisons are extremely difficult. As one might have feared this is true even within East Africa. Uganda distinguishes between class of vehicle - private, commercial, public service vehicle and private motor omnibus, but gives a detailed breakdown only in terms of types of body - saloon, van, lorry and omnibus. Kenya gives a detailed breakdown by types of body too, but this is different from that of Uganda - saloon, station-wagon, lorries and trucks, buses, mini-buses. Tanzania uses a breakdown similar to that of Uganda except that there is differentiation between van and pick-up. Exact comparability is therefore impossible between the three territories except for total vehicle units, although a split into cars and light commercials on the one hand and lorries and buses on the other can be made, with some reservations. Figures of government vehicles are treated separately but cause little trouble as the detail on them is usually more than for private sector vehicles.

The motor industry:

The world motor industry is dominated by large corporations which operate on an international scale. The largest is the General Motors Corporation which is the largest single company in the world. In 1963

its sales alone equalled the Gross National Product of Brazil, a country of 80 million people. Two firms, General Motors and Ford in their Operations in the United States alone, accounted for 36.5 percent of world Output in 1965. A further nine firms, including foreign subsidiarie's of the two giants, accounted for a further 32 percent öf world output.

Table j: 'World motor vehicle production, 1965 by firms, all vehicles.

1.	General Motors	USA	5,706,000	x	
2.	Ford	USA	3,113,000		x
3.	Chrysler	USA	1,611,000		
4.	Volkswagen	WG	1,510,000		
5.	Fiat	Italy	988,000		
6.	BMC	UK	854,000		
7.	Opel (GM)	WG	631,100	x	
8.	Ford	UK	589,800		x
9.	Renault	France	542,000		
10.	Toyota	Japan	477,000		
11.	Citroen	France	465,000		
13.	General Motors	Canada	419,000		
13.	American Motors	USA	346,000		
14.	Datsun-Nissan	Japan	345., 900		
15.	Ford	WG	334,500		x
16.	Vauxhall (GM)	UK	333,200	x	
17.	Peugeot	France	293,000		
18.	Toyo Koggo	Japan	273,500		
19.	Daimler-Benz	WG	236,900		
20.	Simca (Chrysler)	France	230,000		
21..	Rootes (Chrysler)	UK	212,000		
22.	Ford	Canada	211,000		x
23.	General Motors-Holden	Australia	165,200	x	
24.	Ford	Belgium	161,700		x
25.	Chrysler	Canada	153,000		

Source; J. Baranson, (1968) op.cit. Table 8, p.75.

The twenty-five firms listed above account for 83.4 percent of world vehicle production, and no less than 14 belong to the three great American motor vehicle•empires of General Motors, Ford and Chrysler* The names included in the table.are those that are encountered in the motor industry throughout the world from Canada to Australia and from South Africa to Uganda; even penetrating into Soviet Russia where Fiat and Renault have been recently brought in to build factories for car manufacture.

The extension of the motor industry throughout the world has been from the main source countries of the United States, Britain, France, Germany, Italy and Sweden, with Japan also recently gaining prominence in this respect.

Table 2: Motor Vehicle assembly lines in operation throughout the world, July 1966.

Source Country	No. of lines	No. of countries
United States	122	26
Great Britain	64	27
France	62	26
West Germany	55	22
Japan	49	22
Italy	25	22
Sweden	10	8
Total	387	55

Source: J. Baranson, (1968), op.cit. Table 10, p.77.

The industry in other countries, particularly in the developing world, is very much made up of colonies of great motor vehicle empires based in these source countries. American firms have by far the largest networks which, as may be seen from Table 1, extend to most of the other "source" countries. The process of "colonisation" is one of exports of capital and technology as well as actual products in assembled or unassembled form. In the case of General Motors and Ford subsidiary companies overseas are invariably 100 percent owned by the parent company, but other companies encourage local shareholding or even ownership on an exclusive contract basis.

The "source" countries are great exporters of motor vehicles. France, Britain and Italy all export more than a quarter of their production, and West Germany and Sweden a half or more.

Table 3: Motor Vehicle exports of "source countries

Source	No. of units exported	Exports as Percentage of production
West Germany	1,527,300	50.0
Great Britain	793,800	37.2
France	613,000	38.8
Italy	326,700	28.2
United States	167,700	1.5
Japan	194,200	10.4
Sweden	108,100	53.0

Source: J. Baranson, (1968), op. cit. Table 9, p.76

The structure of the motor industry is highly complex. The central function of the main companies is the assembly of the many thousands of individual parts which go to make a modern motor vehicle. Some of these

parts are manufactured by the motor Company, others are bought in from outside component manufacturers. The prcportion of seif-manufacture varies from Company to Company and from country to country. General Motors is more seif sufficient than Ford, American more than British. Some parts such as tyres and glass are invariably bought-in, others such as engines, major functional parts and body pressings are usually made by the motor **Company.**

In developing countries manufacture of components with a large replacement market in addition to the original equipment market are often set up in advance of vehicle manufacture or even assembly. Thus Dunlop opened a •tyre and tuhe factory at Bulawayo before Ford and MC opened assembly plants at Salisbury.and Umtali respectively. Component manufacture often responds to pressures other than those from the motor companies and different from those acting upon the motor companies but they are ultimately part of the sameIndustrial complex.

There is a tendency.to make an artificial dichotomy of countries according to their economic status, into developed and developing. The point that there is in reality a continuum from richest to poorest needs no labouring. In the same way the state of development,of the motor industry in the different countries of the world may also be seen in the form of a continuum from the mmst complex to the most simple form. It is. useful, however, for the purposes of analysis to establish significant points in the process of development of the industry to distinguish stages in the growth of the industry. To be most useful the criteria selected for defining these points must be universally applicable so that one can formulate a broad pattern of growth on a world wide scale.

It is easier to start at the beginning and define the first stage when the motor industry is first established in a developing country. The first elements of the industry are the sales and **Service** dlvisions. Vehicles are imported on wheels, in a complete form, and are merely sold by dealers and serviced and repaired.

The second stage begins when vehicles are brought in an unassembled form and assembled in the country. As this is usually done very early on for commercial vehicles of the heavy lorry and bus type, it is this form of assembly that characterises the second.stage in the industry's development.

The third stage begins when füll assembly of cars and light trucks is .entered into from completely knocked down (CKD) packs. The beginning of this stage is defined as themoment the first production model rolls off the assembly line.

'The fourth stage is that of manufacture as opposed to assembly. The threshold here is a little more difficult to define as from a relatively early stage (Stage 2 for instance), some local components will be manufactured. When CKD assembly is well advanced there could well be as much as 20 percent

local content made up of tyres, glass, paint and th like, components bought-in from local manufacturing sources, but without this being considered as local manufacture of vehicles. It is proposed that manufacture begins when here is a major investment made by the vehicle manufacturer, whether it be one of the international corporations or a national company operating in the single country, to machine and assemble engines or to engage in large scale body pressings. There is a temptation to simply define this stage in terms of percentage of local content, say 50 percent, as is implied in Baranson's work.[4] But when one is going on to consider location as an important aspect of the study of the motor industry the criterion establishment of manufacturing capacity for the major items of a car, the engine or body is more satisfactory.

Location:

Location of economic activity must be an important aspect of any economic study particularly in developing countries. There is all too often a tendency to ignore spatial aspects leading one to the conclusion that many economists contrive to conceive of countries as minute pinheads without the length and breadth of reality. In developing countries where distances are often great, where economic distances are even greater because of poor infrastructure the spatial aspect of economic activity is ignored at peril.

The stages of growth outline above can all be identified in spatial terms. They are defined in terms of a concrete activity taking place, an activity that can be identified spatially. We can ask the question "where?" and rightly get an answer. Such definitions as formulated above are at least as valid and useful as definitions framed in terms of proportion of local content or of investment or of any other criteria that cannot be easily identified geographically, and have the added advantage that one can build into this developmental, chronological framework a spatial dimension to enable locational analysis to be fully integrated with development analysis.

The first stage of the motor industry is very much market orientated even within the market of the country itself. It is found in the main urban centres in response to the preponderance of total demand arising there. The second stage is also likely to be characterised by localisation centred on the main urban nodes. The third stage, with its heavy dependence on imports might be oriented towards points of entry into the national market rather than to the major urban centre where these two are different. In the fourth stage market orientation in the local sense is likely to be re-asserted although there will be strong locational influences exerted by material sources and perhaps more importantly by factors of inertia.

The First Stage - sales and service

The earliest manifestation of the motor industry in a territory is probably the small backyard service and repair station set back from some petrol pumps. Trade in second-hand vehicles is easily added to the activities of such an establishment but it is a long step to selling new cars, and even further to becoming an acredited main dealer.

From returns to a questionnaire[5] answered by the 15 present new-vehicle main dealers in Uganda, only two, the Uganda Company and the Motor Mart Group held dealerships in Uganda before the Second World War. These were respectively the Ford dealership held from 1922 and the General Motors dealership held from the mid-1920's.

All dealerships in Uganda are held in respect of exclusive sales of new cars, and official spares and servicing. Provision of spares and service is a condition a dealer must meet before being given the franchise. The acquisition of stocks of spares is one of the largest capital items to be met by a dealer. The Peugeot agent for Uganda General Motors Ltd., with total unit sales in 1967 of 1,075 made up of three basic models, estimated their stock of spares to be worth £150,000 to £170,000. The very much smaller Gian Motors which holds dealerships for Volvo, Saab and Standard-Triumph, had sales in 1967 of only 147 but carried stocks of spares valued at £50,000. It has proved impossible to obtain exact figures of value of spares because in this highly competitive trade they are treated by most as trade secrets. What is certain is that a large amount of capital is tied up in spares, that this amount increases sharply with the number of models stocked, and that where a large number of sales of a single modely occur the average value of sales per model is much smaller than where there are few sales.

The firms holding dealerships in Uganda at present have sprung from a variety of backgrounds. The earliest, the Uganda Company, was first formed in 1908 to import cotton seed and carry out cotton planting. It then developed into a general trading company, acquiring as one of its several activities the Ford franchise in 1922. One other firm, Gailey and Roberts who hold the British Motor Corporation franchise, are also a general trading company with other interests in bicycles and caterpillar tractors. They acquired their dealership from another trading company, the Twentische Overseas Company. One company Ecta, is based on a sugar producing combine which branched out into first tractor, then modor vehicle sales. Four of the larger dealers, were originally branches of European owned Nairobi based firms which became Ugandan based at about the time of independence. They were formed expressly to handle new car sales and to acquire the agency of some of the larger manufacturers. Six other dealers, operating on a smaller scale grew from being small motor garages,

via sales cf second-hand vehicles into acquiring one or more dealerships. All are Asi_n owned, with franchises acquired in the 1960's, and operated in all cases by owner-manager, family type Organisation. The other two are manufacturer owned. Fiat (Uganda) Ltd., set up in 1958 sells cars and trucks. The Fiat companies in the three East African territories are exceptional to the Fiat Organisation which does not normally participate in the motor trade at this stage of development. The Leyland Company is concerned only with lorries and buses and was formed to introduce assembly of these vehicles and so belongs to the second stage of development rather than the first.

The first stage motor dealers in Uganda are self-financing in the sense that there is no capital investment made on the part of the manufacturing **Company** except in the case **of** Fiat. For the most part the initiative in obtaining the dealership was taken by the local firm and not the manufacturer, and many dealers held more than one manufacturers franchise as set out in Table

In terms of the location all the dealers, who have exclusive rights to seil their respective makes of vehicles thrcughout Uganda, are based in Kampala. Only,one, the Uganda Company, has any up-country branches, at Jinja and Mbale,. and these arise from the wider trading function of the Company rather than the motor trade itself. All have sub-agents in most of the main urban centres outside Kampala, and most also have sub-agents within the city itself. Y/ith the exception of the Uganda Company all estimated that at least 90 percent of Ugandan sales were effected in Kampala, and this is borne out by the fact that 84 percent of all new vehicles' in Uganda are registered in Kampala.[6]

This amazing degree of centrality arises from several factors. Distances to Kampala from even outlying parts of the country are not great and the roads converging on the city are reasonably good. The potential customer ca.n there-fcre fairly easily avail himself of the opportunity of seeing the wide ränge of cars available in the main showrooms and at the same time enjoy the other amenities of the city. The converse of this is the relatively small stock of vehicles carried by the sub-agencies which are invariably small garage businesses repairs. Few are prepared to venture far into the filed of car sales or to take risks such as accepting "trade-ins" as part exchange for a new vehicle. To get such facilities, and often to get financial assistance the customer must come into the capital city, and is not averse to doing so.

In Kenya 65 per cent of vehicle registrations are made in Nairobi, and in mainland Tanzania 63 per cent are in Dar ea Salaam. These figures reveal a high degree of centrality but it is less than that shown in Uganda fcr two main reasons. There are more large urban centres other than the capital city and, particularly in Tanzania distances are great and roads not good so that a joumey to the city to buy a motor car is a much more arduous task. Thus Mombasa, Nakuru, Mwanza, Kisumu, Tanga and Arusha all register more vehicles than Jinja the second town in Uganda. Evidence from Zambia also

confirms the concentration of the motor trade on the larger urban centres, although there the. presence of the rieh market of the Copperbelt balances the pull *o* Lusaka. In its first stage the motor industry is very much market oriented within each country being highly concentrated in the Chief urban centres.

At this stage the market is highly fragmented into many makes and models. In East Africa almost all the world vehicle manufacturers are represented and cars and trucks of most makes may be purchased. Even large expensive American cars such as the GM Chevrolet Impala are carried as stock in Kampala, though the dealers allege that the sales tax spells an end to such luxuries. The very extent of the ränge available is in itself a luxury and the price is paid in the large stock of spares and tooling for servicing and repairs that have to be carried,.

The question for the East African governments her§. is should, and could the ränge of vehicles be reduced. The only known move in this direction is that the National Trading Corporation of Uganda, unsuccessfuly approached Peugeot with a request to take over the Peugeot franchise for Uganda. Peugeot has top sales throughout East Africa but.it is not clear whether the intention of the NTC would have been to limit imports to the one make or to simply acquire the trading rights to continue in Opposition to other manufacturers' produets. In the event nothing materialised except that many dealers were suspicious of filling in my questionnaire.

The second stage - assembly of comraercial vehicles

The second stage in the development of the motor industry is **helcl** to begin when lorries and buses are assembled for the first time. This is the current stage of development in East Africa, and was entered upon in Uganda in 1956 when Mercedes-Benz opened a small assembly plant. At present there are five assembly plants in and around Kampala, representing, Mercedes-Benz, EMC, Ford, Leyland and Bedford. A sixth plant is in the Ministry of Works **Workshops** where government vehicles bought through the Crown Agent, and not via the dealers, are assembled.

Assembly of lorries and buses means tha the vehicles are imported as several large components and sub assemblies which are simply put together. A typical breakdown would be: engine, gear box, drive shaft, chassis, axles wheels and cab. The equipment needed for this type of assembly is limited a fork-lift truck, several jacks and the various toöls used to fit the pieces together. Tooling and machinery costs are very small, estimates in Kampala varying from £1,000 to £20,000, depending on volume. In all cases in Kampala the assembly plant is merely a part of the repair Workshop of the Company. The labour force in each case is small, varying from between 10 and 40, with between 5 and 10 being skilled workers. Much of the capital equipment and all the labour could be used in repair shops so that there is

little problem arising from under utilisation of these factors. The problem of scale is the'refore not considered serious by any of the fims involved. There is no moving assembly line simply up to six vehicles' components being laid out the floör of a Workshop and each set being bolted together.

The purpose of the exercise is to save money on transportation costs. Shipping space is charged according to cubic measure, A lorrjr "on wheels" takes up as much as twice the volume as do the components for that vehicle

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boxed in packs. One assembler estimated the saving to be about one half in freight charges, and another put it at about £80 per vehicle on shipment frcri Britain. An added advantage is that customs is levied CIF so that a saving on shipping costs also means less customs duty. Savings of this magnitude far outweigh the cost of assembly in Kampala despite the small scale of the Operations, it is an operation where scale is not a major facto.r anyway.

After assembly of the parts mentioned above the vehicle is then sent to a local body builder. In Kampala there are six makers of wooden "cotton" bodies, one metal body builder, and one recently established coach builder. A large percentage of local materials is used to make the bodies, which are custombuilt on an individual basis. This part of the industry pre-dates assembly. Local bodies obviously had to even greater savings in freight charges and customs duties and have the added advantages of being cheaply made - less than £100 per "cotton" body, and custom built.

Ownership of the lorry and bus assembly plant is in the hands of the main dealer. In all cases in Uganda, except Leyland, there is no investment by the manufacturer. Total investment varied between £10,000 and £50,000, all found by the local Company. The tie to the local Company is significant to the location of these plants. As part of the repair Workshops of the franchise hodder they are almost invariably within a few miles of the main branch of the dealer. All five Ugandan plants were in and around Kampala, the farthest out being at Port Bell, the nearest site available to the assembler at the time. So in this stage of the industry centrality again'prevails. There is some little pull towards the point of entry, as was the case when the Bedford'dealer for the whole of East .Africa had an assembly plant at Mombasa. However, when the Company broke into three at the time of independence in 1961-63 that plant was closed down and new ones opened at Kampala, Dar es Salaam and Nairobi.

In the seccnd stage the remainder of the motor industry continues as it was in stage one. This is the case throughout East Africa and Zanbia, with rather more assembly taking place in Kenya and Tanzania, including assembly of land-rovers taking place there and also Zambia. Problems are much the same as in the first stage, namely variety of model, leading to heavy st'ocking of spares. In assembly itself these problems are not actue because scale is notof paramount importance.

The Third Stage - car and truck CKD assembly

Assembly of cars represents a major Innovation in terms of capital Investment, required skills and Organisation. Assembly techniqües for the complex and highly finished product of a passenger car basically depend on high volume to fully utilise advantages of division of labour and high cost plant such as the paint shop. Scale therefore becomes quite iteportant and for optimum operation sales need to be high. Tariff protection is normally used to ease problems of scale and competitiveness but results in raising costs andprices. Manufacturers normally insist on such protection before committing themselves to high cost local assembly.[7]

It is impossible to arrive at any "threshold volume" of sales for the assembly industry because so much depends on the degree of protection a government is Willing to afford a Company to set up an assembly plant. In South Africa the Ford assembly plant was opened in 1924 when motor vehicle sales were a mere 13,000 a year. In Rhodesia the MC and Ford plants were opened in 1960 when the market was 17,000 units. But in both cases the key factor was the tariff protection and not the volume. Figures collected by Baranson[8] show that in many countries there are assembly plants even though the markets are much smaller than in South Africa in 1924 or Rhodesia in 1960, but it is not clear for instance whether the 10 assembly plants listed for Nigeria with a total production of 5,000 are all commercial plants on the Kampala pattern or füll blown passenger car assembly plants on the South African pattern.

«:— The scale of investment for füll car assembly is normally beyond that of the local dealer and the manufacturing Company frequently steps in to build and operate its own plant. This is significant as it is the first time that the manufacturer actually enters the field apart from the occasional sales and technical respresentative in the earlier stages. An alternative form of **Organisation** is the contractual plant, not ow[ne]l by any one manufacturer but assembling products of several on contract. These plants are often owned by groups of local sales organisations integrating backwards. A second alternative is a state-owned plant assembling a limited number of models fron several manufacturers.

South African experience shows that the first two assembly plants established,.were manufacturer owned, Ford and- G-ereral Motors, but they were followed by one contractual plant before the- second world war.' ' The direct relationship between volume of sales and additional assembling capacity is clearly demonstrated in South Africa where four new plants, three contractual and one, Chrysler, manufacturer-owned,were established in the immediate post-war sales boom.[9]

As the market expanded further in the early 1960[5]s so the former contractual plants were bought up either by manufacturers v/hose products they were assembling or by new competitors in the field. The first to fall

was to the British **Company**, Rootes, which has since been taken over by Chrysler, the other three to "Volkswagen, Mercedes-Benz, and Toyota, the. last a relatively new comer on the scene."^

The advent of CKD assembly can have a profound effect on the location of the industry. In the first two stages the ownership of the industry is concentrated in the hands of sales agents who are naturally located where the majority of sales are to be made, that is in the main urban centre. In the case of East Africa it is in Nairobi or Kampala or Dar es Salaam, in South Africa it is in the Witwatersrand. The change of ownership, or rather the introduction of the manufacturer for the first time, results in a fresh look being taken at the matter of location. There are new factors to be considered, the manufacturer is not concerned directly with retail sales, he is concerned with importing CKD material, assembling it and distributing the final product to the agents. The point of entry must be considered as a possible location because having a factory there would eliminate any backfreighting of vehicles. To have a plant at Nairobi would entail transporting all packs of CKD material through Mombasa to Nairobi and then after assembling them sending 13 percent of the vehicles back along the same railway to Mombasa again. Much depends on railage rates for CKD material compared with finished cars. At its crudest the sum would have to be worked out whether it is cheaper to transport 100 CKD packs plus 13 finished cars the distance between Mombasa and Nairobi or 87 finished cars. Of course the equation is much more complex, and many other factors would have to be fed in such as differentials in land and labour costs, construction costs, before a rational location choice could be made. In reality the location decision is all too often based on where the managirig director's wife prefers to live as was the case with one major assembler in South Africa.

In South Africa, 'from the first Port Elizabeth was the chief centre for motor assembly because its central position on the seaboard made it the best coastal distribution point, but there are assemblers at all three other ports. Although the Transvaal has long been the chief market there was until recently only one inland assembler and that a contractual plant which was organised originally from the motor trade. In 1961 about 70 percent of South African Output came from Port Elizabeth, about 12 percent from Cape Town and about 6 percent from each of the other centres of East London, Durban and Johannesburg. Even in land-locked Rhodesia the importance of the point of entry was emphasised when BMC placed their assembly plant at Umtali rather than at Salisbury. It has already been noted that when Bedford trucks were assembled in one plant for the whole of East Africa that plant was located at Mombasa, the point of entry.

The problems at this stage are severäl among which the one of scale probably dominates. Also encountefed are rising costs and prices and a tendency towards complacency and inefficiency behind the protective tariff. There is also the question of 'skills although the number of highly skilled personnel need for assembly is not large.

Among questions that governments must face at this stage are, should the number of manufacturers given access to the market be limited, should there be state participation, should there be a centralised plant run by one manufacturer or on a contractual basis with government holding perhaps a Controlling interest in partnership with one of several manufacturers who would provide the capital and technical know-how. In this way some of the probelms of scale and prolifei-ation of makes and models could be overcome.

The fourth stage - manufacture

Düring the previous stage of development of the motor industry component manufacture will have grown particularly of such items as tyres, glass, paint, and batteries ~ hang-on, non functional components enjoying replacement markets as well as original equipment markets. Even these industries need a degree of protection to overcome the overwhelming^proble of scale. Although they might account for 20 percent or more of a car's content their establishment aannot be construed as constituting motor vehicle manufacture*

This comes when major Investment is made to secure the manufacture of of either engines or bodies, it is a step that is usually only taken by the motor companies as a result of pressures brought to bear by the' government of the country concerned. In other words in developing countries the pace must be forced at this point, if not before, for manufacture of the major parts. of a car is essentially a large scale operation dependent on a high volume if costs are going to be competitive. Outside competition must be eliminated by very high tariff barriers and/or strict import control.

In South Africa the government embarked on its manufacturing programme

for the industry in 1962. Several devices were used including: tariff protection for certain local made components, granting import licences on a sliding scale according to local content, rebates of excise duty as local content increased. In September 1963 approval was given of engine manufac-turing programmes which provided: initially for assembly of engines, leading to: use of local engine Castings when available. On 1 July 1964 the most important individual incentive was introduced the "manufactured model" scheme, whereby an assembler with a model which had a lccal content of 45 percent, and who undertook to raise it to 55 percent within years could declare it a manufactured model and so render it free from all import controls. There have been minor amendments to this battery of inducements and a new set are expected shortly to raise local content to at least 70 percent.

These measures inerely serve as an example of the sort of government interference that is necessary to get manufacturing under way. In South Africa they have paid off. There are now 8 engine plants, B/IC are on the threshold of production of engine block castings, several manufacturers have large scale body pressings and no fewer than 26 basic models were declared manufactured by the end of 1967 with another 6 committed for 1968.[19]

The need to invest large amounts of capital gave the manufacturers the opportunity of reconsidering their location before sinking their new Investment in the- same place. Most decided to stay at their seaboard location despite several factors pulling them.

Assemblers considered re-location before investing in new manufacturing plant but a majority elected to expand where they were. Chrysler, however, decided to expand at Pretoria; leaving their Cape plant soley for commercial vehicle assembly. Datsun-Nissan built their new factory at Rösslyn, near Pretoria, though their products had previously been assembled on contract at Durban. Fiat are building a new factory also at Rosslyn and the new Kaiser assembly plant opened there in February 1968. The major considerations behind the moves were materials, markets and 'border industry' inducements.

Local raw materials have assumed a new importance and ass many, including steel, come from the southern Transvaal, the previous clear advantage of a seaboard location is reduced. Port Elizabeth has continued to attract many of the new component manufacturers, but more have set up in the southern Transvaal.

Distribution of retail motor sales is changing in favour of the Inland centres. The Transvaal's share of the market is rising whilst that of the Cape Province is falling. In 1967 the Transvaal accounted for over half South African car sales and almost half of all vehicle sales. Johannesburg is nearer than Port Elezabeth to 75 per cent of the market, and the other ports are even less advantageously placed. Even if the industry were still entirely dependent on imported materials, the southern Transvaal would now be, marginally, the least transfer cost location. With an increasing amount of local content coming from this area its locational advantage is very real.-

Firms locating at Rosslyn also get the substantial government benefits paid to attract industry to'border areas'. Durban and East London are in 'border areas' but Port Elizabeth is not.

Re-location of the industry and recent sales penetration have already resulted in a decrease in the importance of Port Elizabeth, and in the emergence of the southern Transvaal, as an important vehicle producing area. Between 1964 and 1967 Port Elizabeth's share of vehicle output feil from 62 to 54 per cent whilst that of the southern Transvaal rose from 5 to 12 per cent. When the Chrysler and Fiat plants are operative, on present Company