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The challenge of industrial base europeanization: mergers, technological cooperation, State aid for R&D and Competition Policy.

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Summary

Competitiveness with manufacturer of other geographic areas is the primary objective. Today, European industry must pursue a policy of restructuring, rationalisation, and innovation to be competitive.

Restructuring and rationalisation means making the production system efficient by "pruning" it and optimising the utilisation of production capacity. Pre-condition is the existence of a home market guaranteeing sufficient production and R&D economies of scale.

Innovation means product technological development to improve the quality and performance, to decrease production and management costs and develop new products and product's components and materials.

The E.E.C.'s *industrial policy* should be directed at facilitating this process. This involves:

- a new *competition policy* to stimulate restructuring and rationalisation of the production system,
- rational stimulation to innovate.

THE CHALLENGE of INDUSTRIAL BASE EUROPEANISATION
Mergers, Thecnological Cooperation, State Aid For R&D
And Competition Policy

Foreword.

We are convinced that key to development lies in the following:
- balanced distribution of riches in a free and sufficiently wide market, at the level of the socio-economic system,
- manufacturer competitiveness, within the production system.

Competitiveness of manufacturers operating in a given geographic area means winning competition from other areas and producing goods which - free from protectionist constraints - are excellent both in terms of quality, performance and price. It also means occupation and job assurance, the only feature that guarantees balanced distribution of riches, which is the basis of the market.

Competitiveness with manufacturers of other areas is therefore the primary objective.

Today, European industry must pursue a policy of restructuring, rationalisation and innovation to be competitive. Restructuring and rationalisation means making the production system efficient by "pruning" it and optimising utilisation of production capacity. The pre-condition for this is the existence of a home market guaranteeing sufficient production and R&D economies of scale. Innovation means product technological development to improve quality and performance, to decrease production and management costs and develop new products (end products, components and materials). The E.E.C. 's industrial policy should therefore be directed at facilitating this process. This involves:
- a new competition policy to stimulate restructuring and rationalisation of the-production system,
- rational stimulation to innovate.

Transition of the production system

We are going through a transition period from which a new organization of production and commercial systems will emerge. This is supported by:
- the Increasing importance (referred to G.N.P) of import-export flows of advanced Nations proving the unavoidable internationalisation of World markets;
- the dynamics of innovative technological change that also involve all sectors, including the so-called "mature" ones, that are experiencing a real process of re-birth on new technological bases.

European industry will not be able to meet this double challenge unless it succeeds in developing a real European dimension in all sectors, not only in so-called "advanced technology" sectors.

Under normal stable conditions of the technical and economic system, it might be thought necessary and sufficient a public action (a Community action) aimed to achieve the Common Market. Faced with development opportunities and threats to their very existence tied to the opening of the European market, companies should react to market changes. Only those capable of adapting will survive. This at least is what classical economic theories teach us.

"Weaker" companies will of course try and counteract dangers - since they are unable to take advantage of opportunities - with actions and attitudes remote from market logic (technical barriers to imports, State aid and the like). Competition policy must prevent this from taking place.

However, today we are not in a normal stable conditions of the technical and economic system. Classic economic theory is based on a model far removed from the real world (of today) and therefore marked adjustments to this theoretical model are required both to understand reality and to act in reality. Classical theory can be a guide during periods of relative stability of the socio-economic system but is not adaptable to periods of transition such as the present.

Not only those who "observe" reality have to change their theoretical references (the flourishing of economic theories tied to concepts similar to biological evolution over these past years did not take place by pure chance), but also those who "operate" must find rationales other than those referring to classical economic theory and the marginalistic hypothesis of the effects of their own or their competitors action.

Scholars and "observers" of the economic scene, as well as economy "operators", i.e. economist and entrepreneurs, have taken good notes of this state of affair and are changing theories and behaviour.

Also those who are apparently outside the entrepreneurial world - e.g. those who are *responsible for protecting competition safeguard principles* - must change, in this moment of transition, both their theoretical reference models and their methods of observing and intervening on reality. Is not the increased conflict between public policies directed at favouring economic development and those protecting competition a significant indication of this?

We shall address both the issue of industry growth at the European level and of innovation in the light of these general comments.

Competition and "Europeanization" of Industry

Most European companies have a nationally-based structure. The opening-up of the European market did favour growth of the more efficient companies but have hardly yet changed company structure national bases.

Today, many European "sectors" include too great a number of producers when compared to Japanese or North American competition. This leads to scarce efficiency of the European production system:

- less competitive manufacturers survive because of protection of national interests (these are often State-owned or controlled);
- the national base, with the related constraints, prevents healthy manufacturers from developing and reaching production, R&D and market size sufficient to allow adequate economies of scale;
- resources are progressively destroyed and whole economic sectors wrecked, opening up the way to penetration by competitors from other areas;
- European manufacturers are therefore destined - lacking adequate policies and interventions - to lose competitiveness both on export and home markets. Macro-economic consequences are the deterioration of the European trade balance, increased unemployment, and thus interruption of the E.E.C.'s economic development.

Today, the Community's policy appears as being prevalently "passive". In other words, it merely prevents the creation of trust or monopoly situations for companies operating in Europe, as though it were a market closed to extra-European competition or companies did not have to compete with their products in other markets.

This "passive" policy should privilege only the control of cases of State support to State - owned or controlled companies. Such support may have been justified by strategic reasons in a national scenario but no longer is in a Community one.

Community's policy seems to forget that the size of big European Corporations is too small, with rare exceptions, to compete on an international basis,

An "active" European policy is needed to favour, stimulate and help industry integration and "pruning". Say there are some 15 to 20 companies - maybe mostly State-owned or controlled - in any given sector where a "crisis" exists because there is no room for all of them. An appropriate policy must, e.g.:

- prevent competitive distortions generated by protection of nationalistic interests (through systematic loss coverage of less efficient manufacturers by each individual Nation);
- use proper Instruments to stimulate cooperation among the various companies both by mergers of end product or component manufacturers and by the activation of great projects, whenever and wherever possible.

A development policy of national "poles" must be replaced by one of European "poles", especially when the latter involves industry integration and internationalisation. In actual fact, we are far from an “active" policy that favours the development of European poles.

Any industry attempting to become European today finds many obstacles on Its way. The following is a short list of problems:

- social problems, because of the absence of a Union counterpart with whom to negotiate restructuring plans, while national Unions protect local interests to the hilt and are insensitive to trade-offs in other Community areas and potential overall advantages;
- cultural problems, due to differences of language and cultural backgrounds, ways of understanding each other and working, as well as the difficulties inherent in labour mobility;
- problems caused by national Governments and Administrations that still consider, in many instances, a European manufacturer as an alien. Even though it might have production bases in the Country concerned, it is discriminated with respect to local companies. (This discrimination ranges from purchase preferences of Public Administrations and Defence Departments to export financing);
- image problems, since national media often behave in the same way as national Governments and Administrations in discriminating European manufacturers with respect to national ones;
- administrative, local and fiscal problems.

The process of Europeanization of the industry must be accelerated. This is a crucial point of the historical moment we are living in now.
To allow this process to go on by itself and overcome countless difficulties could be a major risk; namely that the Common Market would go to the advantage of a European importer of North American or Japanese products and that European industry turns into trade!

This acceleration certainly involves a faster capability of acquiring and developing technological innovation. However, it also means developing organizational, production and market size at the European level.

An active policy must therefore be Implemented to:

- counteract distortions generated by State-owned or controlled enterprises managed outside entrepreneurial profit-making , objectives;
- remove the barriers and disadvantages that today’s European multi-national industry complains of and put it into an unfavourable position with respect to individual national industry and extra-European competition;
- facilitate integration and mergers from the fiscal and financial standpoints;
- allow cooperation on great projects, in sectors such as, e.g., Aerospace and Defence, Transportation, Environmental protection;
- coordinate, at the Community level, financing of exports to other areas .

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The subject-matter of today's meeting centres on the issue of technological innovation which the remainder of this presentation addresses. We did however deem it advisable not to lose this opportunity to also highlight other important problems for Europeanisation of the European industrial base.

We believe that the first short-term issue should be how to implement an active policy addressed at accelerating production scale growth based on concentrations and mergers.

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Technological - innovation and competition

The marginalistic model of classical economy is remote from the real economic world (the more so during periods of great changes like the one we are in) and is, in particular, non-valid when technological innovation is taken into account. Since it refers to equilibrium conditions, classical economic theory shows its limitations when faced with an event such as innovation which is tied to the onset and development of great unbalance in the technical and economic system.

Appendix A shows this statement is supported by the development of economic research on innovation.

It follows that the economic model to rightly approach the problem - in particular to understand how far State aid to R&D or cooperation between companies for the common development of innovative technological solutions contrast the rules of competition or not - must be such as to understand the complexity of the innovation issue and the motivations that stimulate entrepreneurs to innovate.

Most recent theories have stressed the importance of the social, economic and cultural scenario in which the entrepreneur acts.

Just to give some examples of these factors outside the company:

a) the importance for innovation diffusion of different cultural traditions or the different average level of education of the labour force in Japan, the U.S. and Europe;

b) the importance of technological fallout (and innovation opportunities), of investment in R&D outside market logic for great strategically-oriented research projects (just think of the basic difference between the U.S. and Europe).

The possibility to "appropriate" oneself of the "innovation variable" therefore varies from place to place and from sector to sector.

A first conclusion can be derived on carefully examining the features of technological innovation: all economic policy directed at favouring recourse to technological innovation must firstly be oriented at creating a context conducive to innovation and harmonic by Country and sector.

Thus, the following should be surveyed. and judged in this context:

- State aid to R&D
- Joint Ventures for the development of technological innovation.

The following should in particular be considered as acceptable and in line with the rules of competition:

- the policies of aid to R&D in Countries and industrial sectors less favoured than others, in which barriers to innovation are higher. The European motivation is to create a more harmonic context in which entrepreneurs have the same opportunity to use all production steps (technological innovation included) and therefore compete at the same conditions;
- all cooperation between companies to develop technologica1 innovation (in all the phases in which it is subdivided: from pure to applied research and industrial applica-

tion), should be taken as positive, since it is per se conducive to improving the scenario and removing barriers to innovation. This is not normally easy and some public policies tend to favour it, in fact. Whenever competing entrepreneurs decide to co-operate, they themselves are firstly interested in assuring their competitive position is not unpaired by the Joint Venture.

Criteria for assessing industrial co-operation

The basically suspicious position with regard to Joint Ventures can lead to consider only pure or applied research projects remote from industrial application as acceptable.

Appendix B deals with the contradictions inherent in the concept of Pre-Competitive Research.

This position is contrary to the favour with which norms and regulations on competition deals with agreements on licensing (even imposed under certain circumstances). Licenses apply during the industrialization stage (drawings and know-how). Why should, on the same ground, it be impossible to favour cooperation in projects which aim to develop production know-how and the design of new products?

In the light of this initial contradiction, it is necessary to try and find a general typology of co-operations and joint ventures to develop technological innovation to first understand motivations to cooperate, before enacting laws thereon.

The following classification is proposed for the purposes debated so far:

- pure and applied research projects to develop technological know-how;
- strategic projects to develop component, product and production process alternatives;
- projects to develop new components for end products;
- projects to develop end product models which are needed to complete the product range to serve different market segments.

Appendix C reviews some project cases in each of the above classes.

If no account of the reality of the economic system is taken, the survey of each case shows that action taken to protect competitiveness can actually produce adverse effects. In particular, those cases in which co-operation more difficultly ensures the same chance of Partners using the same results are those directed at developing strategic or pure research work.

State aid for R&D

In this connection, one should firstly consider the great disharmony in the European context of Science and Technology. An important element of this context is tied to total national Governments investment in R&D, independently of final use - whether Industry or Public Laboratories. The main fact is that any company is conditioned - directly or indirectly - by its hinterland, which conditions its scientific "richness", with respect to competitors in other countries.

The lack of European harmony becomes even more obvious when you consider the levels of research density achieved by nations such as the U.S..

Let us give a look at the relevance of public intervention of industrial research in the U.S.A. Over 30% of expenditure for industrial R&D is financed by the Government. The average for Europe is 20%. For Italy, the figure is under 10%.

State aid for industrial R&D will therefore have a much different effect (apart from sectoral considerations) for a company operating in West Germany or in Italy. (In Germany expenditure for industrial R&D is covered 30% by the Government as in the U.S.A.).

It should therefore be said that R&D aid distorts competition the more so the more they are given to companies operating in countries with strong "global" public funding for research.

One should also remember the difference between Sectors with respect to the risk of R&D activities, which must therefore be measured differently in different sectors. To give an example, the application of new scientific break-troughs may be less risky for a company operating in high-research activity density (measured, e.g. as R&D with respect to sales) as compared to the case of a low-research company, which apply well-known knowledge already used in other sectors.

companies in sectors less used to Innovation are in difficult conditions during great technological changes. Disharmony in the scientific and technical field greatly increase difficulties in rapidly utilizing innovation by companies operating in low-research contexts.

So, a favourable attitude to frontier research and radical innovation privileges advanced companies, which are already favoured with respect to the ability to "appropriate" itself of the "technological variable". This becomes a hindrance to the development of competition.

Under these conditions, even disharmony and the unbalance for non-achievement of a real common market tend to have a more negative effect on the weaker companies.

So far, the E.E.C. competition policy - in considering national aid to R&D and innovation - perhaps never took practical account of "industrial policy" sector by sector. This is also due to the fact that such a policy only exists for some so-called "advanced" sectors (which tend therefore to be treated with a favourable attitude).

Furthermore, competition policy never considered that European reality is highly heterogeneous by Country and that therefore general uniform rules can "kill" competition (companies in globally weaker Countries).

It should however also be borne in mind that there are sectorial technological cycles during which average features of innovation change.
Any sectorial policy should be consistent with the phase in which the sector is. At any given moment a sector can be embryonic, growing, mature or moving towards new technology.
The innovation process is prevalently oriented at the product during the first steps of the process and then becomes production process-oriented. During transition, progress innovation becomes prevalent.

The R&D strategy of each company must be in line with the sector's stage. A policy of R&D State-aided activity - when justified by improvement of the context in which companies operate - must itself take account of the sector's conditions and never be prejudiced (such as for example in favour of product-oriented innovation).

The Commission's policy to define the acceptability criteria of State aid for R&D also seems to include a somewhat favourable prejudice with respect to small and medium size enterprises (SME). In this case too, one should ponder on their role with respect to large industry both from the production process and technological advance points of view. Again, the situation changes from sector to sector and, for a given sector, should be considered in relation to its stage in technological advance in each sector.

There are sectors in which SME's and large size companies compete for the same market segments (such as agricultural machinery, software and the like). Other sectors are dominated by small and medium size companies (furniture and shoes, for instance), while in others these prevalently supply bigger companies (vehicles and domestic electric appliances, for example).
In the latter instance, the main innovation role in the entire sector is prevalently played by large companies. It would in this case be absurd, in the very interest of smaller companies, to have a negative prejudice with respect to State aid to large size companies.

Within the same sector, there can be large-size companies with different features as to structures to achieve innovation transfer (such as the fact that some may have central long-term Research Centres and others may not), also as a function of company history and the context in which they have developed. An example could be accelerated development due to the acquisition of licences for companies operating in more recently industrialized Countries.

These latter companies can also be innovative thanks to the possibility to access the innovation process at different stages with make-or-buy decisions according to whether strong internal R&D structures exist or not. This possibility partly compensates for the different contexts in which the companies operate, and helps maintain competition possibilities.

A policy basically oriented at considering as acceptable only aid to pure research paradoxically distorts competition potential as it penalizes those companies without - or being only in the process of starting it - internal pure research capability.

Appendix D mentions some general principles which should be fol2owed in formulating criteria for aid acceptability.

Appendix A

Economic Theory and Innovation

The concept of "innovation" in economic theory developed parallel with theory itself.

In classical theory innovation is considered as a factor "exogenous" to the company. It changes the production function and is freely acquirable based on entrepreneurial decisions of investment in research or licence acquisition. As there is reversibility between capital and labour, so there is reversibility among the different production functions, according to classical theory.

On the other hand, Schumpeter maintains that innovation is "endogenous" to the company and resort to it belongs to entrepreneurial spirit and intuitions. With his decision to innovate, the entrepreneur tries to acquire a temporary oligopolistic advantage over competition.

More recent evolutionary theory does not deny Schumpeter's approach but adds that innovation has all the features of irreversible phenomena that cannot be merely determined on the basis of entrepreneurial decisions but are subject to blocking or acceleration conditions dependent on external factors beyond the entrepreneur's control. To innovate it may be necessary to go beyond thresholds that are not the same for all entrepreneurs and that change according to the context.

Studies and surveys on the recent European situation (for example *Piatier*'s work for the Commission) have highlighted the existence, importance, variety and non-uniformity of barriers to innovation.

There does not seem to be much room in classical theory for rational motivation to "cooperation" for research between competing companies as the conditions of optimum choice of production factors change from one company to another and in any case each company can make resort to the research function to produce a change in the production function if this is a more advantageous solution than the present situation.

On observing cooperation, the suspicion therefore arises that they are not so much motivated to reach optimum conditions with respect to the market, but to avoid market mechanisms and modify competition conditions. The preventive hostility of those whose function it is to fight against anti-competition practices seems to derive from an economic view based on the theories of classical free trade.

Passing to Schumpeter's model, there seems to be a basic contra- diction between motivation to cooperation and the behaviour of an entrepreneur according to Schumpeter's logic, leading him to innovate in order to acquire a position of temporary oligopolistic advantage. Were the external factors underlined by the *'evolutionary' scholars of innovation* irrelevant, it would be difficult to understand the logics of sharing with competitors not only risks but also the opportunities of acquiring innovations thereby cancelling or minimizing the oligopolistic advantage obtainable.

Cooperation find, instead motivations and justifications in the attempt to change together with competitors the outside context and making the technological innovation variable more available to the entrepreneur.

Appendix B

Cooperation for research

The Commission's main criterion to consider company cooperation programmes in R&D as acceptable seems to be pre-competitive research.

This concept is however vague and ambiguous. Who decides whether a research project is pre-competitive and on what bases ? The concept can range from one extreme of considering only pure research as pre-competitive since it is certainly far removed from the market application stage to the other of defining cooperation In any project as pre-competitive, for the very fact that companies have decided to exploit its outcome individually in competition with one another.

If the modified and integrated Schumpeter model is valid, one can immediately deduce that cooperation to pure research becomes marginally interesting under these conditions, as pure research probably corresponds the most to the concept of classical economic theory on proportionality between resources employed and results obtained. In the case of pure research, it is a question of ensuring increased knowledge by increasing resources employed but not necessarily increased application potential to innovation of this knowledge.

If, as can be observed, cooperation exists between companies for pure research projects, it is due to the need (that the entrepreneur may perceive as important at any given historical moment) to change the environment in which the companies operate. They are therefore important "contextual" but indirect measures, more suitable to public rather than private intervention.

Cooperation in research, as other issues concerning industrial development, should be analysed by attempting to define the motivations an entrepreneur has for making decisions, that must take account of the fact that the marginal position of a company in a free market is a mere abstraction, no longer even recognized by scholars.

Law makers or appliers that should reduce to practical cases the generality of the law, must take account of the complexity of real systems, avoiding generalisation and oversimplification.

Because of the very essence of the innovative fact that makes it a creative act, in order for it to take place technological innovation must leave the conditions of equilibrium, reversibility and marginality that are at the very basis of classical economic models. This model therefore cannot be taken as a reference point for decisions as to the acceptability of cooperation projects in R&D in the light of safeguarding competitiveness of entrepreneurial activity.

Appendix C

Typology of Cooperation Projects

It may be useful to review different typical cases of R&D projects to single out for each of them - in the light of the most suitable economic theory to understand the complexity of technological innovation - the motivations of companies cooperating and how these motivations are foreign to development of practices against free trade.

a) pure and applied research projects to develop technological know-how and general knowledge.

An example of this type is, f.i., the cooperation among a group of European car makers to develop knowledge on material behaviour on cars, the scientific understanding of the combustion phenomenon in the explosion chamber, the development of calculation models to integrate findings, etc.

The basic motivation for different companies to cooperate on issues of this type is the importance to call University Research Centres attention to them. Resources for pure and applied research at Universities and Public Research Centres are in fact scarce and the various industrial sectors have to compete among themselves to ensure that sufficient resources are allocated to scientific issues that can lead to potential technological innovation of interest.

Scientific activity is subject to motivations often tied to "fashion" or the inertia of local research traditions. This ends by markedly affecting the entrepreneur s possibility of accessing innovative potential. It therefore becomes natural to try and associate with other enterprises to change an external factor such as directions of pure research activity to the advantage of its sector and thus to each individual company. They are not, as it is often said, motivations to avoid investment duplication but rather to stress by means of international cooperation and give greater credibility to the Importance of scientific issues deriving from the practical problems of developing products and processes.

b) Strategic projects

The uncertainties of the technological future, particularly during very fluctuating periods such as the present, make it necessary to explore different technological trajectories in order to obtain the knowledge and human and technical resources necessary to rapidly pass from research to industrialisation as soon as the winning technological trajectory is clear.

An example of an alternative technological trajectory followed for some time in microelectronics is the Josephson effect with respect to CMOS technique. Had the alternative proven successful, the fact that practically only one company (IBM) had the necessary resources to also follow it through, it could have had disastrous effects on competition. .

The "imperfections" of the technical and economic system are such (due to the long time required to acquire necessary technical competence) as to make definitive the oligopolistic advantage of who followed the winning trajectory (and not only temporary as postulated by Schumpeter). Recent history contains many examples of companies that were leaders in their field but disappeared for not having foreseen technological change. Suffice it to think of U.S. steam locomotive producers in the '20's that disappeared for not having developed diesel technology in proper time. Or, more recently, that U.S. company that dominated the electromechanical calculating machine market that disappeared for not having taken the electronics alternative into account.

It is therefore not surprising that, in situations in which there are many technological alternatives radically different from one another, competing companies decide to walk part of the road together to develop possible alternative technological advances, Each company then follows its individual way when it appears that the solution studied together is the winning one.

This case will appear acceptable even to the most strenuous defenders of the concept that the best way to avoid anti-competition practices is to avoid all contact with competition. It must however be said that even in this case formal agreements are necessary among the companies that have decided to cooperate, were it only to ensure that each can exploit the results of common work proportionally to the resources allocated. These agreements are often more difficult to define than In the case of. cooperation including industrialisation. It may in fact be difficult to forecast the different possibilities each company has to profit from the results of a research work still far from the application stage. Paradoxically therefore, an agreement to cooperate In a pure research project can ultimately prove to affect competition more than an agreement for the common implementation of a given product! .

c) Projects for developing new components

The size of component supplier companies is often too small to ensure the capability of developing radically new components when this could be made possible by the potential of new scientific breakthroughs and the availability of new technological knowledge. In this case, the customer companies responsible for the end product can be led to deal with this development directly by replacing or cooperating with the suppliers. The new product developed in this way is however available for a larger market than can be ensured by one end product manufacturer. It is thus natural that several competing customer companies are led to develop in common, by themselves or in cooperation with the supplier, a project for implementing the new component.

In this case, research is not far from the industrialization stage; on the contrary, customer companies must take part in the project up to the point at which they are sure they can count on industrialization of the product itself (if the R&D project was successful). This can be assured either by the supplier that cooperated in the project (at conditions guaranteeing participants a return on their R&D investments), by a branch established in common by the customer companies or by one of them also on behalf of the others.

This will not stop the companies having participated in the project from competing; in fact, as important as it may be, the component developed in common is only one of the many elements that make up the end product, while all other components will continue to differentiate their products.

An example is the cooperation among vehicle manufacturers deciding to produce a certain type of engine together or a new type of transmission to be used for some vehicle models produced in full competition.

Motivation for competitors to cooperate in these cases is the same that led some of the most important European electronics companies to cooperate for the common production of highly integrated microchips which are essential components for the systems produced by the same companies in competition with one another.

Ventures of the above type are also motivated by the need to overcome the limits of technical innovation availability tied to the "imperfection" of the product supply market (and product components, in the case in point).

d) Cooperation in product development to complete model range

Market "imperfections" - this time tied to the need for some markets and sectors to make the whole range of models into which the market is segmented available to the sales and distribution network - can place the companies unable to supply the whole range in conditions of competitive inferiority. It may therefore be mutually convenient for companies fiercely competing with one another (but without research and industrialization investments necessary to implementing by themselves product models for market segments in which their presence is scarce), to decide to cooperate in implementing development projects of a product model to complete the range. This product is then sold by each of them independently and in full competition.

In this case, even more than for the case for components, cooperation in the R&D project can only make entrepreneurial sense if it continues until industrialisation or even production of the model developed, by a common branch for instance. Unlike the case of a component developed in common, now the cost of the whole product marketed by each company Is the same. Can we still speak of possible competition according to normal market laws?

This is in fact possible when the two companies offer to the market an entire range of products of which only one is produced in joint venture. Different market conditions and the specific features making these companies different and strongly competitive on other products, ensures the conditions by which each of them can make independent decisions based on competitiveness even for the product developed and perhaps produced by a common branch.

In other words, the Important thing to establish the competitiveness of companies is the globality, the system, of the products marketed by them. An individual product ends up by playing the role of a "component" of the "product" represented by the whole range.

Appendix D

Acceptability of State Aid for R&D

The European Commission, in formulating criteria for the acceptability of State aid for R&D, should follow general principles that take in due considerations the real conditions and the context of the Country and the sector.

The following general criteria are suggested:

- the need for aid should be evaluated in relative terms:
  a) by sector (for risk definition). Each case must be assessed based on the evaluation of the relative context, without favouring advanced sectors and penalizing mature ones.
  b) by Country (dis-homogeneity of public R&D financing indices). Community priority is to favour homogenisation of the economic sector. Priority should be given to aid from Countries with specific R&D indices below Community average.
  c) by company (competition difficulties with respect to other EEC and not only extra-EEC companies, due to different national market share with respect to the EEC market). .
- all distinctions between the various stages of the innovation process (pure and applied research, development, etc.) must be eliminated since they are ambiguous and difficult to make and because they privilege Countries and companies already having a high research expenditure index.