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# Automobile Industry in the Third World

by Adolf Cramer, Hamburg \*

**During the fifties and sixties many countries of the Third World endeavoured to set up steel industries of their own. These efforts seem to have awakened a wide-spread desire in these countries to produce also their own motorcars. As was the case with steel production, this desire is partly motivated by prestige partly by economic considerations.**

**T**here are various reasons why manufacturing motorcars should be regarded as a key industry particularly suitable for less developed countries (LDCs). This industry is after all not confined to the manufacture of the cars themselves, but extends to that of a multitude of primary products and parts. Moreover, to be viable, any automobile industry must have at its disposal a wide-spread marketing and after sales organisation. Because of all these forward and backward linkages, it should therefore be in a position to impart a strong impetus to the entire economy. Among the more immediate benefits to be expected from the establishment of a motorcar industry are: a rise in the number of available jobs and, resulting from this, increased wage earnings and higher tax revenues, quite apart from the foreign exchange savings which may be effected by doing away with the necessity of importing foreign cars. Finally there is the prospect of selling domestically produced cars abroad.

## Features of Private Car Production

A small private car consists of roughly 2,500 main parts and components or of 20,000 parts, if every nut and every bolt is counted separately. The most essential components of a vehicle are: the engine, the gears and transmissions, the axles, the steering, the suspension and the body. All these must pass through, from the raw material stage to their arrival at the conveyor belt, a manufacturing process requiring a high degree of precision work according to a minutely worked out programme.

In the industrial countries the processing of the components and parts has been automated to the greatest possible extent, which means that production there becomes profitable only after the annual output has reached a certain level. Some researches into the economies of large-scale production in the private car sector have

shown<sup>1</sup> that the long-term effects of the economies of scale begin to be felt only after the assembly has reached 25,000 to 60,000 units per annum. If the essential parts and components are manufactured in the car factory itself, the crucial production figure would seem to lie somewhere between 200,000 and 400,000 units.

These are the reasons why an output of 1,000 private cars per working day — and this means more than 200,000 units per year — is regarded in Europe as the minimum production a motorcar company must achieve to survive. Unit figures of such a magnitude are hardly ever reached by any single company operating in LDCs, and it would be highly unrealistic to regard such high production targets as an essential precondition for a successful operation of an infant automobile industry in an LDC.

The opinion has therefore been variously expressed that an annual output of 100,000 units would have to be reached to justify the manufacture in the country concerned of 95 to 100 p.c. of car components and to ensure that unit costs are not appreciably higher than those prevailing in the industrial countries. Even then care must be taken to keep the production programme as simple as possible; any temptation to manufacture more than two basic models including variants would have to be resisted for economic reasons, and the best policy would be to confine output to one single model plus variants.

## Conditions in the Lorry Sector

Conditions in the sector producing medium sized and heavy lorries as well as buses are markedly different from those applicable to private cars

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<sup>1</sup> Cf. H. Jürgensen/H. Berg, *Konzentration und Wettbewerb im Gemeinsamen Markt — Das Beispiel der Automobilindustrie* (Concentration and Competition in the Common Market — the Example of the Motorcar Industry), Göttingen 1968, p. 36.

and vehicles like transporters and delivery vans whose production is similar to that of private cars. Here manufacturing methods have up to now still remained largely a matter of craftsmanship; their production is therefore highly labour-intensive because the types and equipment required by the market vary so much as to exclude to a large extent mass production. This is why in Europe relatively small manufacturers like DAF in the Netherlands and Saab-Scania in Sweden have so far been able to exist with outputs of between 10,000 and 15,000 units per annum and to offer several types of vehicles. But the trend in the European commercial vehicle industry is clearly towards closer cooperation, indicating

that the time of production on a small scale of engines, gear boxes, axles and steering gear is rapidly drawing to a close, for it is hoped that with the setting up of larger production units more highly automated production processes may be introduced in the manufacture of lorries and buses as well.

For the LDCs which for the most part are inadequately provided with railways and waterways and whose need for lorries and buses is therefore relatively greater than that of other countries, the chances of manufacturing commercial vehicles themselves at a cost which is not appreciably higher than that of the industrial countries are not too bad. An annual output in one plant of 5,000 units of a few types of lorries and buses would seem to provide a sound basis on which to operate at costs which would not be so very much higher than those of the industrial countries, bearing in mind that in the industrial countries the costs have to cover a much greater variety of types.

### Motorcar Production in Various Selected LDCs

Country/Firm	1971	
	Private Cars	Lorries, Buses including Delivery Vans and Jeeps
<b>Yugoslavia</b>	59,941	20,427
Crvena Zastava	59,941	5,344
FAP Famos	—	3,661
T.A.M.	—	7,221
<b>Spain</b>	452,921	79,437
SEAT	254,322	1,299
FASA-Renault	100,923	9,330
Chrysler España	29,352	3,638
ENASA	—	14,469
Citroën-Hispania	36,923	14,955
A.I.S.A.	—	4,697
Authi	32,706	—
<b>Mexico</b>	153,398	57,435
American Motors	12,245	1,914
Chrysler	24,512	10,227
Dina	15,319	4,525
Ford	25,460	15,963
General Motors	15,113	16,859
Nissan	14,312	3,595
Volkswagen	48,219	—
<b>Brazil</b>	342,214	173,753
Ford-Willys	53,374	42,033
General Motors	54,212	29,085
Mercedes-Benz	—	19,850
Chrysler	15,368	2,389
Volkswagen	218,136	76,713
<b>Argentina</b>	193,386	60,244
FIAT Concord	58,069	3,010
Ford Motor	30,340	14,150
I.K.A. Renault	34,443	4,251
General Motors	20,018	11,935
SAFRAR	25,702	2,876
Chrysler Fevre	10,844	6,519
Citroën Argentina	13,970	1,853
Mercedes-Benz	—	8,056
I.M.E.	—	7,200
<b>India</b>	41,746	47,364
Ashok Leyland	4,260	2,389
Hindustan Motors	24,665	2,559
Mahindra and Mahindra	—	11,975
Premier Automobiles	12,821	4,578
Tata Engineering	—	24,654

Source: Chambre Syndicale des Constructeurs d'Automobiles, Repertoire Mondial des Usines d'Assemblage de Vehicules Automobiles, Paris, December 1972.

### Examples from LDCs

Since the fifties, some of the larger LDCs which had already reached a more advanced stage of development have been endeavouring to set up plants for the manufacture of private cars, lorries and omnibuses and to pass beyond mere assembly to the establishment of a national motorcar industry. Leaving aside the East European countries, there were two states in Europe bent on this course — Yugoslavia and Spain; in America three — Mexico, Brazil and Argentina — and one in Asia, i.e. India.

The table listing the output of the most important producers in the six countries shows that in 1971 only three producers of private motorcars reached 100,000 or more units. These were SEAT and FASA-Renault in Spain and Volkswagen in Brazil. Of all the other manufacturers — those of secondary importance have been left out of account altogether — only four reached 50,000 units. The fragmentation of output, particularly in Mexico and Argentina, is bound to retard the establishment of economically operating manufacturing plants for a long time to come. The situation is altogether different in Brazil where no more than four manufacturers of private cars share amongst themselves practically the entire output with only one of them producing fewer than 50,000 units (i.e. Chrysler with 15,000). In Yugoslavia the entire private motorcar production is in the hands of one single undertaking — mere assembly is left out of account — and in Spain with its rapidly expanding market prospects for the future are also not at all bad.

The situation in the sector concerned with the manufacture of lorries, omnibuses and delivery vans including jeeps has been very much better by comparison in all the six countries. Of the most important manufacturers (34 in number), 19 at least reached in 1971 an output of more than 5,000 units, while a further ten managed to produce between 2,500 and 5,000 units. Although fragmentation of production was by no means less than in the private car sector, its economic effect on the annual output of lorries and buses has been much less than in the private car sector.

### Essential Preconditions

The partially successful attempts at industrialisation on the part of some LDCs make it possible to answer the question as to what preconditions must exist for the realisation of any plans to set up a motor industry.

The most important precondition is the existence of a market large enough to absorb the private cars and/or lorries and buses it is planned to manufacture. Such a market by no means need to be a national one, but should, in so far as the prevailing circumstances warrant it, be regarded from a regional point of view. In Western Europe, it is no longer possible to base one's initial calculations on a national market, for, as a result of the creation of the EEC and EFTA and the subsequent extension of the EEC as from January 1, 1973, markets have now assumed a regional character. The requisite size of the market which justifies the setting up of a motor industry decisively depends on what it is intended to produce — private cars or lorries. Another vital consideration is the planned scale of integration on the national or regional level, i.e. to what extent the components and parts needed for the finished product or products are to be manufactured within the national frontiers or on a regional basis.

Assuming an annual output of 10,000 private cars, it would not seem advisable to plan for the production of more than 20 p.c. of the required parts in the country or the region concerned, leaving 80 p.c. to be imported from industrial countries. As the assembly operations extend, the share of the components imported from the industrial countries may be gradually reduced so that in the end when production has reached 100,000 units or more the end-products consist to between 95 and 100 p.c. of domestically produced components. This is the only way to justify the sacrifices which a country wishing to produce its own private cars has to make — i.e. in the form of relatively higher prices of the domestically produced vehicles — within reasonable limits. What are these limits? It may be said that the selling prices

(without tax) of the home products should not exceed those of comparable models from industrial countries by more than 30 to 50 p.c.

In the case of lorries and buses, assuming an initial annual output per plant of 1,000 units, it would seem reasonable to begin with 20 p.c. of domestically produced components. This percentage share should subsequently be increased as output rises until it reaches 5,000 units which by then should consist to between 90 and 100 p.c. of home-produced parts. The smaller the number of models, the more favourable will be the cost situation, though, as in the case of private cars, it will never be possible to achieve internationally competitive prices. For this a much larger output would be required. Given the existence of a market, there is still another essential precondition for the successful functioning of a domestic motor industry — an adequate infrastructure. Bearing in mind that in the initial stages the new plant or plants will be mainly concerned with assembly work, outside firms are needed which, after being taught the necessary technological and administrative know-how, will be able to act as suppliers. In other words, the ground on which the infant motor industry is to flourish must be properly prepared; only when this is done, the industry can be expected to exercise a stimulating effect on the growth and development of the country's economy.

### No Chance for Small Countries

In view of the fact that there is no sense in starting a motor industry without a sufficiently large market and a minimal infrastructure, smaller countries have practically no hope of making a success of such a venture. This applies primarily to the manufacture of private cars, but also, if to a much lesser degree, to the production of lorries and buses. This is why the UNIDO at a recent meeting once more urged the LDCs to concentrate in the first instance on the production of commercial vehicles because in this sector it is relatively easier to keep costs down and thus to achieve profitability<sup>2</sup>. In view of the much more restricted potential markets by comparison with those open to industrial countries, it is of primary importance to limit as much as possible the number of models in order to avoid mini-production runs. For, as the share of domestically produced components increases, such mini-series are bound to lead to a cost explosion. Another matter that must be carefully considered is the share of domestically produced components that are to be used in the end-product.

<sup>2</sup> Cf. Recommendations of a Meeting, arranged by UNIDO, on the Transfer of Technology to Developing Countries through Sub-contracting and Licensing Agreements with Special Reference to the Automotive Industry, Paris 27. 11. — 1. 12. 72.

The need to avoid small unprofitable production runs for vehicles and component parts inevitably causes most countries to turn their attention to the possibilities of international cooperation. Such cooperation could be arranged either on a regional basis or it could take the form of working agreements between developing and industrial countries. The advantages of cooperation to the LDCs are two-fold: It enables the particular LDC concerned to mass-produce component parts on a large scale also for export and to buy with the foreign exchange thus earned other parts abroad more cheaply than if these parts were manufactured locally. This type of cooperation between industrial and developing countries exists in Europe between Spain and Yugoslavia, on the one hand, and Italy, France and Germany, on the other. In America, a similar arrangement is operating between Mexico and the United States<sup>3</sup>.

There are also cooperation agreements in force between industrial and developing countries which are further apart from each other. But the

<sup>3</sup> Without regional cooperation even the manufacturers in Sweden, the Netherlands, Belgium and Canada could not possibly function at their present level. All these countries are to a considerable extent dependent on imports of parts which are mass-produced abroad in large quantities.

value of these agreements is impaired by the higher costs involved in transporting the — in comparison to their weight — low-value parts, which LDCs find easiest to produce, to the assembly points in the industrial countries. The great distances involved make an extension of this kind of trade rather difficult to achieve. The concept of regional cooperation is therefore likely to be found more practicable in future. Some steps in this direction have already been taken by the countries of the Andes Pact (Chile, Bolivia, Peru, Ecuador and Columbia), but also by those of the Maghreb (Tunisia, Algeria and Morocco) and by the Republic of Argentina. Special mention must be made in this connexion of the projects of Ford and General Motors who are planning to manufacture a cheap vehicle for the countries belonging to the Association of South East Asian States — Malaysia, Singapore, Thailand, the Philippines and Indonesia. The idea is to develop a cheap vehicle which, it is hoped, will meet the needs of the entire region. It will thus be possible to mass-produce it in numbers sufficiently large to avoid uneconomic short runs. Moreover, the concept of regional division of labour is to be the guiding principle of its manufacture.

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