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Communication

Motivations

The future of the aircraft industry in Western Europe is of importance to the Community for a number of reasons. The existing industry is a major source of employment. It is one of the chief representatives of a type of employment—highly skilled, commanding sophisticated technologies and a high level of investment—towards which the Community must necessarily move in the future as the industrialization of the Third World proceeds and a wider international division of labour unfolds.

Furthermore, the research and development carried on by the aircraft industry has proved to be a major source of scientific invention and technological innovation across a wide range of products.

And of course Western Europe's capacity to make an appropriate contribution to its own defence must depend in large measure upon the strength of its aircraft industry.

Nevertheless, in spite of its importance the European aircraft industry faces serious difficulties which have put a question mark against its future.

In a large part these difficulties are due to the divergent policies of the Member States with regard to the aircraft industry, despite their financial aid to the launching of major civil and military programmes (averaging 400 million u.a. a year between 1969 and 1973 on civil R & D alone) and despite numerous cooperation agreements.

These conflicting policies have had consequences all the more harmful since they have arisen in the present poor economic climate with all its effects on air transport in particular.

Criticism of policy in recent years can be summed up as follows:

- resources have been spread over too many, sometimes competing, civil and military programmes; this has made production runs too short and even led to cancellations;
- no overall, market-orientated strategy to coordinate the various aeronautical programmes;

- a lack of adequate support for marketing and for developing existing products;

- decision-making powers dispersed among the Member States, and in some of them, inefficient division of responsibilities between industrial sectors, airlines and sponsoring bodies.

The European aircraft industry with all its weaknesses is confronted by the powerful American industry which not only dominates the European market, but is also preparing to gain a foothold in the Community itself by means of bilateral agreements with certain Member States (Italy, with the 7X7, Belgium and Holland with the F 16).

The European industry, however, has two important advantages:

- it has a real technological capability, and its civil and military products could compete on world markets if all its technological and commercial possibilities could be harnessed to a joint effort;

- the growing size (in relative terms) of markets outside the United States should provide new opportunities in the next ten years, if the European industry can provide competitive products.

In the years 1969-74, the American market amounted to just under half of the 'Western' civil transport market, and the 'Rest of the World' and 'Europe' shared the remainder almost equally. By contrast, it is estimated for the decade 1975-85, that the 'Rest of the World's' share will become the largest, leaving a little over one-third of demand to the United States and about one-quarter to Europe.

To set against these advantages and possibilities, however, there is the fundamental fact that the aircraft industries of our Member countries, as they are at present organized, are too small and too fragmented to develop themselves.

This fact has of course been recognized over the past decade in a proliferation of bilateral and multilateral cooperation agreements between particular Member States and their industries of

Documentation on this section can be found in Annex I.

which those for the Airbus and the MRCA¹ are the most significant.

But even intensification of this kind of cooperation will not ensure for the aircraft industry of the Community the future which its needs and possibilities demand.

The development of the aircraft industry, with its important inputs of new technology, requires clear strategies, systematic long-term planning, and coherent management. And because of the high level of investment which must be undertaken it requires a wide capital base, secure financing, good market prospects, and the avoidance of the kind of waste that arises from duplicated efforts and lost opportunities for rationalization.

The market

The market, and especially the internal market, is the first thing to consider when examining an industry's development problems. The European aircraft industry can only build a secure future upon a genuine capacity to fulfil the needs of consumers defined in a competitive market, both internally and externally. Moreover, the evidence shows that the aircraft industry cannot hope to achieve a sustained penetration of export markets (though these are essential to it) where competition is keenest, if it is being progressively pushed out of its home market.

A common policy limited to the civil market and ignoring the military market would be meaningless in a sector which supplies both, with the military market accounting for over 60 % of output.

However, the approach will be different depending on whether the civil market or the military market is considered.

The European civil market¹

To have a European aeronautical policy requires the creation of a true European market which should provide the air transport companies with the most favourable economic conditions for the growth of their activities. A common policy for air transport which, under the terms of the Treaty requires the unanimous agreement of the Council, has as yet not been decided upon, and consequently European air services result from regulations made at world level.

The Commission considers that it is desirable to move beyond the present situation which is characterized by rigidly compartmented national markets, in which traffic shares are divided primarily as a function of the air transport companies' nationality.

Any Community action in the field of air transport must take into account the world-wide nature of many of the Community's air services and the need to avoid abrupt changes in the existing

¹ Multi-Role Combat Aircraft.

¹ For market statistics, see Annex I, page 20.

system. It must also safeguard and eventually improve the close and traditional links which exist with certain other European countries.

The Ruling of the Court of Justice in case 167/74¹ lays down that the general rules of the Treaty apply to air transport. The Commission is currently examining the implications of this with the assistance of experts of Member States.

Such an approach, which is in keeping with the Commission's role as guardian over the Treaty, should be complemented at the same time by the adoption of a Community policy which aims at the creation of a Community market replacing the present systems and which would be created gradually, bearing in mind the complex nature of the current problems.

Such a policy would have as its general objectives:

- the creation of a European airspace, managed at the Community level creating in respect of intra-Community traffic a system of competition which would be regulated with a view to providing the public with those services best adapted to their needs, at the most economic prices, through the innovation and diversification of those services and the rationalization of the route structures, particularly for inter-regional traffic;

- joint negotiations of the Community's agreements with third countries, particularly on traffic rights, which would have the effect of improving the Community's bargaining power and would lead to optimizing international routes and services.

The Commission feels that in the immediate future, on the basis mainly of Article 84 paragraph 2 of the Treaty, certain actions should be undertaken which would aim at:

- improving intra-Community air services (both scheduled and non-scheduled), by making licensing procedures more flexible and by widening their scope of application;

- harmonizing the conditions of competition;

- facilitating the pooling of aircraft and crews and the mutual acceptance of appropriate technical standards, with the intention of optimizing utilization of flight equipment, which would lead to considerable operating economies, and would improve professional mobility;

- strengthening cooperation with international organizations (particularly the European Civil Aviation Commission, ECAC) in both technical and commercial fields, as well as safety, taking into account Community problems;

- encouraging by means foreseen mainly in the framework of regional policy, the creation of certain air services outside the usual main axes, provided the public interest in developing the regions warrants such services.

All this would have a major impact in creating an economic environment favourable for harmonizing those parameters which are fundamental to route structures (frequencies, routes, size of aircraft) and which also condition the choice of aircraft.

In the framework of a common policy evolved in this way, which would allow the airlines particularly to take part in jointly defining a European aircraft programme, and thus becoming a necessary and valuable partner of the manufacturing industry, the most favourable conditions would be created for bringing about a common interest between the European airlines, who must be competitive at world level and a European industry capable of supplying advanced and competitive products.

The military market

The military market accounts for 62 % of the European aircraft industry's sales and is very important to it; the way in which it is organized is even more directly dependent on government policies.

Despite the efforts made in the 1960s with bilateral and trilateral collaborative projects, the European aircraft industry is still deeply divided on military aircraft construction, which reduces its production runs and weakens it relative to its world competitors (e.g. France's absence from the MRCA group).

Duplication of national projects and the multiplied costs of providing logistic support and separate spares systems all cause poor utilization of

¹ Report of Cases before the Court 1974, p. 359.

public money. Differences in European and other advanced-technology military equipment (for example, electronic equipments) have adverse operational effects (for instance, because of the great variety of types of aircraft, each of them with their own ground servicing and spares facilities, each type of advanced aircraft can only operate effectively from a limited number of NATO airfields). Though the short-term interests of American arms suppliers may benefit from the divisions of Europe, which have enabled them to win contracts like that for the F16 which has been bought by four European countries, the Americans' long-term interests, like those of Europe, lie in the establishment of a coherent European weapons' procurement system which will enable European industry to make a more economic contribution to the joint defence effort.

Any policy designed to strengthen and develop the aircraft industry must therefore include common action in the defence equipment field. To this end the Governments of the Member States should decide to create a joint arms procurement agency for airborne weapon systems (aircraft, missiles, etc.) to be responsible for joint development and purchasing of airborne weaponry to meet the needs of the European armed forces. It could be an *ad hoc* body working in liaison, as appropriate, with the competent national ministries and in close cooperation with the Commission which would thus be provided with all the necessary data to manage the policy for the aircraft industry. This agency will obviously not reduce the freedom of decision of the Member States in matters of defence policy and will not interfere with existing international commitments. The agency would become an organ of European Union once this takes shape. The opportunity to extend the scope of this body to other sectors of the arms industry will clearly have to be evaluated by the Member States in the light of the needs.

The agency should, in particular,

— coordinate the requirements of European air forces so that they consistently standardize on existing European military aircraft for similar missions. This would apply initially to combat aircraft (MRCA, F1 Harrier, Jaguar), subsequently to other military aircraft;

— identify common future needs necessitating new joint programmes (including if necessary, a European future combat aircraft) and promote the establishment of consortia comprising the chief European manufacturers of military aircraft, to develop such aircraft in economic conditions.

A European policy for the procurement of airborne weaponry would have to be accompanied by discussions with the United States on mutual arms sales and collaboration in weapons development. Such discussions might have the following aims:

— mutual opening-up of markets, i.e., a move beyond the production under licence of American equipment in Europe, and of European equipment in the United States towards a big and balanced development of two-way transatlantic trade, resulting in large economies of scale;¹

— to ensure that Europe will be involved in the development not of every product but in all major sectors of technology.

¹ An example of such an agreement is the series of agreements between Canada and the United States, the first of which was signed in 1941, which opened up the markets of the two countries on a reciprocal basis but subject to the principle that trade should balance over the years.

A common policy for the aircraft industry

If the Community's aircraft industry is to have any future, we must go beyond the stage of intergovernmental cooperation between differing, and still national, aerospace policies.

To this end, sponsorship of the aircraft industry should be exercised by the Community.

The eventual framework for the management of the Community's policy for the aircraft industry should be that to which the Community is already accustomed: namely that, acting on a proposal from the Commission, after consulting the European Parliament, the Council would make the major policy decisions on programmes, Community financing and international agreement in this sector. On the basis of these decisions, the Commission would assume the necessary management of the common aerospace policy, and would take the necessary steps to consult users, producers, trade unions and national authorities.

The Commission would organize the management of the aircraft policy in such a way as to use to the maximum existing national structures and to seek the greatest possible decentralization.

Community financing of the aircraft policy would not be superimposed on national financing but would replace it as the policy is implemented. The rules of financial management would have to take such a form as to guarantee, first, that the multiannual decisions taken by the Council reflect the real scale of the common programme and second, that the Commission, responsible for management, can raise funds on the capital market and undertake the expenditure necessary to implement the programme in practice.

This policy will include, in particular:

- bringing all large civil transport aircraft construction activities into a coherent programme and optimizing the use of resources;
- close cooperation between industry, airlines and public authorities about the decisions required in executing the joint programme;
- a joint basic research programme;

- the establishment of a system of Community financing;

- conduct of relations with non-member countries: not only collaboration between Community industries and those of other countries, but also a commercial strategy for penetrating export markets;¹

- harmonization of laws or administrative provisions regarding certificates of airworthiness, noise and other nuisances and standardization generally.

A joint programme

Action can and must be taken now to bring the European aircraft industry's potential into a joint programme on large civil aircraft to be developed. Given the competitiveness of European helicopter production, the Commission will present appropriate proposals with the aim of ensuring the expansion of this sector.

The programme for large civil aircraft should be better tailored to market requirements, as expressed by the airlines, than has been the case in the past. It should use the Community's capabilities to the full. It would be based first on those developments of existing projects best suited to market needs and on a very small number of new projects as soon as commercial requirements emerge.²

From the American example we can observe the importance of support for basic technology provided by US military and NASA programmes. The European programme of commercial projects must therefore be backed by a Community basic research and technology programme, which should coordinate national research projects and

¹ The Council has already defined the Community's position in the negotiations in the GATT on reciprocal abolition of customs duties on aircraft over 15 000 kg, their spare parts and power plants.

² The main criteria of this programme, which are based on information supplied by the aircraft industry through its European association, AECMA, can be found in Annex II. It should be mentioned here that, for the first time, the state of the market and the gravity of the industrial situation, have produced a broad consensus of agreement between the aircraft industry and the Commission on the necessity for such a realistic programme.

develop a limited number of sizeable joint programmes to provide the industry with new technologies, as the building blocks necessary to give future aircraft enhanced performance.¹

Such a programme should promote a permanent industrial structure, at least for large civil aircraft, particularly in sales and after-sales service, based on experience in cooperation so far; this will enable the European aircraft industry to increase productivity and thus reap the full benefit of rationalization.²

The first decision which the Council is asked to take on the basis of the Commission's proposal attached to this report, concerns the adoption of the principle of a European programme backed by joint financing. This European programme should be prepared together with the manufacturers and the airlines of the Community.

It should be noted that in the aircraft industry a special relationship exists between governments and industrial enterprise. Although a substantial part of this industry is publicly owned in Europe, it remains essential for it to retain the prime responsibility for identifying likely commercial opportunities and for risking and managing the resources needed to exploit them. Community action should be of the nature of support and encouragement for the manufacturers themselves to initiate commercially viable programmes with the aim of creating in the 1980s a truly competitive industry capable of financing a large part of its development by itself.

Community financing

The execution of the common programme will be supported by Community financing. This should progressively replace national financing making use of transitional measures. Far from raising total expenditure by national and Community authorities, this will relieve the burden. For, with national funding disappearing, Community funding should help to avoid duplication and failures experienced up to now, and Community financing would catalyse the rationalization process which is its main aim.

The Community's existing financial instruments will be used and others created if necessary.³

Sales to non-member countries should be financed by an export credit system. This function could be served by a European Export Bank, should one be created.⁴

External relations

The concentration of responsibilities for aircraft policy at Community level will enable it to speak with one voice in its relations with the rest of the world. These relations will include industrial cooperation with partners outside the Community, commercial policy for penetrating export markets, and negotiations with third countries on civil air transport policy.

At industrial level permanent and organic cooperative links should be envisaged with the industry of other European countries.

With regard to other countries outside the Community, the Community should develop a policy in the commercial and industrial field, which will consist sometimes in seeking unfilled gaps in the market, sometimes in meeting competitors head on, or again in seeking collaboration on a balanced basis. However, it must ensure in negotiations with non-member countries that the Community's interests are safeguarded and that cooperation, like competition, is not a one-way process. Penetration of export markets will require tariff barriers to come down—just as our competitors are generally able to penetrate the European market because no such barriers surround it.

In the field of regulation of air transport and agreements on traffic rights, the Community's policy will consist in exploiting in international negotiations, its common bargaining power in the service of European interest and to optimize international routes and services.

¹ The main criteria for the R & D programme can be found in Annex III.

² A more detailed analysis is given in Annex IV.

³ The financial instruments envisaged are described in detail in Annex V.

⁴ The Commission sent the Council on 23 July 1975 a communication regarding the creation of a European Export Bank, Bull. EC 7/8-1975, point 2309.

Conclusions

The Governments of the Community are at the crossroads. If they refuse to seize the new opportunities offered and continue to pursue divergent national policies, this could lead to the disappearance of an autonomous European aircraft industry, thus damaging the economic, political and social future of the Community.

On the other hand, new opportunities will arise of attaining the objectives of past efforts if governments are prepared to progress beyond inter-governmental cooperation on different but still national aerospace policies—a method which has proved ineffective and has wasted precious years—and agree to the aircraft industry being put under the real and effective sponsorship of the Community, which would have the necessary means to implement a common industrial, commercial and transport policy for this sector.

The five Annexes which are attached hereto provide detailed information on different aspects of the action programme which is the object of this document.

To launch this action programme, the Commission is submitting:

— to the Council of the European Communities, a proposal for a Decision concerning the creation of a common policy in the civil aircraft and aviation sector.

— to the Member States of the Community, a draft resolution of the Representatives of the Member States of the European Economic Community meeting within the Council relating to the purchase and development of aircraft weapon systems.

Annex I

The situation in the industry

Introduction

The current problems in the European aircraft manufacturing industry stem from two types of factors: short-term economic factors of a general nature and structural factors specific to the industry, both at the industrial level and at the level of government intervention.

Short-term economic trends, with the economic recession and the rise in fuel prices have profoundly affected this industry, as can be seen from their repercussions on the market for air transport: while between 1959 and 1969 the market grew at an average rate of growth of approximately 14 %, in the following years the rate of growth fell to 9 % and in 1974 to 3.6 %. The airlines, finding themselves over-equipped and with low load factors have been forced to slow down their re-equipment programme and when re-equipping to go for existing proved models or improvements on existing models rather than completely new types of aircraft. This unfavourable situation has affected the European manufacturers particularly, since it has coincided with the coming on to the market of their main aircraft programme (Airbus, Mercure, Concorde, F 28, VFW 614) and since the competitiveness of their prices has been to some extent affected by factors outside their control such as revaluation of European currencies in relation to the dollar and an inflation rate higher in Europe than in the United States.

In this difficult short-term situation, the various limitations of the cooperative formulas adopted to date and all the contradictions in the varying national policies have been more acutely felt, preventing effective realization of the very real technological potential of the industry and of the progress made in European cooperation during the past decade.

That progress is in many respects remarkable. The aircraft industry, once a romantic symbol of the nation, is probably the most committed of all industries to international and in particular European collaboration. Because of the high cost of development and the need to spread such costs and gain access to wider markets, all the industries' most recent civil developments (Concorde, Airbus, VFW 614, F 28, Mercure) have involved European collaboration in one form or another. There has been a significant evolution, moreover, in the methods of collaboration from the worksharing and committee structures of Concorde for example to the more coherent Groupement d'Intérêt Economique of Airbus Industrie. The full benefit of these efforts, however, will not be realized unless the limitations of today's cooperative methods are understood, the lessons learnt and a new effort made to build on the foundations laid.

In the area of intra-Community cooperation the limitations have been felt at different levels. Programmes carried out in cooperation on a bilateral or a trilateral basis have not formed part of a single and coherent framework. Each company has pursued its own interests in other civil and military programmes which sometimes have put them into a competitive situation *vis-à-vis* the same companies with whom they have been cooperating. The continuation of these differences or opposing interests has resulted in the fact that in general cooperation has been at the development phase or in series manufacture rather than in the sales and after sales phase, with each cooperating company maintaining its autonomy in its commercial organization, namely sales and after sales service. It is precisely in this field that there is the greatest need for genuine pooling of existing capabilities.

The result of this fragmentation of efforts in sales and marketing has been that programmes have generally been oriented towards production and technological objectives rather than towards marketing objectives.

The lack of an overall cooperative framework which includes civil and military production prevents the creation of a common basic research programme. Because they have wanted to maintain commercial competitiveness and military independence, the manufacturers have often decided to retain their own research programmes, to develop the same expertise and to create, with the backing of the governmental authorities, the same research infrastructure. These shortcomings in industrial cooperation generally stem from differing and contradictory national policies.

The national governments which retain large scale civil and military research and development programmes encourage the manufacturers to cooperate internationally in order to share costs and risks and sometimes themselves conclude inter-governmental agreements for this purpose.

Their policies however remain separate and on an *ad hoc* basis and have not formed part of an overall strategy. Governmental authorities have not paid sufficient attention to the fact that manufacturers have been participating in civil or military programmes, which have not been coordinated or have even been in competition with each other.

Where public funds have been devoted to promoting industrial cooperation, the necessary joint support for marketing the products has not been provided: in the field of export credits and insurance the governments have remained independent, to an extent which undermines the efforts made to sell on a world-wide basis those products manufactured in cooperation for which complex and often inadequate solutions have had to be evolved, compared with the competition, which can call on fast and flexible credit organizations such as the American ExIm Bank.

The governments are in favour of international cooperation to share the financial burden but they have failed to avoid the wasting of Community resources in too many programmes

which have had short manufacturing runs or have even been abandoned.

In order to retain independence in decision-making, they have been very reluctant to delegate powers of decision to the Community, and even at national level one notes a certain dispersal of powers between manufacturers, air transport companies and responsible ministries.

The lack of coordination of airframe and engine programmes has too often been the result of decisions taken in response to particular situations and notably for social and employment reasons, and of the absence of a financial policy concerned to take advantage of all the benefits to be gained from the investments made, not only for employment or industrial development, but also for the external balance of payments.

During the 1960's, even though considerable progress was made in intra-European collaboration, two major opportunities were lost.

The first was in the civil aircraft field: the Airbus, the only major modern technology project in Europe in the market for medium haul aircraft, was launched without the participation of the British government and with an American engine, even though Hawker Siddeley provided industrial participation; at the same time, the largest European engine manufacturer, Rolls-Royce, supplied the RB 211 engine for the Lockheed Tristar. Thus a severe conflict of political and commercial interests divided the European Industry, Airbus with its USA CF 6 engine and Tristar with its European RB 211 engine competing throughout the world market, including that of British Airways itself.

The second was in the military field, in the paralleled major divergence of interests created by the absence of France from the MRCA project.

The cumulative result of these economic and political factors has been to put the European aeronautical industry into an extremely difficult situation. The analysis and figures which follow¹ show more clearly the actual effect of the limitations and contradictions which characterize the present state of the aeronautical manufacturing industry within the Community.

Industrial activity

Development and manufacturing programmes in the civil aeronautical sector

A run down of all the large civil jet transport aircraft which have appeared on the western world market and of the actual numbers produced shows the following:

¹ Which are complementary to or a summary of those which the Commission has already provided in the two documents 'Situation and figures' of February 1975 and 'Demand prospects for civil transport aircraft' of 4 March 1975, Bull. EC 5-1975, point 2240.

Table 1 — Orders and deliveries up to 31 December 1974

American Jet Aircraft		European Jet Aircraft	
Boeing 720 and 707	897	Caravelle	278 ¹
Boeing 727	1195	BAC 111	219
Boeing 747	283	HS Trident	117
Boeing 737	407	VC 10	47 ¹
DC 8	556 ¹	Comet	51 ¹
DC 9	802	Mercure 100	10 ¹
DC 10	240	Concorde	9
Tristar	150	Airbus A 300	23
Convair	83 ¹	F 28	95
		VFW 614	10
Total	4613	Total	859

¹ Aircraft out of production.

— on the one hand the length of the production runs of the American aircraft and their in-service life. Apart from the DC 8 and the Convair all the American jet transports are still in production thanks to successive developments which have allowed the fullest possible advantage to be taken of the initial development costs of these aircraft;

— and on the other hand the large number of programmes launched by the European industry, sometimes in competition with each other and always with production runs which even under the best assumptions have only just enabled amortization of costs to be achieved. This has been due to the fragmentation of sales efforts and to the lack of determination to exploit to the maximum the existing production programmes.

These figures show quite clearly how the aeronautical industry in Europe (but also in certain cases in the USA) has too frequently wasted its resources in launching an excessive number of programmes: it has been more anxious to develop its technological capabilities and its know-how, which certainly have not been inferior to those in American industry, than to maintain its competitiveness by a complete concentration of effort in producing long production runs and in developing existing programmes to exploit to the full its technological and commercial strengths.

The effects of such policies have quite clearly been felt in the competitiveness of the European manufacturers, taking account of the effect of direct labour costs on prices as defined by the 'learning curve'.¹

With regard to the other aeronautical product, the situation varies according to the product:

— *general aviation* (including light turboprops): The overwhelming superiority of the USA is best illustrated by the production figures for 1973: approximately 14 000 aircraft were produced in the USA compared to 1 200 aircraft produced in Europe (of which 350 were produced by a French subsidiary of an American company);

— *commercial turboprop aircraft*: In this field the European manufacturers experienced considerable success, notably with the Fokker F 27 and the Hawker Siddeley 748, of which 625 and 298 have been sold respectively up to 31 December 1974, and which are still in production, and in the past with the Vickers Viscount, of which 438 were produced;

— *executive jets*: The European industry whilst not attaining the quantity of US production has shown a remarkable degree of competitiveness and dynamism (730 aircraft have been produced to date in Europe against 1 300 in the USA);

— *helicopters*²: Similar factors are present in this field: whereas during the course of the decade 1965-74 the average annual production was approximately 2 600 aircraft in the USA, and 600/650 aircraft in the Community, European products exhibited a remarkable degree of competitiveness in penetrating world markets;

— *engines*: The engine manufacturers and particularly the UK manufacturers have produced programmes with long production runs. The SPEY of which approximately 4 000 have been sold since 1963 and the RB 211 of which 430 have been sold since 1971 can be compared with the American equivalents (5 000 JT3D, 4 000 JT8D, 1 400 JT9D and 510 CF 6). In the same way the Viper, of which 5 000 have been produced, and the Dart turboprop, of which 6 400 have been produced, represent important successes for European industry.³ It is worth noting also the considerable success of European industry in the field of gas turbines for helicopters, which is a corollary of the success of the European-produced helicopters themselves. On the other hand, prospects are more doubtful for the two Anglo-French cooperative projects, the Olympus and the M 45 H, owing to the problems in launching the aircraft with which they are associated, namely Concorde and the VFW 614, and the lack as yet, of other outlets.

To this must be added the fact that the continually increasing cost of development together with limited resources has led the principal engine manufacturers in Europe to create cooperative links with the two major manufacturers in the USA for the new 10-ton engines.

¹ The effect of direct labour cost per unit of production is defined in the aeronautical sector by what is commonly called the 'learning curve': when the production run is doubled, the average input of direct man hours is reduced by a given coefficient ('learning factor'). In concrete terms this means large reductions in man hours per unit of production in the early stages of a production run and then a flattening out of the curve, which means that the amount of work per unit of production decreases less rapidly.

² Military and civil.

³ These figures refer to deliveries made by 31 December 1974.

Military aircraft

As the following paragraph shows, 62 % of the turnover of the European aircraft industry is in the military sector.

The immense size of development expenditure and the need for economies of scale in production have prompted the development of a series of collaborative European projects:

— *Bréguet-Atlantic*: Dornier, MBB (Germany), SABCA, Fairey, Fabrique Nationale (B), Dassault-Bréguet, Snecma (F), Aeritalia, Alfa Romeo, Fiat (I), Fokker-VFW (Netherlands), engines Rolls-Royce (UK)

— *Alpha Jet*: Dornier (Germany), Dassault-Bréguet (F); engines Snecma/Turboméca (F)

— *Transall*: MBB VFW-Fokker (Germany), Aérospatiale (F); engines Rolls-Royce (UK)

— *Jaguar*: BAC, (UK), Dassault-Bréguet (F), engines Rolls-Royce (UK) and Turboméca (F)

— *M.R.C.A.*: (PANAVIA), BAC (UK), MBB (Germany), Aeritalia (I), engines Turbo Union (RR, MTU, Fiat), (UK, Germany, I)

— *Puma* } helicopters : Aérospatiale (F), Westland (UK),
— *Gazelle* } engines : Turboméca/RR (F/UK)
— *Lynx* }

to which must be added all the collaborative ventures in the guided weapons field.

As in the civil field, moreover, the structures of this collaboration have evolved and been most varied: from the agreement between separate companies on the Transall, to the 'light' company (SEPECAT) set up to develop the Anglo-French Jaguar, to the common development company set up to develop and produce the MRCA.

Yet this healthy evolution has been marred by weakness: by lack of systematic collaboration on procurement at European level, by lack of pooling of the basic research infrastructure, by the fact that industrial production structures and development capabilities have not yet been fully rationalized to render them capable of exploiting the European dimension; above all, perhaps by a failure of basic political strategy during the 1960's which has meant that in the key area of advanced combat aircraft, major European capabilities are still in ruinous competition with one another.

Europe of the 1950's saw the re-emergence of three major poles of military aircraft development: the UK and France, each with its indigenous technology, and the group of countries (Germany, Italy and Benelux) which combined together to build up licensed production of the Lockheed 104 Starfighter.

When the time came in the 1960's to consider the development of a joint European successor to the existing generation of jet combat aircraft, negotiations between the UK and France on a possible Anglo-French Variable-Geometry aircraft broke down. The UK, West Germany and Italy then com-

bined to develop the MRCA, which, with production orders of some 800 aircraft, is Europe's major current joint military project. The absence of the French from the MRCA caused a fundamental divergence of interests within Europe. The absence of a solidarity of interests has been reflected in other areas: the development of two separate trainer aircraft, the Dassault-Dornier Alpha-Jet and the Hawker-Siddeley Hawk; and the fact that the jointly developed Franco-British Jaguar (BAC and Dassault-Bréguet) has found itself in competition with Dassault's own F 1.

When the time came in 1975 for Belgium the Netherlands, Denmark and Norway to decide on a replacement for their F 104s, the choice of an American aircraft was, quite apart from all technical and operational considerations, a logical consequence of these divisions of interest. Through the absence of a systematic European procurement policy, a significant market opportunity for European aircraft has been lost.

Like the civil industry, the European military aircraft industry thus finds itself in a contradictory position. Its technical competence is unquestionable. European helicopters, and aircraft such as MRCA, the Mirage family and the Harrier, not only meet European requirements but on occasion have led world competition. Yet existing divisions mean that the full economic benefits of producing such aircraft on a European scale for world markets have not been realized.

Turnover

Taken overall, the turnover figures in the Community's aerospace sector have shown very considerable progress in terms of value expressed in current money during the course of the last few years: This is an increase of 55 % in the EEC and a reduction of 30 % in the USA. Taking 1969 prices and exchange rates, the increase in the EEC is 29 % and the reduction in the United States 27 %. The improvement in European turnover figures is due to military sales, to government contracts for research and development, and to the sales of spares and equipment for civil aircraft already in service for many years, as well as of engines; so far it has not been due to substantial sales of new civil aircraft. The fall in the turnover figures for the USA is mainly due to a reduction in space programmes and to a falling off of the military effort. Calculated according to 1969 prices and exchange rates, the progress of the European industry with an average annual increase of 6.6 %, has clearly reduced the gap between the figures for European and American industry: the turnover figures for the European industry were equivalent to 16 % of the turnover of the American industry in 1969, whereas by 1973 this percentage had reached 29 %.

With regard to the breakdown of the turnover figures for the aerospace industry within the Community, the main points to be noted are as follows:

Table 2 — Turnover in the aerospace sector

in million EUR¹

	1969	1970	1971	1972	1973
EEC	3 856	4 039	4 234	5 275	5 990
United States	23 427	22 286	19 663	18 484	16 368

¹ The values are expressed here in EURs, which are the units of account used in the statistical field by the European Community (1 u.a.=0.888671 gr of fine gold). Values expressed in national currencies with floating exchange rates are calculated by the Statistics Office of the European Communities on the basis of market rates of such floating currencies against those currencies linked by the European agreement on the narrowing of margins. See *General Statistics 5/1975*, page 171.

The scale of intra-Community industrial cooperation

Transactions between manufacturing companies in the different Member States represented 49 % in 1972 and 74 % in 1973 of the overall value of transactions carried out at national level while the volume of transactions with aerospace companies in non-member countries remained stable in value at roughly 38 % of the value of transactions carried out on a national basis in 1973.

The scale of military business

62.6 % of total aerospace turnover in the EEC is represented by military business as opposed to 70.2 % in the USA.¹

Table 3 — Breakdown of turnover

in %¹

	aircraft ²	engines	equipment	space	total
EEC ³	54.2	25.1	17.5	3.2	100
USA	43.5	13.0	15.3	28.2	100

¹ These percentages are calculated on the basis of average figures for the years 1972/73, and relate to net turnover figures for the Community, i.e. excluding all transactions between aerospace companies in the Community.

² Including missiles and guided weapons.

³ The breakdown into sub-sectors for the average of the years 1972/73, calculated from the totals of the gross turnover figures of the Member States of the EEC (i.e. including all transactions of aerospace companies in the Community) is as follows: aircraft 49.4 %, engines 24.6 %, equipment 23.3 %, space 2.7 % (N.B. The turnover for the 'aircraft' sub-sector always includes the value of engines and equipment bought by the airframe manufacturers and thus understates the relative contribution these sectors make to total aerospace industry turnover).

Breakdown of turnover between sub-sectors

In the Community the small proportion represented by space activities increases the share of the other sub-sectors compared with the breakdown for the USA turnover.

The role of public contracts in the EEC and the USA

To illustrate the role of public contracts, the turnover of the entire aerospace sector, aeronautical activities proper (excluding space activities where public contracts account for almost the entire turnover) and the three aeronautical sub-sectors have been broken down into three sections: the State (civil and military purchases and contracts for civil and military research), the internal civil market and exports (civil and military).

Before examining in greater detail how intervention by governmental authorities is carried out a certain number of observations can be made. Firstly, the scale of governmental support in the USA (77.1 % of turnover compared to 59.7 % in the EEC), mainly due to the importance of space activities (28.2 % of turnover in the USA against 3.2 % in the EEC). In the field of aeronautical activity, on the other hand, a greater role is played by government contracts, particularly military ones, in the EEC (58.3 % as opposed to 51.5 %), as a simple consequence of the low proportion of turnover relating to the internal civil market (11.4 % as opposed to 20.9 %). Within the three aeronautical sub-sectors-'aircraft', 'engines' and 'equipment' one can see both the importance of the internal civil market for 'equipment', (the only one in which public intervention is less than in the USA), and the smallness of the internal civil market for 'aircraft' in the EEC compared to the USA (8.4 % as opposed to 19.4 %).

¹ These percentages are calculated on the basis of average figures for the years 1972/73, and relate to net turnover figures for the Community, i.e. excluding all transactions between aerospace companies in the Community.

Table 4 — *Percentage of turnover for the main customer categories¹*

	EEC	USA
<i>'Aerospace activities'</i>		
State	59.7	77.1
Internal civil market	11.0	9.9
Exports	29.3	13.0
	100.0	100.0
<i>'Aeronautical' activity</i>		
State	58.3	51.5
Internal civil market	11.4	20.9
Exports	30.3	27.6
	100.0	100.0
<i>'Aircraft'</i>		
State	57.7	45.6
Internal civil market	8.4	19.4
Exports	33.9	35.0
	100.0	100.0
<i>'Engines'</i>		
State	61.3	52.3
Internal civil market	9.0	23.1
Exports	29.7	24.6
	100.0	100.0
<i>'Equipment'</i>		
State	56.1	67.4
Internal civil market	24.0	23.5
Exports	19.9	9.0
	100.0	100.0

¹ These percentages are calculated on the basis of average figures for the years 1972/73, and relate to net turnover figures for the Community, i.e., *excluding* all transactions between aerospace companies in the Community.

Structure of public support

The way in which the governments support aeronautical activities varies between the EEC and the USA.

Analysis of government support structure in the EEC shows the scale of the support given for R & D in the engine and aircraft sectors in comparison with the equipment sector, which is supported mainly by military purchases (Table 6).

In the EEC, governments intervene in the civil and military sectors by purchases and R & D contracts, whereas in the

Table 5 — *Breakdown of government support by type of contract¹*

	<i>in %</i>	
	EEC	USA
<i>Purchase and maintenance contracts</i>		
civil	2.6	—
military	57.3	72.8
<i>R & D contracts</i>		
civil	10.9	—
military	29.2	27.2
	100.0	100.0

Table 6 — *Breakdown of government support by type of contract¹*

	<i>in %</i>		
	sub-sectors		
	'aircraft'	'engines'	'equipment'
<i>Purchase contracts</i>			
civil	56.6	55.6	77.2
military	(1.6)	(1.5)	(7.8)
	(55.0)	(54.1)	(69.4)
<i>R & D contracts</i>			
civil	43.4	44.4	22.8
military	(9.8)	(17.7)	(3.5)
	(33.6)	(26.7)	(19.3)

USA, according to official statistics, the federal government intervenes primarily by means of military purchases and military R & D contracts.

In this context, it should be noted that these military R & D contracts can also assist the civil industry in that many civil programmes stem from military ones. The best known examples of this trend are the Boeing 707, which derived from the Boeing military Tanker; the CF 6 engine derived from the military TF 39 engine; the CFM 56 engine derived from the military GEF 101 engine; the JT 3 D engine derived from the military T 57 engine. Moreover, even though official statistics do not provide precise information on purchases and R & D contracts for civil aircraft by NASA, various examples are known, such as NASA contracts for the civil QSTOL aircraft, the creation within NASA of an agency for studying aerodynamic problems for general aviation and the contracts let by NASA to General Electric for a QCSHEE engine (Quiet Clean Short-Haul Experimental Engine) and to General Electric and

Table 7 — *Trend in employment*

	1969	1970	1971	1972	1973
EEC	435 553	438 770	422 668	413 021	406 605
USA	1 402 000	1 166 000	951 000	922 000	948 000
Canada	44 400	35 800	28 700	28 800	30 200
Japan	23 100	25 600	26 500	26 000	26 026

Pratt and Whitney for engines for future civil supersonic transport aircraft.

In fact military developments have provided a base for most large scale civil engine projects in the USA. Contracts for the advancing of basic technology and for providing demonstration prototypes have built up a remarkable fund of know-how which has enabled American industry to launch civil projects rapidly as soon as a market appeared and with very short development time scales.

In Europe, on the other hand, the resources committed in the different countries have been limited and the tendency has been to try to achieve technological developments within the framework of specific civil programmes. This has even been the case for the main civil engine programmes such as the RB 211. The lack of a military background for civil engine programmes has sometimes led to considerable difficulties at the development phase.

The absence of a European basic technology programme comparable with, even if less costly than, that of NASA and the lack of a close link between the civil and military efforts has been one of the main weaknesses of the European effort.

Conclusions

In brief, an examination of the operation of the aeronautical sector from the angle provided by the figures for turnover shows up other weaknesses:

- the clearly inadequate role played by the internal civil market in the aircraft sector;
- too low a level of civil exports in the aircraft and engine sectors;
- inadequate support by public authorities in R & D for equipment, in the light of the need to maintain a competitive level of technology.

Public financing of R & D

In absolute value terms, the total public aid provided by the States of the Community to civil aeronautical R & D (including research not conducted within the industry) was of the order of approximately two thousand million EURs for the period of five years from 1969 to 1973; this figure represents somewhat less than 4 % of the total of public R & D financing in the six countries of the Community which possess an aeronautical industry (Belgium, France, Italy, Germany, the Netherlands, the UK).¹

Manpower and productivity

In 1973, the aerospace sector in the enlarged Community employed 406 605 people, whereas in 1969 this figure was 435 553. This fall in the workforce of approximately 7 % is primarily due to a reduction in numbers employed within the British industry and overall reflects an improvement in productivity.

During this period, the number of jobs in aerospace activities dropped in the USA by 32.3 %, in Canada by 31.9 %, but rose in Japan by 12.6 %.

The considerable drop in numbers employed in the USA has followed the reduction in turnover which has previously been shown. Such manpower elasticity has obviously enabled the American industry to overcome the crisis while maintaining and even improving its productivity level. In Europe, where a high level of employment is often considered as one of the principal objectives of industrial policy, it is not possible to adopt policies of structural change which treat employment as

¹ Unfortunately, the Commission does not possess equivalent statistics for expenditure on military R & D. However, expenditure on R & D conducted within the industry in 1972 and 1973 is estimated at 620 million EURs in the civil sector and 1 675 million EURs in the military sector.

Table 8 — *Trend in the relative value of fleets*

	1970	1971	1973	1974	1975
Community	14.7	15.4	18.2	17.9	17.6
Other Western European countries	6.3	7.1	8.1	7.8	8.0
Europe	(21.0)	(22.5)	(26.3)	(25.7)	(25.6)
USA	63.9	60.1	53.0	48.0	45.8
Rest of the Western World	15.1	17.4	20.7	26.3	28.6
Western World	100.0	100.0	100.0	100.0	100.0

only one factor in the search for an overall balance, a factor which can be adjusted according to cyclical fluctuations. This results in a rigidity in employment which, with the frequent breaks in production caused by conversion from military production to civil production and vice-versa, or from one major project to another, has an effect on productivity; and this goes to prove the fundamental need to programme civil and military production together.

The short production runs (an average of 100 aircraft in Europe compared to 500 in the USA) and an internal distribution of the work force in terms of occupational skill which does not always reflect an optimum structure, together mean that productivity (expressed in terms of added value per head employed) in European industry lies between one third and two thirds of that of American industry, according to an estimate made by AECMA.

This estimate confirms the calculations made by the service of the Commission, whose results (which were forwarded to the Council¹) are derived from a financial analysis of a limited sample of aerospace companies on the one hand in Europe and on the other in the USA. They show in effect that the added value per employee in Europe is roughly half that in the USA.

In the past this productivity handicap has been partly offset by the lower wage levels in Europe. However, current trends have made this problem more acute, owing to the rise in labour costs, which is tied to inflation, and changes in the parity of European currencies in relation to the dollar.

The market for civil transport aircraft

Trend

The breakdown by value of aircraft fleets shows the relative importance of the different markets.

Table 9 — *Trend in the European share in the various markets*

	1970	1975	change
Community	33.0 %	21.9 %	- 11.1
Other Western European countries	23.1 %	5.8 %	- 17.3
Europe	30.1 %	16.9 %	- 13.2
USA	2.1 %	0.3 %	- 1.8
Rest of the Western World	12.2 %	12.0 %	- 0.2
Western World	9.5 %	7.9 %	- 1.6

Between 1970 and 1973 the markets of Europe and the Rest of the World grew at the expense of that of the USA. Between 1973 and 1975 the share of the market filled by the Rest of the World has continued to expand rapidly and that of the USA to shrink but the European market has stabilized at approximately one quarter of the overall world market. These trends have been particularly noticeable in short and medium haul aircraft: the share of the Rest of the World has grown very quickly, the market in the USA has decreased and the European market remains stable.

This general trend should in theory have been favourable to manufacturers outside the USA, but the percentages for the share of European products on the various markets fell substantially between 1970 and 1975.

With regard to categories of aircraft, whilst the share of the European manufacturers in the market for long haul aircraft is virtually disappearing (2.7 % in 1975), the European share in the market for short and medium haul aircraft in 1975 is

¹ Demand prospects for civil transport aircraft, Bull. EC 5-1975, point 2240.

growing slightly for the first time since 1970 — 13.4% in 1975 as against 11.9% in 1973.¹

The net result of the growth in the European air transport market and the reduction in the share of all the markets held by the European manufacturing industry has been a negative trade balance over the period 1968-1973, amounting to \$4 521 million (1974) — broken down as \$2 695 million for long haul aircraft and \$1 826 million for short and medium haul aircraft.

Prospects

Demand

Air traffic expanded very rapidly during the 1960s, with an average annual growth rate of 14% per year, but in 1974 it grew by only 3.6%; this figure was regarded by many experts as highly satisfactory in view of their forecast for the year 1974 of a zero growth rate, which was based on the seriousness of the economic crisis and its repercussions on air transport.

Following this slowing down of the growth rate, forecasts made by various governmental and private organizations suggest that the next decade will show a constant growth but at considerably lower rates than those of the past.

In their studies, the results of which have already been forwarded to the Council,² the Commission staff have calculated two hypothetical growth rates for traffic in the period 1973-1985: hypothesis A, for an average annual growth rate of 6.8%, and a hypothesis B, for a rate of growth of 9%.³ The average annual rates for the period 1975-1985 would be 7.7% under hypothesis A and 9.5% under hypothesis B.

Table 10 — *Estimates of the value of the civil transport aircraft market in the Western World for 1975-85*

	\$ thousand million (74)	of which long haul aircraft
— mean of hypotheses A and B produced by the Commission staff	49.1	45 %
— mean of the AECMA hypotheses	44	60.5 % ¹
— Boeing	50 ²	40 %

¹ This high figure reflects the inclusion of long haul aircraft used on short and medium haul routes.

² Reduced to \$46 thousand million in the Boeing estimate of June 1975.

Table 11 — *The geographical breakdown of the World market*

	Europe	USA	Rest of the World	Total
— Commission's study ¹	30	35	35	100
— AECMA's forecast ¹	22	36	42	100

¹ The differences in the figures for the geographical distribution of the market between Europe and the Rest of the World mainly arise from the use of different regional rates of growth for air traffic.

AECMA (Association Européenne de Constructeurs de Matériel Aérospatial), which analysed these results at the request of the Commission, has arrived at the spread of 7.0% and 7.9% respectively for the period 1975-1985. On the basis of these different hypotheses for traffic growth and through a complex analysis which takes into account load factors, seats/km available, withdrawal of aircraft in service, the breakdown by type of equipment and geographical zone, productivity and the cost of aircraft, we have arrived at an estimate of the value of the Western World market for civil transport aircraft for the period 1975-1985 (Table 10).

It is estimated (Table 11) that the Rest of the World will account for around 40% of the market, the USA for slightly more than one-third and Europe for approximately one-quarter.

With regard to *long-haul aircraft* the Rest of the World will account for more than 50% of the market, Europe and the USA sharing the remainder equally. This is a considerable change compared with the recent period (1969-1974), when the three geographical zones divided the market almost equally.

For *short- and medium-haul aircraft* the USA will account for 50% of the market, with Europe and the Rest of the World sharing the remainder more or less equally. The share of the USA will remain the largest despite a relative drop from the period 1969-1974.

¹ This percentage, of 11.9% is different from the figure of 10.1% which was given in the document 'Situation and figures', dated February 1975, in which turboprop aircraft were not included (see Bull. EC 5-1975, point 2240).

² Demand prospects for civil transport aircraft, Bull. EC 5-1975, point 2240.

³ The Boeing company has forecast in 1974, and for the same period, rates of growth of 6.8% and 8.2%; in 1975 Boeing revised the rates downwards to 5.6% and 6.7%. ICAO on the other hand considered in October 1974 that there was a strong likelihood that scheduled world passenger air transport traffic would increase up to 1985 at a 'probable' average annual growth rate of approximately 9%.

Table 12 — *Estimates of the balance of trade in the aeronautical sector for the period 1975-85*

in \$ millions at 1974 level

	Hypothesis I ¹		Hypothesis II ¹	
	Commission	AECMA	Commission	AECMA
Short- and medium-haul aircraft	+ 19	+ 1 964.7	- 2 698	- 1 010.0
Long-haul aircraft	- 986	- 2 454.7	- 2 708	- 2 914.7
Total	- 967	- 490.0	- 5 406	- 3 924.7

¹ Hypothesis I is the result of a combination of high forecasts for traffic and market penetration, and hypothesis II is the result of a combination of low forecasts for traffic market penetration.

Supply capacity of the European industry

The supply capacity of the European industry will obviously depend on political and commercial decisions taken in respect of aircraft programmes.

However, it has appeared useful both to the Commission staff and to AECMA to take two hypotheses for European production based on theoretical rates of penetration of the world markets. The Commission staff have selected averages of 30.4 % and 13.1 % of the world market, and the AECMA have taken averages of 19.4 % and 12.8 % of the world market.

This method can be used to show the consequences, depending on the political and commercial decisions taken, for the European balance of trade in the sector, taking into account the trend in demand. (Table 12).

It can be seen therefore that under the best hypothesis the balance will be negative and in the worst hypothesis this negative balance may well exceed five thousand million dollars.

The table shows that the deficit would be due primarily to the long-haul aircraft sector. It should be added that the AECMA forecast, made for long-haul aircraft, assumes both the continuation of Concorde production, and the launching of a new 200-seat subsonic European long-haul aircraft at the beginning of the 1980s. AECMA estimates that if this last aircraft is not produced the overall negative balance will increase from \$490 million under hypothesis I to \$3 019.6 million, and under hypothesis II from \$3 924.7 million to \$5 611.1 million.

AECMA has made forecasts up to 1990; for the period 1975-1990 the balance will be negative to an amount of \$12.5

thousand million under hypothesis II if no long-haul subsonic aircraft is produced, and will be positive by \$1.63 thousand million under hypothesis I if new long-haul aircraft are launched and obtain a share of the world market of 14.4 %.

Conclusions

The situation within the European civil aeronautical field appears to be very difficult. Despite considerable financial support provided by certain Member States, and despite certain isolated attempts at cooperation and coordination between European partner countries, it is clear that national policies pursued to date have proved unable to maintain the market share of European industry. American aircraft are tending to impose their monopoly on Western markets and are threatening the progressive disappearance of European aircraft from the world scene.

This danger has been noted by the governments of the Member States who, in their Resolution of 4 March 1975,¹ decided to work together and consult each other on matters of industrial policy in the aeronautical field.

It has also been noted by the manufacturers who have achieved a measure of progress towards rationalizing their efforts: the reorganization of the 'Association Européenne des Constructeurs de Matériel Aérospatial (AECMA)', the creation of a 'Group of Six', and collaborative agreements between European companies for R & D are all evidence of this.

In effect, the European aircraft industry, in the last 15 years, has passed through its apprenticeship in cooperation. To sur-

¹ OJ C 59 of 13.3.1975, Bull. EC 12-1974, point 2256.

vive, its potential must now be harnessed to a strategy agreed jointly between industry and public authorities.

The study of the current operation of this sector shows that considerable potential exists which could be made use of, provided that there is a change in political and commercial policies.

This conclusion rests on three main factors:

— *The first* stems from an overall judgment on the state of the Community aerospace sector which cannot be a negative one.

Activity in this sector is constantly expanding (even when calculated at constant prices and exchange rates) the level of technology is excellent and the level of know-how and design capability is certainly not inferior to that of American industry. It can therefore be said that the technological infrastructure and the human and even financial resources (taking into account the funds devoted to this sector) are sufficient for the European industry to regain an important role on the world market, provided that an effort is made towards rationalization of which it is certainly capable.

— *The second factor* concerns the market forecasts, which exhibit a trend which can be of great importance for the future of the European industry: the growth of the proportion of the market represented by Europe and even more the growth of the market in the Rest of the World, with a concomitant fall in the share occupied by the American market. If one considers the scale, in value terms of the world market as forecast for the next ten years, this trend opens sufficient market prospects for a satisfactory development for the industry to be mapped out.

— *The third factor* relates to the structure of the world industry which favours a major effort to maintain activity by the manufacturing industry in Europe. Already in the market for civil transport aircraft the USA is left with only three large manufacturers, and of these a single company, Boeing, holds 72% of the world market for long haul aircraft and 49% of the market for short and medium haul aircraft. Moreover, the pressure towards even greater concentration remains strong within American industry. The best guarantee, ensuring that European users will be able to make their purchases in competitive conditions, would be the existence of a viable European industry capable of developing cooperative ventures with other industries such as those of Japan and the USA on a basis which is not dependent.

Annex II

The establishment of a joint programme for civil transport aircraft

In drawing up this plan of action, the Commission sought the advice and cooperation of representatives of both the industry and organized labour.

Through the medium of its European representative association, AECMA, the industry replied to a list of questions drawn up by the Commission staff: it has given its views on the prospects for demand, existing programmes which could be expeditiously developed to meet this demand, future programmes, the investments required, the possibilities of cooperating on basic research and on questions of structure and industrial productivity.

The position of the industry may be summed up as follows:

— the *airframe* constructors agree in principle that a joint programme should be adopted and carried out by intra-Community cooperation, whilst at the same time allowing a certain amount of competition in project design.¹ They recognize the need to improve the forms of collaboration by means of closer integration notably in the area of sales and after-sales support; however they feel that to achieve this a much greater drive is necessary from the government authorities because of the existence of differing national interests in matters of defence. Moreover, they feel that there are problems of industrial productivity, but that these can be overcome by rationalizing collaboration arrangements;

— the *engine manufacturers* reaffirm the need for their industry to have access to a world-wide market, owing to the extremely large number of units (roughly 3 000) that must be produced before the capital investment is amortized. This need is behind their policy of collaboration with the American industry;

— the *aircraft equipment manufacturers* underline the importance of their activity within the aerospace industry and would like to see a policy of encouragement and support for intra-Community collaboration parallel to current or planned initiatives for the other sub-sectors of the aircraft industry.

The labour representatives have made clear their support for the principle of an integrated common policy for the aircraft industry, but they would not be prepared to accept the con-

¹ The Italian industry feels however that cooperation outside Europe, and in particular with the USA, can already, in certain cases, be beneficial to the European industry by opening to it a world-wide market, but all the other European manufacturers consider that this viewpoint is tenable only in cases where cooperation concerns a programme aimed at a market not covered by a competing European project.

Table 13 — *Estimate of the value of European production*

(in \$ millions at 1974 level)

Markets	Europe	USA	Rest of the World
1975-1985	2 073.3	428.9	1 626.9
1985-1990	2 206.9	536.1	1 575.0
Total	4 280.2	965.0	3 201.9

sequences unless they were associated with its preparation and unless an organization of work and a rhythm of production guaranteeing job stability could be assured. They made a useful contribution towards a future study of the structure of labour in the European industry. They urged the need to reorganize air transport in Europe according to criteria reflecting the interests of the users.

Market prospects

The three areas to be considered for joint projects suggested by the analysis presented in Annex I of this report are the following:

- the maintenance of a European presence in the sector of short- and medium-haul aircraft of less than 100-110 seats;
- the search for various solutions to enable the European industry to occupy a major position in the market for other short- and medium-haul aircraft;
- the need for further detailed studies on the advisability of action in the field of long-haul subsonic aircraft.

On this basis, and taking as a working hypothesis the development of demand along lines projected by the mean of the optimistic and pessimistic forecasts provided by AECMA, it seems useful to explore assumptions relating to production based on theoretical rates of market penetration, as a means of obtaining some reference data for assessing specific programmes. Quite apart from market forecasts and given the current economic situation, any joint programme must include only new versions of existing aircraft or aircraft which show a substantial improvement in direct operating costs. The analysis must be carried out for each category of aircraft.

Short- and medium-haul aircraft

For these aircraft, if we adopt as a hypothesis a market penetration of 50 % for the European market, 5 % for the USA market and 35 % for the Rest of the World,¹ we arrive at the totals for European production (expressed in \$ millions at 1974 level) indicated in Table 13.

Table 14 — *Breakdown of the World market by capacity of short- and medium-haul aircraft*

	Number of seats per aircraft			
	less than 100/110 seats	100/110 to 180	more than 180	Total
Hypothesis I	5 %	60 %	35 %	100
Hypothesis II	10 %	35 %	55 %	100

The total, \$8 447.1 million (1974), represents in global terms 22.8 % of the world market for short- and medium-haul aircraft.

This overall figure should be subdivided by category of aircraft expressed in capacity terms,

- aircraft with less than 100-110 seats,
- aircraft with 100-110 to roughly 180 seats,
- aircraft with a seating capacity higher than 180.

As things now stand, the European industry is not in a position to attempt this breakdown which can be done only at Community level and on the basis of tripartite cooperation between the manufacturing industry, air transport companies and public authorities.

However, the Commission feels that this analysis should be made for illustrative purposes, at least to bring out the themes for future discussions on civil- and medium-haul aircraft programmes.

For this purpose, as a breakdown of the world market by capacity of short- and medium-haul aircraft, both the current breakdown (I) and a hypothetical breakdown (II) of demand based largely on market trends in the United States, can be used (Table 14).

Aircraft of less than 100-110 seats

Taking the figures for market penetration rates given above, assuming that these aircraft each cost \$4 million on average, European production for the period 1975 to 1990 will reach 105 aircraft under hypothesis I and 210 aircraft under hypothesis II.

Bearing in mind these theoretical manufacturing assumptions, what are the possibilities for the European industry?

¹ These percentages are working hypotheses postulated by the staff of the Commission. The figures used by AECMA are Europe 52.5 %, the USA 10 % and the Rest of the World 30 %.

It should first be noted that the penetration rates on the most important markets for these aircraft are likely to be higher than those given on page 24 and therefore European sales could be larger. In fact, it is foreseeable that demand for this category of aircraft will absorb the current market for turbo-props, with the result that the figures above could be considerably increased.

Especially as for feeder aircraft, certain European companies already hold an important position on the world market, in particular Fokker with its F 27 and 28 and the HS 748.

To meet this prospect, the manufacturers are planning to develop a 100-seat aircraft based on the F 28 and using a new version of the Rolls-Royce Spey engine, the Spey 72. However, Rolls-Royce/Snecma will have to be given wider applications for their M 45 H engine than are available today, if the programme is to be continued. In this way, an F 28 with three M 45 H engines has also been considered.

The VFW 614 could also be further developed as a function of the increased thrust of the M 45 H engine.

The estimated research and development costs suggested by the airframe industry for these programmes would be:¹

- airframe for the F 28 : \$93.2 million (74)
- Spey engine : \$70.2 million (74)
- airframe for the VFW 614: \$11.7 million (74)

Aircraft from 100-110 to 180 seats

Taking the market penetration rates specified, and assuming that these aircraft each cost \$9 million on average, production for the period 1975-90 would reach 563 aircraft under hypothesis I and 328 aircraft under hypothesis II.

Bearing in mind these theoretical assumptions, the European industry is already in the field in this category with three aircraft types—the BAC 111, the Trident and the Mercure. Competition from the Americans is represented by the Boeing 737, the Boeing 727, and the DC 9 which cover the complete range and dominate the market.

Before 10-ton engines (CFM 56 from Snecma/General Electric and the JT10D from Pratt and Whitney-MTU-Fiat and possibly from Rolls-Royce) appear in 1979, some airline companies, particularly European ones, will have to obtain aircraft with 120 to 150 seats, which would correspond to the existing European types (or their derivatives: BAC 111-700 or Trident 3C for a research and development and airframe tooling cost of \$95 million and \$130 million (1974) respectively, provided that appropriate versions of the Spey engine are available).

Once the new engines are on the scene, demand will shift towards aircraft of 150 to 180 seats, which may be either two-engined or three-engined aircraft. The United States industry will be represented by the 7 X 7 family of aeroplanes, of which the first version will be a three-engined medium-haul

aircraft whose capacity is likely to exceed the upper limit of this category, while the European industry could be represented at the lower end of the range by twin-engined developments of existing aircraft.

The manufacturers have raised three possibilities for developing twin-engine aircraft using 10-ton engines, based on existing aircraft: the BAC 111, the Mercure and the Trident. The estimated cost of research and development and tooling (with the latter being 45-50 % of the total in each case) would be the following:

- *airframe of the BAC 111-800*: \$235 million (74) – 144 seats,
- *airframe of the Mercure*: \$228 to \$273 million (74). The investment could be reduced by \$64 million by using the airframe already available of the prototype 02 Mercure. – 147 seats, 2 800 km,
- *Trident airframe*: \$260 million (74) – 142 seats, 2 100 km,
- *CFM 56 engine*: the European share (made by SNECMA (F) and Fabrique Nationale (B)) which is 50 % of the total, is estimated at \$270 million (74),
- *the JT10D engine*: the manufacturers have not provided detailed information, but the costs are roughly equivalent to those of the CFM 56.

Aircraft with seating capacity in excess of 180 seats

Taking the market penetration hypotheses and assuming an average aircraft price of \$17 million, the European production for the period 1975 to 1990 would amount to 174 aircraft under hypothesis I and 273 aircraft under hypothesis II.

In respect of these hypothetical market projections, the European industry can offer in this range the Airbus A 300, of which existing versions do not differ in their capacity (269 seats), but in their range capability (B2, short- and medium-haul, B4, medium-haul).

No clear division exists between the aircraft at the top of the range with 100-110 to 180 seats and those at the bottom of the class of aircraft with more than 180 seats; furthermore an as yet ill-defined market for aircraft from 180 to 220 seats is emerging.

The European industry could offer a new version of the A 300—the version B 10 with 214 seats, using new generation engines, either the Rolls-Royce RB 211-524, or the General Electric CF 6, or the Pratt and Whitney JT9D.

The A 300 B 10 would have an operational range of 5 300 km and would be produced by shortening the fuselage and modifying the empennage. The cost of this development, which could take approximately three and a half years, is estimated

¹ The comparability of these figures and of the other estimates of costs included in this chapter must be treated with the utmost caution, bearing in mind the different methods of estimating used by the manufacturers.

at \$97.6 million (1974), and if it was decided to equip this aircraft with RB 211-524, new nacelles would be required together with the modification of certain systems, which airframe manufacturers estimate, would cost an additional \$31.2 million.

The launching of the B 10 version (research and development and tooling) would therefore total \$128.8 million, which represents a fairly small investment compared to the possibility, of covering, with the addition of this new version of the Airbus family the whole range of markets referred to. It is also worth noting that this version would have many elements in common, not only with the B 2 and B 4 versions, but also with the long haul version B 11 which is discussed later in this paper.

Conclusions

Finally, from this analysis of the short- and medium-haul aircraft markets and programmes, based mainly on data supplied by industry, the following conclusions can be drawn:

— In the class of aircraft below 100-110 seats, European industry is already well established on the world market and its position could be improved in the future by supporting a development of the F 28 (with a developed Spey engine) in order to increase its capacity, and by supporting the continued sales of the VFW 614.

— In the intermediate capacity class of aircraft (100-110 to 180 seats) which today is the most important category, American competition is already dominant and is likely to become even more so with the development of its existing or projected aircraft.

Sales support should be assured for existing aircraft (BAC 111 475 and 500 at the lower end of the range and the Trident 3 B at the upper end).

On the other hand, the information currently available to the Commission on the projected aircraft using new 10-ton engines or re-fanned Spey engines does not allow it at this stage and in the absence of a firm position being taken by the European airlines to provide precise indications of which policies to follow.

It seems nevertheless that the solution to look for will be amongst the twin-engined projects, carried out either under purely European cooperation or in cooperation with industry in non-member countries. A comparative study of European projects should therefore be made, as well as very detailed market surveys.

At the same time the value of possible cooperation with the Japanese industry should not be underestimated, bearing in mind the features of the Japanese market and the attempts by the Japanese to set up balanced forms of international cooperation.

Lastly, the advisability of collaboration with manufacturers in

the USA should be considered from the point of view of the links which already exist in both the airframe sector (the Boeing-Aeritalia 7 X 7 agreement) and the engine sector (collaboration on the 10-ton engines).

There must be an overall agreement with American manufacturers, so that cooperation can take place on the basis of shared responsibility and without prejudice to independent European development of other programmes. Certain options will have to be decided, and reciprocal arrangements should be asked of the American manufacturers if transatlantic collaboration (on the 7 X 7 for instance) were to harm the prospects of other European projects such as the enlargement of the Airbus family.

— In the high capacity aircraft sector (more than 180 seats) the first efforts should be towards selling the A 300 B2/B4. Thereafter if it was decided to develop the B 10, one would have the considerable advantage of being able to offer, with the B 11, which is discussed below, a family of aircraft based on concrete results and maximized return on investments already made.

Long-haul aircraft

The only current European project is Concorde. Any possible scenario which one might suggest in respect of sales of this aircraft presents grave difficulties. However until further market information which will become available once the aircraft has entered service is provided, the actual manufacturers projections have been used, i.e. the scale of 40 to 50 aircraft between now and 1990.

Various developments of the current version are projected, notably the B version for an estimated cost of \$114.5 million (1974), which involves noise reduction and range increase. On this it is difficult to form opinions until firmer information on prospective markets can be obtained.

For future projects, market projections have indicated a need, by 1981, for a 200 seat long-haul aircraft for airlines not requiring aircraft as large as the Boeing 747, the DC 10-30/40 and the long-range version of the Lockheed Tristar, taking into account the need to replace the Boeing 707 and DC 8, and the distribution of the long-haul market, of which 75 % will be outside the USA. This aircraft would be a version derived from the Airbus A 300 (A 300 B 11), with four new 10-ton engines, with a capacity of 214 seats for a range of 11 800 km.

Estimated investment costs for research and development and tooling for the A 300 B 11 would be \$833 million (1974). This long-range version of the Airbus would use the B 10 fuselage, and modified or new wings. It would still have many elements in common with the B 2 and B 4 version.

Market prospects, the use of a basic module in different versions and the resulting possibility of offering customers a long

range version of a family of aircraft are arguments in favour of this development.

Assuming a production rate of two aircraft per month for the first five years and three aircraft per month for the following five years, we arrive at a total sales figure of \$4 675 million (1974) for 275 aircraft.

Adding the Concorde sales projected above, we reach a total of \$6 070 million (1974), representing 12% of the long-haul western world market for the years 1975-90. Such an objective should not be beyond the capabilities of the European industry.

Another solution suggested by the manufacturers would be to launch a completely new narrow-bodied long range aircraft, which would also use four new 10-ton engines with a payload and range capability of 190/225 seats over 10/12 000 km. This aircraft, for which development costs are estimated at \$1 041 million (1974) could in theory form the basis for a new family of aircraft, with a new short- and medium-haul twin-engined aircraft, if construction of the latter was decided on.

On the basis of the foregoing, the following conclusions can be drawn: for Concorde, before a policy can be suggested, the impact of entry into service on market prospects must be known; for subsonic long-range aircraft, the A 300 B II appears the most suitable solution.

Production of aircraft equipment

The creation of a joint programme will have direct consequences on the development of industrial activity in the sub-sector of on-board equipment. This is a high technology industry, sufficiently competitive to maintain substantial experts, and it is characterized by a large number of companies.

Intra-Community cooperation for the production of certain systems and sub-systems designed for aircraft which are part of the joint development programme should be promoted and supported by research and development contracts; this could be of considerable benefit to the joint programme, since the cost of on-board systems accounts for about 30% of the price of an aircraft.

As areas for joint action, the industry has suggested flight control systems, navigation systems, and, in the broader field of electronic equipment, advanced technology applications using digital techniques. Further proposals are being prepared by representatives of this sub-sector.

Steps towards overall agreement on a joint programme

Six basic principles should be borne in mind in reaching an overall agreement for a joint programme:

— the whole spectrum of industrial effort in the construction

of large civil transport aircraft (airframes and motors) must be covered by the overall framework of the joint programme, including both the projects which are exclusively European and those which are carried out in cooperation with manufacturers in non-member countries;

— at the industrial level, the work should be shared out on as balanced a basis as possible, in order to make use of the capabilities and potential of each partner;

— the work should be shared out with due regard for the time scale necessary to carry out the joint programme, in such a way as to ensure that each partner has a balanced work load for the whole period in question;

— a joint civil aircraft programme would have very important consequences for the engine sector: with wider sales outlets, this sector would more easily preserve its technological independence, which might well be jeopardized if it is too heavily dependent on the American industry. The 'airframe' and 'engine' subsectors are so closely connected that one will not survive without the other;

— the impact of such a programme on the 'equipment' sub-sector should be studied with a view to promoting suitable cooperation arrangements for developing certain systems and sub-systems for aircraft and engines constructed under the joint programme;

— in view of the close industrial connection between civil and military activities, it would be much easier to arrive at the balance referred to above if parallel progress could be made in military aircraft manufacture.

Participation of the airlines in the establishment of the joint programme

In the past European airlines have been unwilling to limit their freedom of action by making advance commitments to buy European aircraft. Yet they do have an interest in the survival and development of a strong and viable European aircraft industry. The existence of a strong indigenous industry guards them against the emergence of monopoly situations in the future, and against the harmful impact of any major technical failures in such a situation.

In the view of the Commission it is in the interest of the airlines and of the Member States of the Community to develop a relationship of understanding and partnership with the European aircraft industry, much on the lines of the relationship that exists between airlines in the USA and the US industry.

Such a relationship has two elements:

— First, if such European programmes are to be launched, they must be based on a systematic analysis and presentation by the airlines of their needs in the form of a common requirement. It is a task which needs to be carried out both through direct contacts between the airlines and industry and

through a systematic input of airline views in the detailed elaboration of the programme.

— Second, just as in the United States, aircraft are launched against orders by major US airlines, so in Europe, if competitive and economic products are designed as they can be, it would be natural and proper for them to be launched against firm orders by the major European airlines.

In the past a major cause of the reluctance of the airlines to make such commitments to the European industry has been a lack of confidence in its permanence. A long-term overall programme backed by the governments of the Community and industry, together with firm commercial and financial commitments to develop and sustain the after-sales service and the product range corresponding to the airlines' needs would surely provide that credibility.

Technical harmonization

Common airworthiness certification

Work already carried out by industry with a view to the adoption by every national authority of the Community of common standards for airworthiness certification makes it possible to look forward to the following results:

- the presentation to the Council of a directive establishing within the EEC common standards for airworthiness certification,
- the creation of a European office for airworthiness certification. The Commission considers such an organization to be necessary primarily to give the users and the public authorities a full guarantee as to the homogeneous and reliable application of European certification regulations. The Council of the Western European Union has already approved this proposal in principle.

Common certification in respect of nuisance reduction

Current discussions between the Commission and the Member States aiming at the adoption by every national authority in the Community of common standards and procedures for aircraft noise reduction should shortly lead to the issue of a Community Directive which will mainly echo the requirements of Annex 16 of the International Civil Aviation Organization's (ICAO) Chicago Convention.

Establishment of norms

AECMA has worked for several years on normalization.

As the Commission stressed in its Communication to the Council in 1972,¹ the current state of progress of this work now makes it possible to consider whether some of these norms should be embodied in Community Directives.

¹ Bull. EC 9-1972, Part I, Chapter 2.

Annex III

A Community programme for basic research and technological development

Technological objectives

The aircraft industry, both civil and military, makes use of many advanced technologies. The competitiveness of the products therefore depends on substantial programmes of research and of basic technology.

In most cases there exists a logical relationship between research for military purposes and research for civil purposes. One could say that the military sector is concerned primarily to improve operational performance, whereas the civil sector seeks primarily to achieve economic operation.

There is, then, a close interlinking between civil and military interests in any research programme, particularly for the long term. It follows that a joint aeronautical research programme which did not distinguish between civil and military applications could optimize the parameters of cost, benefit and efficiency. The role which the Community might play herein, through the adoption of a joint common programme in basic aeronautical research, financed from Community budget funds, would be similar in nature to that played by NASA in the USA. Such a programme therefore could be realized in different forms according to the subject of the research; sometimes this could mean contracts placed with individual companies on condition that results would be made available to the entire Community aeronautical industry; or it could mean contracts placed with groups or consortia of companies who would be committed to common developments (for example, in the field of equipment).

The competitiveness of European products depends on the quality of their technology. It is therefore a matter of high priority to create conditions to enable basic research and technological programmes to be optimized, and these can be classed in three categories, according to their time scale:

Short-term applications which require improvements and extensions to existing technologies with the aim of improving specifically defined products, whether aircraft or components

In this category, the purpose of research is to upgrade current generation aircraft according to economic criteria and with a view to reducing nuisance problems, and to create new versions derived from these according to the needs of the market.

Both these two cases involve specific industrial programmes

where existing technology is applied to existing or derived products.

Medium-term applications, the objectives for which will depend on market trends

In the medium-term, it is important for the industry to build up a capital stock of key technology, even when users have not identified their exact needs, so that competitive commercial products can be launched when requirements crystalize. The technologically critical areas must first be defined and then the building blocks identified, pending an express statement of requirements by the users.

Work in this case is therefore oriented towards the next decade. Its objective is to enable the industry to launch aircraft onto the market at competitive sales prices, but which will also incorporate substantial improvement in direct operating costs and nuisance reduction. These aircraft will call upon new technologies and probably on derived versions of existing engines or engines under development.

This type of Community programme for research and basic technology should be structured in several phases: firstly, the collation and analysis, at Community level, of national estimates made by governmental organizations and by the manufacturers covering passenger and freight demand and the aircraft designs which might meet requirements in the period in question.

These aircraft could be either advanced versions derived from current civil aircraft or new generation aircraft.

Various options might be decided, and would be the basis for identifying technologies to be developed.

A research programme would then be mapped out on the basis of the cost-benefit assessments of the most suitable development projects.

Long-term applications for which the procedure described above should be reversed: current scientific and technological evaluations which will suggest long-term trends

These will be basic research or feasibility studies: they are subject to a considerable risk in economic terms, since success in a research project does not necessarily lead to application.

The greater part of this work is basic research largely carried out by research centres (universities, national bodies, etc.) at a national level; this obviously leads to overlapping and therefore wastage of effort and resources.

Certain bilateral and trilateral arrangements exist in this field, but in the framework of the Community programme, it is clearly necessary to go further and combine infrastructure and technical expertise and to set up centres of advanced research in the various field under consideration.

Infrastructure

In the field of research tools, national considerations have sometimes led to the costly duplication of installations and to an inefficient use of national resources.

The setting up of centres of advanced research in a Community framework should improve this situation. The coordination which is implicit will lead to an optimized use of the European resources.

Moreover, certain installations are still lacking in Europe, since their cost is generally beyond the capacity of national budgets. It may well be possible to establish these within a Community programme, if a need is identified:

- large transsonic wind tunnel,
- flying test beds (wings, materials, equipment),
- titanium foundry,
- Data processing (structures, aerodynamics).

Annex IV

Structures, employment and productivity

Objectives

The industrial structure necessary to carry out a joint civil aeronautical manufacturing programme should meet the following objectives:

Basic research

Several research and design centres can operate at the same time, so long as research is programmed on a European basis and provided that in this particular context the independence of each company whilst continuing to provide stimuli, does not have adverse effects on the efficiency and the rational organization of the overall effort.

Research-development and production

Responsibility and risks should be shared among the different companies in such a way as to minimize the additional costs which result from problems of coordination, management and often overlapping of work.

Sales and after-sales

Relations with the customer, and with the banks and public authorities which are involved in supporting sales, require finished products to be marketed by a body capable of offering full guarantees throughout the period of use and credible as a potential supplier serving the user's future requirements.

Current methods

Various forms are in use and none fulfils all the objectives set out above, even though considerable progress had been made towards them.

Appointment of a company as a prime contractor

This formula involves the least amount of cooperation and is preferred when a single company can take overall responsibility for the programme (for example, Dassault in the Mercure project).

The problems lie in the difficulty of extending the system to

partners of equal standing, particularly for a small number of programmes.

Certain tasks carried out by both companies

This solution has been adopted in the Concorde programme in the area of assembly and sales. It presents several problems at the production stage, for it does not allow full rationalization of production, nor does it allow full advantage to be taken of the benefits of the learning curve; furthermore, it is difficult to coordinate sales and marketing strategies.

Transfer of certain responsibilities to a single company or multinational grouping, taking responsibility for a single project (for example, Airbus Industrie, Panavia, etc.)

This is the formula which has been most often used; it embodies the advantages of a central management and can bring about a more complete integration at the development and production stages, but certain problems remain, at the sales and after-sales level, owing to the difficulty for such organizations to build up a reputation of stability and reliability.

Possible solutions

The solution which takes the form of a complete merging of companies to create one or two large manufacturers in Europe has seemed attractive, but has so far proved unfeasible, owing to insurmountable political, legal and tax problems.

Experience suggests that the route to follow is, first, to fix common objectives, then to find functional solutions for attaining them most fittingly and efficiently, without, however, calling in question the existence of the companies themselves.

In the field of large civil transport aircraft, the *functions* which must be performed in common (by an integrated industrial organization at the European level, perhaps on the model of Airbus Industrie or through a joint subsidiary), are as follows:

- marketing, sales and after-sales support;
- the definition of an overall strategy concerning future products and the organization of production in the medium- and long-term;
- Coordination and planning of basic research.

These three functions together make up a coherent framework which would allow for example the feedback of marketing information into the planning of research so that the latter can be based on the indicated needs of the market.

Such a central industrial organization involving on an appropriate basis, the participation of the representatives of organ-

ized labour, would constitute the right kind of body to deal with the European public authorities responsible for financing, overall control and sponsorship of the joint programme.

Finally, individual projects would be organized by intercompany working groups who would be responsible for coordinating development and production.

To sum up, for many years continuous conflicts of commercial interests have made it impossible for the main European companies to come together in a single grouping. At the same time, specific cooperative projects have linked them together in a complex network which has made impracticable the formation of two or three separate groups. Serious economic problems and the growing unity in the industry, which is reflected in the development of a consensus on a single programme for large civil aircraft, have made the time ripe for a debate on the launching of a single organization to manage the production of large civil transport aircraft, crowning in its turn a series of intercompany working groups responsible for particular projects. Individual companies could continue to compete amongst themselves for smaller aircraft, such as business jets. Methods of collaboration for military programmes should of course be different.

Employment and productivity

Concentration of all industrial efforts on a limited number of programmes selected in response to market requirements, defined in collaboration with the airlines and with full backing at the sales and after-sales phase should result in longer production runs and therefore in higher productivity.

However, effort is necessary to improve the level of man hours per unit of production, and work in this field is being carried out by the main European companies, particularly in the following areas:

- application of value engineering;
- cost control for components;
- indirect cost reduction;
- effects of the learning curve;
- methods and cost inherent in international collaboration;
- improved methods of production control.

The results of such studies and their practical application will provide the counterpart from industry to the support of the joint programme which is required of the public authorities.

It is extremely difficult to predict at the moment the likely consequences on the level of employment of the process of rationalization towards achieving a common programme; detailed information would be necessary not only on the planning of civil aircraft production but also on military aircraft production.

Nevertheless the fact that turnover of the aerospace sector is expanding overall, even though the manufacture of civil

transport aircraft is currently at a very low level compared with the objectives proposed in the framework of a Community programme, does not allow one to conclude that any process of rationalization will necessarily lead to an overall reduction in numbers employed, though it may lead to changes in structure of employment (for example, increases in sales and commercial staff) and therefore require concomitant social measures. It will be necessary to examine in detail the effects on the structure, volume and location of jobs, and on working conditions, with a view to preserving balanced employment. This examination should take as a starting point the existing infrastructure, for example, the qualitative role of research and development centres and the regional function of the operation of certain companies, particularly when they are a vital element in the economic life of the area. It will be necessary as a result, to study the structure of employment, working conditions and basic and further training in the various branches of the aircraft and space industry and related sectors. These studies could serve as the basis for eventual intervention by the European Social Fund and European Regional Development Fund, particularly in cases of re-location of work and vocational re-training.

Annex V

Financing methods

Four types of possible financial support can be singled out:

— *Financing of research and development*: the objectives of financing in this area can be divided into two categories:

- a programme for basic research in the medium- and the long-term whose aim is to provide industry with a stock of technical know-how which should be financed out of Community resources,
- a programme of applied research in the short term and developments of specific commercial projects (including necessary tooling) which obviously must be in part financed by industry.

Community financing would be provided partly out of the budget of the Community and for certain types of support partly from funds raised on the capital market.

— *Support for rationalizing the means of production and marketing*: this would be provided essentially from loans granted by Community institutions and perhaps through the European Investment Bank on the basis of Commission Directives.

— *Export credits and guarantees*: the work carried out to date to harmonize national policies and practices has shown how difficult it is to provide sufficiently efficient and flexible export credits and guarantees for projects carried out on an international collaborative basis to meet terms offered by the competition. The Commission in a separate document has set out for the Council its views on the need to create a Community body for this type of activity, in other words a genuine European Export Bank.¹ Whilst the mandate of such a Bank would be to provide support for many branches of industry, it is quite clear that the aeronautical sector, bearing in mind the multinational nature of its products, is one of those which make the creation of such a body a matter of urgency.

The potential customers of European industry when they negotiate with manufacturers who are competitors of the European industry, are dealing generally with a single contractor, in a single currency, and with a single credit agency. The seller is therefore capable of providing at the same time not only an aircraft but also a set of financial conditions which enable the purchaser to see quite clearly the effects his purchase will have on his operation and returns.

The purpose of an export credit system should be to create conditions in which European industry can benefit from facilities comparable to those available to its overseas competitors:

¹ Bull. EC 7/8-1975, point 2309.

- it should lend in a single currency;
- it should be able to offer conditions (interest rates, payback periods, percentage of contract value financed), which whilst taking account of international commitments, would be no less favourable than those offered by third party competitors;
- it should be extremely flexible and rapid in its decision-making process.

— *The financing of sales within the Community:* until economic and monetary union is achieved in the Community, manufacturers will continue to encounter on the internal market the same difficulties as on the external market. It will be necessary then, by means yet to be decided for sales within the EEC to have common financial support.

Proposal for a Council Decision
concerning the creation of a common policy
in the civil aircraft and aviation sector

The Council of the European Communities,

Having regard to the Treaty establishing the European Economic Community, and in particular Articles 84(2) and 235 thereof;

Having regard to the proposal from the Commission;

Having regard to the Opinion of the European Parliament;

Having regard to the Opinion of the Economic and Social Committee;

Whereas the aim of the European Economic Community is 'to promote throughout the Community the harmonious development of economic activities, continuous and balanced expansion, increased stability, an accelerated improvement in the standard of living and close relations between Member States' (Article 2 of the Treaty);

Whereas those economic activities relating to the civil aircraft and aviation industries are of particular importance; whereas within this sector the aircraft industry has been tending to lose its outlets on world markets, including those of the European market, while the aviation industry is characterized by a rigid compartmentalization of national markets, wherein traffic rights are essentially shared out by reference to the nationality of the air transport companies;

Whereas, given the scale of the problems arising from the situation described above, national intervention is no longer capable of ensuring the harmonious development of activities within the sector under consideration, and whereas to this end it is necessary to provide for the initiation of common action concerning the aircraft and aviation industries;

Whereas the difficulties of the European civil aircraft industry are due mainly to the absence of an overall strategy in relation both to intra-Community cooperation and to cooperation with non-member States, to the lack of financial support from the Community to ensure that European products are competitive in the world market, and to the lack of concerted action on the part of the European air transport companies with a view to orienting production towards market objectives corresponding to real requirements;

Whereas the European aircraft industry, thanks to the level of its technology, its design capabilities, and its technical, human and financial infrastructure, can regain an important role on the world market provided that efforts are made substantially to improve its productivity through rationalization and cooperation;

Whereas however, there is a risk that any effort on the part of the industry will once more prove fruitless unless real common action is undertaken embracing all the problems relating to this sector;

Whereas to this end it is necessary to establish a common policy for the aircraft industry, such policy to consist in particular of: the establishment of a common programme for the development, manufacture and marketing of large civil transport aircraft, including activities carried out in collaboration with third country manufacturers; the establishment of a common basic research programme; the common financing of research, development and production tooling for specific programmes; a Community system of financial support for marketing; and the harmonization of national laws, regulations and administrative provisions dealing with certification of airworthiness, environmental nuisance, norms and standards;

Whereas in the sector under consideration the purpose of a common policy designed to replace national policies must be to enable projects to be undertaken whose size would be beyond the financial capability of any national industry or of any one Member State in isolation; whereas in these circumstances it would be wrong to allow the success of the common programme to be jeopardized by the launching of new, competing, State-aided national projects;

Whereas, given the considerable effort required by the Community to put a common programme into effect, it is appropriate to seek to concentrate public resources on financing its implementation; whereas steps should therefore be taken to prevent the undertaking of national projects likely to lead to a dispersion of effort and to make the common policy unworkable; whereas to this end the only effective method of ensuring the success of the common programme under the best conditions consists in the creation of a common

financing system to replace completely existing systems of national aid;

Whereas, in order to make the process of transition towards the financing system described above a gradual one, provision should be made for national aids to be phased out gradually; whereas it should accordingly be provided that State aids or aids provided from State resources in those areas which are to be the subject of common financing are to be replaced by this method of financing within five years from the date on which the new system is put into effect; whereas at the end of this period the Member States should refrain from providing State aid in the areas mentioned above, same in so far as is permitted under Article 92 (2) of the Treaty;

Whereas the establishment of a common air policy requires the establishment of a European market in all its aspects, including air services between Member States; whereas at present the structure of these services does not correspond fully to the needs of traffic growth in the Community, especially with regard to European inter-regional links;

Whereas the creation of a European common market requires that the Community should establish as objectives in respect of air transport on the one hand the creation of a European airspace to be managed on a Community basis, thus making it possible to provide the public at the best price possible with services better tailored to its needs, through the introduction of new services and the diversification of existing services and the rationalization of route networks, particularly for inter-regional traffic, and on the other hand the negotiation and conclusion of agreements between the Community and third countries, particularly in respect of traffic rights, with the aim of optimizing international routes and services;

Whereas objectives should be achieved by progressive steps enabling the transition towards the Community system envisaged above to be achieved in a balanced way; whereas to this end appropriate action in the specific fields will be set in motion as soon as possible;

Whereas the achievement of the objectives and actions mentioned above will have an important

impact in that it will create an economic environment favourable to the harmonization of the criteria on which the structure of route networks is based (frequency, routes, size of aircraft) and on which the purchaser's choice of aircraft thus depends;

Whereas it is for the Commission to propose measures for the implementation of the schemes set out above; and whereas, to accomplish this task, it will require full knowledge of all matters relevant to the measures envisaged by the common policy in this field;

Whereas to this end Member States, manufacturers and air transport companies should be required to provide the Commission with the necessary information; and whereas the conditions and detailed rules relating to this requirement will be established by the Council on proposals from the Commission;

Whereas, as regards action in respect of air transport, provision should be made for the necessary measures to be adopted by the Council acting by a qualified majority on a proposal from the Commission and after consultation of the Economic and Social Committee and of the European Parliament;

Whereas, as regards certain action relating to the common policy in the aircraft construction sector, the Treaty does not provide the necessary powers; whereas such action is necessary in order to attain, in the course of the operation of the common market, the objectives of the Community set out in Article 2 of the Treaty; whereas it is therefore necessary to have recourse to Article 235 of the Treaty,

Has adopted this decision:

Article 1

There is hereby established a common policy for the civil aircraft industry. The purpose of such policy is to ensure the optimal use of resources while being at the same time essentially adapted to market requirements.

It consists in:

- (a) the establishment of a common programme for all activities in connection with the manufacture of large civil transport aircraft including those carried out in collaboration with manufacturers in third countries;
- (b) the common financing, to replace individual national financing of research, of development, and of production tooling for the common programme referred to in (a);
- (c) the establishment of a common programme for certain areas of basic research receiving Community financing;
- (d) a system of financial support by the Community for marketing;
- (e) the harmonization of the laws, regulations and administrative provisions of the Member States dealing with certification of airworthiness, environmental nuisance, norms and standards.

Article 2

1. Aids granted by the State or out of State resources in the areas to be the subject of common financing in accordance with Article 1(b) shall be replaced by such a common financing system within five years from the date when that system is put into effect.
2. At the end of this period, Member States shall, save as permitted under Article 92(2) of the Treaty, provide no further national aid in these areas.

Article 3

Action by the Community in the field of air transport shall have as its main objectives:

- (a) the creation of a European airspace, to be managed on a Community basis and involving the establishment in respect of intra-Community traffic of a system of regulated competition, whose aim will be to provide the public with services better tailored to its needs, at the best prices possible, through the introduction of new services and the diversification of existing services and the rationalization of route networks, particularly in inter-regional traffic.

- (b) the conclusion of agreements between the Community and third countries, particularly in respect of traffic rights and with the aim of optimizing international routes and services.

Article 4

1. The provisions necessary for the implementation of the measures set out in Article 1, shall be adopted by the Council in accordance with the rules of the Treaty, on proposals from the Commission and after consultation with the Economic and Social Committee and with the European Parliament.
2. The provisions required for the realization of the objectives set out in Article 3 shall be adopted by the Council acting, by a qualified majority, on proposals from the Commission and after consultation with the Economic and Social Committee and the European Parliament.
3. In preparing its proposals, the Commission shall consult governmental authorities in the Member States, manufacturers, air transport companies and trade unions. They may present to the Commission any views or suggestions on the measures and objectives set out in Articles 1 and 3.

Article 5

1. The Member States, manufacturers and air transport companies shall provide the Commission with the necessary data and information in order to enable it to carry out the tasks required of it under this Decision.
2. Conditions and detailed rules shall be laid down by the Council on proposals from the Commission.

Article 6

This Decision is addressed to the Member States.

Done at Brussels,

For the Council
The President

Draft Resolution
of representatives of the Member States
of the European Economic Community
meeting within the Council
relating to the purchase and development
of aircraft weapon systems

The Member States of the European Economic Community,

Conscious of the importance to the European aerospace industry of the military aircraft market and of that industry's direct dependence on government policies;

Conscious too that the close links which exist between civil and military technology result in the fact that difficulties or successes met in one bear directly on the other;

Conscious that the scale of development costs and the need to achieve economies of scale in production have led to the setting up of a certain number of European collaborative projects, but that this limited collaboration must now be supplemented by the establishment of a systematic common policy in this field;

Convinced that the duplication of developments at national level as well as the cost of multiple logistic support organization and of separate spare part systems result inevitably in a massive waste of public funds;

Convinced of the necessity for developing a substantial and balanced aircraft weapons trade with the United States while safeguarding an adequate design and production capability in Europe;

Hereby agree as follows:

1. To consider the creation of a European Military Aircraft Procurement Agency, whose task will be to coordinate the purchase of aircraft weapon systems, to identify common future requirements, and to initiate new common developments to meet them, while acting in close collaboration with Community institutions so that they may be in a position to administer the policy for the aircraft industry in full possession of all the necessary information.
2. To open discussions with the United States of America on sales and cooperation in the field of defence equipment, with the following objectives:
 - the mutual opening up of markets with a view to the development of the two-way trade going beyond production under licence;
 - the safeguarding of the role of European industry in the major sectors of technology.