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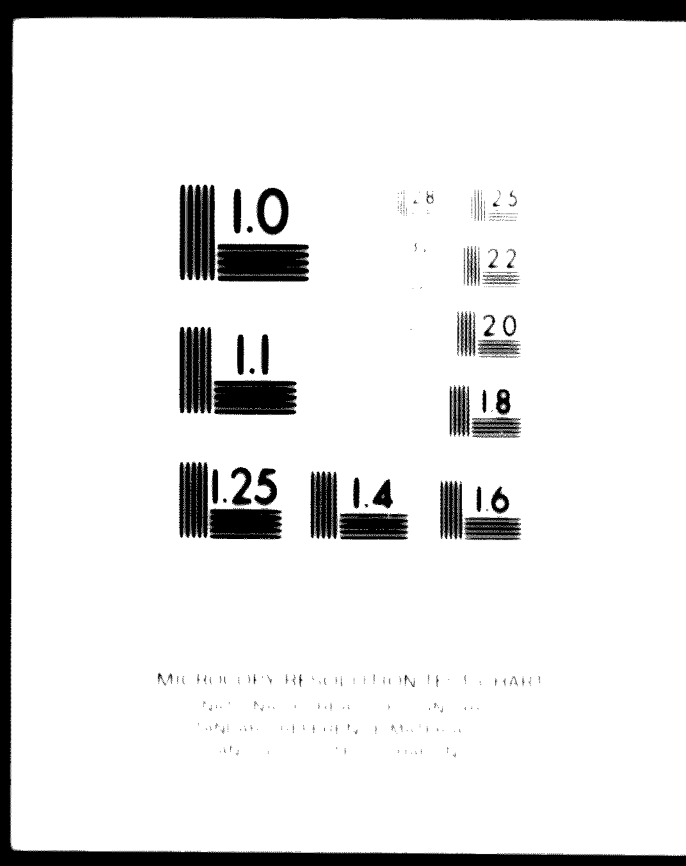
1 OF 4



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Prepared by Metra International for the
United Nations Industrial Development Organisation

A STUDY OF THE AUTOMOTIVE MARKET AND INDUSTRY IN IRAN

01069

VOLUME 1 : Main Report (1 of 2)

October, 1972

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In the execution of the Household Survey, which formed a major part of the project, our thanks are due to many people in Iran who assisted us with this work. In particular we would like to thank the Governors of the Bank Markazi Iran for permitting us to use their facilities and to Dr. Taj Dar, Head of the Bank's Economics and Statistics Department, who made this possible. In particular we would like to express our appreciation of the tremendous help provided by Mr. Shahkarami of the Economics and Statistics Department and Mr. Shojaei also of that Department and the members of their staff who carried out and supervised the fieldwork. Their active and enthusiastic support was invaluable.

Finally, we wish to acknowledge the generous and efficient assistance of various British Embassies and High Commissions during the course of fieldwork in a number of countries.

FOREWORD

On the basis of a request from the Government of Iran, United Nations Development Programme (Special Fund) is assisting the Government in carrying out a project entitled "Research Centre for Industrial and Trade Development" (UNDP/Special Fund, Symbol IRA/16) The assistance is being provided through the United Nations Industrial Development Organisation (UNIDO) which is the executing agency for this project. The present study entitled "A Study of the Development of Consumer Durable Goods and Automobile Industries in Iran" has been carried out under contract number 71/68.

The total study has been divided at the request of UNIDO into two separate studies :

The Development of the Domestic Appliance Industry in Iran

The Development of the Automotive Industry in Iran

The report on the Automotive Industry has been divided into two volumes. The first of these is the "Main Report", presenting analyses of the industry and market together with detailed projections and recommendations. The second volume presents analyses of the individual companies which make up the industry at the present time.

The report of the Consumer Durable Goods is divided into two volumes, the first of which is the "Main Report" which presents Recommendations, a Summary and Conclusions. The second volume is sub-divided into thirteen parts according to product or product group. In this volume, Section I of each part gives a review or summary of that part of the report.

In addition to the above, a further volume deals with the Household Survey carried out as a part of the overall study and with the related Demographic Forecasting. This volume of the report is in fact common to the studies on both the Consumer Durable Goods and Automotive Industries.

The total study has been carried out under the following terms of reference :

- <u>Consumer Durable Goods</u>

  Within the scope of the project concerned with the domestic appliance industry Metra Consulting Group undertook to :

  Assess the demand for refrigerators, coolers, space heaters, water heaters, air conditioners, television sets, radio sets, hairdriers, vacuum cleaners, fans and any other appliances for which plans for local production are feasible. Such demand forecasts entail:

  (a) An analysis of past statistics and time series as may be available to obtain an indication of future demand;

  (b) An extensive household survey in the project area in order to collect as detailed information as possible on the project area on both income and expenditure;

  (c) A review of the Bank Markazi survey reports.As well as extracting appropriate information to establish:

    - minimum income necessary before purchase of a limited number of domestic appliances is made;

    - the curve of income distribution within the project area;

    - the total ownership of a particular appliance in the project area at the present time and hence, the level of penetration reached.

  (d) The minimum household income level necessary for purchase of the more expensive appliances, taking into consideration retail prices and consumer preferences.

(e) An indication, for the sake of comparison of elasticities of demand, the growth in demand and the pattern of this growth in a number of selected countries.

An analysis of the domestic appliance industry including :

(a) a detailed interview survey with senior representatives of companies in the domestic appliance industry in the project area, with the purpose of defining :

- the present structure of the industry

- production capacities and actual production levels

- production techniques and practices in use at the present time

- the present product range and product policy

- a cost structure of the industry identifying and quantifying major cost elements, labour, investment, overheads, raw material and components.

(b) Determine the consequences and implications of local manufacture both with respect to cost of the finished product in the project area and in terms of foreign exchange costs and savings.

(c) Indicate for the sake of comparison the experience of selected countries in the development of the domestic appliance industry, particularly as regards the degree of integration within the industry and the way in which this has evolved, the present product range and the ways in which these have developed, relationships between component producers and domestic appliance manufacturers, the commonality of components within a particular company and also across companies, and the competitive nature both of individual companies and the national industry as a whole in world market terms.

(d) Select a list of components worthy of further study and possible manufacture in the project area. For these components indications of minimum economic plant sizes, investment necessary, cost structure, and desirability or otherwise of integration with domestic appliance manufacturing companies should be established. In each case the probable foreign exchange cost and cost benefit or loss to the industry as a whole should be assessed.

(e) Indicate foreign companies possibly interested in manufacturing components in association with companies in the project area and the probable export potential resulting from such joint-ventures.

(f) Formulate recommendations regarding the future structure of the domestic appliance industry in the project area and the desired level of integration of components and finished product sectors. Recommendations should also be made with respect to target production levels, optimum product ranges and the cost and price levels of different products.

(g) Specific policy measures and programmes to be considered by the Government in its future planning and policies should be outlined.

- <u>Automotive Industry</u>

Within the scope of the project Metra Consulting Group undertook to :

(a) Analyse past motor vehicle registrations, production and imports to obtain general indications, on a time series basis, of future demand;

(b) Assess the life expectancy of the motor vehicles in Iran;

(c) Make a macro-economic analysis, based on the correlation between economic indicators and per capita owning of motor vehicles in a number of selected countries, to draw analogies between the development of the motor vehicle market in the Project Area and the corresponding development in such selected countries;

(d) Make an analysis of the lower income threshold necessary for the purchase of a motor vehicle and its trend within the period up to 1982-1983, taking into account factors such as price of the motor vehicles, development of other transport systems, Government's expenditures on roads as well as the development of urban and inter-urban bus and cargo transportation services.

(e) Based on the results of the work above, determine the demand for motor vehicles (per types and sizes) for the period up to 1982-1983.

Analysis of the motor vehicle and ancillary industries and preparation of a development programme.

(a) Undertake a detailed survey of the existing industry.

(b) Give advice on the advantages and disadvantages of concentrating manufacturing efforts in the lower cost, multi-purpose type of motor vehicles;

(c) Consider the partial trade balance of imports of incomplete kits with the export of components manufactured locally, beginning with a small percentage but increasing gradually;

(d) Propose legislative and policy measures to be considered by the Government for carrying out the proposed development plans;

(e) Recommend types of protection to be accorded to local entrepreneurs to encourage local manufacture while allowing sufficient margin for imports of completely built-up vehicles and parts in case of unacceptable inefficiencies in quality and/or overcost;

(f) Advise on the creation of a national body to deal with the policies on automotive industry and production questions such as quality control and independent testing facilities;

(g) Include in the investigation the possibility of using fibreglass reinforced plastics for commercial vehicles and passenger car bodies in the Project Area;

(h) Assess requirements in terms of manpower (labour and managerial including expatriates), and the need for labour training programmes;

(i) Prepare a production programme which shall include, but not necessarily be limited to, the following information :

- number of plants (existing and new), for motor vehicle assembly and ancillaries production;

- number (by make and type) of vehicles to be produced;

- details of progressive increases in local content and local labour;

- list of parts to be manufactured locally.

On-the-job training of Iranian Counterparts

In addition to the above, Metra Consulting Group undertook to provide on-the-job training to two Iranian counterparts nominated by the Government in consultation with the UNIDO. The training programme included :

(a) participation in and contribution to the Contractor's work in the Project Area, and

(b) participation in and contribution to the Contractor's work at his Home Office

GENERAL NOTES

1. Throughout this report both the Solar and Gregorian Calendars have been used. For statistical purposes the two systems are not interchangeable and in general terms statistics appertaining specifically to Iran are based on the Gregorian Calendar. Nevertheless, for general approximations the following conversions should be used.

Solar Year + 621 = Gregorian Year

Solar	Gregorian	Solar	Gregorian
1338	1959	1353	1974
1339	1960	1354	1975
1340	1961	1355	1976
1341	1962	1356	1977
1342	1963	1357	1978
1343	1964	1358	1979
1344	1965	1359	1980
1345	1966	1360	1981
1346	1967	1361	1982
1347	1968	1362	1983
1348	1969	1363	1984
1349	1970	1364	1985
1350	1971	1365	1986
1351	1972	1366	1987
1352	1973	1367	1988

2. **INCOME AND EXPENDITURE GROUPS**

The income and expenditure groups used by Metra are the same as those used by the Bank Markazi in their 1348 survey. For convenience the income/expenditure groups are often referred to by number and the following table gives the range of annual income/expenditure for each group:

Group Number	Annual Income/Expenditure (Rls. p.a)
1	less than 30,000
2	30,001 - 50,000
3	50,001 - 75,000
4	75,001 -100,000
5	100,001 -150,000
6	150,001 -200,000
7	200,001 -300,000
8	300,001 -400,000
9	400,001 -500,000
10	over 500,000

3. ABBREVIATIONS

IMDBI	-	Industrial Mining and Development Bank of Iran.
cfm	-	cubic feet per minute
RCD	-	Regional Co-operation for Development
CKD	-	Completely Knocked Down
ft	-	foot
BTU	-	British Thermal Units
cu. ft.	-	cubic foot
fob	-	freight on board
cif	-	carriage insurance and freight
gvw	-	gross vehicle weight
sq.m	-	square metres
c.c.	-	cubic centimetres
HP	-	horse power
kg	-	kilograms
p.a.	-	per annum
lbs	-	pounds
Rls	-	rials

All tons are metric unless otherwise stated.

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CONTENTS

		Page
RECOMMENDATIONS		1
UNITED NATIONS PARTICIPATION		10
1.	MARKET SUMMARY	11
2.	THE MARKET FOR PASSENGER CARS	22
3.	THE COMMERCIAL VEHICLE MARKET	68
4.	THE IRANIAN MOTOR VEHICLE INDUSTRY	95
5.	AUXILIARY INDUSTRY	155

APPENDICES

A.	IMPORT TARIFFS AND TAXATION	A.1
B.	IMPLICATIONS OF AGREEMENT BETWEEN JEEP COMPANY AND GENERAL MOTORS CORPORATION	B.1

KRP:
October, 1972

RECOMMENDATIONS

As the Iranian automotive industry has reached a stage of development involving a transition from a small assembly oriented industry to a more mature manufacturing industry and in view of the somewhat unbalanced structure of the industry which has recently emerged, it is felt that the major emphasis over the forthcoming year or two should be one of consolidation. The aim should be to establish a strong base from which the industry can develop in the future. Thus the major recommendations as a result of the current study have this purpose in mind. These recommendations are:

1. The Government should actively promote the establishment of a two group structure in the industry; such a structure representing a logical compromise between the necessity for competition and the requirements for economies of scale. The groups referred to need not be totally integrated groups; the objectives should be to promote the greatest degree of linkage between companies. For example, in the case of the first group which already exists, (Iran National and Khavar) the link is the common licensor: Daimler Benz. The second group must include Jeep Company[1] and should provide some form of linkage between that company and a commercial vehicle manufacturer in Iran. Having formed the basis of the second group, the Government should attempt to persuade the remaining companies to allow themselves to be absorbed into the two group structure or to terminate their vehicle building activities in Iran. In this context, the Government will clearly be assisted by market and other natural forces. In some cases it may be possible to persuade companies to switch their activities from vehicle manufacture to component manufacture. In two cases, Moratab and Kaveh, it is possible that vehicle manufacturing activities which serve specialist, small but necessary sectors of the market could continue outside the main two group structure. Table 1 illustrates a possible structure which could emerge in the near future.

   In terms of vehicles produced, the passenger car industry is well structured. However, great urgency must be attached to the quest for a replacement for the Rambler and the relatively low level of market acceptance of the Citroen.

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[1] Since carrying out the present study, Jeep Company have reached a measure of agreement with General Motors Corp. The implications of this agreement are discussed in an Appendix to this report.

TABLE 1 SHORT TERM FUTURE "IDEAL" PRACTICAL SOLUTION TO AUTOMOTIVE INDUSTRY STRUCTURE

GROUP I	GROUP II	OTHER
Iran National	Jeep Company	Moratab
Khavar	Pars Lux	Kaveh
	Leyland Motors Iran	Iran Mazda
	and/or Zamyad	Iran Citroen
	← Absorb	Bus Consortium

should be noted. The current plans of Iran National to introduce a low cost 1250 cc passenger car are appropriate in view of market requirements. In addition, consideration should be given to the introduction of low level production of a glass fibre bodied sports car and/or coupe based on Iran National mechanical components. In view of their curtailment of G.M. Vanette production and their existing competence in glass fibre technology, it seems logical to suggest that Kaveh could manufacture this vehicle.

Turning to commercial vehicles, the aim, implicit in the quest for a two group structure, should be to eliminate existing duplication of models which is particularly marked in the Vannette, Bus and mini-Bus sectors. Attempts should also be made to reduce the number of models of truck produced in the 9 ton to 18 ton gross vehicle weight sector. The only addition to the range of commercial vehicles apparently produced in Iran should be a vehicle which can form the basis of a range including 1 ton to 30 cwt. closed van or platform truck or a micro-bus (e.g. the British Leyland JU Series or the Ford Transit Series). Wherever possible, light commercial vehicles should be derivatives of passenger cars or at least share common major mechanical components. Similarly, efforts should be made to minimise the range of major mechanical components required in the heavier commercial vehicle sector. The above are short term measures; by about 1356, the Government should consider the introduction of direct competition in the passenger car industry through the duplication of models in, particularly, the 1100 - 1300 cc range. In other words, by 1356 or shortly after the market demands should justify the introduction to manufacture of such a passenger car within the second group in addition to that produced by Iran National.

2. Relationships and co-operation between companies in the automotive industry and between that industry and the Government are not as close as is desirable. Rationalisation of the industry and participation of major foreign companies on an equity basis should assist in this respect. However, the Government should do all in its power to foster this intra-industry

co-operation. Eventually a motor vehicle manufacturers association should be established to act as:

- a forum for discussion
- a communications link between government and industry as a whole
- a communications link with foreign vehicle industries
- a provider of specialist training and education facilities for the industry particularly at a management level
- a mechanism for the promotion and formation of other bodies dealing with matters of common interest to the industry such as, statistical information, standards, testing facilities, etc.

The association should have a permanent staff including, at least, a director, an officer concerned with economic and marketing affairs, an officer concerned with educational affairs and an officer concerned with engineering and technical matters. Its activities should include:

- The organisation of seminars and other instructional courses for all levels of management personnel in the Iranian motor industry. At one end of the scale world authorities directly or indirectly involved in the motor industry should be invited to address top management. At the other end of the scale formal courses should be developed, possibly in conjunction with Iranian educational institutions, covering such areas as financial control, production control, inventory control, quality control, marketing, design, value engineering, work and methods study, personnel management, etc.
- The association should co-operate with the Government in the shape of the Ministry of Economy, the Institute of Standards and Departments responsible for the regulation and licensing of vehicles in the formation of a national body whose function would be the creation of industry standards suitable for the construction and use of vehicles in

Iran. Clearly these could be based to a large extent on existing overseas national, industry or company standards. However, these must be evaluated and revised where necessary to suit the Iranian environment.

- The association should co-operate with the Government in setting up a national automobile laboratory and testing facility. The primary aim of this organisation should be to provide comprehensive vehicle and component testing facilities. However, the organisation should also become involved in research and development partly in recognition of the need to modify foreign designed vehicles to suit Iranian conditions and partly to serve as a training ground for Iranian automobile engineers. The organisation should be set up as an autonomous body with its own management structure having complete responsibility for operational control. However, their could be a governing council composed of members of the automobile industry and the government which would have responsibility on overall policy matters. The initial establishment of the organisation might be funded by the Government, possibly with United Nations assistance. However, the body should be self supporting. It is suggested that subscriptions should be levied on members (both Industrial and Government) these subscriptions entitling members to representation on the governing council and to basic research reports, market information etc. In addition industrial and other users of the organisation's services and facilities should pay economic fees.

- The association should promote a free flow of information on the industry and its markets in co-operation with member firms, the government and the vehicle licensing authority. Such information would enable both industry and government to make realistic plans for the future.

In view of the present climate in the Iranian automotive industry, it may well be that the formation of an active motor vehicle manufacturers association will take some time. In this case, working parties comprising members of industry and Government should be set up in order to implement the proposed activities of such an association even before it is formed. Specifically, the establishment of the body responsible for standards and the national automobile laboratory and testing facility should not be delayed. In addition, the management training activities referred to should not and need not await the formation of the association.

3. The Government should rationalise its own internal structure for dealing with the problems of the automotive industry.

In view of the growing importance of the industry in the country, a specialist planning body should be set up within the Ministry of Economy whose sole responsibility is the development of the automotive industry and its associated components industry. Apart from back-up staff, this body should be led by an expert in the automotive industry. In the absence of a suitably qualified Iranian expert, it is suggested that UNIDO could assist in this respect.

Given a continuing need, at least over the next five to ten years, for a high level of protection of the Iranian automotive industry, it is clear that direct control for example of prices will have to be maintained. In this respect, the example of Brazil should be followed and the price control department should be totally divorced from other Government bodies. As this statement applies to price control in general, the department will obviously deal with a wide range of industries. However, it should include a group responsible for the automotive industry. This group should be headed by an expert in financial control in that industry and the department as a whole should be recognised both as being competent and having adequate resources to allow the rapid execution of its function. Furthermore, it should be inherent in the terms of reference of the department that increased profitability obtained by means of improved productivity and efficiency should not be negated. As far as the automotive industry is concerned, the department should concern itself primarily with the justification of price increases based on increased costs. However, it should also keep a watching brief on the absolute levels of prices in comparison with those prevailing in other countries and upon the price differentials between models produced in Iran. The latter, particularly in the passenger car industry, will allow the introduction of a degree of internal competition without the need for duplication of models.

As far as the component industry is concerned, in view of the fact that a relatively small differential between the prices to the vehicle manufacturers of locally produced items and their imported equivalents will be sufficient to influence these manufacturers in their choice of a supplier, effective rates of protection can be used to control the price and the quality and delivery in the auxiliary industry.

A secondary function of the price control department should be one of education. Clearly the department will require the industry to provide information on costs, etc. In cases where individual companies are unable to provide this information in the form required due to inadequate financial and cost control systems, the price control department should assist these companies in the introduction of such systems.

4. In order to stimulate the market and, therefore, the industry the Government should promote the formalisation of the credit function in both the passenger car and commercial vehicle markets. In particular, this credit function should cease to be the responsibility of the industry itself but, more properly, should be entrusted to the Iranian banking community. Apart from the stimulation of the market, which would be most marked in the passenger car sector, such a course would have a beneficial effect on motor vehicle manufacturing companies' working capital requirements and liquidity positions.

5. A further stimulus to the industry would be provided by the purchase of military vehicles from local sources.

6. In development of local component manufacture and consequently of local content, the aim should be to concentrate production as much as possible in order to achieve the greatest economies of scale. Thus, motor vehicle manufacturers must be limited in the degree of vertical integration which they achieve. Of course, in some cases such as Iran National and its engine manufacturing plant, the economies of scale achieved in a single company together with the specific nature of the component or major assembly to a particular vehicle will make vertical integration possible. Certainly in cases where there is little difference in a component between different makes and models of vehicles (e.g. electrical components, spark plugs, pistons, clutches, brakes, carburettors, fuel pumps, injection equipment, gears and even gear boxes and final drive units, lighting etc.) the aim should be to concentrate production in single specialist plants.

Furthermore, there should be a policy of concentration of individual technologies. Thus, all forging, casting etc. should again be concentrated in single manufacturing units even though the parts produced may be used in a wide variety of components, sub-assemblies and assemblies.

The Government should set formal criteria by which projects proposed for the introduction to local manufacture of components can be judged. These criteria must include the difference in cost between local manufacture and imports and the effect of this differential on overall vehicle prices, the proportion of the total vehicle cost accounted for by the components (i.e. the effect on local content), the foreign exchange costs or savings involved and the overall allocation of national resources required. In general, a long term view should be taken and short term gains in local content and foreign exchange savings should not be made at the expense of eventual international cost and quality competitiveness or indeed of a reasonable price structure in the home market.

Priority should be given to those component production projects which have the greatest effect on local content providing their effect on motor vehicle manufacturing costs is within specified bounds, preferably bounds set to ensure maintenance or reduction of present price levels. With respect to exports it seems inevitable that, in the the foreseeable future, even with complete drawback of duty and taxes, the Iranian automotive industry will find it difficult to compete in the international market for motor vehicles. Whilst there are certain exceptions such as the export of buses to the Gulf States the industry must be assisted by means of bi-lateral and multi-lateral trade agreements if any appreciable exports are to be gained. Turning to components it is possible that export markets will be found. However, it must be recognised that the large, multi-national motor vehicle and component producers can have a great influence on levels of exports. It must also be recognised that these companies will be reluctant to export unless such exports are price competitive. Whilst the government should attempt to make it a condition of entry to the Iranian industry that foreign companies should generate export markets for components, this is a short term policy. The necessary effects can be achieved by, for example, imposing a partial trade balance on individual companies. However, as local content builds up, these companies will tend to export less and less if such exports have to be subsidised from their local production. In the long term, the Government should try to create conditions in which local manufacturers can be price competitive in international markets. In particular, complete drawback of duties and taxes involved in the production of goods for export must be given. Furthermore, the government must recognise that it is difficult for companies other than the large multi-nationals to export in view of their lack of knowledge and experience in this area. Thus, it is partly the responsibility of the Government to promote Iranian products and to assist individual manufacturers with even the simplest mechanics of exporting.

As a general point, in selecting models to be introduced to local manufacture in Iran, both Industry and Government should ensure that those models chosen have as long a "life" ahead of them as possible. In other words, models chosen should have been recently introduced in the country of origin.

UNITED NATIONS PARTICIPATION

In response to a request from UNIDO, it is convenient at this point to identify areas in which that organisation might provide direct or indirect assistance to the Government.

1. **Standards and Testing**

   It has been recommended that the Government should actively promote the establishment of an Automotive Industry Testing Establishment and of a body to formulate Iranian Automotive Standards. This is an area in which UNIDO has direct experience[1] which could be used in the planning of these bodies and, if necessary, in implementation. Certainly, contacts between the Ministry of Economy and UNIDO should be made as soon as possible aimed at examining the possibilities.

2. **Training**

   United Nations agencies can play an important role in the field of training personnel involved in or with the Iranian Automotive Industry. It is interesting to note that one move in this direction has already been made with the invitation of Iranian participants in the Expert Group meeting to be held in Paris in November 1972. In the future the UN could assist with the provision of fellowships for Iranian Industry and Government personnel to gain experience of other Automotive Industries. Furthermore, the UN could assist in the formulation of and provision of experts for the various training activities referred to in recommendation 2.

[1] e.g. in Chile and in Nigeria.

1. MARKET SUMMARY

1.1 Demand

The total demand for motor vehicles* in Iran is expected to increase from its present level of some 65,000 units p.a. to:

- 140,000 units in 1356
- 225,000 units in 1361

These forecasts assume that the currently projected growths in the Iranian economy will be achieved. Table 1.1 summarises the anticipated productions of vehicles by type.

The demand for passenger cars, currently standing at some 45,000 units per annum should rise to:

- 100,000 units in 1356
- 170,000 units in 1361

These forecasts assume that present trends in price, income growth, credit availability, etc., are maintained. If it is felt desirable to stimulate passenger car demand above the levels projected above, the government should formalise the consumer credit function in Iran. Apart from stimulating demand, particularly amongst the lower income categories, this measure would provide protection for the consumer. The vehicle for the reformed credit function should be the banking community and not the motor industry. In this way, possible conflicts of interest would be removed from the consumer credit mechanism and manufacturers' working capital would be released. As an indication, the objectives involved could be to give a maximum loan related to borrower's income; requiring a deposit of say 25% of purchase price; the loan being repayable over two to three years. If this credit system were introduced it is estimated that an immediate increase in demand for passenger cars of at least 10% would result. Furthermore, experience in other countries suggests that the previously forecast growth rates would be maintained from this higher base level.

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*Passenger cars, Station Wagons, Jeep/Land Rover, Trucks, Vannettes, Buses, Mini-buses.

TABLE 1.1 FUTURE DEMAND FOR MOTOR VEHICLES IN IRAN

VEHICLE	1350	1356	1361
Passenger Cars[1]			
Total	47,000	103,000	169,000
Small/Medium	36,000	72,000	-
Large 6 cyl.	6,000	21,000	-
Other[2]	5,000	10,000	-
Trucks & Vannettes[3]			
Total	17,100	35,000	50,000
Vannettes up to 1 ton	9,000	17,500	-
Vannetes 1 - 2 ton Light trucks up to 3 ton	4,000	7,700	-
Trucks 3 - 7 ton	1,200	3,500	-
Trucks over 7 ton	1,700	5,600	-
Special vehicles	500	700	-
Unspecified	700	-	-
Buses & Minibuses			
Total	3,000	3,700	4,000
Buses	1,000	1,250	-
Minibuses	2,000	3,450	-

1 Includes Jeep and Land Rover utility vehicles and station wagons

2 Includes all imported cars.

3 Figures refer to load carrying capacity.

The introduction of such credit measures together with the increasing incidence of purchase amongst the lower income groups as incomes rise generally and are redistributed will have a significent effect on the structure of demand for passenger cars in terms of the size and price categories. At the present time, it is difficult to measure the structure of demand as the market is overwhelmingly influenced by supply. It is dominated by the medium sized Peykan, this being the vehicle produced in greatest quantity. However, the factors referred to above would create an ever increasing requirement for a smaller, cheaper car than the Peykan. This requirement is presently served by the locally produced Citroen but this vehicle appears not to have gained acceptance in the market. The conclusion drawn is that the lower price end of the market should be served by a vehicle of between 1100 and 1300 cc which, whilst identifiable with the Peykan, can be sold at a lower price. The introduction of the vehicle would obviously limit the potential market for the Peykan itself but would of course contribute to increases in overall demand for passenger cars.

At the other end of the scale there is a continuing and growing demand for a larger six-cylinder car, presently served by the Rambler, and for luxury or specialist cars, presently served by imports. Neither the introduction of credit nor rises and redistributions in incomes will have as great an effect on growth of this section of the market as on that for the smaller cars. However, there is clearly a need to maintain local production of a vehicle such as the Rambler although it is inevitable that a significant number of luxury cars will continue to be imported at virtually any price.

As far as the specialist cars are concerned demand is largely confined to young people.

The levels of imports of such cars as the smaller BMW together with experience in other countries suggests the possibility of serving this sector of the market from local production. A first step in this direction has been taken by Iran National with the introduction of the GT Peykan model. However, it is thought that this bears too close a resemblance to the standard models and a significant proportion of this demand will still remain unsatisfied. This demand could be met to a large extent by the introduction of a locally produced, glass-fibre body coupe based on Peykan components. Should the 1100 to 1300 cc model and the Peykan type be based on a family of engines, there would then exist the possibility of offering the specialist cars in a range of engine sizes and powers.

The demand and utility vehicles (Jeep and Land Rover) will continue, although at a relatively low level of growth. It should be mentioned, however, that military vehicles have been excluded from the present study as no data was made available in Iran. However, it is clear that a significant demand, particularly for utility vehicles, is involved. It seems anomalous that the army for example have imported Jeep CJ-5 vehicles from the United States when the self same vehicle is produced in Iran. Incidentally, to dispose of the question of military vehicles in total, the only significant purchases of vehicles by the military from local producers encountered during the course of the study were a few buses and trucks purchased by the Army from Kaveh and a small number of buses purchased by the Navy from Pars Lux. Once again it seems anomalous that the Services are purchasing cars, trucks and buses from, for example, the USSR[1] when equivalent vehicles are produced locally.

In summary and excluding the military vehicle market it is estimated that the structure of demand for passenger cars and utility vehicles in Iran in 1356 will be as shown:

1. In Australia government orders for military vehicles enabled International Harvestor to increase local content in a range of commercial vehicles.

	% of Market
Small / Medium	65-70
Large 6-cylinder	18-22
Luxury (imported)	3-4
Specialist	1-2
Station wagon / Jeep/Land Rover	5

The above breakdowns assume that a suitable replacement is found for the Rambler and that a suitable vehicle in the 1100 to 1300 cc class is introduced within the next three to four years.

An important characteristic of the market is its changing distribution by geographical area. The intense concentration of demand in Tehran is beginning to be dissipated as sales build up in other areas of the country. This has two effects as far as price and quality of vehicles required are concerned. As more and more vehicles come into use in areas of Iran outside Tehran, existing service facilities will be stretched. For this reason it would be an advantage if models introduced in the future were kept as conventional as possible. It is worth noting that the relatively unique design of the small Citroen already acts as a barrier to sales in areas without specific Citroen servicing facilities. Furthermore, the use of vehicles in the smaller urban areas tends to impose a requirement for robustness and quality greater than that encountered in Tehran in view of the quality of roads, greater use to which these vehicles are put etc. This requirement for robustness is perhaps more equal or greater in Tehran as far as bodywork is concerned in view of the harsh treatment to which vehicles in use in that city are subjected.

Turning to the demand for trucks and vannettes, it is anticipated that this will increase from its present level of some 17,000 units p.a. to:

- 35,000 units in 1356
- 50,000 units in 1361.

Again, the above figures assume that the projected economic growth rates in the country will be achieved.

The greatest growth in this section of the market will be in vannettes, particularly over the next three years or so in the vannettes of less than 1 ton capacity, in view of replacement of the existing stock of three-wheeled pickups and the introduction to local manufacture of the Mazda pickup. A high growth rate will also be experienced in the market for light commercial vehicles of 1-3 tons capacity as evidenced by the success of the recently introduced Iran National diesel engine trucks up to 3 tons capacity. Significantly, the competitive Leyland truck which was fitted with a petrol engine had very little success in the market. It is felt, therefore, that the demand for these vehicles involves diesel engines. Trucks of medium capacity (3-7 tons capacity) will be the subject of relatively low growth in demand but the heavier trucks should experience relatively rapid growth rates. In summary, the following table presents an estimated breakdown of the market for trucks and vannettes in 1356.

Vehicle Type and Capacity	Proportion of Total Demand
Vannettes up to 1 ton	50 %
Vannettes 1-2 ton Light trucks up to 3 ton	22 %
Trucks 3-7 ton	10 %
Trucks over 7 ton	16 %
Special Vehicles*	2 %

*Fire fighting, road sweepers, refuse disposal, etc.

The market for buses and minibuses, presently involving a demand of around 3,000 units p.a. is not expected to show major growth in the future. In fact it is anticipated that demand will reach about 3,700 units in 1356 and 4,000 units in 1361. The distribution of this demand between buses and minibuses will be as shown below:

	Buses	Minibuses
Demand in 1356 Units	1,250	2,450

1.2 Foreign Trade

Imports of all vehicles have fallen steadily over the last three or four years from over 21,000 units in 1347 (including three-wheelers) to under 12,000 units in 1348 and less than 9,000 units in 1349. As far as passenger cars are concerned, imports served over 30 per cent of the market in 1347 but this figure is now in the region of 8 per cent or about 3,000 vehicles per annum. As has already been mentioned it is anticipated that there will always be a small demand for imported cars although this will represent a decreasing proportion of the market assuming the Government's present tariff policies are continued. As far as vannettes are concerned imports remain at a relatively high level of around 4,000 units per annum. However with the scheduled increase in production of the Nissan pick-up and the commencement of local manufacture of the Mazda pick-up it is felt that these imports will virtually cease. It should also be mentioned that imports of three-wheeled vehicles have now ceased. Imports of buses are now at a negligible level although imports of trucks continue to oscillate around 1,000 units per annum. To some extent these imports of trucks are due to a requirement, unsatisfied from local production sources, for specialist vehicles but this is now being met by, for example, Leyland Motors with their refuse disposal vehicles etc. Looking to the future, and apart from the previously mentioned demand for luxury and specialist passenger cars, imports of vehicles in Iran should be negligible.

Apart from the case of a few buses, exports of vehicles from Iran have been negligible. Buses with their relatively high labour content in manufacture appear to be competitive in markets close to Iran, 258 vehicles having been exported in 1348 and 178 by Iran National alone in the first 10 months of 1350. For the same reason (high labour content in manufacture) it seems reasonable to suggest that opportunities may exist for the export of heavy trucks. As

Table 1.2 [illegible] R INDUSTRY - [illegible]

	Iran National Industrial	Jeep	Iran C[illegible]	Zamiad	Khavar	Leyland [illegible] Iran	Iran Mazda	Moratab	Kaveh	Pars Lux	Bus Manuf. Consortium	Iran Saika	Sales 1349
PASSENGER CARS:													
Small			P(1)									F	2,804
Medium	P(1)											F	19,794
Large		P(1)											4,405
[illegible]ETIES													
Up to 500 Kg[1]			P(1)				P^2(1)						1,869
500 Kg - 1,000 Kg[1]	P(1)					P(1)							2,771
Over 1,000 Kg[1]		P(1)		P(1)				P(2)	P(1)	L			2,265
TRUCKS													
Light - up to 6 ton gvw	P(1)					P(1)							1,375
6 - 10 ton gvw				P(1)	P(3)	P(2)							1,062
10-20 ton gvw				P(1)	P(3)	P(1)							1,285
20-30 ton gvw					P(2)	P(1)							125
Over 30 ton gvw									P(2)				173
BUS	P(2)									P(2)	P(2)		857
MINIBUS	P(1)									P(1)	P(1)		1,776
UTILITY VEHICLE 3													
Small			P(1)										-
Large		P(2)						P(2)					3,202

P. Production
L. Licence
F. Factory but no production
(1) Number of Basic Models
1 Carrying Capacity
2 About to commence production
3 [illegible] CJ Series, [illegible], Citroen Mihati

far as passenger cars are concerned experience of other countries suggest that it will be at least a decade before the costs of manufacture can be reduced sufficiently to place Iranian products in an internationally competitive position, even taking into account complete drawbacks of taxes and duties. On the other hand, multilateral and bilateral trade agreements may provide export opportunities. However, it must be remembered that vehicles which are exported must be backed up by service and guarantee facilities. In some cases it may be that service arrangements can be negotiated with the vehicle manufacturers foreign partner representatives in the countries concerned.

1.3 Structure of Supply

The Iranian automotive industry now supplies over 85% of local demand for motor vehicles and, with the introduction of the Mazda pick-up, this will rise to over 90%.

At the present time the motor vehicle industry in Iran comprises eleven companies (twelve if Iran Saika the erstwhile producer of Fiats which still has a factory but no licence is included). The structure of the industry in terms of specialisation and concentration is shown in Table 1.2. As can be seen there is a high degree of specialisation in the passenger car sector with small, medium and large cars each being produced by a single company. The greatest degree of disaggregation exists in the vannette sector with eight companies involved in production and a further company (Pars Lux) having a manufacturing licence. However, it should also be mentioned that Kaveh and Leyland have virtually ceased production of their vannettes. In the truck sector, competition is fierce in the medium size trucks but Iran National have had a virtual monopoly of the light trucks (up to six tons gvw, up to three tons capacity) due to their ability to offer a diesel engine in this range. The bus and minibus sector is also dominated by Iran National, with the Bus Manufacturing Consortium operating at a particularly low level of production.

All the companies in the Iranian Automotive Industry produce foreign designed vehicles although only three (Iran Citroen, Zamiad and Leyland Motors Iran) have foreign equity participation. The connections are as follows:

- Iran National: Chrysler (UK) passenger car and vannette derivative; Daimler Benz buses, minibuses and trucks.
- Jeep Company[1]: American Motors Rambler passenger car; Jeep International Corp. utility vehicles, station wagons, etc.
- Iran Citroen: Citroen passenger car, vannette and utility derivatives.
- Zamiad: Volvo, trucks, Nissan pick-up (also BM Tractor).
- Khavar: Daimler Benz trucks.
- Leyland Motors Iran: British Leyland Motor Corporation trucks.
- Iran Mazda: Mazda pick-up.
- Moratab: British Leyland Motor Corporation Landrover utility vehicle.
- Kaveh: Mack Trucks Ltd trucks; General Motors pick-up.
- Pars Lux: Magirus Deutz bus and minibus.

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[1] At the time of writing (October 1972) Jeep Company are negotiating an agreement with General Motors Corporation involving the latter's direct equity participation.

2. THE MARKET FOR PASSENGER CARS

2.1 Basic Statistics

In any investigation of the market for passenger cars, the most important characteristic is the number of vehicles in use. In many countries the Vehicle Licensing Authority operates registration procedures which automatically generate information on the number of vehicles in use in the country. These procedures take account not only of new registrations of vehicles but also of scrappage (the vehicles which through old age or accidents can no longer be considered as being in use). In Iran unfortunately the Police Department responsible for licensing of vehicles concerns itself only with new registrations as far as privately registered passenger cars are concerned. No mechanism exists for the recording of scrappage, and, indeed, there is no onus upon the owner of a vehicle to inform the Police Department when that vehicle is scrapped. Thus, in order to build up a picture of the developments of the number of vehicles in use (the PARK) in Iran it is necessary to make some estimates of scrappage.

Table 2.1 shows first the statistics of cumulative registrations. It is interesting to note the figure for 1348 as this is believed to be an accurate assessment of the PARK at the end of that year. In 1348 it was found necessary to make a change from four figure to five figure licence plates for passenger cars. Thus the Police Department, which has responsibility for issuing the new licence plates, was given the opportunity of compiling a new base. Significantly the Department has now expanded the amount of statistical data it is extracting from the information on new registrations. This expansion is being achieved through computerisation and will yield much more detailed breakdowns of registrations by geographical area and type of vehicle. Unfortunately, however, there is still no mechanism, and apparently no intention to institute a mechanism, for dealing with the question of scrappage. Thus, commendable as the efforts of the Department may be, it will still not be possible to obtain directly figures for the PARK.

TABLE 2.1 **PASSENGER CARS IN USE IN IRAN**

Year	Cumulative Registrations.	Apparent Demand	Cumulative Demand	Scrappage In Year	PARK (C-D)	Passenger Cars per 1,000 capita
	UNITS A	UNITS B	UNITS C	UNITS D	UNITS E	
1327	12,387	-	-	-	-	
1333	32,208	-	32,208	-	32,208	1.8
1334	35,138	5,884	38,092	76	38,016	2.1
1335	42,826	7,416	45,508	92	45,340	2.4
1336	54,505	9,477	54,985	110	54,707	2.8
1337	69,780	12,465	67,450	134	67,038	3.3
1338	82,519	14,467	81,917	164	81,341	3.9
1339	94,164	14,234	96,151	192	93,383	4.4
1340	99,856	7,467	103,618	207	102,643	4.6
1341	106,919	6,041	109,659	219	108,465	4.8
1342	116,231	13,225	122,884	246	124,324	5.3
1343	127,761	17,049	139,933	420	138,073	5.7
1344	139,211	16,199	156,132	468	153,804	6.2
1345	153,299	18,107	174,239	697	171,214	6.7
1346	165,438	20,010	194,249	971	190,253	7.2
1347	191,723	32,295	226,544	1,359	221,189	8.2
1348	250,289*	30,867	257,411	2,059	249,997	8.9
1349	289,711	33,341	290,752	2,908	280,430	9.7

(C - A) for 1348 = 7,122 vehicles =
Scrappage 1334-1348

* Due to a change from 4 figure to 5 figure Licence Plates data for 1348 is representative of number of vehicles in use.

A. Figures obtained from discussions with Police Department.

B. Local Production + Imports - Exports (Passenger Cars plus Jeep/Land-Rover).

C. Cumulative Registrations for 1333 plus Apparent Demand.

D. Taken as sliding scale : 0.2% of C in 1333 to 1.0% of C in 1349.

Returning to Table 2.1, the second column shows the development of apparent demand for passenger cars in Iran, which has been taken as the aggregate of local production plus imports minus exports. Strictly speaking of course this is not apparent demand as production and indeed import figures do not necessarily equate with sales. Changes in stock should be considered but these figures are not available and, in any case, over a long period the effect of such changes should be largely cancelled out.

At this point it should be mentioned that the statistics on apparent demand have been taken to include both passenger cars and Jeep/Land-Rover vehicles, but not vannettes. This is because the statistics for cumulative registrations of "passenger cars" tend to include the Jeep/Land-Rover vehicles but exclude Vannettes the latter generally being registered as commercial vehicles. It is interesting to note that the increase in cumulative registrations between 1347 and 1348 (the new registrations in 1348) amounting to over 58,000 vehicles, exceed by a considerable margin the equivalent figure for apparent demand. It appears therefore that over a course of time, there has been for one reason or another a certain amount of under recording of new registrations.

The third column of Table 2.1 takes as its starting point the figure for cumulative registrations in 1333, to which are added the apparent demand figures for subsequent years. The nett result is that of figures for cumulative demand. Referring to 1348 there is a difference between the figure for cumulative demand and the figure for cumulative registrations of 7,122 vehicles. Assuming the cumulative registrations figure to be equal to the PARK in 1348, this difference should represent the total number of vehicles scrapped in the period of 1333 to 1348. In order to calculate the historical development of the passenger car PARK in Iran it is now necessary to consider the annual rate of scrappage in the country. Unfortunately, no such figures exist for Iran as the Traffic Police Department has no mechanism for recording scrappage. Two methods can be used to estimate scrappage rates. The first making a comparison between the scrappage rates in various other countries and the second by referring to the average life of the vehicles in use in Iran.

In any vehicle PARK the rate of scrappage expressed as a percentage of that PARK, apart from being entirely dependent upon the average life of the vehicles, can be indicated by the actual size of the PARK, and the rate of growth of the PARK.

TABLE 2.2 ESTIMATED SCRAPPAGE RATES IN VARIOUS COUNTRIES : 1970

Country	Park 1970	Ave. Annual Growth 1960-1970	Scrappage 1970	Passenger Cars per 1,000 capita.
	(1000 units)	%	% of Park	Units
Yugoslavia	560.5	26.0	0.4	34
Spain	1,998.8	22.6	0.3	82
Greece	131.0	12.3	3.8	17
United Kingdom	11,317.0	8.5	3.8	214
Switzerland	1,291.0	11.1	6.8	223
Sweden	2,193.6	7.3	5.6	281
*Portugal	401.9	10.8	2.0	47
*Norway	700.9	13.7	3.2	192
Italy	9,028.4	18.4	4.4	186
W. Germany	12,867.0	12.7	6.4	228
France	11,670.0	10.5	5.5	242

As can be seen from the above table countries exhibiting high rates of growth of the PARK (e.g. Yugoslavia, Spain) tend to have low scrappage rates. This is certainly logical and, as in these countries, a high proportion of the vehicles in use will be relatively new. It would also appear that the countries having the highest levels of vehicle ownership (Sweden, France, West Germany and Switzerland) tend to have the highest scrappage rages. Obviously, the countries with the lowest ownership levels will tend to exhibit the highest growth rates in the PARK and, therefore, the lowest scrappage rates. For example, the position of Greece is rather anomalous, as its vehicle ownership level would indicate a scrappage rate rather less than that of say Yugoslavia, but its rates of growth of the PARK indicates the scrappage rate more akin to the highly developed countries. In fact Greece has exhibited a declining rate of growth in the PARK with growth rates of up to 25% being experienced in the early 60's having declined to around 2% in 1968 and 1969. Thus the scrappage rate for Greece is probably artificially high.

As far as Iran is concerned the growth in cumulative demand has averaged around 12% per annum over the decade ending 1348 but this growth has tended to increase with the average annual growth over 1347 and 1348 being 15%. With vehicle ownership standing at present between 9 and 10 passenger cars per thousand capita scrappage rates would seem to be fairly low. On the basis of vehicle ownerships the scrappage rate for passenger cars in Iran should be lower than that in Portugal, Greece, Spain and Yugoslavia. Based on growth in the PARK, the scrappage rate in Iran should be higher than that in Yugoslavia and Spain but slightly lower than that in Portugal. As an approximation it would seem reasonable to set a scrappage rate of about 1% of the PARK for Iran in 1348.

Turning to the historical developments of the scrappage rate in Iran, it has already been said that as the vehicle ownership increases so the scrappage rate tends to increase. Table 2.3 illustrates this effect for a number of European countries. Based on the above arguments, the Table 2.4 shows the development of passenger car scrappage in Iran assuming a gradual build up of the rate of scrappage up to 1% of the PARK in 1349. On this basis the total scrappage in the period 1334 to 1348 inclusive is 7,414 vehicles which compares well with the previously mentioned difference between the registration figure and the cumulative demand figure for 1348. (See Table 2.1).

The actual number of vehicles scrapped in any one year is clearly dependent on the life of the vehicles which have entered the PARK in previous years. However, for the purposes of calculation, it is not sufficient simply to take the average life of the vehicles bought in any one year. Rather the distribution over time of the scrappage of these vehicles must be considered. For example some vehicles are scrapped in the year they are first bought through involvement in accidents whilst other vehicles will be in use long after they should, according to average life criteria, have been scrapped. Figure 2.1 illustrates the distribution by age of the cars scrapped in 1950, 1960 and 1970 in Spain. These are theoretical curves, being based on the assumption that the average life of a passenger car in Spain is changing gradually from 20 years in 1950 to 10 years by around 1975. The available data in Spain tends to confirm this assumption which is also felt to be reasonable by the Vehicle Licencing Authorities. Returning to Iran, it seems reasonable to suggest that a trend towards a shorter average passenger car life is taking place and, in the absence of specific information, it is assumed that this trend will be similar to that in Spain. More precisely, it is assumed that the average life of a passenger car in Iran was 20 years in 1333 but that this will have decreased to 10 years by about 1359/60. Using this assumption, the theoretical scrappage of passenger cars in Iran is derived in Table 2.5. In summary this shows the total number of passenger cars scrapped up to and including 1349 and the number of vehicles which came into use prior to 1350 scrapped in

TABLE 2.3 SCRAPPAGE RATE DEVELOPMENT IN VARIOUS COUNTRIES

Country

Portugal:

Year	1967	1968	1969	1970
Park ('000 units)	280	316	355	402
Scrappage (% of Park)	0.7	1.0	1.8	2.0

Norway:

Year	1965	1966	1967	1968	1969
Park ('000 units)	416	466	517	570	620
Scrappage (% of Park)	1.4	2.0	2.2	2.6	2.8

Italy:

Year	1965	1966	1967	1968	1969
Park ('000 units)	4,675	5,472	6,356	7,295	8,179
Scrappage (% of Park)	1.9	2.4	3.5	3.8	4.4

France:

Year	1960	1961	1962	1963	1964
Park ('000 units)	4,360	4,873	5,450	6,220	7,075
Annual Growth	11.8	11.8	14.1	13.7	12.5
Scrappage (% of Park)	2.7	2.8	2.6	3.1	2.4

Year	1965	1966	1967	1968	1969
Park ('000 units)	7,960	8,718	9,555	10,210	10,935
Annual Growth	9.5	9.6	6.9	7.1	6.7
Scrappage (% of Park)	3.8	4.3	6.0	5.0	5.8

TABLE 2.4 SCRAPPAGE IN IRAN (PASSENGER CARS) - HYPOTHESIS I

Year	Scrappage Rate % of Park *	Scrappage Units	Scrappage as % of Apparent Demand
1333	-		
1334	0.2	76	1.29
1335	0.2	92	1.24
1336	0.2	110	1.16
1337	0.2	134	1.08
1338	0.2	164	1.13
1339	0.2	192	1.35
1340	0.2	207	2.77
1341	0.2	219	3.63
1342	0.2	246	1.86
1343	0.3	420	2.46
1344	0.3	468	2.90
1345	0.4	697	3.85
1346	0.5	971	4.85
1347	0.6	1,359	4.21
1348	0.8	2,059	6.67
1349	1.0	2,908	8.72

* Actually taken as % of Cumulative Demand.

Error less than 2%

FIGURE 2.1 PASSENGER CAR SCRAPPAGE DISTRIBUTION CURVES : SPAIN

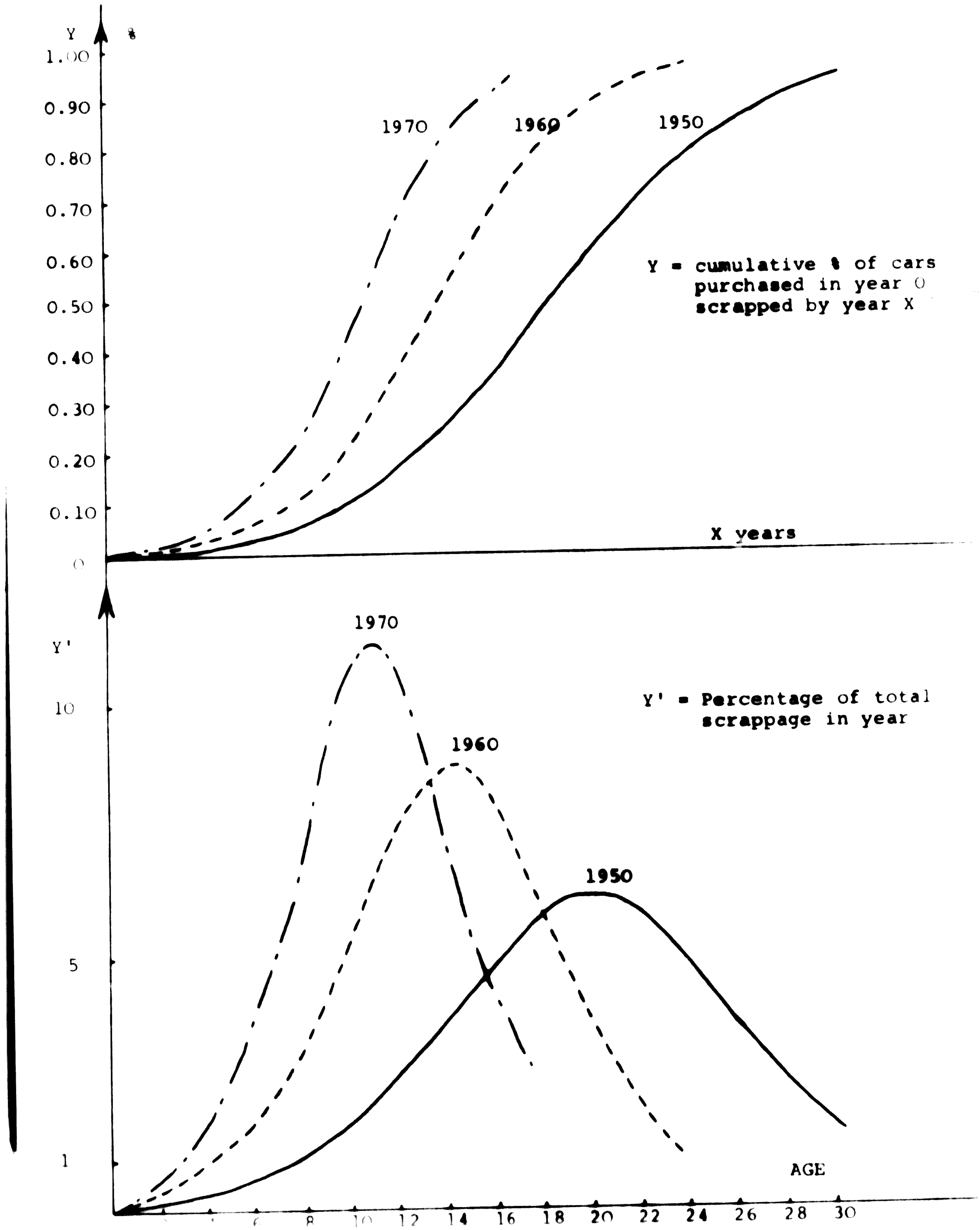


TABLE 25 THEORETICAL SCRAPPAGE OF PASSENGER CARS IN IRAN [1]

YEAR	DEMAND	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346
1333	(PARK) 32,208	64	77	100	125	161	203	258	325	409	509	625	[illegible]4	928
1334	5,884	7	14	18	23	30	37	46	60	74	92	113	[illegible]41	169
1335	7,416	-	8	18	23	31	39	51	65	85	106	131	[illegible]3	200
1336	9,477		-	9	26	34	43	55	72	93	118	151	[illegible]89	237
1337	12,464			-	14	37	47	60	81	103	135	173	[illegible]20	280
1338	14,464				-	16	43	56	75	100	132	171	223	285
1339	14,234					-	17	44	60	80	105	140	[illegible]5	240
1340	7,467						-	9	25	33	45	60	80	106
1341	6,041							-	8	21	28	39	52	70
1342	13,225								-	17	48	65	[illegible]0	123
1343	17,049									-	24	63	89	124
1344	16,199										-	23	[illegible]3	89
1345	18,107											-	27	74
1346	20,010												-	26
1347	32,295													-
1348	30,867													
1349	33,341													
	TOTAL NUMBER SCRAPPED EACH YEAR:	71	99	145	211	309	429	579	771	1015	1342	1754	2276	2699
	CUMULATIVE TOTAL	71	170	315	526	835	1264	1843	2614	3629	4971	6725	9001	11700
	% OF CUMULATIVE DEMAND	0.19	0.22	0.26	0.38	0.45	0.56	0.70	0.70	0.83	0.96	1.12	1.31	1.40
	% OF APPARENT DEMAND	1.20	1.33	1.53	1.69	2.14	3.0	5.75	12.76	7.67	7.87	10.8	12.[illegible]	13.5

* Strictly this does not equal % of park. Taking Police Department figure for vehicles in Use Scrappage as % of Park

[1] Calculated on the basis of 20 years average life in 1334 decreasing progressively to 10 years average life by 1359.

SECTION 1

43	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361
09	625	774	928	1108	1298	1488	1672	1826	1957	2003	2003	1957	1826	1672	1488	1298		
92	113	141	169	203	238	273	305	333	354	365	365	354	333	305	273	238		
.06	131	163	200	243	288	338	384	426	457	477	481	469	442	405	359	312		
.18	151	189	237	291	352	418	483	545	593	627	593	545	483	418	352	291		
.35	173	220	280	350	431	520	615	704	784	840	869	863	828	760	679	588		
.32	171	223	285	362	456	563	676	791	898	983	1034	1046	1013	443	845	732		
.05	140	165	240	313	400	502	616	739	858	260	1035	1065	1052	989	895	779		
45	60	80	106	140	182	233	293	360	428	491	543	572	576	550	506	445		
28	39	52	70	94	125	163	210	263	322	379	431	467	482	473	454	393		
48	65	90	123	159	226	300	394	508	636	774	906	1010	1077	1084	1037	944		
24	63	89	124	170	234	315	425	559	721	903	1091	1260	1388	1444	1420	1319		
-	23	63	89	125	173	241	327	444	585	753	941	1126	1286	1386	1413	1353		
	-	27	74	148	208	290	400	541	496	717	923	1146	1439	1528	1616	1606		
		-	26	84	122	174	248	346	480	654	866	1116	1375	1613	1783	1847		
			-	52	142	207	300	426	604	843	1150	1528	1960	2400	2774	3013		
				-	49	142	207	306	435	624	870	1194	1590	2031	2466	2840		
					-	57	160	237	347	503	723	1023	1403	1863	2997	3894		
						-												
							-											
								-										
									-									
										-								
											-							
												-						
													-					
														-				
															-			
																-		
																	-	
342	1754	2276	2699	3842	4924	6214	7715	9354	10955	12896	14824	16744	18553	19864	20357	21889		
4971	6725	9001	11700	15542	20466	26680												
.96	1.12	1.31	1.40	1.70	1.91	2.14												
.87	10.8	12.6	13.5	11.9	16.0	18.6												

Use Scrappage as % of Park is 1.97% as opposed to 1.91 above in 1348

SECTION 2

subsequent years. On this basis, the scrappage rates derived are somewhat higher than those postulated with reference to experience of other countries. Instead of the 1% of PARK postulated above, the theoretical estimate is just over 1.9% in 1348. There are two possible explanations for this discrepancy; the first is that there has been an under recording of production and/or imports of passenger cars which would result in true demand being higher than the apparent demand of Table 2.1 and would mean that the theoretical scrappage of Table 2.5 is nearer the truth. A second explanation is that the average life of a car in Iran was longer than 20 years in 1333 or that the decrease in this life has not taken place as rapidly as assumed above, and, therefore, the scrappage rates postulated in Table 2.4 are the more accurate. There is in fact a third explanation and that is that the registration figure for 1348 is incompatible with the figures for demand. In any case, as far as the PARK in 1349 is concerned, the maximum error possible using either of these scrappage rates derived is 6%. However, looking ahead, it can be seen that the scrappage will become more and more important as a proportion of new vehicles demand. This is in fact a trend in all developing motor vehicle markets.

If the first explanation, that there has been an under recording of production and/or imports is correct, then the theoretical scrappage figures derived will hold good. If the second explanation, that the average life of a vehicle is now longer than would be expected on, say, the basis of Spain's experience, then the average age of the existing PARK in Iran is rather high. Assuming that vehicle life in Iran will eventually conform to world norms, there will in fact be an upsurge in scrappage above that predicted in Table 2.5. For these reasons, and in view of the lack of explanatory information, it is proposed to use the first set of scrappage figures, (Table 2.4) in calculating the PARK up to 1348 but, in subsequent forecasting exercises, to utilise the theoretical scrappage figures derived in Table 2.5.

It is now possible to calculate the number of vehicles in use in Iran and the historical development of ownership levels in the country. These have in fact been inserted in Table 2.1.

As an indication of the errors which might ensue if the assumptions on average life made above are incorrect, the following table illustrates the sensitivity of scrappage to average life.

Year	Total Number of Vehicles Scrapped	
	I	II
1334	71	71
1335	99	99
1336	145	145
1337	211	209
1338	309	296
1339	429	406
1340	579	536
1341	771	693
1342	1,015	896
1343	1,342	1,153
1344	1,754	1,467
1345	2,276	1,867
1346	2,699	2,327
1347	3,842	2,897
1348	4,924	3,563
Total in Period	20,466	16,625

Column I reproduces the scrappage figures from Table 2.5, calculated on the basis of an average life of 20 years in 1334 reducing to 10 years in 1359. Column II shows the scrappage calculated on the basis of a constant average life of 20 years. In 1348 the difference in scrappage derived using each assumption amounts to the 1,361 vehicles or 4.4% of apparent demand in that year.

2.2 Characteristics of the Market

So far all information presented has dealt with the overall market for passenger cars (including Jeeps and Land Rovers). Taking the figures for 1348, it is estimated that 84% of the passenger car Park is privately registered. Taxis account for some 7.6% of the Park, Rental cars 2.6%, Government vehicles 4.9% and Diplomatic and Service vehicles 1%. The greatest growth is occurring in the private sector as, 10 years previously, privately registered cars accounted for 70% of the Park whilst Rental Cars and Taxis combined accounted for 24% of the Park, Governmental cars accounted for 4.6% and Diplomatic and Service cars 1.4%. It appears as if this trend has stabilised somewhat as, of the vehicles first registered in 1349, 82% were privately owned cars, 10.9% Government cars, 6.1% Taxis and Rental Cars and 1% Diplomatic and Service cars. The only feature of note in this last set of figures is the high proportion of, and hence high growth in, Government vehicle registrations.

Turning to the geographical distribution of passenger cars, Table 2.6 gives an indication of the concentration of vehicles in Iran. It should be noted that the figures for new registrations are based on all passenger cars including those used in rural areas of Iran. However, as the Police Department operates only 30 centres which are located in the larger cities, the Police Department statistics will tend to over emphasise the degree of concentration of vehicles in use. In comparison with the Police Department's statistics however, the Metra Consumer Survey of 1350 was conducted only in urban areas and, therefore, specifically excludes cars in use in rural areas. The results of the Metra Survey indicate that the degree of concentration is tending to decrease. This trend is similar to that experienced in Spain where the combined concentration of passenger cars in the provinces of Madrid and Barcelona (accounting between them for 18% of the Spanish population) has decreased from 45% of the Spanish passenger car Park in 1962 through 42.8% in 1966 to 41.0% in 1969. At the present time some 26% of new registrations of vehicles in Spain are accounted for by Madrid and Barcelona provinces.

TABLE 2.6 GEOGRAPHICAL DISTRIBUTION OF PASSENGER CARS

	New Registrations[1] 1349 : % of total	Private Cars in Use[2] in Urban areas : 1350 % of total	New Cars Purchased in[2] Urban Areas : % of total	
			up to 1347	1349-1350
TEHRAN	65	64	80	62
11 MAJOR CITIES [3]	27	14	6	12
OTHER URBAN [3]	8	22	14	26

1 Police Department Statistics : Excluding Government, Diplomatic and Service

2 From METRA Consumer Survey 1350.

3 Police Department and METRA figures not strictly compatible as number of registration centres is limited. Hence some cars in use in other urban areas will have to be registered in 11 major cities etc.

Clearly the implication of the above figures is that the highest growth potential in the passenger car market exists outside Tehran. The number of cars in use stands at a higher level in Tehran than in other areas of the country partly because of the concentration of the population in Tehran, but more significantly, from the point of view of growth potential, because ownership levels are higher in Tehran than in other areas. Turning to the ownership of cars in rural areas, neither the Metra survey which confines itself to the urban population nor the Police Registration Statistics give any indication. However it is probable that ownership stands at a very low level in rural areas with only between five and ten per cent of the total passenger car Park being accounted for by vehicles owned by rural families. In Yugoslavia for example six per cent of the cars in use in 1969 were owned by rural families although this figure is expected to increase by about eight per cent, by 1973.

Having discussed the degree of concentration of passenger cars in use by geographical area, it is interesting to consider the concentration in terms of ownership by various income groups. Table 2.7 shows the high level of ownership which exists amongst the highest income groups in the country. Again the pattern shown is similar to that experienced in other countries at an early stage in the development of their passenger car markets. However, it should be noted that, after an initial high growth in ownership amongst high income groups, most countries exhibit the highest growths of car ownership amongst the low and middle income groups. For example, whilst the growth in ownership in passenger cars amongst high income groups in Yugoslavia is expected to show an average income rate of some 12% per annum of the period 1969-1973, the middle income group is expected to show an equivalent rate of over

TABLE 2.7 OWNERSHIP BY INCOME GROUP AND GEOGRAPHICAL LOCATION : ALL PASSENGER CARS

	Income Group	Ownership Level % of Households Owning
TEHRAN	1-2	1.7
	3-4	5.1
	5-6	25.5
	7-8	51.6
	9-10	73.2
OTHER URBAN	1-2	1.3
	3-4	2.9
	5-6	11.4
	7-8	33.3
	9-10	-
ALL URBAN	1-2	1.4
	3-4	3.5
	5-6	16.7
	7-8	44.7
	9-10	75.4

25% per annum and the low income group around 50% per annum. Similarly in Spain the highest growths in ownership are amongst the skilled and unskilled workers and amongst junior staff and service employees. Obviously, to a certain extent, the growth in ownership amongst the high income groups is bound to slow dowm as these approach saturation. This explains the slow down in growth amongst the high income groups but not the increasing growth of the middle and low income groups. Explanations for the latter phenomena are to be found:

- in the increasing wages and salaries of these groups which in Spain, for example, has certainly led to rapid increases in disposable income, particularly at the lower end of the salary scale.

- the introduction, as in Yugoslavia of lower priced models of car together with the general tendency in developing motor industries, for vehicle prices to decrease relative to the cost of living as in Spain and Argentina.

- the introduction of credit as in Spain and Latin America, making it easier for the lower income groups to purchase a car.

- greater industry output rendering improved car availability and other perhaps more subjective factors.

Taking up the question of credit, mentioned in the previous paragraph, it is quite clear that this has had an extremely important role in stimulating the market for passenger cars in such countries as Spain, Argentina, Brazil, Mexico and indeed the developed countries such as the UK. Taking one example only at this point Table 2.8 shows the importance of credit in the Spanish market, particularly amongst the lower income groups (unskilled labourers, agricultural employees, etc.). It should be noted that this table refers to all cars owned including those purchased second-hand. Credit is even more important than indicated by the Table if new cars only are considered. As far as Iran is concerned, one manufacturer of passenger cars estimates that some 80% of his sales are credit sales, his vehicles going mainly to the 10-20,000 rials per month income groups (his estimate) or 100-200,000 rials per annum income groups (Metra survey estimate). The problem in Iran, however, is that the credit function cannot be described as "normal" in the, for example, UK sense. Whilst down payments at 20-50%[1] of the purchase price are not particularly high, nor is the pay back period of between 20 and 30 months particularly long, however interest rates are high and in addition the business of financing is too complicated. For example, it is usual to require bank or other guarantees from the prospective purchaser and not infrequently, although this is illegal, dealers will demand an undated cheque for the outstanding amount. The latter is used as a final threat against slow payers. In general it seems that the Iranian credit system excludes prospective purchasers whose income levels in the UK or Spain would be considered sufficient for the extension of credit.

1 Citroen's experience is 20% minimum. Down payments required can be as high as 50% of purchase price for a Peykan.

TABLE 2.8 IMPORTANCE OF CREDIT IN PURCHASE OF CARS:

SPAIN 1968

	Bought Cash	Bought on Credit
	% of Total Owners	
- Agricultural Employer	76	24
- Self Employed Farmer	67	33
- Agricultural Employee	0	100
- Industrial and Service Sector Employer	70	30
- Self Employed: Industrial and Service Sector	56	44
- Liberal Professions[1]	78	22
- Senior Management	65	35
- Upper Category Admin.[2] and Professional Employees	78	22
- Lower Category Admin. and untitled technical	59	41
- Clerical staff	56	44
- Other Lower Paid Indirect Workers	62	38
- Skilled Labourers	57	43
- Unskilled Labourers	33	67
- Service employees	50	50
- Inactive	75	25
- Total Spain	62	38
- Total Agricultural	67	33
- Total Non-Agricultural	60	40

[1] Doctors, Lawyers, etc.

[2] Engineers, Economists, etc.

Having mentioned briefly the role of prices in the market, it is interesting to observe the way in which passenger car prices are varied in Iran. The following table illustrates this movement in prices and compares it with changes in the cost of living index, the wholesale price index and the wage and salary index.

PASSENGER CAR PRICE EVOLUTION IN IRAN: 1347 = 100

	1346	1347	1348	1349	1350
Peykan	100	100	110	110	121
Rambler Arya	-	100	123	123	131
Shaheen	-	100	124	124	135
Citroen Dyan	-	-	-	-	-
Cost of Living Index		100	103.8	105	-
Wholesale Price Index		100	103.4	106	-
Wage and Salary Index		100	113	138	150*

* 2nd quarter 1350

As can be seen the prices of passenger cars has generally increased at a greater rate than the cost of living index and the wholesale price index. However, the Iranian wage and salary index has shown substantially greater increases than those experienced in the prices of passenger cars. As a result there is obviously an increasing percentage of the Iranian population which is in a position to purchase a car. This trend is similar to that experienced in other countries, for example, Argentina and Spain. Putting it another way, taking the average per capita wage in Iranian manufacturing industries to have been 62,000 rials at the end of the second quarter 1350, the price of a Peykan represents a total of 40 months wages. It is interesting to compare this figure with Argentina where the average price of an 850 cc car was equivalent to 40 months salary in 1962. By 1970 this figure had decreased to 23 months average salary. In Spain, the price of a medium sized car represented 27 months wages for a skilled worker in 1965, this figure having decreased to 18 months by 1969.

Whilst on the subject of prices, it is interesting to consider the price differentials between various models in Iran and to compare these with other countries. These are shown in the following table which takes, in each country, the price of a medium sized passenger car as Base 100.

PRICE DIFFERENTIALS 1350 IRAN
1971 SPAIN AND BRAZIL

IRAN		SPAIN		BRAZIL	
Model	Index	Model	Index	Model	Index
		Fiat 600	58		
Citroën	67	Citroen AZL	64	VW 1300	68
Peykan	100	Fiat 124	100	(VW 1600) (Ford Corcel)	100
Shaheen	148		-	Opala 6 Std	122
Arya	164		-	Opala 6 De Luxe	150
Peugeot 504*	271	Dodge Dart	266	Dodge Dart	171

* Imported

As can be seen from the table the differentials between various models in Iran are more or less in line with those existing in Spain and Brazil. These differentials are of considerable importance in view of their influence on the structure of the market in terms of the relative importance of different models. As far as Iran is concerned, however, the major influence on the structure of demand in this context is presently that of supply . With Iran National, being the predominant supplier with its Peykan model, it is natural that this car should account for the bulk of demand. The portion of demand accounted for by small cars, now supplied by the Citroen, is relatively small in Iran as compared with say Spain, even though the price differentials between the Citroen and the Peykan are similar to equivalent differentials in Spain. This would seem to indicate a lack of acceptance of the Citroen by the Iranian purchaser, an observation which is generally confirmed by participants in the Iranian market. A significant portion of the market is also held by imported cars which, even though extremely high priced in Iran, have a novelty or status value, a factor which has been recognised by Iran National with the recent introduction of the relatively high priced GT Peykan model.

DISTRIBUTION OF VEHICLE DEMAND BY TYPE

Make	Type	% of Total Demand 1347	1348	1349
Citroen Fiat Volkswagen	I	7.5	16.5	11.3
Iran National	II	40.0	48.0	65.2
Rambler	III	15.0	22.0	14.5
Mercedes Peugeot	IV	4.0	3.4	3.6
Other or * not specified	-	33.5	10.1	5.4

* Other imported cars in the main BMW and American cars

TYPE

I Small saloon - up to 1,100 cc
II Medium saloon - up to 1,800 cc
III Large saloon
IV Luxury saloon

2.3 Forecasts of Passenger Car Demand

Many methods exist for forecasting passenger car demand. They vary in:

1. complexity
2. the number of underlying assumptions
3. extent of data required

Experience shows that the degree of sophistication and complexity of a forecasting model is no guarantee of accuracy. This is true for automobile forecasting in some European countries where elaborate mechanisms have been mathematically modelled and yet the forecasts turned out to be too high, due to a congestion/distaste-for-car-travel factor not fully included.

There is a great danger, especially for developing countries for which the data is not always available or reliable, of using a forecasting method which relies on too many uncertain assumptions and sources of data. Good forecasting methods for Iran are probably direct and simple. The simplest method of all would be to make a time series of annual demand for automobiles and extrapolate with the usual type of logistic or Gompertz curve. However, this method is probably an oversimplification which would lead to poor forecasts due to annual variation of car sales dependent on too many short term factors.

One of the methods considered appropriate is to plot the Park per 1,000 capita against per capita GNP. This method does not make too high demands as far as data or assumptions are concerned. Another method, which has been used for all domestic appliances has been to use the ownership levels by income group and apply to forecasts of households by income group.

The basic method of forecasting passenger car demand has been selected as that dealing with increase in ownership and consequently of the Park in relation to increases in GNP. Figure 2.2 illustrates the relationship between car ownership per 1,000 capita and GNP per capita at market prices in Iran over the past twelve years. Quite clearly there is an extremely good "fit" between these two variables, the mathmatical relationship linking them being:

$$\mathrm{Log}_{10}Y = 1.233\ \mathrm{Log}_{10}X - 0.7632.$$

Table 2.9 gives relevant historical data and, based on the above relationship, and forecasts of GNP market prices and population, forecasts of ownership of passenger cars in Iran and, consequently, projections of the Park and annual increases in the Park. As agreed with representatives of the Ministry of Economy in Iran, GNP at market prices has been anticipated as growing at an average annual rate of 12% up to and including 1356 and an average rate of 10% between 1357 and 1361 inclusive. Population figures and estimates have been taken from Bank Markazi publications as far as 1355 and, for subsequent years, projected at an annual rate of growth of 2.9% until 1356 and 2.8% per annum thereafter, these figures having been agreed with the Ministry of Economy.

As can be seen from Table 2.9, providing that GNP increases at the rates indicated above, it is estimated that the ownership of passenger cars in Iran will reach 20 units per thousand capita by 1356 and 30 units per thousand capita by 1361.

The method used was chosen as giving the best results consistent with the data available. In point of fact the projections by income group from the household survey indicate passenger car PARKS which are compatible with those derived above.

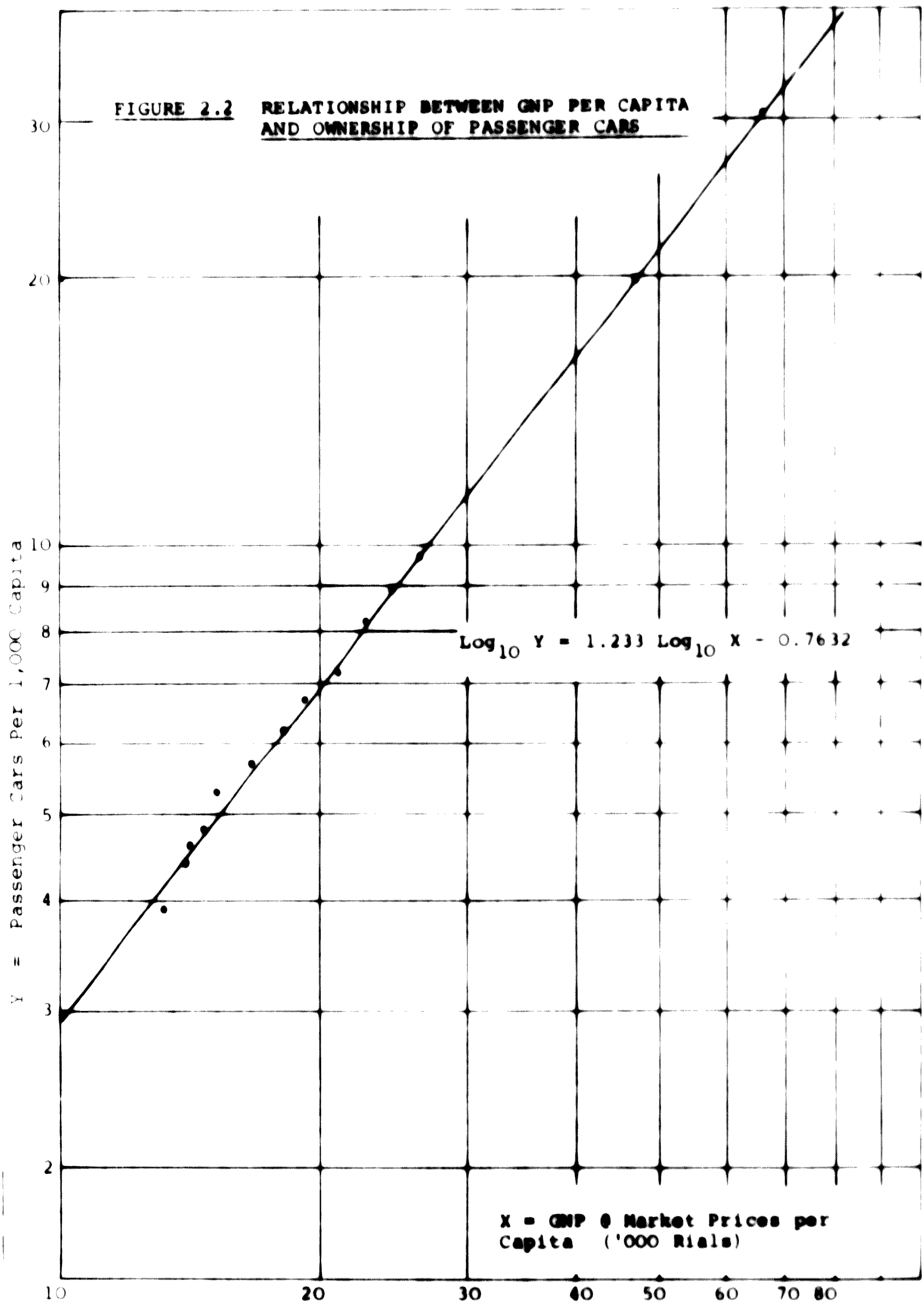


FIGURE 2.2 RELATIONSHIP BETWEEN GNP PER CAPITA AND OWNERSHIP OF PASSENGER CARS
Y = Passenger Cars Per 1,000 Capita
Log_{10} Y = 1.233 Log_{10} X - 0.7632
X = GNP @ Market Prices per Capita ('000 Rials)
30
20
10
9
8
7
6
5
4
3
2
10
20
30
40
50
60
70
80

TABLE 2.9 **PROJECTED OWNERSHIP AND PARK : PASSENGER CARS**

YEAR	GNP @ Market Prices	Population	GNP @ Market prices per capita	Passenger Cars per 1000 capita	Park at end of year	$\triangle$ Park in year
	Bill Rials.	'000	'000 rials	units	units	units
			X	Y		
1338	275.3	20,773	13.25	3.9	81,341	
1339	301.5	21,417	14.07	4.4	93,383	
1340	314.9	27,081	14.26	4.6	102,643	
1341	336.3	27,765	14.77	4.8	108,465	
1342	357.7	23,471	15.24	5.3	124,324	
1343	409.6	24,198	16.93	5.7	138,073	
1344	454.1	24,948	18.20	6.2	153,804	
1345	493.0	25,722	19.17	6.7	171,214	
1346	550.6	26,260	20.97	7.2	190,253	
1347	618.1	27,130	22.78	8.2	221,189	
1348	685.0	28,050	24.42	8.9	249,997	
1349	767.2	29,020	26.44	9.7	280,430	
1350	859.3	30,080	28.57	10.75	323,360	42,930
1351	962.4	31,021	31.02	11.91	369,460	46,100
1352	1078	31,991	33.70	13.19	421,961	52,501
1353	1207	32,991	36.59	14.61	481,998	60,037
1354	1352	34,023	39.74	16.17	550,152	68,154
1355	1514	35,087	43.15	17.90	628,057	77,905
1356	1696	36,105	46.97	19.87	717,406	89,349
1357	1866	37,116	50.27	21.60	801,705	84,299
1358	2052	38,155	53.78	23.48	895,879	94.174
1359	2257	39,223	57.54	25.52	1,000,971	105,092
1360	2483	40,322	61.58	27.75	1,118,936	117,965
1361	2731	41,451	65.89	30.16	1,250,162	131,226

PASSENGER CAR PARK

	From Correlation with GNP	From Household Survey Projections*
1350	323,000	319,000
1356	717,000	595,000
1361	1,250,000	956,000

* Assuming ownerships levels in each income group remain at their 1350 levels.

Projections from the household survey are consistently lower than those derived above. However, the household survey was confined to urban areas and, therefore rural ownership of motor vehicles must be added as must vehicles owned by Government organisations etc. Taking the 1356 figures, it seems likely that rural ownership will represent between 5 and 10% of the PARK.[1] or about 50,000 vehicles. Government and Rental vehicles represented 13.7% of the Iranian passenger car park in 1340; this proportion having

[1] Rural ownership in 1969 accounted for 12% of the Spanish passenger car PARK.

fallen to 8% by 1348 due to the faster growth of private ownership. Assuming that this percentage falls still further to around 5% by 1356 an extra 35,000 vehicles must be added to the household survey projection.

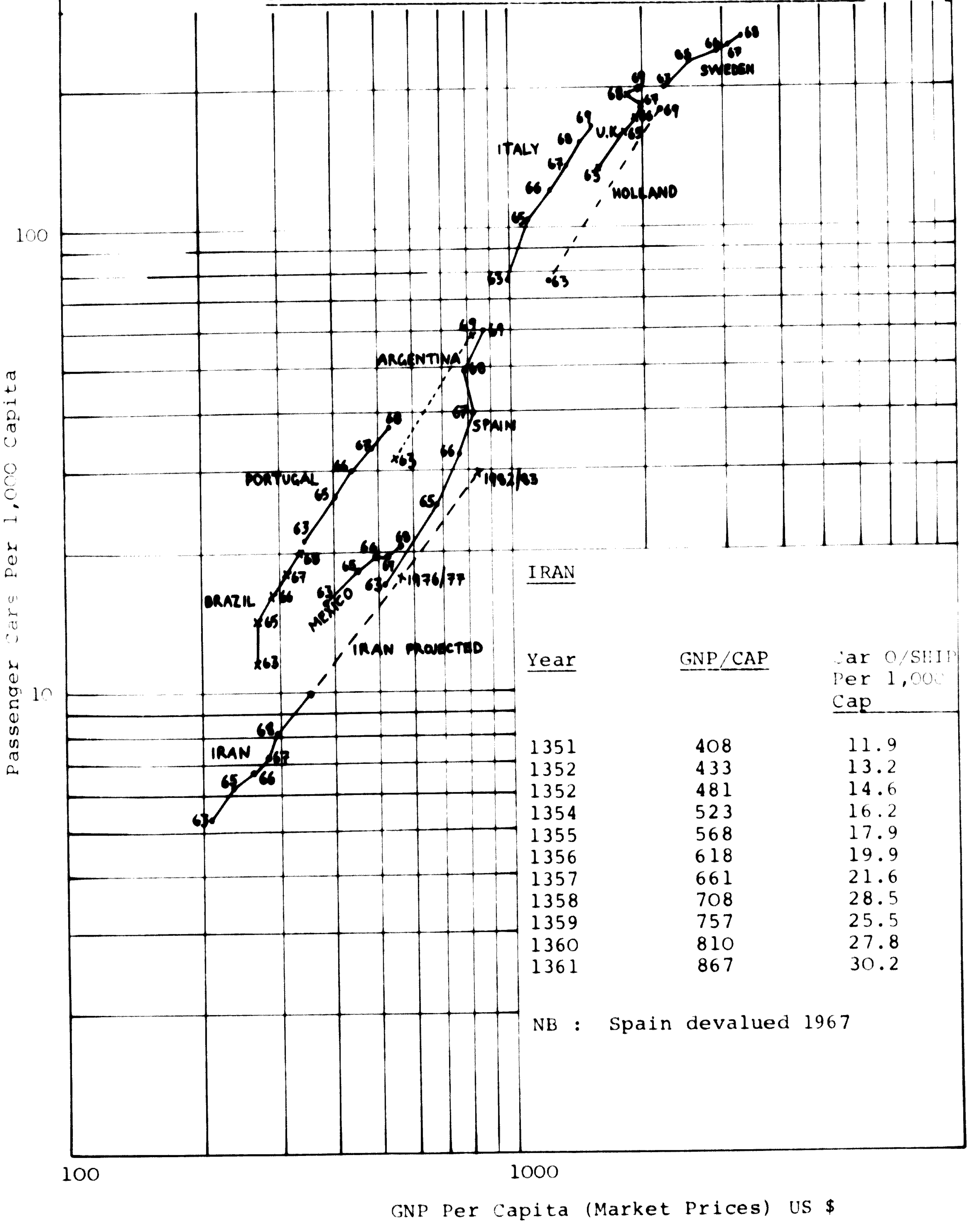
In summary, the household survey yields the following forecast for the Passenger Car Park in 1356.

Privately Owned :	Urban	595,000
	Rural	50,000
Government, Rental etc. :		35,000
Total Park		680,000

This is still somewhat short of the projections derived by correlation of the PARK with GNP. However, the forecasts evolving from the household survey assume constant levels of ownership in each income group over time. In actual fact, the trend is towards an increasing ownership in each income group which, if taken into account, brings the two sets of forecasts more into line.

In order to obtain some impression of the validity of these forecasts, it is interesting first to compare the past and projected growth of car ownership relative to GNP in Iran with similar relationships in other countries. Figure 2.3 illustrates this comparison and shows the trend for Iran to be similar in its tendencies to that experienced by other countries. More specifically, it appears that Iran will follow

FIGURE 2.3 COMPARISON OF GROWTH IN PASSENGER CAR OWNERSHIP IN IRAN WITH OTHER COUNTRIES



IRAN

Year	GNP/CAP	Car O/SHIP Per 1,000 Cap
1351	408	11.9
1352	433	13.2
1352	481	14.6
1354	523	16.2
1355	568	17.9
1356	618	19.9
1357	661	21.6
1358	708	28.5
1359	757	25.5
1360	810	27.8
1361	867	30.2

NB : Spain devalued 1967

the pattern of Spain quite closely, at least until about 1980. Thereafter the high rates of growth in passenger car ownership experienced by Spain in the mid-1960's tend to swing the curve for Spain in Figure 2.3 away from the Iranian trend. It should be noted of course that a constant exchange rate has been used in converting rial GNP figures to dollars It would appear from the figure that Iran is tending to follow Spanish experience, but with a lag of some 10-15 years. Thus it is interesting to consider the projected ownership of passenger cars in Iran with the historical growth in ownership in Spain and other countries. This comparison is set out in Table 2.10.

As can be seen in this table Iran lags Spain in passenger car ownership by 10 years at the present time, but the Iranian trend indicates a lag of about 15 years by 1980. In other words, the experience of Spain suggests that there should be major, stepwise growth in the Iranian market for passenger cars around the middle of the coming decade. However, it is of interest to consider on the one hand the reasons for the upsurge in growth in Spain and secondly the influences on the trend in Iran.

The Spanish market and, consequently, the ownership of vehicles was given a great boost in the mid-1960's by the introduction of formalised consumer credit. Furthermore, the motor industry in Spain, virtually from its inception, had considerable over-capacity and therefore the market was led by supply rather than by demand. This factor, together with the increasing scales of production amongst manufacturers, resulted in decreasing prices over the early part of the 1960's and absolute stability in prices over the latter half of the decade. In addition, the Spanish industry concentrated its efforts on producing relatively small and cheap cars. As a result of these factors Spain has experienced an extremely high elasticity of growth in car ownership compared with growth in GNP. The trend projected for Iran presupposes that historical conditions are maintained

TABLE 2.10 DEVELOPMENT OF OWNERSHIP OF PASSENGER CARS IN VARIOUS COUNTRIES.

IRAN YEAR	PROJECTED A	SPAIN YEAR	A	ARGENTINA YEAR	A	MEXICO YEAR	A	BRAZIL YEAR	A	YUGOSLAVIA YEAR	A	PORTUGAL YEAR	A
1971/72	10.75	1960	11.1							1964	9.6		
1972/73	11.91	1961	13.7			1960	13.0	1963	11.4	1965	12.8		
1973/74	13.19	1962	17.0			1961	-	1964	14.1	1966	17.6		
1974/75	14.61	1963	19.7			1962	-	1965	16.1	1967	21.6		
1975/76	16.17	1964	25.4			1963	15.5	1966	17.9	1968	27.4		
1976/77	17.90	1965	32.7	1957	18.14	1964	-	1967	20.0	1969	33.8*	1959	17.7
1977/78	19.87	1966	40.1	1958	19.3	1965	18.1	1968	22.4	1970	40.3*	1960	18.4
1978/79	21.60	1967	48.8	1959	20.9	1966	19.5			1971	48.1*	1961	19.3
1979/80	23.48	1968	60.7	1960	23.6	1967	19.5					1962	21.1
1980/81	25.52	1969	71.2	1961	26.2	1968	20.6					1963	23.1
1981/82	27.75	1970	81.6	1962	30.2	1969	22.7					1964	26.3
1982/83	30.16	1971	93 *	1963	33.2							1965	30.0
				1964	37.8							1966	33.5
				1965	42.3							1967	37.4
												1968	41.8

A Passenger Car Park per 1,000 capita.

* Projected.

in the future. It has already been stated that the present consumer credit mechanism in Iran cannot be compared with that in Spain and is felt to be a barrier to high growth in the Passenger Car market. Furthermore, at the present time, although the industry has over capacity if this were fully utilised, it is also true that one has to wait two and a half months for delivery of a Peykan. Prices of motor vehicles in Iran have increased, at the rate of between 5 and 8% per annum over the last four or five years. These factors combine to give a relatively low elasticity between growth in the level of car ownership in Iran and growth in GNP. In fact, the historical and projected elasticities are shown in Table 2.11.

In summary, it is felt that the forecasts of passenger car Park in Iran presented above are realistic at least as far as 1356. However, it should be remembered that these forecasts are based on GNP and are therefore dependent upon the forecasts of GNP by the Ministry of Economy being achieved. Table 2.12 illustrates the effect on the Park and the annual increase in the Park should GNP at market prices increase at 10 or 14% p.a. over the period to 1356 and 8 or 12% p.a. thereafter. Figure 2.4 shows the effect on the Park of a number of different GNP growth rates. However, even if GNP growths do not achieve the level predicted for Iran it should be remembered that the elasticity of growth in the passenger car Park with growth in GNP is relatively low and there would seem to be scope for maintaining the growth in passenger car ownership.

The experience of other countries (see Table 2.10) suggests that the levels of ownership projected for Iran for 1356 and 1361 are certainly realistic. The historical growths in ownership in Argentina, Mexico, Brasil and Portugal have matched those predicted for Iran. Furthermore it should be noted that both Spain and Yugoslavia have experienced equivalent growths in ownership considerably in excess of those predicted for Iran. In short, it is felt that the projections

TABLE 2.11 **ELASTICITY OF PASSENGER CAR PARK WITH GNP**

YEAR	GROWTH IN GNP	GROWTH IN PARK	ELASTICITY
	% p.a.	% p.a.	
1339	9.5	14.8	1.56
1340	4.4	9.9	2.25
1341	6.8	5.7	0.84
1342	6.4	14.6	2.28
1343	14.5	11.1	0.77
1344	10.9	11.4	1.05
1345	8.6	11.3	1.31
1346	11.7	11.1	0.95
1347	12.3	16.3	1.33
1348	10.8	13.0	1.20
1349	12.0	12.2	1.02
1356	12.0	14.2	1.18
1361	10.0	11.7	1.17

TABLE 2.12 SENSITIVITY OF GROWTH IN PASSENGER CAR PARK TO GROWTH IN GNP

$$\text{Elasticity} = \frac{\text{GROWTH IN PARK}}{\text{GROWTH IN GNP}} = 1.18$$

	Annual Rate of Growth of GNP @ Market Prices					
YEAR	14% pa 1350-56 12% pa 1356-61		12% pa 1350-56 10% pa 1356-61		10% pa 1350-56 8% pa 1356-61	
	Park	Δ Park	Park	Δ Park	Park	Δ Park
1351	376,779	53,419	369,460	46,100	361,516	38,156
1352	439,023	62,244	421,961	52,501	404,174	42,658
1353	511,550	72,527	481,998	60,037	451,868	47,694
1354	596,058	84,508	550,152	68,154	505,188	53,320
1355	694,526	98,468	628,057	77,905	564,800	59,612
1356	809,262	114,736	717,406	89,349	631,446	66,646
1357	923,853	114,591*	801,705	84,299*	691,055	59,609*
1358	1,054,671	130,818	895,879	94,174	756,290	65,235
1359	1,204,013	149,342	1,000,971	105,092	827,684	71,394
1360	1,374,501	170,488	1,118,936	117,965	905,817	78,133
1361	1,569,130	194,629	1,250,162	131,226	991,326	85,509

* The reason for the apparently anomalous decrease in Δ Park between 1356 and 1357 is the idealised nature of the forecasting method. The stepwise decrease in the rate of growth of GNP results in a corresponding decrease in the rate of growth of the PARK.

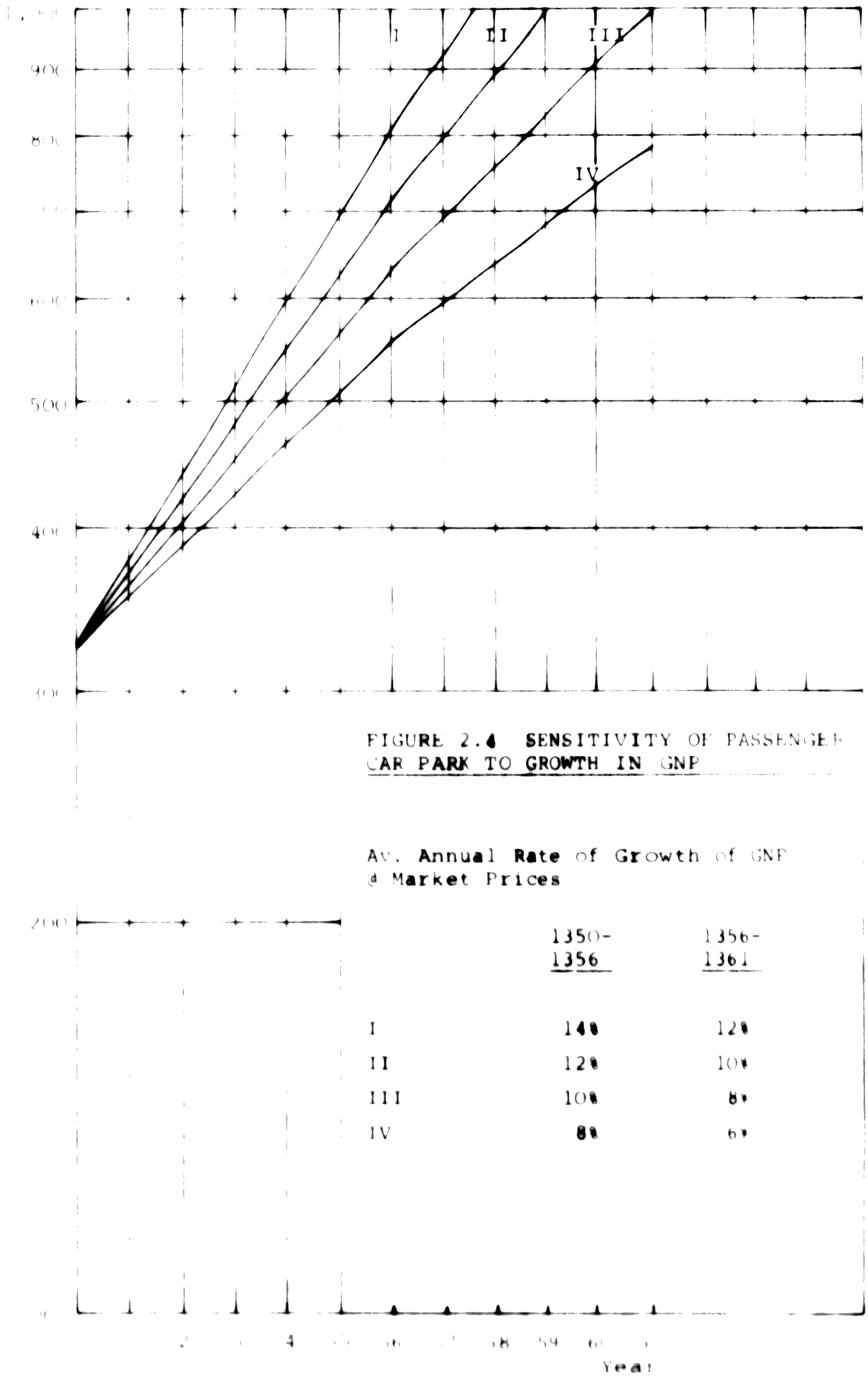


FIGURE 2.4 SENSITIVITY OF PASSENGER CAR PARK TO GROWTH IN GNP

Av. Annual Rate of Growth of GNP @ Market Prices

	1350-1356	1356-1361
I	14%	12%
II	12%	10%
III	10%	8%
IV	8%	6%

for Iran are if anything conservative and, if credit is formalised, prices are reduced and the industry improves its production capacity and efficiency to match any upsurge in consumer demand then Iran could experience growths in ownership and consequently of the Park approaching those of Spain and Yugoslavia.

So far we have dealt only with the increase in ownership of passenger cars in Iran,this being the basis of forecasting demand. In order to arrive at these forecasts of demand it is necessary to consider the future of scrappage in the country. Table 2.13 shows the possible future of scrappage of passenger cars based on three hypotheses. The first of these assumes the average life of a vehicle was 20 years in 1334 and will decrease to 10 years by 1359; this decrease over a period of 25 years being similar to that experienced in Spain. The second hypothesis is based on a constant average life of 20 years; this being considered extremely conservative as in most motor vehicle markets of the world average life is now considerably less than 20 years. Finally, the third hypothesis takes as a starting point a figure of 1% of the Park scrapped in the last Iranian year, this figure appearing to be realistic on consideration of historical registration and demand figures in Iran (see Table 2.4). This figure has been increased progressively inthe years to 1356 at a rate which would appear realistic in view of the experience in other countries. In the year 1357 and 1358 a rather greater increase in this scrappage is anticipated and it is felt that, at this time, conditions in the country together with the introduction of new models aimed at the lower income groups will favour the rapid replacement of what will be by then a rather old passenger car park. The projected demands for passenger cars resulting from the forecast increases in the Park and the three possible rates of scrappage are also shown on Table 2.13. It is interesting to note that up to about 1357 the rate of scrappage taken has relatively little effect on total demand. However by 1361 the influence of the replacement market is beginning

TABLE 2.13 PROJECTED DEMAND FOR PASSENGER CARS AND JEEP/LAND ROVER VEHICLES IN IRAN.

YEAR	△ PARK UNITS	SCRAPPAGE						DEMAND *		
		I		II		III		I	II	III
		units	% of Park	units	% of Park	units	% of Park			
1350	42,930	7,801	2.4	5,176	1.60	3,880	1.2	50,731	48,106	46,810
1351	64,100	9,703	2.6	6,117	1.65	4,434	1.2	55,803	52,217	50,534
1352	52,501	11,735	2.8	7,140	1.69	5,485	1.3	64,236	59,641	57,986
1353	60,037	14,377	3.0	8,199	1.70	6,748	1.4	74,414	68,236	66,785
1354	68,154	17,394	3.2	9,337	1.69	8,252	1.5	85,548	77,491	76,406
1355	77,463	21,027	3.3	10,548	1.67	10,676	1.7	98,932	88,453	88,139
1356	89,349	25,384	3.6	11,809	1.64	13,630	1.9	114,733	101,158	102,979
1357	84,299	30,370	3.9	13,184	1.64	16,836	2.1	114,738	97,483	101,135
1358	94,174	36,237	4.1	14,453	1.61	21,501	2.4	130,411	108,627	115,675
1359	105,092	44,847	4.6	16,380	1.63	26,025	2.6	149,939	121,472	131,117
1360	117,965	55,947	5.0	18,308	1.63	31,330	2.8	173,912	136,273	149,295
1361	131,226	62,508	5.0	20,558	1.64	37,505	3.0	193,734	151,784	168,731

I based on average life of 20 years in 1334 decreasing to 10 years by 1359

II based on constant average life of 20 years

III estimated development of scrappage as % of Park

* DEMAND = △ PARK AND SCRAPPAGE

to be very significant. In summary it is felt that the most realistic estimates of future demand for passenger cars (including Jeep and Land-Rover vehicles) is as shown in Table 2.14.

TABLE 2.14 PROJECTED DEMAND FOR PASSENGER CARS* IN IRAN

1350	47,000
1351	51,000
1352	58,000
1353	67,000
1354	76,000
1355	88,000
1356	103,000
1357	101,000
1358	116,000
1359	131,000
1360	149,000
1361	169,000

* Including Jeep/Land-Rover utility vehicles.

Table 2.15 gives a forecast for passenger car demand based on growth rates of GNP at market prices of 14% p.a. over the period 1350-1356 and 12% p.a. thereafter.

TABLE 2.15

Forecast of passenger cars demand assuming growth in GNP at Market Prices of 14% p.a. to 1356 and 12% p.a. thereafter:

YEAR	PARK	Δ PARK	SCRAPPAGE	DEMAND
1350	323,360			
1351	376,779	53,419	4,521	57,940
1352	439,023	62,244	5,707	67,951
1353	511,550	72,527	7,162	79,689
1354	596,058	84,508	8,941	93,449
1355	694,526	98,468	11,807	110,275
1356	809,262	114,736	15,376	130,112
1357	923,853	114,591	19,401	133,992
1358	1,054,671	130,818	25,312	156,130
1359	1,204,013	149,342	31,304	180,646
1360	1,374,501	170,488	28,486	208,974
1361	1,569,130	194,629	47,074	241,703

2.4 Future Structure of Passenger Car Demand

It is interesting to consider the distribution of the passenger car park between income groups both at the present time and in the future.

	No. of Households Owning		
Household Expenditure Group Rials/Annum	1350	1356	Increase 1350-1356
< 30,000	0	0	-
30,000-75,000	17,414	34,729	17,315
75,001-150,000	73,065	111,549	38,483
150,001-300,000	97,278	210,088	112,810
300,001-500,000	61,920	114,051	52,131
>50,000	41,214	91,027	49,813

The above figures are indicative of the distribution of the market by income group. However, before drawing conclusions two points must be made:

1. The increase in households owning a car in each income group will be partly due to the natural movement of families from one income group to another.

2. The increases do not discriminate between cars purchased new and those bought second hand.

Having made these provisos the increases in ownership over the period 1350-1356 can be compared with the distribution by income group of vehicle purchases by model:

Household Expenditure Group	Increase 1350-1356	Ownership				Acquisition of new 1346-1350			
		CIT.	Peyk.	Ram.	Imp.	IT.	Peyk.	Ram.	Imp.
2 - 3	17,000(6%)								
4 - 5	38,000(14%)								
6 - 7	113,000(42%)								
8 - 9	52,000(19%)								
10	50,000(19%)								

Citroens are bought, in the main, by the 4 - 5 Expenditure group families. By the time expenditure group 5 is reached, families are beginning to be able to buy a Peykan, purchasers of this model being found in all income groups from 5 - 10 with the predominance being in groups 6, 7 and 8. Rambler ownership begins to be significant in Group 8 but the major incidence of new purchase is in Group 10. As far as imported cars are concerned, the distribution of ownership is distorted by the existence of older foreign produced vehicles which are bought and sold on the second-hand market. New, imported cars tend to be bought by the highest income groups (the more expensive cars) and by Group 6-7., (Volkswagen). In addition, there is a significant evidence of ownership in Groups 2-3, these cars being Peykans, Ramblers and Mercedes. probably taxis in the main.

Turning to the increases in the park between 1350 and 1356, the greatest growth will be in cars owned by families in the 6-7 expenditure groups. These people are just above the lower limit of income for purchase of a Peykan as opposed to a Citroen and are therefore the people to whom a cheaper, smaller vehicle, identifiable with the Peykan, would appeal . Such a vehicle would also appeal to the Group 4-5 Citroen purchasers.

However, as the major growth in the car owning population will come from purchases by the relatively low income groups in the country it would seem natural to suggest that the largest potential market in Iran is for a cheap and, by definition, relatively small car. Certainly experience in countries such as Spain and Brazil, where the bulk of demand is and has been for cars of less than 1300 cc, seems to bear out this observation. On the other hand, it would seem that, to gain acceptance in the Iranian market, such a car should be identifiable with, for example, the Peykan. Thus it is unlikely that the early experience of the Spanish market involving a predominance in the market of a very small car (the Fiat 600*) can be repeated in Iran. Rather the aim should be to introduce a vehicle of between 1100 and 1300 cc, which is similar in general appearance to the Peykan. For example, cars which fall into this category would be the Chrysler UK Avenger (although this could turn out to be relatively expensive on the market), the Ford Escort, the General Motors Vauxhall Viva or Opel Kadett or the Fiat 124. The introduction of such a car would have a significant impact on sales of the Peykan and would take up the major portion of future growth in the market.

Turning to the larger cars, there is clearly a demand in Iran for a car of the 2 litre plus class, now filled by the Rambler models and imported cars. At present this category accounts for around 20% of demand and it seems likely that this proportion will remain substantially constant or perhaps even decrease. Two points are worth bearing in mind when considering this category: firstly, the 2 litre plus models can offer competition to the top end of the medium sized car depending on the price differentials involved; secondly, apart from there being a demand for large cars in the country, there is also a demand for individuality or status inherent in the purchase of certain types of car. Thus, assuming the production of a large car continues in Iran with a replacement for the Rambler models, there will still be a demand, at virtually any price, for on the one hand

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*Government policy in Spain virtually dictated that the Fiat 600 would be the most popular car by imposition of a biased supply. However, the market has changed from being 78% less than 8 H.P in 1960 to being 50% less than 8 H.P in 1969 due to increased choice.

cars in the "luxury" class (the Mercedes) and on the other hand for a car providing sporting performance and individuality (at present served for example by the smaller BMW models).

To some extent, the introduction of luxury versions of any large car produced in Iran can make inroads into the market for imported luxury cars. However, there is really no model presently produced in Iran (apart perhaps from the GT Peykan) which can provide competition to imported cars such as the BMW. Whilst this market is relatively small at the present time it will grow and it is suggested that consideration be given to the local manufacture of a suitable vehicle. In Spain the solution has been the introduction of fixed head and drop head versions of the Fiat 850 and the Fiat 124, these being amongst the most numerous cars in production in the country. A similar course has been adopted in Brazil with the introduction of coupe models of the VW 1600, together with production of a glass fibre bodied coupe based on a local vehicle. The latter is particularly interesting in that it has had a certain amount of export success, even being sold in Europe. As far as Iran is concerned the introduction of the GT Peykan has already been cited as a move in this direction but the vehicle probably suffers from too close a resemblance to the basic Peykan. It is suggested therefore that consideration might be given to the manufacture of a glass fibre bodied coupe based on, for example, Peykan components.

It has already been demonstrated that the Iranian car market is supply led being dominated by the Peykan. This car at present holds over 60% of the market with the remainder being relatively evenly distributed between the small Citroen, the large Rambler and imported (mainly "luxury") cars. Despite price differentials which are not out of line compared with say Spain, the Citroen has failed to make the impact which might have been expected of a small cheap car in an under developed market. This is felt to be partly due to psychological reactions to the model and partly due to servicing difficulties. In general, it is felt that consumer preferences in Iran have already been conditioned to the extent that an "utility" car is unacceptable. Obviously, success in the market of a very low cost (compared with the Peykan) car would have the effect of increasing the overall size of the market through higher levels of ownership in lower income groups. However, the experience of Citroen suggests that the price differentials involved in achieving such a success would be impossible to achieve directly. For example, even the Citroen Mihary, whose retail price is 56% of the cheapest Peykan, has not achieved any dramatic success.

3. THE COMMERCIAL VEHICLE MARKET

3.1 General

Transportation is of paramount importance in the development of Iran as it is in most countries; perhaps more so in Iran in view of the vast area of the country and the existence of heavy centres of population at great distances from one another. In view of the lack of inland waterways internal communications in Iran must depend on road, rail and air links. However, the overwhelming emphasis is on road transport. In this respect, Iran is similar to, for example, Spain where road transportation accounts for 75% of total transport requirements. This is largely due to the underdeveloped state of the rail network in Spain; this having a length of 27 km per 1,000 sq. km of land area. In comparison, Iran has less than one-fifth of the railway network of Spain, measured on a km. of rail network to land area basis. One estimate* divides current internal land transport in Iran into "80% by truck, 16% by railway and 4% by other means".

Although there have been significant investments in the rail service in Iran, these have not kept pace with overall increases in demand for transport services. As far as freight is concerned, the gross weight carried by railways increased at an average annual rate of only 3.5% over the period 1335-1346. Over the same period total freight mileage covered increased by 2.2% per annum. Freight receipts increased at a rate of 2.4% per annum on average, again over the period 1335-1346. In contrast, gross product of the transport industry increased at an average annual rate of 9.5% per annum over the period 1342-1346.

Turning to passenger transport, the total number of passengers carried by the railways actually fell between 1340 and 1346 from about 4 million to 2.8 million. This fall is partly due to increased usage of buses, partly to the improvements in internal airline services and partly to the proliferation of the private car.

*Iran Almanac 1971.

3.2 Truck Market

Table 3.1 gives basic statistical data relating to the historical growth of the market for and usage of trucks in Iran. As in the case of passenger cars, it has not been possible to establish from the police department exactly what is being measured in cumulative illustrations. In the case of trucks it appears as if scrappage may be taken into account to a certain extent. However, the figure for "cumulative registrations" in 1348 is believed to represent the number of vehicles in use in Iran at that time. Comparing this with the cumulative demand figure for the same year suggests a total scrappage over the period 1333 to 1348 of around 15,000 units. This indicates an average level of scrappage of 2.7% of Park over the period. In common with most other countries it seems reasonable to suggest that Iran is experiencing an increase in rate of scrappage, expressed as a percentages of Park. It is postulated therefore that scrappage has remained relatively steady at 2% per annum over the period of 1334 to 1345 inclusive and has risen to 4% per annum in 1348. This hypothesis results in a cumulative scrappage of some 14,800 vehicles over the period 1334 to 1348 inclusive, which compares favourably with the indication from cumulative demand and cumulative registrations of some 15,000 vehicles scrapped in the same period. As a further check on this hypothesis it is interesting to note the levels of scrappage of commercial vehicles prevailing in other countries. Figure 3.1 gives an indication of the relationship between scrappage as a percentage of Park and the annual growth in the commercial vehicle Park. As can be seen the figures postulated for Iran of between 2% and 4% of the Park scrapped per annum correspond reasonably well with the experience of other countries. If anything the levels of scrappage for Iran postulated for the years 1348 and 1349, are slightly high and, in any case, the level is unlikely to exceed 4% of Park for some time to come provided the growth in Park is maintained. Thus, as far as the future is concerned, it is felt that scrappage will remain fairly constant at about 4% of Park per annum.

TABLE 3.1 CUMULATIVE REGISTRATIONS ETC.

Trucks*

	Cumulative Registrations	Imports	Prod'n	Demand[1]	Cumulative Demand	Scrappage		Cumulative Scrappage	Park	Commercial vehicles per 1000 capita
	A Units	B Units	C Units	D Units	E Units	F % of Park	Units (b)	G Units (b)	E - G Units	Units
333	18294	-	-	-	18294[2]	2	366	366	18294	-
334	19949	781	-	781	19075	2	382	382	18693	1.00
335	19182	1241	-	1241	20316	2	406	788	19529	1.01
336	24795	1449	-	1449	21765	2	435	1223	20542	1.03
337	27776	1966	-	1966	23731	2	475	1698	22033	1.08
338	31094	2603	-	2603	26334	2	527	2225	24109	1.14
339	33983	3603	186	3789	30123	2	602	2827	27296	1.26
340	33694	2127	284	2411	32534	2	651	3478	29056	1.30
341	35319	877	319	1196	33730	2	675	4153	29577	1.28
342	35568	772	412	1184	34914	2	698	4851	30063	1.27
343	37107	2244	2588	4830	39744	2	795	5646	34098	1.39
344	40490	2239	3180	5418	45162	2	903	6915	38247	1.45
345	43153	2431	3114	5544	50706	3	1521	8436	42270	1.57
346	45240	3232	3407	6639	57345	3	1720	10156	47189	1.73
347	52306	6147	4814	10961	68306	3	2049	12205	56101	2.00
348	64533	5857	7333	13179	81485	4	3259	15464	66121	2.29
349	75245	4640	10925	15550	97035	4	3881	19345	77690	2.62

* Includes vannettes as these are mostly registered as commercial vehicles.

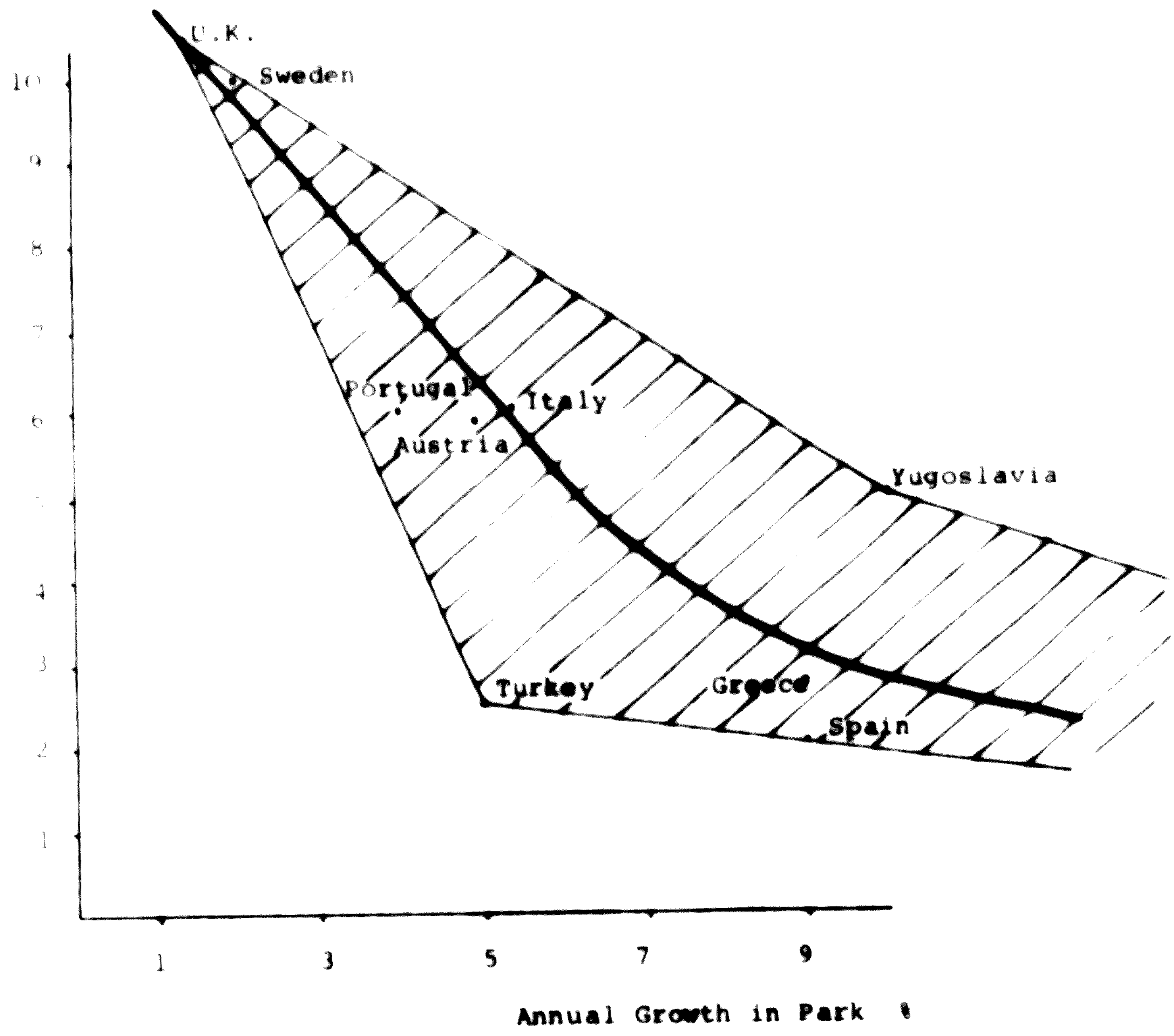
Total Scrappage over period 1333 - 1348 = 16,952 units.
Average Scrappage over period 1333-1348 = 1,130 units.

Average E = 38,035
Average Scrappage as % of Ave E = 2.9%

1 D = B + C - exports.

2 Estimated Park in 1333

FIGURE 3.1 COMMERCIAL VEHICLE SCRAPPAGE RELATIVE TO GROWTH IN PARK



Turning to the structure of the market, the figures for cumulative registrations from 1340 onwards are known to include vannettes and lorries. Prior to that date these figures included three wheeled vehicles but it is not possible to identify the precise proportion that these accounted for. On the other hand it is felt that, as the number of three wheeled vehicles in use in 1340 represented only some 6% of cumulative registrations these vehicles are ignored for the present set of calculations. Thus, the series for demand has been calculated on the basis of imports, production and exports of vannettes and trucks only. It should also be mentioned of course that the import and manufacture of three wheeled vehicles was banned in 1349 and therefore they will play no part in the future market for commercial vehicles in Iran except insofar as replacements, presumably by small vannettes, of existing three wheelers is concerned. This influence is likely to be small in view of the short average life of a three wheeler and the relatively small numbers involved in relation to the total commercial vehicle park.

Table 3.2 shows the structure of the Iranian vannette and truck market in 1349 and, as can be seen, the light vehicles particularly vannettes predominated particularly in that year. As can be seen from Figure 3.2, the structure of the market is not dissimilar to that in a number of European countries, particularly when it is remembered that the unspecified vehicles in the Iranian market are mainly in the 3 ton to 7 ton capacity class.

As far as the market for light commercial vehicles is concerned it is felt that some regard should be taken of the traditional demand for three wheeled vehicles. As has been mentioned this demand has now ceased due to changes in law. However, looking to the future, it seems reasonable to suggest that the demand for three wheelers will be replaced by a demand for light vannettes.

TABLE 3.2 STRUCTURE OF IRANIAN TRUCK AND VANNETTE MARKET - 1349

		Local Production	Imports	Total Sales	% of Total	
Vannettes -	up to 1 ton	4,640	3,629	8,255	53.1	
	over 1 ton	2,265	-	2,265	14.6	23.3
Light Trucks -	up to 3 ton	1,349	-	1,349	8.7	
Trucks -	3 ton - 5 ton	530	-	530	3.4	
	5 ton - 7 ton	558	-	558	3.6	
	over 7 ton	1,583	-	1,583	10.2	
Unspecified		-	1,011	1,011	6.5	
			Total	15,551		

Notes All tonnage figures refer to capacity.

Included in "unspecified" are special vehicles (e.g. fire-fighting, road sweepers, etc.) plus 667 "lorries unspecified".

FIGURE 3.2 INCREASE IN TRUCK AND TANKER PARK DISTRIBUTIONS BY VARIOUS CAPACITIES

EUROPEAN COUNTRIES 1960-1965

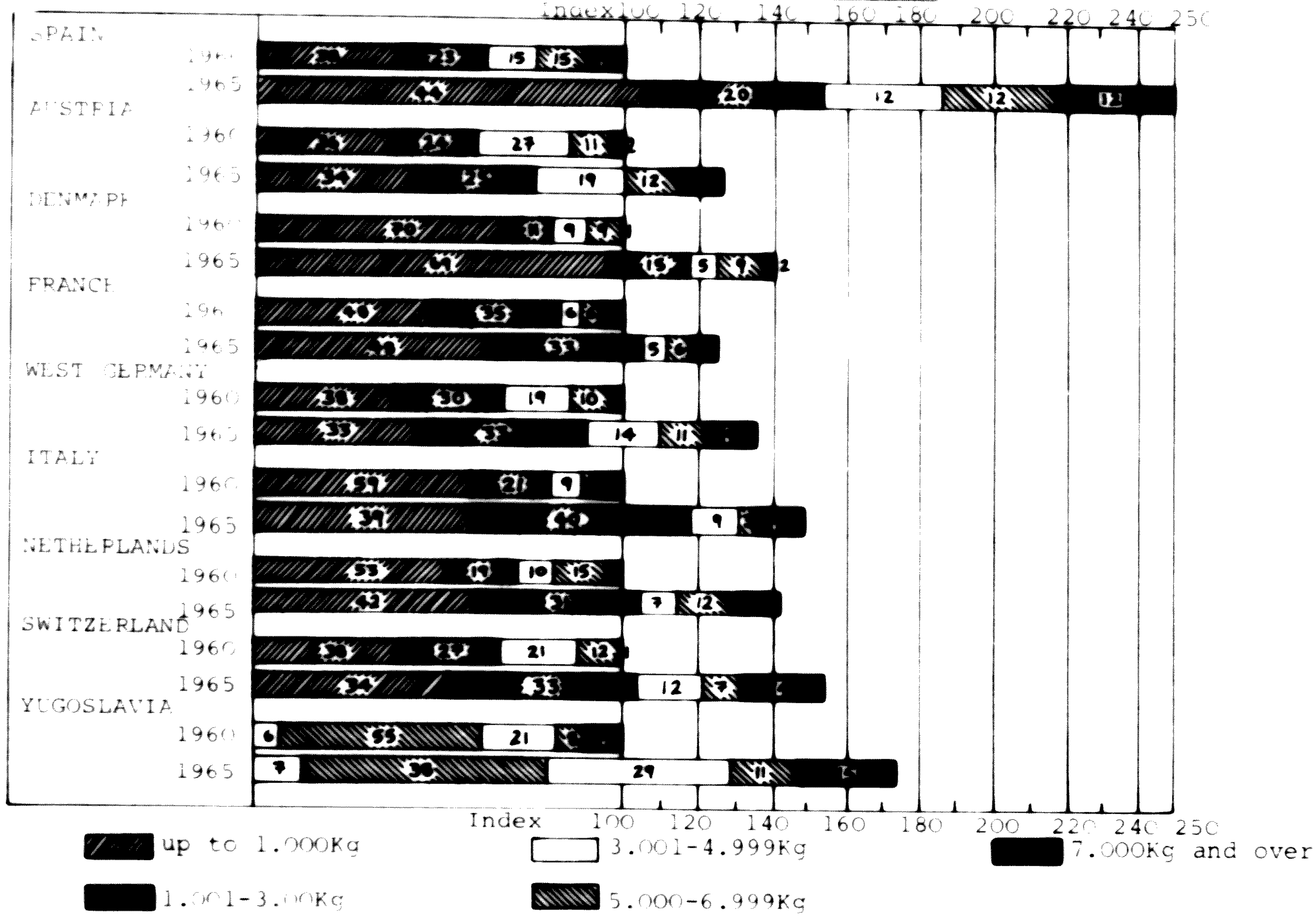


Table 3.3 shows the evolution of demand for vannettes and for three wheelers and the relationship between this demand and that for all trucks and light commercial vehicles. Over the years considered, with the exception of 1345, the demand for all light commercial vehicles has been a substantially constant proportion of the demand for all commercial vehicles. If anything this proportion, in 1349, is slightly lower than normal reflecting the higher price of four-wheeled vehicles as opposed to three-wheeled vehicles. Dealing in absolute figures, the demand for light commercial vehicles showed a substantial increase between 1334 and 1347. However, this demand has been relatively stagnant over the period 1347 to 1349 due to the curtailment of sales of three-wheeled vehicles, and the natural lag in their replacement by small equivalent four-wheeled vehicles. These replacements consist largely of the imported small, two stroke Isuzu pick-up, the small Mazda pick-up (presently imported but local production is imminent) and to a lesser extent the rather larger Peykan pick-up. Other recent changes in the market for vannettes include the introduction to local production of the Nissan 2 ton pick-up although the scale of production of this vehicle is severely limited until its manufacturers, Zamiad, move to their new factory. In addition, the introduction by Iran National of lorries having a capacity up to three tons has undoubtedly had an effect on demand for the heavier pick-ups (Kaveh GM model , Jeep universal pick-up) particularly as these Iran National vehicles have diesel engines as opposed to the petrol engines in the pick-ups of equivalent capacity. It is also worth mentioning that the diesel engined Iran National lorries referred to have had considerably more success in the market than the competitive Leyland 550 FG series which, until recently, were fitted with a petrol engine. This tends to confirm the view of the industry that, although petrol engines are acceptable in pick-ups, all lorries including those below 3 ton capacity should be fitted with diesel engines this being the result of both operational economies and police driver qualification requirements.

TABLE 3.3 THE MARKET FOR LIGHT COMMERCIAL VEHICLES

YEAR	DEMAND in units						
	Total Trucks & Vannettes	Trucks	Vannettes	3 wheel Vehicles	Total Vannettes & 3 wheel	Total Trucks Vannettes & 3 wheel	E/F %
	A	B	C	D	E	F	
1343	4,830	1,484	3,346	-	-	-	
1344	5,418	2,308	3,110	1,258	4,368	6,676	65
1345	5,544	2,865	2,679	789	3,468	6,333	55
1346	6,639	3,255	3,384	2,844	6,228	9,483	66
1347	10,961	4,235	6,726	3,375	10,101	14,336	70
1348	13,179	4,480	8,699	1,327	10,026	14,506	69
1349	15,550	5,030	10,520	325	10,845	16,876	64

Turning to trucks, demand has shown a steady increase over the last decade reflecting the steady increase in demand for transportation and in GNP at constant prices. The local demand is distributed evenly between up to 5 ton, 5-10 ton and 10-20 ton g.v.w* with a relatively small demand for vehicles above 20 tons g.v.w. In general it can be said that the lighter vehicles (up to 5 tons g.v.w or 3 tons capacity) are used mostly for general haulage in or around urban areas. The middle ranges (5-20 tons g.v.w, 3-13 tons capacity) are used for general haulage including long distance work, in the construction industry and in the agricultural sector. The largest vehicles, those over 20 tons g.v.w and including the large Khavar models, the Leyland Hippo series and the Mack trucks are used predominantly for long haul transport and also to some extent in the construction industry. It is interesting to note that whilst there has been a steady increase in overall demand for trucks, the market for the heaviest vehicles suffered a considerable set back in 1349 due to the reduction of tonnage imports and exports. However, this section of the market is now showing signs of recovering.

3.3 Truck Prices in Iran

Table 3.4 indicates the historical development of truck prices in Iran as provided by the Ministry of Economy. However, as there is no definition of the vehicles to which these prices apply, no firm conclusions can be drawn. At best, it can be said that there has been a general increase in prices over the period covered with the increase between 1345 and 1349 of average price being 1.7% per annum. In fact, this increase corresponds with that shown for Iran Kaveh company whose prices cannot be distorted by incompatibility from year to year because of the company's limited product range. Other figures, presented in Table 3.5 do confirm the generally increasing trend of prices referred to above.

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* g.v.w = gross vehicle weight

TABLE 3.4 **SALE PRICE OF TRUCKS IN IRAN**

(1000 Rials)

Company [1]	1343	1344	1345	1346	1347	1348	1349
Zamyad Co.	750	762	951	1014	1047	854	1354
Khavar Co.	-	-	882	813	841	[illegible]	862
Iran Kaveh Co.	-	-	1673	1644	1655	1675	[illegible]
Leyland Motor Iran Co.	-	-	-	821	1053	814	1111
Average price	750	762	1036	942	1004	1042	1107

Source: Ministry of Economy

TABLE 3.5 **TRUCK PRICE EVOLUTION 1340-1346**

	'000 Rials						
	1340	1341	1342	1343	1344	1345	1346
Leyland 5 ton	-	793.3	810	820	903	946	-
Mercedes 5 ton	-	-	-	-	-	760	760
Mercedes 10-12 ton	1,010	-	1,125	1,170	-	1,370	1,320

---

1. Actual model is unspecified. Hence international comparisons are not possible. As examples, the following ex-works prices (Rials) were operating in 1971 for Leyland vehicles:

Model	Iran	UK
FG 550	400,000	252,000
FG 900	622,000	330,600
Super Comet	1,086,607	637,000

3.4 Future Market for Trucks and Vannettes

Figure 3.3 illustrates the historical evolution of demand for trucks, vannettes and three-wheelers referred to in previous sections. As can be seen, apart from the case of trucks, there have been large variations in demand and, therefore, simple trend analysis is unlikely to yield reliable forecasts. As far as trucks are concerned extrapolation of the trend between 1343 and 1349 suggests a demand for some 9,000 vehicles in 1356, rising to 12,000 vehicles in 1361.

As in the case of passenger cars, and in line with experience of forecasting in such countries as Spain, it has been decided to use as the basic parameter the number of trucks and vannettes in use in Iran (the Park). Figure 3.4 illustrates the relationship between the truck and vannette Park in Iran and GNP at market prices in the country. Plotted in the same figure is the equivalent relationship for Spain. Once again, as in the case of passenger cars, there is a certain similarity between the trends for Iran and the trends for Spain, although of course Iran is lagging Spain by about 14 years. As perhaps a better indicator of the requirements for transportation, and, consequently, the size of the vehicle Park, Figure 3.4 also illustrates the relationship between the truck and vannette Park and GNP minus the contribution of the oil sector. There are grounds for thinking that the latter is a better indicator of the Park than total GNP as the oil sector itself contributes relatively little to the requirements for road transportation in Iran. Significantly, this latter trend is even closer to that of Spain. However, as a means of forecasting, this relationship is limited by the lack of projected data. Similarly rather more sophisticated methods of forecasting demand for commercial vehicles based on multiple regressions involving contributory sectors (manufacturing industry, construction, agriculture etc.) are also limited by lack of historical and forecast information. Furthermore, it should be remembered that these multiple relationships are highly complex, involving considerable time phase differences. For example, demand for trucks is clearly a function of industrial output, construction activity, agricultural output, foreign trade, etc. However, changes in growth rates for each of these sectors take time before they are reflected in changes in demand for trucks.

FIGURE 3.3 DEMAND FOR COMMERCIAL VEHICLES

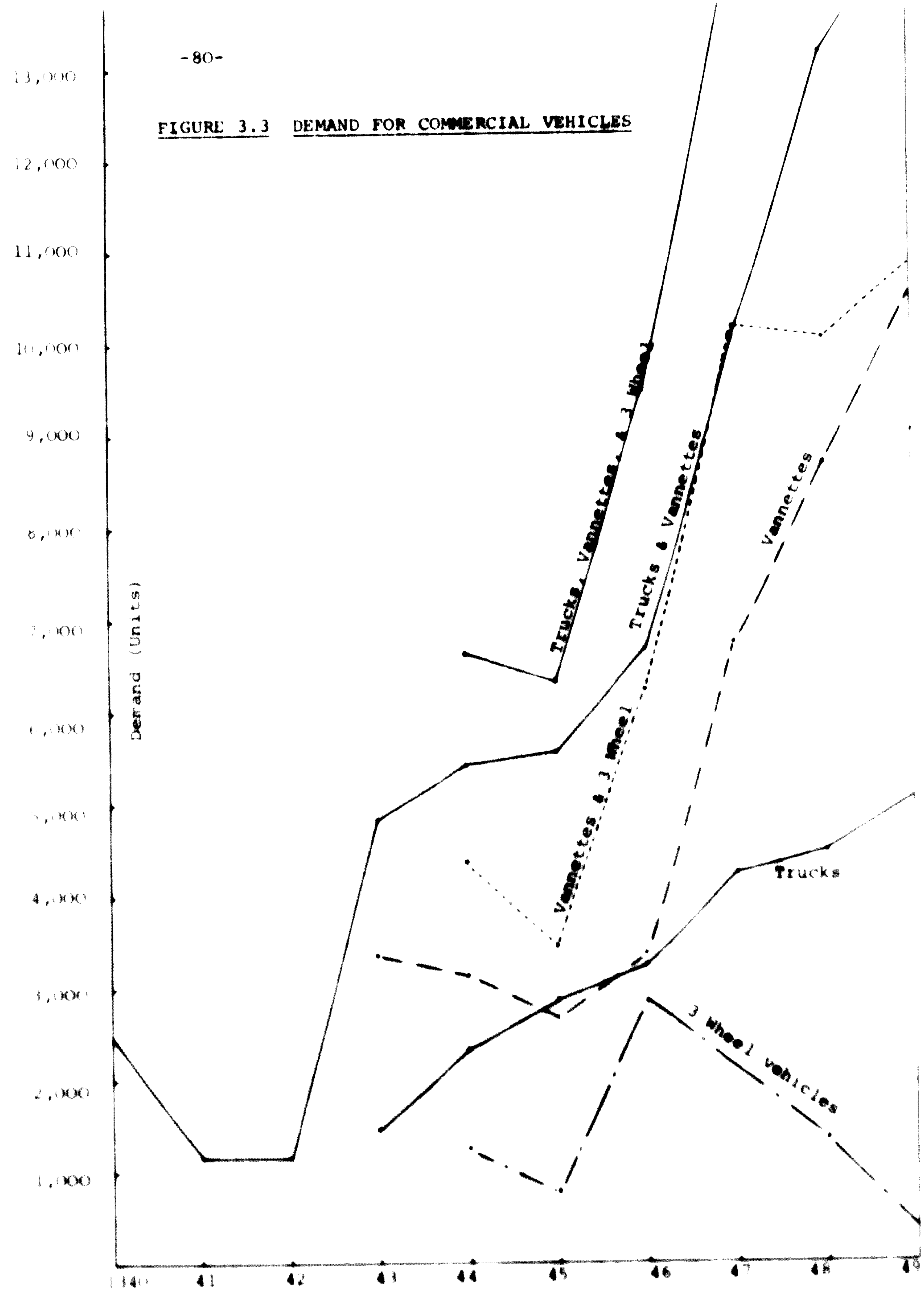

FIGURE 3.4 TRUCE AND VANNETTE PARK V GNP @ MARKET PRICES
IRAN AND SPAIN

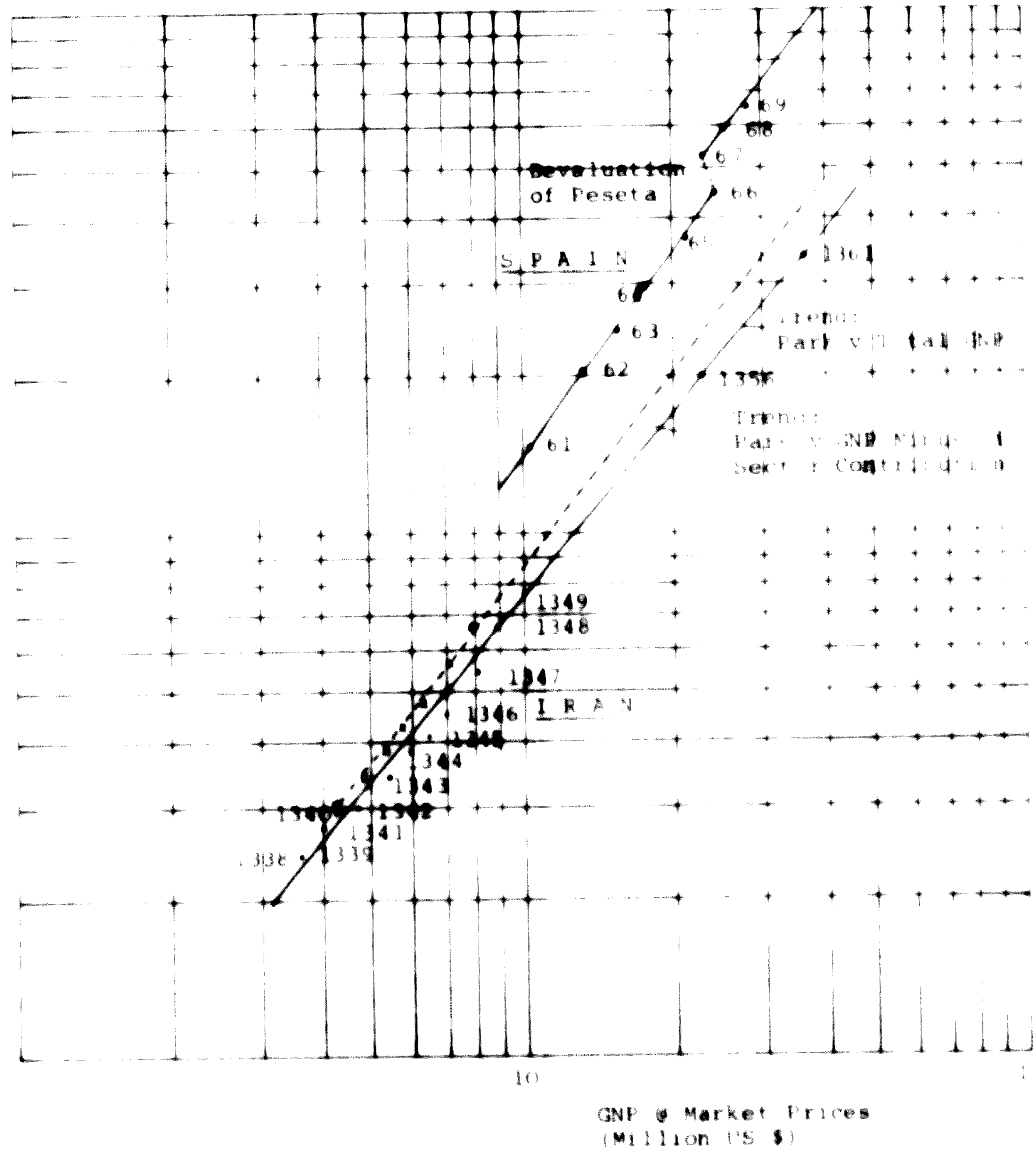

Table 3.6 shows the historical development of the elasticity of growth in the truck and vannette park with respect to growth in GNP at market prices. With the exception of the years of 1341 and 1342, when elasticities were abnormally low during the initial phase of local production, elasticity has tended to oscillate between 1 and 1.5. In fact the average elasticity over the period, excluding the years 1341 and 1342, was 1.26. Table 3.7 compares the elasticity in Iran with that of a range of other countries during the period 1963 to 1968. In fact these figures refer to the total commercial vehicle park, including buses and minibuses, because of data availability. As can be seen, the average figure for Iran does not appear unrealistic. Spain has shown a particularly high elasticity and the elasticity of countries with less developed road transport systems are generally higher than those of countries such as the UK and France. Whilst one or two anomalies exist (eg. Mexico and Portugal) this comparison suggests that an elasticity of 1.26 is not unreasonable for Iran, at least in the period up to 1356. Beyond 1356, the degree of confidence with which the second vannette park can be forecast decreases as other factors than GNP growth can play a very important part. The requirements for road transportation would become highly dependent upon inter structure development, the government's policy towards regional development and the structural evolution of inter sectors contributing to road transport requirements.

Table 3.8 presents the forecasts of truck and vannette park and demand based on an elasticity of 1.26. This suggests that demand will rise to a level of 36,000 units by 1356 and almost 60,000 units in 1361, compared with the present level of 15,500 units per annum. Over the same period, the Park is estimated to increase from its present level approaching 100,000 to just over 200,000 in 1356, and 385,000 in 1361. These figures correspond to 5.9 vehicles per

TABLE 3.6 **ELASTICITY OF GROWTH IN TRUCK AND VANNETTE PARK WITH RESPECT TO GROWTH IN GNP**

Year	GNP @ Current Prices		Truck & Vannette Park		Elasticity
	mill US$[1]	Growth %	Units	Growth	C respect to B
		B		C	
1338	3,608		24,109		
1339	3,951	9.5	27,296	13.2	1.39
1340	4,129	4.4	29,056	6.4	1.45
1341	4,398	6.8	29,577	1.8	0.26
1342	4,692	6.4	30,063	1.6	0.25
1343	5,372	14.5	34,098	13.4	0.92
1344	5,953	10.9	38,747	12.2	1.12
1345	6,466	8.6	42,270	10.5	1.22
1346	6,900	11.7	47,189	11.6	.99
1347	8,106	17.3	56,101	18.9	1.09
1348	8,984	10.8	66,121	17.9	1.66
1349	1,006	12.0	77,690	17.5	1.46

1 1338 Rials converted at 76.25 = US$

Average Elasticity = [illegible]
Average Elasticity excluding year 1341 and 1342 = 1.26

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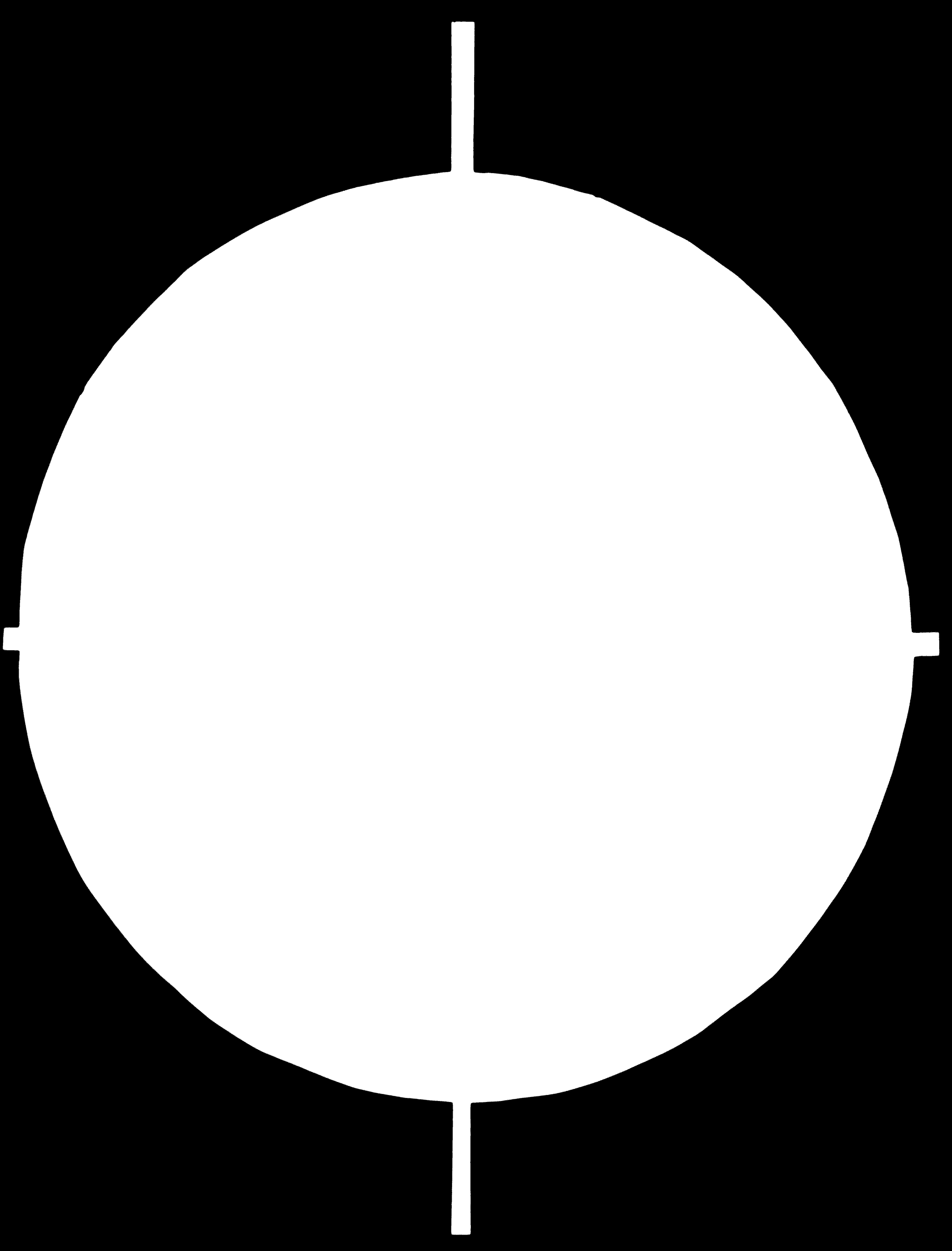

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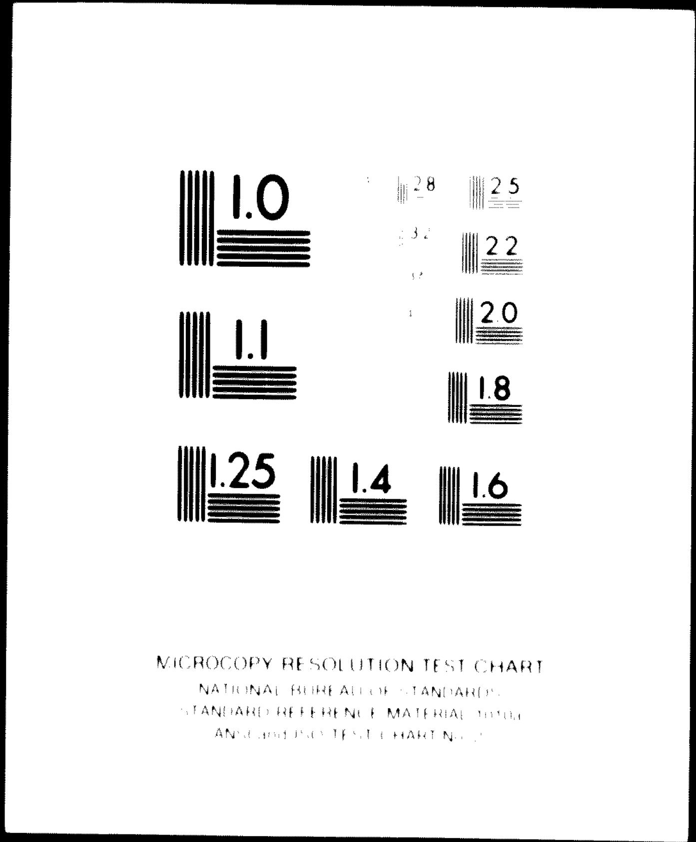
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1.1
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1.6
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2.8
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
ANSI and ISO TEST CHART No. 2

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TABLE 3.7 ELASTICITY OF GROWTH IN COMMERCIAL VEHICLE[1] PARK WITH RESPECT TO GNP IN VARIOUS COUNTRIES 1963-1968

Country	Average Annual Growth in GNP @ Mkt Prices %	Average Annual Growth in Park %	Elasticity[2]
Mexico	11.6	4.2	0.36
Argentina	7.1	6.2	0.87
Brazil	7.7	8.4	1.09
Venezuala	7.9	12.1	1.53
Spain	9.9	17.2	1.73
France	8.8	3.5	0.40
Greece	9.9	8.9	0.90
Italy	8.4	5.4	0.64
Portugal	10.0	4.2	0.42
UK	3.5	1.4	0.40
Turkey	10.7	7.6	0.71
Australia	8.4	1.7	0.20
Iran	11.4	13.7	1.21

Notes

[1] Includes Buses and Minibuses

[2] $\text{Elasticity} = \frac{\text{Ave Annual Growth in Park}}{\text{Ave Annual Growth in GNP.}}$

TABLE 3.8 **ESTIMATED PARK AND DEMAND: TRUCKS AND VANNETTES**

Year	Growth in GNP @ Market Price %	Growth in* Park %	Park	Δ Park	Scrap**	Demand
1349			77690			15550
1350	14	17.64	91395	13705	3656	17361
1351	12	15.12	105213	13818	4209	18027
1352	12	15.12	121122	15909	4845	20754
1353	12	15.12	139435	18313	5577	23890
1354	12	15.12	160518	21083	6421	27504
1355	12	15.12	184788	24270	7392	31662
1356	12	15.12	212728	27940	8509	36449
1357	10	12.6	239532	26804	9581	36385
1358	10	12.6	269713	30181	10789	40970
1359	10	12.6	303697	33984	12148	96132
1360	10	12.6	341962	37995	13678	51673
1361	10	12.6	385050	43088	15402	58490

* on basis of 1.26 Elasticity of Growth in Park with respect to Growth in GNP

** on basis of Scrappage = 4% of Park in year

TRUCKS AND VANNETTES per 1,000 capita:

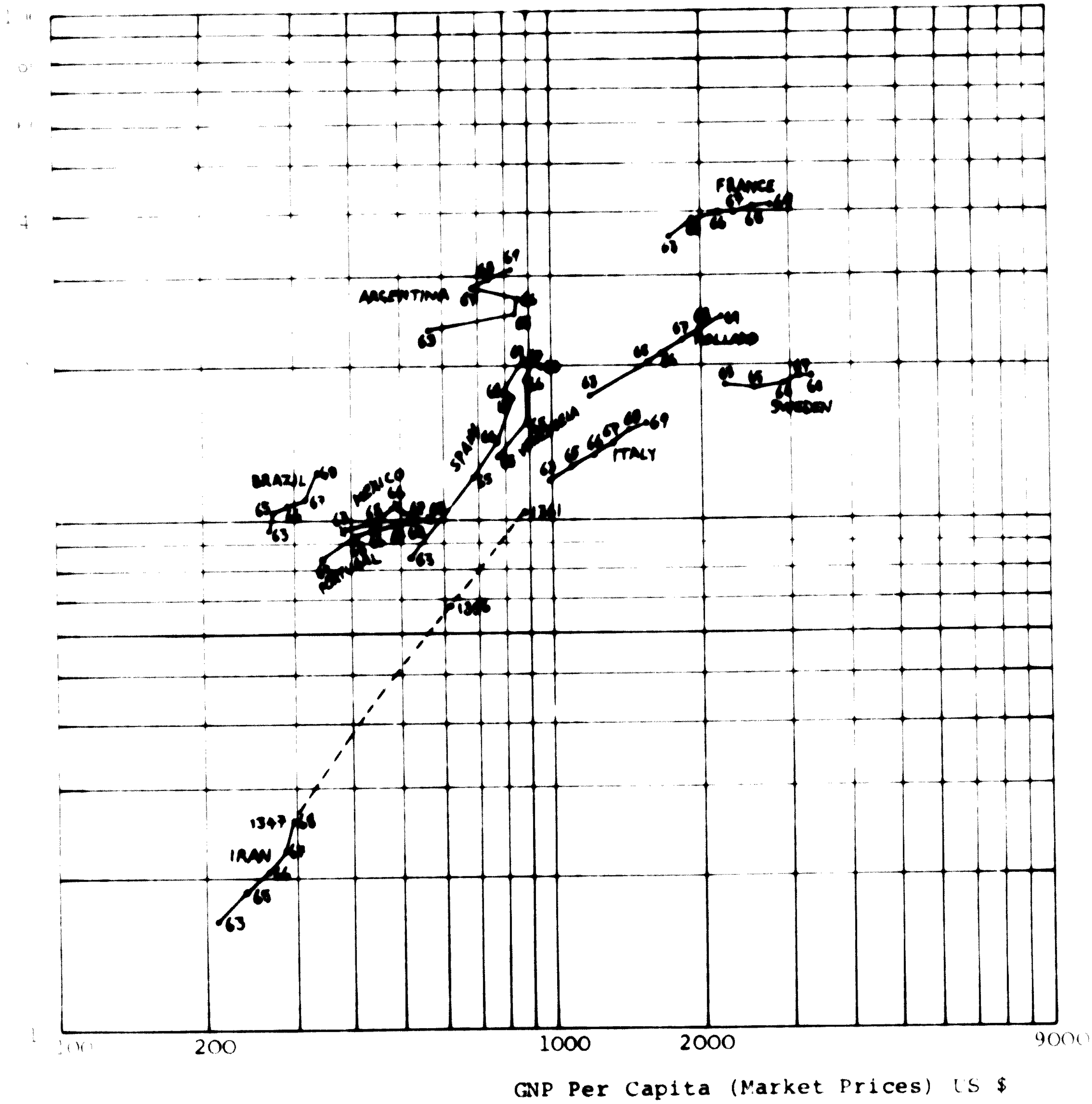
1356 - 5.9
1361 - 9.3

1,000 capita in 1356 and 9.3 vehicles per 1,000 capita in 1361. As will be seen in a later section, it is estimated that the minibus and bus Park will represent figures of 0.9 vehicles per 1,000 capita in 1356 and 1.1 vehicles per 1,000 capita in 1361. Thus the total number of commercial vehicles in use in Iran in 1356 and 1361 is estimated as being 6.8 and 10.4 vehicles per 1,000 capita respectively. Referring to figure 3.5 these figures do not seem unreasonable in comparison with a range of other developing and developed countries. On a more or less subjective basis it is felt that the Park and demand figures for 1356 represent realistic estimates whilst those for 1361 are perhaps optimistic. In summary therefore the following estimates of the truck and vannette Park and demand in Iran are proposed:

	Park Units	Demand Units
1356	210,000	35,000
1361	350,000	50,000

Turning to the structure of the demand for trucks and vannettes, the greatest growth is likely to be seen in the lighter vehicle categories. In the next 2 to 3 years the growth will be particularly marked in the demand for vannettes of less than 1 ton capacity due to the replacement of three wheeled vehicles and of course the introduction to local manufacture of the Mazda pick-up. At the same time there is likely to be relatively high growth in the demand for vehicles of between 1 and 3 tons capacity, both pick-up and light truck types. This is a section of the market which has had relatively little attention paid to it until recent years. Initially the only vehicles available were the large four wheel drive Jeep series and the GM truck from Kaveh. Neither vehicle is ideally suited to the demands of urban carriage of goods, nor has the Leyland 3 ton petrol engine truck been accepted for this purpose. However, the introduction of the Iran National light truck

FIGURE 3.5 TOTAL COMMERCIAL VEHICLE PARK V GNP @ MARKET PRICES



with a diesel engine and of the Nissan pick-up has demonstrated the potential of this section of the market. As we have already seen, the demand for vannettes accounted for about 68% of the total demand for trucks and vannettes in 1349 with light trucks up to 3 ton capacity accounting for a further 8.7%. Over the period 1344 to 1349 the demand for vannettes and three wheeled vehicles combined oscillated around 65% of the total demand for commercial vehicles (excluding buses and minibuses). To this can be added a further 7% for light trucks up to 3 tons making a total of about 72% of the total demand for trucks, vannettes and three wheeled vehicles accounted for by the light commercial vehicles. It is anticipated that this situation will be maintained, at least until 1356.
As far as trucks are concerned, 1349 represented a particularly bad year for the heavier vehicles although the indications are that the demand for these is reverting to a more normal level. It is estimated that trucks in the 3/7 ton capacity range will account for 10% of total truck and vannette demand in 1356, whilst demand for trucks of over 7 tons capacity will account for 16% of this total. In addition to the vehicles already mentioned there is a demand in Iran for specialist vehicles (fire fighting, road sweeping, refuse disposal etc.). At the present time this market accounts for a total of some 300/400 vehicles per annum and is expected to grow to perhaps 700 vehicles per annum by 1356. In summary, the following table presents a projected breakdown of the market for trucks and vannettes by vehicle type and capacity in 1356.

STRUCTURE OF MARKET FOR TRUCKS AND VANNETTES: 1356

Vehicle Type and Capacity	Proportion of Total Demand
Vannettes up to 1 ton	50%
Vannettes 1 - 2 tons) Light trucks up to 3 tons)	22%
Trucks 3 - 7 tons	10%
over 7 tons	16%
Special vehicles*	2%

* Fire fighting, road sweepers etc.

The above figures, in conjunction with those referring to total demand for trucks and vannettes, suggest a market for all trucks of between 9,000 and 10,000 units in 1356. This compares favourably with the figure derived at the beginning of this section based on a simple time series analysis.

3.5 Bus & Minibus Market

Table 3.8 presents the available statistics dealing with buses and minibuses in Iran. As can be seen there has been a steady growth in both the Park and Demand over the period covered, initially served by imports with local production commencing in 1342 and gradually replacing imports until 1349 when the latter were insignificant. It is also interesting to note the commencement of exports of buses in recent years.

Figure 3.6 compares the evolution of the Park and Demand for minibuses and buses in Iran with that of Spain, although with a lag of five years between the countries. As can be seen, there is a remarkable similarity between the two countries which is perhaps not surprising when the similarities between the populions and the population distribution of the two countries are taken into account. The demand for buses and minibuses in Spain is tending to stagnate at a level of about 3,000 vehicles per annum. However, Iran is showing a significantly higher population growth rate than that experienced by Spain and, of course, bus transportation is rather more important in Iran as its passenger car ownership levels are lagging by much more than the five years referred to above. It is estimated therefore that the demand for buses and minibuses in Iran will continue at a somewhat higher level than that experienced by Spain. In round numbers it seems reasonable to suggest a level of demand of about 3,700 vehicles in 1356 rising to 4,000 vehicles in 1361. These figures also seem reasonable in comparison with other countries (see Table 3.10). It is also estimated that approximately one-third of the demand will be accounted for by buses and two-thirds by minibuses.

As can be appreciated from the above figures the demand for buses and minibuses represents a relatively small proportion of the total demand for vehicles in Iran in the future. However, it is worth mentioning, that both buses and minibuses have utilised in the past and will continue to utilise diesel engines.

TABLE 3.8 Cumulative Registrations etc.

Bus and Minibus

Year	Cumulative Registrations	Imports	Prod'n	Exports	Cumulative Demand	Scrappage	Cumulative Scrappage	Park	Bus + minibus per 1000 capita
	A	B	C	D	E	F	G	E-G	
	Units	Units	Units	Units	Units	Units	Units	Units	Units
1333	5805	164	-	-	5805	-	-	5805	-
1334	6287	205	-	-	6010	60	60	5950	0.32
1335	6644	248			6258	125	185	6073	0.31
1336	6966	305	-	-	6563	131	316	6247	0.32
1337	7022	462	-	-	7025	140	456	6569	0.32
1338	7317	510	-	-	7535	151	607	6928	0.33
1339	7836	555	-	-	8090	162	769	7321	0.34
1340	7796	600	-	-	8690	174	943	7747	0.35
1341	8776	640	-	-	9330	187	1130	8200	0.36
1342	9851	685	120	-	10135	203	1333	8802	0.37
1343	10843	666	380	-	11181	224	1557	9624	0.40
1344	11816	727	1000	-	12908	387	1944	10964	0.44
1345	12660	497	1843	-	15248	457	2401	12847	0.50
1346	13817	247	1325	-	16820	505	2906	13914	0.53
1347	14599	106	2784	105	19605	588	3494	16111	0.59
1348	18512	70	3138	258	22555	676	4170	18385	0.65
1349	21771	35	2633	180	25043	751	4921	20122	0.67

Total Scrappage over period 1333 - 1348 = 4043 units
Average " " " " " = 269 p.a.
Average E = 10860

Average Scrappage as % of Average E = 2.48%

TABLE 3.6 EVOLUTION OF PARK AND DEMAND : MINIBUSES AND BUSES : SPAIN AND IRAN

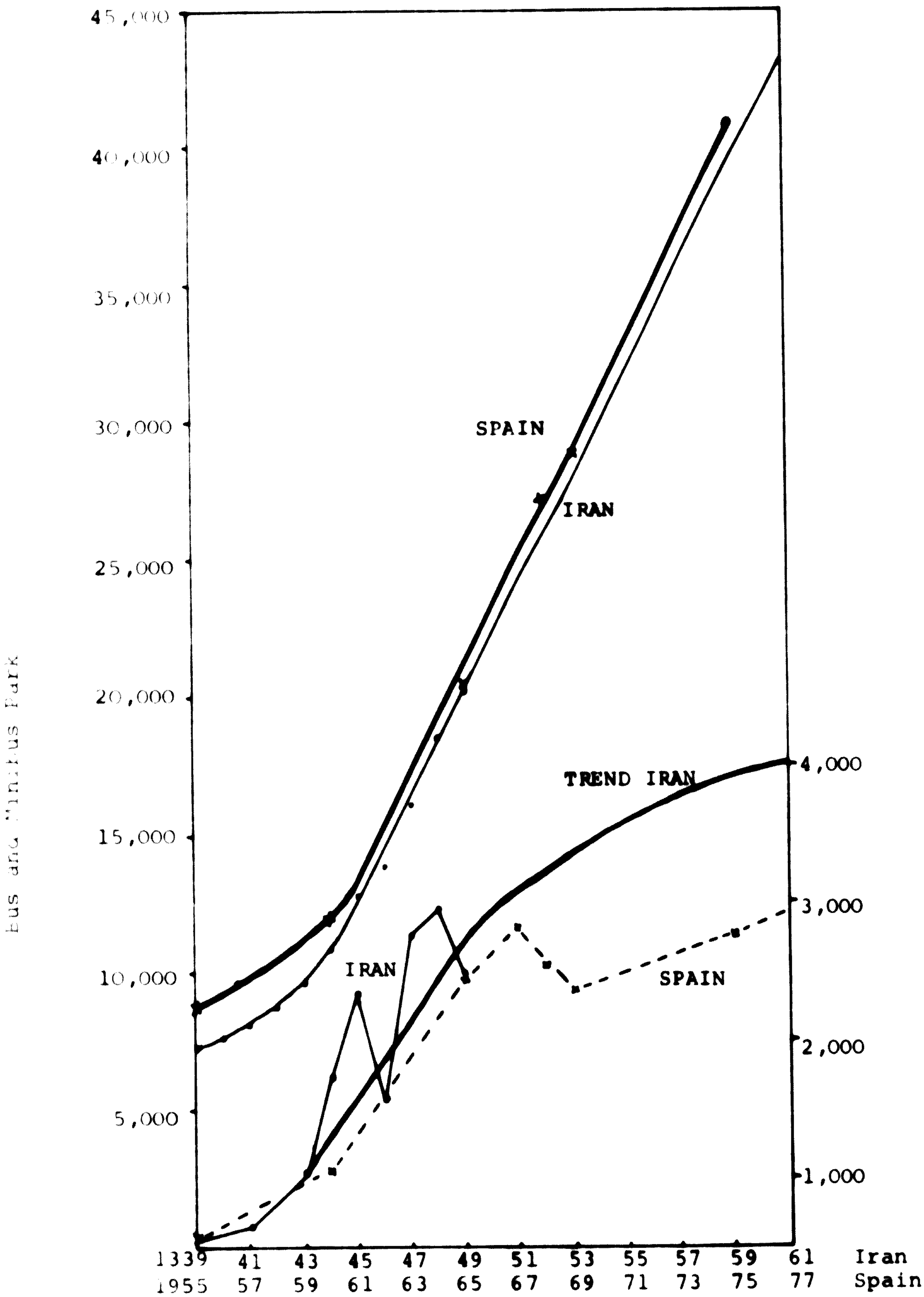


TABLE 3.9 LOCAL DEMAND AND PARK FOR BUSES AND MINIBUSES : IRAN AND SPAIN

IRAN			SPAIN		
Year	Demand Units	Park Units	Year	Demand Units	Park Units
1339	555	7,321	1955	558	8,748
1340	600	7,747			
1341	640	8,200			
1342	805	8,802			
1343	1,046	9,624			
1344	1,727	10,964	1960	1,048	11,992
1345	2,340	12,847			
1346	1,572	13,914			
1347	2,785	16,111			
1348	2,950	18,385			
1349	2,488	20,122	1965	2,406	20,343
			1967	2,806	-
			1968	2,551	27,195
			1969	2,382	28,965
1356		33,500			
			1975	2,774*	39,739*
1361		43,000			

* Forecast

TABLE 3.10 COMPARISON OF BUS AND MINIBUS PRODUCTION IN VARIOUS COUNTRIES

COUNTRY	YEAR	DEMAND
1. IRAN	1350	3,000
	1356	3,700
	1361	4,000
2. SPAIN	1960	1,048
	1965	2,406
	1967	2,806
	1969	2,382
3. BRAZIL	1968	5,696
	1969	5,679
	Est. 1970	3,000
4. ARGENTINA[1]	1968	2,350
	1969	2,703
	1970	2,871
5. AUSTRALIA	1960	1,232
	1965	1,544
	1970	2,183
6. INDIA	1960	6,108
7. FRANCE	1960	2,427
	1965	4,925
	1970	5,858
8. WEST GERMANY	1960	3,892
	1965	3,505
	1970	5,219
9. ITALY	1960	2,396
	1965	1,793
	1970	3,095

[1] Figures for Brazil and Argentina are Production.

4. THE IRANIAN MOTOR VEHICLE INDUSTRY

4.1 Historical Background

This report is concerned with an assessment of the existing situation in the Iranian motor vehicle industry and with indication of a possible future development of that industry. However, in order to understand the industry it is necessary to consider the historical background to its development and to take into account the pressures to which it has been subjected both internally and externally.

To all intents and purposes the motor vehicle industry in Iran was born some ten years ago with the setting up, in 1340, of Iran Sayka company and, in the following year, the Jeep Company and Moratab company, all in the Tehran area. Iran Sayka began its operations with assembly of the Fiat 1100 passenger car whilst Jeep and Moratab began with the production of utility vehicles, the former under licence from the then Kaiser-Jeep Corporation, and the latter under licence from the then Rover company of the UK. In 1342 Iran National Industrial Manufacturing Company came into the motor industry as a producer of buses under licence from Daimler Benz of West Germany. At about this time also the manufacture of trucks began in Iran, four companies of Daimler Benz trucks, Leyland Motors (Iran) started assembly of trucks under licence from Leyland Motors company (UK), Zamiad began the manufacture of Volvo trucks and Kaveh began to produce Mack trucks. Gradually these companies built up their production levels, began to integrate vertically and in some cases began to diversify their product ranges. In addition three new companies joined the industry: Pars Lux commencing the production of buses and mini-buses in 1343; the Bus Manufacturing Consortium also entering into bus manufacture in the mid 1340's commencing in 1347.

In the same year that Citroen commenced production, Sayka ceased production of motor vehicles but continued as a sales organisation for imported Fiat vehicles. As far as diversification is concerned, the Jeep company soon began the assembly of American Motors passenger cars and, in 1347, this operation blossomed into a relatively major manufacturing company by a move to new premises. The most significant move towards diversification came in 1346 when move towards diversification came in 1346 when Iran National began production of the Peykan passenger car under licence from the then Rootes Motors Limited of the UK. Production of this vehicle built up rapidly and was followed by further diversification into vannettes based on the passenger car and, more recently, the production of light trucks based on the Daimler Benz mini-bus chassis. Iran Citroen also diversified into vannettes* again based on the passenger car. However, the first model produced met with little market acceptance and production was small. Coming up to the present day, Zamiad has diversified into the production of a relatively large vanette, Jeep produce a large station wagon, and Iran Mazda are about to enter the industry with the manufacture of a vanette.

In common with most governments faced with an emerging motor industry, the Iranian administration has exercised a high degree of influence over the industry. This has been achieved primarily through the manufactured licence system and, at least initially seem to be aimed at imposing a logical structure of the industry. For example, in the passenger cars sector, one company was awarded a licence for large six cylinder vehicles, one company a licence for medium sized four cylinder passenger cars and one company a licence for small passenger cars. Citroen, again in the passenger car sector, were awarded the licence for the smallest cars with a limit imposed not only on cubic capacity but also on the number of cylinders in the engine. More recently, this policy of enforcing a concentrated structure in the industry has begun to be less rigid particularly in the vannette sector. This sector has reached a position in which six companies are presently producing light commercial vehicles, one has made a half hearted attempt to enter this market and a further company is about to start production. The government in Iran has also exercised control over the level of vertical integration achieved within the industry. Again in common with other countries, the Iranian administration has sought to impose a local content on the vehicles produced in Iran. This has been achieved on the

* Strictly speaking, this was not diversification as the factory began life by producing a vannette.

one hand by the imposition of restrictions on imports of components produced locally by an emerging auxiliary industry (e.g. tyres, batteries, radiators, etc.) and also by a requirement for the motor industry itself to integrate vertically. Furthermore, in the second context, the industry has not been free to choose the direction of this vertical integration. The most significant decision made by the government, and made very early in the history of the industry in Iran was that to enforce the manufacture of all body panels in the country. Obviously this entailed large investments on the part of the industry in press working capacity and tooling. Finally, the government has exercised direct and indirect control over vehicle prices in Iran. Quite naturally a system of protective tariffs has been instituted as a means of curbing competition to the local industry from imports. These tariffs have been modified from time to time at a relatively high level, the effect being seen in the dramatic decrease in imports particularly in the last couple of years. The government also exercises direct control over prices through the Price Investigation Department of the Ministry of the Economy. The expressed objective of this department is to vet and approve price increases requested by the various manufacturers.

Two, often opposing sections have therefore been involved in the development of the motor industry: on the one hand the goverment with its objectives of foreign exchange savings, provision of employment, utilisation of local resources and maintenance of price stability and, on the other hand, the motor vehicle manufacturers or prospective manufacturers, with their objectives of profit maximisation and minimisation of investment. In general, the impression gained is that there has been little true collaborative effort between the Government and the manufacturers and, more particularly, virtually no collaboration within the industry itself. In fact, as far as the second point is concerned, the lack of collaboration or cooperation between one manufacturer and another has at times transcended non-cooperation, and become positive disruption. One example of such a situation stems from the Government's decision that all vehicles produced in Iran should utilise locally pressed body panels.

At least one case exists in which the government suggested that, as spare capacity existed at that time in the industry, a new company should not install its own press working facilities but should sub-contract the manufacture of body panels to one of the existing manufacturers. This course of action was duly agreed between the two companies and the necessary tooling ordered. However, at the eleventh hour the sub-contractor finally refused to undertake the manufacture of the panels and the new entrant to the industry was forced to install its own press working facilities. These could not then be integrated with the assembly building and furthermore, in view of the tooling which had been ordered, resulted in the installation of presses having a much greater force capacity than necessary. Similar or even more disturbing stories abound in the industry and, whether ill founded or not, have resulted in a situation which no member of the industry will rely on any other member for the supply of components. If no independent source of a particular component exists in Iran and the industry is forced by the Government to delete the component from its CKD packs (as in the case of body panels) then each company sets up its own manufacturing facility. The net result has been and continues to be over capacity at a national level.

It is vitally important for the future development of the Automotive Industry in Iran that there should be as good a climate as possible of co-operation and mutual understanding between the manufacturers and Government. At the present time this climate cannot be considered adequate and, in the interests of future improvement it is appropriate to consider the areas in which the manufacturers feel that problems exist. First and foremost, it is felt that consultations between Government and Industry involving major policy decisions are inadequate and that the Industry's viewpoint is not given sufficient weight. Again the example commonly cited is that of presswork. Companies were forced to install sheet working facilities at a relatively early stage in their development. One company proposed a $1/2 m programme but ended up with an investment of $15 m which included pressworking but yielded the same level of local content. Apart from the high investment involved, sheet working cannot be flexible in terms of model changes whereas, for example, machining facilities can be relatively easily modified. In general the Industry feels that its inherent expertise in vehicle manufacture should be utilised by the Government in the planning phase as the latter's personnel, having little direct experience, are divorced from the problems of the Industry.

It is felt that the Government has not considered adequately the effect of using locally produced components on overall costs. This is not necessarily a question of price differentials over imported components but also the higher rejection rates which can be inherent to the use of the local product. Furthermore, it is often felt that the warning of component deletion requirements due to commencement of local manufacture is often inadequate. Companies would welcome and often need much more time to assess, or in some cases even identify, local supply sources, to ensure sufficient discussion with suppliers and, if necessary, to give practical advice in the fields of quality control, testing procedures etc. Finally, the existence of the Price Investigation Department of the Ministry of Economy does not help Industry/ Ministry cooperation. Obviously, any private company will have a resistance to direct control over its product pricing. However, the Iranian Automotive producers are often highly critical of this function, for example from the point of view of the delays in carrying through investigations and giving decisions. These delays are clearly due to both lack of resources in the Price Investigation Department and the effort involved in collecting necessary cost details.

These inadequacies in the relationship between the Ministry of Economy and the motor vehicle producers appear to militate against effective communication and collaboration between Government and Industry.

This lack of communication hinders, for example, the gathering by the Ministry of essential statistical data. Of course the provision of realistic information by the industry is also hampered by the atmosphere of mistrust existing between companies. This factor has also tended to prevent effective cooperation in other fields, such as the establishment of standards.

4.2 Existing situation

At the present time the Iranian automotive industry is made up of 14 companies, 11 of whom assemble completely. One (Sayka) has a factory for the assembly of passenger cars but is no longer effectively manufacturing, and two (Iran Payma and Cyrus Arjomand) who assemble bus and special truck bodies respectively onto locally purchased chassis units. A total of 38,000 vehicles was produced in 1348 rising to 44,000 units in 1349. Total sales of the industry amounted to 13,000 M Rials (US $ 170 M) in 1348 and had increased to 16,000 M Rials (US $ 210 M) in 1349. Total employment in the industry is now around 10,000 workers, this figure including only those workers in the terminal industry. Whilst estimates of fixed capital investment in the industry vary widely, the most realistic figure for cumulative investment since the start of local manufacture of motor vehicles is around US $ 150 M (again excluding components and parts suppliers). This investment and labour force has resulted in an industry with a maximum theoretical single shift capacity of around 80,000 vehicles per annum.[1] Of course, it must be remembered that maximum theoretical capacity is seldom achievable as breakdowns, disruption of parts supplies and other factors combined to cause unavoidable losses of production. Summing up data on individual companies,[2] it is estimated that achievable single shift capacity at the present time is for something approaching 60,000 vehicles per annum. It is difficult to break this overall capacity down into individual capacity for various vehicle types. In the case of those manufacturers operating mixed model assembly, an increase in utilisation for say passenger cars, would result in a decrease for perhaps vannettes. However, very approximately,

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1. This figure represents an estimate of maximum theoretical capacity of a single shift basis for 300 working days a year. But the more realistic estimate of theoretical production capacity is felt to be between 70,000 and 75,000 units per annum at the present time. This figure takes into account the fact that most companies work less than 300 days per annum (for example, Citroen only work 240 days).

2. See Table 4.5

some 60% of the above capacity is available for the manufacture of passenge cars, 15% for the manufacture of trucks, 15% for the manufacture of vannettes and 10% for the manufacture of buses and mini-buses. As far as passenger cars are concerned, present levels of output in the country as a whole are approaching full utilisation of achievable single shift capacity. On the other hand, production of station wagons, utility vehicles and commercial vehicles represents less than 70% of achievable single shift capacity. The above observations refer to the country as a whole and, of course, there are considerable differences between companies. For example, Iran National has been forced to introduce overtime working in some sections of its plant due to capacity limitations. In other cases, companies are operating at less than 50% of achievable single shift capacity.

The industry created has resulted in an annual foreign exchange cost to the Iranian economy of well over US $ 100 M [1]. at the present time. Against this foreign exchange cost, it is estimated that the foreign exchange saving over the import of an equivalent number of built up vehicles is now around US $ 40 M. In addition to this foreign exchange saving of course, the industry produces a gross value added in Iran of over 4,000 M Rials, of which over 1,000 M Rials is accounted for by the annual pay-roll.

The above figures are summarised in Table 4.1 which also presents a number of ratios, these being indicative of the performance of the industry as a whole. As can be seen, the development of these ratios between 1348 and

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1. This figure includes not only the direct import of components and parts for the motor vehicle industry but also imported content of locally produced components and parts, a proportion of depreciation of plant and machinery, royalties, costs of expatriot advisors and other foreign exchange costs.

TABLE 4.1 IRANIAN MOTOR INDUSTRY STATISTICS

		1348	1349
A.	Output - number of vehicles	38,000	44,000
B.	Employment - total personnel	8,500	9,000
C.	Total sales - million Rials	13,000	16,000
	million US $	$170m	$210m
D.	Gross Value Added - million Rials	3,000	4,000
E.	Annual Payroll - million Rials	885	1,000
F.	Foreign Exchange Cost - million Rials	7,200	8,000
	million US $	$ 94m	$105m
G.	Foreign Exchange Saving - million Rials	2,300	2,900
	million US $	$ 30m	$ 38m

			1348	1349
- Output per worker	$\frac{A}{B}$	(Vehicles)	4.5	4.9
- Sales per worker	$\frac{C}{B}$	(m Rials)	1.48	1.75
- Value added per worker	$\frac{D}{B}$	('000 Rials)	343	450
- Labour Cost as % of output	$\frac{E}{C}$	x 100%	7%	6.3%
- Foreign Exchange Cost per worker	$\frac{F}{B}$	(US $)	11,000	11,700
- Foreign Exchange Saving per worker	$\frac{G}{B}$	(US $)	3,500	4,200
- Value Added as % of output	$\frac{D}{C}$	x 100%	24%	26%
- Foreign Exchange cost per vehicle	$\frac{F}{A}$	(US $)	2,500	2,400
- Foreign Exchange saving per vehicle	$\frac{G}{A}$	(US $)	800	860

TABLE 4.1 (Contd.)

Approximate Average Ratios for 1349

1.	$\frac{\text{Foreign Exchange Cost}}{\text{Ex-works Price}}$	x 100	50%
2.	$\frac{\text{Foreign Exchange Saving}}{\text{Ex-works Price}}$	x 100	18%
3.	$\frac{\text{Iran Ex-Factory Price}}{\text{Ex-Factory Price - Country of Origin}}$		1.6
4.	$\frac{\text{Iran Ex-Factory Price}}{\text{CIF Price Iran}}$		1.4

TABLE 4.2 STRUCTURE OF IRANIAN MOTOR INDUSTRY : END 1350

	Iran National Industrial	Jeep	Iran Citroen	Zamiad	Khavar	Leyland Motors Iran	Iran Mazda	Moratab	Kaveh	Pars Lux	Bus Manuf. Consortium	Iran Saika	Sales 1349
PASSENGER CARS:													
Small			P (1)									}	2,804
Medium	P (1)											} F	19,794
Large		P (1)											4,405
VANNETTES													
Up to 500 kg[1]			P (1)				P^2 (1)						1,869
500 kg - 1,000 kg[1]	P (1)					P (1)							2,771
Over 1,000 kg[1]		P (1)		P (1)				P (2)	P (1)	L			2,265
TRUCKS													
Light - up to 6 ton gvw	P (1)					P (1)							1,375
6 - 10 ton gvw				P (1)	P (3)	P (2)							1,062
10-20 ton gvw				P (1)	P (3)	P (1)							1,285
20-30 ton gvw					P (2)	P (1)							125
Over 30 ton gvw									P (2)				173
BUS	P (2)									P (2)	P (2)		857
MINIBUS	P (1)									P (1)	P (1)		1,776
UTILITY VEHICLE 3													
Small			P (1)										-
Large		P (2)						P (2)					3,202

P. Production
L. Licence
F. Factory but no production
( ) Number of Basic Models
1 Carrying Capacity
2 About to commence production
3 Jeep J and CJ series, Land-Rover Station Wagon, Citroen Mihari

1349 indicates a general improvement in performance which is to be expected from a rapidly developing industry. Such ratios as output per worker, value added per worker, foreign exchange saving per worker, value added as percentage of output etc. are all showing improvement.

4.3 Structure of the industry

Leaving aside the two small manufacturers who assemble bodies onto locally produced chassis units, Table 4.2 shows the existing structure of the Iranian motor industry in terms of manufacturers, and vehicle types. Table 4.3 illustrates the structure of the industry in terms of company size.

Referring to Table 4.2 it is interesting to note the high degree of specialisation which exists in the industry. In general companies tend to produce specific types of vehicles: passenger cars, vannettes, trucks etc; the major exception being Iran National which is involved in all types of vehicles apart from utility vehicles. However, even in the case of Iran National it should be noted that the vannette is a derivative of the mini-bus. Similarly, in the case of Citroen both the vannette and utility vehicles are derivatives of the passenger car. The degree of specialisation comes down to a finer level in the case of passenger cars but in the production of a particular size of car. This high degree of specialisation in the industry is obviously a result of the government manufacturing licence policy referred to previously and also, of course, a direct result of the decision to impose installation of body panel manufacturing facilities. The latter decision makes it extremely expensive for a company to involve itself in the production of a wide range of models in view of the investment necessary for press tooling. Furthermore, it is interesting to note that there have been no major model changes in the passenger car industry and few in the commercial vehicle industry. Again this is a direct result of body panel manufacture.

TABLE 4.3 SALES AUTOMOBILE PRODUCTS

	1348							1349						
COMPANY	Passenger Cars	Station Wagons	Jeep L/r	Bus	Mini -Bus	Vannette	Truck	Passenger Cars	Station Wagons	Jeep L/R	Bus	Mini -Bus	Vannette	Truck
Iran Nat.	13516	-	-	1460	1200	2412	500	19794	-	-	702	1600	2771	1349
Jeep-Rambler	6080	666	2258	-	-	914	-	4405	296	1912	-	-	1000	-
Citroen	3085	-	-	-	-	153	-	2804	-	-	-	-	1869	-
Land Rover (Moratab)	-	-	891	-	-	2	-	-	-	979	-	-	266	-
Khavar	-	-	-	-	-	-	1979	-	-	-	-	-	-	1863
Leyland	-	-	-	-	-	82	471	-	15	-	-	-	32	411
Pars Lux	-	-	-	200	68	-	-	-	-	-	130	61	-	-
Zamyad	-	-	-	-	-	97	338	-	-	-	-	-	907	224
Kaveh	-	-	-	-	-	98	287	-	-	-	-	-	60	173
Bus Corporation	-	-	-	50	160	-	-	-	-	-	25	115	-	-
TOTAL	22681	666	3149	1710	1428	3758	3575	27003	311	2891	857	1776	6905	4020
Growth Rate (1348/49)								(19.06)	(-19.1)		(-56.7)	(3.9)	(83.7)	(12.4)
TOTAL	36967							43763						

TABLE 4.4 STRUCTURE OF IRANIAN TRUCK INDUSTRY : 1349

CLASS	Iran National (Daimler-Benz)	Khaver (Daimler-Benz)	Leyland (Leyland)	Zamiad (Volvo)	Kaveh (Mack)	Total
Up to 5 ton g.v.w.	L.508 (1349)	-	550FG (26)	-	-	1,375
5 ton - 10 ton g.v.w.	-	L.608, L.808 L.911 (907)	900FG (41)	(114)*	-	1,062
10 ton - 20 ton g.v.w.	-	L1517, L1921 L1924 (847)	Comet Series (328)	(110)*	-	1,285
20 ton - 30 ton g.v.w.	-	L2623, L2624 (109)	Hippo Series (16)	-	-	125
Over 30 ton g.v.w.	-	-	-	-	- (173)	173
						4,020

* Estimated Distribution applied to total
( ) Estimated Sales.

BY CAPACITY: PAYLOAD PLUS BODY and Including Vannettes

	Units	% of Total
Up to 1 ton	4,640	42.5
1 ton - 3 ton	3,614	33.1
3 ton - 5 ton	530	4.9
5 ton - 7 ton	558	5.1
Over 7 ton	1,583	14.4
Total	10,925	

Having commended the degree of specialisation in the industry generally and the level of concentration in the passenger car industry resulting from government policies, the lack of concentration in the commercial industry, illustrated in Table 4.2 should be noted. Turning to Table 4.3 it can be seen that this lack of concentration in the commercial vehicle industry results in extremely low levels of production of some vehicles in some companies. Table 4.4 gives a little more detail on the structure of the truck industry, indicating a range of models produced and the overall production levels of each company.

At this point it is appropriate to comment on the possible future structure of the industry as changes seem imminent in terms of the number, size and grouping of companies involved and also in terms of the models produced. These changes will be brought about partly as a result of Government actions and partly through the industry itself.

On the Government side there is an emerging desire to achieve a structure of the industry which is based on two major groups. To some extent, although there is no direct equity link between the two companies, the first group already exists comprising of Iran National and Khavar. The connection between the two companies is to be found in the commercial vehicle field, each having a Daimler Benz licence and each having a stake in the Iran Diesel Engine Manufacturing Company. The products of the two companies are complementary; Iran National covering passenger cars, vannettes, buses, mini-buses and trucks of under 3 tons capacity and Khavar producing the heavier trucks. It is difficult to envisage any mechanism which would produce a rapid welding of the remaining companies in the industry into a second major group. At the present time there are virtually no common elements between the various companies and, of course, in many cases companies are directly competitive. However, certain companies (notably Jeep-Rambler and Pars Lux) are either being forced or would like to change their present affiliations with overseas companies and/ or the models produced. It may be that a formula for the partial formation of the second group can be found amongst the discussions currently taking place between Iranian motor manufacturers and their foreign colleagues.

From the Iranian companies' side the following discussions and influences are involved:

- Jeep-Rambler are presently in a position where they urgently require a replacement for the Rambler passenger car. For this reason, discussions are taking place with Ford of Europe, General Motors and Toyota. In the case of Ford of Europe and Toyota, the vehicle involved would be a six cylinder saloon of approximately similar dimensions to those of the present Rambler. (The Ford Granada or the Toyota Crown). In the case of GM, the vehicle involved would be rather larger than the present Rambler car. Originally, General Motors had considered a pure licence deal with Mr. Akhavan along the lines of his present deal with American Motors. However, it now appears that any arrangement reached by Mr. Akhavan with a foreign partner would involve a joint venture. At the time of writing there is no indication that any of the discussions referred to above are reaching a conclusion. It is probable that there is a certain reluctance on the part of major multi-national companies, such as Ford and GM, to commit large sums of money (between US \$ 50 M and US \$ 100 M over 5 years), to a joint venture in which a single individual holds a majority of the equity. Certainly, before any agreement could be reached the foreign partner would have to be certain that operational control of the company would be left to experienced professionals. It may be that a suitable formula would be the introduction of a third party (e.g. IMDBI).

  Apart from the above discussions and plans for Jeep-Rambler which are centred around a passenger car, continued production of the Jeep vehicles is envisaged and, in fact, output is expected to increase in accordance with the demands of the market.

- Pars Lux are dissatisfied with the competitive position of the present range of mini-buses and buses and also have a licence for and desire to enter into manufacture of light vans and micro-buses. In addition, the equity structure of the company has recently changed and, for these reasons, the company is actively discussing participation in vehicle manufacture with British Leyland Motor Corporation and Ford of Europe. Both these companies are in a position to provide the light commercial vehicles required and to replace the buses and mini-buses currently produced. As far as British Leyland are concerned a deal with Pars Lux is seen as a complement to the existing Leyland Motors Iran operation, this concentrating on the heavier commercial vehicle side. If such a deal could be negotiated, and it would appear that this would involve a joint venture with Pars Lux, rationalisation could take place with all heavy commercial vehicles including buses being produced at the Leyland Motors Iran plant and the lighter vehicles produced at the Pars Lux factory. It should be remembered that Pars Lux have adequate area of land and buildings to accommodate the necessary light commercial vehicle production facilities. The vehicle involved would be the BLMC J-series.

  Ford of Europe see a deal with Pars Lux as extending the product range embodied in their proposed operations in Iran, assuming they reach agreement with Jeep-Rambler for the passenger car. In this case the light commercial vehicles involved would be the Transit series.

Of the remaining companies in Iran, although only just commencing production, Iran Mazda will have to find a replacement for the existing model within 4 years, although, presumably, their thoughts still lie with Toyo Kogyo. Iran Citroen are disappointed with the market acceptance of their saloon car and could well welcome a change of model which would almost inevitably mean a change of foreign partner. The bus manufacturing consortium (BMC) has suffered a rapidly declining rate of production and would seem ripe for absorption by the second group.

Looking at the problem from the point of view of the prospective foreign partners, the following points can be made:

- Ford of Europe seem to have the most comprehensive plans as they include the manufacture of passenger cars in conjunction with Jeep-Rambler, the manufacture of commercial vehicles with Pars Lux and, significantly, the introduction of the Ford Tractor as a replacement for the Rumanian Tractor now assembled in Tabriz.

- Whilst British Leyland are already operating directly (Leyland Motors Iran) and indirectly (Moratab) in Iran, and, therefore, are already placed to form the nucleus of the second group, the company's thinking seems rather limited. Specifically the company does not seem interested in passenger cars in Iran excepting the possibility of introducing the Marina. However, this hope seems unrealistic as the Marina range is directly competitive with that of Iran National with its present Peykan model and its proposed smaller engine car. It should be remembered of course that, within British Leyland's current range of models there is no vehicle which could replace the Rambler and be suitable for production and use in Iran.[1] It is possible of course that British Leyland's limited aspirations in Iran are a result of a restricted availability

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1. The only possible exception to this statement is the Triumph 2000

of funds for overseas capital investment. As an indication, the company took a long time to make up its mind to purchase the vehicle building division of Innocenti in Italy at a bargain price of £3½ M. This Company is a proven, successful assembler of BLMC passenger cars holding a significant portion of the Italian market, and having a well established and extensive distributor network.

Finally, however, it should be mentioned that British Leyland as, in the case of Ford, are interested in providing a replacement for the Rumanian tractor. It should be noted that the tractor involved utilises the same engine as the Leyland 550 FG truck, this being a 3.8 litre diesel engine.

- General Motors aspirations in Iran are apparently confined to a deal with Jeep-Rambler aimed at the introduction of a large passenger car. As plans for the company for Iran, as far as is known, do not include commercial vehicles nor is the company able to offer a tractor, little movement towards a two group structure would result from such an arrangement.

- The plans of Toyota are clouded in secrecy and Metra have no knowledge of the details. All that can be said is that this company is one of the few in the world that can offer a complete range of both passenger cars and commercial vehicles.

- Fiat is of course another company that can offer a full range of vehicles, including tractors. Furthermore the company has had an active assembly operation in Iran, although this is now closed there is still an existing link through Iran Citroen; Fiat now having a direct interest in Citroen Motors of France. On the other hand, as far as passenger cars are concerned, Fiat's strength is in the small and medium sized vehicles and it is doubtful whether their larger passenger cars would be considered as acceptable substitutes for the Rambler.

So far, the possible future structure and affiliations within the Iranian automotive industry have been discussed. In the final analysis, the outcome will depend on the results of detailed negotiations between Government, Industry and foreign companies. In view of the fact that the detailed negotiating positions have not yet been established METRA can only give considered opinions on the relative merits and effects of the various possibilities.[1]

- It is felt that concentration of the industry is necessary and that a two group structure is the logical compromise. The group in fact need not be totally integrated as shown by the activities of Iran National and Khavar who are now finding it possible to co-operate in such ventures as diesel engine manufacture. What is necessary is the formation of links between the other companies which will allow similar co-operation in a second "group" and avoid unnecessary duplication of manufacturing facilities. For example, if Pars Lux and Jeep both entered into joint ventures with Ford, a link would be established and a way would be open for, as an example, light commercial vehicles produced by Pars Lux to use components produced by Jeep. This should be possible even if separate identities are retained by the respective joint ventures.

- A primary aim of the restructuring of the industry is the rationalisation of models produced and concentration of manufacturing facilities. To some extent there may be a voluntary rationalisation once the major groupings are established. For example, it seems possible that should Ford reach agreements with both Jeep and Pars Lux then

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[1] Since carrying out the present study, Jeep Company have reached a measure of agreement with General Motors Corp. The implications of this agreement are discussed in an Appendix to this report.

British Leyland may well decide to terminate its involvement in Iran. However, a company such as Zamyad and its foreign partner Volvo is unlikely to take kindly to the prospect of curtailing its activities in view of the recent large investment made. A possible solution in this case is to offer suitable alternatives as an inducement. For example, Zamyad are believed to have a licence for the production of commercial vehicle gear-boxes and final drive units. It is probable that the prospect of being able to supply the whole of the Iranian commercial vehicle industry with these components would weigh heavily in any decision on the part of Zamyad and Volvo to curtail vehicle manufacturing activities. Incidentally, such a course should be of interest to the Iranian partners in Zamyad as it would actively establish Rena Industries as one of the major sectors of development of the Iranian components industry.

Turning to the remainder of the industry, there would appear to be little disadvantage in allowing one or two specialist producers to remain outside the main stream of the future industry. For example, Moratab and Kaveh each produces a narrow range of vehicles which satisfy small but necessary requirements of the market. The major difficulty foreseen is the finding of a role for a company such as Iran Citroen or Iran Mazda within the future industry structure. It may be that market or other forces will eventually force these companies out of business. However, this is likely to be in the medium rather than short term (unless Government impositions such as engine manufacture are applied rigidly to the whole of the industry) and in any case the companies are fulfilling to some extent market needs and do represent relatively large capital investments.

As far as detailed plans for the future models to be produced in Iran are concerned, obviously the companies currently involved in negotiations with foreign manufacturers must await the results of those negotiations before planning their product range. However, the largest company in Iran, Iran National, has firm plans for some years ahead and these are discussed in detail elsewhere in this report. Briefly, however, they include the continued manufacture of passenger cars in the 1500/1800 cc range, and significantly, the introduction of a low cost vehicle of 1250 cc. In view of the findings of the market analysis for passenger cars in Iran, the introduction of this last vehicle is an important addition to the range of models produced. Indeed, the 1100/1300 cc low cost model represents perhaps the only area of the passenger car industry in which direct competition within the Iranian industry can be envisaged over the next five years or more.

As far as the commercial vehicle industry is concerned, no companies have plans for diversification of the models produced at the present time. This is certainly logical in view of forecast demands in the country, and, indeed, it would seem that a reduction in the number of models, particularly of vannettes would be more in order.

4.4 Industry Facilities

At the present time, all companies which make up the Iranian automotive industry are primarily assembly operations; their production being based on imported CKD[1] packs. In all cases the facilities involved include final assembly lines, paint shops and body assembly facilities. Obviously the degree of sophistication of the facilities varies from company to company and also from product to product. The least labour intensive operation is that of Iran National in the case of its Peykan assembly line as this now operates at a level of some 20,000 vehicles per shift. At the other end of the scale, heavy commercial vehicle producers, particularly those operating at low levels of production, rely on manual labour rather than capital equipment. However, even in the case of Peykan assembly the methods used and the productivity obtained have presented a lower efficiency than that found in equivalent companies in Europe.

In addition to pure assembly all Iranian motor vehicle manufacturers have been forced into the manufacture of body panels and, consequently, the installation of press working facilities. In this respect, the Iranian industry differs from its counterparts in other countries in having introduced press working at a very early stage in its development. The decision to do so was taken directly by the Government although options in terms of vertical integration at the company level were left open. In practice, all companies have chosen or been forced into integrating vertically and each has installed its own press working facilities. The factors which influence individual companies' decisions are discussed elsewhere in this report. However, had the investment involved in these activities been directed to the manufacture of other components (e.g. mechanical components) it is probable that higher levels of local content than those currently found in the industry could have been achieved. Furthermore, the manufacture of

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1. Completely knocked down.

body panels is a relatively inflexible operation as a set of dies is specific to a single vehicle. Of course, in some cases, this can be an advantage in that it limits the proliferation of models of vehicle in an industry. However, problems can arise and indeed are arising in Iran when replacement of a particular model is enforced. For example, Jeep Company are in a position of having to replace the saloon car currently produced within the next 18 months. In all probability it will entail the investment of between US $ 5 Million and US $ 10 Million in press tools depending on the degree of hand finishing of panels incorporated. Similarly Iran Mazda will be forced to change the model of vannette produced in four years time when Toyo Kogyo, the licensor, terminates production of the model in Japan and hence its ability to supply CKD packs to Iran.

As a result of the spreading of press working facilities throughout the industry, with each company manufacturing its own body panels there exists a considerable under-utilisation of facilities. In most companies, the under-utilisation is particularly marked amongst the larger and therefore more expensive presses. Furthermore, it should be remembered that single shift working is being operated and even on this basis facilities are under-utilised. Also, the tooling and methods employed involve much hand finishing of panels, dies being generally merely form dies. As a crude but striking estimate, it is felt that if all existing pressworking facilities in the Iranian automotive industry were gathered together into a single efficiently run specialist operation using form and trimming dies together with a degree of mechanical handling, two shift working would generate sufficient panels for the production of at least 200,000 vehicles per annum. Unfortunately, as long as the industry structure remains as it is there seems no possibility of co-operation between companies in this field.

Having dwelt upon the disadvantages of the early introduction of press working in the Iranian industry and the ensuing problems, it is appropriate to look on the brighter side. Large investments have already been made in press working facilities and, to some extent, these have been depreciated. This fact will obviously be of benefit to the industry in the future providing that new vehicles introduced to Iranian manufacture are carefully selected to have as long a life cycle as possible.

Finally on the subject of press working facilities it is interesting to note that Iran National, Citroen and Khavar have all followed European practice and installed hydraulic presses. Indeed each of these companies has Fritz Muller equipment, arguably the best in Europe. Jeep, on the other hand, has followed American practice in installing mechanical presses although each type of press has its exponents and indeed its advantages and disadvantages. The decision to install one or other is probably not important. The new facilities being installed (Iran Mazda and Zamyad) are similar to those of Iran National and Citroen. The rest of the automotive industry has a motley collection of home designed and built hydraulic presses, stretch presses and others which cannot be compared in terms of sophistication or performance to the equipment mentioned above. All that can be said is that these other companies have facilities which are adequate in terms of their current needs.

Press working, body assembly, paint and final assembly facilities account for the major proportion of the activities in the automotive industry in Iran. In addition, companies generally manufacture their own seats and interior trim utilising locally purchased material . Companies also manufacture wiring harnesses utilising locally produced wire, brake and fuel lines and other minor components such as dashboards and small sheet metal items. Amongst the truck producers Leyland, Zamyad and Kaveh assemble imported components to complete engines, gearboxes and axles. Both Iran National and Khavar now obtain engines from the Tabriz plant which is currently assembling Daimler-Benz engines.

The above mentioned facilities and operations constitute the norm of vertical integration in the industry at the current time. However, in a few cases companies go beyond this norm and produce other components even though outside suppliers already exist in the country. The company which has gone furthest along the road of vertical integration is Jeep which, in addition to components already mentioned, produces exhaust systems, leaf springs and is about to commence the production of wheels. Jeep Company's facilities for the production of these components are geared solely to their own needs and there is no intention to supply other companies in the industry. Similarly, the other companies facilities for the production of minor components (trim, seats, etc.) are tailored to individual requirements.

4.5 Capacity Utilisation

As was mentioned in Section 4.2, achievable capacity in the Iranian automotive industry stood at around 60,000 units per annum in 1350, this representing a maximum theoretical capacity of around 80,000 vehicle units per annum, both figures being on a single shift basis. The disparity between the maximum theoretical capacity and the achievable capacity recognises the difficulty of maintaining maximum hourly output of facilities for extended periods of time. In point of fact the above figures underestimate slightly the position at the time of writing. For example, Jeep company have recently been making modifications to their station wagon and utility vehicle assembly lines in order to eliminate bottlenecks, Iran National have recently installed additional capacity and Pars-Lux have been making efforts to improve labour productivity. With these changes, it is probable that achievable single shift capacity in 1351 will be at least 70,000 vehicles per annum with the maximum theoretical single shift capacity being over 90,000 vehicles per annum.

Table 4.5 shows the breakdown of the 1350 achievable capacity by company and by type of vehicles. In addition the Table gives approximate capacity utilisations involved. Inevitably, Iran National has both the highest absolute capacity and the highest level of utilisation of that capacity. In general, the passenger car manufacturers are operating at higher levels of utilisation than their commercial vehicle colleagues. The capacities and utilisations referred to are overall approximations for the plants involved. Obviously, all plants will have to a greater or lesser extent capacity mis-matches between the various sections. The bottle-neck on Jeep J and CJ vehicle assembly lines has already been referred to. Further examples of mis-matches can be found in Moratab where the basic problem will be the paint shop and in Iran National in certain sections of the press shop. Correction of these mis-matches often gives a large step increase in capacity. For example, Citroen had a severe bottleneck in its paint facilities which was overcome by duplication of booths to eliminate re-cycling. Apart from these restrictions on the utilisation of capacity imposed by individual sections of the physical facilities, utilisation can also be restricted by reduced labour forces. An example of such a case is Khavar whose facilities would allow reproduction of 12-14 vehicles per day but the current labour force restricts available capacity to 8 vehicles per day. For these reasons, any discussion of capacities must be in terms of nominal figures.

Looking to the future, existing plans call for an expansion in capacity of 12 vehicles per hour (28,000 vehicles per annum) by Iran National in its Peykan production and an expansion to 50-55 units per day (15,000 vehicles per annum) by Jeep company, both on a single shift basis. These plans alone would raise the maximum theoretical single shift capacity in Iran to 120,000 vehicles per annum. The timing of these increases in capacity is as yet uncertain, partly because of Jeeps present negotiations with potential foreign partners. However, the overriding note in all discussions with representatives of the Iranian automotive industry has been one of a reluctance to contemplate double shift working. Even companies such as Zamyad who are currently laying down new plants, envisage increasing capacity as and when the market justifies by provision of extra facilities rather than through double shift working. The reasons commonly cited for this reluctance are the increased cost of the second shift due to the payment of a premium on wages and a natural aversion on the part of Iranian workers to operate anything other than a single shift. As far as the first reason is concerned it will be demonstrated later in this report that labour costs will represent a very small proportion of the total cost of a vehicle. It is felt therefore that any increase in labour costs incurred by motor shift working will be more than compensated for by the increased utilisation of facilities. Furthermore, the natural reluctance of workers to operate a second shift is felt to be a myth as examples already exists in Iran of such a practice. The only valid argument (and this was not presented) against double shift working is a shortage of the necessary middle management personnel.

TABLE 4.5 ACHIEVABLE SINGLE SHIFT CAPACITY

COMPANY	PASSENGER CAR	JEEP/ LAND-ROVER	COMMERCIAL VEHICLE
INIM	20,000* (110%)	- -	4,500 (80%)
CITROEN	7,500* (60-65%)	-	-
JEEP	7,500 (60%)	3,500* (90%)	-
KHAVAR	-	-	3,500 (50-55%)
LEYLAND	-	-	1,100 (40-45%)
ZAMIAD	-	-	2,100* (55%)
MORATAB	-	3,000* (45%)	-
PARS LUX	-	-	500 (40%)
KAVEH	-	-	800 (30%)
MAZDA	-	-	3,000* (-)
TOTAL CAPACITY	35,000	6,500	14,700

*Includes pick-ups. (vannettes)

Figures in brackets refer to current level of utilisation.

4.6 Employment

As has already been mentioned total employment in the automotive industry now totals some 10,000 workers. In 1349 employment totalled just under 9,000 workers and Table 4.6 illustrates the distribution of these workers between companies with Iran National of course having the largest number. The distribution of these workers between direct operatives and indirect workers and staff is difficult to ascertain as definitions of direct and indirect workers vary tremendously from company to company. Certainly company returns to the Ministry of Economy are of no use as, not only does the ratio vary by orders of magnitude from company to company, but also from year to year for a given company. The figures presented in Table 4.6 are rough approximations in most cases. Once again, Iran National emerges as the best company and its ratio of 4 direct workers to each indirect worker is in line with that found in similar sized companies in for example Spain. The smaller companies naturally have a lower ratio of direct to indirect workers although that of Jeep would appear to be disappointingly low.

TABLE 4.6 EMPLOYMENT : 1348/1349

COMPANY	DIRECT INDIRECT	EMPLOYEES	PRODUCTIVITY Vehicles/Worker per annum	PRODUCTIVITY Sales/Worker US $
INIM	4:1	3,800	7	28,000
CITROEN	2:1	525	9	16,500
JEEP	1½:1	1,637	5½	19,700
KHAVAR	1½:1	607	3	45,000
LEYLAND	1½:1	440	1	18,000
ZAMYAD	-	400	2½+3	15,000
PARS-LUX	2:1	400	½	9,200
MORATAB	1½:1	340	3½	17,000
KAVEH	-	500	½	-
BUS CONSORTIUM	-	173	1	7,600
TOTAL	-	8,967	5	17,500

Table 4.6 also gives indications of productivity in terms of number of vehicles produced per annum per worker and also the sales per annum per worker. The former should be treated with some caution as the number of vehicles produced per worker is obviously influenced to a great extent by the type of vehicle produced and the product mix. For example, in the case of Iran National which according to the table would appear to have a relatively low level of productivity the number of passenger cars produced per worker involved in this section of the plant is probably about 10 per annum. By way of comparison, Table 4.7 presents some figures for productivity in the Spanish automotive industry in 1969. These figures cannot be compared directly with those in Table 4.6 for Iran as the local contents in the two countries and the levels of vertical integration in the various companies are not compatible. For example, the Spanish companies mentioned all produced their own major mechanical components in addition to carrying out body assembly, painting and final assembly operations. On the other hand, Chrysler did not manufacture all its own body pannels, some being imported from its French associate. As far as the total Spanish industry is concerned, virtually all components are manufactured locally although, of course, many by the auxiliary industry which is not included in the analysis above. In general terms it seems reasonable to suggest that the Iranian industry is still lagging behind Spain in terms of number of vehicles produced per annum per worker although in view of the relative stages of development reached the disparity is by no means excessive. Turning to sales per worker, the fact of a greater level of vertical integration and value added in Spanish companies again tends to favour the Iranian industry. Furthermore it must be remembered that vehicle prices in Spain are considerably below those for equivalent models in Iran.

TABLE 4.7 PRODUCTIVITY IN SPANISH AUTOMOTIVE INDUSTRY

	Vehicles/Worker per annum	Sales/Worker per annum US $
SEAT	11	12,500
CHRYSLER	4	-
ENASA	1	7,500
TOTAL INDUSTRY: SPAIN	5	9,000
BRAZIL	5½	16,000
ARGENTINA	5	13,000

NOTES:

1. SEAT produced 320,000 passenger cars and vannette derivatives working two full shifts.

2. Chrysler produced 36,000 passenger cars and vannette derivatives and 6,600 trucks, buses and minibuses - single shift.

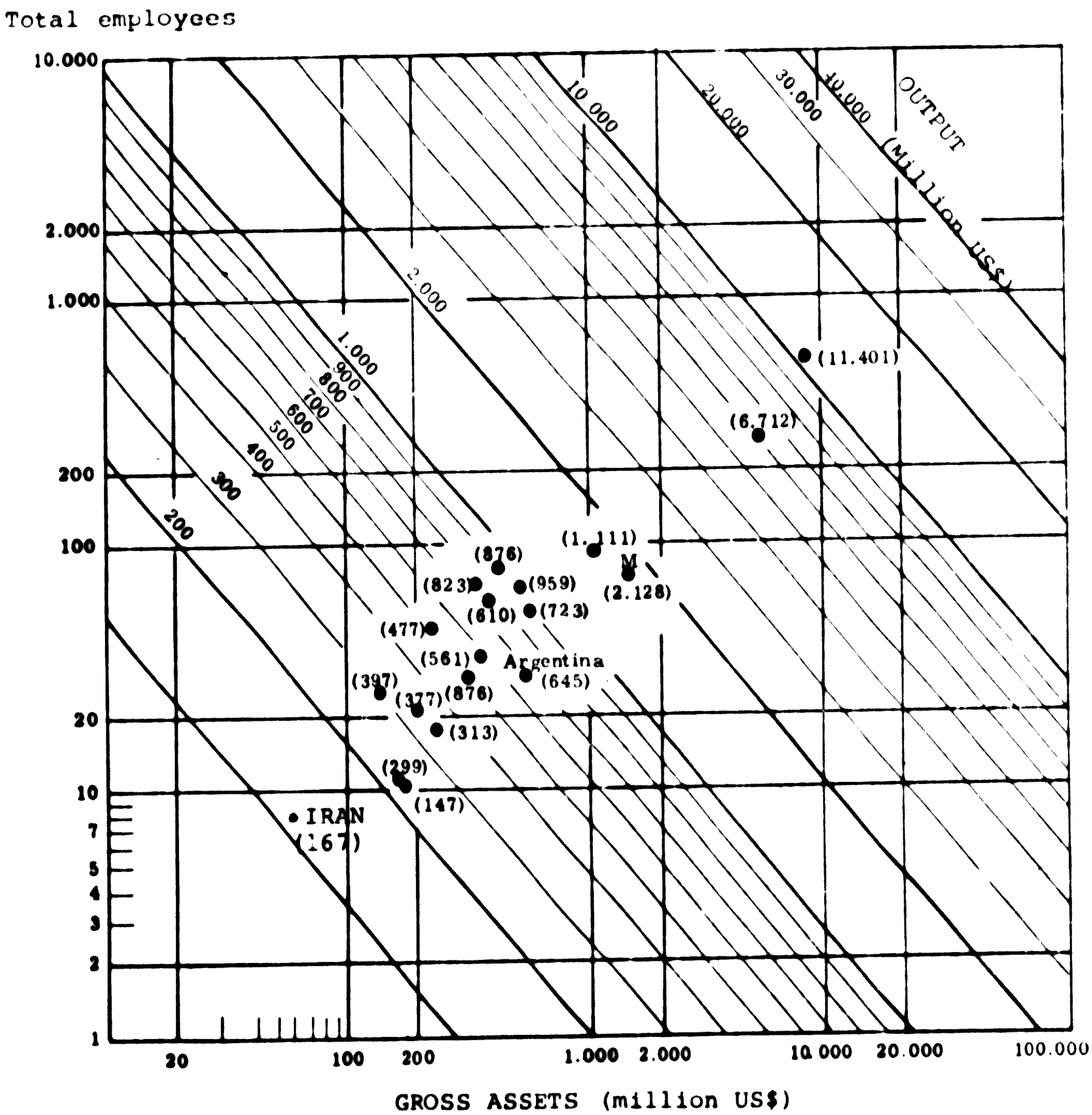
3. ENASA produced 10,000 trucks - single shift.

4. Total Industry Volumes 1969:

Spain	452,000
Brazil	350,000
Argentina	219,000

Table 4.7 also gives similar figures for the Brazilian and Argentinian industries and, once again, productivity in Iran would seem adequate at first sight. However, a word of caution should be sounded. As local content increases in Iran and, with it, levels of vertical integration in Iranian vehicle manufacturing companies increase through the production of other components, so the labour force required will increase without any effect of overall output. The clear necessity therefore is for levels of efficiency and productivity to improve parallel with increases in local content and integration. In other words increasing employment in the industry must be matched by increased investment (partly in more efficient facilities) and increasing output. Figure 4.1 illustrates in general terms the relationship between employment, investments and output and once again shows that the Iranian industry is more or less correctly placed given its present stage of development.

FIG. 4.1. PRODUCTION FUNCTION



Source: Comision de Estudios Economics de la Industria Automotriz Argentina.

So far the discussion on employment has been limited to that in the terminal industry in Iran. In addition to the 10,000 people employed in this industry there are presently some 5,000 people employed in the auxiliary industry including the manufacture of tyres, batteries, glass and other components. Furthermore, the demands of the industry for other materials and services (e.g., plastics, semi-finished metal products, oil, construction, transport, banking, etc.) contribute to employment in these sectors. As a rough estimate, based on the experience of other countries, one job in the automotive industry can be equated to about 2 jobs in these other industries. Finally, although they would be created in any case, even if vehicles were imported rather than locally produced, the motor vehicle industry is responsible for the creation of employment in the transport industry, in the motor vehicle sales organisations and in service stations.

Looking to the future, assuming that production of vehicles reaches 140,000 units in 1356 and that local content increases steadily, the terminal industry should be employing at least 25,000 people in that year. In the same year, the auxiliary industry should employ some 20,000 people and at least 25,000 of the employees in the supply and service industries (steel, plastics, banking, etc.) will be working directly or indirectly for the motor industry. Thus the projected growth of the motor industry should be responsible for creating at least 45,000 new jobs by 1356. In fact the multiplier factors taken are perhaps conservative. In addition to the above, the growth in ownership and use of motor vehicles should lead to the creation of at least a further 30,000 - 35,000 jobs in service stations and the transport industry.

In total therefore, the motor industry should be responsible for the creation of 80,000 jobs between 1350 and 1356. These increases are summarised in the following Table:

EMPLOYMENT CREATED BY THE MOTOR VEHICLE INDUSTRY IN IRAN

		TOTAL EMPLOYMENT		
		1350	1356	Increase
1.	Vehicle Manufacturing and Assembly	10,000	25,000	15,000
2.	Auxiliary Industry	5,000	20,000	15,000
3.	Proportion of Supply and Service Industry	10,000	25,000	15,000
4.	Service Stations,etc.	10,000	25,000	15,000
5.	Transport Industry *			20,000
	TOTAL			80,000

* 1 driver per 2 trucks and buses increase in park.

Turning to the availability and quality of labour, it has been found generally in Iran that there is no shortage of non-skilled labour. Furthermore Iranian workers seem to have a natural aptitude for the engineering industries and there has been little problem in training semi-skilled and assembly line workers. Neither is there a problem in training skilled workers although of course, the process involved takes time. Unfortunately, few companies in Iran (notable exceptions are Iran National and Khavar) have recognised the need for a formalised, long-term approach to the training of skilled workers. Even so few problems have existed in this area so far, although it is probable that as both quantitative and qualitative demands for labour increase in the industry with the introduction of component manufacture and higher levels of technology, more and more attention will have to be paid to training of skilled operatives.

The main problem existing already in Iran is a shortage of qualified middle management personnel, this problem has already been referred to as a possible hindrance to the introduction of multi-shift working. A further problem encountered amongst the companies having restricted attitudes to personnel management is one of labour turn-over. For example, Jeep Company has experienced labour turn-overs as high as 36% per annum at all levels in the organisation from semi-skilled workers to middle management. Obviously this problem is partly bound up with differentials in wage and salary levels between companies and this is the reason commonly cited. However, it is felt that the problem is somewhat deeper than this and it is significant that those companies which do have a responsible attitude to labour relations experience the lowest rates of turn-over.

4.7 Cost Structures and Prices

Detailed breakdownsof costs for the majority of vehicles produces in Iran at the present time are presented in a separate section of this report together with international price comparisons and other company information. Tables 4.8 and 4.9 present analyses of cost structures for representative ranges of passenger cars and commercial vehicles respectively. It should be pointed out that all these analyses are based on estimated cost structures obtained from various sources in Iran and interpreted by Metra. However, it is interesting to note the general consistency of the analyses which indicates a reasonable degree of reliability for the cost structures on which they are based. Furthermore, these cost structures are not out of line with those found in, say, Spain. Table 4.9 gives a breakdown of standard costs for a variety of vehicles in Spain. The most noticeable differences between the cost structures in Spain and those in Iran is the generally high rate of depreciation of tooling and machinery found in Iran, particularly in the case of passenger cars. As far as labour costs are concerned, in the case of buses with their inherent high labour intensity, these represent a significantly lower proportion in Iran than in Spain. Although productivity may be somewhat higher in Spain in this case than in Iran, labour costs are also higher (33-37 Rials per hour in Iran, around 50 Rials per hour in Spain). Turning to trucks and light commercial vehicles, it would seem that the lower wage rates in Iran are outweighed by a lower productivity than in the case of Spain. Finally, in the case of passenger cars, Iran National, whose productivity is now approaching that of some of the Spanish companies, seems to be taking advantage of the lower wage rates in Iran and, consequently, direct labour accounts for a smaller proportion of total cost than in the case of Spain. Jeep Company and Citroen on the other hand, probably due to their lower outputs are unable to match Iran National in this respect.

TABLE 4.8 COST STRUCTURE : PASSENGER CARS

		Peykan de Luxe	Citroen Dyan	Rambler Shaheen
1.	Total cost of materials	78%	66%	78%
2.	CIF Cost of import content	49%	47%	59%
3.	Direct labour	3.3%	7.1%	5.4%
4.	Other costs[1.]	14%	20%	
5.	Depreciation	4.4%	5.7%	17%
6.	Royalties	-	1.5%	
7.	Total cost	100%	100%	100%
8.	Ex-works price[2.]	109%	108%	110%
9.	List price	120%	113%	122%
10.	Retail Price	140%	130%	143%

1. Other costs include, indirect labour costs, general factory overheads, administration and selling costs, interest charges, taxation etc.

2. List price less estimated dealer mark-up

TABLE 4.9 COST STRUCTURE : COMMERCIAL VEHICLES

	Mazda Pick up	Truck 9 ton GVW	18ton GVW	City Bus
1. Total Cost of Materials	75%	72%	75%	82%
2. CIF Cost of Import Content	60%	53%	54%	54%
3. Direct Labour Costs	6%	6%	5%	4.2%
4. Other Costs *	8%	14%	13%	8%
5. Depreciation	9%	5%	4%	5.4%
6. Royalties	1%	3%	3%	-
7. Total Cost	100	100	100	100
8. Ex-works Price	-	-	-	-
9. List Price	110%	115%	115%	123%
10. Retail Price	115%	121%	121%	-

*Other costs include: indirect labour costs, general factory overheads, administration and selling costs, interest charges, taxation etc.

TABLE 4.10 BREAKDOWN OF STANDARD COST : SPAIN

	% Materials and Parts	% Labour (Direct)	% General Manufacturing Costs	% Amortization of Tooling and Machinery	% Total Standard Cost ptas
Passenger Cars - Utility	75-77	4-5	17-20	0.5-2	68,000
" " 1000 cc	77-78	4-5	18-19	0.5-1	73,000
" " 1200 cc	77-78	4-5	18-19	0.5-1	86,000
" " 1500 cc	78-79	4-5	17-19	0.8-1.5	---
" " Dodge	72-73	5-6	20-21	1-2	230,000
Trucks Light	70-71	4-5	21-22	2-3	140,000
" Medium	72-73	4-4.5	20-21	3-4	200,000
" Heavy	77-78	3-3.5	16-17	2-2.5	500,000
Buses Light	76-77	9-9.5	10-11	5-6	---
" Heavy	77-77	9-10	10-11	4-5	---

An important factor demonstrated in the cost structures presented is the enormous influence of costs of materials on the total cost of a motor vehicle. The Iranian industry has not yet suffered any major escalation in the materials costs as relatively few materials and parts are purchased locally. However, in the future, as local content builds up the indications are that increased efficiencies and productivities will be unable to counteract increasing material costs. Greater stress will be laid on this point in a later section. Conversely, increases in labour costs have a relatively minor effect on total costs.

Finally, on the subject of costs, it is interesting to note that the difference between the total cost and the list price (retail price less duties and taxes) is proportionately less than that found in most countries with a developed motor industry. However, dealer mark-ups in Iran are extremely low compared with other countries and it is felt that as a general rule, Iranian motor vehicle manufacturers achieve higher returns on sales than do for example, their European counterparts. It has proved impossible to evaluate these returns in Iran, such an exercise requiring full access to true company accounts. Furthermore, the picture is clouded by the separation in many cases of manufacturing operations from their associated sales companies. A further problem is that of credit which is generally provided by the companies themselves and on which, presumably, a profit is made.

Turning to international price comparisons, Table 4.11 gives relevant ratios for a number of vehicles produced in Iran. As a general rule the ex-works price in Iran is some 70% above that in the country of origin: this figure being that usually quoted by the industry and its overseas associates. List price (price to consumer less taxes is generally around 50-60% higher than in the country of origin due to the previously mentioned lower dealer mark-ups in Iran. As far as retail

TABLE 4.11 INTERNATIONAL PRICE COMPARISONS

	IRANIAN PRICE RELATIVE TO COUNTRY OF ORIGIN		
	Ex-Works	List*	Retail
Peykan de Luxe	1.55	1.38	1.30
Peykan G.T.	1.75	1.56	1.44
Citroen Dyan	-	1.52	1.40
Rambler Shaheen	1.8	-	2.1
Mazda Pick-up	-	1.36	1.4
9 Ton GVW Truck	-	1.88	2.0
18 Ton GVW Truck	-	1.71	1.8

* Includes dealer margins

prices are concerned there is no general rule as taxation policy in Iran and the various countries of origin is often markedly different and, consequently, affects the ratios generated. Of course, Iran National again emerges as the most commendable manufacturer in Iran and the retail price ratio of 30% above the equivalent price in the U.K. can be considered as a remarkable achievement.

4.8 Economic and Financial Factors

Economical and financial factors can be considered on two levels: firstly from the national point of view and secondly from an individual company point of view.

As far as the national interest is concerned perhaps the most important factor is the effect of the vehicle industry on foreign exchange. Table 4.12 gives an indication for a number of vehicles of the relationship between foreign exchange cost and ex-works price and also that of foreign exchange saving to ex-works price. The foreign exchange cost considered includes not only the import of CKD packs and other materials by the vehicle manufacturing companies but also the import content of locally purchased materials and parts together with the foreign exchange element in other manufacturing costs (e.g. depreciation). Foreign exchange savings represent the difference between the above mentioned foreign exchange costs and an estimated cif price and are compared with the ex-works price of the relevant vehicle in Iran.

In general it can be seen that Iranian companies are operating under conditions which entail a foreign exchange cost representing between 35-70% of the ex-works price in Iran. Passenger cars tend to be nearer 35% whilst the heavier commercial vehicles tend to be nearer 70%. On the basis of these figures it can be argued that local content represents between 30-65% of the ex-works price with the weighted average being 50%. However, local content is an expression which tends to create confusion as many definitions exist. For example, materials directly imported by the motor vehicle manufacturers in Iran generally represent 35-60% of the ex-works cost. On this

TABLE 4.12.

Vehicle	Foreign Exchange Cost Ex-Works Price	Foreign Exchange Saving Ex-Works Price
INIM		
Peykan GT	44%	20%
Peykan De Luxe	49%	24%
Light Truck	64%	-
Minibus	58%	-
Bus	47-50%	-
CITROEN		
DYAN Saloon	48%	11%
Vannette	60%	-
JEEP		
Shaheen Saloon	52%	5%
CJ-5 Utility	49%	-
MAZDA		
Vannette	60%	25%
Khavar Trucks		
6 ton G.V.W	69%	
9 ton G.V.W	62%	
19 ton G.V.W	70%	
Weighted Average for Iran	50%	18%

basis it could be argued that local content represents 40-65% of the ex-works price.

Turning to foreign exchange savings, these vary between 5-25% of the ex-works price in Iran. Apart from the actual levels of foreign exchange savings, the most significant and heartening fact is that no cases were found by Metra in which the foreign exchange cost involved in local production exceeded the estimated cif price of the equivalent vehicle. Of course it should be remembered that the cif prices used are estimates and do not take into account possible extraordinary pricing policies on the part of foreign manufacturers (dumping). Whilst on the subject of cif prices, it is interesting to note that the Iranian ex-factory price on a vehicle varies between 20-70% more than the estimated cif cost of the equivalent built-up vehicle. In the case of passenger cars the Iranian ex-factory price is 40-60% more than the estimated cif price.

Turning now to the financial structures of Iranian motor vehicle producers, although it has not proved possible to carry out analyses of reliable balance sheets, certain comments can be made:

- The gross assets of most Iranian motor vehicle manufacturers are heavily distorted as a result of the provision of credit by the companies themselves. Credit is provided against promissory notes which are included as bills receivable in companies'gross assets statements. It is not uncommon to find these bills receivable making up 70% of the total gross assets of the company. Furthermore, these bills receivable affect the current liabilities statement as they are generally used as sur ty for short term bank debts.

- Credit in fact works both ways, the company giving credit to customers and also receiving credit from suppliers. As in the case of bills receivable which makes up a large proportion of gross assets, documents payable make up a large proportion of current liabilities, (as high as 50%).

- Both fixed assets and issued capital are normally small in comparison with other figures in Iranian vehicle manufacturers' balance sheets. The former because of the heavy rates of depreciation usually employed whilst the latter is indicative of the high gearing ratios normally embodied in Iranian vehicle manufacturing operations.

The above comments and the typical balance sheet presented in Table 4.13 point to cash flow and liquidity problems in Iranian automotive companies. In fact discussions with representatives of the industry often confirmed these factors as causing problems. Elsewhere in the report it is suggested that the credit function in Iran should be formalised and, preferably, placed in the hands of the banking community. The reasons cited in other sections of this report for such a move dwelt on the influence of consumer credit on the market for particularly passenger cars. The above comments indicate that the removal of the credit role from the automobile manufacturers themselves would have a highly beneficial effect on cash flow and would put the companies on a much more stable financial footing.

Finally, on the subject of economic and financial conditions at a company level, two points are worth making:

- In the majority of companies stocks are now being turned over at the rate of between two and four times per annum (i.e. annual sales divided by closing stocks is generally between two and four). The higher figure is now approaching that achieved in, for example, Spanish companies.

- Value added in Iranian motor vehicle manufacturing organisations expressed as a percentage of annual sales is currently between about 25% and 35%. The passenger car manufacturers fall into the higher end of this range whilst the commercial vehicle manufacturers tend to have a lower level of value added in plant.

TABLE 4.13. TYPICAL BALANCE SHEET

ASSETS		
Fixed Assets:		9
Current Assets:		
Inventories	10	
Bills Receivable	72.5	
Cash	0.5	
Orders en Route	4	
Others	4	
Gross Assets		100
LIABILITIES		
Short term bank debts	25	
Creditors	2	
Documents Payable	38	
Long term debt	10	
Miscellaneous	10	
TOTAL		85
NET ASSETS		15
ISSUED CAPITAL		15

4.9 Protection and Control of Industry

The Iranian Government policy at the present time is one of the most absolute protection for the local motor vehicle manufacturing industry. Tariff rates on passenger cars are set at exceedingly high levels whilst the import of commercial vehicles is unauthorised except in special cases. Appendix A shows the tariff levels and import conditions imposed at the present time. In the case of passenger cars it can be seen that a sliding scale is imposed with the more expensive cars being subject to the highest rates of duty. As has been shown elsewhere in the report this protectionist policy has had a drastic effect on imports of vehicles which now account for 8% of the passenger car market. Imports of vannettes remain at a relatively high level but these will virtually cease with the introduction to local manufacture of the Mazda vehicle. Imports of buses are now at a negligible level although imports of trucks continue of oscillate around 1,000 units per annum. As far as the latter are concerned, the imports are due to a requirement, unsatisfied from local production sources,for particular types of vehicles. Again it is anticipated that these imports will decrease as local manufacturers meet these requirements. In the case of passenger cars it is interesting to note that vehicles currently imported are almost exclusively in the luxury car class. As has been mentioned these vehicles are subject to the highest rates of tariff, a factor which points to the extreme price inelasticity of this sector of the market. In effect, a group of people in the higher income groups exists which is prepared to pay virtually any premium in order to obtain luxury, performance and individuality in a motor vehicle. At the other end of the scale the small and medium car producers in Iran are now afforded virtually complete protection as imports of such vehicles have almost ceased. Clearly this sector of the market is much more influenced by price and a relatively small differential is sufficient to dissuade consumers from purchase.

Turning to the possible functions of tariffs, these can be grouped into three areas:

- Protection. Tariff levels can be set, as in the case of Iran, at levels which virtually eliminate imports, thus allowing the local industry to maximise its output and, hence, attain the greatest possible economies of scale.

- Revenue Raising. Tariffs obviously provide a source of revenue to Governments although, as far as finished vehicles are concerned, the desire for protection of the home industry has obviously outweighed any requirement on the part of the Iranian Government to raise revenue through tariffs on these goods.

- Control of the industry. Where tariff levels are set at levels which result in the price of imported vehicles being only slightly above that of locally produced vehicles, the local manufacturers are clearly subjected to external competition. In other words, the consumer is given a virtually free choice between purchasing a locally produced vehicle and an imported vehicle. This element of choice imposes a control on the local manufacturers not only in respect of price but also in terms of modernity of design, quality, etc.

In practice the functions which are intended are usually a blend of the above three possibilities. The emphasis on one or other of the possibilities will vary from country to country and from time to time depending on the state of development of the local industry concerned. In the case of Iran, it is natural to place the emphasis on protection in view of the stage of development of the local industry. However, given that some control of the industry is necessary, this emphasis on protection will mean the establishment of some other mechanism of control. In general, it is felt that the revenue raising function of tariffs should be of least importance.

Having examined the possible functions of tariffs it is interesting to consider how levels can be set. The most logical method of arriving at a suitable level is to set an effective rate of protection, this being a theoretical figure which takes into account cost differentials between Iranian manufacture and importation (the cost to the Iranian economy of substituting for imports). These cost differentials should logically be based on the ratio between retail price to the consumer of a locally produced vehicle compared with the retail price of an imported vehicle. This would automatically take into account the different distribution costs involved in the sale of locally manufactured as opposed to imported cars, and of course, must allow for the difference between retail prices in the country or origin and the cif export prices. In other words normal export pricing policies (possible dumping rates) must be taken into account. However, calculations based on retail price suffer from the disadvantage of perhaps implying effective rates of protection which allow companies to make excessive profits. The alternative is to base the effective rate of protection on the ratio between ex-works costs of the locally manufactured product and the cif price (again taking into account export pricing policies) of equivalent imported vehicles. As far as Iran is concerned, there is in fact little difference between the ratios involving retail price and ex-works price as the influences of municipal and other sales taxes and the generally higher dealer mark-ups on imported vehicles than on locally produced vehicles tend to cancel out.

Particularly in the case of passenger cars, the problem with effective rates of protection is that they are theoretical figures and fail to take account of consumer preference; the price inelasticity of demand. This effect can already be seen in Iran in the case of more expensive luxury cars and the levels of protection required to overcome this factor can be far in excess of those simply aimed at compensating for cost differentials. For example, in Iran the ratio between Iranian ex-factory price and cif price of the equivalent vehicle varies, in the case of passenger cars between about 1.4 and 1.7.

Neglecting other factors, this would imply a requirement for a tariff level of up to 70% thus bringing the price of the imported vehicle up to that of the locally produced vehicle. However, a considerable number of purchasers are willing to spend 560,000 Rials on an imported Peugeot 504 rather than be content with a Rambler Aria at 350,000 Rials. In other words a rate of protection equivalent to around 150% is insufficient to provide total protection. Of course, this is an extreme case and as has already been said, at the lower end of the market relatively small increases over and above the effective rate of protection are sufficient to limit imports. This factor is apparently implied in the structure of tariff levels presently operating in Iran as the highest rates apply to the most expensive vehicles.

As far as the future is concerned in Iran, it is inevitable that for some time to come the advantages of giving almost complete protection to the vehicle manufacturing industry will outweight the disadvantages. In view of the difficulty of assessing the rates of protection required to overcome not only manufacturing cost penalties but also price inelasticities of demand it seems reasonable to continue with tariff rates that are set at nominal, high levels. In this case, other mechanisms must be found by which the industry can be controlled in terms of prices, quality and satisfaction of the market demands. Clearly one of the best of such mechanisms is that of competition. However, given the industry volumes predicted it will be some time before Iran can support direct internal competition particularly in the case of passenger cars (e.g. the production of two models of medium sized car). On the other hand, an element of competition can be introduced through the maintenance of realistic price differentials between the various ranges. For example, given suitable price differentials, the cheaper variants of a large car will provide competition to the more expensive variants of a medium sized car. Obviously the extent of this competition is limited and additional direct controls are likely to be required. As the industry develops and market volumes increase so direct internal competition can be introduced by allowing duplication of models in the various vehicle categories and, in addition, tariff levels can be set more closely in line with effective rates of protection thus introducing the element of external competition. This pattern is one which has been followed generally, for example, in Spain[1]. As far as timing is concerned, it seems unlikely that Iran will be able to afford the luxury of direct internal competition within the next 5 years and certainly should not contemplate any major move towards admission of external competition.

As far as the direct control of industry is concerned, some mechanisms already exist within the Iranian Government structure. Control of prices is the responsibility of the price investigation department within the industry group of the Ministry of Economy. To date, the experience and performance of this department cannot be said to have been successful. To a large extent this is due to a lack of cooperation between the department and industry. The initial attempts at price control formulae which, in essence, allowed all direct costs such as, cost of imported components, customs duties, direct labour costs etc., together with depreciation, general manufacturing costs on a proportionate basis and an allowed percentage to cover sales costs, dealer mark-ups and profit. Whilst the attempt to simplify the control procedure is logical, the system did not operate successfully partly because of the ease of abuse. In the latter context, it is obviously easy to abuse a system in order to increase profits by over invoicing on imported components, these forming the largest single cost element involved in calculation of the allowable percentage for profit. As a result of experiences with this system, the department has now adopted a completely different procedure which involves investigating the cost structure of companies in great detail. For example, costs of every single component making up a motor vehicle are required by the department. This system suffers from two disadvantages: in the first place it is time consuming and, with the qualified resources at the disposal of the department decisions on price increases are subject to considerable delay; secondly even this system is open to abuse and still depends upon cooperation of the industry in providing accurate cost information;

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1. The main mechanism has been the introduction of internal competition although tariff rates have been reduced over the past decade.

perhaps a pious hope under the present climate within the industry as a whole. Furthermore, the system is still subject to preconceived ideas as to allowable profit margins which perhaps do not match the industry's own ideas of required profitability.

Having indulged in destructive criticism of the existing price control mechanism in Iran, it is necessary to indicate the improvements necessary. By far the most interesting and impressive experience in this context is that of Brazil which, in common with Iran,operates a system of protection through tariffs of the home automotive industry whilst controlling prices in that industry directly. The Brazilian Government has found it necessary to set up a price control department which in fact deals with a wide range of industries. However, within that department there is a group which is solely responsible for the automotive industry. The first important characteristic of this department is that it is completely separate from any other Government agency and, in particular, has no relationship with fiscal bodies. The group dealing with the motor industry is headed by an expert in that industry and, amongst the 20 or so full-time staff of the price control department as a whole, half are highly qualified personnel recruited directly from industry who have long experience of financial control. Including part-time personnel the total staff of the department numbers about 80. Thus not only has the department considerable resources but it is generally respected by industry as a whole and in particular, the motor industry group is recognised as highly competent. The avowed policy of the group is one of reasonable control over prices and not over profit. Thus its implicit function is to allow increased profitability provided that this is obtained by means of improved efficiency or productivity. In general, price control is achieved by means of allowance or otherwise of price increases. In other words in companies either singly or collectively[1]

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1. The choice of dealing with a price control department either collectively by industries' associations or singly with direct contact between individual companies and the department is left entirely to the industry.

apply to the department for approval of price increases and must justify these increases on the basis of increased costs. Of course, there are disadvantages in dealing solely in price increases, namely:

- All prices will be based on prices operative at an arbitrary point in time at which the control mechanism was instituted. This can cause problems if, for example, a company at that particular time was operating with a pricing policy which was artificial, and there may have been good reasons for the operation of such a pricing policy at the given time.

- The control of price increases allows companies to increase their profit to unacceptable levels as economies of scale and efficiency increase. In fact, in the case of the Brazilian price control department, as has already been mentioned, it is felt necessary to accept this possibility in order to win industry co-operation.

To some extent these problems are solved by the Brazilian department through periodic reviews of absolute price levels in the industry and discussion with companies aimed at the voluntary elimination of abuses. However, it should be remembered that, in the case of Brazil, the automotive industry has now grown to a degree which introduces internal competition as a natural control of prices. Having said this it is interesting to note that the price control department in Brazil feels that apart from its primary functions, a secondary function has been, and continues to be education. In order to provide the necessary information on costs etc., the industry has been forced to introduce more and more sophisticated cost and financial control systems. Furthermore, the price control department has been active in both promoting the introduction of these systems and in assisting the industry with expert knowledge.

Finally, the lesson to be learnt from Brazil is that price control can only operate effectively if there is a recognition of its necessity on the part of industry and co-operation between the industry and government. In order to achieve this co-operation, the price control department must be recognised as being competent and sincere in serving the best interests of both the country and industry.

Turning now to the question of control of quality, there are virtually no provisions for such control at the present time in Iran. All that exists are regulations governing rather more the use of vehicles than the construction. For example, there are regulations as to type of lighting etc.

Clearly the control of quality depends upon the existence of standards and specifications for vehicles. Standards tend to deal with detailed aspects of motor vehicles, for example, the construction and performance of individual components whilst specifications can be taken to refer to the overall aspects of performance of the complete vehicle. There are in effect no industry standards existing for vehicle components in Iran, individual companies tending to rely on their own standards or those of the licensor or foreign partner. Vehicle specifications are again set by the individual manufacturers and are of course embodied in applications for manufacturing licenses to the Ministry of Economy and in sales literature. Without the existence of either industry standards or indeed of testing facilities it is clearly impossible for the Government to exercise control over quality. Nor is the consumer able to exercise a control as the levels of protection of the home industry prevent sanctions of that industry through purchase of imported vehicles. Thus quality control is totally the responsibility of the manufacturer in Iran. At the present time, the large proportion of imported components ensures the maintenance of international quality standards to a certain extent. Furthermore, it would appear that all local manufacturers exercise to a greater or lesser extent control of quality embodied in their own manufacturing operations. Interestingly, this control of quality appears to be more strictly observed in those companies having the closest links with their foreign licensors or partners. For example, Iran Citroen which is a joint venture with the French company pays considerable attention to quality control. However, components manufacturers in Iran are generally criticised on the grounds of quality and there is a lack of adequate testing facilities even within the larger Iranian vehicle producers. Clearly therefore, as local content increases and more and more components are produced in Iran, so the possibility of reductions in standards increases.

A further point of utmost importance is that of safety. At the present time all components which have a direct bearing on the safety of a vehicle (e.g brakes, steering, etc.), are imported and there is no evidence to suggest that safety standards are being sacrificed at the assembly stage. Apart from the effect on safety of the quality of individual components, this aspect of vehicle performance is built in at the design stage. The fact that all Iranian automotive manufacturers are producing vehicles which have been designed by the world's major producers is in itself to some extent a guarantee of safety standards.

Looking to the future, apart from the overall vehicle specifications which will be inherent in the choice of models to be produced in Iran and set by the basic design, the following measures must be taken:

- Industry standards must be formulated progressively, particularly in respect of components to be produced in Iran. To some extent these standards can be based on international standards: national, industry or company standards of the world's major motor vehicle producing countries. However, certain of these standards will have to be modified to suit the Iranian environment.

- In addition to improved testing facilities amongst the Iranian motor vehicle and component manufacturers, a national body is required which can provide comprehensive testing facilities and can act as an arbiter for both component quality and adherence to vehicle specifications.

In both cases it is felt that the most logical approach is one of co-operation between the industry itself and Government bodies. Thus, component standards should be set jointly by the motor vehicle manufacturers, the component manufacturers and the Government in the shape of the Iranian Standards Institute; all these parties having interest in these standards. Similarly, the existence of comprehensive testing facilities benefits both the industry and Government and, of course, the consumer. Furthermore, it is suggested that the organisation responsible for testing could also develop a role in research and development. This function is clearly necessary as Iranian conditions differ from those encountered in the country of origin of the vehicles manufactured in Iran. It is known that in some cases development work involved in adapting vehicles for manufacture and use in Iran has been sub-contracted to independent development organisations in, for example, the U.K. This research and development role whilst serving a direct and essential purpose would also be useful as a training ground for Iranian automobile engineers.

To have credence generally, the organisation proposed would have to operate autonomously. However, this does not mean to say that it should be totally divorced from the industry. In fact, it is suggested that the organisation could be set up as an off-shoot of an Iranian motor vehicle manufacturers association. The individual manufacturers together with the Government would subscribe to the organisation on an annual basis and would participate in a governing body. This governing body should be responsible for overall policy decisions only; operational control of the organisation being delegated to professional management. In addition to the subscription which would give entitlement to representation on the governing body, to publications of general interest etc., the organisation would provide testing, research and development facilities and services for which fees would be charged. The research and development activities referred to will not be on the scale of those existing in developed automotive industries. Rather they will be oriented to the adaption of foreign designed vehicles to Iranian road and climatic conditions, driving habits and manufacturing methods. In some cases, development work will be required to allow the modification of designs for the incorporation of local materials and components.

4.10 Other Observations

4.10.1. Inter-Industry Co-operation

An overriding impression gained during fieldwork in Iran is one of almost total lack of co-operation within the motor industry particularly at top management levels. In fact detailed examples of this lack of co-operation, which, at times has been positively disruptive, are quoted in several places in this report. Even where direct competition exists between motor vehicle manufacturers there are enough problems of common and national interest to make industry co-operation absolutely essential. This fact is certainly recognised in developed motor industries where, not only do effective national industry associations exist, but also there is considerable contact and mutual assistance at an operational level between companies particularly in respect of production problems.

The Iranian industry is now reaching a point, in terms of size, where the beneficial effects of co-operation through an industry association would be considerable. However, it is obviously unrealistic to expect the present climate of mistrust to change overnight. In a case where an industry association exists working parties are set up to deal with such problems as market statistics, standards, etc. In the case of Iran, it may well be that the setting up of the previously mentioned testing facility and working party on standards together with the formation of working parties dealing with statistics and other problems of common interest would serve to illustrate the benefits to be obtained from co-operation. Eventually it is to be hoped that such demonstrations of these benefits would lead to the formation of an industry association, actively supported by the higher echelons of management and the owners of companies. Furthermore, such an association should extend its implicite belief in co-operation to co-operation with the Government in planning and control of the industry.

4.10.2. Management

One of the most serious problems facing the Iranian motor industry is that of a lack of adequately trained and experienced middle-management personnel. This problem has two effects:

- it acts as a barrier to expansion. For example the difficulty associated with the introduction of double shift working in Iran would be the provision of suitable middle management personnel.

- it leads to inefficiencies in production and inflated costs. Many of the Iranian automotive manufacturers have totally inadequate procedures for the control of products, costs, stocks etc. The lack of these procedures is partly due to low levels of awareness on the part of top management and partly due to a lack of resources at the middle management level to provide the information on which control can be based. It is also true, that in many cases, although there may be a desire on the part of top management to introduce these procedures, the necessary delegation of responsibility to lower levels of management is not acceptable.

To some extent a lack of qualified Iranian management personnel can be compensated for by the introduction of expatriot advisors. Clearly, this should be a short term policy; the ultimate aim being to train local personnel. Furthermore, expatriot advisors operating in wholly Iranian owned companies often find it difficult to achieve implementation of necessary management systems because their role is advisory and they have no executive authority. If, as seems likely, the imminent changes in the structure of the industry lead to joint ventures rather than licence agreements and, hence, a greater degree of involvement on the part of foreign manufacturers improvements in management techniques are inevitable. In addition, as a longer term policy, emphasis must be placed on formal and informal training of Iranian personnel. At the present time management training in Iran is almost exclusively on-the-job training. Management personnel are expected to learn from experience although this is an inefficient means of training.

Given basic levels of technical and/or economic education, the responsibility for management training clearly lies at a company level. However, it is unreasonable to expect all individual companies in the Iranian automotive industry to be in the position to provide the facilities for this training. As the problem affects the whole industry it seems reasonable to suggest that the industry as a whole should provide the solution. In fact this is one function which could be well served by the previously proposed Iranian motor vehicles manafacturers' association. Such an association, through a training deparment, should organise courses and seminars on all aspects of management possibly in conjunction with other national bodies such as the universities and with the participation of foreign experts in the respective fields.

In addition to these more formalised approaches to training, companies should attempt to improve the possibilities for on-the-job training. In this context, efforts should be made to encourage foreign associates to accept Iranian personnel into their own plants on a working/training basis.

5. AUXILIARY INDUSTRY

5.1 Existing Situation

Apart from the manufacture of components which is integrated into the existing Iranian vehicle manufacturing industry, few components are presently produced in Iran, in fact, the existing auxiliary industry is composed of the following operations:

- Tyres and tubes are produced by two companies, these being joint ventures with B.F. Goodrich and General Tyre Companies, both of the United States.

- Radiators for supply as original equipment are produced exclusively by Iran Radiator Company, a member of the Rena Industries Group.

- Leaf springs are produced exclusively by Zar Company again, a member of the Rena Industries Group. (The only exception is the in-house production of leaf springs by Jeep Company.)

- Exhaust systems are produced exclusively by Iran Muffler Company.

- Motor vehicle batteries are produced exclusively by Neru Company.

- Wheels are, or will be, produced exclusively by Rezaieh Company in Meshad, although Jeep Company are also commencing in-house production of their own requirements.

- Car radios, produced locally, details being given in the accompanying reports on domestic appliances.

- Other components such as rubber and plastic components and consumables such as paint, aluminium extrusions, oil, grease etc., are also purchased locally in Iran, being produced by a number of companies.

- A variety of components such as brake linings, rear axles, springs which are not supplied to the original equipment manufacturers but are sold on the replacement market.

In addition to the components mentioned above and those currently produced by the vehicle manufacturers themselves, Daimler Benz diesel engines are being assembled by Iran Diesel Engine Manufacturing Company in Tabriz (this being a joint venture between Iran National, Khavar, Daimler Benz and IMDBI). This assembly is the first phase of a programme which will lead eventually to local manufacture of these units. Iran National currently have plans to introduce passenger car engine manufacture in the near future. The programme involved is phased through initial assembly to actual manufacture. Iran National's programme will eventually include the provision of assembly, machining and foundry facilities, a detailed discussion of the costs involved being presented elsewhere in this report. Incidentally, it is apparently the intention of Iran National to supply the Daimler Benz diesel engine plant with various castings. Discussions are also underway between the Government, IMDBI and other Iranian parties with foreign companies aiming at the instruction to local manufacture of a number of components including: electrical equipment (generators and starters initially), bearings, spark plugs, shock absorbers.

Criticisms currently levelled at the existing components industry by the vehicle manufacturers involve price, quality and delivery. As far as price is concerned, Table 5.1 presents comparisons between prices in Iran and Spain. Whilst these price comparisons can only be indicative as the components involved are not strictly comparable it does appear that with one or two exceptions component prices in Iran are very approximately double those found in Spain. One interesting exception is that of tyres where, apparently, prices in Iran were at one time excessively high. However, the Government involved itself directly in this question and, as a result, prices have fallen to a level which can be regarded as quite acceptable. Up to the present time, a relatively high price of Iranian produced components has had little effect on industry costs as purchases of these components still represent a small percentage of the total cost of a vehicle. For example, excluding steel sheet, total local pruchases account for just over 10% of the standard cost of a Peykan G.T. Looking to the future however, it is clear that increased local content will involve a much greater influence upon overall costs of individual component costs. For example, it is estimated that a locally manufactured Daimler Benz diesel engine will cost the vehicle manufacturer some 30% more than the equivalent imported product. In the case of a light truck, (up to 3 tons capacity) the local manufacture of this component alone will add over 6% to the ex-works price of the vehicle. In fact it is probable that the effect will be greater as initial estimates of cost differentials between local manufacture and imports tend to be conservative at the project evaluation stage and are generally exceeded in practice.

Turning to the criticisms of quality, it is true that Iranian component manufacturers have fallen down from time to time on this aspect, for example, in the cases of radiators and springs. However, in these two cases the recent or imminent introduction of more advanced technology in manufacture should improve quality. Furthermore, by criticising their component suppliers it is felt that the Iranian motor vehicle manufacturers are also criticising themselves. It is obviously incumbent upon the motor vehicle manufacturer to assist as far as possible the component supplier in setting quality standards, in instituting adequate quality control and testing procedures and in fact in attaining adequate manufacturing methods.

5.2 Future Component Manufacture

In general, criteria should be set against which proposed projects can be judged. Perhaps the most important criterion should be that of local manufacturing cost versus the cost of the imported component to the motor vehicle manufacture. If, as seems reasonable to suggest an overall criterion is the maintenance or reduction of overall vehicle prices in Iran then the projects should only be accepted if the price of the locally produced products is similar to the total cost of the imported quivalent. In this context, it is interesting to note that CKD packs generally cost the Iranian vehicle manufacturer between 20% and 50% more than the cif cost, allowing for customs duties, interest charges etc. Further, the cif cost is normally some 15% above the basic or ex-factory price in the country of origin excluding boxing charges etc. Thus, the total cost to the Iranian motor vehicle manufacturer of imported components is generally between 35-65% above the ex-factory price in the country of origin. However, when considering local production of a component, it should be noted that deletion allowances are generally some 15-20% below the ex-factory price in the country of origin. Thus any projects which enable components to be produced in Iran under conditions where the ex-factory price does not exceed 25-50% above that in the country of origin should have little or no effect on the overall price of the vehicle.

A case in point is the Iran National engine manufacturing project. In this case, the ex-factory price in the country of origin is about £77, the cif price is £92 (ex-factory plust 20%), whilst the total cost is £134 (cif plus 45%). The total cost predicted for the locally manufactured engine (including duty on imported separate engine parts at 5% ad valorem plus 5% cbt) is £116 or 50% above the ex-factory price in the UK. In fact, assuming that the deletion allowance on the engine is 20% less than the ex-factory price, the saving to Iran National through deletion of the engine is £120 and, therefore, local manufacture represents a saving on the overall cost of production of a vehicle of about £5. Of course, an additional saving would be found if customs duties were waved on the imported components required to manufacture the engine in Iran. In any case the fact that there is a net saving to Iran National represents a justification for approval of the project.

TABLE 5.1. COMPONENT PRICES - COMPARISON IRAN AND SPAIN

ITEM	UNIT	UNIT PRICE RIALS	
		IRAN	SPAIN
1. Battery (12 v 36 amp hour)	unit	1,650	600
2. Tyre and Tube (cross ply)	"	800	700
3. Radiator top cap	"	1,836	950
4. Radio including aerial	"	3,650	2,200
5. Steel Sheet	Kg	21.5	23
6. Paint (final coat)	Kg	168	90
7. Underseal	Kg	195	25
8. Carburettor	unit	-	460
9. Dynamo	"	-	820
10. Voltage Regulator	"	-	290
11. Wiper Motor	"	-	520
12. Ignition Coil	"	-	135
13. Headlight assembly	"	-	165
14. Brake master cylinder	"	-	150
15. Clutch master cylinder	"	-	120
16. Windscreen	"	-	450
17. Steering ball joint	"	-	115
18. Horn	"	-	85
19. Spark plug	"	-	17
20. Clutch Assembly	"	-	950

(continued)

TABLE 5.1. (Continued)

21. Seat Spring Assembly (Rear Back)	unit	230	250
22. Piston	"	-	190
23. Fuel Pump	"	-	130
24. Diesel Injection Pump for			
Light Truck	"	-	5,000
Medium Truck	"	-	8,500
Heavy Truck	"	-	11,000
25. Shock Absorber	"	-	180

*Price to Original Equipment Manufacturer.

Except in the cases where comparisons with Iran have been made, or where otherwise stated, the prices quoted for Spain are those for a 1,000-1,200 cc passenger car.

TABLE 5.2. APPROXIMATE PERCENTAGES OF TOTAL VEHICLE COST ACCOUNTED FOR BY VARIOUS COMPONENTS.

- Engine, Anciliaries and other major mechanical components			33%
of which	Basic Engine	12%	
	Carburettor & Fuel Pump	0.7%	
	Clutch	1.0%	
	Radiator	0.9%	
	Pistons (set)	0.1%	
	Suspension and steering	3-4%	
	Wheels	1.0%	
- Electrical Equipment			5%
of which	Dynamo	1%	
	Starter	1%	
	Battery	0.7%	
	Lights	0.5%	
	Regulator	0.4%	
	Harness	0.4%	
- Tyres and Tubes			4.0%
- Other Rubber Components			1.6%
- Steel, Profiles, Sheet Components bodywork and other metallic parts			13%
- Glass			1.5%
- Paint, etc.			1.2%
- Trim, Textiles, etc.			2.5%
- Others			10.3%
	TOTAL		72%

In addition to the question of cost savings or otherwise accruing to the motor vehicle producer from local manufacture of components other criteria must be taken into account. These include :

- the proportion of the total vehicle cost represented by the component i.e. the effect on local content.
- The degree of labour intensity involved in manufacture and the effect on employment in the country.
- The effect on foreign exchange requirements of local manufacture as opposed to import.
- The economies of scale required for cost competitive local manufacture and their relation to local demand and the production technology most suitable.

Table 5.2 indicates the degree of importance of various components within the cost structure of a finished vehicle. Table 5.3 indicates the relative levels of labour intensity embodied in various aspects of motor vehicle component manufacture. Obviously, these costs and cost structures can only be assessed in relation to firm proposals and detailed project analyses. Furthermore, the foreign exchange requirements and economies of scale involved will be entirely dependent upon the make-up of the individual projects. However, Table 5.4 indicates the minimum annual outputs for the manufacture of a number of components. These should, of course, be treated with extreme caution as minimum economic plant sizes will depend on a wide variety of factors (manufacturing methods, local costs, etc.).

TABLE 5.3. LABOUR INTENSITY OF AUXILIARY INDUSTRIES

	% Of Total Cost	
	Raw Material	Labour
Tool Making	33	24
Ferrous Foundry	40	20
Forging	51	18
Electrical Equipment[1]	55	17
Rubber Components	63	17
Ignition) Machining) Non-Ferrous Foundry) Instruments)		15
Radiator Carburettor & Fuel Pump Starter Motor/Generator Press Work	76) 52) 60) 60)	13-14

1 Harness, switches, lampholders, regulator, etc.

TABLE 5.4. NOMINAL MINIMUM LEVELS OF OUTPUT FOR THE PRODUCTION OF VARIOUS COMPONENTS

Component	Minimum Annual Output
Petrol Engine (Passenger Car)	60,000 *
Diesel Engine	6,000
Bodywork	100,000
Pistons	150,000
Tyres	400,000
Battery	20,000
Wheels	150,000
Electrical Equipment	75,000
Spark Plugs	500,000

*100,000-180,000 if all components produced locally

APPENDIX A

IMPORT TARIFFS AND TAXATION

1. IMPORT TARIFFS

1.1 Vehicle Section

Tariff No.	Description	Import Duty	C.B.T.
890	Automobiles, assembled or unassembled*		
A1	up to 100,000 rials	25% a.v.)	
A2	100,001 - 200,000 rials	30% a.v.)	200%
A3	over 200,000 rials	50% a.v.)	
	200,001 - 250,000 rials)		200% for 200,000 rials & 300% on remainder.
	250,001 - 300,000 rials)	50% a.v.	220% for 250,000 rials 400% on remainder.
	over 300,000 rials)		250% for 300,000 rials 500% on remainder.

NOTE: In the case of imported cars, assembled or in detached parts, the minimum value for payment of C.B.T. will be that of the latest model with its ordinary parts and equipment irrespective of the age of the imported vehicle. The provisions shall not apply to detached parts for local assembly plants and factories. Cars with diesel engines are unauthorised.

890-B	Vehicles for common carrier purposes (coaches, buses)	20% a.v.	20%
890-C1	Vehicles for transport of lquids (tankers)	25% a.v.	-

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*Subject to prior approval of Ministry of Economy
a.v.: ad valorem C.B.T.: Commercial Benefit Tax

Tariff No.	Description	Import Duty	C.B.T.
890-C2	Goods Vehicles (including fork lift trucks*)	15% a.v	20%
	Vans up to 1 ton capacity	15% a.v	35%
	Diesel lorries of 8 tons capacity and over, dumpers	15% a.v	20%
890-D	Electric Vans	35% a.v	5%
890-E1	Road sweepers, cleaners, etc; fire engines, fire escapes	15% a.v	-
890-E2	Other vehicles	25% a.v	5%

NOTE: Cold storage trucks and refuse trucks for municipalities and trucks for special purposes (e.g. Euclid), are exempt from C.B.T.

Tariff No.	Description	Import Duty	C.B.T.
891	Vehicle Chassis	10% a.v	10%
	Chassis with Cab	25% a.v	10%
	Chassis with 'trailer pullers' 200 h.p and over	25% a.v	25%
892	Body Assembly	25% a.v	60 rials per kg
893	Components and detached parts of automobiles and tractors, finished or otherwise, not elsewhere specified:-		
A	component parts of bodies	20%	60 rials per kg
B	component and parts n.e.s	20%	20 rials per kg
	radiators	20%	20 rials per kg plus 15%

*Subject to prior approval of Ministry of Economy
a.v: ad valorem C.B.T: Commercial Benefit Tax

<u>NOTE</u>: The following items are unauthorised imports.

1. Chassis and related parts
2. Rear and front bumpers
3. All bent and pressed parts of the body (including driver's cab, front frame of the doors on both sides and the floor)
4. Truck stake-body and parts thereof
5. Spring and hub and clip (permissible for trucks exceeding 15 tons)
6. Radiators and parts thereof
7. Fan pulleys
8. Fans
9. Air filters
10. Bonnet of engines, mudguards and parts thereof
11. Seats and upholstery
12. Exhaust-pipe, muffler and parts thereof
13. Fuel tank
14. All the electrical wiring with clamps

1.2 Articles other than in Vehicle Section

Tariff No.	Description		Import Duty	C.B.T
373	Hose and tubing, combined with textile material or metal	per kg	30 rials	-
374-A	Transmission belts	per kg	30 rials	-
375	Rubber tyres:-			
A	solid	per kg	5 rials	-
B-2/1	motor car	per kg	15 rials	15 rials
-3/1	goods vehicle	per kg	7 rials	5 rials
-3/2	bus	per kg	7 rials	5 rials
-3/3	tractor	per kg		-
860-A	Accumulators	per kg	25 rials	10 rials
864	Electric ignition apparatus		30%	30 rials per kg
866-2	Electric bulbs for autombiles		30%	-
868-B/1	Radios		25%	75%
873-B/3	Cable harness	per kg	20 rials	15 rials
878-1	Switches, plugs, sockets, etc.		30%	200 rials per kg
-2	Other electrical regulating apparatus		30%	-
917	Thermometers, etc.		25%	5%
919	Speedometers, etc.		25%	5%
920	Pressure gauges, etc.		25%	20 rials per kg
929	Clocks for automobiles		30%	-

Weight Basis
Specific rates of import duty and commercial benefit tax are levied on the net weight plus the immediate packing.

Ad Valorem = c.i.f value

Additional Taxes

1. Charity Tax of 1½% of import duty plus commercial benefit tax.

2. Municipal Tax of 6% of import duty plus commercial benefit tax.

3. Port taxes of 75 rials per metric ton.

4. Registration of order fees = 4% of amount of order.

Tariff No.	Description		Import Duty	C.B.T
	Inner tubes:-			
375-C-2/1	motor car	per kg	20 rials	-
3/1	goods vehicle	per kg	10 rials	-
3/2	bus	per kg	10 rials	-
3/3	tractor	per kg	10 rials	-
642-D	Other asbestos manufactures	per kg	40 rials	-
668-B	Mirrors	per kg	50 rials	100 rials
669	Safety glass	per kg	20 rials	30 rials
732-A	Leaf springs	per kg	6 rials	10 rials
-B	Tubular springs	per kg	15 rials	7 rials
746	Spanners, etc.	per kg	15 rials	-
823-A-2/2	Automobile engines - "lightweight" (e.g. 4 cyls = up to 300 kg; 6 cyls = up to 500 kg)		5%	15% plus 20 rials per kg
856	Ball and roller bearings		10%	15% plus 20 rials per kg

2. TAXATION

Sales Tax is levied according to the type of car on a fixed sum basis rather than as a percentage of price or cost. In addition a municipal duty is levied on the basis of 5% of list price. The following examples illustrate the make up of total retail price:

Vehicle	List Price	Sales Tax	Municipal Duty @ 5% of A	Retail Price
	A	B	C	
Citroen Dyan	157,500	15,000	7,875	180,375
Peykan Deluxe	216,500	25,000	10,850	252,350
Rambler Shaheen	295,000	35,000	14,750	344,750

In the case of commercial vehicles, sales tax is not levied but municipal duty is applied; again at the rate of 5% of list price.

Although sales tax is not levied on a percentage basis, it is interesting to note that it does tend to favour the lower priced cars, although the differentials are small. For example, sales tax represents 8.3% of the retail price of a Citroen Dyan, 9.9% that of a de luxe Peykan and 10.1% that of a Rambler Shaheen. In the case of a Rambler Aria (the "luxury" version of a Shaheen) however, this percentage is only 8.6%.

APPENDIX B

IMPLICATIONS OF AGREEMENT BETWEEN JEEP COMPANY AND GENERAL MOTORS CORPORATION

Reference has been made in the main body of the report to various negotiations between Iranian and foreign motor vehicle manufacturers. At the time of execution of the present study none of these negotiations had reached a definitive stage. However, since the preparation of the draft report, a major development has taken place in the form of an agreement between Jeep Company and General Motors Corporation of the USA. Broadly speaking this agreement involves the setting up of a joint venture between General Motors Corporation and Iranian interests, based on the existing Jeep Company facilities. It is believed that General Motors will have a 45% participation in the equity of the new company; a further 45% of the equity being in the hands of Mr. Akhavan, the present owner of Jeep Company, and the remaining 10% held by other Iranian interests.

The main purpose of the venture is to provide a replacement vehicle for the American Motors Rambler automobiles presently manufactured by Jeep Company. Of necessity, in view of the manufacturing licence situation in Iran, this new vehicle will be a six cylinder car. This being the case, the vehicles in the General Motors range, which could be considered, are the Chevrolet Impala from the USA, the Opel Commodore from Germany, the Vauxhall Cresta from the UK, and the Holden from Australia. Of these the Vauxhall Cresta can be ignored as it is due for replacement in the near future and therefore its model life is limited. Turning to the Chevrolet Impala, whilst this vehicle is extremely well thought of in Iran it could not be put on the market at a price which would provide competition to the top end of the Peykan range. Rather, it would be aiming at the Group 10 (over 500,000 rials per annum) income groups where its market potential would be limited to perhaps 10,000 vehicles per annum. It would, of course, provide competition to existing imported makes which also tend to be bought by the highest income group. However, these imports would not be eliminated as consumers will be wealthy enough to exercise freedom of choice and a quest for individuality.

As in the case of the Chevrolet, the Opel already has a good reputation and, indeed, has gained a relatively high degree of acceptance in the Iranian market. Furthermore, the Commodore has recently been completely re-designed and therefore has a long model life ahead of it. It should be possible to produce this vehicle at a price differential which would afford a degree of competition to the other end of the Peykan range although it should be noted that the new Commodore has independent rear suspension.

As in the case of the Opel, it should be possible to produce the Holden at a price differential which will offer competition to the top end of the Peykan range and create a market for the vehicle in 1356 of around 20,000 units. The advantages of the Holden are that it is relatively simple and robust, having been designed for Australian conditions which are not dissimilar to those encountered in Iran. Furthermore, General Motors are introducing the Holden to local assembly in South Africa and, probably, the Philippines. It is thought that there is no intention to produce, for example, body panels in South Africa, although these would certainly be produced in Iran. Therefore, there seem to be distinct possibilities for interchange of components if the Holden is selected. It should also be remembered that the experience of Holden as a company is much more akin to the future development of Jeep Company than that of European or American operations of General Motors.

Up to the present, General Motors have only given serious consideration to the manufacture of passenger cars in Iran. However, they are aware of the gap in the commercial vehicle product range (the 30 cwt van, platform truck, microbus range) which could be filled from the Bedford range in the UK. General Motors are also aware of the existence of the Pars Lux manufacturing licence for this type of vehicle, although no concrete discussions have taken place between the two companies. In addition to these lighter commercial vehicles, it should be noted that General Motors with for example, Bedford, are in a position to supply a wide variety of commercial vehicles and buses. Furthermore, they seem flexible in their examination of possibilities; being willing to make up hybrids in order to limit the range of components required.

Looking further ahead: General Motors would be in a position to introduce passenger cars from 1100 cc upwards; having the Vauxhall Viva range in the UK and the Opel Kadett in Germany. Thus, the company would be in a position to offer competition to the planned Iran National vehicles as and when this is considered desirable.

Finally, mention should be made of General Motors component activity. Not unnaturally General Motors have within the group a wide variety of component manufacturing operations. Taking the AC-Delco divisions, component manufacturing covers spark plugs, filters, all electrical equipments, braking systems, bearings and transmissions. It has been General Motors policy to concentrate, as far as possible, manufacture of components in their overseas areas of operations. In the UK, for example, AC-Delco have one major works near Liverpool which supplies components not only to Vauxhall Motors UK but also to other General Motors operations.

APPENDIX C

ACKNOWLEDGEMENTS

Our thanks are due to the many people who co-operated in this study and a list of the companies and organisations these people represent is given below:

IRAN

Ajure Company
Aladdin Industries Ltd
Ardel Company
Arj Corporation
Azmayesh Industrial Company
Bank of Iran and the Middle East
B.M. Gas
Butane Gas
Calay-e-Electric Company
Electro Radar Company
ESB Company Iran
General Industrial Company
General Iran Electric
General Steel (Pars America)
Iran Citroen Company
Iran Radiator Company
Industrial Metallic Sabra
Industrial Mining and Development Bank of Iran (IMDBI)
Industrial Calery Ltd
Industrial Credit Bank of Iran (ICB)
Institute of Standards and Industrial Research of Iran
ICMC
Iran Gas
Iran Industrial Autobus Manufacturing Consortium
Iran National Industrial Manufacturing Company
Iran Mazda Company
Iran Muffler Company
Iran Cylinder Company
Jeep Company
Khavar Company
Kaveh Company
Kofard Company
Khorram Company
Leyland Motors Iran
Leyland Diesel Iran
Lord Electric Company
Mofid (Bel-Air)
Motemadi Company
Moratab Industrial Company
National Iranian Gas Company

Orsagas Company
Pama Company
Pars Lux Company
Pars Electric
Pars Toshiba
Plan Organisation
Philver Company
Persigas
Pars Machine Company
Philips Company Ltd
Plaskokar Company
Polar
Radio Electric Iran
Radio Shahab Company
Radio, Television Iran (RTI)
RCD Secretariat
Said Varasteh Industrial
SEIG Company
Sha Morhi Company
Tehran University, Department of Economics
Transpic Company
Teh Don Company
Universal Company
Zamyad Company
Zar Company
Zagross Company
Zeh Company

AUSTRALIA

Federation of Automotive Products Manufacturers
Electrical Appliance Manufacturers Association
Australian Automobile Manufacturers Association
Customs and Excise Department
Smiths Industries Ltd
Malleys Ltd
Australian Institute of Refrigeration, Air Conditioning and Heating
British Leyland Motors (Australia)
Email Ltd
National Springs Ltd
International Harvester
General Motors - Holden
Australian General Electric
Repco Ltd
Robert Bosch (Australia) Ltd
Australia and New Zealand Bank
National Bank
Various Government Departments

UK

AGB Ltd
British Leyland Motor Corporation
Ford of Europe Inc.
Society of Motor Manufacturers and Traders
Motor Industries Research Association
Clancy Brothers Ltd
Joseph Lucas Ltd
Hoover Ltd
Parkinson Cowan
Department of Trade and Industry: HM Government
British Electric Appliance Manufacturers Association
Customs and Excise Department

SPAIN

Chrysler-Barreiros S.A
SEAT
Philips (Espana)
IBELSA
CAPESA
EDESA
University of "Deusto"
Banesto (Banco de Credito Espaniol)
Bolsa de Madrid
Previtecnia
Ministries and Departments of the Government
Instituto Nacional de Estadistica
"Desarrollo"

GERMANY, FEDERAL REPUBLIC

Daimler Benz AG
Verband der Deutsche Automobilindustrie

USA

Westinghouse International
General Electric
Philco-Ford
British Industrial Development Council
American Automobile Manufacturers Association
General Motors (International)
Industrial Bank for Reconstruction and Development
International Finance Corporation
Various Government Departments

JAPAN

Japan Machinery Federation
Japan Automobile Manufacturers Association
Dodwell
Japan Automobile Parts Industry Association
Toyota
Tokyo Shibaura (Toshiba)
Toyo Kogyo (Mazda)
Nissan Motors
Hitachi
Japan Electric Appliance Manufacturers Association
Matsushita Electric
Electronics Industry Association of Japan
Industrial Marketing Consultants Ltd
Plan Organisation
Various Government Departments

MEXICO

Industrias Electricas Mexicanas
SOMEX
Banco de Mexico
Philips Mexicana
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Asociacion de Fabricantes de Aparatos Domesticos
Asociacion Nacional de Fabricantes de Productos Automotriz
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UNIDO staff in Mexico

BRAZIL

Philips Brazil
Ford Motor Company Brazil
Volkswagen do Brazil
ANFAVEA
IPEA
Ministries and Departments of the Government
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Ass. Bras. da Industria Electrica e Electronica
Federacao de Industrias do Estado de Sao Paulo
Bank of London and South America

ARGENTINA

FIAT-Concord
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Bank of London and South America
Camara de Artefactos para el Hogar
Camara de Refrigeracion
Asociacion de Fabricantes de Receptores de Television
Camara Industrias Electronicas
Direccion de Analysis de Coyuntura
"Business Trends"
Ministerio de Industria
Orbis
SIAM di Tella
Subsecretaria de Desarrollo
Philips Argentina
Consejo Tecnico de Inversiones SA

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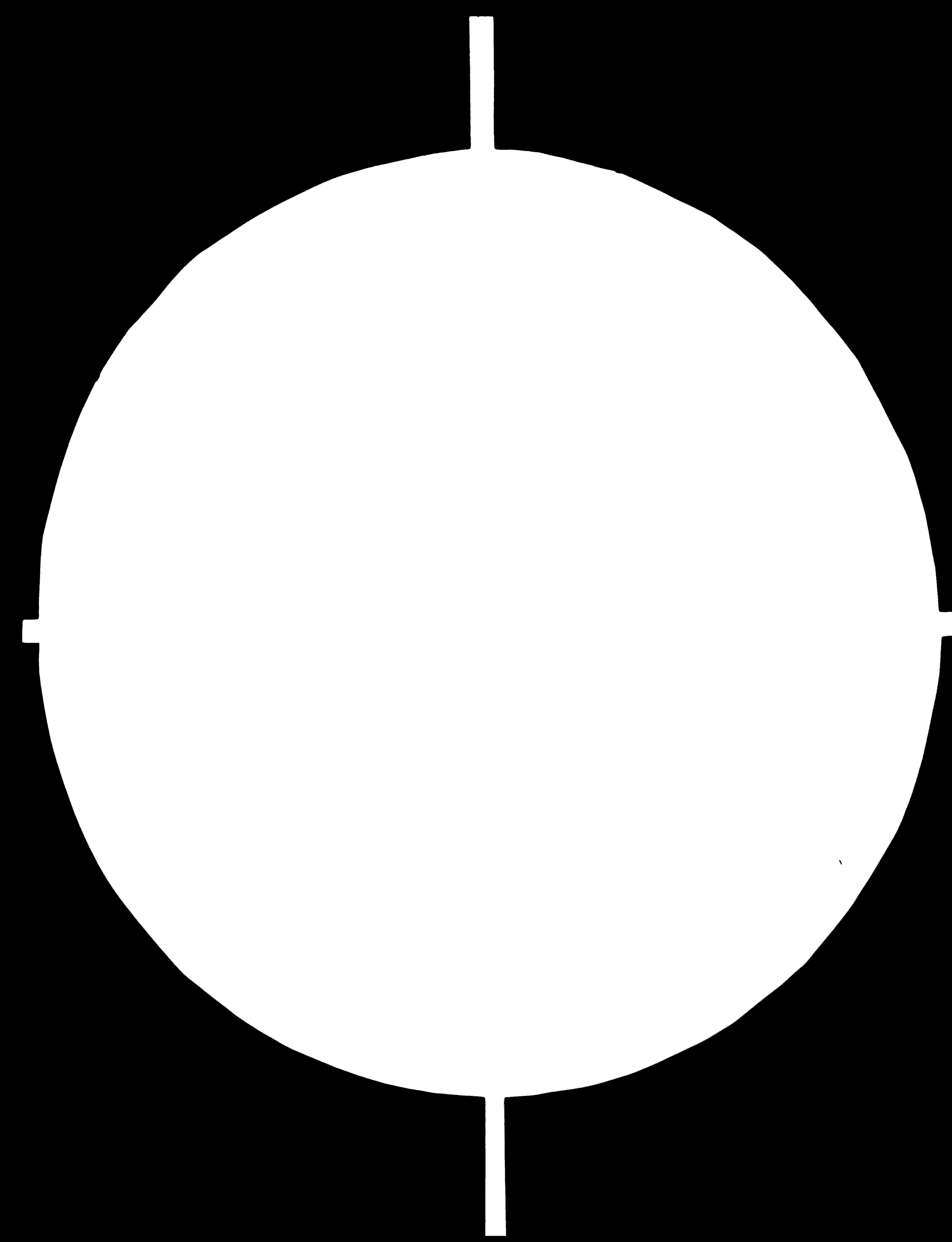

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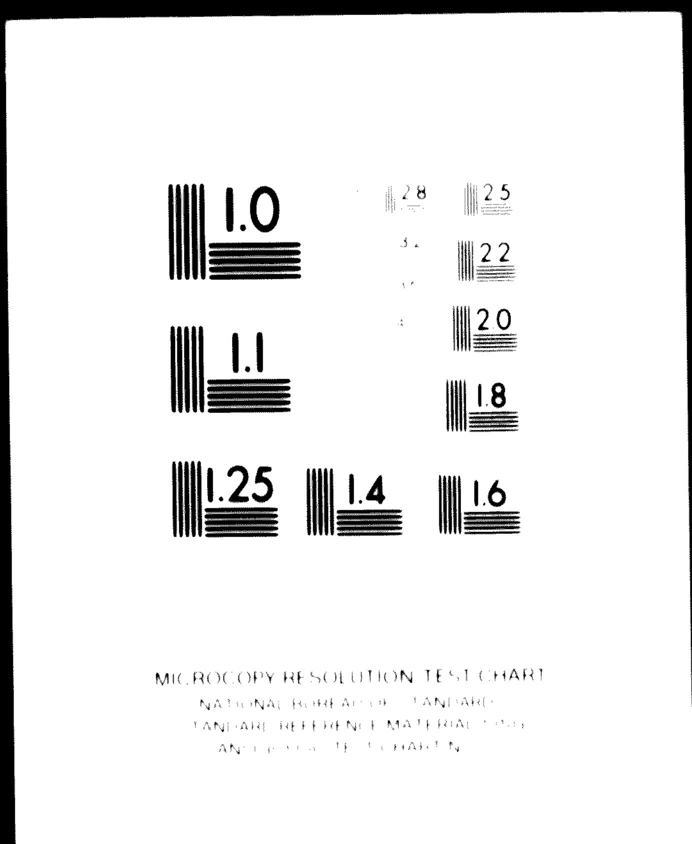

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A STUDY OF THE AUTOMOTIVE MARKET AND
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10069
(2 of 2)

VOLUME 2: Company Analyses

October 1972

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Particular mention should also be made of two members of the Ministry of Economy Staff, Miss F. Baghari and Mr. A. Nishaboori, who were involved throughout the project including a time spent in the Metra Home Office in London under U.N. Fellowships. Their assistance and particularly their presence in London at a crucial stage in the project proved invaluable. We hope and indeed believe that their experience proved both interesting and beneficial and formed an extremely useful by-product of the project.

In the execution of the Household Survey, which formed a major part of the project, our thanks are due to many people in Iran who assisted us with this work. In particular we would like to thank the Governors of the Bank Markazi Iran for permitting us to use their facilities and to Dr. Taj Dar, Head of the Bank's Economics and Statistics Department, who made this possible. In particular we would like to express our appreciation of the tremendous help provided by Mr. Shahkarami of the Economics and Statistics Department and Mr. Shojaei also of that Department and the members of their staff who carried out and supervised the fieldwork. Their active and enthusiastic support was invaluable.

Finally, we wish to acknowledge the generous and efficient assistance of various British Embassies and High Commissions during the course of fieldwork in a number of countries.

FOREWORD

On the basis of a request from the Government of Iran, United Nations Development Programme (Special Fund) is assisting the Government in carrying out a project entitled "Research Centre for Industrial and Trade Development" (UNDP/Special Fund, Symbol IRA/16) The assistance is being provided through the United Nations Industrial Development Organisation (UNIDO) which is the executing agency for this project. The present study entitled "A Study of the Development of Consumer Durable Goods and Automobile Industries in Iran" has been carried out under contract number 71/68.

The total study has been divided at the request of UNIDO into two separate studies :

The Development of the Domestic Appliance Industry in Iran

The Development of the Automotive Industry in Iran

The report on the Automotive Industry has been divided into two volumes. The first of these is the "Main Report", presenting analyses of the industry and market together with detailed projections and recommendations. The second volume presents analyses of the individual companies which make up the industry at the present time.

The report of the Consumer Durable Goods is divided into two volumes, the first of which is the "Main Report" which presents Recommendations, a Summary and Conclusions. The second volume is sub-divided into thirteen parts according to product or product group. In this volume, Section I of each part gives a review or summary of that part of the report.

In addition to the above, a further volume deals with the Household Survey carried out as a part of the overall study and with the related Demographic Forecasting. This volume of the report is in fact common to the studies on both the Consumer Durable Goods and Automotive Industries.

The total study has been carried out under the following terms of reference :

- <u>Consumer Durable Goods</u>

  Within the scope of the project concerned with the domestic appliance industry Metra Consulting Group undertook to :

  Assess the demand for refrigerators, coolers, space heaters, water heaters, air conditioners, television sets, radio sets, hairdriers, vacuum cleaners, fans and any other appliances for which plans for local production are feasible. Such demand forecasts entail:

  (a) An analysis of past statistics and time series as may be available to obtain an indication of future demand;

  (b) An extensive household survey in the project area in order to collect as detailed information as possible on the project area on both income and expenditure;

  (c) A review of the Bank Markazi survey reports.As well as extracting appropriate information to establish:

    - minimum income necessary before purchase of a limited number of domestic appliances is made;

    - the curve of income distribution within the project area;

    - the total ownership of a particular appliance in the project area at the present time and hence, the level of penetration reached.

  (d) The minimum household income level necessary for purchase of the more expensive appliances, taking into consideration retail prices and consumer preferences.

(e) An indication, for the sake of comparison of elasticities of demand, the growth in demand and the pattern of this growth in a number of selected countries.

An analysis of the domestic appliance industry including :

(a) a detailed interview survey with senior representatives of companies in the domestic appliance industry in the project area, with the purpose of defining :

- the present structure of the industry

- production capacities and actual production levels

- production techniques and practices in use at the present time

- the present product range and product policy

- a cost structure of the industry identifying and quantifying major cost elements, labour, investment, overheads, raw material and components.

(b) Determine the consequences and implications of local manufacture both with respect to cost of the finished product in the project area and in terms of foreign exchange costs and savings.

(c) Indicate for the sake of comparison the experience of selected countries in the development of the domestic appliance industry, particularly as regards the degree of integration within the industry and the way in which this has evolved, the present product range and the ways in which these have developed, relationships between component producers and domestic appliance manufacturers, the commonality of components within a particular company and also across companies, and the competitive nature both of individual companies and the national industry as a whole in world market terms.

(d) Select a list of components worthy of further study and possible manufacture in the project area. For these components indications of minimum economic plant sizes, investment necessary, cost structure, and desirability or otherwise of integration with domestic appliance manufacturing companies should be established. In each case the probable foreign exchange cost and cost benefit or loss to the industry as a whole should be assessed.

(e) Indicate foreign companies possibly interested in manufacturing components in association with companies in the project area and the probable export potential resulting from such joint-ventures.

(f) Formulate recommendations regarding the future structure of the domestic appliance industry in the project area and the desired level of integration of components and finished product sectors. Recommendations should also be made with respect to target production levels, optimum product ranges and the cost and price levels of different products.

(g) Specific policy measures and programmes to be considered by the Government in its future planning and policies should be outlined.

- <u>Automotive Industry</u>

Within the scope of the project Metra Consulting Group undertook to :

(a) Analyse past motor vehicle registrations, production and imports to obtain general indications, on a time series basis, of future demand;

(b) Assess the life expectancy of the motor vehicles in Iran;

(c) Make a macro-economic analysis, based on the correlation between economic indicators and per capita owning of motor vehicles in a number of selected countries, to draw analogies between the development of the motor vehicle market in the Project Area and the corresponding development in such selected countries;

(d) Make an analysis of the lower income threshold necessary for the purchase of a motor vehicle and its trend within the period up to 1982-1983, taking into account factors such as price of the motor vehicles, development of other transport systems, Government's expenditures on roads as well as the development of urban and inter-urban bus and cargo transportation services.

(e) Based on the results of the work above, determine the demand for motor vehicles (per types and sizes) for the period up to 1982-1983.

Analysis of the motor vehicle and ancillary industries and preparation of a development programme.

(a) Undertake a detailed survey of the existing industry.

(b) Give advice on the advantages and disadvantages of concentrating manufacturing efforts in the lower cost, multi-purpose type of motor vehicles;

(c) Consider the partial trade balance of imports of incomplete kits with the export of components manufactured locally, beginning with a small percentage but increasing gradually;

(d) Propose legislative and policy measures to be considered by the Government for carrying out the proposed development plans;

(e) Recommend types of protection to be accorded to local entrepreneurs to encourage local manufacture while allowing sufficient margin for imports of completely built-up vehicles and parts in case of unacceptable inefficiencies in quality and/or overcost;

(f) Advise on the creation of a national body to deal with the policies on automotive industry and production questions such as quality control and independent testing facilities;

(g) Include in the investigation the possibility of using fibreglass reinforced plastics for commercial vehicles and passenger car bodies in the Project Area;

(h) Assess requirements in terms of manpower (labour and managerial including expatriates), and the need for labour training programmes;

(i) Prepare a production programme which shall include, but not necessarily be limited to, the following information :

- number of plants (existing and new), for motor vehicle assembly and ancillaries production;

- number (by make and type) of vehicles to be produced;

- details of progressive increases in local content and local labour;

- list of parts to be manufactured locally.

On-the-job training of Iranian Counterparts

In addition to the above, Metra Consulting Group undertook to provide on-the-job training to two Iranian counterparts nominated by the Government in consultation with the UNIDO. The training programme included :

(a) participation in and contribution to the Contractor's work in the Project Area, and

(b) participation in and contribution to the Contractor's work at his Home Office

GENERAL NOTES

1. Throughout this report both the Solar and Gregorian Calendars have been used. For statistical purposes the two systems are not interchangeable and in general terms statistics appertaining specifically to Iran are based on the Gregorian Calendar. Nevertheless, for general approximations the following conversions should be used.

Solar Year + 621 = Gregorian Year

Solar	Gregorian	Solar	Gregorian
1338	1959	1353	1974
1339	1960	1354	1975
1340	1961	1355	1976
1341	1962	1356	1977
1342	1963	1357	1978
1343	1964	1358	1979
1344	1965	1359	1980
1345	1966	1360	1981
1346	1967	1361	1982
1347	1968	1362	1983
1348	1969	1363	1984
1349	1970	1364	1985
1350	1971	1365	1986
1351	1972	1366	1987
1352	1973	1367	1988

2. INCOME AND EXPENDITURE GROUPS

The income and expenditure groups used by Metra are the same as those used by the Bank Markazi in their 1348 survey. For convenience the income/expenditure groups are often referred to by number and the following table gives the range of annual income/expenditure for each group:

Group Number	Annual Income/Expenditure (Rls. p.a)
1	less than 30,000
2	30,001 - 50,000
3	50,001 - 75,000
4	75,001 -100,000
5	100,001 -150,000
6	150,001 -200,000
7	200,001 -300,000
8	300,001 -400,000
9	400,001 -500,000
10	over 500,000

3. ABBREVIATIONS

IMDBI	-	Industrial Mining and Development Bank of Iran.
cfm	-	cubic feet per minute
RCD	-	Regional Co-operation for Development
CKD	-	Completely Knocked Down
ft	-	foot
BTU	-	British Thermal Units
cu. ft.	-	cubic foot
fob	-	freight on board
cif	-	carriage insurance and freight
gvw	-	gross vehicle weight
sq.m	-	square metres
c.c.	-	cubic centimetres
HP	-	horse power
kg	-	kilograms
p.a.	-	per annum
lbs	-	pounds
Rls	-	rials

All tons are metric unless otherwise stated.

517b/4453/72

CONTENTS

		Page
1.	IRAN CITROEN COMPANY	1
2.	IRAN MAZDA	13
3.	IRAN NATIONAL INDUSTRIAL MANUFACTURING COMPANY	19
4.	JEEP	51
5.	KAVEH COMPANY	69
6.	KHAVAR COMPANY	75
7.	LEYLAND MOTORS, IRAN	89
8.	MORATAB	105
9.	PARS LUX	111
10.	ZAMYAD	121

KRP:
October, 1972

1. IRAN CITROEN COMPANY

1. IRAN CITROEN COMPANY

Located on the New Karadj Road, the company is a joint venture between Citroen France (25% equity) and the Aysseh family. The plant covers a land area of 240,000 sq.m. of which 56,000 sq.m. are buildings. A further, adjoining piece of land of about 260,000 sq.m. is in the Aysseh family and could be made available for expansion. The company's operations began in late 1968 with assembly of the AK van although production of this vehicle, which failed to gain market acceptance, ceased in mid-1970. At the beginning of 1969, the main production programme was embarked on this involving the AY passenger car. At the present time products are the AY passenger car, the AYK pick-up which is basically the car front with a pick-up rear (this vehicle was originally designed in France but detailed design alternations were made in Iran). The Iranian company has exclusive manufacturing rights for this vehicle and is hoping that an export market will be found. The Mihary utility vehicle is also produced, this again being a derivative of the passenger car. The vehicle was originally designed in France where it is produced in plastic and glass fibre bodywork, the same method of construction being used in Spain. It was subsequently redesigned in South Africa in steel but of bolted construction. The Iranian company took the latter design and modified it to all welded construction, plastic being said to distort in Iranian temperatures. The one piece body is mated to the pick-up chassis, the only other difference being a lower final drive ratio. The vehicle is interesting in that there are no curves in its bodywork and, therefore, sheet metal work requires no dies and is labour intensity.

All vehicles are based on the two cylinder horizontally opposed air cooled engine of 602 cc which is front mounted and drives the front wheels via a four speed and reverse trans-axle unit. Suspension is independent all round and ideally suited to rough conditions.

Sales in 1349 totalled almost 4,700 units of which 2,800 were passenger cars the remainder being the pick-ups. This represents a considerable increase over 1348 when sales were about 3,200 units, over 3,000 of which were passenger cars. It is anticipated that sales in 1350 will reach around 5,500 units (approximately 60% passenger cars) and the sales forecasts for 1351 is 7,500 units. The large increase in sales forecast for 1351 is attributable to anticipated success of the recently introduced Mihary. This is an extremely cheap vehicle by Iranian standards and initial sales experience has been exceptionally good. The same cannot be said of the saloon car, sales of which are virtually stagnant at around 3,000 units per annum due to a lack of general market acceptance and competition at a relatively small price differential from the cheapest Peykan.

The company works a 240 day year (5 days per week). This scheme has proved very popular with workers and a 30% increase in efficiency is said to have been achieved since its introduction one year ago. At present, achievable capacity is probably about 32 vehicle units per day on a single shift basis; equivalent to about 7,700 vehicles per annum. Thus forecast sales for 1351 entail a high level of utilisation on a single shift basis.

At the time of visiting the plant in December 1971, the company imported from France CKD packs containing:

- Engines
- Transmissions
- Chassis and Associated Components
- Electrical Equipment except Harnesses
- Wheel, etc.

In plant manufacture consisted of:

- All body panels
- Seat Frames, Seats Trim, etc.
- Mufflers
- Battery Boxes
- Petrol Tanks.

In addition the company assembles and welds complete body units from the panels produced in-house and paints complete bodies. The engine is assembled to the transmission and carburettor and other ancilliaries added. Spring units and suspensions are assembled in plant, the wiring harness is made up and of course final assembly is carried out. Furthermore, at that time, production of the complete chassis frame including pressing and assembly was imminent and in fact trial runs had been carried out. The company purchases locally:

- Battery
- Tyres & Tubes
- Glass

- Paint, undercoat, bitumastic all to their specifications.

- Wire for Harnesses (but tape is imported).

- Brake & Fuel Lines (bought out but formed in house).

- Seat Coverings, foam, trim materials, mats, etc.

- Some plastic beading

- Oils.

Sealants are imported separately from the CKD pack and the company has in fact an exclusive right to deal in these products and even it is said to manufacture sealants. It has not gone into production as the returns are said to be low.

Turning to the factory facilities and taking these in turn:

- Press Shop. This is equippped with one 1,000 ton Muller triple action press (hydraulic), a 630 ton Muller hydraulic press, a 315 ton Muller hydraulic press, one 125 ton blanking press and 2/3 smaller blanking presses. All these are presently used in the production of body panels for the AY saloon and the AYK pick-up. In fact none of these facilities were scheduled in the original proposal. Iran National were supposed to do Citroen's press-work. For this reason dies were ordered from France to fit Iran National's equipment but with the eleventh hour decision on the part of that company not to co-operate, Citroen were forced into buying similar presses. Since that time some dies (for the smaller presses have been produced locally). An interesting point is that Jeep have enough capacity to do all Citroen's press-work but their mechanical presses could not take the dies ordered. The 1,000 ton press is only utilised at about 40-50%. This will go up to a maximum practical throughput when the chassis components come on stream (the dies and steel had already been delivered in December 1971). However, it should be noted that the large press is very much under utilised in terms of force capacity. No panels produced require forces of much more than 350-400 tons. If output increases markedly it would probably mean the installation of one or two extra smaller presses. In addition to the above, the body panels for the Mihary are produced on two small press brakes.

Raw material used is imported from Japan - oiled steel sheets for the saloon and pick-up panels, electro-galvanized sheet for the Mihary and steel coil for the chassis.

Quality control in the press shop - as elsewhere in the factory is purely French, the controllers being autonomous, and control being extensive (36 controls on a body set).

- <u>Assembly Shop Area.</u> Components from the press shop, which is physically separated, come into the assembly area to be first sub-assembled and then assembled into complete bodies. All bodies are spot welded although front wings on the AY and AYK are detachable (bolted) and rear wheel covers are "hinged". All bodies are assembled in the same general area but jigs for the Mihary are different. The assembly area also incorporates a small section manufacturing exhausts, trim, seat frames and harness. Completed bodies go to the paint shop where they move on bogies on a track. This used to be a bottleneck with a recycling system involved a capacity of only some 20-25 vehicles per 8 hour shift. Now all but the degreasing plant has been duplicated and capacity is 45-50 vehicles per 8 hour day. The impression of the paint shop is that a lot of hand finishing is involved. Wet sanding is used to the extreme as a means of correcting relatively poor spraying.

From the paint shop bodies go to a body assembly line where trim, instruments, glass etc. are installed. At the same time engines which have had ancillaries and transmissions attached, are mated to chassis on a separate line and suspensions etc. added. Bodies pass from their assembly line to the chassis line for mating and final assembly. The general philosophy is a cross between batch and pure mixed model and, in general, a logical flow of materials is maintained. In fact small batches (as many as say 6) are run. Batch size depends upon demands by the sales department. Once again in the assembly shop quality control is French.

Labour force totals 525 workers (this includes gardeners, cooks, etc.), employed on a single shift, 8 hours day, 5 day week basis. The breakdown is as follows:

Press Shop	84
Assembly) Weld) Paint)	260
Maintenance	49
Quality Control and Correction	17
Warehouse	32
Transport	19
Floor (sweepers, etc.)	39
Not specified	105
TOTAL	525

From the above breakdown, it appears that the number of direct workers is 344 or 65% of the total. It is interesting to note the number of workers employed on quality control and correction which is indicative of the great attention paid to this function in the factory.

The company appears to be well managed by Iranian personnel who have considerable experience of major motor industries, including the Aysseh family who occupy the executive positions of General, Sales and Factory management. Some indication of the competence of management is to be found in the fact that plans outlined in the original proposal presented to the Ministry of Economy have been adhered to in the main. Certainly the production programme, investment and pricing policies planned have been largely translated into fact. Vehicles are produced to a high standard of quality but it is felt that their market potential, except possibly for the 'Mihary', is limited by their basic design which does not appear acceptable to the Iranian consumer. A further problem cited by the company is servicing, the vehicle not being familiar to or liked by Iranian mechanics.

Turning to costs and company performance, the accompanying tables give rough indications based largely on estimates of individual figures. A fuller analysis is not possible as various anomolies exist in information on the company available within the Ministry of Economy. For example, this information suggests a value added in the company less than the reported annual payroll which is clearly nonsense.

The implications of these costs and prices are that the company is selling its vannette and the 'Mihary' close to the margin, profits being due to the mark-up on passenger cars. It is also interesting to note that the 'Mihary' is less expensive to the consumer in Iran than the equivalent vehicle* in France and Spain. However, the passenger car is 1.4 times more expensive in Iran than its equivalent in France. No such comparisons can be made for the pick-up as this is exclusively produced in Iran.

* Note: Iranian vehicle is steel bodied, European equivalent is glass fibre and plastic.

TABLE 1.1 CITROEN VEHICLE PRICES

1. FINISHED VEHICLE PRICES

a) Retail	IRAN Rials	FRANCE Rials	SPAIN Rials
'AY' Saloon Car (including 15,000 rials tax and 5% municipal duty)	181,125	129,272	122,642
'AYK' Pick-Up (including 5% municipal duty)	126,000	-	-
'Mihary' Utility Vehicle (including 5% municipal duty)	123,690	131,875	127,106
b) Ex-Works (including Dealer Margin)			
'AY' Saloon Car	157,500	103,437	99,962
'AYK' Pick-Up	120,000	--	-
'Mihary' Utility Vehicle	117,800	103,218	119,774

2. CKD PACK (SEPTEMBER 1971)

	Basic (Less Packing etc.) Rials	FOB France Rials	CIF Kharranshar Rials
'AY' Saloon Car	48,019	51,206	55,763
'AYK' Pick-Up	51,108	53,474	58,060
'Mihary'	51,108	53,474	58,060

TABLE 1.2 SUMMARY STATISTICS

COMPANY: IRAN CITROEN COMPANY - 1350 - estimated

A.	Production: units	5,500
B.	Value of Output (m rials)	775
C.	Total Workers:	525
D.	Direct	344
E.	Indirect	181
F.	Annual Payroll (m rials)	-
G.	Gross Assets (m rials)	-
H.	Closing Stock (m rials)	-
I.	Total Value of Input (m rials)	-
J.	Materials and Parts (m rials)	500
K.	Cumulative Investment (m rials)	500
L.	Gross value added (m Rials)	250

Ouput per Worker	$\frac{A}{C}$	Vehicles per annum	10.5
Stock Turnover	$\frac{B}{H}$		-
Labour Cost	$\frac{F}{B}$		6.5%
Material Cost	$\frac{J}{B}$		65%
Utilisation of Assets	$\frac{B}{G}$	(1348)	2.2
Investment per Vehicle	$\frac{K}{A}$	(US$ per vehicle per annum)	1,196
Sales per worker	$\frac{B}{C}$		1.5 m Rials.
Value added per worker L/C '000 Rials			476
Value added as percentage of output			

TABLE 1.3

COST STRUCTURE : CITROEN 'AY' PASSENGER CAR

		Rial/Unit
A	Local Production	
1.	Total cost of Imported Components and Materials.	74,000
1a	CKD Pack CIF	55,763
1b	All Imports CIF	60,000
1c	Duty on Imports	-
2.	Locally Purchased Materials and Components.	18,000
2a	Estimated Local Content	12,000
2b	Estimated CIF Equiv.	6,000
3.	Labour Cost.	10,000
4.	Administration Cost.	10,000
5.	General Cost.	
6.	Depreciation.	8,000
7.	Royalties.	2,170
8.	Loan Interest, Sales Cost etc. @ 2½%	3,054
9.	Final Cost.	125,224
	+ Direct Taxation 15,000 rials	140,000
10.	Fixed Price.	
10a	Ex-Works (10b less tax & duty)	157,500
10b	To Customer (Includes 15,000 rials Tax + 5% municipal duty)	180,375
B.	Overseas Comparison	
1.	Ex-Works Price Country of Origin. (B2) - 20% TVA	103,437
2.	Retail Price Country of Origin. (Figures in brackets exclude delivery charges)	129,272 (124,174
3.	Estimated CIF Price Iran. (Based on	93,000

Table 1.3 Continued ....

		Rials
I	Value Added in Plant (includes dealer mark-up and sales cost)	
	10a - (1 + 2)	65,500
II	Foreign Exchange Cost	
	(1b + 2b + 7 + 50% of 6 + 25% of Profit)	76,170
III	Foreign Exchange Saving	
	B3 - II	16,830
IV	Material Content $\frac{1 + 2}{10a} \times 100\%$	58%
V	Labour Content $\frac{3}{10a} \times 100\%$	6.3%
VI	Iran Ex-Factory / Ex-Factory (Country of Origin)	1.52
VII	Iran Ex-Factory / Iran CIF	1.69
VIII	Retail Iran / Retail Country of Origin	1.4

TABLE 1.4 COST STRUCTURE : 'AYK' PICK-UP : CITROEN

A Local Production

	Rial/Unit
1. Total cost of Imported Components and Materials.	76,000
1a CKD Pack CIF	58,060
1b All Imports CIF	62,000
1c Duty on Imports	-
2. Locally Purchased Materials and Components.	12,000
2a Estimated Local Content	8,000
2b Estimated CIF Equiv.	4,000
3. Labour Cost.	8,000
4. Administration Cost.	10,000
5. General Cost.	
6. Depreciation.	8,000
7. Royalties.	2,170
8. Loan Interest, Sales Cost etc. @ 2½%	2,904
9. Final Cost.	119,074
10. Fixed Price.	
10a Ex-Works (10b - 5% Municipal Duty)	120,000
10b To Customer	126,000

B. Overseas Comparison

1. Ex-Works Price Country of Origin.	-
2. Retail Price Country of Origin.	-
3. Estimated CIF Price Iran.	-

Table 1.4 Continued ....

I	Value Added in Plant 10a - (1 + 2)	31,074
II	Foreign Exchange Cost (1b + 2b + 7 + 50% of 6 + 25% of Profit)	72,170
III	Foreign Exchange Saving B3 - II	-
IV	Material Content $\frac{1 + 2}{9} \times 100\%$	70%
V	Labour Content $\frac{3}{9} \times 100\%$	6.7%
VI	$\frac{\text{Iran Ex-Factory}}{\text{Ex-Factory (Country of Origin)}}$	
VII	$\frac{\text{Iran Ex-Factory}}{\text{Iran CIF}}$	

Note: International price comparisons are not possible as the 'AYK' is produced exclusively in Iran.

2. IRAN MAZDA

2. IRAN MAZDA

The company is not as yet producing vehicles although it does import the small Mazda pick-up which it will commence manufacture of in the very near future. In point of fact Mazda have been exporting vehicles to Iran from Japan for some years, these vehicles including 0.4 ton Mazda 800 and 1000 pick-ups (900 units in 1969), 1 ton Mazda B1500 (232 units in 1969), and 0.4 ton Mazda T600 Three-Wheeler (1,625 units in 1969). In fact the model scheduled for production in Iran is the 0.4 ton Mazda 800 model, with a 4 cylinder in line water cooled engine. It should be noted at this point that the vehicle concerned will have a relatively short life, a new model being scheduled for some three years time. Actually, Toyo Kogyo have contracted to supply 12,000 vehicle units to Iran Mazda in CKD form which should take care of production for about 4 years thus fitting in with the introduction of the new model. It should also be noted that this new model will probably incorporated major changes in vehicle designs.

At the time of carrying out fieldwork for the present study, little existed of the new Mazda factory apart from the building shell. However, discussions with the consultant engineer involved in its design and construction indicate a well thought out plant with a logical flow of materials. Essentially, the plant consists of the following main shops:

- Sheet metal working shop involving an investment of over US $ 300,000 in presses alone and an additional investment in dies of somthing approaching $ US 1 million. This sheet metal shop will have a single shift capacity of around 3,500 units per annum.

- Body assembly shop incorporating gantry mounted welding units and involving an investment (excluding special tooling of approximately US $ 100,000.

- Paint shop which will have a capacity of approximately 21 vehicles per day per shift or approximately 6,000 vehicles per annum on a single shift basis. In fact this figure is that for an expanded paint shop, as production will commence with a facility that employs recycling. On the other hand the increased output has been planned for and can be achieved with relatively little capital expenditure. This paint shop is particularly interesting as it has been designed and manufactured exclusively in Iran and is reputed to have cost less than US $ 100,000.

- Vehicle Assembly shop with a single line of vehicles moving on trolleys above a pit, this shop again appears to have been well thought out with a logical flow of materials involved. This section of the plant has a single shift capacity of some 3,000 vehicles per annum.

The whole facility is located on the site of the old Iran Khalidg plant and indeed uses the buildings of that plant together with an extension reputed to have cost $ US ½ million. Total building area is 9,500 sq. metres.

The production programme aims at an average output of 3,000 units per year over the first four years of production. This can be achieved on a single shift basis with the facilities planned. Double shift working would be introduced if market demand justified higher levels of production. The local manufacturing programme calls for the import of 150 CKD packs without deletions as an initial consignment to be used in training workers, moving into the first stage of local manufacturing proper in which the following items would be deleted:

- Water Pump Pulley
- Cooling Fan
- Air Cleaner
- Radiator
- Exhaust System
- Fuel Tank
- Leaf Spring
- Bumper
- Flat Glass
- Wiring
- Piping
- Battery
- Tyre & Tube
- Upholstery and Rubber Parts
- Load Platform and Box
- Driver's Cabin : Pressed parts will be imported with painting and final welding assembly carried out locally.

The second stage of manufacture will entail the deletion of the driver's cab for which the company will manufacture pressings, the main frame apart from the side members which will continue to be imported and wheels. Once again it is interesting to note that the original intention was to use other motor vehicle manufacturers spare press working capacity at least in the initial stages of production. As usual however, this has proved impossible and the company is investing in its own presses. Total labour force once the second stage of production has commenced will be about 350.

As far as costs are concerned the fact that the company is not yet manufacturing vehicles means that actual figures are not available. However, an approximate breakdown of costs based on discussions with both Iran Mazda representatives and Toyo Kogyo in Japan is presented in the Table. It is interesting to note a wide discrepancy between these costs and those obtained in the original proposal presented to the Ministry of Economy. For example, the cost of imported parts given in that proposal was estimated as some 55,000 rials. In view of the deletions involved this figure would appear completely unrealistic. Furthermore, the allowance for depreciation in that proposal was given as 2,283 rials but this obviously did not take into account the onerous burden imposed by the requirement to amortise special tooling over the limited production run of 12,000 vehicles due to the relatively imminent replacement by a new model.

TABLE 2.1 SUMMARY STATISTICS

COMPANY: IRAN MAZDA 1353 (Estimated for Production Stage II).

A.	Production: units	3,000
B.	Value of Output (m rials)	549
C.	Total Workers:	350
D.	Direct	-
E.	Indirect	-
F.	Annual Payroll (m rials)	-
G.	Gross Assets (m rials)	-
H.	Closing Stock (m rials)	-
I.	Total Value of Input (m rials)	-
J.	Materials and Parts (m rials)	378
K.	Cumulative Investment (m rials)	
L.	Gross value added (m Rials)	152

Output per Worker	$\frac{A}{C}$	(units p.a.)	8.6
Stock Turnover	$\frac{B}{H}$		-
Labour Cost (Direct Only)	$\frac{F}{B}$		5.5%
Material Cost	$\frac{J}{B}$		68.8%
Utilisation of Assets	$\frac{B}{G}$		-
Investment per Vehicle	$\frac{K}{A}$	(Approximate US$ per vehicle per annum)	850
Sales per worker (m Rials)	$\frac{B}{C}$		1,568
Value added per worker	$\frac{L}{C}$	('000 Rials)	434
Value added as	L		

TABLE 2.2 COST STRUCTURE

MAZDA PICK-UP

A Local Production

		Rial/Unit
1.	Total cost of Imported Components and Materials.	110,000*
1a	CKD Pack CIF	83,754
1b	All Imports CIF	95,000*
1c	Duty on Imports	15,000*
2.	Locally Purchased Materials and Components.	16,200
2a	Estimated Local Content	11,340
2b	Estimated CIF Equiv. @ 30%	4,860
3.	Labour Cost.	10,000
4.	Administration Cost.	10,000
5.	General Cost.	
6.	Depreciation. Special Tooling Only [1]	13,527
	Other	2,000
7.	Royalties.	1,596
8.	Loan Interest, Sales Cost etc. @ 2½%	4,083
9.	Final Cost.	167,406
10.	Fixed Price.	
10a	Ex-Works (10b - 5% duty)	183,000*
10b	To Customer	192,000*

B. Overseas Comparison

1.	Ex-Works Price Country of Origin. (B2 - 2.5% Tax)	134,634
2.	Retail Price Country of Origin.	138,000
3.	Estimated CIF Price Iran.	155,000*

Estimates

TABLE 2.2 (contd)

I	Value Added in Plant	
	10a - (1 + 2)	46,800
II	Foreign Exchange Cost	
	(1b + 2b + 7 + 50% of 6)	109,256
III	Foreign Exchange Saving	
	B3 - II	45,744
IV	Material Content $\frac{1+2}{10a} \times 100\%$	69%
V	Labour Content $\frac{3}{10a} \times 100\%$	5.5%
VI	$\frac{\text{Iran Ex-Factory}}{\text{Ex-Factory (Country of Origin)}}$	1.4
VII	$\frac{\text{Iran Ex-Factory}}{\text{Iran CIF}}$	1.18

3. IRAN NATIONAL INDUSTRIAL MANUFACTURING COMPANY

3. IRAN NATIONAL INDUSTRIAL MANUFACTURING COMPANY

Set up in 1342, the company has its main plant, which produces passenger cars, pick-ups, buses, mini-buses and trucks, on the new Karadj road. Ownership of the company is largely in the hands of two Iranian brothers, Ahmad and Mahmood Khayyami, although a small proportion of the equity is believed to be held by other Iranian interests. The company's products include the following vehicles:

- Peykan. This vehicle is now available in four basic passenger car versions, the standard, the de luxe, automatic and GT. In addition a pick-up derivative designed in Iran is also available. The model is produced under licence from Chrysler (UK) and is based on this company's Hillman Hunter range. Basic specifications include a four cylinder 1750 cc overhead valve petrol engine driving the rear wheels through a four speed and reverse gear box and a rigid hypoid rear axle. Suspension is independant at the front by coil springs with the rigid rear axle being suspended on half elliptical leaf springs. The pick-up utilises the same floor pan, front wings, bonnet, windscreen surround and front doors as the saloon car together with common mechanical components.

- Buses and Mini-Buses. The company produces Daimler-Benz buses and mini-buses under licence from the German company. The bus is the 0302 and is produced in City and Inter-City versions. The chassis is the same in both cases, differences being found in the body and seating accommodation and also in the major mechanical components, engine being either the OM352 or the OM360. Both engines are six cylinder in line, direct injection diesel engines and are coupled either to the G60 or the G32 five speed and reverse gear boxes. Engine, gear box and transmission are rear mounted.

  The mini-bus produced is again available in a number of variants of seating layout and trim but is basically the Daimler-Benz 0309 high chassis version in either long or short wheelbase forms. Engine is again diesel, in this case the OM314 4 cylinder direct injection unit and is front mounted.

- Trucks. Two basic models of truck are produced these being the 309 which is based on the high chassis mini-bus mechanical components and chassis frame, and the L508 which, whilst having a different chassis frame shares the same major mechanical components. Both these vehicles have capacities of less than three tons, the engine being the OM314 direct injection four cylinder diesel engine in both cases again front mounted.

  In addition to the above mentioned vehicles, the company produces a small number of special vehicles such as ambulances based on the 309 chassis.

Total output of the company has increased from 7,500 vehicles in 1346 to over 26,000 vehicles in 1349. The following table gives details of the production by types of vehicle in 1349 and estimates of production in other years.

TABLE 3.1 INIM OUTPUT

	1346	1347	1348	1349	1350
Peykan: car)	5,833	12,745	17,000	19,794	32,122
vannette)				2,771	
Bus O.302)				702	-
)	1,665	2,320	2,660		
Minibus O.309)				1,600	-
Truck O.309) L.508)	-	-	500	1,349	-
TOTAL	7,498	15,065	20,160	26,216	

NOTE: Figures for 1349 are believed accurate and have been checked by a number of company and other sources. Other figures, particularly those for 1348 should be treated with caution as a number of different estimates have been given to METRA. The above set represents the latest and, in comparison with imports of CKD packs, most realistic view. It should be noted that the figures differ slightly from those presented elsewhere in this report.

Of the passenger cars produced in 1349, the vast majority (over 90%) were the de luxe version with radio included. Present production capacity is said to be just over 70 passenger cars and vannette derivatives per day, 10 mini-buses and trucks per day and 6 buses per day (all on a single shift basis). Therefore, the above output statistics indicate an almost complete utilisation of single shift capacity in 1349 as far as the Peykan passenger car and vannette and mini-buses and trucks are concerned. Bus output is running at rather less than maximum single shift capacity. In fact, in 1350, the company has been forced to introduce overtime working in its Peykan section in order to achieve the desired levels of output.

In common with other motor vehicle manufacturers in Iran the company assembles vehicles from CKD packs. As far as the passenger car is concerned, the following major items are deleted from the pack.

- Radiator
- Battery
- Tyres and Tubes
- All soft trim
- Seat Frames
- Seat Overlays
- Floor Coverings
- Cable Harness
- Outside and Inside Body Panels, Running Boards, Flat Floor Pans.
- Radio
- Exhaust system
- Glass

In addition, the company purchase locally minor components such as rubber parts, name badges etc. and is believed recently to have deleted rear leaf springs from the CKD pack; substituting locally produced components. Furthermore, the company purchases a variety of consumables which are locally produced in Iran including paint, oils, etc. Deletions in the case of commercial vehicles are broadly similar to those for the passenger car with the major exception of diesel engines which are now assembled in Tabriz by Iran Diesel Engine Manufacturing Company (IDEM). This company is a joint venture between Iran National, Khavar, IMDBI and Daimler-Benz of Germany.

Of the above items deleted from CKD packs, the company purchases from outside suppliers in Iran the radiator, radio, exhaust system, tyres and tubes, battery, soft trim materials, paints, oils, and other minor components and consumable materials. In the near future, wheels will be deleted from the CKD pack and will be produced by Rezah company in Mashad. The latter company is in fact owned by the Khayami brothers but is set up as a separate company from INIM and will produce both wheels and hand tools.

The company has by far the largest and best organised vehicle production facilities in Iran including:

Press shop equipped with a large number of hydraulic presses up to a capac·ty of 1,500 tons. The larger presses are highly sophisticated being triple action hydraulic and of German origin (manufactured by Fitz Müller). In general the press shop is well organised although somewhat labour intensive with all transfer of panels between operations being manual and a relatively high degree of hand finishing being required. Layout of the press shop is logical and in-progress materials together with finished panels are stored in pallets. A formalised part numbering and stock control system is in operation.

Components such as trim, Cable harness and dash-boards are manufactured in separate small shops. These together with the press shop supply components to both the passenger car and commercial vehicle assembly facilities which are separate. Dealing with the passenger cars first, body panels are drawn from an intermediate storage area to feed a multi station body assembly line. This line is well organised, vehicle bodies moving from station to station every seven minutes and a high standard of quality and productivity is evident. Completed bodies pass through an automated paint shop at the end of which any minor imperfections are corrected by hand. From there, the completed and painted bodies pass to the final assembly line which is organised on mixed model principles. Assembled major mechanical sub-assemblies (for example complete front suspension/ steering/cross member sub-assembly) are drawn from separate sub-assembly areas and pre-positioned and assembled to accept the body unit which is lowered onto the mechanical components. Again, the final assembly line appears well organised although, as in the press shop the introduction of minor improvements (for example, four men are required to lower the body onto the mechanical components) could probably improve productivity. Finished vehicles are inspected and given a brief test run. Any minor faults are corrected in a separate, small correction area. Overall the impression gained of the Peykan assembly operation is one of good organisation and particularly of a high work rate amongst operatives. In general, the facility stands comparison with similar scale of operations in other countries.

Commercial vehicles, (buses, mini-buses and trucks) are assembled in a separate building. Obviously, much more labour intensity is evident in this facility than in that of the passenger car. For example, body assembly, particularly on the buses cannot be carried out on the same moving assembly line as passenger car body assembly and painting is by hand held spray guns.

In addition to the above facilities, the company has a well equipped apprentice training school and operates comprehensive welfare services including the provision of canteen facilities and worker housing. Two thousand of the company's workers live in the company housing development on the outskirts of Tehran. The development is said to have a population at the present time of 10,000. The company operates its own pension system for its workers, contributions being three percent of wage or salary by the employee and six percent by the company.

All sales of the company's products are handled by a separate company, PLP trading company, which is completely separate as far as capital and accounts are concerned but shares common ownership (the Khayami brothers) with the manufacturing operation.

PLP's facilities consist of a showroom and service station within the Tehran city limits (Eisenhower Avenue) and a large spares depot on a site near the manufacturing plant. This site also incorporates a large modern office block. Investment in the spares depot is said to total 2,000 million rials and it is obviously extremely well organised even by Western European standards. Outside Tehran, the company has a network of distributors, who, although receiving a relatively small dealer margin are given considerable financial and technical assistance by the company in setting up their operations. It is estimated that the cost of setting up an average small city dealership approaches one million rials, this including 100 sq. metre spares depot and a 300 sq. metre repairs depot. In addition to the trading company, direct equity interests are held in various other services necessary for the company's operation.

In general, the company's management appears to be well up to the standard required in the automobile industry. At the top level, the extremely good "deal" negotiated with Rootes which led to the introduction of the Peykan points to a high degree of business acumen on the part of the company's owners. All necessary middle management functions from sales through production to personnel are filled, those dealing directly with manufacture (production control, procurement, personnel, etc.) being housed in an office building at the plant. A close relationship is maintained with Chrysler UK and foreign experts are available at the plant to advise on particular aspects of production and management.

No detail figures are available for investment in the company. However, it is thought that fixed capital investment totalled some US$ 25 million by the end of 1348. This figure excludes any investment in PLP trading company or in the engine plant and other developments south of the new Karadj road.

Fixed assets reported in 1348 breakdown as follows:

TABLE 3.2 INIM: FIXED ASSETS 1348

	Million US $
Machinery	6.6
Vehicles	0.8
Office Equipment	0.4
Revalued Existing Assets	13.4
TOTAL	21.2

Note: "Gross Assets" given for the company in the statistics available from the Ministry of Economy Bureau of Statistics are 1,482 million rials. The above breakdown suggests that these "Gross Assets" are in reality only fixed assets. Further, reported closing stock in 1348 was reported as 1,191 million rials.

The total labour force of the company is currently around 4,000 workers, the following table giving an indication of the distribution as between direct and indirect workers:

INIM EMPLOYMENT

	1347	1348	1349
Direct Workers*:	2,056	2,431	3,000
Auxiliary Workers:	192	750	800
Supervisory and Administrative:	464		
TOTAL :	2,722	3,181	3,800

* Probably includes some workers who should, strictly speakinq, be classified as indirect.

The accompanying tables give a summary of INIM statistics over the period 1347-1349 together with indications of cost structures for a number of individual vehicles produced.

With regard to the summary, it can be seen that, in general, the company's performance continues to improve in terms of labour productivity (output and value added per worker), value added as a percentage of output and utilisation of investment. The figure for number of vehicles produced per annum per worker should be treated with caution as it it influenced by the product mix; the increasing proportion of passenger cars to the total output artificially inflating apparent labour productivity. Although no detailed breakdown of employment in various sections of the factory is available it seems likely that Peykan saloon car production per annum per worker stands at approximately 10 units. The table on the Peykan price comparisons with the equivalent models in the UK indicates a conscious pricing policy involving higher profit margins on the more expensive variants (e.g. the Peykan GT). This observation is borne out by the individual cost structures presented.

The individual cost structures represent approximations based on figures derived from various sources. As far as the Peykan is concerned, the cost of imported and locally purchased components and materials can be treated with confidence as they are based on detailed invoices. However, of necessity, other figures are estimates. In general, it is felt that the cost structures are realistic and it is interesting to note that the export price of a Peykan de luxe is said to be 121,600 rials. It is believed that this figure approximately represents the marginal cost taking into account drawback of customs duties and taxes. Based on the cost structures mentioned above, the marginal cost of the Peykan de luxe is derived as follows:

TABLE 3.4 MARGINAL COSTS : DE LUXE PEYKAN

		Rials/Unit
Cost of Imported Components*		111,877
Less Customs Duty		29,388
	A:	82,489
Other Components & Materials Cost		30,000
Less Customs Duty on Import Content		3,000
	B:	27,000
Direct Labour Cost	C:	6,000
Allowance to cover Royalties and other Direct Costs	D:	6,000
Total Marginal Cost		121,500
Reported Export Price		121,600

* Includes Bank Interest Charges, etc.

TABLE 3.5

INIM: SUMMARY

			1347	1348	1349
A.	Total Production: units		15,065	20,160	26,216
B.	Value of Output (m rials)		4,561	6,030	8,100
C.	Total Workers		2,722	3,181	3,800
D.	Direct		2,056	2,431	3,000*
E.	Indirect		656	750	800*
F.	Annual Payroll (m Rials)		181	294	390
G.	Gross Assets		4,919	-	-
H.	Closing Stock		447	1,192	-
I.	Total Value of Input (m Rials)		3,522	4,472	-
J.	Materials and Parts (m Rials)		3,500	4,452	-
K.	Cumulative investment (m Rials)		1,260*	1,520*	
L.	Gross value added B - I (m Rials)		1,039	1,558	
	Output per worker (vehicles p.a.)	$\frac{A}{C}$	5.5	6.3	6.9
	Stock Turnover	$\frac{B}{H}$	10.2	5.05	-
	Labour Cost	$\frac{F}{B}$	4.0%	4.9%	4.8%
	Material Cost	$\frac{J}{B}$	77%	74%	-
	Utilisation of Assets	$\frac{B}{G}$	0.9	-	-
	Investment per vehicle (US $)		1,100	1,100	950*

TABLE 3.5 (contd)

		1347	1348	1349
Sales per Worker (m Rials)	$\frac{B}{C}$	1.7	1.90	2.13
Value added per worker ('000 Rials)	$\frac{L}{C}$	382	490	-
Value added as percentage of Output	$\frac{L}{B} \times 100\%$	23%	26%	-

* Rough Estimate.

TABLE 3.6 IRAN NATIONAL: PEYKAN PRICE COMPARISON 1350/1971

	Iran Retail	Iran List	Iran Ex-Works	UK (July 71) Retail	UK (July 71) List	UK (July 71) Ex-Works
1. Peykan Standard / Hillman Hunter DL	221,250	186,900	169,900	177,816	142,953	116,212
Ratio to UK	1.24	1.31	1.46			
2. Peykan De Luxe / Hillman Hunter Super	252,350	216,500	196,800	194,556	156,410	127,152
Ratio to UK	1.30	1.38	1.55			
3. Peykan GT / Hillman Hunter GT	303,250	265,000	240,900	210,738	169,420	137,728
Ratio to UK	1.44	1.56	1.75			
4. Peykan Automatic / Hillman Hunter Super Auto	277,100	240,100	218,300	212,040	170,466	138,579
Ratio to UK	1.31	1.41	1.58			

NOTE: Hillman Hunter Super Retail Price Australia = 223,000 Rials
(Maximum local production 13,000 units)

For Iran

"List" is retail price less 25,000 rials tax and municipal duty.
"Ex-Works" excludes taxes and dealer margins (estimated at 10% for IRAN)

For UK

"List" excludes purchase tax @ 30% of ex-works price.
"Ex-Works" excludes purchase tax and dealer mark-up @ 17 2/3% of exworks plus P.T.

TABLE 3.7 COST STRUCTURE : PEYKAN GT

A. LOCAL PRODUCTION

		Rials/Unit
1.	Total Cost of Imported Components	122,793
	1a. CIF Cost of " "	81,659
	1b. Customs Duties	32,730
	1c. Interest charges, etc.	8,404
2.	Other Components and Materials Cost	35,000
	2a. Manufactured components[1]	31,500
	2b. Other Materials[2], non-manufactured	3,500
	2c. CIF Equivalent of Import Content	17,250
3.	Direct Labour Cost @ 37 rials per hour for 175 hours	6,475
4.	Other Costs	29,467
5.	Depreciation TOTAL	8,084
	5a. Of Special Tooling	3,904
	5b. Of Other Plant, Buildings, etc.	4,180
6.	STANDARD COST	201,819
7.	Retail Price (Including Sales Tax and Municipal Duty)	303,250
8.	List Price (Includes dealer mark-up)	265,000
9.	Ex-Works (8 less 10% estimated dealer mark-up)	240,900

TABLE 3.7 (contd)

B. EQUIVALENT IN COUNTRY OF ORIGIN (Hillman Hunter GT)

1.	Retail Price	£1,123	210,738
2.	Less Dealer Mark-up @ 17 2/3%		179,046
3.	Less Purchase Tax @ 30%		137,728
4.	List price including dealer margin, excluding P.T.		169,420
5.	Estimated CIF Price		156,000

TABLE 3.7 (contd)

NOTES:

1. Includes:

	Unit Price Rials	Cost/Vehicle Rials
Steel Sheet	21.5/kg.	8,600
Interior Trim Materials (Cloth, sponge, carpets, etc.)	-	3,500
Radiator	1,836	1,836
Radio with aeriel	-	3,650
Battery	1,650	1,650
Tyre and Tube (560 x 13)	800	4,000
Exhaust	460	460
Paint (Final Coat)	168/kg.	806
Primer, thinner, etc.	-	1,500
Underseal	195/kg.	293
Seat Spring Set (Rear Back 230 rials)	-	854
Anti-Freeze	53/litre	159
Others		4,192
TOTAL		31,500

Thus, these are components and materials directly used in manufacture and locally purchased. Approximate CIF imported content is 15,500 Rials

2. Includes locally purchased consumables such as welding electrodes, butane, oxygen, saw blades etc. and other imported items. Approximate CIF imported content 1,750 Rials

TABLE 3.7 (contd)

					Rials/Unit
I	Value Added in Plant				
	9 - (1 + 2)				83.107
II	Foreign Exchange Cost				
	(1a + 2c + 50% of 5 + 5,000 Rials Allowance for Royalty, Ex-patriate salaries, etc.)				107,951
III	Foreign Exchange Saving				
	B5 - II				48,000
IV	Material Content	$\frac{1 + 2}{9}$	x	100%	58%
V	Labour Content	$\frac{3}{9}$	x	100%	2.7%
VI	Iran Ex-Factory				
	Ex-Factory (Country of Origin)				1.75
VII	Iran Ex-Factory				
	Iran CIF				1.54

TABLE 3.8 COST STRUCTURE : PEYKAN DE LUXE

			Rials/Unit
A.	1.	Total Cost of Imported Components	111,877
		1a. CIF Cost of " "	73,470
	2.	Other Components and Material Cost	30,000
		2a. CIF Cost of Import Content	15,000
	3.	Direct Labour	6,000
	4.	Other Costs	25,000
	5.	Depreciation TOTAL	8,000
		5a. Of Special Tooling	3,900
		5b. Of Other Plant Buildings, etc.	4,100
	6.	Standard Cost	181,000
	7.	Retail Price (Including Sales Tax and Municipal Duty)	252,350
	8.	List Price (Including dealer mark-up)	216,500
	9.	Ex-Works (8 less 10% estimated dealer mark-up)	196,800

TABLE 3.8 (contd)

		Rials/Unit
I	Value Added	
	1a. In Country (excluding Sales Tax etc.) 8 - (1 + 2)	74,623
	1b. In Plant 9 - (1 + 2)	54,923
II	Foreign Exchange Cost	
	1a + 1b + 50% of 5 + 5,000 Rials to cover other costs.	97,470
III	Foreign Exchange Saving	
	Estimated CIF Iran - II	46,530
IV	Material Content	
	a) Percentage of ex-works price	72%
	b) " " cost	78%
V	Labour Content	
	a) Percentage of ex-works price	3%
	b) " " cost	3.3%
VI	Iran Ex-Factory / Ex-Factory Country of Origin	1.55
VII	Iran Ex-Factory / Iran CIF	1.37

TABLE 3.9 COST STRUCTURE

0 309 TRUCK (Diesel Engine)

		Rials/Unit
1.	Total Imported Components	212,919
	1a. CIF Cost	177,617
	1b. Customs Duty	21,803
2.	Engine Cest	82,190
	2a. CIF Cost	75,000
3.	Other, Local Purchases	43,609
	3a. Estimated Import Content CIF	17,000
4.	Direct Labour Cost: 313 hours @ 37 rials/hour	11,581
5.	Overheads and scrap allowance	11,731
6.	Depreciation Total	21,161
	6a. Tooling	17,510
	6b. Other Plant and Machinery	3,651
7.	Standard Cost	383,191
8.	Other Items @ 4%	15,328
	TOTAL	398,519
9.	Quoted Sales Price	440,000

TABLE 3.10 COST STRUCTURE

O 309 HIGH CHASSIS MINI-BUS

		Rials/Unit
1.	Total Imported Components	238,596
	1a. CIF Cost	198,110
	1b. Customs Duty	23,959
2.	Engine Cost	82,190
	2a. CIF Cost	75,000
3.	Other Local Purchases	79,095
	3a. Import Content CIF	39,000
4.	Direct Labour 680 hours @ 37 Rials/Hour	25,160
5.	Overheads and Scrap Allowance	25,317
6.	Depreciation Total	36,809
	6a. Of Special Tooling	17,510
	6b. Of Other Plant and Machinery	19,299
7.	Standard Cost	497,167
8.	Other Items @ 4%	19,887
	TOTAL	517,054
9.	Quoted Price	582,000

TABLE 3.11 COST STRUCTURE

O 302 11 - ROW CITY BUS

1.	Total Imported Components		800,644
	1a. CIF Cost		583,374
	1b. Customs Duty		64,170
2.	Local Purchases		309,221
	1b. Import Content CIF		148,000
3.	Labour Cost. 1,533 hours @ 37 Rials/hour		56,721
4.	Overheads and Scrap Allowance		60,325
5.	Depreciation	TOTAL	73,000
	5a. Of special Tooling		17,830
	5b. Other Plant and Machinery		55,170
6.	Standard Cost		1,199,511
7.	Other Items @ 4%		47,980
		TOTAL	1,347,891
8.	Quoted Price		1,660,000

TABLE 3.12 COST STRUCTURE

0.302 12 - ROW DESERT BUS

1.	Total Imported Components	705,826
	1a. CIF Cost	585,354
	1b. Customs Duty	71,828
2.	Engine Cost	185,780
	2a. CIF Cost	154,000
3.	Other. Local Purchases	393,877
	3a. Import Content	182,000
4.	Direct Labour 1,970 hours @ 37 rials	72,890
5.	Overheads and scrap allowance	77,447
6.	Depreciation Total	131,875
	6a. Of special tooling	17,830
	6b. Of other plant and machinery	144,045
7.	Standard Cost	1,568,695

TABLE 3.13

INIM COMMERCIAL VEHICLE MANUFACTURE

		0309 TRUCK	0309 MINIBUS	0302 CITY BUS	0302 DESERT BUS
Value added in Plant		101,000	182,000	550,135	
Foreign Exchange Cost		290,000	340,000	800,000	1,000,000
$\frac{\text{Material Cost}}{\text{Quoted Price}}$	x 100	77%	70%	67%	
$\frac{\text{Labour Cost}}{\text{Quoted Price}}$	x 100	3%	4.3%	3.4%	

The most interesting aspect of Iran National at the present time is the company's planned future programme. This programme aims to give INIM a low cost entrant into the market through the introduction of a "lo-line" Peykan, to be produced from 1972 onwards using the current Peykan sheet metal, gear box, axle etc., but with a 1,500 cc engine. This engine will be locally assembled initially and, by 1974, fully manufactured in Iran. As a means of improving the product and utilising to the full the new foundry/machining facilities, an 1,800 cc engine will be developed for installation into the Peykan range. This unit will be fully manufactured in Iran from production start-up in January 1974 and will be progressively introduced into Hi-line, pick-up and Taxi models during the following twelve months. In 1354, INIM will introduce a new family of cars from Chrysler UK using locally manufactured 1,250/1,500/1,800 cc engines, gear boxes, axles, etc. Thus, the product programme involves major model changes in 1351 and in 1354 together with minor annual face lifts in between. It also gives INIM a low cost entrant into the market from 1351 onwards by making best use of available tooled Arrow components together with the low cost "B" engine. At the same time it gives continuity to the successful present Arrow range. The whole programme is summarised in Chart 3.1, this being a reproduction of information obtained from Iran National. The numbers in the chart refer to plant output. In relation to the market forecast developed by Metra, these numbers appear to be considerably optimistic. It is interesting to note that the INIM proposal has been revised on a number of occasions and, going back to the proposal of March 1970 (the chart comes from the proposal of July, 1971), market projections are much more in line with those developed by Metra.

Table 3.14 shows the estimated cost of the programme referred to above to be £30.8 million.

RT 3.1

[illegible] CO.

PRODUCT AND [illegible] PLAN

Product Range	1970	1971	1972	1973	1974	1975	1976
Paykaan Hi-Line Models	F/L (Minor)	26.2	MAJOR FACE LIFT 21	24	37	62	62
			CARRY OVER 1725cc ENGINE AND POWER TRAIN. (1800cc engines from Jan 1974)				
Taxi & Pick up		6	8	[illegible]	24	28	28
	CARRY OVER 1970-72 BODY SHELL AND 1725cc ENGINE AND POWER TRAIN. ([illegible] engines from mid-1973)						
Economy Lo-Line Models			'B' 1500cc ENGINE – CARRY OVER PAYKAAN GEARBOX AND REAR AXLE				
			6	22	[illegible]		
			CARRY OVER 1970-72 BODY SHELL				
Paykaan and Derivatives Replacement Model Range						70	'B' ENGINE FAMILY [illegible]
						COMPLETE NEW BODY SHELL	
Manufacturing Programme							
Engine Assembly 1500cc			3.2	[illegible]	[illegible]	68	[illegible]
Engine Assembly 1800cc					[illegible]	[illegible]	62
Foundry							
Machining				1500cc Engine	1800cc Engine	G BOX, SUSP'N & AXLE	

TABLE 3.14 PROJECT EXPENDITURE

PROJECT	ESTIMATED COSTS £000's				AREA	
	Building	Machines	Tooling	Total	Sq. Ft.	Sq. Metre
12/hour Expansion	150	630	128	908	69	6.4
Frt. Susp. & Rear Axle Assy.		6	13	19	-	-
1500 cc Engine Assembly	986	392	13	1,391	186	17.3
1500 cc Engine M/C G.I		2,584	763	3,347	-	-
1500 cc Engine M/C Total		1,971	593	2,564	-	-
Foundry Stage I	871	1,291	182	2,344	106	9.8
Foundry Stage II	60	246		306	10	1.0
Central Services - Phase I	674	534	32	1,240	39	3.6
1250/1800 cc Engine		100	172	272	-	-
Press Shop	990	4,934		5,924	425	39.5
New Paint Trim & Final Assy.	1,440	1,137	100	2,637	600	55.8
'B' Stamping Dies			3,500	3,500	-	-
'B' Soft Trim Manufacture		89	5	94	-	-
'B' Gearbox	149	1,849	366	2,364	64	5.9
'B' Rear Axle	276	1,743	349	2,368	99	9.2
'B' Front Suspension	49	648	84	781	21	1.9
'B' Heat Treatment	28	353	37	418	10	0.9
Central Services - Phase II	100	220	17	337	-	-
T O T A L	5,733	18,727	6,354	30,814	1,629	151.3

Source : INIM

Dealing with engine production, the capital investment proposed and the distribution of this investment between buildings machinery and tooling appears realistic in comparison with that involved in similar plants in, say, Spain. However, certain anomolies exist in the economic appraisal of the plant and in the cost reconcilliation. In particular, the cost savings predicted for full local manufacture accrue purely from anticipated preferential treatment in respect of customs duties and C.B.T. There can be no doubt that it is substantially more expensive to manufacture engines in series of 60 - 70,000 p.a. in Iran than in series of 250,000 in the UK. In fact, ignoring Duty and CBT altogether in each case, the following costs result:

	Total Cost/Unit
	£
Imported Built-Up Engine	93.347
Imported CKD Engine - Local Assembly	94.310 *
Local Manufacture	109.355 *

On the other hand, it is true that foreign exchange savings will result from local manufacture, that around 1,000 jobs will be created directly and that casting and machining technology will be introduced.

A more detailed breakdown of costs, prepared from information contained in the INIM proposal is presented in Table . It seems probable that the locally produced cost cited is somewhat optimistic and, in fact, the latest estimate obtained from sources close to INIM is that a locally produced engine will cost £132. This last figure probably takes into account a return on capital invested and compares with the cost of an imported 'B' 1500 engine put at £134. This in turn compares with a cost of the present 1725 cc engine of about £170 (CIF plus duty, CBT and inland transport). Incidentally, it can be seen that the 'B' engine is inherently a lower cost unit than the existing 1725 cc.

* Excludes any return on invested capital.

TABLE 3.15

BO 1500 cc ENGINE COST (Based on 62,700 units/annum)

			£ per Unit
A.	IMPORTED		
	1.	Ex Factory	76.609
	2.	FOB	82.609
	3.	CIF	92.052
		Plus Duty & CBT	40.503
		Inland Transport	1.295
	4.	Total Cost	133.850
	5.	Total Cost Less Duty & CBT	93.347
B.	LOCAL ASSEMBLY ONLY		
	1.	Ex - Factory CKD	72.559
	2.	FOB	78.809
	3.	CIF	88.252
		Duty and CBT[1]	38.831
		Inland Transport	1.295
	4.	Material Cost	128.378
	5.	Assembly Cost	6.763
	6.	Total Cost	135.141
	7.	Total Cost Less Duty & CBT	94.310

Loss on Local Assembly B6 - A4 £1.291

Foreign Exchange Saving A3 - B3 £3.800

TABLE 3.15 (contd.)

C. LOCAL MANUFACTURE

	Imported Components	£ per unit	Import Content £ cif
1.	CKD 1500 cc Engine Ex-Factory	72.559	
2.	Less Grey Iron Castings	14.923	
3.	Unfinished Parts Allowance	5.059	
4.	EX-FACTORY COST	52.577	
5.	F.o.B. Costs	56.093	
6.	C.I.F. Costs	61.374	61.374
7.	CUSTOMS DUTY AND C.B.T.[1]	27.005	
8.	Inland Transport	0.711	
9.	TOTAL COST	89.090	
10.	Other Direct Materials[2]	3.605	
11.	TOTAL DIRECT MATERIAL	92.695	
12.	Direct Labour	2.724	-
13.	MFG Expense: TOTAL	35.000	
	a) Indirect Labour and fringe benefits	8.845[4]	-
	b) Non productive materials - domestic	1.070	-
	c) Non productive materials - imported c.i.f.	7.808	7.808
	d) Utilities	3.113	-
	e) Depreciation[3]	10.380	6.000[5]
	f) Other	3.784	1.733
14.	Special Tooling Amortization	4.640	3.480[5]
15.	ROYALTIES	1.301	1.301
16.	TOTAL COST	136.360	
	TOTAL COST LESS DUTY AND C.B.T.	109.355	
	Foreign Exchange Requirement		81.695

TABLE 3.15 (contd.)

NOTES

1. To make this analysis compatible with imports of built-up engines and assembly only, Duty and C.B.T. has been added at the standard rate. This factor was omitted from the INIM proposal indicating anticipation of the waiving of duties. However, unless some special agreement has been reached with the Government, this is unreasonable. In fact the duty on separate engine parts is presently 5% ad valorum plus 5% C.B.T. Using these figures:

   TOTAL COST of Locally Assembled Engine = £105.338

   TOTAL COST of Locally Manufactured Engine = £115.646

2. Although shown as 60% imported in the INIM proposal, it is assumed that these will be available in Iran in time.

3. Taken as 5% on buildings
   10% machinery
   25% special tooling

4. Appears somewhat high in comparison to direct labour.

5. Taken as 75% of machinery and special tooling depreciation.

4. JEEP COMPANY

4. JEEP

At the present time the company is solely owned by a private Iranian individual, Mr. Akhavan. The company was set up to assemble Jeeps in 1958/59 and moved to its present premises on the new Karadj road in March of 1968. The company produces vehicles under licence from American Motors Corp. (USA) which includes Jeep International (formerly Willys Jeep and Kaiser Jeep).

Three basic ranges of vehicle are produced, these being:

- Rambler Saloon Cars. This range is produced in two variants, the Shaheen and Aria, the former being the standard version and the latter the De Luxe version which incorporates a higher standard of finish and interior trim together with such items as a radio as standard equipment. The Aria is also available with automatic transmission, with air conditioning, and with tinted glass. In all other respects the two variants are identical, being based on a five seater saloon car body of 106" wheel base and 56" track, powered by a 199 cubic inch (3.25 litre) 6 cylinder in-line engine. Layout of the vehicle is conventional with a front mounted engine driving the rear wheels through a 4 speed and reverse gear box and a rigid rear axle. Suspension is independent at the front using coil springs and damper units and none independent at the rear via semi-elliptical leaf springs. In Shaheen form, the vehicle has been popular as a "fixed route" taxi and as a private hire car. However, most private sales are in Aria form. It should be noted that this vehicle is no longer produced in the USA and indeed future production in Iran is limited as CKD packs will cease to be available within 18 months to two years. Thus the company is actively pursuing negotiations leading to the replacement of the Rambler vehicle by another, similar vehicle. The replacement must be similar as far as the engine is concerned as the company's licence is for 6 cylinder or more engines. In fact, the companies (Ford, Toyota, General Motors) and models being considered all utilise 6 cylinder engines, that of Ford being in Vee form.*

- Jeep Universal CJ-5. This is the ubiquitous 4 wheel drive Jeep utility vehicle which is produced in hard top and canvas top forms at the present time. Engine is the Hurricane 4 cylinder and suspension is by leaf springs and by hydraulic shock absorbers at all 4

*See Appendix B, Volume 1, of Automotive Industry report for the latest situation on these negotiations.

wheels. However, it is believed that the company will replace this engine with a 6 cylinder petrol engine as and when the new passenger car is introduced.

- Jeep J Series. The J series comprises a family of models ranging from the Gladiator in pick-up and personnel carrier forms to the Wagonneer station wagon. Again these vehicles are 4 wheel drive, both axles being rigid and suspension being by semi-elliptical leaf springs all round. Engine used is the 6 cylinder 232 cubic inch (3.8 litre) unit.

Total output of the company was just over 7,500 vehicles in 1349. This represents an increase of about 15% over 1348 whilst the figure for 1350 is expected to be approximately the same as that for 1349. Of the output in 1349, 4,417 vehicles were passenger cars of which the De Luxe version, the Aria, accounted for just over 60%. At the present time the Aria is said to account for about 80% of production of passenger cars and of these Aria vehicles, some 8% are automatics and 17% are fitted with air conditioning units and tinted glass. Output of CJ Jeep vehicles totalled 1,833 in 1349 whilst that of J Series vehicles totalled 1,294.

The above figures represent average daily outputs in 1349 of 15.3 passenger cars, 6.3 CJ vehicles, and 4.5 J Series vehicles; a total of 26 vehicles per day. Present production capacity is for 50 vehicles (of all types) per day. This is the absolute single shift capacity assuming all CKD components are available, no breakdowns, etc., etc. In a normal day however, a maximum of 40 vehicles can be produced, equivalent to 10,500 vehicles per annum. The Jeep lines have a capacity of 20 vehicle units per day, with the CJ Series being counted as 1 vehicle unit and the J Series as 2 vehicle units. Thus capacity is for 12 - 14 vehicles per day. Minor changes to the lines presently being carried out will raise this capacity to 28 units per day, equivalent to some 20 vehicles per day. Future planned changes will raise the capacity for Jeep vehicles to 50 - 55 units per day or 35 vehicles per day based on 15 pick-up and station wagon J Series vehicles and 20 CJ vehicles per day. On the basis of the previously mentioned outputs in 1349 (which are roughly equal to those in 1350) it can be seen that utilisation is currently about 75% of single shift capacity for Jeep vehicles and also for saloon cars. However, days worked in both 1349 and 1350 were less than the planned figure of 289 days due to shortages in CKD packs. If allowance is made for these days lost, utilisation of achievable single shift capacity approached 90%. It should be noted that these utilisations are based on achievable single shift capacity; if maximum theoretical capacity is considered, even allowing for days lost through CKD pack shortages, utilisation is only about 70%.

The company is highly integrated vertically producing more of its own components than possible any other Iranian motor vehicle manufacturer. At the present time all body panels are pressed in theplant and assembled. Other components produced in the plant include:

- Mufflers (originally produced by Iran Muffler Company but, primarily because of bad delivery, the company decided to produce their own).

- Wiring Harness.

- Seats and Interior Trim.

- Brake and Fuel Lines (The Ministry of Economy imposed a ban on imports of these components, assuming that a local souce was available. An extensive search by the company failed to unearth this source and, therefore, the company was forced to go into manufacture).

- Wheels.* Currently a pre-production run of 500 wheels is being produced for the Rambler. If successful all wheels will be produced.

- Rear Leaf Springs. These were originally purchased locally but long delivery times and quality problems resulting in a high rate of rejection led the company into manufacture in-plant.

- Fuel Tank.

Other components and materials presently purchased in Iran are:

- Tyres and Tubes,

- Radiators. Quality fell off appreciably and last year led to engine overheating problems which were finally traced to a 2 mm increase in the filler neck length. This resulted in a decrease in the operating pressure and premature boiling. The company also finds that delivery schedules from Iran Radiator are unsatisfactory.

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*Nov. 1972: Wheel manufacture has now apparently been abandoned.

- Battery
- Canvas for CJ-5 cover.
- Vinyl for seat covers and trim.
- Padding for seats.
- Carpets.
- Glass except tinted glass. The company was compelled (reluctantly) by the Ministry to use local glass. This had previously been used in buses but was not necessarily suitable for car windscreen and back lights.

Turning to the company's facilities, the factory can be divided into the following areas:

- Press shop. The press shop is equiped with a number of presses ranging from 300 - 1,800 tons capacity. In fact, it is the largest press shop in the country with the exception of Iran National who now have a greater capacity with the installation of their latest presses. The Jeep presses are unique in the Iranian Motor Industry in being mechanical as opposed to hydraulic, reflecting a general American as opposed to European preference. Utilisation of capacity in the press shop is extremely low, being some 50-60% overall and considerably less than this on the largest presses. Methods are generally labour intensive, with hand trimming and finishing of panels being employed. The press shop area also incorporates a spring leaf manufacturing facility which, whilst slow and inefficient, is sufficient to cover Jeep Company's present requirements for leaf springs. Also within the press shop area is the new wheel rim production facility which again has been designed with Jeep's requirements only in mind.
- Other component manufacture. An area of the plant is set aside for production of such components as seats, trim, mufflers, wiring harness etc. Again methods are generally labour intensive.
- Assembly. Saloon car and Jeep vehicle assembly facilities are physically separate and housed in separate buildings. Each is self contained in that bodies are welded and assembled from individual panels, degreased, phosphated and painted and final assembly carried out under the same roof. Thus,

there is a perhaps unnecessary duplication of certain facilities, particularly of paint shops. Furthermore, the general impression gained, particularly in the Jeep assembly unit was one of inefficiency with a poor flow of materials. A further disturbing feature from a safety point of view is the location of spot welding bays in close proximity to the paint shop without any reasonable shielding. (In fact, the shield consisted of polythene sheeting and it it believed that several fires have already occurred). Minor changes are being carried out in the Jeep assembly shop which should result in improved flow of materials and, consequently, efficiency.

The rest of the plant is taken up with materials handling and warehousing facilities. In addition, there is a small and ill-equipped testing facility which appears to be very little used. During discussion with company representatives, little emphasis was placed on quality control. Employee training facilities appear to be minimal.

The company employs a total of 1,637 persons of whom 250 are at central office. A breakdown of this employment is shown in the following table:

		Employees
1.	Press Shop	214
2.	Component Manufacture	154
3.	Jeep Assembly	140
4.	Rambler Assembly	332
5.	Pre-delivery Checks	52
6.	Material Control)	138
7	Warehouse)	
8.	Technical Staff*	232
9.	Administration etc.	125
10.	Central Office	250
	TOTAL DIRECT (1-5)	892
	TOTAL AT PLANT	1,387
	TOTAL COMPANY	1,637

* Production Engineering, Plant Engineering, Quality Control, Tooling, etc.

The Rambler assembly shop includes body sub-assembly, paint and final assembly and involves a total of 332 direct workers. Achievable single shift capacity is quoted by the company as 22 vehicles per 8 hour day, thus the standard man hours required per vehicle total 120. A similar vehicle produced in Spain on an achievable single shift capacity basis of 12 vehicles per day requires 118 standard man hours. However, it should be noted that the Rambler capacity is double that of the Spanish counterpart, and that the influence of bonus schemes in Spain means that the actual man hours worked per vehicle are somewhat less (up to 20% less) than the "standard" figure. It would appear therefore that more efficient operating methods offer a means of improving labour productivity.

On the subject of investment, estimates again vary considerably depending upon the source. However, the most informed estimates, from within the company, puts the total investment in plant and machinery at US$ 8,500,000 of which some US$ 4,250,000 are accounted for by special tooling. Adding land and buildings brings the total investment in the plant to about US$ 11,000,000. In addition, some US$ 11,000,000 are tied up in working capital, not including US$ 4-5,000,000 required to finance consumer credit on sales of vehicles.

Management of the company is obviously highly influenced by the situation of sole ownership. The owner, Mr. Akhavan, exercises a high degree of direct control over all management functions and foreign experts employed are often highly critical of his policies especially in technical and production matters. General company management, sales management and, strangely, procurement are operated from the company's central office in town, other management functions being based at the plant. The relatively recent removal of the procurement function from the plant to the central office is said to have caused operational difficulties and, in general, plant management is acutely aware of communications difficulties. Cost control procedures seem inadequate for a company with Jeeps' aspirations and, no evidence was available to suggest that existing procedures are at all capable of yielding realistic "make or buy" decisions. Significantly, the policy of vertical integration embodied in the manufacture of such items as wheels, springs, etc. was justified by company representatives purely on the basis of poor experience with outside suppliers on grounds of delivery and of quality. Cost was not once cited as a reason for in house production of a component.

Personnel management is obviously non-existent in the company and this is evidenced by an extremely high rate of labour turnover (36% per annum). This labour turnover stands at a high rate in all levels from unskilled workers to middle management. To some extent this high rate of turnover is probably due to the quoted reason of low wage and structures in relation to other motor vehicle manufacturers in Iran. However, the general impression gained from watching Jeep employees at work is that deeper reasons associated with job satisfaction and general conditions are also important. Certainly, the industrious atmosphere of, for example, Iran National is not felt within the Jeep plant. It is interesting to note that many of the employees who have left Jeep in the past have in fact gone to other Iranian motor vehicle manufacturers.

Turning to costs and financial performance an accurate analysis is precluded through lack of detailed and reliable information. For example, there is a considerable discrepancy between the reported sales of the company and those suggested by output and unit price. In 1348, reported sales (Ministry of Economy Information) were 2,053 million rials. The reported figure (Confidential Source) for 1349 is approximately the same as that for 1348. However, taking the combination of output of vehicles and unit price of vehicles suggests a total volume of sales (including dealer mark-up) of over 2,500 million rials, a difference of 25% which is considerably in excess of any dealer mark-up normally found in Iran. In any case, the company acts as its own dealer in many cases. It is thought, although no concrete evidence is available that the recorded figures at least for output, refer to the manufacturing operation and exclude the sales operation. The accompanying tables give indications of the costs involved in production of Jeep vehicles together with implications of overall company performance. With the exception of CKD pack costs, for which detailed invoices are available, most of the other figures have been estimated from information obtained through various sources. Thus, final totals should be treated with caution.

As far as the future is concerned, it has already been mentioned that the Rambler saloon car must be replaced by an equivalent model in the near future and negotiations are under way in this connection. In addition, the company has already formulated a master plan setting out its overall objectives for the future. In the short term these include modifications to existing facilities to increase output or rather capacity of Jeep vehicle production. Eventually it is intended to increase Jeep vehicle capacity to 50-55 units equivalent to 35 vehicles, these being 15 J Series vehicles (equivalent to 2 vehicle units) and 20 CJ Series. All these capacities are on a daily basis. In addition it is proposed to increased Rambler (or its equivalent) capacity from the present level of 22 vehicles per day to 65 vehicles per day. Thus the objective is to increase overall capacity to 100 vehicles per day on a single shift basis, and in addition, all stampings for the Rambler, the CJ Series, and the J Series will be produced. Furthermore, the master plan embodies the production of 100 engines per day. It is intended to produce only one engine which will be fitted to the complete vehicle range, the CJ Series being adapted to take a six cylinder engine. The engine plant will include a grey iron foundry to produce basic castings, all machining work, and assembly. No forging is contemplated and components such as valve guides and tappets will be purchased. Production of components presently manufactured in the plant (seats, mufflers, springs, wheels, etc.) will be increased to keep pace with the overall increase in output of vehicles. The overall investment involved in this master plan is said to total US$ 60,000,000 of which the engine plant account for approximately US$ 12,500,000. This engine plant cost is said to include US$ 2,000,000 for the foundry. In fact, it has been suggested that the company should invest in the purchase of an existing foundry in Iran rather than set up a completely new facility on its own site.

The above details of the company's future plans are obviously incomplete and no detailed assessment of them is possible. Apparently more comprehensive data is contained in a proposal submitted by Jeep company to the Ministry of the Economy but, unfortunately, this proposal was not made available to Metra either by the company or by the Ministry of Economy. However, in view of the negotiations under way at the present time between Jeep Company and potential foreign partners, it seems certain that any plans submitted to date will be liable to drastic alteration in the future.

TABLE 4.1 SUMMARY STATISTICS

COMPANY : JEEP COMPANY - 1349

A.	Production: units	7,544
B.	Value of Output (m rials)	2,500 +
C.	Total Workers:	1,637 (1,387 at Plant)
D.	Direct	892
E.	Indirect at Plant	495
F.	Annual Payroll (m rials)	180
G.	Gross Assets (m rials)	-
H.	Closing Stock (m rials)	1,123
I.	Total Value of Input (m rials)	1,650
J.	Materials and Parts (m rials)	1,622
K.	Cumulative Investment (m rials)	836
L.	Gross Value added (m rials) (B-I)	850

Output per Worker *	$\frac{A}{C}$	5.4 vehicles
Stock Turnover	$\frac{B}{H}$	2.2
Labour Cost	$\frac{F}{B}$	7.2%
Material Cost	$\frac{J}{B}$	65%
Utilisation of Assets	$\frac{B}{G}$	-
Investment per Vehicle	$\frac{K}{A}$	1,458
Sales per Worker*	$\frac{B}{C}$	1.5 m rials.
Value added per worker L/C ('000 Rials)		519
Value added as % of output L/B x 100%		34%

+ Estimated total sales at 'ex-works' prices.
* Including employees in central office

TABLE 4.2 (contd.)

APPROXIMATE COST BREAKDOWN: JEEP COMPANY

Average for all vehicles

		Rials/Unit
1.	Total Cost of Imported Components and Materials	175,000
	1a. CKD Pack Cost CIF	125,000
	1b. All Imports CIF	150,000
2.	Locally Purchased Materials and Components	35,000
	2a. Estimated Local Content	20,000
	2b. Estimated CIF Equivalent	10,000
3.	Labour Cost (based on 33 rials/hour)	10,000
4.	General Costs	
	Administration Costs, Depreciation, Royalties, Sales Cost, etc.	33,000
5.	Direct Taxation	8,000
6.	Final Cost (1+2+3+4+5)	266,000
7.	Ex-works price* (including dealer Mark-up)	335,000
8.	Price to Customer (includes 35,000 rials tax plus 5% municipal duty)	388,500

* N.B. Recorded sales divided by recorded output indicate unit ex works price of 266,039 Rials.

TABLE 4.2 (contd.)

		Rials/Unit
I	Value Added	
	(a) Overall based on price including dealer mark-up	120,000
	(b) In-plant only. Excluding profit*	51,000
II	Foreign Exchange Cost	
	(1b + 2b + 10,000 rials allowance to cover royalties, depreciation, cost of foreign workers, etc.)	175,000

* As mentioned previously it is believed that all profits are attributed to the sales operation.

TABLE 4.3 COST STRUCTURE

RAMBLER - SHAHEEN

			Rials/Unit
A	**Local Production**		
1.	Total cost of Imported Components and Materials.		153,000
	1a	CKD Pack CIF	102,144
	1b	All Imports CIF	130,000
	1c	Duty on Imports	
2.	Locally Purchased Materials and Components.		35,000
	2a	Estimated Local Content	23,330
	2b	Estimated CIF Equiv.@ 30%	11,670
3.	Labour Cost.		13,000
4.	Administration Cost.		
5.	General Cost.		
6.	Depreciation.		33,000
7.	Royalties.		
8.	Loan Interest, Sales Cost etc.		8,000
	8a. Direct Taxation		
9.	Final Cost.		242,000
10.	Fixed Price.		
	10a	Ex-Works (including dealer mark-up)	295,000
	10b	To Customer	344,750
B.	**Overseas Comparison** (Equivalent US Compact)		
1.	Ex-Works Price Country of Origin.		145,084
2.	Retail Price Country of Origin.		168,796
3.	Estimated CIF Price Iran.		166,820

TABLE 4.3 (contd)

Rials/Unit

I	Value Added		
	(a) 10a - (1+2) overall including dealer mark-up		107,000
	(b) 9 - (1+2) In-plant only excluding profit		54,000
II	Foreign Exchange Cost		
	(1b + 2b plus 10,000 rials allowance to cover royalties, depreciation etc.)		152,000
III	Foreign Exchange Saving		
	B3 - II		15,000
IV	Material Content $\frac{1+2}{10a} \times 100\%$	64%	
V	Labour Content $\frac{3}{10\ a} \times 100\%$	4.4%	
VI	$\frac{\text{Iran Ex-Factory *}}{\text{Ex-Factory (Country of origin)}}$	1.8	
VII	$\frac{\text{Iran Ex-Factory *}}{\text{Iran CIF}}$	1.6	

* 10a less estimated 10% dealer mark-up.

TABLE 4.4 CKD PACK COST: RAMBLER SALOON

Less engine, radiator, radio, battery, tyres and tubes, all seat fabrics or plastic seat cover, floor mats trimmings and seat springs, exhaust, coating paint and thinners, stamped parts including panel: outer door, rear wheel house, roof, etc., fuel tank, rear springs.

	UNIT PRICE US $
Basic Price	727
Boxing	89
Inland Freight	18
Ocean Freight	51
Forwarding Fees) FCIA) Consular Fees)	15
CIF	900
Engine CIF	444
SHAHEEN TOTAL CIF	1,344

Plus Options ex-works (extra)

Solex Glass	21
Air conditioning kit	207
Automatic Transmission	66

TABLE 4.5 INTERNATIONAL PRICE COMPARISON : RAMBLER SALOON

This model is no longer produced in the USA and, therefore, no direct comparison can be made. However, with a 106 inch wheelbase, 56 inch track and 199 cu. in. engine, the Rambler falls into the US "compact" class. Current US models in this class include:

	List Price *	Ex-Works
Ford Maverick	$ 1,995	$ 1,795
Plymouth Valient	$ 2,282	$ 1,933
Chevrolet Nova	$ 2,275	$ 1,926
Dodge Dart	$ 2,332	$ 1,980
Average	$ 2,221	$ 1,909

Taking these average prices and comparing them with those for the Rambler Shaheen in Iran, retail price in Iran is 2.1 times that in the USA and ex-works is approximately 1. times that in IRAN. It should be noted that indirect taxation is higher in Iran than in the USA. Incidentally, the retail price of the Rambler 'Aria' in Iran is 1.6 times that of the equivalent Holden model in Australia.

* Including 7% Federal Excise Tax.

TABLE 4.6 COST STRUCTURE

[illegible] 5 HARDTOP

A Local Production

		Rials/Unit
1.	Total cost of Imported Components and Materials.	165,000
1a	CKD Pack CIF	1[illegible]8,8[illegible]
1b	All Imports CIF	140,000
1c	Duty on Imports	
2.	Locally Purchased Materials and Components.	80,000
2a	Estimated Local Content	20,000
2b	Estimated CIF Equiv.	10,000
3.	Labour Cost.	10,000
4.	Administration Cost.	
5.	General Cost.	
6.	Depreciation.	33,000
7.	Royalties.	
8.	Loan Interest, Sales Cost etc.	8,000
8a	Direct Taxation	
9.	Final Cost.	246,000
10.	Fixed Price.	
10a	Ex-Works	327,320 rial
10b	To Customer	343,686

B. Overseas Comparison

1.	Ex-Works Price Country of Origin.	
2.	Retail Price Country of Origin.	-
3.	Estimated CIF Price Iran.	

TABLE 4.6 (contd)

		Rials/Unit
I	Value Added in Plant 10a - (1+2)	82,320
II	Foreign Exchange Cost (1b + 2b + 1[illegible],000 rials nominal)	160,000
III	Foreign Exchange Saving B3 - II	-
IV	Material Content $\frac{1+2}{10a} \times 100\%$	75%
V	Labour Content $\frac{3}{10a} \times 100\%$	3%
VI	$\frac{\text{Iran Ex-Factory}}{\text{Ex-Factory (Country of origin)}}$	-
VII	$\frac{\text{Iran Ex-Factory}}{\text{Iran CIF}}$	-

TABLE 4.7 CKD PACK COST: JEEP CJ5

		Unit Price US$
Jeep Universal 4 W.D.		
CJ5 with 4 cyl engine.		
Basic Price		1,654.60
Less engine & attaching parts @		452.77
		1,201.83
Add Misc.		8.95
		1,210.78
Deletions:	$	
Tyres & Tubes	69.15	
Battery	11.60	
Misc.	277.20	
		852.89
Plus Locking Gas cap		1.45
Plus Ventilating Windshield		47.25
Less Parts Deleted		45.93
		855.66
Plus Boxing Charge		55.87
F.O.B. Toledo		911.53
CIF Khorramshahr		937.85
Plus Engine CIF		494.13
TOTAL PACK CIF		1,432

5. KAVEH COMPANY

5. KAVEH COMPANY

Kaveh produces two ranges of vehicles: heavy trucks under licence from Mack Truck Limited of the USA and a six wheel G.M. Pick-up. The company's licence is for 400 large trucks per year and 1,000 vannettes per year.

The bulk of Mack Truck production is taken up by the R 611 model, fitted with the ENDT 673 engine, together with production of some R 685 models fitted with the Maxidine engine. These vehicles are produced in a number of forms including tippers and tractor units. In addition, the trailers are also manufactured in-house. Gross vehicle weight of the models produced ranges from 26 to 56 tons with gross combined weight of tractor and trailer units going up to 100 tons. Engines used are either 135 or 250 h.p. 6 cylinder diesel units, both being water cooled. Although production of Mack Trucks by Kaveh reached a peak of almost 300 units in 1348, 1349 represented a very poor year for the company with, it is estimated, only 173 trucks produced. However, 1350 should be a better year, and indeed sales in the first seven months of 1350 reached 139 units. It must be said however, that production was only 93 units as considerable stocks of finished vehicles existed at the end of 1349. In addition to the above mentioned Mack models, the company has from time to time assembled or sold in built-up form other Mack models in cases where orders have been small. For example, a single Mack B 33 P was sold to the Khuzestan Water and Power Authority. Furthermore, the company has manufactured some buses based on Mack mechanical components and chassis. A number of these buses are used by the company for transport of workers but, in addition, a small number have been sold with the Army having been one customer.

Little need be said of the G.M. Vannette, as this has met extremely limited market acceptance and only 98 and 60 units were sold in the years 1348 and 1349 respectively. Kaveh still have some stocks of CKD packs for this vehicle and will clearly continue assembly until the stocks are exhausted. However, it is not intended to order further supplies of components for this vehicle. In addition to motor vehicles, the company is involved in GRP[1].

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[1] GRP - glass fibre reinforced plastic (Polyester)

moulding. This is partly as a result of the introduction of glass fibre components on Mack and GM vehicles which are produced in-house, but also as a distinct product area. Apart from the glass fibre components for its own vehicles, the company produces glass fibre panels for a number of other Iranian motor vehicle producers including Jeep-Rambler and Leyland Motors Iran. Furthermore, the company produces glass fibre moulded furniture and boats.

Returning the motor vehicle assembly operation, CKD packs are imported from the USA containing all the major mechanical components (these being in knocked down form) chassis side rails, electrical equipment and some other minor mechanical components. Components purchased in Iran include:

- Radiator core
- Battery
- Tyres (these are usually provided by the customer, except in the case of sales to Government agencies)
- Rubber components
- Paint
- Other consumable and minor items

Items manufactured in-house include:

- Chassis cross members
- The cab which is all metal
- Hood and fenders (In the case of the Mack these are made to customer's order in either glass fibre or metal. When glass fibre was first introduced only 10 - 11% of trucks produced incorporated this material. Now some 75% are glass fibre as this material is easier to repair. However, the glass fibre unit is said to be slightly more expensive, at least based on direct costs, although it has the added advantage of giving better accessability to the engine than the metal unit.)
- Fuel tanks
- Mufflers and exhaust pipe
- Air intake units
- Radiator top and bottom tanks
- In addition machining of cast spoke wheel centres, brake drums and other components is carried out in the plant.

The plant is well and thoughtfully layed out for the relatively small series production of a limited range of vehicles. It is divided into a number of separate areas each serving specific functions as follows:

- The first area contains basic component manufacturing and storage facilities together with the cab assembly lines and a simple paint shop. Equipment includes one small crank press, one screw press, one hydraulic press, a stretch forming press and a Pullmax trimming machine. All double curvature metal parts, such as a GM cab roof, together with other stampings, are produced in this area. A relatively small but adequately equipped welding and machine shop serves to produce such items as the cast spoke wheel centres. The cab assembly line, particularly in the case of the Mack cab embodies a high degree of labour intensity with much hand panel beating in evidence. However, in view of the small numbers of vehicles involved the methods employed appear adequate. Radiators are assembled in one small area of this shop, which also contains a small die and tool manufacturing section. Finally, this first shop incorporates one paint spray booth and one paint stoving oven. Quality of paintwork would appear to be adequate for commercial vehicles but would certainly not be acceptable if passenger cars were being produced. Quality of sheet metal work is good, and labour seems to be generally of a relatively high standard.

- Moving on to the second major area of the factory which, though under the same roof as that described above, is on a different level. This area is divided into two sections, one being involved purely with Mack truck assembly and the other with GM truck assembly. Both sections are centred around the main assembly lines, the first operation in each case being the assembly of axles to the frame, thus allowing movement from station to station of the wheeled vehicles on their own wheels. After assembly of axles to frame vehicles pass through a spray booth where the sealer is applied and then on to the final assembly stations where, progressively, major mechanical components are installed, the cab mated to the chassis and final assembly including fittings of trim etc. to the cab carried out. The Mack truck line differs from the GM line in that the finishing section is parallel to the main assembly line in the case of the former, but in series with the main assembly line in the case of the GM. The Mack assembly section incorporates separate small areas in which front and rear axles and frames are assembled. In addition, a separate area is set aside for assembly of the Mack engines, this area section incorporating a dynomometer on which each engine is run.

- The third major area of the factory is taken up with the manufacture on finished chassis of tipper bodies together with the separate production of platform and low loader trailers. Essentially this section of the plant is purely a covered space as very little capital equipment is required, manufacturing methods being of necessity highly labour intensive.

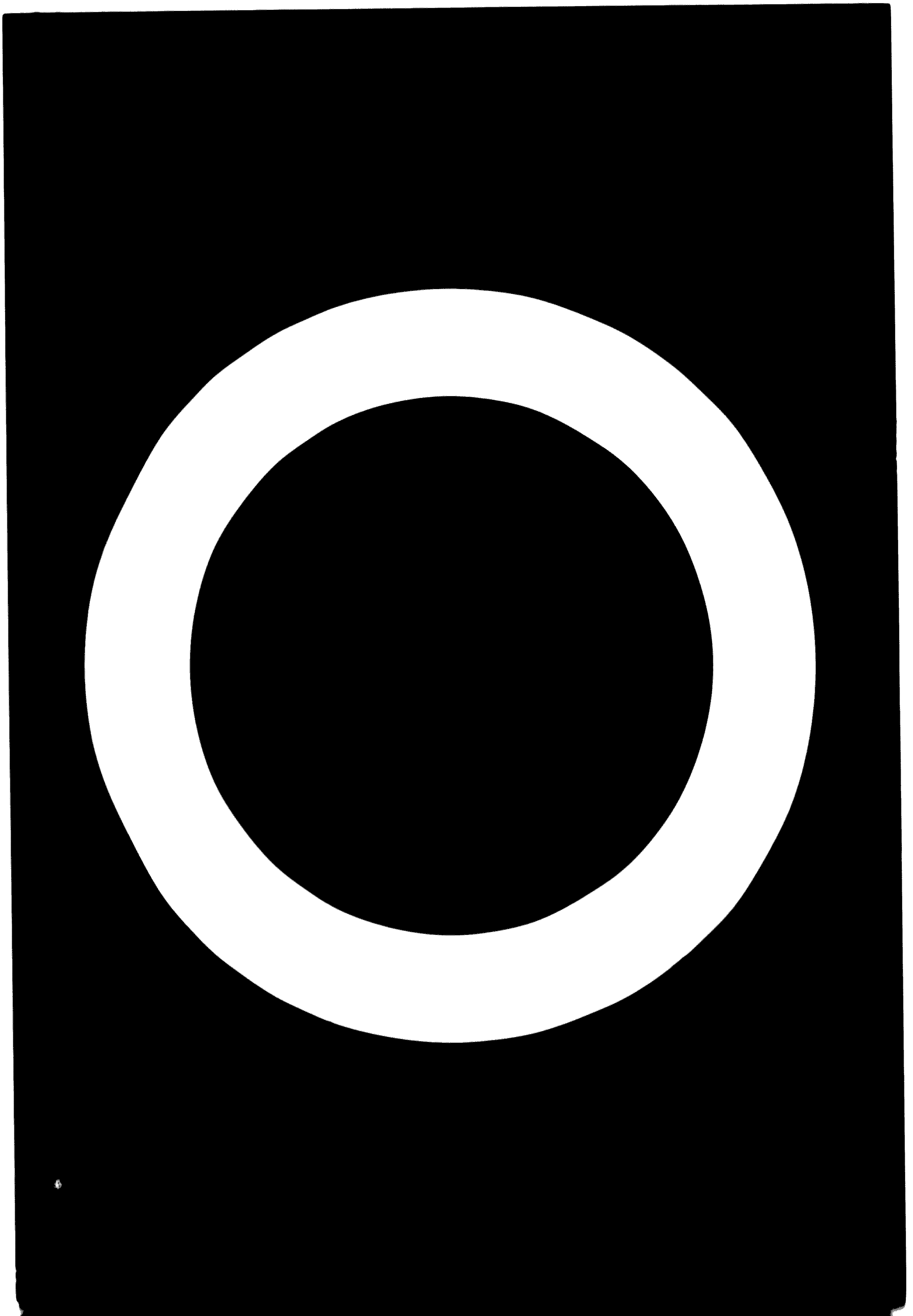
- Finally, the plant incorporates a separate glass fibre mouldering shop in which, not only the vehicle components are manufactured but also glass fibre furniture and boats. This moulding shop is under the direct supervision of a British glass fibre expert and the quality achieved seems to be exceptionally good. Incidentally, the company offers a repair service for, for example, Mack truck hood/fender units. In the event of accidental damage, the affected section is cut away, the unit placed in the original mould and the damaged area re-built. In this way, the unit is restored to its original appearance and strength.

Total labour force at the plant is said to be 261. Of these some 18 are staff functions, and about 150 can be regarded as direct workers in the vehicle manufacturing activity. Of the remainder, the majority are indirect workers, although some are involved as direct workers in production of glass fibre products other than vehicle components. There is mobility of labour within the company, workers being switched from, for example, Mack assembly to GM assembly if the need arises.

In view of the different vehicles produced, it is difficult to give a precise figure for overall plant capacity. However, the company feels that with its present labour force and facilities a maximum of 3 Mack trucks per day could be produced on a single shift basis. This is equivalent to an achievable capacity of 700 to 800 vehicles per annum and, clearly, the company's facilities are considerably under utilised at the present time.

Although the company does not operate a detailed cost control system, its major problems are in fact associated with costs. Recently there has been a large (reportedly 20%) increase in c.i.f prices of its imported CKD packs. In addition, its local purchases have also been affected by increased costs. For example, the recent merger between the two suppliers of welding electrodes in Iran led to an overall increase in electrode prices of 26%. Previously these were purchased on the basis of 30 rials per kilogram; the company being given a 6% discount and 3 months interest free credit. Now the same electrodes are said to be priced at 36 rials per kilogram cash settlement. Finally, on the subject of costs, labour costs are said to have risen sharply over the last 2 years with the company paying around 140 rials per day to its workers as a minimum.

Looking to the future, the company anticipates the continued production of Mack trucks although it foresees a relatively small growth in this section of the truck market. Thus in view of the quantities involved it is doubted if local manufacture of major components can be undertaken. Obviously, should the more minor components become available from local sources their use would be considered although prior approval has to be obtained from the licensor (Mack Trucks International). This approval is largely dependent upon components meeting Mack's own quality standards. Glass fibre work is seen as a continuing and expanding activity but, as has already been mentioned, the continued production of the GM vehicle is not foreseen, although a replacement would be welcomed. No detailed information is available on the company's cost structure.
accompanying table gives some



6. KHAVAR COMPANY

6. KHAVAR COMPANY

The company is located a few miles south of the majority of motor vehicle producers but still in the Tehran area. Ownership of the company is wholly Iranian although a relatively large number of directors is involved. Khavar began operation some 10 years ago and has a licence agreement with Daimler-Benz A.G. to produce a range of trucks. Broadly speaking the range covers six to twenty six tons gross vehicle weight (4-18 tons capacity) with vehicles being produced in a number of forms including tippers, flat-trucks, tractor units etc. In the accompanying table brief details of models currently produced are given. A further table gives details of the development of sales of trucks by the company over the last three years, and as can be seen, 1349 represented a rather poor year for the company as it did for the Iranian truck industry in general.

As far as facilities are concerned the company's capacity on a single shift basis is some 12-14 vehicles per day depending on the product mix. However, the current labour force would have to be increased to achieve this capacity and, present achievable capacity is estimated to be eight vehicles per day with current production running at around seven vehicles per day.

In common with other Iranian vehicle manufacturers, trucks are assembled from imported CKD packs although recently the engine has been deleted from the imported pack and is now delivered to the factory from the new diesel engine manufacturing operation in Tabriz. All bodywork is produced in the plant as are trim, fuel tanks, bumpers and exhaust systems. Incidentally, axle units are received from Germany in semi-lnocked down form and assembled in the factory. Engines were received in this form and assembled in the factory prior to the introduction of the Tabriz plant. Indeed, two dynamometer test benches are still installed at Khavar although no longer used.

Taking each of the individual facilities in turn, the following comments can be made:

TABLE 6.1 KHAVAR COMPANY : PRODUCT RANGE

MODEL	GVW* Tons	Capacity* Tons	Type	Engine Cylinders	Power**/ RPM	Gearbox No of Forward Speeds and Type		Comments
608	6.2	4.0	OM314	4	90/2800	G.20	5	) Common Cab
808	8.0	4.75	OM314	4	94/2800	G.20	5	) Flat Front
911	9.0	6.0	OM352	6	120/2900		5	) Common Cab :
1517	14.8	10	OM360	6	185/2200		5	) Bonnetted with
1921	19	13	OM355	6	230/2200	Ak6-80+	6	) forward mounted
1924	19	13	OM355	6	265/2200	Ak6-80+	6	) engine.
2623	22/26	14/18	OM355	6	255/2200	Ak6-80+	6	)
2624	22/26	14/18	OM355	6	265/2200	Ak6-80+	6	)

* Figures are indicative and will vary with body type
** SAE
\+ Not Daimler Benz gearbox - manufactured by ZF

TABLE 6.2 KHAVAR SALES

MODEL	1348	1349	1350*
608	253	284	119
808	127	220	124
911	420	403	103
1517	325	175	46
1921)	780	169	200
1924)		503	11
2623	74)	109	8
2624	-)		94
TOTAL	1979	1863	705

* First four months only.

1350 estimated 12 months sales 2,000

Note: Model numbers in 1348 do not correspond exactly to those above.

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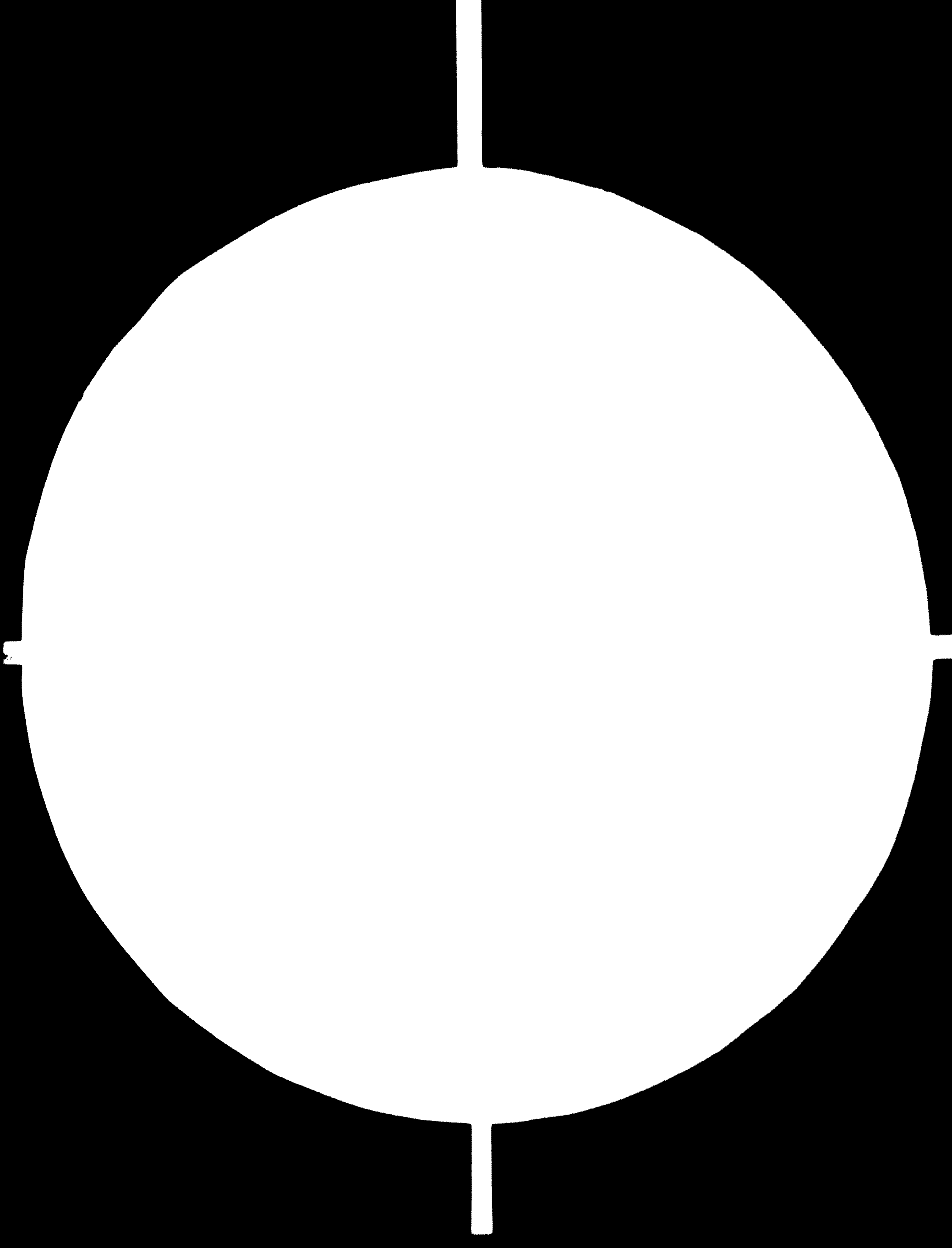

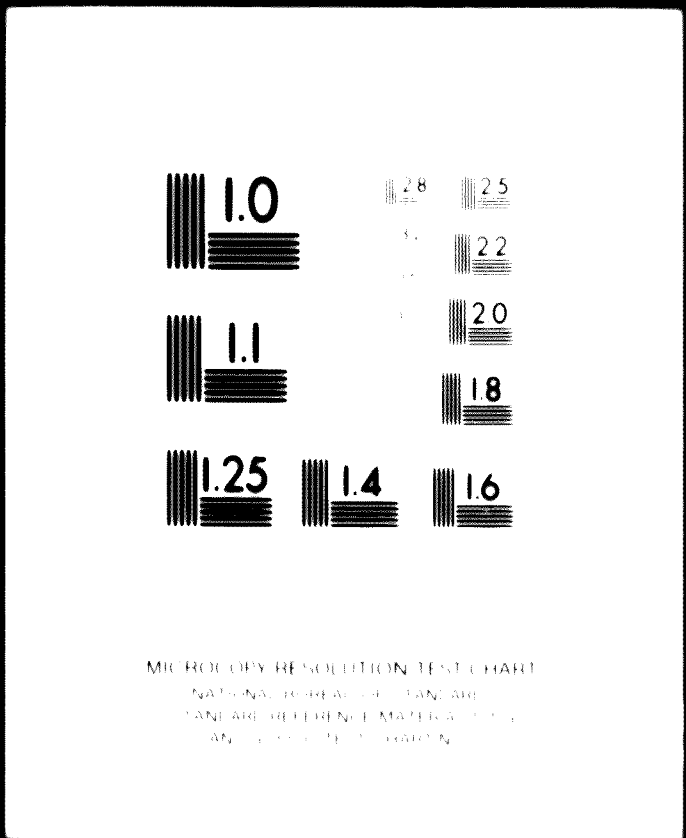
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MICROCOPY RESOLUTION TEST CHART

- Press Shop : The company has a well equipped press shop with up to 800 ton Muller hydraulic presses installed together with four small crank presses,two 250 ton stretch presses, one press brake and four cutting off machines. Hand finishing of panels is much in evidence although the press shop as a whole obviously has a considerable amount of spare capacity. As in the rest of the factory, production control systems are German.

- Whilst the press shop is housed in the main assembly building, completed panels are taken via an intermediate storage area to another smaller building in which two cab assembly lines are installed. One line produces exclusively the flat fronted cabs for the 608 and 808 series trucks whilst the other line is utilised for the bonneted cabs. The former makes use of large sub assemblies which are made up from individual smaller components, eventually four major sub assemblies making up the majority of the cab. Production of the bonneted cabs involve much more labour intensity as cabs are built up completely from individual panels rather than major sub assemblies.

- Paint Shop : Is installed in the cab assembly building, cabs being painted in a standard colour (unless otherwise specified by the customer) with a high standard of finish being achieved.

- Completed and painted cabs pass back to the main assembly building onto a cab trimming line run on mix model principles. Cabs move along the line and all trim, wiring harnesses, instruments, glass etc., are installed.

- Chassis are assembled in a separate section of the main assembly shop, the starting point being imported side rails and in-house produced cross members.

- From the chassis assembly area, chassis are taken via a small paint shop using hand held spray guns to the main assembly line. Here, mechanical components are installed progressively in the chassis as it moves down the line from station to station and, at the end of the line the completed cabs are mated to the rolling chassis. Vehicles leaving the main assembly line are held in stock pending the building of the required body. Bodies are produced in a separate area of the factory which is apparently due for redevelopment. In fact most bodies are built up on the cab chassis units in the open at the present time.

- In addition to the facilities described above the factory includes a small trim manufacturing shop housed in the main assembly area, an axle assembly shop again housed in the main assembly area, a wiring harness manufacturing shop housed in the cab assembly area, a carpenters shop, and a tool room. The tool room is perhaps one of the most commendable aspects of the factory as quite large dies are now being manufactured in-house to an apparently high standard of quality and precision. Some thirty skilled craftsmen are presently working in the tool room under the supervision of German personnel. Finally, an extremely well equipped apprentice training school has been established which takes in 35 young people each year. The course will last three years and has so far been going two years. Thus there are 70 students in training at the moment.

- Total labour force at the present time is just over 600 workers of whom 320 are said to be direct operatives. Interestingly, a piece-work system has been introduced which has resulted in an increase in average wages. These are now said to be some 20% higher than the average for the rest of the industry. Apart from this increase in wages the introduction of piece-work is said to have been beneficial as far as productivity is concerned and certainly the general impression gained of the factory is one of a high pitch of activity. Other general

> impressions suggest high quality products, a high standard of middle management particularly in such areas as production control and increased awareness of the need for skilled operatives and hence for training. In general, Khavar is not only the biggest manufacturer of trucks in Iran but also the best.

The accompanying Tables give firstly a summary of available statistics for a company (although some are estimates) referring to 1349, together with approximate breakdowns of the costs of production of a range of the company's vehicles. As far as the latter are concerned the figures given, whilst being derived from detailed analyses provided by the company to the Ministry of Economy should be treated with extreme caution, and are considered to be at best indicative. Certain anomolies appear to exist, for example the relatively low level of royalties and the relatively high cost of imported components compared with the total cost of the vehicle and also with similar costs in other Iranian companies.

TABLE 6.3 SUMMARY STATISTICS COMPANY : KHAVAR 1349

A.	Production : Units	1,863
B.	Value of Output (M rials)	2,081
C.	Total Workers	607
D.	Direct	317
E.	Indirect	290
F.	Annual Payroll (M Rials)	129*
G.	Gross Assets (M Rials)	3,286**
H.	Clsing Stock (M Rials)	963
I.	Total Value of Input (M Rials)	-
J.	Materials and Parts (M Rials)	1,615
K.	Cummulative Investment (M Rials)	-
L.	Gross value added B - (J+3%) (M Rials)	418

Output per worker $\frac{A}{C}$ vehicles p.a.	3.1
Sales per worker $\frac{B}{C}$ (m rials)	3.4
Stock turnover $\frac{B}{H}$	2.16
Labour cost $\frac{F}{B}$	6.2%
Material Cost $\frac{J}{B}$	77%
Utilisation of Assets $\frac{B}{G}$	0.63
Investment per vehicle	-

* Excludes staff and sales personnel. Total is 175 M Rials

** Fixed assets 448 M Rials

TABLE 6.3 (contd)

Value added per worker $\frac{L}{C}$ ('000 rials)	700
Value added as percentage of output:	
$\frac{L}{B}$ x 100%	20%

TABLE 6.4 COST STRUCTURE

608 TRUCK

(N.B. Includes imported engines)

A Local Production

1.	Total cost of Imported Components and Materials.		340,989
	1a	CKD Pack CIF	
	1b	All Imports CIF	292,600
	1c	Duty on Imports	
2.	Locally Purchased Materials and Components.		29,907
	2a	Estimated Local Content	19,907
	2b	Estimated CIF Equiv.	10,000
3.	Labour Cost.		14,014
4.	Administration Cost. Included in 5		-
5.	General Cost. etc.		47,553
6.	Depreciation.		15,105
7.	Royalties.		696
8.	Loan Interest, Sales Cost etc.		-
9.	Final Cost.		-
10.	Fixed Price.		
	10a	Ex-Works	448,264
	10b	To Customer	470,000

B. Overseas Comparison

1.	Ex-Works Price Country of Origin.	
2.	Retail Price Country of Origin.	
3.	Estimated CIF Price Iran.	

TABLE 6.4 (contd)

I	Value Added in Plant		
	10a - (1+2)		77,368
II	Foreign Exchange Cost		
	(1b + 2b + 7 + 50% of 6 +		310,846
III	Foreign Exchange Saving		
	B3 - II		
IV	Material Content	$\frac{1+2}{10a} \times 100\%$	83%
V	Labour Content	$\frac{3}{10a} \times 100\%$	3.1%
VI	Iran Ex-Factory / Ex-Factory (Country of origin)		
VII	Iran Ex-Factory / Iran CIF		

TABLE 6.5 COST STRUCTURE

911 L TRUCK

A Local Production

1.	Total cost of Imported Components and Materials. (includes engine)	411,907
1a	CKD Pack CIF	
1b	All Imports CIF	360,166
1c	Duty on Imports	
2.	Locally Purchased Materials and Components.	103,334
2a	Estimated Local Content	69,334
2b	Estimated CIF Equiv.	34,000
3.	Labour Cost.	30,031
4.	Administration Cost.	-
5.	General Cost. + 4 + 8 etc.	87,087
6.	Depreciation.	32,367
7.	Royalties.	1492
8.	Loan Interest, Sales Cost etc.	-
9.	Final Cost.	-
10.	Fixed Price.	
10a	Ex-Works	666,218
10b	To Customer	700,000

B. Overseas Comparison

1.	Ex-Works Price Country of Origin.	
2.	Retail Price Country of Origin.	
3.	Estimated CIF Price Iran.	

TABLE 6.5 (contd)

I	Value Added in Plant		
	10a - (1+2)		150,977
II	Foreign Exchange Cost		
	(1b + 2b + 7 + 50% of 6		411,838
III	Foreign Exchange Saving		
	B3 - II		-
IV	Material Content	$\frac{1+2}{10a} \times 100\%$	77%
V	Labour Content	$\frac{3}{10a} \times 100\%$	4.5%
VI	Iran Ex-Factory / Ex-Factory (Country of origin)		-
VII	Iran Ex-Factory / Iran CIF		-

TABLE 6.6 COST STRUCTURE

1912 L TRUCK

A Local Production

1.	Total cost of Imported Components and Materials. (includes engine)	817,964
1a	CKD Pack CIF	
1b	All Imports CIF	731,000
1c	Duty on Imports	
2.	Locally Purchased Materials and Components.	134,634
2a	Estimated Local Content	89,634
2b	Estimated CIF Equiv.	45,000
3.	Labour Cost.	31,806
4.	Administration Cost.	
5.	General Cost. + 4 + 8 etc.	113,547
6.	Depreciation.	34,174
7.	Royalties.	1,575
8.	Loan Interest, Sales Cost etc.	
9.	Final Cost.	
10.	Fixed Price.	
10a	Ex-Works	1,133,700
10b	To Customer	

B. Overseas Comparison

1.	Ex-Works Price Country of Origin.	
2.	Retail Price Country of Origin.	
3.	Estimated CIF Price Iran.	

TABLE 6.6 (contd)

I	Value Added in Plant 10a - (1+2)	181,102
II	Foreign Exchange Cost (1b + 2b + 7 + 50% of 6)	794,660
III	Foreign Exchange Saving B3 - II	-
IV	Material Content $\frac{1+2}{10a} \times 100\%$	84%
V	Labour Content $\frac{3}{10a} \times 100\%$	2.8%
VI	$\frac{\text{Iran Ex-Factory}}{\text{Ex-Factory (Country of origin)}}$	-
VII	$\frac{\text{Iran Ex-Factory}}{\text{Iran CIF}}$	-

7. LEYLAND MOTORS, IRAN

7. LEYLAND MOTORS, IRAN

Located near Tehran on the Karadj Road, Leyland Motors, Iran (LMI) is owned jointly by Private Iranian Interests and British Leyland Motor Corporation of the UK. Production of a wide range of commercial vehicles totalled 458 vehicle units in 1349, which represents a reduction over the previous year. However, 1350 will be be a much better year for the company, output being over 600 units in the first seven months of the year.

The company produces a wide range of commercial vehicles including the following:

- Piroos: A 4 wheel drive 900 kg. capacity vannette also produced in station wagon, ambulance and fire-fighting forms, this vehicle is derived from the British Triumph 1300 front wheel drive saloon with the addition of a power take-off to a rigid rear axle. The vehicle has not gained market acceptance in Iran and production remains at an extremely low level.

- 550 FG: Smallest of LMI truck range with a g.v.w. of 5.5 tons and a capacity of 3.5 tons, this vehicle has also failed to gain market acceptance largely due to the fitting of a 4.0 litre petrol engine. Ministry regulations are said to have precluded the import of CKD packs with diesel engines and, hence, the vehicle has suffered in competition with the equivalent Iran National diesel engined models, as LMI are importing 3.8 litre diesel engines separately for fitting to the 550 FG.* The vehicle is relatively modern in design, being forward controlled with the cab over the engine. However, it may be replaced by the British Leyland Terrier range which, although similar in general, has the engine mounted rather further back in the chassis, thus improving accessability. Interestingly, it is felt that all "cab-over-engine" trucks have met resistance in the Iranian market; heat and noise being cited as the main obstacles.

* Another company source cites the reason for fitting of a petrol engine as traffic regulations in Tehran.

- 900 FG: Similar in general design to the 500 FG, this vehicle is 9 tons g.v.w. (6.5 tons capacity) and is fitted with a 5.7 litre, 6 cylinder diesel engine. Once again production has been relatively low.

- Comet Series: Unlike its British equivalent this series utilizes a forward mounted, bonnetted engine. Futhermore, although basically 16 ton g.v.w. in the U.K., the Iranian equivalent is said to have beeen uprated to 19 ton g.v.w. or about 13 tons capacity. The series is produced in a variety of forms although the tipper versions account for some 50% of the total. In addition the Super Comet serves as the basis for special vehicles (refuse collectors etc) and is sold in chassis form to producers of tankers. In general, these vehicles are fitted with the Leyland 401, six cylinder 6.54 litre diesel engine.

- Super Hippo: The heaviest vehicle in the LMI range, this is produced as a tipper or as a tractor unit. In the former case, g.v.w. is just under 30 tons. implying a capacity approaching 20 tons. These models are all fitted with the Leyland 680, 6 cylinder 11.1 litre diesel engine.

In addition to the above vehicle, LMI have occasionally assembled buses and, should they win further contracts in the near future, will undertake assembly of double-deck buses.

The company imports CKD packs subject to the following deletions which are purchased and manufactured locally:

- All drivers cab and body panels
- Tyres (except for 8.25 x 17. 14 ply tyres for the 900 FG vehicles which are not manufactured locally)
- Batteries
- Radiators
- Springs (LMI supply material to the spring producer)

- Seats
- Wire (LMI manufacture the wiring harness)
- Trim
- Glass
- Glass fibre panels

The company's facilities include:

- A press shop containing 900 ton hydraulic press (interestingly this press was built in Iran to LMI's design, in order to shorten delivery time)

- Five 150 ton eccentric presses, a stretch press, and a brake press, and a four metre shear. All sheet metal work involved in cab and body manufacture is produced within this press shop. Capacity is more than adequate for present levels of production with , in particular, the large press being under utilized.

- Mechanical component assembly shop. All the large diesel engines together with gear boxes and final drive units are assembled in this shop from imported CKD packs. Engine assembly is carried out on a short but seemingly efficient production line, having a capacity of 5 units per shift. Good dynamometer engine test facilities have been installed and perhaps the only adequate diesel injection equipment testing facility in Iran has also been installed. This mechanical component assembly facility is housed in a separate building into which are received directly the CKD packs and from which emerge completed and painted major mechanical components.

- A paint shop which is well thought out, appears to produce an acceptable standard of finish and, unlike many companies in Iran is more than adequate to meet LMIs' present production. Capacity of this paint shop is said to be seven vehicles per shift on average.

- The rest of the company's facilities are taken up with sub assembly and final assembly together with manufacture of some minor components such as the wiring harness. There appears to be relatively little organisation of the assembly operations with a poor flow of materials. This situation is probably a result of the company's previous attempts to enter a a wide variety of sectors of the truck market and consequent spreading of production efforts over a number of vehicle types and models.

Over all capacity is said to be about 4 vehicles per day or, say, 1,100 vehicles per annum on a singleshift basis. Of course this capacity will be largely dependent upon the particular product mix as the limit appears to be imposed by the available labour force rather than the facilities. At the present time this labour force stands at a total of 370 personal of whom 220-230 are direct workers. In fact, taking the direct labour content of the average LMI vehicle as being 1,000 hours, this suggests that with the present labour force, the above mentioned capacity could not be reached, that the labour force mentioned refers to 1349 and/or that the company held significant stocks of finished vehicles at the end of 1349 which contributed to the high sales figure for 1350.

As a further indication of the validity of these employment figures, it is interesting to note that the company recorded a total number of workers of 532 in official returns to the Ministry of Economy in 1348. Of these 366 workers were described as "operatives" and 166 were described as "non-operatives".

Turning to investment, total new investment over the period 1343-1348 was reported as about 100 million rials, approximately 42% of which involved investment in buildings, the remainder being for machinery. However, gross assets at the end of 1348 were reported as 468 million rials. As closing stock in that year was reported as 267 million rials, it seems that either the above investment is not representative of fixed assets or that bills receivable stand at a high level. In fact, both are probably the case as total investment, which must have been subjected to depreciation, has obviously been much more than 100 million rials and also, in common with the Iranian industry generally, it is probable that a high proportion of the company's assets are tied up in bills receivable. This latter point is indicative of the company's cash flow problems.

In general, the company's management seems to be left largely to Iranian personnel with British Leyland playing a relatively small part in day to day control. As far as company policy is concerned, there does appear to have been a significant change in the last year or so with the decision being taken to concentrate on certain sections of the truck market. For example, the market for tippers as used in the construction industry has been identified as one offering potential for the company's products and it is now estimated that Leyland Motors Iran have some 65% of the local tipper market. This has been the result of a conscious policy as has been the monopoly acquired by the company in the field of specialist vehicles such as the refuse collector and other municipal cleaning vehicles. Whilst the present LMI management is to be commended on its improved marketing strategies it is felt, in general, that the same cannot be said of its production or financial control procedures.

The following tables give an indication of cost breakdowns for various vehicles produced by LMI in 1349. These serve at best as an indication, because the absolute accuracy of the individual figures used cannot be vouched for.

Looking to the future, the Leyland Motors Iran operation, or more correctly its British Associate is interested in expanding its activities in Iran to include a wider range of vehicles and, should volumes justify it the setting up of a diesel engine manufacturing plant. As far as the latter is concerned, a joint venture has already been formed with IMDBI, land acquired and buildings erected. However, the project is dormant at the moment and awaits the results of various possibilities being explored by British Leyland within the Iranian Motor Industry. The original intention was to produce the Leyland 400 and 680 series engines presently used in the Super Comet and Super Hippo vehicles and involved an investment of over 5 million pounds. The average price envisaged for these engines was 150-160,000 rials, this comparing with an average f.o.b. price of the engines in CKD condition of 125,000 rials (equivalent to about 135,000 rials c.i.f.). If allowance is made for the difference between built up cost and CKD cost, it seems that the projected price for the local and manufactured engines is very little different to the c.i.f. price of imported built up engines.

TABLE 7.1 SUMMARY STATISTICS - LEYLAND MOTORS IRAN : 1348

A	Production: units	553
B	Value of Output (m Rials)	680
C	Total Workers:	532
D	Direct	366
E	Indirect	166
F	Annual Payroll (m Rials)	68
G	Gross Assets (m Rials)	486
H	Closing Stock (m Rials)	267
I	Total Value of Input (m Rials)	495
J	Materials and Parts (m Rials)	492
K	Cumulative Investment 1343 - 1348 before depreciation (m Rials)	100
L	Gross value added (B-I) (m Rials)	185

TABLE 7.1 (contd)

Output per Worker	$\frac{A}{C}$	1.04
Stock Turnover	$\frac{B}{H}$	2.55
Labour Cost	$\frac{F}{B}$	10%
Material Cost	$\frac{J}{B}$	72%
Utilisation of Assets	$\frac{B}{G}$	1.4
Investment per Vehicle (US $)	$\frac{K}{A}$	2,300
Sales per worker (m Rials)	$\frac{B}{C}$	1,278
Value added per worker ('000 Rials)	$\frac{L}{C}$	348
Value added as % of output	$\frac{L}{C} \times 100\%$	27.2%

TABLE 7.2 COST STRUCTURE

LEYLAND FG 550 TRUCK

A Local Production

		Rials/Unit
1.	Total cost of Imported Components and Materials.	218,796
1a	CKD Pack CIF	165,483
1b	All Imports CIF	174,060
1c	Duty on Imports	33,464
2.	Locally Purchased Materials and Components.	52,311
2a	Estimated Local Content	36,618
2b	Estimated CIF Equiv.	15,693
3.	Labour Cost.	11,715
4.	Administration Cost.	8,200
5.	General Cost.	14,058
6.	Depreciation.	8,875
7.	Royalties.	7,689
8.	Loan Interest, Sales Cost etc.	8,491
9.	Final Cost.	348,135
10.	Fixed Price.	
10a	Ex-Works	400,000
10b	To Customer	-

B. Overseas Comparison

		Rials/Unit
1.	Ex-Works Price Country of Origin.	252,000
2.	Retail Price Country of Origin.	-
3.	Estimated CIF Price Iran. (B.1 + 15%)	290,000

TABLE 7.2 (contd)

I	Value Added in Plant	
	10a - (1+2)	128,893
II	Foreign Exchange Cost	
	(1b + 2b + 7 + 50% of 6 + 20% of Profit)	212,000
III	Foreign Exchange Saving	
	B3 - II	90,000
IV	Material Content	
	$\frac{1 + 2}{10a}$ + 100%	68%
V	Labour Content	
	$\frac{3}{10a}$ + 100%	2.93%
VI	$\frac{\text{Iran Ex-Factory}}{\text{Ex-Factory (Country of Origin)}}$	1.59
VII	$\frac{\text{Iran Ex-Factory}}{\text{Iran CIF}}$	1.38

TABLE 7.3 COST STRUCTURE

LEYLAND 900 FG TRUCK

			Rial/Unit
A	**Local Production**		
1.	Total cost of Imported Components and Materials.		300,569
	1a	CKD Pack CIF	243,000
	1b	All Imports CIF	260,826
	1c	Duty on Imports	27,061
2.	Locally Purchased Materials and Components.		91,317
	2a	Estimated Local Content	63,922
	2b	Estimated CIF Equiv. @ 30%	27,395
3.	Labour Cost.		33,000
4.	Administration Cost.		23,100
5.	General Cost.		39,600
6.	Depreciation.		25,000
7.	Royalties.		15,326
8.	Loan Interest, Sales Cost etc.		13,197
9.	Final Cost.		541,109
10.	Fixed Price.		
	10a	Ex-Works	622,000
	10b	To Customer	–
B.	**Overseas Comparison**		
1.	Ex-Works Price Country of Origin.		330,600
2.	Retail Price Country of Origin.		-
3.	Estimated CIF Price Iran. (B.I +16%)		386,000

TABLE 7.3 (contd)

I	**Value Added in Plant**	
	$10a - (1 + 2)$	230,114
II	**Foreign Exchange Cost**	
	(1b + 2b + 7 + 50% of 6 + 20% of Profit)	324,247
III	**Foreign Exchange Saving**	
	B3 - II	72,473
IV	**Material Content** $\frac{1 + 2}{10a} \times 100\%$	63%
V	Labour Content $\frac{3}{10a} \times 100\%$	5.3%
VI	$\frac{\text{Iran Ex-Factory}}{\text{Ex-Factory (Country of Origin)}}$	1.88
VII	$\frac{\text{Iran Ex-Factory}}{\text{Iran CIF}}$	1.60

TABLE 7.4 COST STRUCTURE

LEYLAND SUPER COMET TRUCK

		Rial/Unit
A	**Local Production**	
1.	Total cost of Imported Components and Materials.	563,411
1a	CKD Pack CIF	440,73[illegible]
1b	All Imports CIF	470,[illegible] *
1c	Duty on Imports	
2.	Locally Purchased Materials and Components.	143,48[illegible]
2a	Estimated Local Content	100,437
2b	Estimated CIF Equiv. @ 30%	43,[illegible]4[illegible]
3.	Labour Cost.	49,5[illegible]
4.	Administration Cost.	35,[illegible]28
5.	General Cost.	72,44[illegible]
6.	Depreciation.	37,5[illegible]
7.	Royalties.	28,71[illegible]
8.	Loan Interest, Sales Cost etc.	17,67[illegible]
9.	Final Cost.	944,876
10.	Fixed Price.	
10a	Ex-Works	1,086,[illegible]7
10b	To Customer	
B.	**Overseas Comparison**	
1.	Ex-Works Price Country of Origin.	637,[illegible]
2.	Retail Price Country of Origin.	
3.	Estimated CIF Price Iran. (B.1 + 15%)	734,[illegible]

* Estimate.

I	Value Added in Plant 10a - (1 + 2)	379,714
II	Foreign Exchange Cost (1b + 2b + 7 + 50% of 6 + 20% of Profit)	588,957
III	Foreign Exchange Saving B3 - II	175,443
IV	Material Content $\frac{1 + 2}{10a} \times 100\%$	65%
V	Labour Content $\frac{3}{10a} \times 100\%$	4.6%
VI	$\frac{\text{Iran Ex-Factory}}{\text{Ex-Factory (Country of Origin)}}$	1.71
VII	$\frac{\text{Iran Ex-Factory}}{\text{Iran CIF}}$	1.48

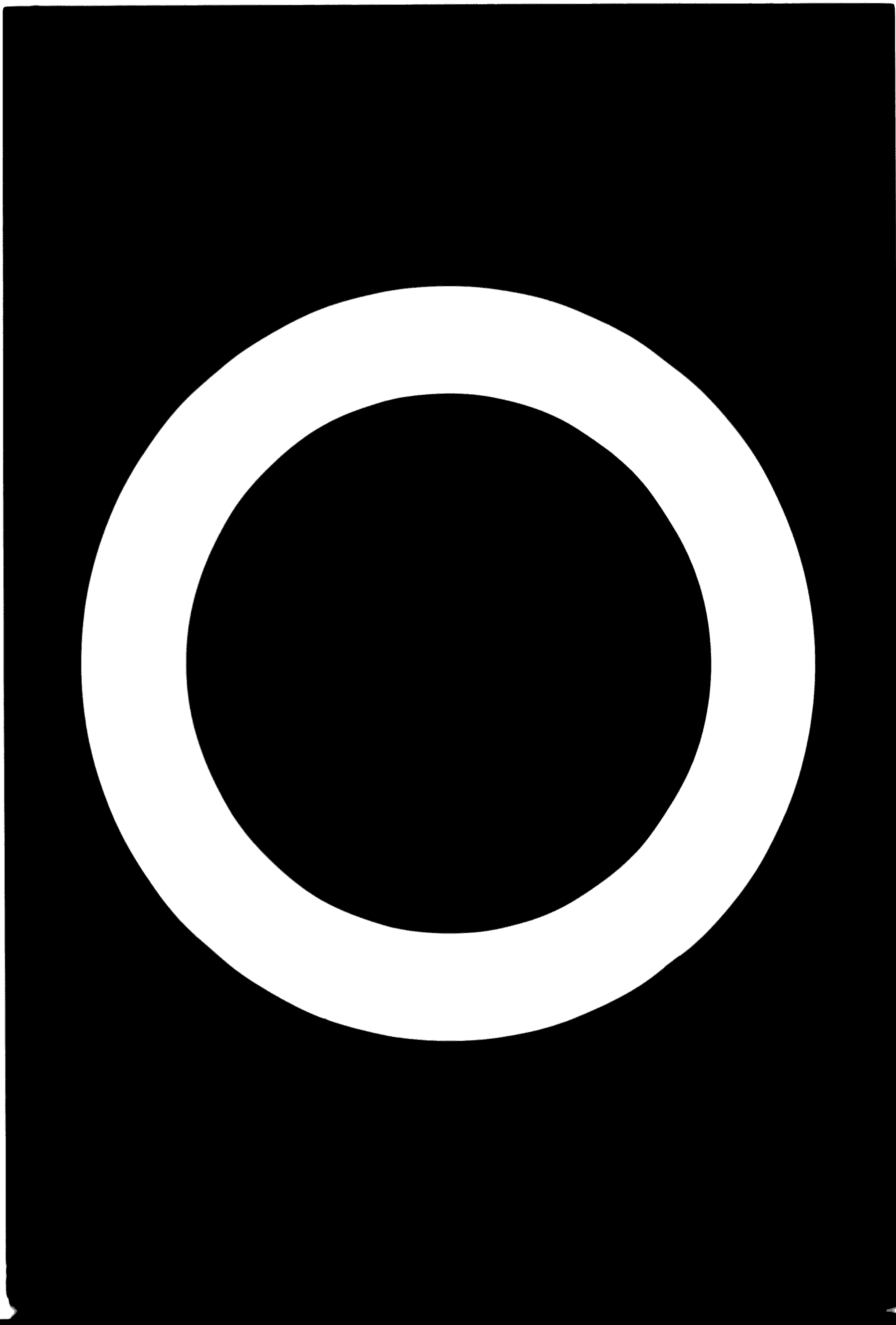
TABLE 7.5 COST STRUCTURE

LEYLAND SUPER HYPO TRACTOR UNIT

			Rial/unit
A	Local Production		
1.	Total cost of Imported Components and Materials.		1,000,157
	1a	CKD Pack CIF	879,480
	1b	All Imports CIF	860,323
	1c	Duty on Imports	92,320
2.	Locally Purchased Materials and Components.		397,902
	2a	Estimated Local Content	208,531
	2b	Estimated CIF Equiv. @ 30%	89,371
3.	Labour Cost.		46,200
4.	Administration Cost.		32,340
5.	General Cost.		67,840
6.	Depreciation.		35,000
7.	Royalties.		37,109
8.	Loan Interest, Sales Cost etc.		37,916
9.	Final Cost.		1,554,554
10.	Fixed Price.		
	10a	Ex-Works	1,787,000
	10b	To Customer	
B.	Overseas Comparison (NOT AVAILABLE IN UK)		
1.	Ex-Works Price Country of Origin.		
2.	Retail Price Country of Origin.		
3.	Estimated CIF Price Iran.		

TABLE 7.5 (contd)

I	**Value Added in Plant**		
	10a - (1 + 2)		488,941
II	Foreign Exchange Cost		
	(1b + 2b + 7 + 50% of 6 + 20% of Profit)		1,051,073
III	Foreign Exchange Saving		
	B3 - II		-
IV	Material Content	$\frac{1 + 2}{10a} \times 100\%$	73%
V	Labour Content	$\frac{3}{10a} \times 100\%$	2.59
VI	$\frac{\text{Iran Ex-Factory}}{\text{Ex-Factory (Country of Origin)}}$		-
VII	$\frac{\text{Iran Ex-Factory}}{\text{Iran CIF}}$		-



8. MORATAB

8. MORATAB

This company has a long history, it being one of the first to receive a license to manufacture motor vehicles in Iran. Whilst the company is wholly Iranian owned (by it is believed some 7 different director) and, the equity structure of the company has in fact had a chequered history having suffered from internal and external pressures. Although the British licensor, the Rover Company (now part of the British Leyland Group) has no direct equity involvement in the company, it appears that it did at one time make a long term loan to the company in order to assist in certain financial difficulties. It appears that this loan has now been repaid in total.

The company manufactures the Land Rover utility vehicle in two basic forms: the 88" wheel base and the 109" wheel base versions. The former is produced in station wagon and half-ton pick-up variants whilst the latter is now produced in the form of a 1 ton pick-up although conversions can be carried out to station wagon form. All vehicles share common major mechanical components.

The company began life as a distributor for Rover, turning to assembly some 8 or 9 years ago and to manufacture in 1344. Two years ago the company moved to its present site on the Karadj Road. Sales have tended to increase steadily from a level of some 280 vehicles in 1344 to 1,245 vehicles in 1349. This increasing trend appears to be continuing with sales in the first 7½ months of 1350 totally over 1,500 vehicles. The following table details these sales by model over the last 3 years :

MORATAB SALES

	1348	1349	1350
88" Regular S.W.	891	979	931
88 W.B. ½ ton pick-up	-	90	250
109" 1 ton pick-up	2	176	374
TOTAL UNITS	893	1245	1555

It is interesting to note that the Land Rover is a simple vehicle to produce as far as body work is concerned as very little double curvature is involved in panels. Furthermore, unlike its British counterpart the Iranian vehicle has been further simplified by the introduction of glass fibre for the roof sections, the grill surround and the bonnet.

Based on existing facilities, the achievable capacity of the plant is for some 3,000 units per annum on a single shift basis (8½ hours per day for 5 days of the week and 5½ hours on the 6th day).

CKD packs are imported from the UK and contain all major mechanical components together with chassis side rails and some minor mechanical components. Incidentally, the engine is imported part assembled. The following items are purchased locally :

- radiator
- battery
- tyres
- body seals
- glass
- paint (one basic colour)
- springs
- other production materials such as trim materials etc.

The following components are made within the plant :

- body (including fibre-glass panels)
- trim
- wiring harness
- exhaust system
- brake lines
- petrol tank
- bumper
- chassis cross-members
- seat frames
- other minor items.

As far as outside suppliers are concerned the company has certain criticisms these being partly on the grounds of quality, for example in the case of the battery, and also on grounds of price. The following table indicates the difference in prices between components purchased in Iran and the UK price.

MORATAB COMPONENT COSTS

Item	Iran Price	UK Price*	Comments
Battery	1,850 rials	750 rials	Poor quality/ life
Radiator	2,750 rials	1,395 rials	
Springs (Average)	1,100 rials+	576 rials	Poor quality: dimensional tolerance and heat treatment

* OEM price less 10-20% as it is suspected that figures given were deletion allowances.

+Excludes bushes which are included in U.K. equivalent.

The company's facilities consist of the following :

- A small press area which incorporates a 300 ton hydraulic press although this machine is a rather strange design and extremely slow, together with a small number of low capacity crank presses and bending machines. As has already been mentioned little press work is required on the Land Rover vehicle.

- Blacksmith's shop. Here such items as the petrol tank, silencer, bumpers, door frames, grill panels and steel sub-assemblies are made up largely by hand. An interesting point is the manufacture in-house of the exhaust system. There appears to be no logical reason why the company should manufacture this item and certainly no procedures exist which would allow a cost justification. In fact it has been suggested that the company should sub-contract the manufacture of the exhaust system to Iran Muffler Company.

- Glass-fibre shop. Again highly labour intensive, the glass-fibre shop is housed in a separate building.

- Sub-assembly area, moving into the main assembly shop, a sub-assembly area is installed in which completed panels and frames are spot welded to form complete body units.

- Paint shop. The paint shop incorporates a degreasing plant and a degree of automation has been installed with the incorporation of moving conveyors for panels which are individually painted and for major sub-assemblies. However, the paint shop does represent the current bottle-neck as far as overall plant capacity is concerned. Theoretical capacity is said to be 14 - 16 vehicles per day which, presumably, comes down to the overall achievable capacity of 3,000 vehicles per annum mentioned previously. Whilst steps are being taken to remedy this situation through reorganisation of the paint area it is difficult in view of its location, surrounded by other production areas.

- Main assembly area. Main assembly is carried out on a production line basis with components being drawn via intermediate stocking areas from the individual component and sub-assembly shops.

- The plant is completed by a number of smaller areas which manufacture trim and assemble other components.

At the present time there are some 300 personnel employed at the plant of whom about 200 can be regarded as direct workers, 70 indirect workers (stores staff etc.) and perhaps 30 as administrative staff. About 60 people are employed at the head office in such functions as general management, marketing and accounting. From a management point of view the company obviously has a long way to go, there being virtually no management services. Recently, however some stock control procedures have been instituted and the managing director is personally supervising the introduction of a simple though comprehensive cost information system. Whilst this in itself is commendable it remains to be seen whether the information system will generate a cost control function.

Largely because of the attention paid to costs being so recent, it is not possible to present any detailed cost analysis for the Land Rover vehicles built in Iran. However, some overall statistics for the company are presented in the accompanying table, these having been taken largely from information reported by the company to the Ministry of Economy. In addition, the following table gives details of current ex-works prices of the vehicles produced:

MORATAB EX-WORKS PRICES

	Rials
88" wheel base Land-Rover Station-Wagon	420,000
88" wheel base 1/2 ton Vannette	290,000
109" wheel base 1 ton Vannette	300,000

In comparison with the price of 420,000 rials for the 88" wheel base station-wagon, the ex-works price in the UK would be 216,000 rials and the c.i.f. price Iran would be 260,000 rials. Thus the Iranian ex-works price is 1.6 times the c.i.f price of the equivalent vehicle imported from the UK.

TABLE 8.1 SUMMARY STATISTICS

COMPANY: MORATAB 1348

A.	Production: units	893
B.	Value of Output (m rials)	331
C.	Total Workers: *	226*(285)
D.	Direct	-
E.	Indirect	-
F.	Annual Payroll (m rials)	10+
G.	Gross Assets (m rials)	-
H.	Closing Stock (m rials)	90
I.	Total Value of Input (m rials)	278
J.	Materials and Parts (m rials)	275
K.	Cumulative Investment (m rials)	-
L.	Gross value added (M Rials)	53

Output per Worker	$\frac{A}{C}$ vehicles/annum	3.13
Stock Turnover	$\frac{B}{H}$	3.7
Labour Cost	$\frac{F}{B}$	3%
Material Cost	$\frac{J}{B}$	83%
Utilisation of Assets	$\frac{B}{G}$	-
Investment per Vehicle	$\frac{K}{A}$	-
Sales per worker (m rials)	$\frac{B}{C}$	1.16
Value added per worker ('000rials)	$\frac{L}{C}$	186
Value added as % of output	$\frac{L}{B} \times 100\%$	16%

* Reported figure probably only "at plant" - (285) includes head office
+ Probably direct workers only

9. PARS LUX

9. PARS LUX

The company as such was set up some 20 years ago although it began life as a garage. Production of buses began in about 1341 and, recently, there were changes in the equity structure which gave the Fermanfermaian family a one third stake, the Tehrani family a one third stake with the remaining equity held by, it is believed, an Iranian bank. The company operates under a simple licence agreement to produce Magirus buses (licence from Kloeckner-Humbolt-Deutz of Germany). Vehicles produced include four different kinds of rear air-cooled diesel engined buses together with both front and rear engined mini-buses. Mini-bus engines are again air cooled diesel being either six cylinder as in the case of the buses or four cylinder. Total output of the company was 268 vehicles in 1348 although this decreased to 191 vehicles in 1349. Of the latter it is believed that some 61 were mini-buses. Incidentally, in addition to the buses and mini-buses, the company have a licence to produce light vans and micro-buses such as the Ford Transit or the British Leyland JU 250. In fact, it is believed that the company is actively pursuing discussions with these two companies with a view to introducing manufacture of vans. In fact prototype vans have already been produced by the company although based on the previously mentioned mini-bus. Should negotiations with one or other of the above companies reach fruition, the van produced would in fact be petrol engined.

The company's present capacity is for about 450 vehicles per year on a single shift basis although the exact number would obviously depend on the proportion of buses to mini-buses produced. The limit on capacity is said to be the plant facilities although it is worth mentioning that the land area of 45,000 sq. metres and covered building area of 35,000 sq. metres would be sufficient to accommodate a considerably greater capacity in terms of numbers of say light vans. Clearly, therefore, the company's present facilities are somewhat under utilised when the capacity figure is compared with the previously mentioned output figures. This was particularly so in 1349 although the situation in 1350 is somewhat improved, it being estimated that some 240 vehicles will be produced of which 80 will be mini-buses. The under utilisation of capacity is said to be largely due to market forces: primarily competition from Iran National. It would appear (as will be shown by the cost analyses) that the mini-bus is totally uncompetitive with the quivalent Iran National product although the bus is said to be more competitive.

CKD packs are imported from Germany which incorporate the engine and transmission units in built up form together with the chassis rails, axles, steering units and braking systems. Leaf springs are purchase locally from Zah Company as are exhaust systems (Iran Muffler), tyres, battery, glass, seat covers and of course consumable materials such as aluminium profiles, (Pars America/General Steel). The company's facilities are primarily involved in fabrication of sheet metal parts (petrol tanks, air tanks, body work) and tube based parts such as the main frame together with seating and interior framing. In addition, minor components (trim, wiring harness, etc.) are manufactured in-house, chassis assembly and final assembly carried out and all paintwork undertaken.

Broadly speaking the plant is labour intensive with little capital equipment involved. For example, press working facilities have been kept to a minimum although a small number of simple stretch presses and other small presses are used. However, as an aid to productivity a considerable investment has been made in jigs and fixtures which allow easy and reproducible fabrication and assembly of vehicles chassis and bodies. The company is fortunate in having a considerable area under one roof and, therefore, it has been possible to set up logical flow lines for both buses and mini-buses. The company employs some 545 persons, the distribution of personnel being as follows:

DIRECT PRODUCTION WORKERS		358
Chassis assembly	12	
Mechanical assembly	15	
Skeleton fabrication	59	
Panel fabrication	64	
Paint	25	
Carpentry	16	
Upholstery	25	
Trim	61	
Electrical Installation	6	
Machine shop	18	
Press shop	26	
Other parts mftr,	31	
INDIRECT WORKERS		81
STAFF AT PLANT		30
HEAD OFFICE STAFF		76
T O T A L		545

As far as labour productivity is concerned it is freely admitted that in the past this has been poor, largely due to inadequate production control techniques. However, since the previously mentioned change in management structure, determined efforts are being made to improve this aspect. For example, the present direct labour content of a normal bus is about 80,000 Rials. Partly as a result of minor design changes and, rather more important, through the introduction of an incentive plan, it is hoped to achieve a saving of 20,000 Rials per bus in direct labour cost. In fact the standard is being set at 70,000 Rials per bus but it is expected that the final achievement will be 60,000 Rials per bus. The difference between the standard and achievement will be passed on to workers via a monthly merit plan based on a group incentive scheme. In other words, of the savings achieved over the original costs the company will receive half and the workers will receive half. The above labour costs are based on a total cost (including social security, welfare services etc.) of 35 Rials per hour; these incorporating daily rates of pay for production workers varying between 110 Rials per day and 150 Rials per day.

As in the case of the improvement in labour productivity, determined efforts seem to be being made by the company to improve other operational aspects at least at manufacturing plant level. For example, inventory control is being improved although as will be seen from later figures stock turnover does not appear to be unrealistic at the present time. Efforts are also being made to improve the local material supply situation for example, by providing suppliers with as detailed forecasts as possible of the company's requirements for materials. These efforts have not always met with success and local suppliers are still criticised on the counts of both quality and delivery. As far as foreign suppliers are concerned, any change from Marigus vehicles in respect of major components would require considerable retooling costs. However, the company would like to have more freedom to delete minor items from the CKD pack and to purchase these directly from foreign suppliers. An example, quoted is the vehicle lighting equipment which the company feels it could obtain more cheaply by going directly to the German supplier rather than buying via its CKD pack supplier. However, the company feels that there is no incentive or advantage to be gained from such a course of action so far as the present customs tariffs are constituted.

The accompanying tables give some statistical information on the company as a whole and indicative cost breakdowns for two of the vehicles produced. It is appropriate to make some comments upon these tables.

Dealing first with the general statistics of the company it is interesting to note that the gross assets figure in 1348 of approximately 1,200 million Rials includes almost 730 million Rials of bills receivable. This reflects the heavy burden on working capital of financing of sales. The majority of the company's sales are based on credit with the deposit required being between 20 and 25% and the repayment period between 10 and 32 months. In view of the fact that purchasers of buses and mini-buses are in many cases individual owner drivers rather than large companies it is obviously necessary that credit should be provided. It seems that the extension of credit is accompanied by the lodging with the vendor of a promisory note for the full amount of the purchase price these being included in the company's assets. Whilst it is probable that, at interest rates varying between 10% and 18%, the company does not in the long term loose from this financing function the gross assets situation is rather distorted and as has been mentioned it is probable that working capital and liquidity problems ensue. In fact these working capital requirements are covered partly by short term debts obtained against the promisory notes and through the extension of credit by the company's creditors. It is interesting to note that of the gross assets figure of some 1,200 million Rials mentioned above only just over 104 million Rials is represented by fixed assets. These gross assets are covered by something approaching 300 million Rials of short term bank debts, 120 million Rials of longer term bank debts and around 600 million Rials of documents payable, creditors etc., together with 150 million Rials of paid up capital. It is interesting to note that the gearing ratio involved is something which would be totally unacceptable to a European motor vehicle manufacturer.

As far as the cost breakdowns are concerned, these are based on a wide variety of figures obtained from company records and the Ministry of Economy pricing department. It should be noted that there is often a wide divergence between individual figures from different sources. However, it is felt that the figures presented are at least indicative of the company's cost structure.

TABLE 9.1 **SUMMARY STATISTICS**

COMPANY: PARS LUX 1348

A.	Production: units			268
B.	Value of Output (m rials)			384
C.*	Total Workers:			545
D.*	Direct			358
E.*	Indirect			187
F.	Annual Payroll (m rials)			39
G.+	Gross Assets (m rials)			1,200
H.	Closing Stock (m rials)			126
I.	Total Value of Input (m rials)			318
J.	Materials and Parts (m rials)			311
K.	Cumulative Investment (m rials)**			1,275
L.	Gross value added (M Rials) (B-I)			66
	Output per Worker	$\frac{A}{C}$	vehicles p.a.	0.5
	Stock Turnover	$\frac{B}{H}$		3.0
	Labour Cost	$\frac{F}{B}$		10%
	Material Cost	$\frac{J}{B}$		81%
	Utilisation of Assets	$\frac{B}{G}$		0.32
	Investment per Vehicle	$\frac{K}{A}$	(US $)	60,000
	Sales per worker	B/C	'000 rials p.a	700
	Value added per worker	L/C	'000 rials p.a.	120
	Value added as % of sales	L/B x 100%		17%

* Figures for 1350 which are approximately equal to those of 1348

\+ Includes 729 m rials bills receivable

** Reported figure - seems inordinately high

TABLE 9.2 COST STRUCTURE

6E75 MINIBUS

A Local Production

1.	Total cost of Imported Components and Materials.	316,000
1a	CKD Pack CIF	261,000
1b	All Imports CIF	-
1c	Duty on Imports	38,000
2.	Locally Purchased Materials and Components.	148,000
2a	Estimated Local Content	100,000
2b	Estimated CIF Equiv.	48,000
3.	Labour Cost. (DIRECT LABOUR COST)	45,000
4.	Administration Cost.)	
5.	General Cost.)	20,000
6.	Depreciation.	25,000
7.	Royalties.	5,000
8.	Loan Interest, Sales Cost etc.	12,000
9.	Final Cost.	531,000
10.	Fixed Price.	
10a	Ex-Works	-
10b	To Customer	-

B. Overseas Comparison

1.	Ex-Works Price Country of Origin.	-
2.	Retail Price Country of Origin.	-
3.	Estimated CIF Price Iran.	-

TABLE 9.2 (contd)

I	Value Added in Plant	-
	10a - (1+2)	
II	Foreign Exchange Cost	
	(1b + 2b + 7 + 50% of 6	326,500
III	Foreign Exchange Saving	
	B3 - II	-
IV	Material Content $\frac{1+2}{9}$ x 100%	87%
V	Labour Content $\frac{3}{10a}$ x 100%	8.5%
VI	Iran Ex-Factory / Ex-Factory (Country of origin)	-
VII	Iran Ex-Factory / Iran CIF	-

TABLE 9.3 COST STRUCTURE

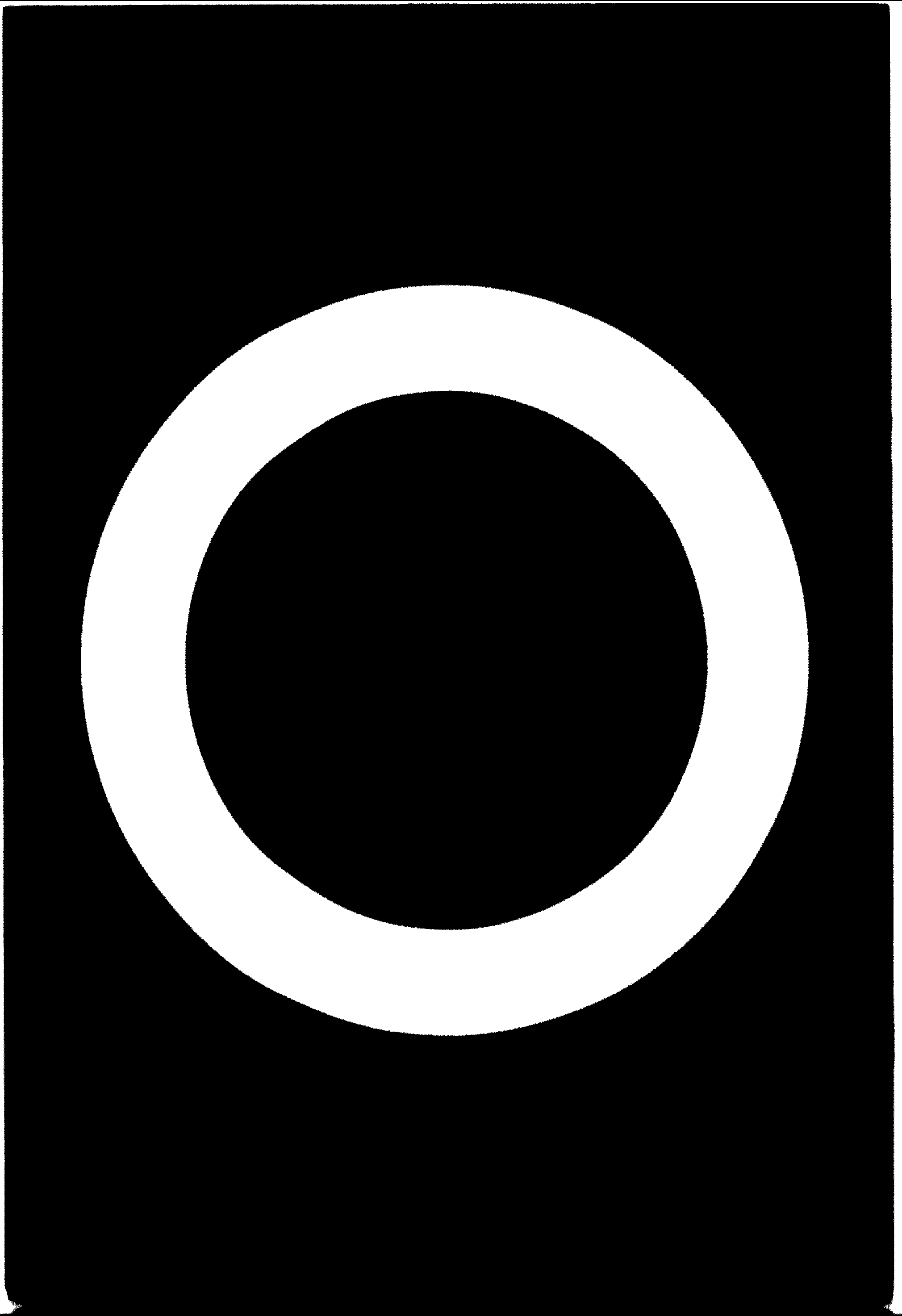
12 Row Desert Bus De Luxe

A Local Production

1.	Total cost of Imported Components and Materials.	851,000
1a	CKD Pack CIF	694,000
1b	All Imports CIF	-
1c	Duty on Imports	100,000
2.	Locally Purchased Materials and Components.	310,000
2a	Estimated Local Content	210,000
2b	Estimated CIF Equiv.	100,000
3.	Labour Cost.	80,000
4.	Administration Cost.)	
5.	General Cost.)	44,000
6.	Depreciation.	54,000
7.	Royalties.	17,000
8.	Loan Interest, Sales Cost etc.	30,000
9.	Final Cost.	1,386,000
10.	Fixed Price.	
10a	Ex-Works	-
10b	To Customer	-

B. Overseas Comparison

1.	Ex-Works Price Country of Origin.	-
2.	Retail Price Country of Origin.	-
3.	Estimated CIF Price Iran.	-



10. ZAMYAD

10. **ZAMYAD**

Zamyad is a joint venture between *Rena Industries and Volvo of Sweden. Zamyad is in fact 75% Iranian owned and 25% owned by Volvo. At the time of carrying out field work for the present study, Zamyad was located on its old site, Gazvin Avenue. However, a new site on the Old Karadj Road was being developed to incorporate all three Rena Industries operations at the same location including a large new plant for Zamyad. This plant was visited during the course of field work although little of the production machinery was in evidence; only some of the newly acquired presses having been installed. Unfortunately, the detailed proposal submitted to the Ministry of Economy covering the new Zamyad plant was not made available to Metra representatives and, therefore, no detailed analysis of the plant can be undertaken.

Discussions with Zamyad representatives revealed that the company's production will be as follows :

	Target Production	
	1st Phase	2nd Phase
Trucks	600	1,000
Nissan	1,500	3,000
Tractor	600	1,000

The above figures being on a single shift basis for both 1st and 2nd phases. This year (1350) in the first eight mongnts 190 Nissans and 211 trucks were produced at the old plant. The Nissan is a two ton capacity 2 litre petrol engine pick-up. Two models (long and short wheel base) of 18 ton g.v.w. truck are produced together with a 9 ton g.v.w. truck. The tractor is a 65 H.P. B.M. model. It is planned to retain all these models but not to diversify.

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*Rena Industries comprises Zamyad, Iran Radiator Company, and Zah Springs Company (joint venture with Brüninghaus).

Activities of the old plant will be transferred by the end of 1350. The old plant will be retained for service and delivery purposes. The new plant (Zamyad section) is housed in a single open-plan building covering 32,000 sq.m. The machinery from the old plant will be transferred and added to. Basically the new plant will consist of :

- Press Shop with

  1 x 800 ton)
  1 x 400 ton) Muller single action
  2 x 350 ton) hydraulic presses
  2 x 160 ton)

  3 small eccentric presses
  1 x stretch forming press for truck cab parts
  Plus press brake, roller shears, guillotines etc.

As usual form dies will be used in conjunction with hand trimming and flanging.

- Sub-assembly welding.
- Body assembly and welding.
- Paint shop with, initially a degreasing and phosphating booth: drying oven: spray booth: oven: spray booth: oven.
  Recycling will be used and scheduling will be mixed model. A conveyor system is installed.
  The paint shop is isolated by a solid wall.
- Final Assembly. From the paint shop, bodies will pass to one of three separate final assembly conveyors, one for each product.
- Component assembly. All major components will be assembled (truck engines, gearboxes and axles are already assembled in the old plant) and test rigs will be installed (engine dynamometer, etc.)
- Other components. Harnesses, mufflers, chassis, cross-members on both truck and pick-up, petrol tanks and air tanks will be produced in the plant as will certain trim items.
- Bought in components include tyres, battery, springs, radiator, seats, glass, paint, body seals. All these are purchased in Iran, the radiator and springs obviously from the other Rena Industries companies.

General impressions of the plant are that it is well and logically thought out with a good flow, generous working space and good engineering. Attention has clearly been paid to efficiency with palletisation much in evidence even at the old plant. Provision has been made for future expansion. The expansion in output from 1st to 2nd phases will be accomplished by provision of additional facilities. For example, the major bottleneck is the paint shop but expansion will be achieved by provision of further equipment to eliminate recycling. In the press shop, expansion will be achieved by provision of one or two extra presses and improved tooling to eliminate much of the hand work. In general, the rest of the plant should accommodate the increase with relatively little extra investment. Certainly the building is adequate. Double shift working is not contemplated as a means of securing the increased output because it is felt to be expensive (10% extra labour cost) and, as yet, unacceptable to the workers. It is felt that it may be possible to introduce a double shift about 1975 if the market warrants this.

Total labour force on the plant will be 450 as compared with 400 now at the old plant.

Incidentally, it is believed that Zamyad have a licence to produce (manufacture rather than just assemble) truck gearboxes in Iran. It has been suggested in various quarters, although not by the company itself, that should rationalisation of the truck industry force Zamyad to cease production of the Volve truck and/or its Nissan pick-up, they might find solace in the production of gearboxes for the Iranian truck industry.[1]

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[1] Recent discussions with Daimler-Benz Company in Germany suggest that installation of Volvo gearboxes in Daimler-Benz trucks produced in Iran is a distinct possibility.

TABLE 10.1 SUMMARY STATISTICS

COMPANY: **ZAMYAD COMPANY : 1348**

A.	Production: units	435
B.	Value of Output (m rials)	649
C.	Total Workers:	335
D.	Direct	
E.	Indirect	-
F.	Annual Payroll (m rials)	11*
G.	Gross Assets (m rials)	-
H.	Closing Stock (m rials)	251
I.	Total Value of Input (m rials)	535
J.	Materials and Parts (m rials)	526
K.	Cumulative Investment (m rials)	-
L.	Gross value added (M Rials)	114

Output per Worker	$\frac{A}{C}$ (vehicles p.a.)	1.1
Stock Turnover	$\frac{B}{H}$	2.6
Labour Cost	$\frac{F}{B}$	-
Material Cost	$\frac{J}{B}$	81%
Utilisation of Assets	$\frac{B}{G}$	-
Investment per Vehicle	$\frac{K}{A}$	-
Sales per worker	$\frac{B}{C}$ (000 rials)	1,690
Value added per worker	$\frac{L}{C}$ (000 rials)	296
Value added as % of output	$\frac{L}{B}$ x 100%	17.6%

*Report figure seems totally unrealistic.

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ILL 5.5+10