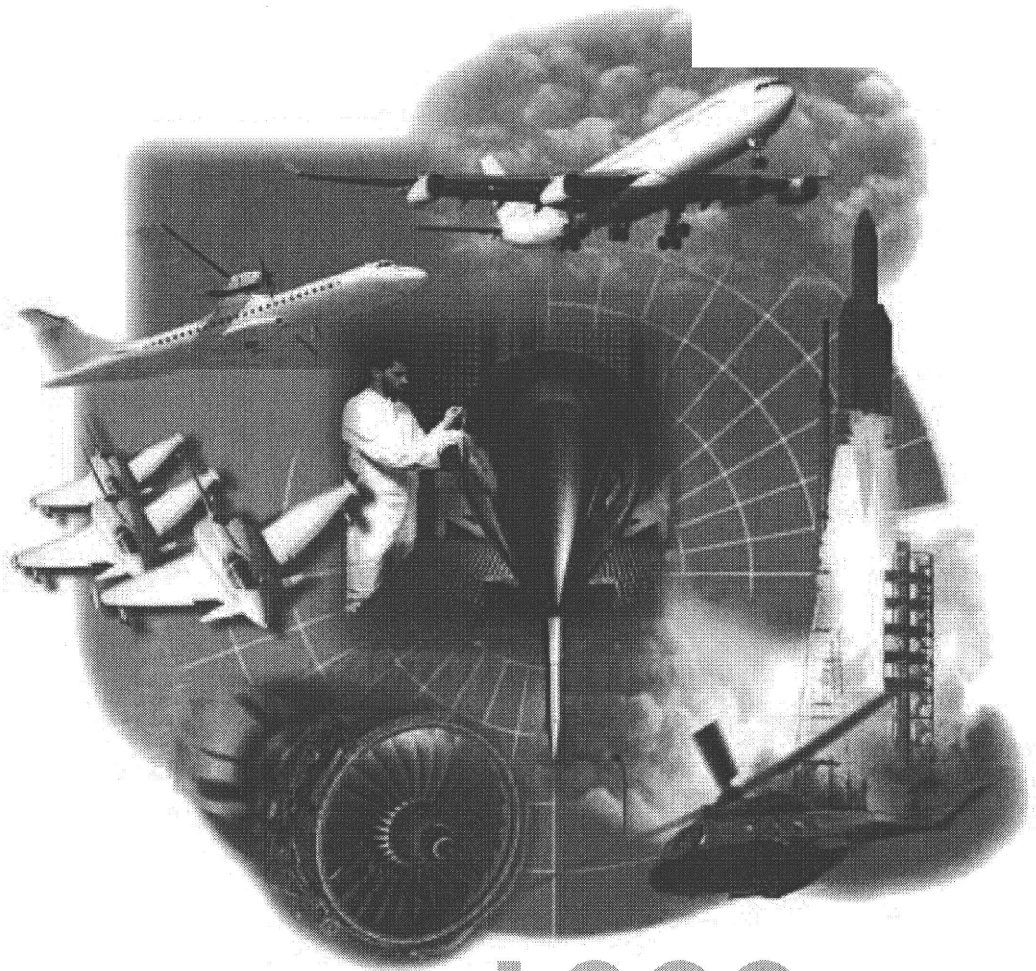


The European Aerospace Industry

Aerospace Industry



1999 Statistical Survey

AECMA

1999 Statistical Survey

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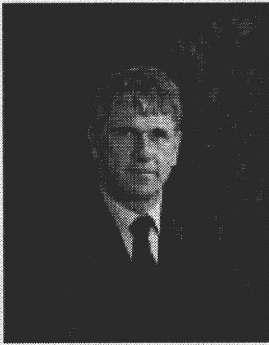
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Data and Information

The data and information provided in this brochure represent the results of the statistical survey carried out on the European Aerospace Industry (EAI) for 1999.

Data covers the aerospace industry of the 15 Member States of the European Union. It has been collected primarily through the National Aerospace Industries Associations forming the membership of AECMA and thereby from the indirect member companies. In addition data was also retrieved from all other accessible sources outside the AECMA membership, including EU consortia such as Airbus Industrie and airline maintenance companies, thereby providing for full cover of all activities.



The financial statistics for European aerospace in 1999 reflect the strength of the industry, with a sustained level of business across all sectors. The output from the industry and its strong exports continue to provide a major contribution to the European economy as a whole.

During 1999, the industry has undergone substantial developments. Through restructuring and consolidation it has become more competitive and better prepared for future challenges.

Today, two-thirds of the turnover in the European industry derive from products developed under trans-national agreements.

The recently signed MOU for the NH-90 helicopter programme, the start of production of the Eurofighter aircraft and the orders placed for the Tiger helicopter, all illustrate the power of trans-national co-operation.

Moreover, the A3XX project has now been announced, with a number of airlines expressing interest and the A400M, (so far endorsed by the UK, Belgium, French, German, Italian, Spanish and Turkish Governments) will perform a key strategic role in future European airforces.

These projects illustrate how the European industry has the capability to compete successfully on a global scale. However, challenges remain.

Competition for Europe's aerospace industry comes primarily from the US. The US industry is roughly twice the size of the European business in terms of employment and turnover. The effort required for every company to remain at the leading edge in the global market is immense as the European aerospace industry invests more of its own resources in R&D than the US industry, because US government support is much greater. Europe needs to strengthen and co-ordinate its national programmes to compete effectively.

From the industry's point of view, the drive to succeed with long-term projects at a European level has to be developed in future Framework Programmes. For this reason we welcome the initiative of Commissioner Busquin to create a European Research Area.

Since last October, the membership of AECMA has grown to include all 15 member states of the European Union. At the beginning of this year, the aerospace association in the Czech Republic joined AECMA, as the first member from a country aspiring to join the EU. This demonstrates the growing strength and increasing economic potential of member companies.

The European industry has always been open to international co-operation and welcomes competition. European co-operation is not about building 'Fortress Europe' but about building the pillars of a bridge to all the other aerospace businesses in the world to better serve our customers world-wide.

A handwritten signature in black ink, appearing to read 'John Rose', with a long, sweeping horizontal stroke extending to the right.

John Rose
AECMA President 1999-2000
Chief Executive of Rolls-Royce plc

Key Characteristics

1999 has been another successful year for the European Aerospace Industry (EAI) with continued growth in turnover by 5%, an employment growth of 1%, an increase of the profit margin by 5% and an order intake of almost 1.2 times the turnover.

The industry thereby continues its positive development on the recovered high level after years of extraordinary growth.

The growth of turnover in real terms, i.e. excluding inflation effects, amounted to 3% contributing to an overall growth of 45% from 1995 to 1999. The employment in the same period has grown by 10% and the profit rate of 7% compares to negative results encountered in 1995.

Key Characteristics of the European Aerospace Industry for 1999

Employment	426 700 employees
Turnover	66 billion Euro
Operating Profit	7% of turnover
Order Intake	117% of turnover
R&D Expenditure	15% of turnover
Export Percentage	51% of turnover

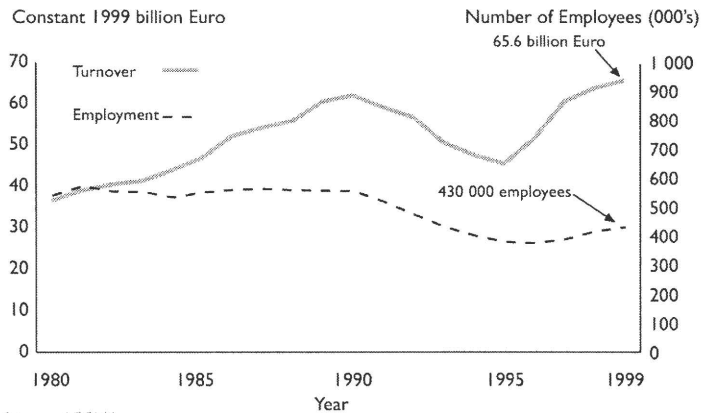
The growth of the EAI business recovered in 1996 after a number of years of declining sales and this trend continued in 1999 (Figure 1). This more than compensates for the downturn at the beginning of the decade, and industry is now exceeding the peak performance of 1990.

Compared to 1998, sales grew in 1999 still by 5%, equivalent to 3% in real terms. For 2000 a further turnover growth is expected. Long-term market forecasts indicate the overall growth for the aerospace business to be sustained, with individual segments ranging from stable demand to strong increases, and all segments being subject to cyclical developments.

Also compared to 1998, the number of employees in the EAI has increased by around 1%, comparing end year figures.

However, since 1995 the respective growths in volume of sales and in employment have been 45% and 11%. This trend to higher productivity is likely to continue due to the further rationalisation and restructuring which is necessary to ensure the continued competitiveness of the industry. On the other hand, to pursue R&D and manufacturing in certain programmes, the recruitment of additional personnel may be expected.

Fig. 1 EU Aerospace Industry Turnover*+ and Employment+



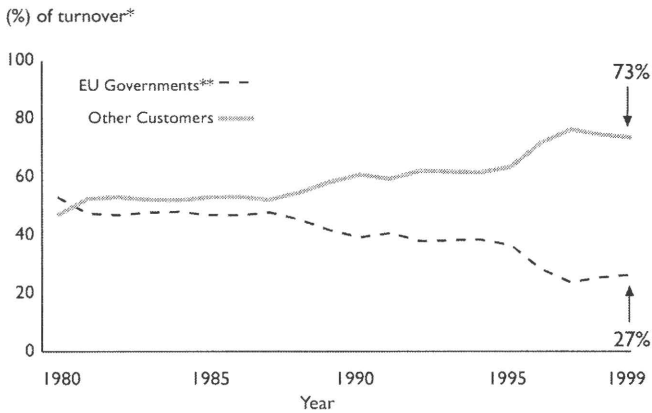
Source: AECMA

(*) consolidated turnover

(+) incl estimations for Sweden until 1992 and non-AECMA companies until 1995

It should be remembered that there is substantial additional aerospace-dependent employment within a wider supply chain, external to the actual aerospace industry presented here. This additional employment is estimated at approximately 800 000 jobs. A substantial amount of this business has been transferred to the wider supply chain by outsourcing as part of the rationalisation process.

Fig. 2 EU Aerospace Industry Turnover* by EU Governments / Other Customers



Source: AECMA

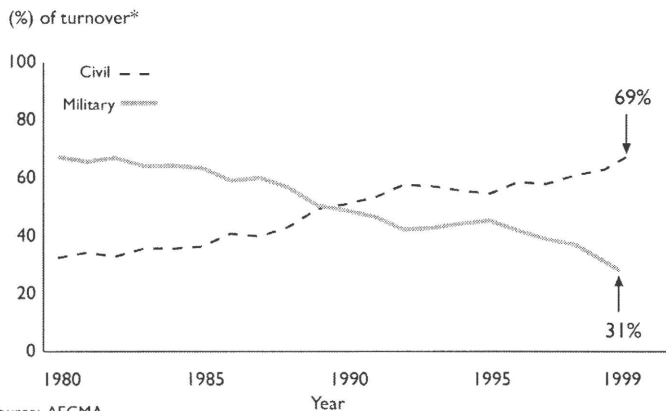
(*) based on consolidated turnover in constant 1999 prices, incl. estimations for Sweden until 1992 and non-AECMA companies until 1995

(**) incl. ESA, national aerospace research establishments and agencies

The overall growth in the industry has been achieved with a complete change in the business. Following a long period of business coming from governments for a share in between 2/3 and 3/4 between 1981 and 1988 (Figure 2), the EAI's business was typified by parity of sales to EU governments and to other customers. The EAI then expanded its sales to non-public customers.

Since 1997, the EU governments (including ESA, national aerospace research establishments and agencies) account for just one quarter of the overall turnover, while commercial domestic customers and export customers now constitute three quarters of the business. The considerable global demand for civil aircraft has been the main contributor to that ratio. In the US, the corresponding 1999 ratio is 36% for sales to the US government (including NASA and other agencies), against 64% for sales to other customers. This demonstrates that the EAI depends to a much lesser extent on government contracts but also has a smaller home market base on which to rely.

Fig. 3 EU Aerospace Industry Turnover* by Civil/Military



Source: AECMA

(*) based on consolidated turnover in constant 1999 prices, incl. estimations for Sweden until 1992 and non-AECMA companies until 1995

The shift of sales from public to commercial customers is also indicated to a certain extent by the application of the products delivered. Above all, the overall growth of the business has been achieved against the background of a complete change in the business (Figure 3). The civil sector has reached almost 70% of turnover, while the military sector has reduced to around 30%, reversing the relationship prevailing until the middle of the last decade. This compares to a 60% / 40% ratio for sales by the US aerospace industry.

Total consolidated turnover (for definition see Annex) of the EAI in 1999 was 65.6 billion Euro. There is an additional 6.5 billion Euro of turnover generated by EAI subsidiaries located in the US and other countries outside the EU. This additional turnover is not part of this survey.

Comparison of Turnover 1999 to 1998

As stated above, the turnover of the EAI has grown from 1998 to 1999 by 5%, which amounts to 3.4 billion Euro.

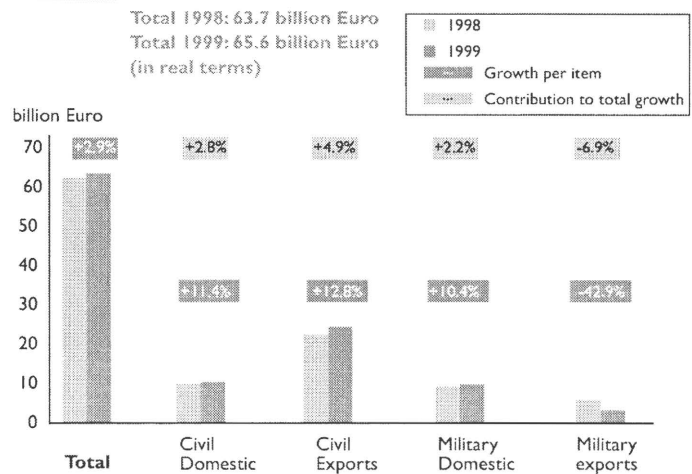
The total turnover for 1998 of 62.2 billion Euro compares to 63.7 billion Euro in economic conditions 1999.

Compared to the inflated turnover of 1998 (63.7 billion Euro), sales have grown by 1.9 billion Euro or 2.9% in real terms. This growth from 1998 to 1999 happens to be in line with the long-term growth rate of the industry, which has been about 3% between 1980 and 1999.

The increase in turnover from 1998 to 1999 was brought about by growth in the civil sector (both domestic and export) and in the domestic military business. The growth in each of these three areas was above 10%. This strong increase was partly outweighed by a sharp fall in military exports of more than 40% (Figure 4).

On the civil side, the domestic and the export markets developed equally well. There has been a shift in growth for civil exports away from the US to the Rest of the World (RoW). Nevertheless the previous year's substantial increase in exports to the US has been maintained. In 1998, the export volume to the rest of the world has been reduced by around 15%, due to the Asian crisis. This decrease was more than offset by a growth of more than 20% in 1999.

Fig. 4 Turnover* Growth from 1998 to 1999



Source: AECMA
(* based on consolidated turnover)

The reduction of military exports was exclusive to markets in the rest of the world. Exports to these markets already showed a substantial decline of 1.8 billion Euro during 1998 and suffered from another drop of 4.8 billion Euro in 1999. This development results from governments, particularly in Asia, having had to cancel major procurement programmes. In addition, large export programmes to the Middle East were completed at the end of 1998.

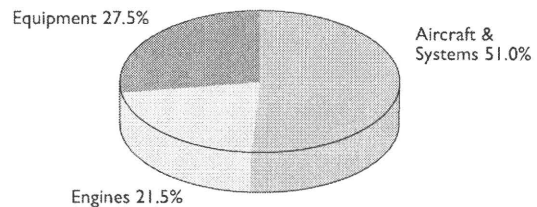
The domestic military business, that is sales to EU governments, has increased by 10% in 1999. However, this improvement starts from a very low level and amounts in money terms to only 1.5 billion Euro. Nevertheless, it is an indication that the major aerospace procurement programmes launched in 1998 and 1999 are starting to produce a strengthening of the European aerospace defence business, after a long period of decline.

Sector Contribution to Industry Turnover

The aerospace industry is generally broken down into three industrial sectors "Aircraft & Systems", "Engines" and "Equipment" and into the three product segments "Aircraft" (including helicopters), "Missiles" and "Space". Turnover information is detailed for these sectors and segments.

It should be noted that the contribution (in the sense of the value added to the final products) of a sector to the total consolidated turnover is not reflected by the share of the consolidated turnover of this sector as shown in figures 6, 8, 9 and 11, because this is by definition limited to sales outside the EAI. The considerable business in the supply chain within and between the sectors as shown in Figure 10 has to be accounted for in defining the contribution properly. Figure 5 shows the individual sector contributions to the 1999 total consolidated turnover after appropriately having taken into account the sales within the EAI (for an explanation of industry sector contributions see Annex).

Fig. 5 Industry Sector Contribution to 1999 EU Aerospace Industry Turnover^(*)
Total for Aerospace: 65.6 billion Euro



Source: AECMA, estimated

The figures reallocate internal turnover within industry; i.e. Aircraft & Systems figures exclude EU-supplied Engines and Equipment; Engines figures exclude EU-supplied Equipment but include Engines supplied to European Aircraft & Systems manufacturers; Equipment figures include Equipment supplied to European Aircraft & Systems and Engines manufacturers.
(*) based on consolidated turnover.

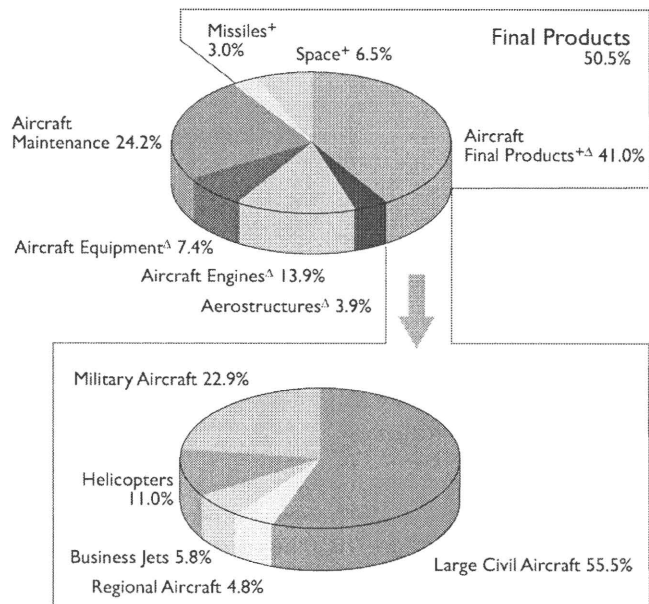
Breakdown of Turnover by Product Segments

The public image of the industry is determined by the final products. These include large commercial aircraft, combat aircraft, helicopters, regional aircraft, business jets, as well as missiles, satellites and rockets. However, these final products account for only around 50% of the overall turnover, with aircraft final products contributing over 40% (Figure 6). Within the aircraft final product range large civil aircraft are the single largest contributor.

Aircraft maintenance is gradually approaching one quarter of the turnover, and has become an important pillar of the business.

The remaining 25% of the industry's turnover is made up from sales of engines, equipment and aerostructures to final customers. These comprise primarily spares but also direct order equipment and supplies to aerospace companies outside the EU.

Fig. 6 Breakdown of 1999 EU Aerospace Industry Turnover^(*) by Product Segment
Total: 65.6 billion Euro



Source: AECMA, Aircraft breakdown estimated

(*) based on consolidated turnover

(*) data comprises EU and non-EU supplied aerostructures, engines and equipment

(*) excl. maintenance

Inter-Industry and End-Customer Turnover

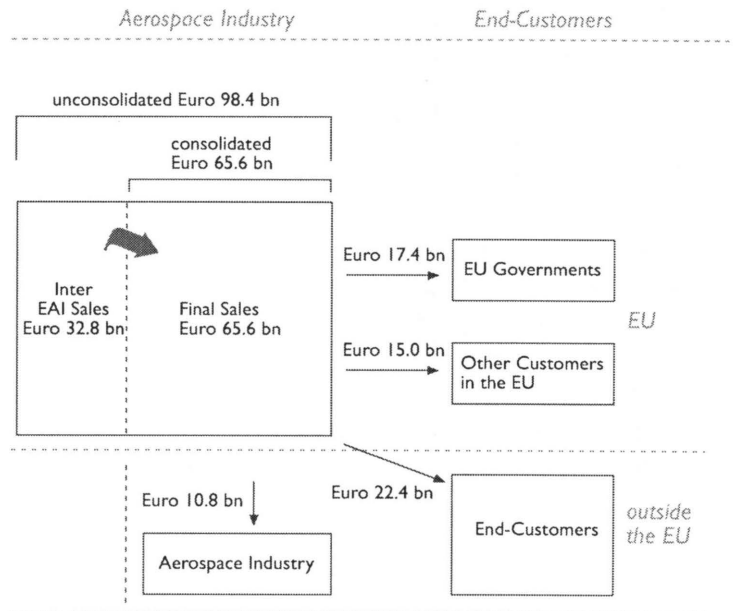
Although end products are mainly responsible for the public image of the aerospace industry, it should be recognised that an important part of its sales is not to end-users. The relevance of the EAI internal trade, as well as the role of the EAI as supplier to aerospace companies outside the EU, is described in Figure 7.

In examining EAI internal trade, one has to acknowledge the role of so-called EU Consortia, such as Airbus Industrie. About 50% of the EAI internal trade volume is with EU Consortia. These organisations operate as the interface with the customer on behalf of companies co-operating in multi-national European programmes. They have therefore taken over the programme management and marketing tasks from these companies in order to run the respective programmes. In 1999, 37% of the 55 billion Euro turnover with end-users has been accredited to EU Consortia. In the civil market, this proportion approaches 50%.

At segment and sector level (Figure 8), there is a wide variation in the respective customer bases. For instance, the business-to-business sales portion is very low in the missiles segment. For the Engine sector, there are 60% higher sales to aerospace companies outside the EU than to the EAI, demonstrating the competitiveness of the Engine sector outside the EAI community. In the Equipment sector, sales to aerospace companies are larger than those to end customers.

Fig. 7 Breakdown of 1999 EU Aerospace Industry Turnover by Customer considering Inter Aerospace Industry Sales

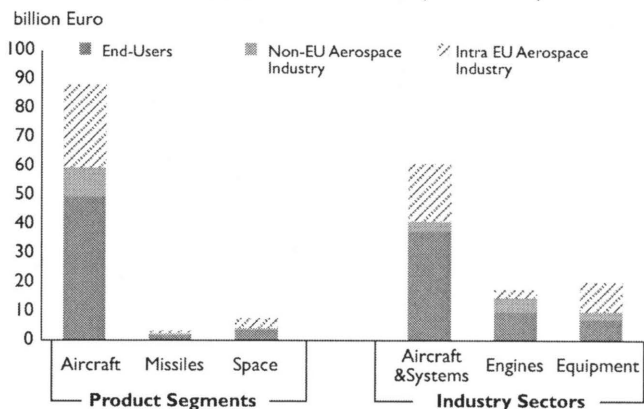
Total: 98.4 billion Euro unconsolidated
 32.8 billion Euro Inter EU Aerospace Industry Sales
 65.6 billion Euro consolidated, i.e.
 excluding Inter EU Aerospace Industry Sales



Source: AECMA

Fig. 8 Breakdown of 1999 EU Aerospace Industry Turnover by Customer considering Inter Aerospace Industry Sales on Segment and Sector Level

Total: 98.4 Mio Euro unconsolidated
 32.8 Mio Euro Inter EU Aerospace Industry Sales
 65.6 Mio Euro consolidated,
 i.e. excl. Inter EU Aerospace Industry Sales



Source: AECMA

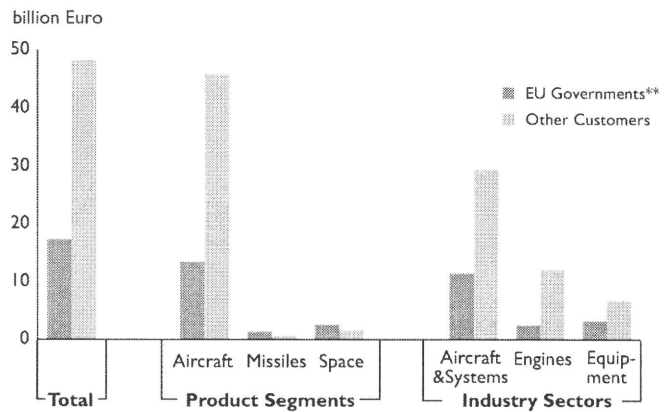
Turnover Share of EU Governments

Figure 9 illustrates the low dependence of the industry on contracts acquired from EU governments. This varies for product segments and industry sectors.

On the product segment side missiles for which there is no civil market have to rely predominantly on EU governments. Space activities are still largely government oriented or sponsored, but the civil market has already a substantial importance for the EU space segment. The Aircraft & Systems sector dominates the total industry's result, while the EU Government share is 1/5 for the Engine sector and 1/2 for the Equipment sector.

Fig. 9 Breakdown of 1999 EU Aerospace Industry Turnover* by EU Governments** / Other Customers

Total: 65.6 billion Euro



Source: AECMA

(*) based on consolidated turnover

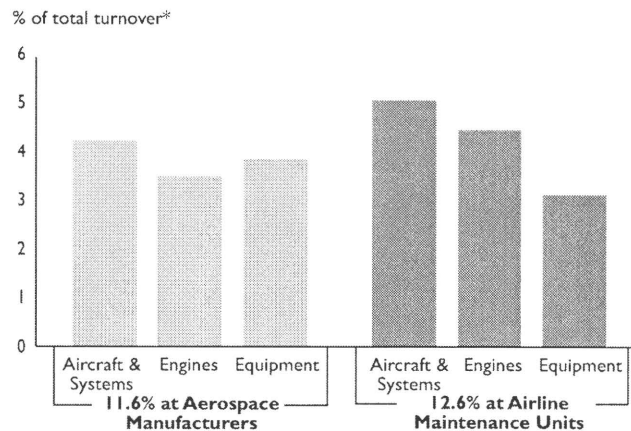
(**) incl. ESA, national aerospace research establishments and agencies

Turnover in Maintenance

While a significant part of the business for most aerospace manufacturers' relates to maintenance activities, it is noted that non-manufacturing companies also provide such services. The large maintenance units operated by EU airlines are particularly important; they account for more than half of the EU turnover from aircraft maintenance (Figure 10). Total turnover resulting from sales of maintenance services in the EU reached nearly 16 billion Euro in 1999, which corresponds to about 24% of the total turnover.

Fig. 10 1999 EU Aerospace Industry Turnover* resulting from Sales of Aircraft Maintenance

Total: 15.9 billion Euro = 24.2% of total turnover*



Source: AECMA

(*) based on consolidated turnover of 65.6 billion Euro incl. maintenance

Domestic and Export Turnover

The relative contributions of the home market sales and exports on the civil and the military side of total turnover are shown in Figure 11.

This demonstrates the high level of engagement in civil markets, which account for about 70% of the turnover. Of this, 60% has been sales to customers outside the community, giving testimony to the global competitiveness of the EAI's products and services.

On the military side, due to reductions in sales to the rest of the world (outside Europe and the US), the domestic market has increased in importance for the EAI and now accounts for 70% of the turnover from military products and services.

Even allowing for the slight reduction in overall export volume due to the substantial shrink of military markets in the rest of the world (outside Europe and the US), exports still account for more than 50% of the European aerospace business. This illustrates the fact that the aerospace industry serves a truly global market.

Fig. 11 Breakdown of 1999 Aerospace Industry Turnover* by Export/Domestic and Civil/Military
Total: 65.6 billion Euro

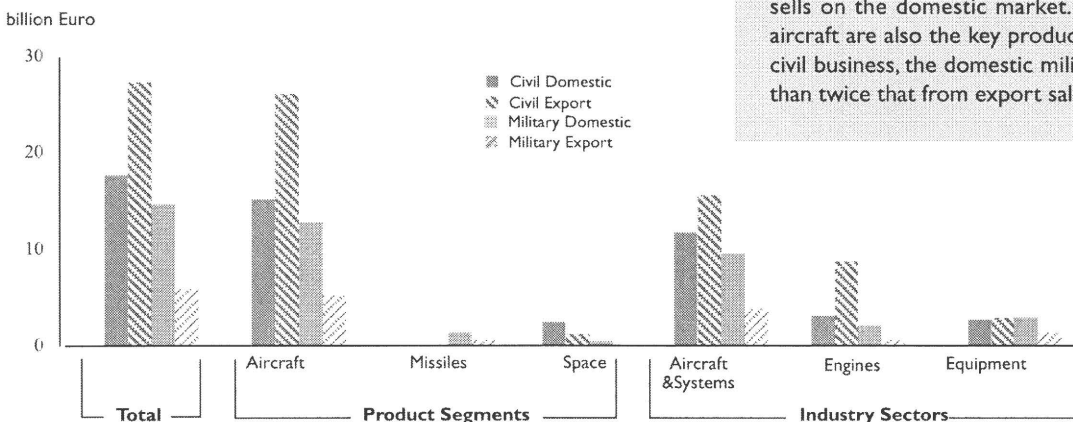


Source: AECMA, estimated
(* based on consolidated turnover.

In order to give a more detailed insight in the market structure of the EAI, a further breakdown by product segment and industry sector is given in Figure 12. It is noted that the distribution of the Aircraft business is well reflected in the overall distribution of civil to military business, whereas the exclusively military market of Missiles is balanced by Space being a predominantly civil market.

Civil aircraft continue to be the single largest contributors to the industry's exports, with almost 80% of the 1999 export sales from this segment. Thus, the EAI exports 70% more civil aircraft products and services than it sells on the domestic market. On the military side, aircraft are also the key product. In contrast with the civil business, the domestic military turnover is more than twice that from export sales.

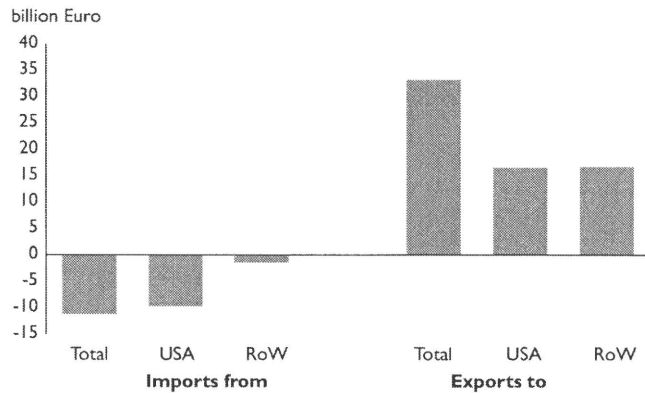
Fig. 12 Breakdown of 1999 EU Aerospace Industry Turnover* by Domestic / Export and by Civil / Military on Segment and Sector level
Total: 65.6 billion Euro



Source: AECMA (*) based on consolidated turnover

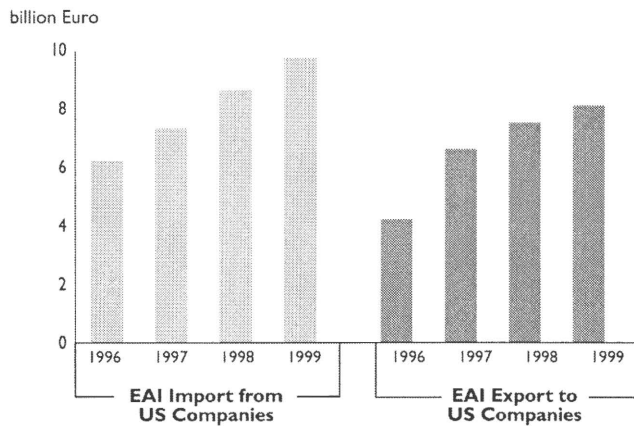
The European Aerospace Industry achieved a high surplus of exports over imports of 22 billion Euro in 1999 (Figure 13), slightly below the level of 1998. Imports by the EAI have been primarily from the USA, whereas exports have been almost equally divided between the USA and the Rest of the World (RoW), at around 16 billion Euro each.

Fig. 13 1999 Aerospace Industry Import and Export



Source: AECMA

Fig. 14 EU-US Aerospace Industry-to-Industry Turnover



Source: AECMA

The intra-aerospace industry business exhibits a strong link between the EU and the US industries, with a rapidly growing inter-dependence between these industries (Figure 14). Exports from Europe to the US industry have doubled since 1996 and are approaching parity with the level of imports into Europe from the US, which themselves have increased by more than 50% since 1996.

Order Intake and Business Outlook

The order intake for 1999 represents the turnover of almost 1.2 years of business, meaning that the industry's order book has continued to grow. The increase corresponds to that seen in 1997 (Figure 15). It should be noted that 1998 had been an exceptional year regarding order intake, with the civil aircraft market being particularly active, leading to an order volume for large civil aircraft of three times the 1998 turnover. On the military side, the 1998 order book had been expanded by the initial order for the Eurofighter and its Eurojet engine, which covered production investment and a first batch of aircraft, and which amounted in itself to more than 13 billion Euro.

Order Intake by Customer

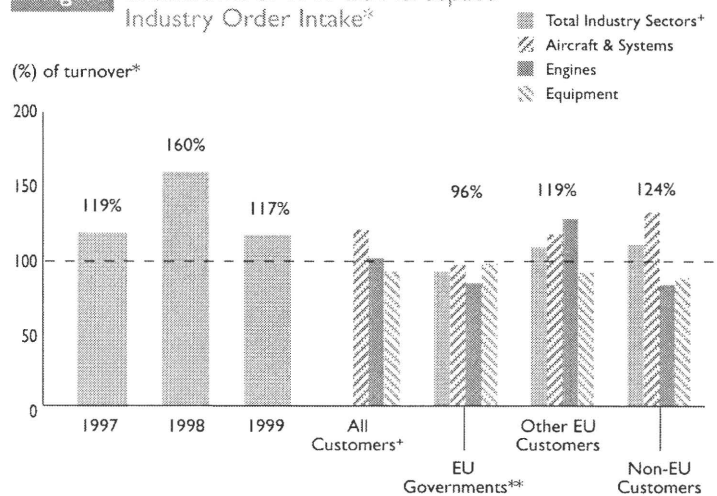
The division of 1999 order intake between customer groups shows non-EU customers, i.e. export markets, as the strongest segment with 124% of a year's turnover (Figure 15). The EU governments in their turn placed orders worth slightly less than the respective 1998 turnover. This is an indication that the strong reliance of the aerospace industry on exports and civil markets will not change in the foreseeable future.

The order intake is a good indicator of continued growth or at least a sustained level of business. On the civil side, Airbus deliveries are forecast to increase during 2000 and also in future years. This will support not only Airbus Industrie but also the whole supply chain. On the other hand, suppliers within the EAL will feel the reduction of Boeing delivery rates to some degree. On the military side, large programmes like the Eurofighter and Rafale combat aircraft, the EH101, NH90 and Tiger helicopters and eventually the A400M transport aircraft, should help to compensate the supply chain for any decline induced by the predicted reduction of Boeing delivery rates.

In addition, the growing fleet of civil aircraft will increase the demand for maintenance, overhaul and spares.

It is therefore expected that the cyclical downturn in the large civil aircraft market that has started in 2000 will have a less noticeable effect world-wide than in past cases and that, for the European Aerospace Industry in particular, it should not lead to a reduction in the overall business level.

Fig. 15 Breakdown of 1999 EU Aerospace Industry Order Intake*



Source: AECMA

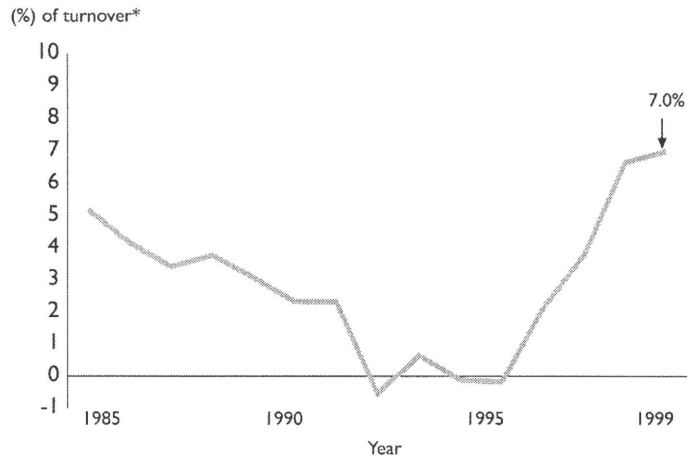
(*) based on unconsolidated order intake in percent of unconsolidated turnover (excl. EU-Consortia)
 (**) incl. ESA, national aerospace research establishments and agencies
 (†) weighted average

Operating Profit Margin

The EAI has now achieved a profitability of 7% as a result of rationalisation and business re-engineering (Figure 16), which is a significant improvement over that experienced until the middle of the last decade. The EAI result now corresponds to that achieved by the US aerospace industry.

It must be remembered in this context that, for the European industry, the general business environment and the requirements for profitability changed substantially in recent years. EU governments have gradually but considerably reduced their stake in EAI companies, which have become more publicly owned. A profit level comparable to those of equivalent industry sectors is indispensable for survival and to attract private capital in today's environment of privatisation and increasing public ownership.

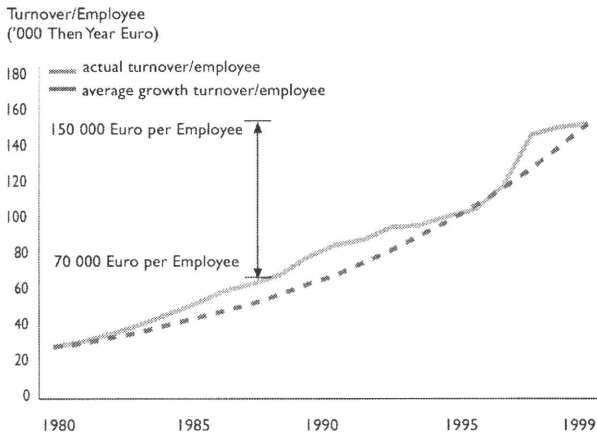
Fig. 16 EU Aerospace Industry Operating Profit Margin*



Source: AECMA

(* operating profit over turnover)

Fig. 17 EU Aerospace Industry Turnover* per Employee⁺
Average Growth 1980 - 1999: 9.3%*



Source: AECMA

(* based on consolidated turnover (Then Year Euros) and annual average no. of employees
(+) incl. Estimations for Sweden until 1992 and non-AECMA companies until 1995

Turnover per Employee

As a result of the improvement in productivity, the turnover per employee shows an overall long-term growth of about 9% per year (Figure 17). This equates to more than doubling the turnover per employee during the decade from 1987 to 1997/99. In real terms, i.e. excluding inflation, this is still equivalent to a growth in output of more than 50%.

This productivity increase of over 50% results from a number of factors. These include the larger share of materials and bought-out items as production throughput has grown, rationalisation of manufacturing through outsourcing of services, investment in automation with corresponding capital cost depreciation, and increased utilisation of information technology. The industry today is fundamentally different from that of the early Nineties, with a focus on global competition and profitability.

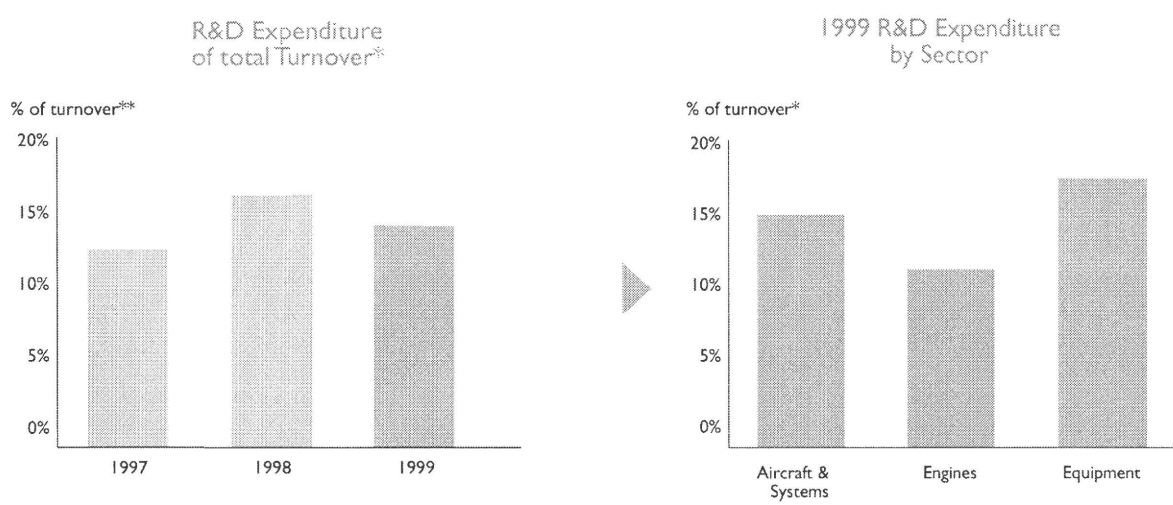
Research & Development (R&D)

Trend and Breakdown of R&D

The investment in Research and Development in the European Aerospace Industry in 1999 amounted to almost 9.5 billion Euro or 14.5% of turnover (Figure 18). The level of R&D is particularly noticeable in the Equipment sector, with investments of 17.5% of turnover.

The aerospace industry leads all industry sectors with its share of R&D expenditure in relation to turnover, and ranks well above the next highest industry sectors (pharmaceuticals and information technology).

Fig. 18 1999 R&D Expenditure* of EU Aerospace Industry
Total: 9.5 billion Euro = 14.5% of turnover*



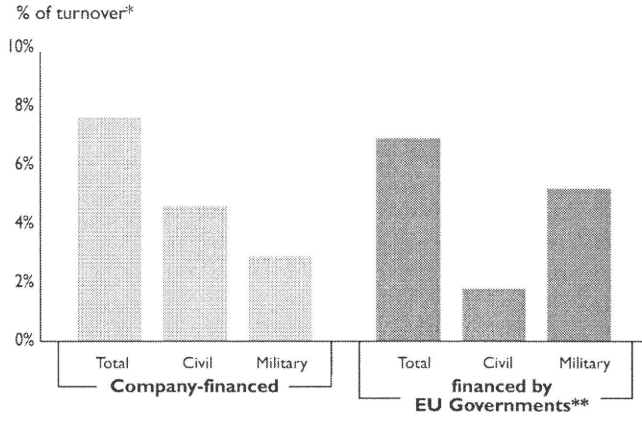
Source: AECMA
(* each consolidated
(**) weighted average

Financing of R&D

More than half of the total aerospace R&D expenditure in Europe is financed by the industry itself, with less than one half being funded by EU governments (Figure 19).

On the civil side, 75% of the funding is provided by industry, with only 25% being derived from governments. Even in the military field, which traditionally features development to order, close to 40% of expenditure is now financed by industry and only slightly more than 60% by governments.

Fig. 19 1999 R&D Expenditure* of EU Aerospace Industry
Total: 9.5 billion Euro = 14.5% of turnover*



Source: AECMA
(* each consolidated
(**) incl. ESA, national aerospace research establishments and agencies

Employment

Total direct employment in the EAI at the end of 1999 was 426 730 employees. Some 4 200 new jobs have been generated by the EAI during 1999, increasing the employment by 1%.

The additional employment provided within the supply chain (not represented here) is estimated at almost twice the above number of jobs. The overall employment generated by aerospace in the EU is therefore in the order of 1.2 million people.

In addition, there are some 40 000 employees working in EAI subsidiaries located in the US and other countries outside the EU. This additional employment is also not represented here.

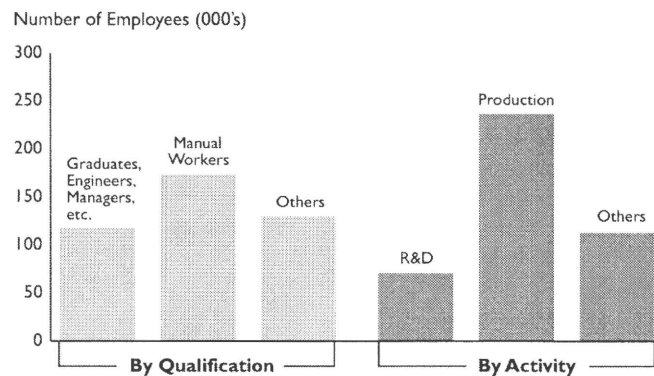
Employment by Qualification and Activity

The Aerospace Industry provides a large number of highly skilled jobs. 27% of the 426 730 employees mentioned have a university degree or equivalent (Figure 20). Another 32% which include technicians, draughtsmen, craftsmen, secretaries etc. have received an education at below-university level. Even in the case of manual workers, who account for 41% of all employees, most have been highly trained either within the EAI or externally to cope with the sophisticated nature of aerospace technology.

With a share of 60 percent of all employees, the majority of them is active in the production area (including maintenance). However, the fact that 17% work in the field of R&D again demonstrates the importance of R&D to the EAI.

Fig. 20 Breakdown of 1999 Direct EU Aerospace Industry by Qualification and Activity

Total: 426 730 employees



Source: AECMA

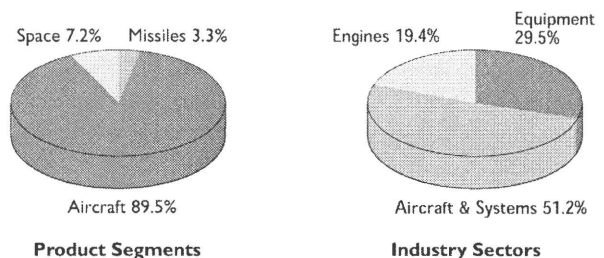
Employment by Product Segment and Industry Sector

On the products side, close to 90% of all direct aerospace employees in the EU are tasked with Aircraft related activities. The aircraft segment, as can be seen from Figure 21 is made up of subsegments that partly require certain special knowledge, such as for rotor systems on helicopters and high agility aerodynamics for fighter aircraft. The employment in Space (7%) and Missiles (3%) contributes further speciality aspects to the high technology spectrum of the aerospace industry.

Regarding sectors, about 50% of the EAI's workforce is employed by prime contractors or overall system level companies. The remainder is shared between the Engine sector (about 20%) and the Equipment sector (30%).

Fig. 21 Breakdown of 1999 Direct EU Aerospace Industry Employment by Product Segment and Industry Sector

Total: 426 730 employees



Source: AECMA

Employment in the EU Member States

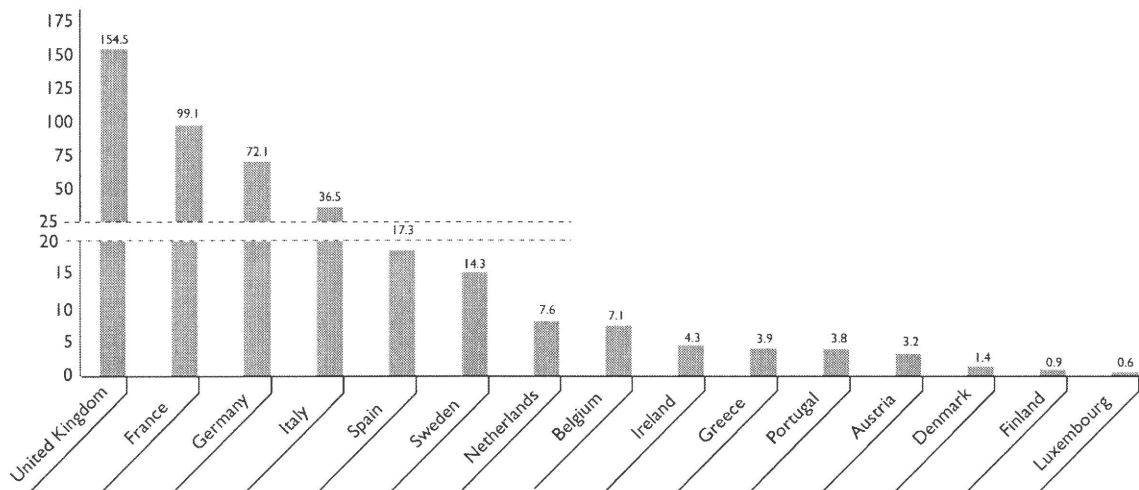
The industry features activities in all 15 Member States of the European Union, with no exceptions (Figure 22). The leading countries are now supported by small other countries which have structured aerospace industries involved in most product segments. With the increase of EU research and technology projects, the aerospace industries of these countries are becoming more active also at a European level.

The size of the aerospace industries in the individual countries correlates with the size of their overall economies and population. The largest aerospace industries are found in the states having the larger population and the highest GDP within the EU. Since France, Germany, Italy and the United Kingdom comprise more than three quarters of the EU population and GDP, their aerospace industries account for more than three quarters of the EU aerospace industry's turnover and employment.

Fig. 22 Contribution to 1999 Direct EU Aerospace Industry Employment

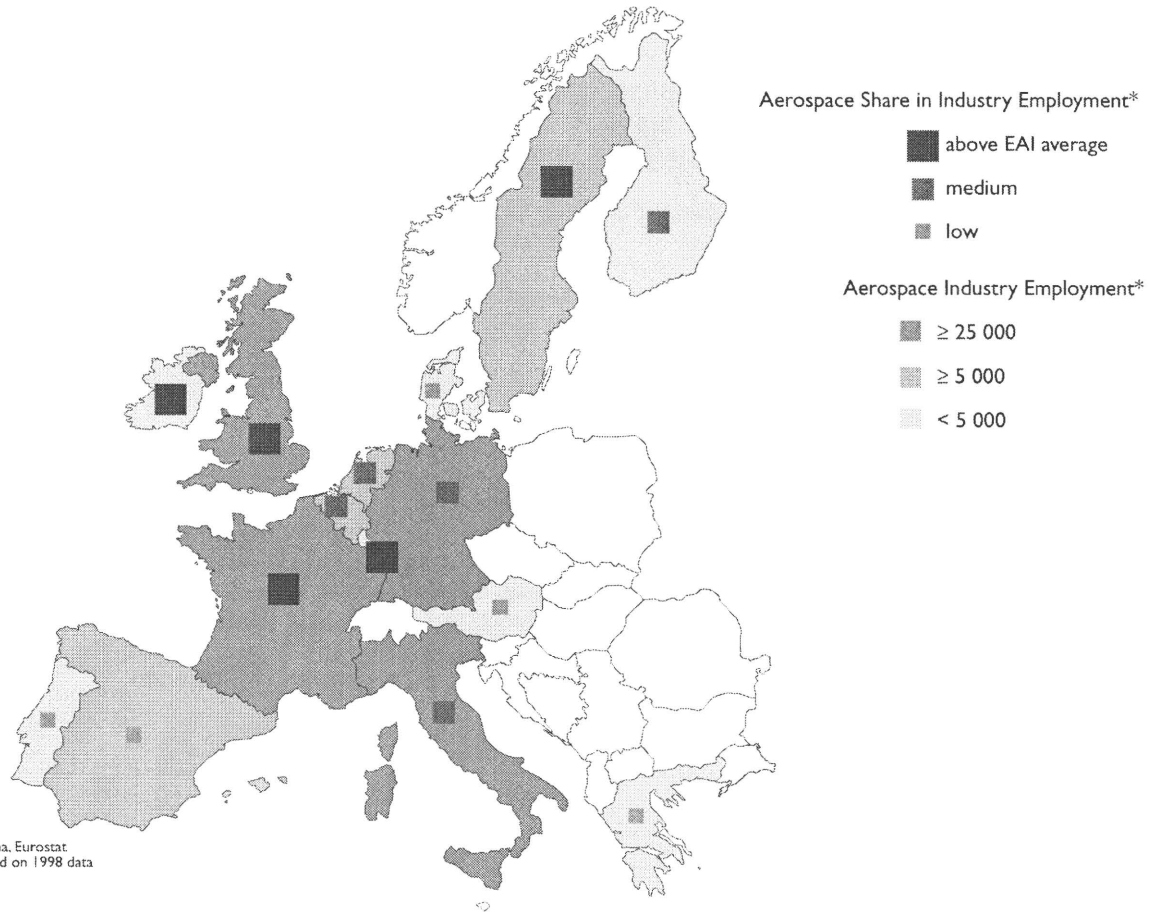
Total: 426 730 employees

Number of Employees ('000)



Source: AECMA

Fig. 23 Aerospace Industry Contribution to EU Industry Employment



Source: Aecma, Eurostat
*based on 1998 data

Aerospace Industry Contribution to EU Industry Employment

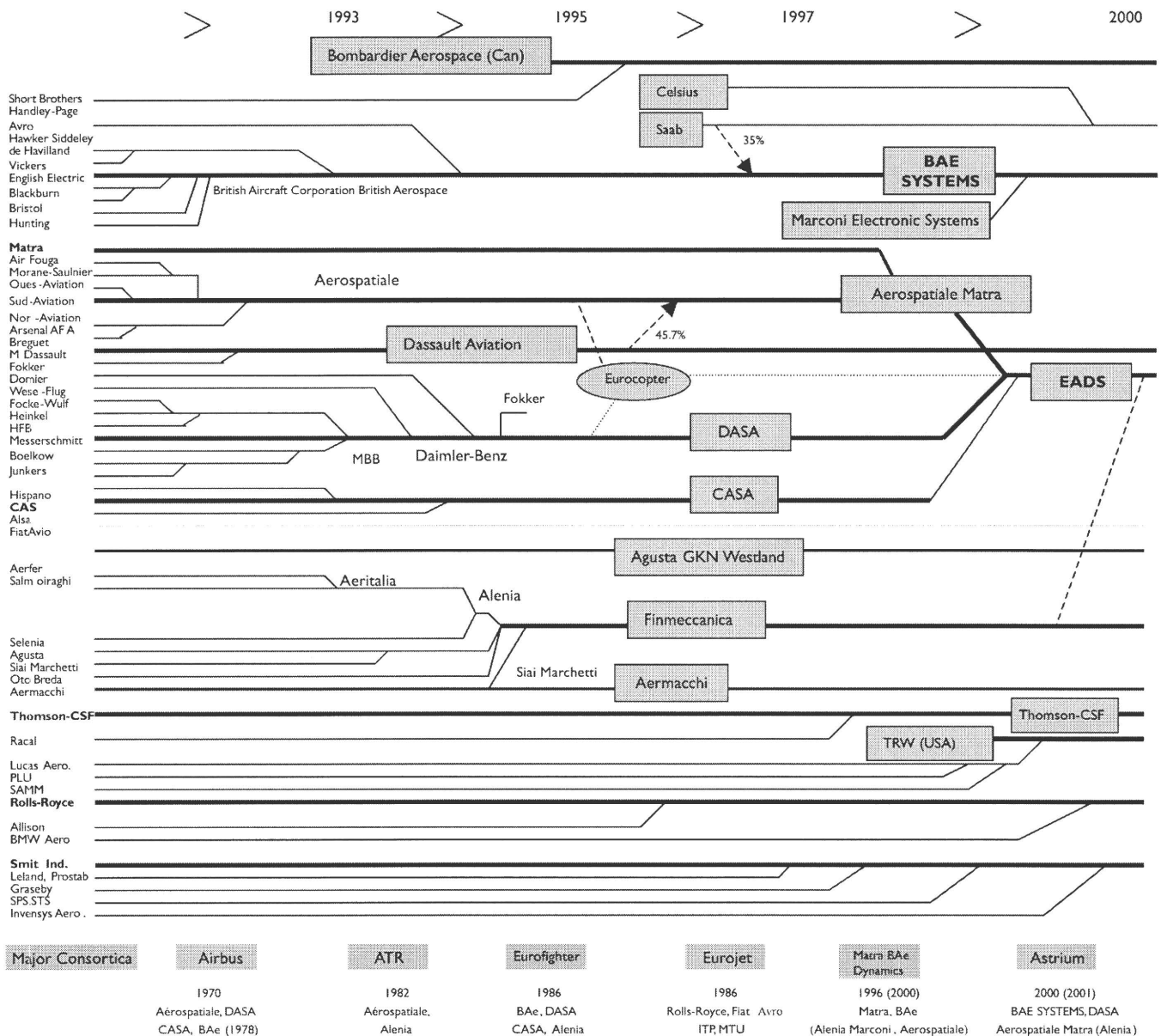
In terms of direct employment, the EAI provides for about 1% of the jobs in all industries within the EU (based on 1998 figures). Including employment generated in the supply chain outside the EAI, the Figure would amount to about 3%. The aerospace sector ranks on the 14th position out of 89 industry sectors, following an analysis published in the "Panorama of the European Industry 1997" by the European Commission DGIII.

The relative importance of the aerospace industry compared to the overall EU industry varies within the EU. This variation is not correlated to the absolute size of the population, the GDP and the aerospace industry of a country, with for instance the smallest country of the EU, Luxembourg, ranking in the group with a share above average. The group of countries with an aerospace employment share in overall industry above the EU average comprises France and the United Kingdom but also Ireland, Luxembourg and Sweden (Figure 23). The group with a medium share (above 50% of the average share) consists of Germany and Italy together with Belgium, Finland and The Netherlands. Austria, Denmark, Greece, Portugal and Spain feature in aerospace industry with a share in employment below 50% of the EU average.

Structure of the European Aerospace Industry

The structure of the European aerospace industry has undergone profound changes in 1999 (Figure 24). A process of mergers and rationalisation has taken place in the face of US competition. This has led in particular to the formation of global players such as BAE SYSTEMS and EADS, which each generate a turnover in the region of \$20 billion. The European companies are therefore approaching a status equivalent to the US groupings (although Boeing still predominates), giving European industry the ability to face the challenges present in all parts of the global aerospace market.

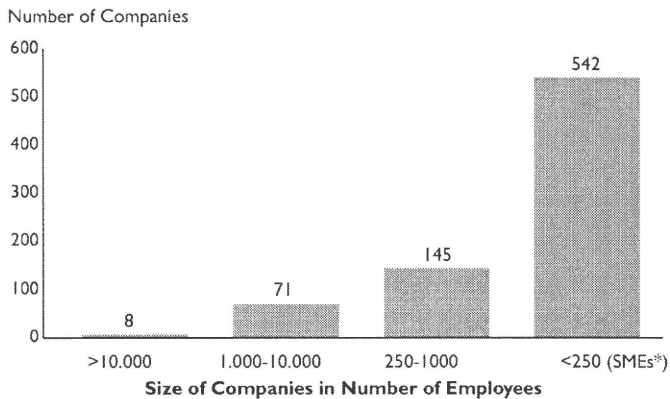
Fig. 24 European Aerospace Industry Consolidation



Source: SBAC, company information

Structure of the European Aerospace Industry

Fig. 25 Structure of the EU Aerospace Industry in 1999 by Company Size
Total: 766 companies



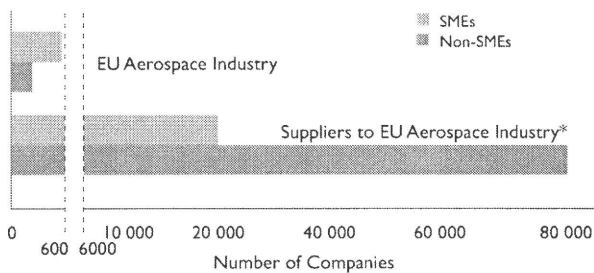
Source: AECMA

(*) Small and Medium-sized Enterprises

The EAI is characterized by a small number of very large firms, a larger number of medium sized companies, and a very large number of small enterprises (Figure 25).

The figures submitted here describe the industry structure at the end of 1999 and do not reflect the restructuring which continued in 2000. In any event, these changes affect only the two categories of companies with more than 1000 employees, the number of which slightly decreased in 1999. The number of smaller companies (those with less than 1000 employees) has continued to grow in 1999 and now amounts to close to 700, which is almost 10 times the number of the larger companies. About 540 companies, or 70% of all those belonging to the EAI in 1999, comply with the employment criteria contained in European Commission definition of SMEs.

Fig. 26 The EU Aerospace Industry's SMEs and Suppliers



Source: AECMA

(*) Number of supplier companies estimated

In addition, there are an estimated 80 000 European suppliers of goods and services to the EAI, of which about 20 000 are estimated to be SMEs (Figure 26). Thus, aerospace provides impetus not only among the classical aerospace manufacturers represented by the EAI, but also through the supply chain, to a large number of SMEs within the EU.

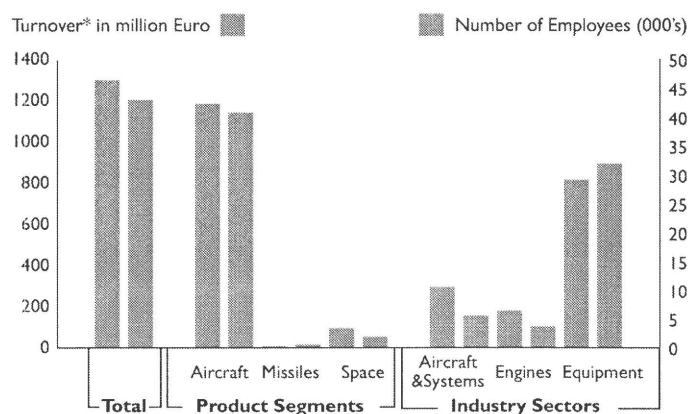
Small and Medium-sized Enterprises

Medium-sized Enterprises

While the contribution of smaller companies to the industry's turnover and employment is naturally relatively small, they are nevertheless considered vital for the development of the aerospace industry.

Fig. 27 1999 Turnover* and Employment of EU Aerospace Industry SMEs**

Total Turnover*: 1305 million Euro Total Employment: 41188

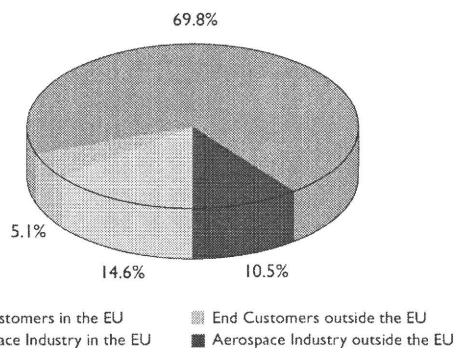


Source: AECMA
 (*) based on consolidated turnover
 (**) excl. suppliers to EU Aerospace Industry as mentioned in Figure 26

The SMEs' turnover and employment for the various product segments and industry sectors is shown in Figure 27. In line with the overall industry, SMEs are predominantly supplying to the Aircraft product segment (91% of SMEs' turnover). However, in deviation from the repartition of the overall industry, the majority of 79% of all SMEs is found in the Equipment sector.

Fig. 28 1999 Turnover of EU Aerospace Industry SMEs* by Customer

Total turnover: 4 320 million Euro



Source: AECMA
 (*) excl. suppliers to EU Aerospace Industry as mentioned in Figure 26

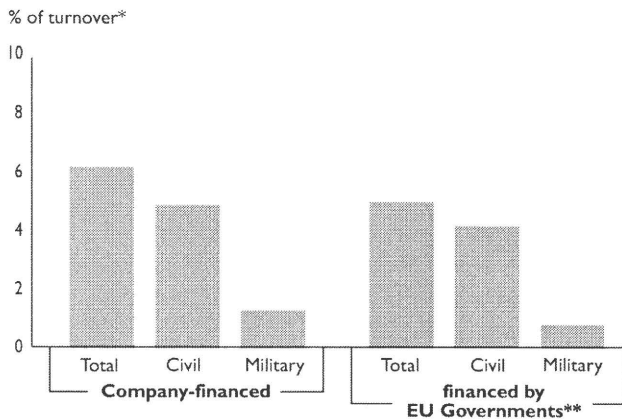
As might be expected, the main customer group for SMEs is represented by the EAI itself. The EAI accounts for 70% of the SMEs' turnover. 10% of output is shipped to the non-EU aerospace industry. 20% of the turnover directly goes to end-users all over the world (Figure 28).

Small and Medium-sized Enterprises

A high level of R&D expenditure is not only a characteristic of larger aerospace companies but also of the EU Aerospace Industry SMEs (Figure 29). These companies contributed about 150 million Euro to aerospace R&D in 1999. As a percentage of turnover, R&D expenditure for these companies was slightly lower (at 11,3%) than for non-SMEs (at 14,5%). Unlike non-SMEs however, the SMEs' R&D focus is on the civil side, regardless of the source of financing. This demonstrates that the SMEs are well prepared for a growing demand for civil applications. In general SMEs indicate that in view of their financial framework they must aim for near term market application of their technology development.

Fig. 29 1999 R&D Expenditure* of EU Aerospace Industry SMEs

Total turnover: 147 million Euro = 11,3% of turnover*



Source: AECMA

(*) consolidated

(**) incl. ESA, national aerospace research establishments and agencies

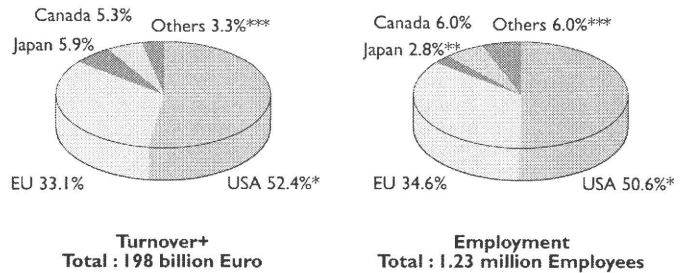
Global Comparison

The aerospace producing nations of the world (except the CIS and the PR China) achieved a combined sales volume of 200 billion Euro in 1999. This Figure represents consolidated sales for the respective entities shown, i.e. supplies within the industry of an entity have been eliminated. It does however include sales among the industries of the entities.

The EAI contributed 33% (or 66 billion Euro) to this amount (Figure 30).

The US aerospace industry, with 50% of the worldwide direct aerospace industry employment, remains the dominant player in the global market place.

Fig. 30 1998 Comparative Aerospace Industry Turnover+ and Employment



Source: AECMA, AIA, AIAC, SJAC, Company Reports

(+) based on consolidated turnover

(*) excluding turnover/employment not directly associated to Aerospace

(**) excluding company staff not directly related to development/manufacturing of aerospace products

(***) excluding PR China and CIS

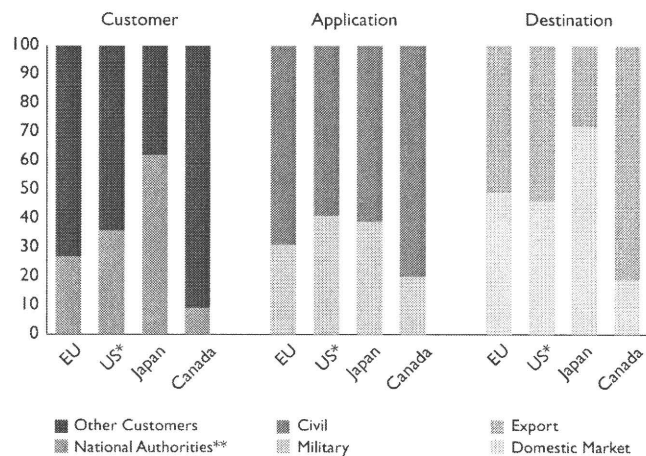
In respect of the customer base for the four larger aerospace manufacturing entities, firstly Canada and then the EU are least dependent on orders from their national authorities, while in Japan the national agencies are the main customers (Figure 31).

As for application, Canada's aerospace industry is estimated to be 80% engaged in civil products and services, again followed by the EU with 70%. The US and Japan make about 60% of their turnover with civil products and services.

Concerning the destination of the aerospace industries' products and services, Canada is leading in export intensity with a rate of 81%. The EU and the US export slightly above one half of their sales. Japan is mainly producing for the home market.

Fig. 31 1999 Comparative Aerospace Industry Turnover Breakdown+

% of total turnover



Source: AECMA, AIA, AIAC, Strategis, SJAC

(+) based on consolidated turnover

(*) excluding sales not directly associated to Aerospace

(**) including defence and space agencies

Breakdown of Consolidated Turnover

Total unconsolidated turnover is the sum of all turnover data provided by the companies. Consolidated turnover at EU level is calculated as the total unconsolidated turnover minus the turnover resulting from sales between EAI companies. This consolidated turnover therefore represents all sales to end-user customers as well as to aerospace companies outside the EU.

However, the appropriate weight of the industry sectors in the development and manufacturing process cannot be expressed by their share of consolidated turnover, since the Engine and Equipment sectors also supply a substantial part of their output to the EAI's Aircraft & Systems companies.

To calculate the individual contributions of the industry sectors to the total consolidated turnover, the major corrections to the sector's turnover data are:

- exclude turnover of Engines and Equipment supplied by the EAI to Aircraft & Systems manufacturers from the consolidated Aircraft & Systems' turnover,
- add turnover of Engines supplied by the EAI to the European Aircraft & Systems manufacturers to the consolidated Engines sales, and subtract the Equipment supplied by the EAI to the European Engine manufacturers from the consolidated Engines sales, and
- include turnover of Equipment supplied by the EAI to the European Aircraft & Systems and Engines manufacturers in the consolidated Equipment turnover.

Breakdown of EU Aerospace Industry Turnover

		Industry Sectors			
		Aircraft & Systems	Engines	Equipment	Total
Product Segments	Aircraft	a	b	c	Aircraft = a + b + c
	Missiles	d	e	f	Missiles = d + e + f
	Space	g	h	i	Space = g + h + i
	Total	Aircraft & Systems = a + d + g	Engines = b + e + h	Equipment = c + f + i	Total* = $\sum (a...i)$

* for financial data, this means unconsolidated

Definition of R&D

Various definitions of R&D exist and it is difficult to achieve reasonably harmonised data throughout the EAI. For the purpose of this survey, R&D was defined to comprise:

- Research and Technology activities which represent all those R&D activities which are not directly attributable to products. They can, thus, be regarded as generic technologies and are designed to maintain or expand the technological basis.
- Development activities leading to series production.

List of Abbreviations

AECMA	European Association of Aerospace Industries
AIA	Aerospace Industries Association (of the USA)
AIAC	Aerospace Industries Association of Canada
DAC	Data Analysis Committee
EAI	European Aerospace Industry
ESA	European Space Agency
EU	European Union
Euro	European Currency Unit
GDP	Gross Domestic Product
R&D	Research & Development
SJAC	Society of Japanese Aerospace Companies
SMEs	Small and Medium-Sized Enterprises
US	United States of America

Fig. 1: EU Aerospace Industry Turnover and Employment***

Year	Turnover: Constant 1999 Mio Euro	Employees+ (Year End)
1980	36 511	547 193
1981	38 975	579 425
1982	40 444	560 168
1983	41 273	559 495
1984	43 885	540 215
1985	46 885	558 435
1986	52 135	565 577
1987	54 166	569 445
1988	55 779	564 947
1989	60 478	563 059
1990	61 947	561 062
1991	59 069	524 698
1992	56 618	480 305
1993	50 439	437 258
1994	47 488	407 520
1995	45 394	386 656
1996	51 457	382 012
1997	60 442	395 487
1998	63 708	422 484
1999	65 572	426 730

Source: AECMA
 (*) consolidated turnover
 (-) incl. estimations for Sweden until 1992 and non-AECMA companies until 1995.

Fig. 2: EU Aerospace Industry Turnover* by EU Governments / Other Customers

Year	EU Governments** in (%) of turnover*	Other Customers in (%) of turnover*
1980	53.07	47.57
1981	47.45	53.06
1982	46.92	53.55
1983	47.81	52.64
1984	48.05	52.29
1985	46.97	53.30
1986	46.83	53.27
1987	47.85	52.12
1988	45.29	54.71
1989	41.70	58.20
1990	39.28	60.58
1991	40.67	59.19
1992	37.69	61.93
1993	38.28	61.63
1994	38.48	61.45
1995	36.59	63.27
1996	28.43	71.45
1997	23.81	76.11
1998	25.60	74.36
1999	26.51	73.49

Source: AECMA
 (*) based on consolidated turnover in constant 1999 prices; incl. estimations for Sweden until 1992 and non-AECMA companies until 1995.
 (**) incl. ESA, national research establishments and agencies

Fig. 3: EU Aerospace Industry Turnover* by Civil / Military

Year	Civil in (%) of turnover*	Military in (%) of turnover*
1980	32.6	67.4
1981	34.3	65.7
1982	33.3	67.0
1983	35.8	64.2
1984	35.7	64.3
1985	36.5	63.5
1986	40.9	59.1
1987	39.9	60.1
1988	43.2	56.8
1989	49.4	50.6
1990	51.1	48.9
1991	53.3	46.7
1992	57.7	42.3
1993	57.2	42.8
1994	55.7	44.3
1995	54.6	45.4
1996	58.0	42.0
1997	61.0	39.0
1998	62.0	37.1
1999	68.6	31.4

Source: AECMA
 (*) based on consolidated turnover in constant 1999 prices; incl. estimations for Sweden until 1992 and non-AECMA companies until 1995.

Fig. 4: Turnover* Growth from 1998 to 1999

Constant 1999 Mio Euro	Total Sales	EU Governments	Other Customers	Military Exports	Military Domestic	Civil Exports	Civil Domestic	Total Domestic	Total Export	Total Military	Total Civil
1998 (revised)	63 708	16 307 25.6%	47 401 74.4%	10 327 16.2%	13 321 20.9%	24 178 38.0%	15 883 24.9%	29 204 45.8%	34 505 54.2%	23 648 37.1%	40 061 62.9%
1999	65 572	17 384 26.5%	48 188 73.5%	5 901 9.0%	14 707 22.4%	27 268 41.6%	17 696 27.0%	32 403 49.4%	33 169 50.6%	20 607 31.4%	44 964 68.6%
Change 1998 to 1999 (%)	+2.9%	+6.6%	+1.7%	-42.9%	+10.4%	+12.8%	+11.4%	+11.0%	-3.9%	-12.9%	+12.2%
Contribution to total growth of +2.9%		+1.7%	+1.2%	-6.9%	+2.2%	+4.9%	+2.8%	+5.0%	-2.1%	-4.8%	+7.7%

Source: AECMA
 (*) consolidated turnover

Fig. 5: Industry Sector Contribution to 1999 EU Aerospace Industry Turnover*
 Total: 65 572 million Euro

	Turnover in million Euro	%
Aircraft & Systems	33 430	51.0%
Engines	14 098	21.5%
Equipment	18 044	27.5%
Total	65 572	100.0%

Source: AECMA, estimated
 The figures reallocate internal turnover within the industry; i.e. Aircraft & Systems figures exclude EU-supplied Engines and Equipment; Engines figures exclude EU-supplied Equipment but include Engines supplied to European Aircraft & Systems manufacturers; Equipment figures include Equipment supplied to European Aircraft & Systems and Engines manufacturers.
 (*) consolidated turnover

Fig. 6: Breakdown of 1999 EU Aerospace Industry Turnover* by Product Segment
 Total: 65 572 million Euro

	Turnover in million Euro
Aircraft*	59 341
Aircraft Final Products*	26 871
Large Civil Aircraft [□]	14 920
Regional Aircraft	1 283
Business Jets	1 565
Helicopter	2 948
Military Aircraft	6 154
Aerostructures	2 585
Aircraft Engines [□]	9 124
Aircraft Equipment [□]	4 883
Aircraft Maintenance [□]	15 878
Missiles*	1 990
Space*	4 241
Total	65 572

Source: AECMA, Aircraft breakdown estimated
 (*) based on consolidated turnover
 (+) data comprises EU and non-EU supplied Engines and Equipment
 (□) excluding Maintenance

Fig. 8: Breakdown of 1999 EU Aerospace Industry Turnover by Customer
 Total: 98 381 million Euro unconsolidated
 22 809 million Euro Inter EU Aerospace Industry Sales
 65 572 million Euro consolidated, i.e. excl. Inter EU Aerospace Industry Sales

		End-Users	Non-EU Aerospace Industry	Intra EU Aerospace Industry	Total
		million Euro	million Euro	million Euro	million Euro
Product Segments	Aircraft	49 381	9 960	28 725	88 066
	Missiles	1 928	62	794	2 784
	Space	3 484	757	3 290	7 531
	Total unconsolidated	54 793	10 779	32 809	98 381
	Total consolidated		65 572	-	65 572
Industry Sectors	Aircraft & Systems	37 591	3 320	19 817	60 729
	Engines	9 944	4 731	2 844	17 518
	Equipment	7 258	2 728	10 149	20 135
	Total unconsolidated	54 793	10 779	32 809	98 381
	Total consolidated		65 572	-	65 572

Source: AECMA

Fig. 9: Breakdown of 1999 EU Aerospace Industry Turnover* by EU Governments / Other Customers**
 Total: 65 572 million Euro

		EU Governments civil	EU Governments military	Other Customers civil	Other Customers military	Total million Euro
Product Segments	Aircraft	579	12 833	40 657	5 272	59 341
	Missiles	0	1 371	0	619	1 990
	Space	2 098	503	1 630	10	4 241
	Total	2 677	14 707	42 287	5 901	65 572
Industry Sectors	Aircraft & Systems	1 927	9 570	25 559	3 856	40 912
	Engines	439	2 167	11 422	646	14 674
	Equipment	311	2 970	5 306	1 399	9 986
	Total	2 677	14 707	42 287	5 901	65 572

Source: AECMA (*) based on consolidated turnover (**) incl. ESA, national aerospace research establishments and agencies

Fig. 10: 1999 EU Aerospace Industry Turnover* resulting from Sales of Aircraft Maintenance
 Total: 15 878 million Euro = 24.2% of total turnover*

	at Aerospace Manufacturers		at Airline Maintenance Units		Total	
	million Euro	%	million Euro	%	million Euro	%
Aircraft & Systems	2 772	4.2	3 322	5.1	6 094	9.3
Engines	2 288	3.5	2 921	4.5	5 209	7.9
Equipment	2 525	3.9	2 050	3.1	4 575	7.0
Total Maintenance Turnover	7 585	11.6	8 293	12.6	15 878	24.2

Source: AECMA (*) based on consolidated turnover of 65 572 million Euro incl. maintenance

Fig. 11-12: Breakdown of 1999 EU Aerospace Industry Turnover* by Civil / Military and by Domestic / Export
 Total: 65 572 million Euro

		Civil EU Domestic Mio Euro	Civil Export Mio Euro	Military EU Domestic Mio Euro	Military export Mio Euro	Total Mio Euro
Product Segments	Aircraft	15 187	26 049	12 833	5 272	59 341
	Missiles	0	0	1 371	619	1 990
	Space	2 509	1 219	503	10	4 241
	Total	17 696	27 268	14 707	5 901	65 572
Industry Sectors	Aircraft & Systems	11 844	15 642	9 570	3 856	40 912
	Engines	3 129	8 732	2 167	646	14 674
	Equipment	2 723	2 894	2 970	1 399	9 986
	Total	17 696	27 268	14 707	5 901	65 572

Source: AECMA (*) based on consolidated turnover

Fig. 13: 1999 Aerospace Industry Import and Export

		million Euro
Imports from	USA	9 719
	Rest of World	1 557
	Total Import	11 276
Exports to	USA	16 479
	Rest of World	16 689
	Total Export	33 169

Source: AECMA

Fig. 14: Trend of Aerospace Industry-to-Industry Turnover

	EAI Export (Euro bn 1999)		EAI Import (Euro bn 1999)	
	to US companies	to companies in RoW	from US companies	from companies in RoW
1996	4.21	1.77	6.20	0.58
1997	6.63	1.90	7.29	0.74
1998	7.49	1.79	8.63	1.08
1999	8.14	2.64	9.72	1.56

Source: AECMA

Fig. 15: Breakdown of 1999 EU Aerospace Industry Order Intake⁺ by Customer

	EU Governments** (%)	Other EU Customers (%)	Non-EU Customers (%)	Total ⁺ (%)
Aircraft & Systems	98.8	126.1	150.4	128.9
Engines	79.4	144.3	84.2	103.0
Equipment	99.8	92.5	88.3	92.8
Total ⁺	96.1	119.4	123.7	116.9

Source: AECMA
 (*) based on unconsolidated order intake in percentage of unconsolidated turnover (excl. EU-Consortia)
 (**) incl. ESA: national aerospace research establishments and agencies
 (+) weighted average

Fig. 16: EU Aerospace Industry Operating Profit Margin*

Year	EU Aerospace Industry Operating Profit in (%) of turnover
1985	5.2
1986	4.2
1987	3.4
1988	3.8
1989	3.1
1990	2.3
1991	2.3
1992	-0.6
1993	0.6
1994	-0.1
1995	-0.2
1996	2.1
1997	3.8
1998	6.7
1999	7.0

Source: AECMA
 (*) operating profit over turnover

Fig. 17: EU Aerospace Industry Turnover*⁺ per Employee

Year	Turnover/Employee* ⁺ ('000 Then Year Euro) Actuals	Turnover/Employee* ⁺ ('000 Then Year Euro) Average Growth
1980	29	29
1981	32	31
1982	36	34
1983	41	37
1984	47	41
1985	53	45
1986	60	49
1987	64	53
1988	69	58
1989	79	64
1990	86	69
1991	89	76
1992	96	83
1993	97	91
1994	102	99
1995	106	108
1996	119	118
1997	148	129
1998	152	141
1999	154	154

Source: AECMA
 (*) consolidated turnover
 (+) incl. estimations for Sweden until 1992 and non-AECMA companies until 1995

Fig. 18: 1999 R&D Expenditure* of the EU Aerospace Industry
 Total: 9 487 million Euro = 14.5% of turnover*

	R&D Expenditure in (%) of turnover*
Aircraft & Systems	14.9
Engines	11.1
Equipment	17.5
Total**	14.5

Source: AECMA
 (*) consolidated
 (**) weighted average

Fig. 19: 1999 R&D Expenditure* of the EU Aerospace Industry
 Total: 9 487 million Euro = 14.5% of turnover*

R&D Expenditure in	(%) of turnover*	million Euro
Company-financed	Civil	4.6 3 047
	Military	2.9 1 911
	Total	7.6 4 958
financed by EU Governments**	Civil	1.8 1 149
	Military	5.2 3 380
	Total	6.9 4 529
Grand Total	14.5	9 487

Source: AECMA
 (*) based on consolidated turnover
 (**) incl. ESA: national aerospace research establishments and agencies

Fig. 20: Breakdown of 1999 Direct EU Aerospace Industry Employment by Qualification and Activity
 Total: 426 730 employees

Number of Employees		
By Qualification	Graduates, Engineers, Managers, etc.	114 363
	Manual Workers	176 045
	Other	136 322
	Total	426 730
By Activity	R&D	73 923
	Production	255 693
	Other	97 114
	Total	426 730

Source: AECMA

Fig. 21: Breakdown of 1999 Direct EU Aerospace Industry Employment by Segments and Sectors
 Total: 426 730 employees

	Product Segments Nr. of Employees	Industry Sectors Nr. of Employees
Aircraft	381 905	
Missiles	14 093	
Space	30 732	
Aircraft & Systems		218 269
Engines		82 587
Equipment		125 847
Total	426 730	426 730

Source: AECMA

Fig. 22: Contribution to 1999 Direct EU Aerospace Industry Employment
Total: 426 730 employees

Country	Number of Employees
United Kingdom	154 453
France	99 122
Germany	72 072
Italy	36 519
Spain	17 315
Sweden	14 301
Netherlands	7 640
Belgium	7 082
Ireland	4 320
Greece	3 938
Portugal	3 828
Austria	3 193
Denmark	1 419
Finland	942
Luxembourg	586
Total	426 730

Source: AECMA

Fig. 23: Aerospace Industry Contribution to EU Industry Employment

Country	No. of Employees in the EAI* / No. of Employees in the EU Industry*
Austria	0.3%
Belgium	0.7%
Denmark	0.3%
Finland	0.5%
France	1.6%
Germany	0.6%
United Kingdom	2.2%
Greece	0.3%
Ireland	1.1%
Italy	0.6%
Luxembourg	1.6%
Netherlands	0.5%
Portugal	0.2%
Spain	0.4%
Sweden	1.3%
EU	0.9%

Source: AECMA, Eurostat
(*): each based on 1998 data

Fig. 25: Structure of the EU Aerospace Industry in 1999

Size of Companies in Number of Employees	Number of Companies
>10 000	8
1 000 - 10 000	71
250 - 1 000	145
<250 (SMEs*)	542
Total	766

Source: AECMA (*) Small and Medium-sized Companies

Fig. 26: The EU Aerospace Industry's SMEs and Suppliers

	Number of Companies	
	SMEs	Non-SMEs
EU Aerospace Industry	542	224
Suppliers to EU Aerospace Industry*	20 000	80 000

Source: AECMA
(*): estimate

Fig. 27: 1999 Turnover* and Employment of EU Aerospace Industry SMEs**
Total Turnover*: 1 305 million Euro
Total Employment: 41 188 Employees

Product Segments	Turnover* in million Euro		Number of Employees
	Aircraft	Missiles	
	1 192	12	38 898
		100	467
		100	1 823
Total	1 305		41 188

Industry Sectors	Turnover* in million Euro		Number of Employees
	Systems & Frames	Engines	
	299	185	5 476
		821	3 622
Total	1 305		41 188

Source: AECMA
(*): based on consolidated turnover, i.e. excl. suppliers to EU Aerospace Industry
(**): excl. suppliers to EU Aerospace Industry

Fig. 28: 1999 Turnover of EU Aerospace Industry SMEs by Customer**
Total Turnover: 4 320 million Euro

End Customers	Turnover billion Euro	
	in the EU	outside the EU
	629	220
Aerospace Industry	3 016	455
Total	4 320	

Source: AECMA
(**) excluding suppliers to EU Aerospace Industry from other industries

Fig. 29: 1999 R&D Expenditure of EU Aerospace Industry SMEs**
Total: 147 million Euro = 11.3% of turnover*

R&D Expenditure in	(%) of turnover*	million Euro
Company-financed	Civil	4.9%
	Military	1.3%
	Total	6.2%
financed by EU Governments**	Civil	4.2%
	Military	0.8%
	Total	5.0%
Grand Total	11.3%	147

Source: AECMA
(*): based on consolidated turnover
(**) incl. ESA, national aerospace research establishments and agencies

Fig. 30: 1999 Comparative Aerospace Industry Turnover and Employment

	Turnover+ Million Euro	Employment
USA*	103 858	623 492
EU	65 572	426 730
Japan	11 737	34 141**
Canada	10 419	73 462
Others***	6 500	74 000
Total	198 086	1 231 825

Source: AECMA, AIA, AIAC, SJAC, Company Reports
(+) based on consolidated turnover
(*) excluding turnover/employment not directly associated to Aerospace
(**) excluding company staff not directly related to development/manufacturing of aerospace products
(***) excluding PR China and CIS

Fig. 31: 1999 Comparative Aerospace Industry Turnover Breakdown†

		EU	US*	Japan	Canada
Customer	National Authorities**	27%	36%	62%	9%
	Other Customers	73%	64%	38%	91%
Application	Military	31%	41%	39%	20%
	Civil	69%	59%	61%	80%
Destination	Domestic market	49%	46%	72%	19%
	Export	51%	54%	28%	81%

Source: AECMA, AIA, AIAC, Strategis, SJAC
(†) based on consolidated turnover
(*) excluding sales not directly associated to aerospace
(**) including sales to defence and space agencies
(e) estimated

Detail items may not add up to totals due to independent rounding.

Currency Conversion Table based on 1999 average Exchange Rates

The following 1999 exchange rates have been used:

	Euro	BEF	DKK	DEM	GRD	ESP	FRF	IEP	ITL	LUF	MLG	ATS	PTE	FIM	SEK	GBP	CZK	USD	CAD	YEN
	=	1	40,34	7,436	1,936	3,258	1,664	0,7876	1,936	40,34	2,204	13,76	2,005	5,946	8,808	0,6587	36,89	1,066	1,584	1,213
1 BEF	=	0,0248	1	0,184333168	0,048487853	0,06076351	0,04124938	0,162617749	0,019524046	0,047982067	0,341100645	0,049702529	0,147397124	0,216344075	0,016828706	0,914476946	0,026425384	0,039266237	0,03006941	
1 DKK	=	0,1345	5,424958656	1	0,263044643	0,438138784	0,882194728	0,10591716	0,28035503	5,424958656	0,296395912	1,850457235	0,289834212	1,1845078	0,089562571	4,961060538	0,143338643	0,213017751	0,163125336	
1 DEM	=	0,5112	20,62372188	3,801635992	1	1,865644172	3,353783231	0,402658487	0,980775051	20,62372188	1,126789386	7,034764826	1,023051125	4,503067485	0,336756691	18,8589182	0,544089775	0,899815961	0,620143149	
100 GHD	=	0,3069	12,38182934	2,282381829	0,600388324	1	0,013505218	0,241743401	0,594229389	12,38182934	0,676498643	4,223449669	0,615406226	1,850460441	2,702490079	11,32289748	0,327194588	0,480187845	0,372314303	
100 ESP	=	0,6010	24,24279846	4,40875	1,175480789	1	0,510742787	0,473317308	1,163461538	24,24279846	1,324519231	8,269230789	3,573917308	5,295282923	0,395853365	22,16847715	0,640625	0,951923077	0,728986346	
1 FFR	=	0,1324	6,148930244	1,133536685	0,298170732	0,253688537	1	0,120260976	0,296121951	6,148930244	0,333097561	2,097568976	0,305640244	1,342862927	0,100411585	5,62347561	0,1625	0,241463415	0,184908537	
1 IEP	=	1,2897	51,21889284	9,441340782	2,483484159	4,136617572	2,112747888	8,329191067	1	2,458100059	51,21889284	2,78937481	17,47079736	2,545708481	11,1833418	46,8384967	1,353478923	2,01173184	1,540121889	
1000 IIL	=	0,5165	20,83677696	3,840908091	1,010339579	1,08285124	0,899504132	0,388429152	0,400818182	1	20,83677696	1,138429752	1,085640496	3,071290992	4,549586777	19,06475207	0,550619835	0,818181818	0,828549887	
1 LUF	=	0,0248	1	0,184333168	0,048487853	0,06076351	0,04124938	0,162617749	0,019524046	0,047982067	0,341100645	0,049702529	0,147397124	0,216344075	0,016828706	0,914476946	0,026425384	0,039266237	0,03006941	
1 M.G	=	0,4537	18,3023063	3,373865639	0,887477314	1,478221416	0,754909026	0,357350272	0,878402904	18,3023063	1	6,243194192	0,9309709619	2,697822142	3,896370236	16,73749955	0,483866002	0,718693285	0,550362976	
1 A.S	=	0,0727	2,931696047	0,540408977	0,142151163	0,236773256	0,120830233	0,478744186	0,057238372	2,931696047	0,160174419	1	0,145712209	0,640116279	0,04767084	2,880985602	0,07747093	0,115116279	0,08815407	
100 PTE	=	0,4988	20,11970075	3,7097918	0,975861087	1,624837656	0,829925187	0,392817955	0,965866035	20,11970075	1,09925187	6,862842893	1	4,93017456	0,328528678	18,39000249	0,531678023	0,790024938	0,604997531	
1 FIM	=	0,1682	6,784392869	1,20588631	0,328806064	0,547931382	0,278652001	0,132458796	0,325597034	6,784392869	0,370669358	2,31416078	0,33720148	1	1,481331988	0,110760357	0,179280188	0,266307578	0,204002091	
1 S.K	=	0,1135	4,579927339	0,844232516	0,222070945	0,360891008	0,188919164	0,08941871	0,21980182	4,579927339	0,250227066	1,562216167	0,227633969	0,87506812	0,074784237	4,188237965	0,12102634	0,179638512	0,137715713	
1 GBP	=	1,5181	61,24185999	11,2880238	2,98048535	4,945105066	0,959010172	1,195688477	2,939122514	61,24185999	3,345884515	20,89963109	3,043874298	9,02867111	13,37179238	1	56,0042508	1,618339153	2,404766602	1,841505997
1 CZK	=	0,0271	1,093521279	0,201672242	0,053022499	0,086316617	0,045107075	0,177825969	0,021349959	1,093521279	0,050745188	0,373000813	0,064360773	0,161181892	0,238763893	0,01785787	1	0,02888672	0,042838406	0,03288154
1 USD	=	0,9381	37,8424015	6,975609756	1,834988811	3,058285178	1,86097361	0,738883673	1,816135984	37,8424015	2,067542214	12,90806734	1,880863039	5,577861163	8,262664165	0,617817448	34,606900375	1	1,489328705	1,137898887
1 CAD	=	0,6313	25,46717172	4,894444444	1,294648485	2,058818182	1,050505051	4,141414141	4,497222222	25,46717172	1,391414141	8,686868687	1,285782828	3,753787879	5,560666661	0,41564596	23,28914141	1	1,489328705	1,137898887
100 YEN	=	0,8244	33,25638912	6,130255565	1,61253915	2,685902721	1,371805441	0,649298258	1,590042869	33,25638912	1,816882888	11,3437576	1,652828628	4,901886125	7,261336532	0,5430338	30,41220115	0,872979798	1	0,765782828

Source: European Commission Services, 09.07.2000

EXAMPLE: 1000.it = 0.55062 USD

NOTE: - rates are annual averages based upon daily rates through the year
- this table is based upon rounded figures, thus it is not suitable for financial transaction or payment calculations

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