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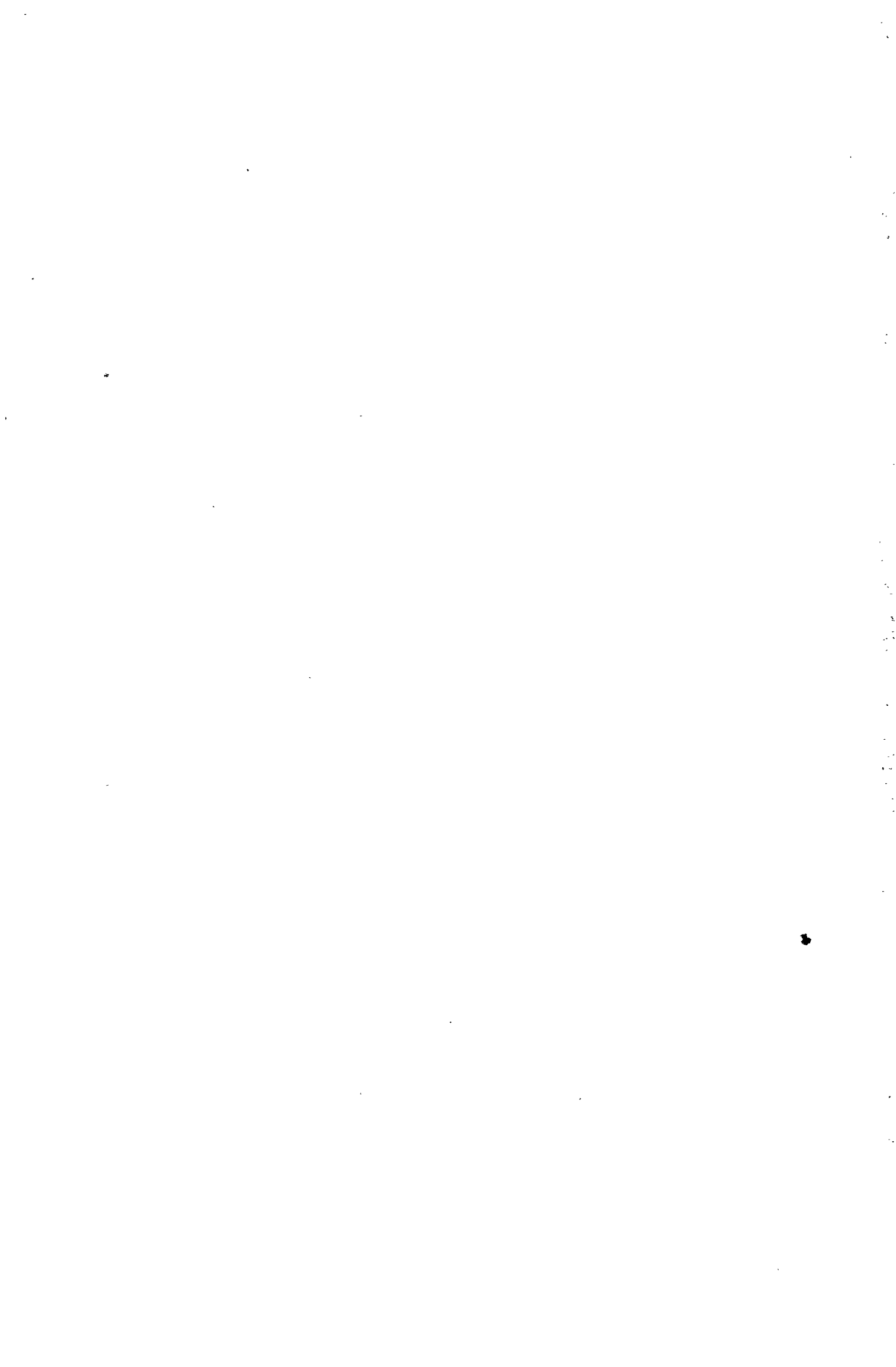
DOCUMENT 1-235/83

REPORT

drawn up on behalf of the Committee on Energy  
and Research

on basic technological research in the automobile  
industry

Rapporteur: Mr P. VERONESI



At its sitting of 16 November 1981 the European Parliament referred the motion for a resolution tabled by Mr BARBAGLI and others (Doc. 1-695/81) pursuant to Rule 47 of the Rules of Procedure, to the Committee on Energy and Research as the committee responsible and to the Committee on Economic and Monetary Affairs and the Committee on Transport for their opinions.

At its meeting of 17 March 1982 the Committee on Energy and Research decided to draw up a report and appointed Mr P. VERONESI rapporteur.

The committee considered the draft report at its meetings of 26 November 1982, 15 March 1983 and 20 April 1983.

At the last meeting it adopted the motion for a resolution unanimously.

The following took part in the vote: Mr Gallagher, acting chairman; Mr Ippolito, vice-chairman; Mr Veronesi, rapporteur; Mr Bombard (deputizing for Mr Adam), Mr Flanagan, Mr Fuchs, Mr Gautier, Mr Halligan, Mr Hoffman (deputizing for Mr MÜller-Hermann), Mr Linkhor, Mr Moreland, Mr Normanton, Mr Pedini, Mr Petersen, Mr Purvis, Mr Rinsche, Mr Rogers (deputizing for Mrs Lizin), Mr Sälzer, Mr Travaglini (deputizing for Mr Sassano) and Mrs Viehoff (deputizing for Mr Markopoulos).

The Committee on Economic and Monetary Affairs decided not to deliver an opinion. The opinion of the Committee on Transport is attached.

The report was tabled on 25 April 1983.

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A

The Committee on Energy and Research hereby submits to the European Parliament the following motion for a resolution together with explanatory statement:

MOTION FOR A RESOLUTION

on basic technological research in the automobile industry

The European Parliament,

- having regard to the motion for a resolution by Mr BARBAGLI and others (Doc. 1-695/81),
- having regard to the motion for a resolution by Mr COTTRELL and others (Doc. 1-1042/81),
- having regard to the answer given by Vice-President DAVIGNON on behalf of the Commission (26 February 1982) to Written Question No. 1494/81 of 11 December 1981 by Mr MOREAU to the Commission of the European Communities,
- having regard to the oral question with debate by Mr BERKHOUWER and others (Doc. 1-149/82) of 21 April 1982,
- having regard to the motion for a resolution by Mr ALMIRANTE and others (Doc. 1-196/82),
- having regard to the motion for a resolution by Mr TRAVAGLINI and others (Doc. 1-224/81),
- having regard to the UNICE memorandum for a Community industrial strategy submitted on 15 September 1982 to the Vice-Presidents of the Commission, Mr ORTOLI and Mr DAVIGNON,
- having regard to its resolution submitted by the Committee on Energy and Research and annexed to the report by Mr LINKOHR (Doc. 1-654/82)<sup>1</sup>,
- having regard to the report of the Committee on Energy and Research (Doc. 1- /82) and the opinion of the Committee on Transport (Doc. 1-235/83),

<sup>1</sup> OJ No. C 334, 20.12.1982, p. 94

- A - having regard to
- the outstanding economic and social significance of the automobile industry in the European Community,
  - the new challenges which the European industry must meet, particularly the need to develop more efficient vehicles while complying with stringent requirements governing safety, the emission of exhaust fumes and noise prevention,
  - the growing international competition from producers in areas outside Europe, Japan in particular, who for various reasons have appreciably lower production costs,
  - the need for the European automobile industry to maintain and improve its competitiveness not only on Community markets but also on export markets,
  - the low average profit levels of European producers caused by the economic recession and the keen competition from outside the Community,
  - the prospect of alarming social strains if the process of job shedding were to become more widespread.
- B - bearing in mind that
- to regain, retain and expand the market, the efforts to renew products and production processes must be continued and increased with a view to improving quality and efficiency and reducing costs
  - it is vital to prevent an erosion of Europe's technological lead in this sector

#### Basic research and development

1. Fully agrees with the widely held view that the international competitiveness of the European automobile industry must be maintained and constantly improved by means of technological progress;
2. Is convinced that this technological development can be achieved only by making use of new basic scientific knowledge which is the result of specific research projects;

3. Believes that the governments of Member States should create the fiscal conditions and harmonized legal requirements in which industry can respond to the principal objectives with which automobiles must comply (e.g. energy savings, environmental protection, product liability, health and safety at work) if they are to be competitive on world markets;
4. Believes that firms should define areas of basic research appropriate to their product requirements;
5. Requests concerted action by the Community in respect of research programmes undertaken in government research establishments in order to avoid unnecessary duplication;
6. Considers that, in this effort to improve product quality and with regard to basic research in particular, the European industries operating in the sector must work in close cooperation;
7. Believes that cooperation of this kind would not undermine the rules of the market and of free competition, since the basic research would by definition and content be a pre-industrial activity;
8. Is of the opinion that the national programmes of the Member States could be coordinated to good effect at European level and that it would be possible to encourage a profitable exchange of information on the results of these programmes;
9. Takes the view that, precisely because of its inherently pre-industrial nature, basic research could be conducted on the basis of cooperation between public research institutes (universities, scientific institutes, JRC, etc.,) and industrial laboratories, while the utilization of the results for the purposes of technological development should remain the sole prerogative of industrial undertakings;
10. Urges the involvement of small and medium-sized enterprises, particularly the component manufacturers, in the research programmes and the exploitation of the results;

## Financing

11. Is convinced that there exists within the Community both the scientific, managerial and financial potential required to establish coordinated basic research in the automobile industry, and the general conditions needed for its success;
12. Considers that Community support may be given to basic research in the automobile industry where
  - (a) Community funds supplement, rather than replace, national budget expenditure in this field;
  - (b) the automobile industry itself puts sufficient effort into research;
  - (c) cooperation between the European automobile undertakings can be improved as a result;
13. Calls, therefore, initially for concerted action by the Community to promote cooperation in the European automobile industry in the field of basic research and expects the European automobile undertakings to put forward proposals for such joint projects;
14. Urges that the Commission's activities, which should take the form of indirect action, should be
  - (a) based on a realistic programme which is consistent with the objectives of general interest,
  - (b) accompanied by a strict budget estimate appropriate to the proposed objectives;
15. Claims the right to precise information on the commitments entered into by the Community and on their results;
16. Endorses, in particular, the spirit and letter of paragraph 6 of the resolution by Mr BARBAGLI and others;
17. Acknowledges that as few bureaucratic obstacles as possible must be placed in the way of any measures undertaken but that the rules on correct and transparent administrative procedures must be observed;



Political aspects

18. While supporting Community action and favouring cooperation between the various European industries, cannot conceal, in relation also to this particular case, the many uncertainties which similar past experiments in other sectors of production have raised, as a result of
  - (a) the failure to interpret in a uniform manner the concept of the 'pre-industrial phase',
  - (b) the lack of clear arrangements and rules for transferring the basic knowledge acquired to the technological development stage,
  - (c) the constant danger of divergencies in national or business interests between the various partners;
  
19. Calls once again on the community institutions to reflect critically on these aspects so that they may derive from past experience useful pointers for the definition of procedures and rules of conduct which will facilitate supranational Community cooperation;
  
20. Notes that Japanese and US automotive associates operating in the Community have access to technologies in the Community, and calls on the Commission to consult the industry in order to propose appropriate measures, if required in the industry's interest, to ensure a two-way flow in new automotive technologies between the Community, Japan and USA;
  
21. Urges, finally, the Community to take action to
  - (a) increase the cultural and scientific value of specific basic research,
  - (b) encourage the definition and implementation of closer links between industry and university research centres;
  
22. Instructs its President to forward this resolution to the Council and Commission of the European Communities.

EXPLANATORY STATEMENTI - INTRODUCTION

1. This report will concentrate on the specific and extremely important field of basic scientific research on the technology of the automobile industry

The rapporteur wishes, as a preliminary, to point out a difference between the description of the subject of this report, underlined above, and that of the motion for a resolution by Mr BARBAGLI and others from which the report derives.

The motion for a resolution refers to basic technological research in the automobile industry.

2. Although both these descriptions make quite clear the proposed objective and desired results, the rapporteur considers his description to be more appropriate and more precise.

This is not the place to dwell further on a semantic matter of this kind, although it is a problem which could usefully be investigated in greater depth, provided there was no unnecessary splitting of hairs.

The rapporteur's point of view will perhaps become clearer as the report develops. The following scheme may, however, be used as a reference:

- (a) Basic (or fundamental) research may be conducted in all scientific laboratories and makes use of the widest range of investigation techniques and methods, the approach to the problems varying in accordance with the different viewpoints. However, it is well known that, at least in Europe, such research is conducted primarily in universities and public research institutes.

When basic research is 'directed' towards particular areas by a particular 'client', it is described as 'specific'.

Long experience has shown that it is difficult to involve the universities ('temples of free research' or 'ivory towers') in specific basic research. The pressing requirements of modern industry and of

highly developed societies have lain siege to the 'university citadels'. This question will be taken up again later in more concrete and less figurative terms. What can be stated now is that the universities and public research institutes must be urged to commit themselves to specific basic research.

(b) The natural and irreplaceable location of research into technological development is in the centres of production, that is, in industry. This is where technology is created.

3. The scheme and distinctions indicated above may help to clarify the meaning of the term 'pre-industrial', which is intended to describe European cooperation in the field of basic research into the technological development - as regards products and production methods - of the automobile industry. It therefore follows that the task assigned to our committee by the motion for a resolution by Mr BARBAGLI and others is to assess whether it is in principle desirable for the Community to contribute, in cooperation with the industries concerned, to a basic research plan directed specifically at the technological development of the automobile industry.

The report will therefore follow the plan shown on the contents page and will include a brief description of the present situation in the automobile industry, a section devoted specifically to scientific research in this sector, a few relevant political considerations and a conclusion.

## II - BRIEF REVIEW OF THE AUTOMOBILE INDUSTRY

4. It is well known that the automobile industry (in Europe and the world) is a production sector of major economic importance on account of the financial movements it involves, the size and wide distribution of the markets on which it operates and its social implications in terms of employment in the industry itself and, indirectly, in the mass of separate and widespread related industries.

The automobile sector now plays such a substantial and important role in modern industrial society that, in addition to those directly responsible for the economic management - private or public - of the undertakings, it now involves the governments of Europe and the possibility of state intervention.

5. There are two aspects to the severe world economic crisis, as reflected in the automobile industry:

(a) the stagnation or general decline in the market, with a consequent reduction in the average levels of production in the three principal (USA, EEC, Japan), which does not, however, effect all the undertakings in the sector to the same extent.

(b) the fierce competition on domestic and foreign markets.

6 At the end of 1980 and the beginning of 1981 Parliament discussed in depth the difficult and arduous conflict with the seasoned USA and Japanese industries, on the basis of the detailed analytical report by Mr BONACCINI. The resolution adopted on 13 January 1981 at the end of this debate sets out a number of guidelines to be followed at Community level with a view to restoring the competitive position of the European industries and consolidating their presence on the world markets.

Following this debate the various political groups in the European Parliament submitted a large number of motions for resolutions calling for the subject to be discussed further. The FILIPPI resolution, debated at the first October part-session this year, is the most recent to which reference should be made.

This report does not intend, even briefly, to cover again all the relevant arguments on the subject developed in previous parliamentary debates, since this would involve the futile repetition of analyses and points that are already extremely familiar. In substance, then, the rapporteur believes that all the relevant problems have been adequately investigated and also that a consistently realistic body of information has been established.

It should also be borne in mind that, further to the commitments made by Parliament at the end of the debate on the BONACCINI report in January 1981, an updated study of the situation is being carried out by the Committee on Economic and Monetary Affairs, on the basis of a document again to be drawn up by Mr BONACCINI.

7. As far as the general world situation in the car industry is concerned, the production figures for the three most important production areas for the five-year period 1977-1981 (statistics by ANFIA) are significant:

- USA; car production has fallen at an increasingly fast rate from 9,214,000 units in 1977 to 6,252,000 in 1981;
- Europe; following a stagnation in production between 1977 and 1979, when the figure was 11,341,000 cars, in 1980 and 1981 there was a steady decline to 8,696,000 cars;
- Japan; at a virtually steady or slightly increasing rate of growth production increased from fewer than 6,000,000 units in 1977 to 7,038,000 in 1980, while in 1981 the total number of cars produced was 6,974,000.

The production figures for 1982 and the corresponding percentage variations by comparison with 1981 are as follows:

- USA; 5,075,000 (-18.8%)
- EEC; 9,060,000 (+ 4.2%)
- Japan; 6,887,000 (-1.2%)

The monthly statistics so far available for 1983 seem to indicate that demand for cars is probably about to climb again from the bottom of the cycle of decline which began after the unprecedented record sales of a few years ago (the 1982 figures for Europe are significant here).

However, there is still no clear indication that the decline in the demand for commercial, and particularly heavy, vehicles is likely to end in the near future.

In recent years, the EEC and USA car industries have encountered particular difficulties not only because of stagnant and falling demand, but also as a result of fierce and aggressive competition from Japan (which has now, however, begun to feel the effects of recession).

A consequent effect on the motor industry over the same period has been a contraction of jobs in both the production and component sectors. Dismissals, early retirement and lay-offs have led to a considerable contraction of the work force employed in the car industry, although not always for the same reasons or on the same scale. Indeed, there has been an increase in employment in some Community car industries. Nevertheless, it seems clear that expanding the market and facing up to competition will continue to be key objectives in ensuring the proper protection of the Community's industries and the strategic measures that this requires.

8. This combination of competition from outside and a slack market has prompted two 'therapeutic' trends, which are short-term, very traditional, of doubtful effectiveness and clearly incompatible with all the canons of the free market:

- the first is the constant temptation to protectionism supported, for example, by the American producers through Mr WINDECKER, who is responsible for the study and research section of Ford (October 1982). Also significant is the legislative proposal (bill HA 1234) on 'domestic content', submitted to the US Congress by R. OTTINGER. The FILIPPI report also contained a similar proposal in attenuated form, restricting the application to a specific period, although its content was substantially modified by the final resolution adopted by Parliament.
- the second involves the sinking of massive support funds in the car sector, in order to protect employment, by credit institutions backed up by guarantees from the countries concerned (United Kingdom, France, FRG, USA, Japan and Italy).

This sector is of such importance that no government, even those run on strictly free-trade principles, has succeeded in evading the responsibility to take direct action. The problems facing Chrysler in the USA and the British Leyland affair have been tackled by means of substantial subsidies from public money, while in Japan there is a kind of two-way link between the car industry and government policy.

9. The proposals for strategic measures at Community level are sounder and more rational.

The bulk of these measures, which are reasonably considered to be the most suitable means of reviving the European car industry, are contained in the BONACCINI report and summarized in the accompanying resolution.

Further proposals followed.

(a) The fourth international automobile conference, organized by the Financial Times, was held in Geneva in March 1982 and attended by the major European and Japanese manufacturers (notable absentees, however, were the US firms Ford and General Motors). Taking as a starting point the age-old fact that large-scale economies have always been a key factor in the car industry and that the development of new products is now vastly expensive, proposals were again put forward at the conference, this time by those directly involved in production, for cooperation between the various manufacturers.

The fundamental point was that the car industry is now at a crossroads where it must choose between two policies :

- either conflict within the international oligopoly, which inevitably means strict protectionist measures,
- or the conclusion of supranational agreements.

(b) The symposium held by the Socialist Group of the European Parliament with the European trade unions in the metallurgical and mechanical industry also called for a global industrial strategy at European level, in which the car industry is of major importance. Recognizing that Community action could make an effective contribution to the efforts to modernize the car sector, the broad guidelines for a suitable strategy were laid down.

(c) Mr FRASER, Director of the SMMT (Society of Motor Manufacturers and Traders) in the United Kingdom and chairman of the EEC Coordinating Committee for the Automobile Industry, expressed quite different views on 22 April in Berlin at the European forum on the future of the car. The conference was organized by the Berlin Wissenschaftszentrum as part of the world programme concerning the future of the automobile industry, which was drawn up on the initiative of the MIT (Massachusetts Institute of Technology). Commenting on the MIT study, Mr FRASER stated that the car industry endorsed the Institute's aim of arousing political leaders to an awareness of current trends in the industry, its problems and the conditions under which it operates. In this sense such academic studies can be of use, provided they reflect the facts as they are and do not attempt to put forward political views. The industry does not want specific problems to be unjustifiably highlighted, nor does it want such studies to pro-

duce unwarranted pessimism, such as the extremely widespread fear of a substantial reduction in jobs as a result of the introduction of new technologies. 'It is in general impossible to draw up valid plans for all car manufacturers in the European Community and it is not for the governments to develop a strategy for the industry. Governments should create suitable conditions in which the industry can carry out regular adjustments with a view to improving its competitive position.'

Mr FRASER went on to point out that the industry had throughout its history pursued a process of adjustment and there was no reason to believe that future adjustments would be more costly than in the past. 'Studies will not add a great deal to this process. The pressure of competition and the economic situation require the manufacturers to introduce changes at a much faster rate than that at which studies can be produced.'

This summary is taken from a newspaper article and may not faithfully reflect Mr FRASER's views. The rapporteur nevertheless has reason to believe that these are personal views which are not shared by a substantial section of the industry in Europe.

10. Cooperation and agreements on joint production have been the keynotes of a strategy which has been adopted by virtually all the major car manufacturers since the years when the first symptoms of structural crisis in the sector began to emerge. Efforts have been made to establish links at both transnational and national level.

(a) at transnational level

- Volkswagen has concluded an agreement with Nissan and a research and production agreement with Renault
- in 1979 Renault acquired a proportion of the American Motors holdings and it has shares in Volvo
- in 1979 British Leyland contracted a business 'marriage' with Honda
- the major American industries do not shrink from business deals with their feared Japanese competitors; Chrysler holds shares in Mitsubishi and has an agreement for one million engines a year, while Ford has a substantial holding in Toyo Kogyo and General Motors in Isuzi, together with an agreement with Toyota for the production of 200,000 cars in the USA



- the Italian manufacturers have concluded agreements such as the Alfa-Nissan, Fiat-Peugeot and Innocenti-Daihatsu agreements

(b) At national level the following are of importance

- in Italy, the cooperation agreements between Fiat and Alfa
- in France, the merger of Peugeot with Citroen and Talbot
- in the FRG, the rescue and merger operations guaranteed directly by strong regional governments, for example in Bavaria for BMW and in Baden-Württemberg for Audi NSU.

11. However, recent events in the sector suggest that the agreements between European undertakings are precarious, while those between undertakings within the same country are becoming increasingly well established.

The simple customs union, which according to the political advocates of the agreement and the theorists who believed in its validity, should have led to major economies of scale through the integration of European undertakings, has not succeeded in achieving the proposed objectives. The measures taken by the EEC have formally united the markets but not the undertakings. Someone has written that 'the European automobile is still in the pits'. It seems that efforts to establish production at European level have been abandoned and that the opposing tendency, to restrict production to national level, is prevailing. A reference to this situation was made in the speech given recently by the Vice-President of Fiat in Como before the Committee on External Economic Relations of the European Parliament, which was meeting to discuss the problems facing the automobile industry in the Community. Having asserted 'that the European automobile industry has the potential to retain the supremacy as regards innovation which marked its origins' he added that 'cooperation must be built on clearly defined foundations with respect for mutual interests and in accordance with an approach which explicitly maintains, defends and strengthens the individual industrial systems'. He requested the European Community as soon as possible to find the will and the means to implement an industrial policy which will facilitate the achievement of this objective.

12. To conclude this general introduction to the specific matters brought to the attention of the Committee on Energy and Research, the rapporteur feels that two points may be made to summarise the situation.

- (a) Although the European and world car industry is caught in the vice of the more widespread economic crisis affecting the entire world, it is attempting to find ways of emerging from the trough of depression in which it finds itself. This process is taking place amid uncertainty as regards direction and prospects and under the shadow of many unknown factors and of major and alarming social risks: some positive signs of recovery do, however, seem to be emerging.

This problem is a constant concern of governments, managing directors and trade union organizations, the latter being legitimately and consistently committed to defend employment and jobs. Drastic and unilateral solutions which disregarded the consequences and implications of the measures adopted on the structure of society could have disastrous destabilizing effects on an unforeseeable scale.

- (b) Although measures to establish effective cooperation between undertakings at European level are proving difficult to implement, there is one aspect of the strategy for revival on which all those concerned are agreed.

It is generally believed, as explicitly stated in all bodies and at all the numerous conventions devoted to the crisis in the car industry, that one of the most reliable and effective, though perhaps not the only means of returning to growth is technological innovation at the level both of products and of production processes.

It is therefore essential to encourage specific scientific research on a massive scale, within which fruitful international cooperation would be feasible. Precisely for this purpose the six largest industries in the sector have set up a Joint Research Committee (JRC) responsible for investigating the strategic research areas suitable for joint action and commitment.

The third part of the explanatory statement is devoted to this subject.

### III - TOWARDS BASIC RESEARCH SPECIFICALLY RELATED TO THE AUTOMOBILE INDUSTRY

#### 1 - General

13. It will be remembered that the BONACCINI report stressed this aspect and felt that technological progress had a major role to play in the renewal and defence of European industries. The relevant basic arguments were appropriately recalled in the motion for a resolution tabled by Mr BARBAGLI and others.

This resolution also makes a valid reference to all the preceding documents

which considered and analysed the question of basic research specifically related to technological development for the automobile industry.

14. The motion for a resolution under consideration already has a formal structure and its contents and practical indications amply suffice as the basis for a parliamentary opinion. Our political body, the Committee on Energy and Research, could use the information provided to draw up its assessment of this subject. The committee could even merely have been asked to vote on the resolution.

It is not for us to identify and analyse the scientific topics to which the research should be devoted. Nor is it for the Commission to undertake such a task. The identification of the problems and any proposals must come from the industries concerned within the context of a series of general objectives which should in this case, be drawn up by the Commission.

15. These objectives have to a large extent been determined by the practical conditions in which the sector operates; some of them are listed below:
- because of the energy crisis it is essential to make energy savings and to use alternative fuels
  - the protection of the external and working environment requires production processes and products capable of reducing pollution
  - the scarcity of traditional raw materials and the need to reduce the weight of vehicles necessitate basic studies into new substitute materials for vehicle construction
  - the widespread use of motor vehicles, which has not been met by adequate adjustments to transport infrastructures, means that particular care must be devoted to vehicle safety and reliability
  - competition on the world markets is arousing particular interest in robots and computerization as a means of cutting production costs and increasing productivity
  - to realize the production capacity potential, a serious study must be made of measures, including scientific research measures, designed to protect employment and create new job opportunities.
16. The above remarks clearly reveal the importance of the supply-demand ratio in relation to scientific research for industrial activities in general and the automobile industry in particular. It may not be easy, but it is absolutely essential to discover and develop clear and efficient means of defining this ratio accurately. These means will not necessarily be identical for

every type of production (consumer goods, instruments, services). The protagonists in this investigation are producers, consumers, civil and political institutions and research workers. Their relative weight varies but it is the interaction between them which produces the supply-demand ratio.

The specific case in question seems to follow this pattern. Faced by difficulties on the market (consumers) and by social and environmental problems (civil and political institutions), the car manufacturers (producers) are putting forward specific ideas for strategic research into selected topics (research workers).

## 2 - Examples of research topics

17. Having made these preliminary remarks the rapporteur does not feel required to define in depth the specific scientific areas in which action should be taken - even if he were qualified to do so, which is not the case. His task should be to provide a brief summary review of the areas in which basic research in the automobile sector is most needed.

This digression is necessary in order to define in practical terms the 'basic' nature of the possible research topics, their strategic connotations and their fundamental role as a 'pre-industrial' activity.

For this purpose the rapporteur will refer to a number of statements on the automobile industry made at the Convention on relations between universities and industry, organized by the University of Florence in cooperation with Syracuse University (San Miniato, 24 and 25 November 1980).

The rapporteur has not been able to make use of a meeting organized by the Scuola Normale Superiore of the University of Pisa and the Fiat Research Centre, in cooperation with the JRC, on the need for research in the automobile industry, which would have been of great help in drawing up this report. The meeting, which was scheduled for the end of September 1982 (hence the delay in submitting the report, since the rapporteur wished to write it after the meeting), has been postponed until spring 1983.

18. Below, therefore, are listed a number of research topics.

(a) Study of combustion chambers in reciprocating engines. The aim would be to devise a simulated model of the engine and to feed it through a computer; the model should be based on more thorough understanding of