OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

United Nations Industrial Development Organization

Distr. LIMITED
ID/WG.136/12
4 January 1973
ORIGINAL: FRENCH
ENGLISH

Meeting on Transfer of Technology to Developing Countries through Subcontracting and Licensing Agreements with Special Reference to the Automotive Industry

Paris, France, 27 November - 1 December 1972

DEVELOPMENT OF THE AUTOMOTIVE INDUSTRY IN DEVELOPING COUNTRIES IN CO-OPERATION WITH INDUSTRIES IN DEVELOPED COUNTRIES

CASE STUDY OF TUNISIA[1/]

M. Bechraoui
Director
Ministry of National Economy
Tunis, Tunisia

1/ The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO.
Unofficial translation

id. 73-0071

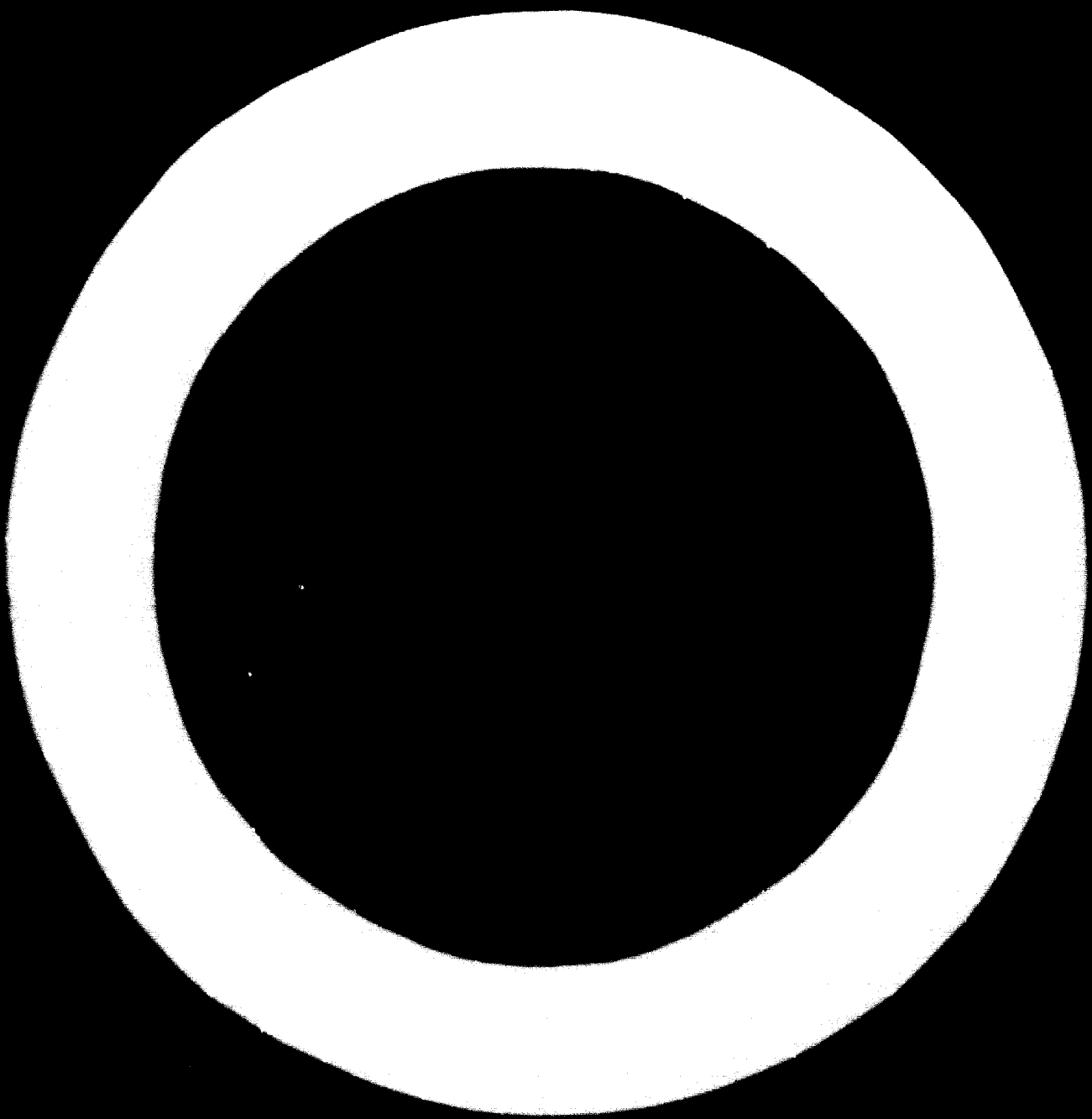


TABLE OF CONTENTS

3. Special conditions required for this cooperation

30 - Investments

31 - Quality of the production

32 - Production costs and comparison of these costs with those of industrialized countries

33 - Respect of delivery delays

4. Results obtained

41 - Gains of foreign currencies

42 - Creation of employments

43 - Transfer and know-how technics

5. Conclusion

50 - Advantages of bestowing upon developing countries

51 - The limits of this experience

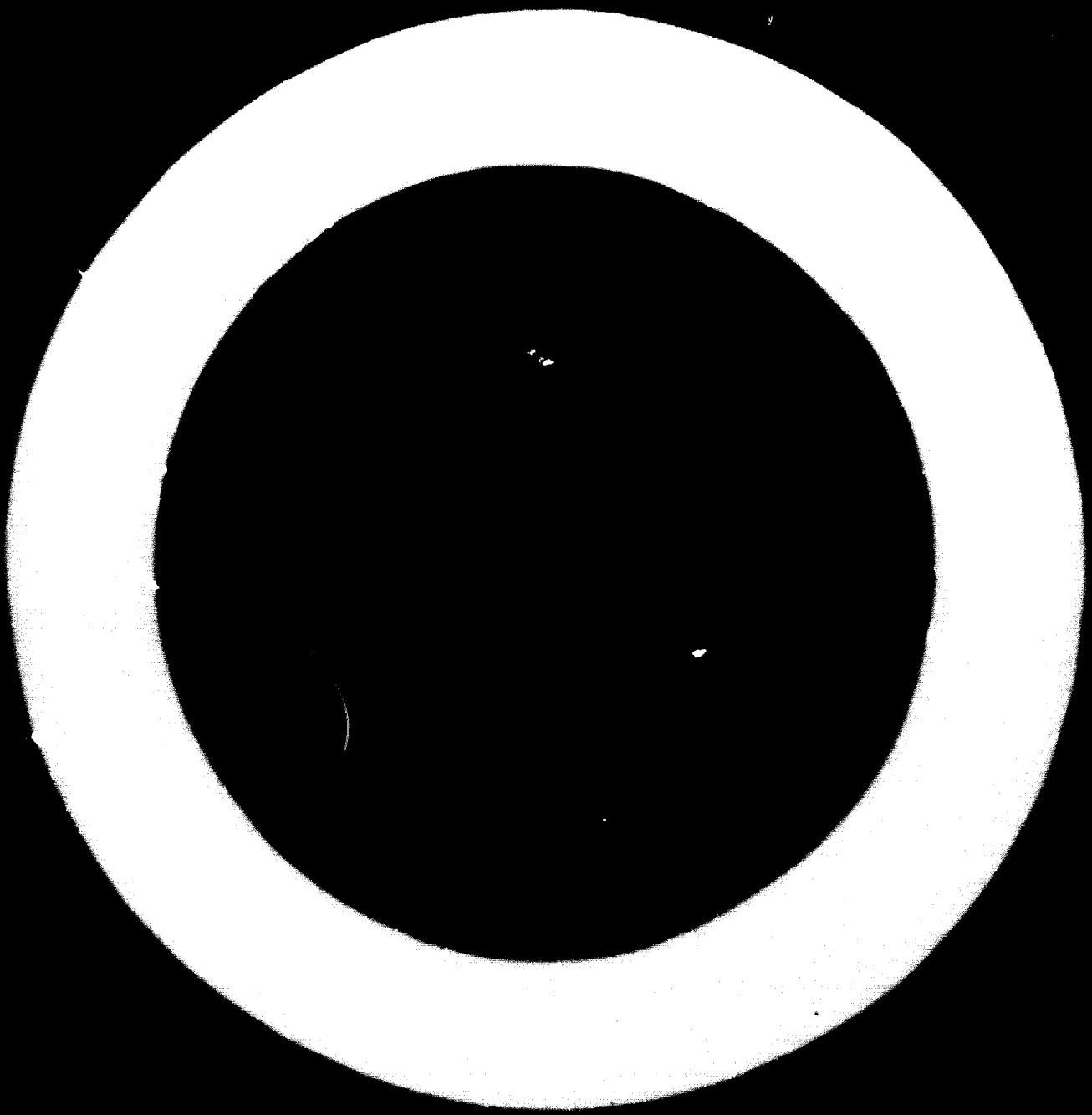
52 - Advantages for the givers of order

53 - Obstacles restricting the international subcontracting

D

In order to realize this paper we had recourse to certain documents relative to the automobile industry in Tunisia. We quote the principles of them:

- Situation de l'automobile en Tunisie, perspectives de développement (paper of C. N. E. I. realized in 1971).
- La sous-traitance facteur d'industrialisation (paper of C. N. E. I. issued in March 1370).



PREAMBLE

Being the smallest country of North Africa as much regarding its surface as the population and in spite of the low natural ressources, Tunisia did not hesitate to make sacrifices in order to start her own industry. During the last ten years appeared industrial activities in different sectors: siderurgy, refining, textile industries, mechanics, electricity &c.

Now, notwithstanding the increase of the portion of industry in the Rough Industrial Product which raised from 17 % in 1962 to 27 % in 1971, the manufacturing industry did not yet find its way to a real expansion. All the attempts and researches in this respect encountered considerations of market which were difficult to resolve. Owing to the exiguity of the interior market Tunisia was bound to strow a trend towards exterior markets. To this effect it is at first necessary that the Tunisian industrial firms accede to conditions enabling them to compete as far as concerns quality and prices.

However, in the absence of industrial traditions Tunisia needs a solid technical cooperation so as to be able to accede to these exterior markets. The responsible Tunisian people were looking for several years for cooperation formulas with industrialized countries capable to further

the industrial development of the country while safeguarding the autonomy of decisions.

This solution which protects at the same time the interests of both parties has been set out by the economical commission for Europe in 1970 in the following manner:

"It seems reasonable to require that the agreements between firms should fulfill the following conditions in order to correspond to the denomination of industrial cooperation:

To concern production operations or technical operations of great importance for the respective firms, these operations meaning for a long period common interests for the partners; in more complex cooperation forms these common interests are extended to subsidiary activities of commercialization and upkeep services."

The experience of Tunisia in the matter of automobile industry wanted to find the right way in this respect. After 4 years of experience the present statement will try to draw up the balance-sheet. The experience Perliet STIA, of an older idea compared to new agreements realized or in the course of realization, has been choosen as an example as this cooperation type may catch the eye.
It is obvious that this choice and the analysis that is made therefrom will have no influence either on the decisions of the authorities or of the firms working in narrow collaboration with Perliet or on the choice of future foreign partners.

1. MOTIONS ABOUT THE AUTOMOBILE INDUSTRY IN TUNISIA

10 The number of cars (1961 to 1971)

According to the documents of the INSTITUT NATIONAL DE LA STATISTIQUE (INS) we could number the quantity of cars in Tunisia and indicate the evolution from December 31st, 1961 to January 1st, 1971 (Table 1).

The agricultural tractors are included in this table although they may not be considered as automobile vehicles because we estimated that their production raises the same problems since we find often the same pieces and the same devices as those which are used in the automobile construction.

In the same table we have joined a supplementary column indicating the portion, in number and in percentage, of vehicles aged more than 15 years.

Moreover in examining this column we notice immediately that the number of cars increases timidly during a period while they are getting more and more old.

Before dealing with a nearer analysis of this number of cars we have to point out two facts which certainly had an influence on the normal evolution of the demand of automobiles in Tunisia:

1) The devaluation of the dinar taking place in 1964.

TABLE I

THE NUMBER OF AUTOMOBILE VEHICLES

	Private cars	Commercial cars	Heavy and light trucks	Motor coaches and buses	Agricultural tractors	Sundry tractors	Special vehicles	Total number of vehicles	Vehicles of more then 15 years	%
31.12.1964	49 149	9 726	18 471	1 094	16 046	470	586	94 544	24 970	26,4
31.12.1965	51 155	9 306	19 005	1 162	17 082	480	520	98 800	24 889	25.1
31.12.1966	53 755	10 027	19 411	1 370	17 833	519	709	103 624	30 163	29.1
31.12.1967	56 727	10 503	19 833	1 489	18 131	543	774	107 800	35 735	33.2
31.12.1968	59 017	10 982	19 779	1 583	18 684	600	786	111 431	37 981	34.1
31.12.1969	62 280	11 951	20 287	1 935	19 045	615	838	116 832	45 063	38.5
31.12.1970	63 870	12 419	20 751	1 872	19 388	• 632	863	119 759	48 277	40.2

Source = Number of Tunisian Automobiles (INS)

• Provisionel figures

- Are not included the vehicles belonging to the Tunisian State (ET), vehicles under temporary rule (RS)

2) The important increase of custom duty and of different taxes since 1964.

COMMENTARIES AND ANALYSIS

On December 31st, 1969, the motorization proportion of Tunisia was 35,7 for 1 000 inhabitants with a pronounced maladjustment between the Tunis area, the other great cities and the rest of the country.
As a matter of fact, with about 20 % of the Tunisian population, the Tunis district owned in 1969 50,4 of the total number of cars.

Moreover, not only the number of cars is concentrated in the big cities, with a motorization proportion yet small compared with many developing countries, but it shows also a very characteristic structure, distinctive by the very advanced age and by a considerable number of types and models.

For this reason we thought it useful to give more details about the age and the number of models, two factors that have acted in a sure manner on the evolution of the automobile industry in Tunisia.

101 Analysis of the number of cars according to age

- Private cars (V. P.)

Included in the total of 92 280 touring vehicles on January 1st, 1970:

44 %, i. e. 27 282 vehicles are of an age inferior to 12 years.

22 %, i. e. 13 790 vehicles from 12 years to 17 years.

18 %, i. e. 11 262 " from 17 years to 22 years.

16 %, i. e. 10 959 " superior to 22 years.

- Utilitarian vehicles (V. U.)

The following types range within this category

- The commercial vehicles,
- The motor trucks and delivery vans,
- The heavy and light motor lorries,
- The road tractors,
- The special vehicles.

On January 1st, 1970 the total number amounted to 33 058 vehicles, out of them:

18 708 less than 12 years, i. e. 56,6 % of the total,

4 987 from 12 to 17 years, i. e. 14,9 % of the total,

4 327 from 18 to 22 years, i. e; 13,8 of the total,

5 174 of more than 22 years, i. e; 15,7 of the total.

- Motor coaches and buses

On January 1st, 1970 the number of cars included 1 835 vehicles ot of them:

1 246 vehicles of less than 12 years, i. e; 69,1 %

158 " from 12 years to 17 years " 8,8 %

117 " from 18 years to 22 years " 6,4 %

254 " of more than 22 years " 13,9 %

CONCLUSION

If we consider that the technically satisfactory life for private cars is 12 years, 53,1 % of the number of private cars exceed this limit, and 34 % are of an age of 17 years or more.

For the utilitarian vehicles, the busses and the motor coaches the average life is about 15 years.

Consequently 35,5 % of the number of utilitarian vehicles are of of age superior or equal to 15 years, likewise 29,10 % of the number of motor coaches and busses are of an age superior or equal to 15 years.

We notice that as far as the utilitarian cars, the motor coaches and the busses are concerned, the ageing is less pronounced than regarding the private cars, perhaps owing to the fact that the users of this typeof vehicles are organized societies and disposse of better technical andfinancial means.

To the contrary, of the private cars, 2/3 of them should be cut to scrap-iron. This fact may be explained by by the too high prices of new vehicles, intended for a market which is essentially composed of consumers with a moderate revenue.

102 Number of models

- Touring cars.

It would be particularly tedious and of few interest to point out accurately the number of models which compose

the whole of private cars in Tunisia.

We meet on principle all trade marks and the models exceed certainly one thousand, we see rather a "rolling museum" than a collection of automobiles.

- Utilitarian vehicles

In 1970 there was on the market of utilitarian vehicles a number of models also impossible to be defined accurately, but which might be esteemed roughly at least of 1 250 models originating from all countries since 35 years, out of them 250 models for commercial vehicles and 1 000 models for heavy and light lorries.

Aggravating circumstances for the manufacturing, the repairs and the upkeep of these vehicles: about a third of the vehicles are composed of pieces in inch dimensions and two thirds in the metric system.

- Motor coaches and busses

For want of statistics we have estimated this item at 250 models originating from 25 trade marks.

11 Yearly registrations

We have indicated in the table 2 the yearly registrations of automobile vehicles according to categories from 1962 to 1968, and in the table 3 the transfers of vehicles (change of owner).

The analysis of these tables shows that the market

TABLE II

REGISTRATIONS OF AUTOMOBILE VEHICULES

	1968	1969	1964	1965	1966	1967	1968
Private cars	2 808	2 151 - 78%	2 367 + 10%	2 104 -11,2%	2 759 + 31%	3 220 + 17%	4 044 + 28%
Commercial cars	2 385	2 608 + 9,3%	2 562 81,8%	1 281 -50,8%	1 588 +25,8%	1 809 -36%	1 788 +77,2%
Total :	5 201	4 758	4 929	3 385	4 388	4 289	5 832
Increase on the previous year		- 11%	3,6%	-31,7%	29%	2,5%	36,6%
% of the total number				4,28%	5,31	5,01	6,82

- In 1970 the total of registrations amounted to 4 952 vehicles, 12 887 for 1971 and 8.466 until july 1972.

  For the year 72 , 12 000 vehicles are expected.

- Are not included : the vehicles belonging to the Tunisian State (S T), the vehicles under temporary rule (R S)

TABLE III

VEHICULES DESTROYED OR TRANSFERRED OUT OF TUNISIA

	1962	63	64	65	66	67	68
Private cars	1 422	1 195	4 917	88	185	373	175
Commercial cars	94	139	2 541	47	189	188	133
Total :	1 516	1 334	7 458	145	374	563	408
% of the total number				0,18	0,48	0,86	0,48

Source : The economy of Tunisia in figures (INS).

of automobiles as a whole was very irregular and that there was generally one good year out ot two.

The percentage of registrations in comparison with the total number is rather low and fluctuates between 4,5 and 6,6 % whereas the world figures range between 12,8 and 13,5 %.

Finally the number of tranfers of vehicles is, to the contrary, very high, it is twice or thrice higher than the number of the yearly registrations. This means to say that in Tunisia 2 to 3 second-hand vehicles are being sold for the purchase of a new vehicle.

The market of second-hand vehicles is therefore very active which is to be explained by the high prices of new cars, duty paid.

However, we have to notice that since 1970 an interesting evolution in our imports takes shape; the registrations for the year 1971 are taken as example.

The checking of the monthly lists of registrations published by the National Automobile Club of Tunisia gives the following figures:

Private cars	77 848
Utilitarian vehicles	2 900
Busses and motor coaches	198
Total registretion s	10 725

This number of 10 725 for a year constitutes a record comparatively to the previous years (in 1960 the total of registrations has attained the number of 7 150). This fact is due to the development of touring and to the bringing in on the market of second-hand vehicles imported by Tunisian workers in foreigne countries.

Out of this number the deliveries of STIA (Tunisia) amounts to 887 vehicles only whereas the imports represent 9 864 including 3 673 second-hand vehicles.

This checking carried out on the registrations of 1971 has allowed us to distinguish the trade marks and the models for each category of vehicles:

Private cars	43	trade marks
	151	models
Commercial cars	3	trade marks
	7	models
Heavy & light lorries	19	trade marks
	46	models
Motor coaches & busses	6	trade marks
	13	models

These figures confirm the continuous proliferation of models put into the traffic in spite of the new contracts taking effect like those of Berliet and of Peugeot.

Facing these difficulties the responsible people

have been looking for a long time for a solution of this serious problem.

It was in 1969 that a new policy in the matter of automobile has been defined, but the tendency has to be confirmed for the coming years. In this connection we think that the year 1973 will show a turning point in the automotive industry in Tunisia.

As a matter of fact the industrial group installed in 1961 did not bring out valid results during these ten years. Since 1969 only certain positive results did appear.

This experience as moderate as it may be, in spite of its weaknesses and even sometimes its failures deserves a thorough study thus enabling us to define the trend that we wish to insure for the next ten years.

12 National Production

The whole of the national production is assumed by the Société Tunisienne d'Industrie Automobile (STIA) installed at Sousse (on the Eastern Tunisian coast) in the neighbourhood of the port and 2 km from the centre of the town.

Created in 1961 this factory started its activity with the assembling SKD of motor coaches and lorries SAVIEM.

In 1965 a contract has been concluded with the REGIE NATIONALE des Usines Renault for the assembling CKD of R4 cars. This agreement included the assembling of ROC

vehicles per annum:

300 delivery vans, covered with iron sheet, with a carrying capacity of 330 kg,

200 limousines.

In 1967 the production has been extended to the assembling CKD of lorries by international call on bids.

300 Ford lorries until 8 tons,

200 Berliet lorries of 10 tons and more.

In 1968 an agreement has been drawn up with Fiat for a yearly assembling CKD of:

1 000 delivery vans Fiat with a carrying capacity of 1 500 kg.

In 1971 conclusion of an agreement with Peugeot for the yearly assembling CKD of 1 000 404 vehicles comprising:

200 berlines with petrol engine of 1 618 cm^3 (9 CV)

800 family cars with Diesel engine of 1 948 cm^3 (8 CV)

600 sheeted light lorries with Diesel engine 1948 cm^3

in place of the Fiat light lorries.

In 1972 negotiations have been engaged with Citroën for the assembling of 1 800 vehicles of the 8 CV type, delivery vans and commercial cars (Ami 8).

Concerning the busses and the motor coaches the engagements of STIA have always been markets drawned up with BERLIET, FIAT, SAVIEM or IKARUS.

At the present time STIA is again examining their policy of assembling lorries and busses, putting forth a

call of bids for a five years contract foreseeing the production of 20 busses and motor coaches per annum.

The new program foresees from 1973 onwards, the beginning of the quadrennial plan, the manufacturing of the coachwork in its whole and the importation of mechanics by SKD.

At the present time STIA presents itself as a firm of an average size (for Tunisia) with a manpower of 500 persons for a nominal capacity of 5 000 vehicles per annum.

The real capacity of 4 500 vehicles, considering the starting organization, will be reached in 1977. The manufacturing program foresees:

1 600 Citroë (3 CV) vehicles, commercial delivery vans,

1 000 Peugeot vehicles,

200 lorries, motor coaches and busses,

total 3 500.

In 1978 it is planned that the production will already reach 2 000 vehicles of which:

400 private cars

1 500 utilitarian vehicles

100 busses.

13. <u>The industry of outfittings and accessories for automobiles in Tunisia</u>

STIA assures only the construction work of the coachwork;

the mechanical devices and the inside fittings are being imported.

STIA ensures for own needs some work as assembling petrol tanks, assembling of mufflers and the construction of chair framework.

Certain accessoiries like the following ones are being supplied by the Tunisian industry:

1 - The tyres (Firestone et Kenzel Bourguiba)

2 - The accumulator batteries

3 - The synthetic or cellulose paint (Société Astral)

4 - The polyethylene foam

5 - The stratified polyester seats (Fonderies réunies)

6 - The hubs and the brake drums for lorries (Berliet, SC FO ME CA and RECTIF)

7 - The springs (Manufacture Tunisienne de Ressorts).

Other articles, projected or in the course of execution will complete the scale:

- The inner tubes and the trapezoidal belts
- The radiators for refreshing water
- The electric headlights
- The alternators-dynamos-starters.

All the firms manufacturing these articles appeared after 1960. They do not work exlusively for the

automotive industry, with the exception of those producing the tyres and the accumulators whose existence is justified by the needs of renewning (spare pieces or worn out pieces).

1. 4. Integration percentage, its progression during the period and its method of evaluation

Different methods have been used in order to evalue the integration ratio. At a certain time the Turisian administration has choosen the following formula:

$$T_{\lambda} = \frac{\text{Tunisian added value}}{\text{Turnover all taxes included}}$$

This method which uses the accounting documents has the serious inconvenience to include in the calculations the customs duty and the taxes which are not productive factors of the cost price.

The Société Tunisienne de l'Industrie Automobile determines the percentage of integration by the formula:

$$T_{\lambda} = \frac{P - (C - m)}{B}$$

P = Price of the imported vehicle build-up CIF - TUNIS

C = Price of the collection C. K. D., CIF all the pieces supplied

m = Amount of the pieces and materials which are supplied by the country and deducted from the collection.

For their part Berliet have suggested another formula which takes into account the evolution during a period of the integration ratio, this rate being equal to nought in the case that all the components are supplied.

$$T_i = \frac{C_o - C_t}{C_o}$$

C_o is the value of the CKD collection, all the pieces being supplied,

C_t is the value of the collection forwarded at the moment t.

Berliet's calculation method does not interfere the assembling costs, but gives an accurate idea about the technical integration which characterizes the industrial possibilities of the country.

By these two methods we get the following integration ratios:

	Method STIA	Method Berliet
Renault R4F	38,13%	1,1%
R4L	34,03%	0,1%
Peugeot 404 B	20,05%	0%
Light lorries 404F	12,11%	0%
Berliet GLC8	33,68%	8%
GLR8	27,76%	19,6%
GLR10	33,89%	18,1%
FORD D200	17,70%	0%
D300	18,38%	0%
D500	21,75%	0%
D800	14,30%	0%

The comparison of these methods of calculating the integration ratio enables us to propose another formula giving the real integration ratio since it takes into account:

a) the costs of the operations of manufacturing, of assembling, of painting and of mounting, executed in the workshops of STIA,

b) the costs of outfittings and accessories manufactured in Tunisia after deduction of all imported items interferring to their production.

This formula present itself in the following manner:

$$\% = \frac{B - (C_t - \sum_{i=1}^{i=n} t_i b_i}{B}$$

B = price of the vehicle build-up CIF TUNIS

C_t = Price of the collection at the time t after allowance as requested by the Tunisian constructor,

t_i = Integration ratio of the items bought locally or manufactured or mounted in the country, represented by the proportion

$$\frac{\text{costs} - \text{costs in foreign currencies}}{\text{costs}}$$

(consequently $t_i = 0$ for any item imported as a whole and resold on the local market).

b_i = CIF value of the items produced or bought locally

on the basis of the constructor's prices.

n = number of integrated pieces and items.

1.5. Legislation applicable to automotive industry

Properly said, there is no particular legislation for automotive industry either in respect of the national production or of importation.

Before the creation of STIA the importation of automobile vehicles has followed a normal evolution in order to satisfy a demand relatively important in comparison with the present demand. This evolution may be explained solely by the absence of quantitative restrictions for the importation of automobile vehicles and by the moderate rate of customs duty and of the taxes.

Still, since 1963 the Tunisian lawmaker changes his attitude towards the automobile which he considers as a luxury product. For this reason the rates of taxes and customs duty range between 70 and 150% of the CIF price according to the origin and the power of the imported cars.

From the point of view of encouragement to the automotive industry a general legislation exists in Tunisia and is appropriate to any investments which allows the undertakers to benefit of certain advantages of the State concerning guarantees and the system of taxation.

The law of 1969 putting forward the investments code enables STIA, for example, to benefit of certain fiscal advantages as:

- tax reduction (for the tax on the premises, CPE &c)
- registration fees of title deeds of the factory (increase of the capital, transformation of the articles of the Company, amalgamation and assignment of assets),
- exoneration during a certain time of the income tax on stocks and shares,
- warrant letter destined to facilitate the financing of the storage of primary matters and of finished products,
- letter of guarantee in order to take out banking credits,
- suspension of payment of taxes and fees when importing outfit material.

Moreover the law n° 70-18 of May 19th, 1970 submits the products of the automotive industry and the complementary industries to the rules of homologation which means to say that these undertakers just as the rest of the undertakers of the industrial sector are obliged to submit the prices of their products to the Board of supervision to be homologated.

However, the Board of supervision settled the selling prices of automobile vehicles, assembled in Tunisia, at the same level as those of imported vehicles including the customs duty inferior to those due for vehicles build-up (17% and 23%).

Taking into account the customs duty and the different taxes (essentially T. P. and T. C.) the selling prices of private cars assembled by STIA are from 76 to 119% higher than the French prices, those of utilitarian cars are from 36 to 86% higher. This difference is essentially due to the high rate of customs duty for imports. Thus, for example, the State collects 157% of the CIF price of the CKD collection for a berline 404 sold in Tunisia.

At the present time several projects for drawing up rules relative to the automotive industry are in the course of study. It is likely that the present tendency consisting in negotiating privileged agreements with foreign partners will gain in strength and that STIA will succeed in supplying 50% of the Tunisian market at the end of the four years until 1976. There will certainly also appear a rule for importing second-hand vehicles. This problem will moreover be largely settled in lowering the prices of new vehicles produced in Tunisia.

16. Description of the levels of industrialization

We have seen already that the national production of automobile vehicles in 1971 did not exceed 10% of the number of registrations, i. e. about 1 000 vehicles.

It is hard to think that for this derisory quantity, far from corresponding to a single model, one could

expect a higher integration than what it is at present and which is limited to the assembling. As a matter of fact the added value realized by the automotive industry exceeds hardly 15 %.

If what quality concerns the production of the automotive industry in Tunisia did not meet with serious problems either relatively to foundry nor in the industry of accessories, the question of the prices is still put. Just as the automotive industry properly so called, the industry of accessories encounters unavoidably the fact of the economy scale.

Different attempts have been made to increase the integration rate:

- manufacturing of brake drums,
- manufacturing of motor units,
- manufacturing of engine fly-wheels,
- manufacturing of gear box casings &c.

The same remarks may be made for the accessories industry as the tyres of Firestone Tunisia, the sparking-plugs of the Société d'Exploitation des Techniques Industrielles &c.

On the other hand the quality of these products has not always been regular owing to the smallness of the series, this excluded to have recourse to modern means of manufacturing and particularly to of supervising the quality.

2 The cooperation between the Société Tunisienne de l'Industrie Automobile and the Société Berliet

The cooperation between STIA and BERLIET goes back to 1967.

It started the day of the signature of the record of agreement within the plan of industrialization of Tunisia.

This agreement was relative to the assembling of 200 vehicles per annum in three periods, at more or less pronounced industrial degrees, CKD1, CKD2 and CKD3.

2.0 Description of the cooperation between STIA and Berliet

We give hereafter some indications about this agreement which took into consideration the particular conditions which involve a harmonious development of the automotive industry from the point of view of our profitable yield and of direct utility. The reciprocal obligations, lined out by the record of agreement, concern the following fields:

- with regard to business:

It has been defined and pointed out all about the conditions of sales on the local market, the scale of vehicles, the relations between the two partners on the outside market,

- with regard to the technical cooperation:

A program of technical assistance has been set up between the two parties enabling them to attain the aimed objective. For this purpose the foreign partner bounds himself to furnish the execution plans, the tools, the assistance for the management, the professional training &c.

POSITION OF STIA

STIA remains master of the work as regards industrialization.

As such they are entitled to assemble, realize, order to realize or purchase directly at subtracting firms certain items or parts meant for mounting and entering in the constitution of the vehicles. Regarding the transfer of patents or methods of manufacturing belonging or not to the givers of order, to the different subcontractors, quite a series of proceedings has been worked out in order to favour and facilitate the local intervention.

The aim of the integration program settled by a common agreement was to reach at the end of the fourth year a ratio of 25 % for the whole scale of assembled vehicles. It is understood that this integration rate is calculated according to the Perliet method which we have mentioned at the beginning of this statement (cf integration ratio page 15).

On the other hand, in the outline of the contract was set up a list of parts or items capable to be produced in Tunisia, either by the own means of STIA or by potential subcontractors.

However, the parts or items manufactured in Tunisia should be submitted to the homologation by the constructor before the definite acceptance. As a matter of indication we give a list of parts whose local manufacturing has been foreseen (see the following table 4).

TABLE IV (continuation)

DESCRIPTION OF ITEMS OR PIECES	HOMOLOGATION by BERLIET		HOMOLOGATION not necessary
	on the spot (2)	at Vénissieux	
Various trimmings	♦		
Bumper			♦
Spare wheel carrier			♦
Driver's seat	♦		
Passenger's seat			♦
Bonnet shutter and radiator grill			♦
Number plate			♦
Fuel pipe units	♦		
Air pipe units		♦	
Preparing of electric headlights	♦		
Radiators		♦	
Batteries			♦
Tyres (3)			♦
Set of board tools			♦
Manufactured bolts and nuts		♦	
Not manufactured bolts and nuts	♦		
Paint of chassis		♦	
<u>For cabin nomenclature</u>			
Items of cabin floor	♦		
Inside fittings			♦
Rubber for surrounding of plate-glass and wind screen			♦
		♦	

TABLE IV

INDUSTRIALIZATION

List of parts which can be mass - produced upon decision of S.I.I.A. (I) - cf. article 7 - appendix 2)

DESCRIPTION OF ITEMS OR PIECES	Homologation by BERLIET		Homologation not necessary
	on the spot (2)	At Vénissieux	
I/ [illegible]			
1. On commercial chassis and different items			
. Straight cross pieces and iron fittings, bent, welded and not stamped			
. Laminated suspension springs front and rear			
. Cheeks and bridles			
. Brackets, different supports, trusses			
. Fuel tanks			
. Compressed air tank			
. Silencer and exhaust pipe			
. Boxes for batteries and for tools			
. Unit supporting right and left cylinders			

TABLE IV (continuation)

DESCRIPTION OF ITEMS OR PARTS	HOMOLOGATION by BERLIET		HOMOLOGATION not necessary
	On the spot (2)	At Vénissieux	
. Bonnet and unit parallelogram	♦		
. Instrument panel			♦
. Mounting handle			♦
. Footboard unit			♦
. Cabin paint		♦	
3 . For nomenclature axles and back axles			
. Brecke drums		♦	
. Wheel hubs		♦	
. Ring step-up gear		♦	
4 . For nomenclature of gear box			
. Connecting gear cap		♦	
5 . For nomenclature of motor			
. Front plate		♦	
. Rim fly-wheel unit		♦	
. Pulley		♦	
. Water pump		♦	
. Tumbler cover	♦		
. Oil cup		♦	
. Admission and exhaust manifolds		♦	

(1) Subject to the possibilities of the Tunisian subcontracting

(2) Subject to the existence in Tunisia of the necessary supervision means

(3) The supply shall be up to international standards.

2. 1. Subcontracting agreemen-ts

With reference to the years 1967 and 1968 which correspond in Tunisia to the first quadrennial plan, called industrialization plan, important undertakings have appeared such as the siderurgy EL POULADI (SOFOMECA), the Société de fonderie et de mécanique, the hardware of the Ateliers mécaniques du Sahel. The units of mounting which were constituted since 1963 are principally interested by these new undertakings because they are capable to supply intermediary products like cast-iron, billet steel, hardware, tyres ...

Unfortunately the theory of development poles which was built round the mounting industries did not give the expected results.

As a matter of fact the scale economy, applied to such a small market as ours, made collapse dreams and hopes admitted since a long time in developing countries.

Tunisia, as far as she is concerned, has tried several attempts. During a first period she set up a minimal integration ratio of 50% to be attained in the years 1972. The research carried out in all the sectors aimed to determine all the items, parts and accessories capable to be manufactured in Tunisia by the means either existing or to be created and which should permit to reach the settled integration ratio.

The first experience of this kind has been realized effectively with Berliet from 1966 onwards around two poles:

- the foundry with SOFOMECA, the only steel foundry in Tunisia,
- the Atelier d'usinage (machining workshop) of the Société Rectif, the principal machining workshop in Tunisia.

What regards technics these two undertakings dispose of equipments equally valid as those of similar European undertakings. The manpower, trained on the spot in railway workshops and afterwards engaged by these undertakings, has all the requested experience in profe-ssional respect.

The first orders concerned the iron fittings and the brake drums. For the first parts of relatively easy conception there were not noticeable difficulties in the course of their manufacturing.

With regard to the parts showing complications from the technological view difficulties appeared between the givers of orders and the subcontractors, thus this experience lived sparely until 1969 at which date it had to stop. The origin of this failure is not due to the only foundry sector.

As a matter of fact the Tunisian undertakings which should have attain the integration proportions settled by the administration could not control the technological problems, but ascertained that their cost prices

climbed up in a considerable manner which obliged them to sell at loss in spite of exceedingly high selling prices.

In spite of the granted efforts the integration made only a progress of 5 % per annum.

This situation which covered the whole period of the quadrennial plan 65-68 was to lead also to the failure of the interior integration for economical reasons and particularly for a question of the market.

However, the Perliet contract which had hardly two years could not be judged definitely. The foundry and the machining workshop in Tunisia which also were engaged in this way had to agree with Perliet and Stia about another formula which should limit the harms brought about by this experience. At the same time the Société Tunisienne de Banque and the Centre National d'Etudes Industrielles which just have been created (August, 1968) started studying the fact of subcontracting and its possibilities as a solution for a change. The research finally led to proposals which could on one hand resolve certain problems, raised by the integration and more generally by the mounting units, and on the other hand help the start of the mechanical industry in some time. The study of the C. N. E. I. published in March 1970 and called "The subcontracting, industrialisation factor", was to contribute to the introducing of a new period in the relations between contracting parties of the

kind of STIA and Berliet.

The similar industries of mounting, specialized on the field of electro-mechanics, of electronics, of Diesel engines, of electric home appliances &c went throu again their mounting policy.

The new trend applied to the Berliet experience has allowed the manufacturing of more important series, intended for the greatest part for the Berliet factories at Vénissieux.

This business course noticed since March, 1970 the first deliveries of which started in July, 1970, has opened the way to a narrower collaboration between the license suppliers and the Tunisian industry. The compensation contracts which as a matter of fact are only subcontracting agreements having a permanent and regular character correspond moreover to reciprocal commercial and financial interests. They seem to become the basis of all the present and future agreements that Tunisia is bound to conclude on the field of mounting industries and and mainly in the automotive industry.

3. 3. Types and quantities of pieces

We do not dispose of accurate particulars about the type of collaboration that existed between RECTIF and BERLIET. At the present time SOFOMECA is the principal beneficiary of the compensation agreements in the field of mechanics.

We give hereafter the specifications of the parts produced by SOFOMECA within these operations, (see table V).

TABLE V

SPECIFICATIONS OF PARTS MANUFACTURED BY SO FO ME CA WITHIN COMPENSATION DEALS

Reference	DESCRIPTION	Weight per unit, in kg
184 742	Hub	40,000
475 519	Iron Fitting	4,200
475 523	Iron Fitting	2,100
483 329	Cover	5,000
457 808	Gear support	7,000
184 554	Hub	44,000
884 180	Iron Fitting	7,000
872 880	Shutter plate	1,000
473 774	Pedal board	3,200
474 971	Gear support	8,100
351 744	Shutter plate	2,000
118 507	Rear plate	2,400
352 749	Spring plate	1,400
351 752	Upper cap	1,400
383 443	Articulation iron fitting	8,100

These operations carried out since nearly three years have been executed exclusively with the country, supplier of license.

The parts are verified and machined in France. The only export of entirely built-up vehicles which has nothing to do with the subcontracting, has been a commercial deal realized with a neighbour country.

We think nevertheless that the operation of subcontracting of assembling vehicles would be interesting for the busses and the motor-coaches. The studies in the course and the different contacts taken with various constructors show a trend in this direction.

Moreover we have always wished that a co-ordination should be established between Berliet and the three countries of the Maghreb (Algeria, Tunisia and Morocco) so as the volume of subcontracting gets an economically valid size. At the same time this would allow to reduce the freight charges for the three countries, to reinforce the integration of the Maghreb and possibly install a machining unit which might increase the added value appropriately.

We are showing in the table VI the monthly deliveries of SOFOMECA to Berliet since the beginning of the operation (March, 1970) until to-day.

The evolution shown by the graph that follows confirms that the relations established between Sofomeca and Berliet have not been regular. The divergences are being accentuated by the shipping of hubs and other parts at the same time.

TABLE VI

DELIVERIES BY SO FO ME CA OF CAST IRON PARTS

Months		Quantity delivred in tons	Total in tons
July	70	1.914	1.914
August	"	14.830	16.744
September	"	10.217	26.961
October	"	19.060	46.021
November	"	32.875	78.896
December	"	35.392	114.088
January	71	57.992	172.080
February	"	39.110	211.190
March	"	30.772	241.962
April	"	32.941	274.903
May	"	20.280	295.183
June	"	6.485	301.820
July	"	17.047	318.875
August	"	0.909	319.584
September	"	8.216	327.800
October	"	9.317	336.117
November	"	25.338	361.455
December	"	12.359	373.814
January	72	12.477	386.291
February	"	17.242	403.533
March	"	33.606	437.139
April	"	47.438	484.577
May	"	53.620	538.197
June	"	46.251	584.448
July	"	19.721	604.169
August	"	8.093	612.262
September	"	19.451	631.713

3. SPECIAL CONDITIONS REQUESTED FOR THIS CO-OPERATION

This commercial and technical co-operation of subcontracting cannot be realized and maintained without certain conditions: observe quality standards, delays and prices failing which this course could not exist.

The advantages by which can benefit our partners of industrialized countries and which in principle are within our reach, are essentially short delays (availability of the equipments and of the manpower) and prices able to compete (low salaries even if the yield-capacity is inferior).

As a matter of principle the technical part of the operation should be settled with the partner in bestowing to the subcontractor a valid technical assistance, necessary for the technical training, the organization of the production and the continuous checking of the quality of products...

As far as the specific investments are concerned, a part of them has been realized by the partner and the remainder by the subcontractors.

30 Investments

The Société Tunisienne de l'Industrie Automobile which started in 196[illegible] with an initial investment of 120 000 $ reached in 1971 a total investment of about 3 800 000 $ With a level of 554 persons employed.

As a matter of course all these investments are not entirely attributable to the experience STIA - Perliet which represents only 35 % of the average production of the last 4 years (68-7 1) and 20 % only of the average turnover for the same period.

In the course of the years 6? to 71 the added value of this producing unity amounted to about 25 % of the total turnover, all taxes included; this may be explained by the fact that Stia is an undertaking of automobile construction from intermediery products such as sheet iron, sectional steel, tubes for the manufacturing of the coachwork and mechanical units and (imported) subunits for the final assembling.

As far as the Companies RECTIF and SO. FO. ME. CA. are concerned, the subcontracting agreements set up with Perliet during these four years did not require important specific investments owing to the fact that these two undertakings dispose of equipments which can be easily adapted for automotive industry.

With regard to the investments which are realised within the experience STIA - Perliet, we shall quote only the expenses caused by the purchase of tools and by the manufacturing of casting models.

STLA

The tools which have been used for the equipment of the factory at Sousse, for the mounting of the motor-coaches, busses and lorries (formers, handling equipments and sundry tools) are estimated for the equivalent of 300 000 $ x

PERLIET

A part of the specific tools for the mounting of the busses and the motor-coaches has been borne by Perliet. The total amount of this participation has been of about 50 000 $.

The Société RECTIF and SO FU TE CA

These two companies have invested nearly 13 000 $ for the purchase of tools necessary for the manufacturing of Perliet parts within the present contract.

---

x All the values are expressed in $ equivalents for the convenience of comparison.

31 Quality of the production

For the manufacturing under license just as for the mere subcontracting the essential condition for the success of such operations is the good quality which must be at the same level as that which is guaranteed by the original constructor.

As a matter of principle the construction realised in the STIA workshops lines up easily with the norms requested by the European constructors.

Some of the minor defects encountered in the finishing as the welding, the paint or the wiring can be eliminated easily by a final strict checking. As a matter of principle the conception defects in a mounting industry can originate only from the constructor.

On the other hand the technological difficulties for the integration and the subcontracting are the same as those encountered by the European constructors (the defects of castings, the machining defects and thermic treatment defects, the quality of accessories etc).

Thus, for a country like Tunisia which has not yet an industrial tradition, it is normal that the automotive industry meets problems of quality, especially in the manufacturing of devices the proceeding of which is not automatic.

The collaboration and the co-operation between the European giver of orders and the Tunisian subcontractor is the only way to be followed in order to master the technical difficulties. However, in spite of their qualifications certain foreign constructors who engaged themselves in the direction of this co-operation, were in difficulty to find rapidly the solutions of those problems. The splitting of the periods which their results therefrom has immediately after-effects on the quality. Within certain limits set up by the two parties the articles manufactured during this interval of time should be accepted by the giver of orders.

We conclude therefrom that the notion of quality cannot be measured by the means of immutable standards as for the sizes. The experience has shown that the necessary time to reach the label of quality requested, does not exceed a few months provided that the two parties are acting with a good grace.

Thus the obtained quality corresponds entirely to the norms of the European constructors regarding the types of vehicles assembled in Tunisia, some minor incidents excepted. On the contrary relatively to the subcontractors of Stia, there were some difficulties to attain products of good quality. During the starting period in some undertakings for example, it was difficult to convince the constructors to accept certain accessories like tyres and sparking-plugs.

Unfortunately in the cases of this kind STIA is not well enough situated to to give them the necessary technical assistance, having nor the means nor the ability. On the other hand, in the case that the constructors are already working for the international subcontracting through the medium of STIA, the technical assistance could be obtained from the foreign partner. This is the case of assistance given to SO FO ME CA by Perliet.

It is an incontestable fact that at the be-ginning of the subcontracting and especially on the field of casting, SO FO ME CA had to face up multiple difficulties. If some of them are still existing, it is uniquely due to a bad conception of the subcontracting agreement.

As a matter of fact it is not logical that the checking of the rough castings is not being carried out in France instead at the time of reception which often corresponds to the very time of machining whereas the time slipped by between the shipping and the delivery exceeds sometimes six months.

Principly, considering operations of this importance, either the verification should be carried out by a technicist of the giver of orders on the very production place of the subcontractors in order to limit the scrappings, or the subcontracter should be given leave to execute the machining operations locally which would avoid useless losses.

It is this formula that has been kept for future sub-contracting operations of SO. FO. IE. CA with foreign countries. It will permit the company to avoid transporting the turnings, and furthermore to become aware of the technological defects in time, and of the importance of the rejections.

In our opinion, it is in that sense, that an experience as the one of Berliet - STIA has the biggest chance of succeeding and of guarantying the contract the maximum of continuity and regularity.

32 Comparaison of the costs of production

As we pointed out at the beginning of this report, in Tunisia the sale prices (all taxes included) of the different types of vehicules are higher than in France. The difference varies from 36 to 120% according to the final use of the vehicles. These variations represent customs duties and the taxes imposed upon the automobile vehicules imported or manufactured locally.

If one reports the taxes imposed in Tunisia at the price when the vehicule leaves the factory as in France for example, we have for the private automobiles the total of the taxes of production and consumption equal to the rate of 59,8%. In France it is of 37,4% or 22,4 % less.

For the utilitarian automobiles the taxes at production in Tunisia is of 16,8 % against 23 % in France or 6,2 % less.

At the consumer level, the differences are accentuated by the beneficiary margin which is 13,39 % and the consumption tax of 29 %. In chart 7 we give the various deviations in percentage, between the price of private automobiles and utilitarian automobiles of the same kind, in Tunisia and in France.

These variations are true for imported cars as well as those manufactured in Tunisia. Actually , the selling price to the client, the imported vehicules, and the vehicules assembled locally are identical. This does not mean that the price of the cars when leaving the factory are the same.

The production costs of the industry in Tunisia are higher by necessity.

There are many reasons for these variations:

- The transportation expenses from the original factory to the assembling factory which include: the cost of gathering the small pieces (parts), packing, transportation itself from the foreign factory to the local factory.

- Customs duties on the CKD (about 17 %), the added taxe included.

- The different taxes added to the local products applied at the time of the assembly of the vehicules.

- The cost of assembly which is never only higher due to the following reasons:

TABLE VII

PRICES OF VEHICULES PRODUCED BY S.T.I.A.

Original rade Mark	Type of véhicle	M O D E L	Price Ex Works Taxes included		Ratio of prices
			Tunisia in D	France in D	
RENAULT	R4	Limousine	1 526,5	865	176
	R4	Delivry van	1 114,0	822	136
PEUGEOT	404	Berline	2 646,0	1300	219
	404	Family car	3 804,0	-	-
	404	Shected lorry	2 080,4	1334,9	156,6
FORD	2 T	D 200	3 956,5	-	-
	3 T	D 300	4 079,5	2704	151
	5 T	D 500	4 710	-	-
	8 T	D 800	6 494	3788	171
BERLIET	8 T	GLC - 8	8 388	8158	103
	11 T	GCK - 160	11 397,5	8848	128
	12 T	GLR - 200	12 837	-	-

Source : for prices in Tunisia : S.T.I.A.

for prices in France : Price lists Motor Show 1971. 10th October 1971

- For the conversion of F. into D, rate : 10 F = 0,841 D.
- As regards RENAULT and PEUGEOT, in Tunisia the cost of Car license is included in the price.
- Prices of vehicles sold un Tunisia are the same, wether they are assembled by S.T.I.A. or imported "Build Up"

* The diversity of the models assembled.

* The low number of vehicules assembled yearly.

* The assembling equipments.

* Ways of management.

* The time used for assembling.

Unfortunately we do not provide a sufficient number of elements for the evaluation of these differences. We can however affirm the fact that they are not considerable because STIA does not sell at a loss in spite of the fact that it is obliged to conform to the prices of the same vehicules when imported.

The prices of national subcontractors

In general and for the same reasons that we have already given, the prices of the accessory parts and the included elements are theoretically higher at the time of importation. The comparison was made in relation to the prices of the parts which are included in the lists of foreign builders furnishing the CKD. These prices were increased from the incoming expenses and the customs duties to give the same base of comparison.

According to the Societe Tunisienne de l'Industrie Automobile these differences are from:

16 % for the tires representing 2,2 % of the total value.

16 % for the paint representing 0,233 % of the total value.

15 % for the manufactured pieces representing 3 % of the total value.

The electric accumulators which are furnished to STIA as spare parts are 50 % more expensive if one compares them to the prices of the first mounting made in Europe.

However an investigation in 1970 revealed that the public (market) prices of electric accumulators (as spare parts) are lower than French prices (chart 8).

Practical prices for international subcontracting:

We have seen that for the fondry the business trend registered after March 1970 has not stopped consolidating. The orders of Derlict to SO FO Ms CA have been able to reach 60 Tuns a month. The average price at exportation for welded steel is in the order of 60 cents a Kg. For the casting it is between 30 and 40 cents a Kg. according to the complexity of the piece.

Concerning the manufacturing time, it is invoiced for exportation between 3 and 4 $ according to the type of work performed. The price varies according to the qualifications of the worker and the type of machine.

The prices that we just indicated are current and used for exportation by the "societe de Fonderie et de mecanique"(SO FO Ms CA) and the company RACTIF.

According to the statistics of OCDE of 1960 the price in the average of all the molded parts exported by the member countries was about 38 cents. With an yearly increase of only 3 %, this price should be in 1972 of 42 cents minimum.

According to an investigation done by U.I.M.I., the prices at exportation of molded steel and cast iron are 15 to 20 % lower than those of the French subcontractors.

Conclusion

We consider that for the national subcontracting and integration of superior prices up to a margin of 20 % are acceptable owing to the impact that they can have on the formation of manpower and the creation of jobs. It is not even for the exportation, since the subcontracting Tunisian industry is obliged to line up at ... least on the foreign prices, to improve the quality of its products and respect delivery delays.

TABLE VIII

COMPARATIVE TABLE OF THE SELLING PRICES OF ELECTRIC ACCUMULATORS ON THE BASIS OF PRICES IN OCTOBRE 1970

The prices in France are established T.V.A. included -
The prices un Tunisie are the retail prices

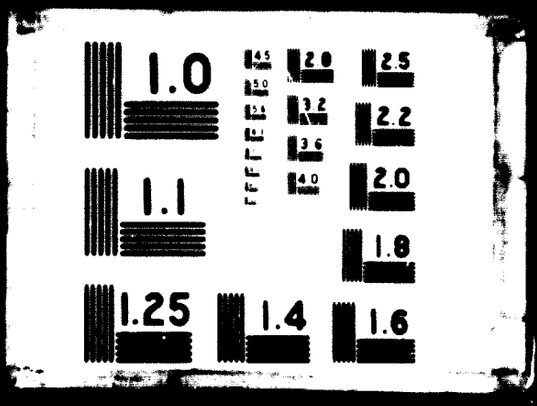
NOUR		STECO		AUTOX		TUDOR		SLEM	
Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
M 1	7 030	M 1	11 105	M 1 D	12 082	M 1 AS	11 109	M 1 AS	11 222
B 1	8 270	B 1	12 733	B 1 D	13 960	B 1 AS	11 454	B 1 AS	12 500
B 2	10 474	B 2	15 175	B 2 D	15 973	B 2 AS	14 711	B 2 AS	14 943
M 2	8 513	M 2	12 966	M 2 D	14 075	M 2 AS	12 910	M 2 AS	12 908
B 3	9 802	B 3	14 827					B 3 AS	14 594
B 4	10 [illegible]	4 4	18 025						
M 3	9 732	M 3	14 827	M 3 D	16 080	M 3 AS	14 711	M 3 AS	14 711
L B 4	13 488					LB 4 AS	18 838	L B 4 AS	19 072
M 4	11 080	M 4	16 920	M 4 D	18 238	M 4 AS	16 744	M 4 AS	17 501
M 5	13 [illegible]	M 5	22 289	M 5 D	24 386	M 5 AS	22 095	M 5 AS	22 211
M 6	16 [illegible]	M 6	26 375	M 6 D	31 541	M 6 AS	26 373	M 6 AS	26 142
M 7	19 [illegible]	M 7	33 548	M 7 D	37 948	M 7 AS	33 086	M 7 AS	33 085
6 M 5 Sp	13 387	2 H N	25 816	2 H N D	26 197	2 H N	24 246		
B 10	12 [illegible]	B 10	19 072	B 10 D	21 085	B 10 AS	16 838	B 10 AS	19 955
B 11	12 [illegible]	B 11	20 816	B 11 D	22 538	B 11 AS	20 469		
M 10	12 [illegible]	M 10	19 943	M 10 D	22 073	M 10 AS	19 769	M 10 AS	20 002
M 11	14 081	M 11	23 816	M 11 D	22 711	M 11 AS	20 469	M 11 AS	20 583
M 12	16 [illegible]	M 12	25 351	M 12 D	27 417	M 12 AS	25 059	M 12 AS	25 119
M 13	19 315	M 13	29 944	M 13 D	32 845	M 13 AS	29 736	M 13 AS	29 538
M 14	25 [illegible]	M 14	42 387	M 14 D	46 [illegible]	M 14 AS	41 633	M 14 AS	44 248
M 15	37 595	M 15	57 621	M 15 D	61 [illegible]	M 15 AS	57 098	M 15 AS	57 099
M 16	47 829	M 16	73 030	M 16 D	77 884	M 16 AS	72 157	M 16 AS	72 216
6 M 11	25 [illegible]			6 T N	51 755	6 T N	47 736	6 T N	48 086

x All prices are expressed in Tunisian dinar One dinar equals 2 dollars.

5. 8. 74

2 OF 2

04590



3.3. Respect for delivery delays

The respect for delivery delays is the essential condition for the success of subcontracting operations.
The developing countries with their available capacities (equipment and manpower) fullfill in principle that condition.

Unfortunately, the fact of having available capacities is not sufficient to encourage the trend of subcontracting.

Actually, it would first be necessary that the giver of orders accept to furnish the necessary technical assistance, which is the only one able to solve the [illegible] principal causes of dely in delivery. It would also be necessary that the contracts present a character guarantying the stability of the personnel and the redemption of the eventual investments necessary, to the execution of the contracts. These two conditions not having been fullfilled, the experience Berliet SO FO MI CA in the matter of subcontracting has known many disappointments. It is only in 1972 that question of dely was solved in a satisfactory way. It has been necessary for that reason that SO FO MI CA make sure of the continuity that this type of cooperation could have, and the resolution of certain technical problems of rectification, to uniformize afterwards the investments in tools, verifying apparatus, etc....

It has been necessary too that the administration take care of a series of measures and administrative structures in order to encourage the exporting industries. We mention, the global admission to supply foreign countries, the rule of temporary admission, the industrial warehouse....

But many other causes could exist and have repercussions in regard to delivery delays.

In the following, we are going to enumerate the most important ones that we have been able to identify:

1) Discontinuance of stocks and irregularity of supply

Certain perishable products, sensitive to aging must be renovated continuously. The administrative formalities and the absence of regular means of transportation make it so that in certain cases the result is the discontinuance of stocks and consequently the disregard for delivery delays.

2) Poorness of series

The small and average series prevent to start the work of perfectioned tools to arrive at the quality required. The tuning of the machines and testing time are lengthen. The delivery deadlines suffer a lot because of it.

3) Unexpected breakdowns

Unexpected incidents immobilize the machines and to palliate such incidents it would be necessary to foresee an emergency service for the importation of the replacement parts in the minimum of time.

4) Irregularity of the quality of the base materials

These irregularities are found often in cast nemalite (local production), for coke (imported), sand etc.... The supply service must find ways to assure quality on time.

5) Revision of prices

This question is the most delicate to debate, in principle the should not undergo revision of prices for at least two years, except in exceptional conditions. A quick understanding between the two partners should prevent the delays that could follow.

6) Administrative formalities

If we want these contracts of subcontracting to be able to play a role in the economic development, an appropriate legislation should exist and present the maximum of clarity and with the minimum of administrative formalities. In such case, the customs and resources services, can have a tool permitting the quick execution of the operations.

4 - Results obtained

The automobile industry, considered as a "industrialisante" industry, has not given in Tunisia relatively results.
In spite of its ten years of experience, it has not had the impact on the development of certain industrial branches such as metallurgy, mechanics, electromechanics, rubber, plastic....

It seems to us that the main reason for that relative failure is inherent to the size of the market. It is admitted in effect that the minimum economic series for the construction of automobiles (tourist automobile) must be around 100.000 units per year.

It is only in this case, that the matter of thinking about integrating many accessories like the engine and the transmission parts becomes possible even if the country does not have any industrial tradition.

With the existence of an industry of automobile components, one could then speak of transfer of technology and the know-how, of appreciable foreign currency gains, and the creation of employment.

4.0. - Foreign currency gains

During the last decade (from 1962 to 1971) the automobile industry in Tunisia produced 5.500 vehicles and achieved a business number of 40 million $. (The foreign currency gain corresponding is of 10 million $ or 25 %.)

corresponding is of 10million $ or 25 %.

If one takes the year 1971 as reference, the economic currency brought by the Tunisian automobile industry was 900.000 $ whereas it was expected to reach 3million $.

That difference is explained by the modification of the fabrication program and the massive introduction in the market new and used imported cars. For these estimations we have not deducted the expenses that have been produced by the investment in foreign currency and by the purchase of materials and accessories found on the marcet or imported.

The value of these articles is equal at least to 5 % of the total price. On the global volume achieved by the automobile industry, the foreign currency part deducted by the Tunisian experience Berliet-STIA is estimated at 1.020.000 $ or 10 % of the whole realized during the decade.

This economy was calculated by taking the difference between the CIF price of an assembled imported vehicle, and the CIF price of the same vehicle C.K.D, as it is shown in the first method resume in the following chart:

Year Truck	Price CIF of vehicle in EU in FF	Price CIF of vehicle in CKD in FF	Unitary difference in FF	Number	Total economy in FF
67/68	47 334	34 429	12 905	144	1 858 320
68/69	50 696	33 837	16 859	36	606 924
69/70	54 744	34 691	19 813	52	1 032 356
70/71	60 909	39 626	21 283	152	3 235 016
68	62 140	62 129	20 011	20	400 220
AUTOCARS	100 746	73 150	27 596	20	551 920
AUTOBUS					
69/70	92 000	69 013	22 987	20	459 740
TOTAL in FF				444	8 144 496
TOTAL in DINARS					810 327 000
in DOLLARS					1 620 654 $

If we take into account the price of the integrated elements, raw materials and imported accessories, evaluated at 5 % of the value of the vehicle, the foreign currency gain becomes at the most equal to:

$$1.320 - \frac{5\ 240\ 746 \times 5}{100} = 1.350.000\ \text{F for the 4 years.}$$

A second approach takes as reference the CIF price of vehicles of the same type imported and assembled by competition. This method of calculation estimates the gain in foreign currency at 1.200.000 for the 4 years.

We give details in the following chart:

FIG. I	FIG. II	UNITARY DIMENSIONS	BUILDER	ACCOUNT
Price CIF in C.K.D.	TYPE	Price CIF in E.U.		
2 679 D.	4 630 D.	1,751	96	168 096 D
3 405 D.	4 630 D.	1 221	102	124 542 D
3 659 D.	5 243 D.	1 764	173	308 632 D
TOTAL	in dinars			601 270 D
	in dollars			1 200 000 $

In an indirect way , Tunisia, has achieved an additional foreign currency gain thanks to the contracts of subcontractings.

In four years , (68-72) the tonnage dispatched to the French market has reached: 691 tons of machined parts of foundry in molded steel.

At an average price of 60 cents a Kg., the foreign currency gain would be of 370.000 $. We have supposed in first approximation that this operation has not declated the going out of currency.

Therefore the total foreign currency gain achieved by ur experience STIA can be estimated as follows :

Direct gain STIA.....	1.200.000 $
Indirect gain BC FO RI CA.....	370.000 $
Total.....	1.570.000 $

We have not taken into consideration the indirect gain obtained by the remittance of a part of the workers' salaries employed by "le donneur d'ordre".

The situation of employment in the French industry and in general in Western Europe, is such that even without preliminary contracts, the employment of that manpower is generally assured.

To have a comparison with the business numbers achieved in Tunisia by "un donneur d'ordre," we give below the volume of the importations in collections of CKD and in special vehicles.

Between 1967 and 1971, 496 vehicles were bought, 53 of which were special vehicles imported assembled.

If one admits that in value a bus is worth two trucks, since the busses were not planned for the licenced contract, the 62 motor-coaches and busses will bring the number of vehicles up to 599.

Taking into account then the devaluation of the FF of September 1969, the corresponding business figure is of:
2.124.402 Tunisian Dinars or: 4.250.000 $.

Because Tunisia has achieved a foreign gain of 1.570.000 $, the cover is in the proportion of:

$$\frac{1.570.000}{4.250.000 + 1.200.000} = 29\ \%$$

We confirm that in spite of all efforts, the currency balance of this operation is still modest. To justify this judgement, we are going to give in what follows a theoretic calculation permitting us to show the considerable difference existing between the present situation and the one we hope to achieve in the automobile industry.

We are going to take into consideration an ensemble of the kind of STIA, SO FO IM CA and RECTIF.

The first company is an automobile construction unit of a capacity of 5.000 vehicles per year (private cars, commercial cars, trucks and busses).

The second is a foundry of a nominal capacity of 3.500 T. of steel and 5.000 T. of iron.

Finally the third one is a machinery workshop equiped with universal machine tools and some special [illegible] machines on the ones of the Societe RECTIF.

We take the hypothesis that this ensemble would work exclusively for the automobile industry.

On the basis of the prices in Tunisia in 1965, the necessary investments to achieve this ensemble would be:

For the mounting unit..... 3.500.000 $

For the foundry unit..... 3.500.000 $

For the machining unit..... 1.000.000 $

T O T A L ..... 8.200.000 $

In retaining the present structure of the production of SFIA with an average price of 6.000 $ per vehicle, the turnover expected by the mounting unit would be of 30.000.000 $.

With 25 %, the average value of assembling costs for the construction of chassis of vehicles and coachwork of the busses, the possible value added by the considered mounting unit would be of 7.500.000 $.

The foundry which would work for the exportation within the subcontracting would achieve a turnover of: 4 million dollars.

We have taken for that the following hypothesis:

- The foundry would work at full capacity.
- The sale price at exportation of steel and iron (cast) would be respectively 60 cents and 40 cents.

Concerning the machining unit with an average of 30 machines, or 5.000 h of work at 4 $ an hour, the turnover forecasts would be of 2 million dollars.

Therefore, an automobile market of 30 million dollars and an investment of 6.200.000 $ for the 3 units (mounting, foundry and machining), would bring a foreign currency gain of about 13,5 million dollars per year.

It is understood that these companies would work within the agreement of the subcontracting and in the best technical and economic conditions.

This number could increase gradually to reach 100 % of the volume of the importations.

Unfortunately as we have seen previously, the result of our experience is very different from that ideal evolution.

4.1. Employment in the automobile industry in Tunisia

The employment secured by the development of the automobile should not be considered only as dependent of the activity of STIA.

In developped countries, the percentage of people employed in the construction of vehicles, spare parts and replacement parts only represents 6,5 % of the total number of employment secured by the automobile activity.

For 100 persons employed in production, there are in principle 1.500 employees in complementary activities.

It is the multiplying effect of the automobile which must be determined by the public authorities, in order to give this industry a particular place in the industrial development of the country.

In Tunisia, the employment created by the automobile industry is proportional to the degree of industrialisation of the sector.

We are going to give, in what follows, only the direct employment. We do not have available statistics giving the personnel employed by the services of sales, upkeep and repairs.

STIA.

In 1971, STIA employed 490 persons, working

8 h a day during 230 days a year, divided into 370.

The structure of this personnel is represented in the following matter:

226 professionals

75 specialized workers

13 manpower

34 apprentices

24 occasionals

For the monthly employees:

12 department heads

68 employees

23 foremen and head of shifts

9 between chauffeurs and guardians.

After 1964, the personnel has progressed regularly with a good stability to reach 554 employees in 1972.

- Auxiliary industries :

Manufacturing of tires

The whole personnel employed by this society is of 117 persons, 115 being workers by the hour.

40 % of the specialized personnel has left the company in 1970 to go work in foreign countries.

The expenses of direct manpower represent 10 % of the cost price.

We can consider that only 9 persons work for STIA or only 5 % of the whole personnel.

Manufacturing of accumulators

This company supplies STIA 2 % of its production but it equips also the new imported automobiles.

The total supply of first mounting is equal to 6,6 %.

This company employs presently 100 people, 30 in the capacity of employees and 70 workers.

We can then consider that 2 persons work in charge of STIA.

The essential market for that company is the replacement part as in the case of tires.

The SO FO M. SA (Foundry)

This factory employs 300 people of whom:

50 higher staff and administrative employees

(4 engineers and 16 technicians)

100 qualified workers of whom 47 moulding specialists

150 workers

It has a good personnel stability. One can estimate that 20 % of the personnel works for the automobile industry.

The company MACTIF (MACHINING)

The total personnel is 80 persons.

45 for the reconditioning of the engines,

35 for general mechanics.

This company has made until the end of 1970, wheel hubs and brake drums cast by SOPOMECA in charge of STIA.

The automobile industry therefore makes the companies work of which the personnel is summarised as follows:

STIA:	554 employees
Tires:	177 "
Accumulators:	100 "
Foundry company:	300 "
Company MACTIF:	80 "
T O T A L:	1.211 employees

We have not taken into account certain indirect employments of 1st degree as for the industries of synthetic foam, hardware, leather, textile, etc....

We can roughly estimate that the automobile industry and the ones of their accessories have permitted the employment in Tunisia of 1.500 people. We have seen that the experience STIA only represents 16 % of the turnover achieved during this decade.

In these conditions the direct impact of this operation has permitted the creation of 240 jobs.

In this manner, the market portion which returns to the "Giver of orders" is estimated at 4.250.000 $ for the 4 years, has permitted to create directly only 240 jobs.

Therefore, the counterpart average of the market necessary for the creation of a job is of:

$$\frac{4.250.000}{4 \times 240} = 4.300\ \$\ .$$

4.2. Transfer of technology and know-how.

The automobile industry, part of its impact and influences in many areas, concerning multiple activities, which go from the simple machining mechanics, to the most advanced electronics passing by textile, plastic..., has been considered by the planner of developing countries as a "industrialisante" and consequently a creator (generator) of jobs ... since, to mention only the example of France, an active Frenchman in ten works in that Branche.

The implantation of an integrated automobile industry requires a certain number of conditions:

-the existence of industrial basic specialties such as ironwork, foundry, machining, thermic treatment of the parts....

- development of recent industrial sectors such as electronics, plastic materials, etc....

- installation of an industry of accessories utilising practically all the branches and all the materials.

Therefore, before such diversified technology, the developping countries have thought of the necessity of beginning by installing mounting units which would open the door to the gradual incorporation of parts and devises manufactured locally.

This situation has really called the attention of the automobile builders around the years 1955-1960.

The mounting which constitutes a series of small and simple technological operations consists:

- of mounting the coachwork and painting afterwards,
- of fitting the sattlery and the inside fitting,
- of achieving the assemblage of the mechanic devises and fastening them to the coachwork,
- of installing all the accessories and the mechanical, electric, and hydraulic connexions.

This mounting cannot reasonably give place to a technology transfer of a certain value.

The evolution continues and the automobile industry mechanises more and more the mounting units, that call for in the future a foreign manpower small and not qualified, searched much more for its low price than for its professional qualification. Its interest for the developping countries becomes more and more uncertain.

This state of affairs is often aggravated by extra-technological considerations such as narrowness of the market, and ill-adapted legislation.

5. Conclusion

For all the developping countries, the implantation of an automobile industry has for objectives: the creation of employment, the technology transfer and the gain in foreign currency.

The exemple of the Tunisian experience in the subject of automobile industry has shown that the mounting by itself is not enough to achieve its objectives: the integretion is probably the only issue possible to reach such profits for the economy of the country.

Unfortunately, the Tunisian market, as the one in most developping countries are on the other side of the minimum series economically able to exist to be able to support the consequences of a reinforced integration.

We have thought the of orienting ourselves towards the widening of the markets by a regional cooperation between certain countries as in the case of Latin America with the Indes countries which have established between themselves a "Sub-regional" economic ensemble. In this optical Tunisia integrate itself in a larger market as the one in North Africa to accelerate its industrial development and to justify a regional integrationbeing able to reach 80 %.

STIA like the foreign automobile construters, have quickly understood that any integration limited to the only Tunisian market was becoming therefore impossible.

The solution of replacement which could have been found, consisted in developping a narrower cooperation, between the supplier and the Tunisian industrial which goes beyond the simple"techniquelliant" cooperation as well as the commercial interests and reciprocal financiers.

Berliet was the first constructor to engage in such an experience. Even the very modest results were benificial for the two sides and mostly opened the door to a new type of cooperation, being able to constitute one of the best solutions to the difficulties presented by the industrialization of the developping countries.

The immediate results obtained by STIA are the doubling of its production in 1972 and the tripling foreseen for 1973.

This evolution which is not due to a simple chance, must permit at least to justify the existence of the automobile industry in Tunisia.

For the foreign constructor the interest in that experience was first to get hold of stable markets, permiting it to prepare a program of fabrication in the near future, to organise itself better and to think about the development and the improvement of the production.

And then this experience permitted the constructor to discover a type of cooperation bringing about the maintenance of prices, the achievement of supplementary benefits

and a more regular supply of automobile accessories.

5.0. Benefits of impartition for the developping countries

The lack of organization and coordination is a constant characteristic in small and average companies of developping countries. Subcontracting and mostly compensation are susceptible to settle the problems.

In effect, compensation permits to get hold of larger and more [illegible] regular markets with controls adapted to their equipment which will permit them in the first place to make their investments profitable.

On the other hand that expansion of output, will make them concentrate their efforts to improve their quality and therefore to make the most of the international market with the increased knowledge in the subject of manufactoring especially when the necessary technical assistance will be assured them.

More, subcontracting could be an efficient method for the real development of the different sectors of industry.

This procedure would in effect permit the acceleration of the industrialization process in developping countries.

much more quickly and rationally than we can report at the present time: this for many reasons:

- The very important manufacturing of a given part could be started out. This would permit us to obtain them at competitive cost prices.
- The manufactoring volume would increase in important proportions because many imported mechanical ensembles presently could be the object of an eventual integration.
- The foreign currency gain and the proportion of the value added would be much higher than those resulting from the present procedure or integration.
- The commercialization costs would decrease in evident proportions given the possibility of establishing longterm contracts.
- This way of acting would permit the better division of operations of machining (possibility of executing the parts which are cast if an ironwork shop is under employed for example...).
- The certainty ofr the utilizers of the considered country to easily obtain types of equipment, macines, indispensable parts or tools.
- This would permit a good reduction of

the sale prices of equipment and consommation goods (because of the respectable reduction of cost prices) and would favor therefore the increase of national consommation with all the beneficial factors which can result from it.

As for the favorable effects on the national economy, we can cite:

- the increase of the volume of exportations,
- the foreign currency gain,
- the equilibrium of the balance of payments,
- an harmonious economic expansion with immediate effect on the increase of the national revenue.

5.1. The limits of that experience.

To say that the Tunisian experience has rectified a strategy of industrial development of the third world countries is an error which we should avoid.

However, it is possible to affirm that:

- Tunisia has the merit of having taken the risk of inaugurating its own automobile industry.
- the Tunisian experience as well as the ones of other developping countries, is registered within the movement which operates in the center of the World Economy since the forties, to know the international division of tasks.

In effect, as we have observed after the last world conflict the transition of certain economic activities from the hands of the United States to the ones of Western Europe or Eastern Europe, we observe today, a certain decentralization of the economic activity from the industrialized countries to the developping countries.

This is what makes us think that the automobile industry, diversified sector since calling upon the multiple specialties and different materials, is the way to participate in the development of the movement of decentralization.

This tendency will certainly find its foundation in the subcontracting which reflects the specialty, the availability and the competition of each country, and for the reason that boundaries have become fictitious, thanks to the development of the means of transportation, it is not impossible that we would be in a near future the witnesses of a close collaboration between a giver of orders and a subcontractor separated by thousands of Km.

5.3 Advantages for the givers of orders

The advantages of that policy for the givers of orders are even more important.

Presently in the industrialized countries, even though mechanisation is encouraged to extrem limits, the problem of manpower does not stop to create insurmountable difficulties.

Besides, with a permanent increase in salaries, frequent social conflicts, the deadlines and prices are constantly being questioned.

To remedy these difficulties, most of those countries have resorted to foreign manpower more and more numerous. This solution has quickly created major inconvenients. In effect that manpower has found itself in a degradating social situation, with housing problems which have only aggravated an ill-fated psychological climate that sooner or later will have its effects on the productivity and stability of that manpower.

The salaries themselves could not be lower because of the cost of living and the inflation more and more acute in those countries.

From where a constant increase in cost prices in the meantime where the competition becomes a determinant factor.

The compensation and international subcontracting

such as the ones which are proposing can in this case bring a non negligible solution to certain problems of givers of orders.

To find manpower from the country itself, in one of the most stable psychological climates, with relatively low salaries is it not already one of the most advantageous solutions?

Moreover, to have a privileged position in an even reduced market and benifit from a promising geographical situation to output or other markets, can only confirm the multiple advantages which Tunisia can represent for international subcontracting without speaking of the fiscal advantages which are accorded this kind of industries, nor the reception of infrastructure which exists in the country.

5.3 Obstacles limiting the International Subcontracting

In this part we shall review the obstacles that exist presently and which could be taken off if we really want to engage in the way of international subcontracting.

- Technical difficulties whose origines are multiple.

We can cite:

- the lack of qualified personnel,
- the inexistance of study offices capable of inovating and assisting the companies,
- fixing up of certain machines, etc...
- absence of information.
- a lack of internal coordination between the local companies which do not have any information on the equipment and the possibilities of each of them.
- a lack of information on the international market of subcontracting.
- Fiscality.

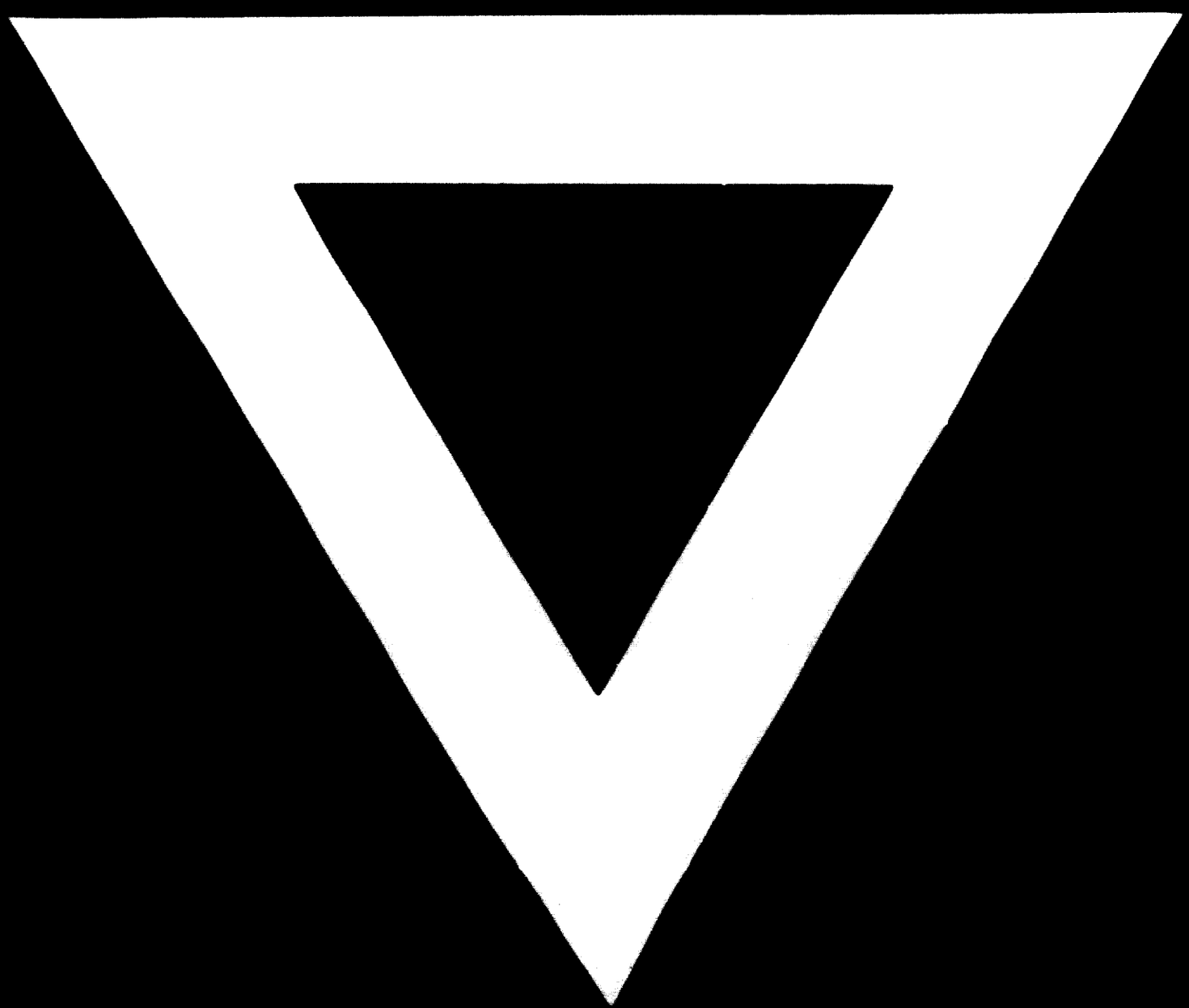
In effect, the taxes which hit the local products are generally very heavy.

Such as:

- licence duties,

- customs duties and takes at production.

It so happens even that the taxes are cumulative along the circuit of transformation of the products.



5. 8. 74