

The European Aerospace Industry



Facts & Figures 2001

AECMA

Facts & Figures 2001

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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 2001.

The data covers the aerospace industries 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 and airline maintenance companies, thereby providing for full cover of all activities.

Preface of the President

2001 was a paradoxical year. Despite the fact that it was the year when the terrorist attacks took place on the World Trade Centre and the Pentagon, it was the best year ever for aerospace



in terms of industrial achievements. Industry turnover exceeded 80 billion Euro. Exports represented more than 50% of this figure and the average operating profit margin was over 6%. These achievements are largely attributable to the civil sector, and especially to Airbus, which is now reaching parity with Boeing in terms of market share.

2001 was rich in positive events on the European scene. The 6th Framework Programme of the European Union on Research and Technology was finalised with an amount devoted to aerospace of 1075 million Euro. Knowing the vital role of Research and Technology for our industry, this result was a major step in our continuous competitiveness enhancement. In relation to that the establishment of ACARE, the Advisory Group for Aeronautical Research in Europe, was also a significant event. This is the first time that all stakeholders - European institutions, EU Member states, industry, airlines, research establishments, service providers - will work together to produce the Strategic Research Agenda for civil aeronautics, implementing the 'Vision 2020' guidelines.

Space and Defence had their share of good news as well. The Galileo programme was launched in December 2001, in a framework associating ESA and the European Union. In the same period of time the agreement to proceed with A400M was signed by seven governments. Unfortunately the good news must be tempered. For Galileo, work-sharing arrangements between governments still have to be finalised; for A400M, despite the signature of the agreement, not all of the partners have confirmed their orders. Yet - more than ever in the current market - these two programmes are essential to Europe, for both political and industrial reasons.

Tasked to review all issues affecting our sector, the STAR 21 Advisory Panel (comprising the European Commission, the European Parliament, industry and the High Representative of the EU Council) was launched in July 2001. Its report was released one year later. The recommendations of the group are clear. In all fields - civil aeronautics, defence and space - there is an urgent need to create a policy framework for our industry at a European level. In the special case of security and defence, harmonisation of the market and of the procurement practices should be sought, together with an increase in resources.

As a result of the economic slowdown and the terrorist attacks on September 11th the outlook for 2002 is very different from the 2001 performance. The downturn in air transport and the telecom sectors has had a significant impact on the aerospace business. The industry will use its strengths to adjust to the new circumstances and to be prepared for a return to growth.

Jean-Paul Béchat
AECMA President 2001-2002
and Chairman and CEO of SNECMA

Key Characteristics

2001 was a year with two contrasting features for the European Aerospace Industry (EAI).

Plain figures would show the industry in good shape. Turnover soared to 80.6 bn Euro, meaning a nominal growth of 11.5%. The profit rate returned to 6.6% and order intake reached almost 1.4 times turnover.

The increase of turnover in real terms (i.e. excluding exchange rate and inflation effects) amounted to 10.1% and contributed to an overall growth of 67% from 1995 to 2001. In the same period, employment has grown by almost 13% to almost 435 500 employees.

The Research & Development (R&D) investment in 2001 amounted to 10 bn Euro, almost 12.5% of the turnover. This confirms once again the EAI's position as a high technology industry.

Order Books exceeded the record level reached last year. The order backlog amounted to 330 bn Euro, 10% more than in 2000.

However, the terrorist attacks of 11 Sep 2001 in the US caused serious problems to airlines worldwide and to US carriers in particular. This added to the growing concerns due to the uncertain economic outlook. Air traffic eroded significantly and carriers had to reduce capacity by grounding aircraft. Some airlines on both sides of the Atlantic had to file for protection or bankruptcy.

Aircraft manufacturers and maintenance companies did their best to adjust to the situation. However, air traffic has not fully recovered, and 2002 and 2003 are expected to be years of consolidation for the Aerospace Industry.

European Aerospace Industry Key Characteristics of the Year 2001

Employment	435 500 employees
Turnover	80.6 billion Euro
Operating Profit	6.6% of turnover
R&D Expenditure	12.5% of turnover
Exports	59% of turnover
Order Intake	137% of turnover
Order Book	330 billion Euro

Trends

After five years of declining sales, the EAI business has been in a period of growth from 1996 to 2001. The upturn more than compensated for the decrease encountered after the beginning of the decade, and industry has successfully exceeded the peak performance recorded for the year 1990.

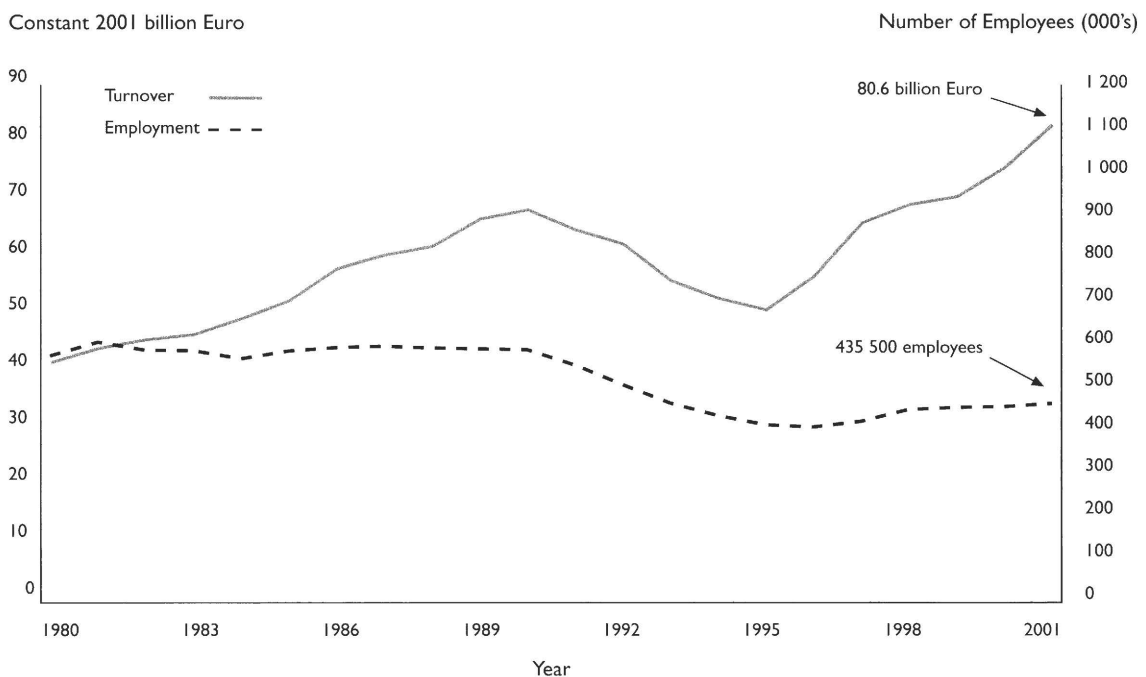
Compared to 2000, sales grew 11.5% in 2001, equivalent to 10.1% in real terms. Long-term market forecasts continue to indicate overall growth for the aerospace business, despite the hiatus post September 2001.

Also compared to 2000, the number of direct employees in the EAI has increased by 1.5% (comparing year-end figures). 6400 new jobs have been created during 2001.

Since 1995 the growth in sales volume and in employment has been 67% and 13% respectively. This increase in productivity, achieved by rationalisation and restructuring of the sector, was necessary to ensure the continued competitiveness of the industry.

It should be remembered that there is substantial additional aerospace-dependent employment within the 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. 1 EU Aerospace Industry Turnover^{*,+} and Employment⁺

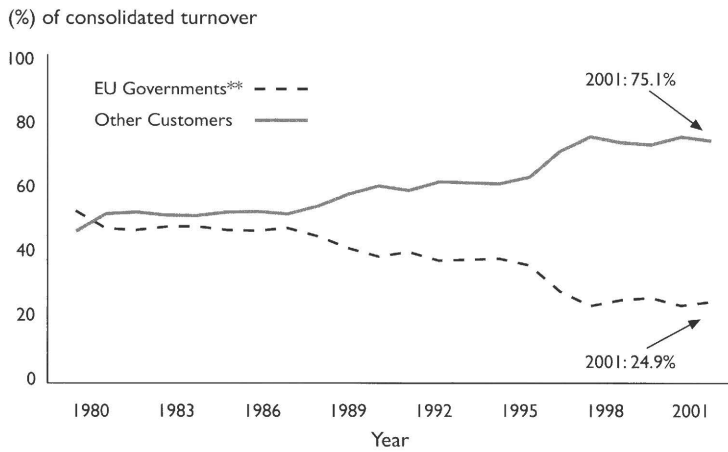


Source: AECMA

(*) based on 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



Source: AECMA

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

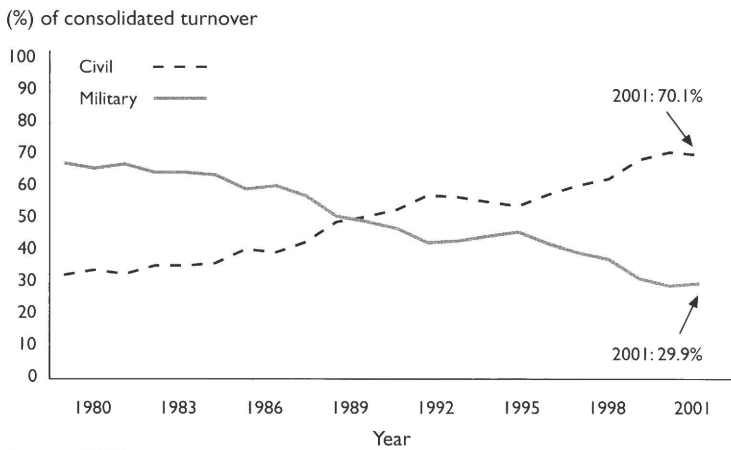
(**) incl. ESA, national aerospace research establishments and agencies

Following a long period in which 65% to 75% of the business came from governments, the period from 1980 and 1988 (figure 2) was typified by parity in sales to EU governments (including ESA, national aerospace research establishments and agencies) and to other customers.

The EAI then successfully increased its sales to non-public customers. Since 1997, the EU governments account for merely 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 reason for this ratio.

In the US, the corresponding ratio is 37% for sales to the US government (including NASA and other agencies), against 63% for sales to other customers. Thus the EAI depends to a much lesser extent on government contracts but, on the other hand, enjoys a smaller home market base.

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



Source: AECMA

(*) based on EU consolidated turnover

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

In the same context as above, the civil sector had exceeded the 70% turnover level in 2000, while the military sector reduced to below 30%, reversing the relationship which had prevailed until the middle of our two decades reporting period (figure 3). In 2001 this evolution in turnover was confirmed.

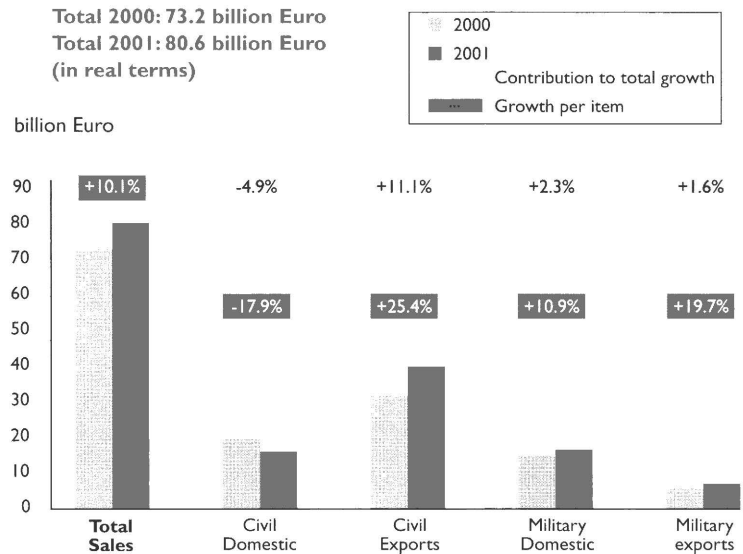
The reason for this evolution was a steady growth in revenues in the civil sector (with an exception during the mid-Nineties), soaring to 445% compared to 1980 in constant prices. Against that military sales remained flat, even shrinking to 91% of the 1980 value (constant prices).

The repartition observed for the EAI compares to a ratio of 60% civil sales to 40% military sales of the US aerospace industry.

Turnover

Total consolidated turnover (for definition see Annex) of the EAI in 2001 was 80.6 billion Euro. There was a considerable additional turnover generated by EAI subsidiaries located in the US and other countries outside the EU. This additional turnover however is not part of this survey.

Fig. 4 Turnover* Growth from 2000 to 2001



Source: AECMA

(*) based on consolidated turnover at 2001 economic conditions

Comparison of Turnover 2001 to 2000

Turnover of the EAI has grown by 11.5% in nominal terms from 2000 to 2001, which amounts to 8.3 billion Euro. Compared to the turnover of 2000 expressed in economic conditions of 2001 (73.2 billion Euro), sales have grown by 7.4 billion Euro or 10.1% in real terms. This growth from 2000 to 2001 again exceeds the longterm growth rate of the industry, which has been 3.5% between 1980 and 2001.

The overall increase in turnover was brought about by strong growth in the civil sector of 4.6 billion Euro. Unlike the year before, markets developed differently. While exports increased 25%, the civil home market lost 18% (figure 4), yet it still remained above the level of 1999.

A closer look at civil exports shows a small increase of 0.9 billion Euro in exports to US end-customers, after a leap of 4.7 billion Euro in 2000. The driver behind civil export success in 2001 was sales to endcustomers outside the EU and the US with an increase of 5 billion Euro after a small loss in 2000.

In the military business, both the domestic and export sales increased by 11% and 20% respectively in 2001.

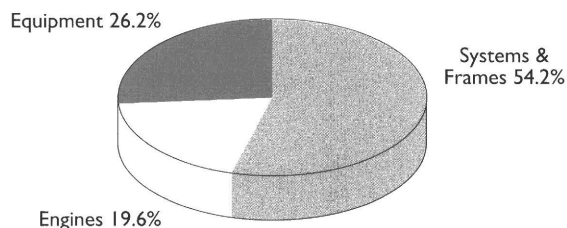
The domestic military market has developed gradually after a low point in 1997 as the result of major government procurement programmes launched in 1998 and 1999 and is now worth 16.8 billion Euro.

Sector Contribution to Industry Turnover

The aerospace industry is generally broken down into three industry sectors “Systems & Frames”, “Engines” and “Equipment” and in parallel into three product segments “Aircraft” (including helicopters), “Missiles” and “Space”. Turnover information is further detailed for these sectors and segments. Definitions of the industry sectors and product segments are included in the annex at the end of this brochure.

Figure 5 illustrates the individual contributions of the industry sectors to the total consolidated turnover posted in 2001. The term “contribution” takes into account that revenues from most of the products sold include the value of subsystems supplied by other companies in the supply chain. These suppliers may pertain to the same or another of the industry sectors. To assess the contribution of a given sector, supplies from companies belonging to other sectors have been eliminated from the turnover of this sector, whereas supplies to either of the other sectors have been taken into account (for further explanations see the Annex).

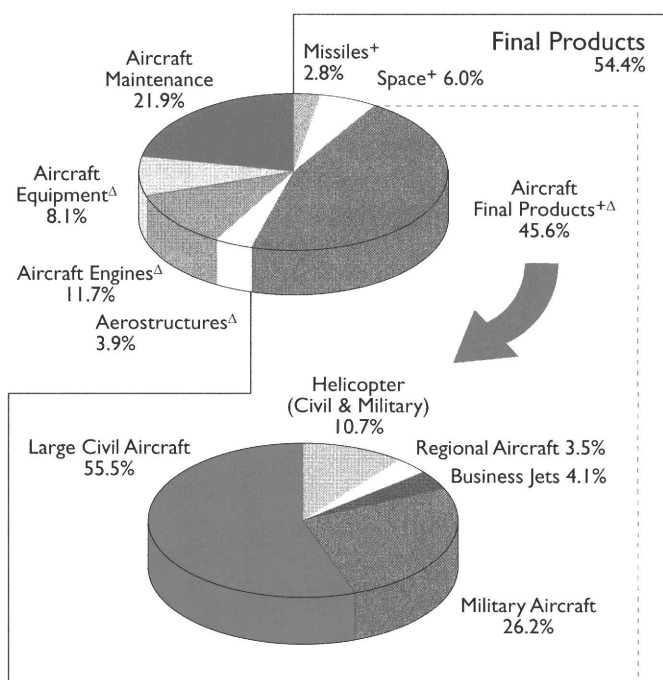
Fig. 5 Industry Sector Contribution* to EU Aerospace Industry Turnover
Total: 80.6 billion Euro



Source: AECMA, estimated
These figures reallocate internal turnover within industry; i.e. Systems & Frames figures exclude EU-supplied Engines and Equipment; Engines figures exclude EU-supplied Equipment but include Engines supplied to European Systems & Frames manufactures; Equipment figures include Equipment supplied to European Systems & Frames and Engines manufacturers.

(*) based on consolidated turnover and 5 years average

Fig. 6 Breakdown of 2001 EU Aerospace Industry Turnover by Product Segment
Total: 80.6 billion Euro



Source: AECMA, Aircraft breakdown estimated

(*) consolidated turnover

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

(^Δ) excl. maintenance

Breakdown of Turnover by Product Segments

The public image of the industry is mainly determined by their final products. These include large commercial aircraft, combat aircraft, helicopters, regional aircraft, business jets, as well as missiles, satellites and space launchers. However, these final products account for only around one half of the overall consolidated turnover, with aircraft final products contributing 45.6% or 36.7 billion Euro (figure 6). Within the aircraft final product range, large civil aircraft are the single largest contributor with a reported turnover of 20.4 billion Euro.

Accounting for sales of 17.6 billion Euro, aircraft maintenance corresponds to 22% of the turnover, and has become an important pillar of the business.

The remaining 24% of the industry’s consolidated turnover is made up from sales of engines, equipment and aerostructures. These comprise primarily spares but also direct order equipment and supplies to aerospace companies outside the EU.

Inter-Industry and End-Customer Turnover

The overall “unconsolidated” (i.e. consolidated only on company level) turnover of the industry generated in 2001 was 115 billion Euro (figure 7). This number includes supplies to companies within the aerospace industry sector worth 35 billion Euro. EU Consortia such as ATR and Eurofighter GmbH take major parts of the EAI internal trade volume. These organisations operate as programme management and marketing organisations on behalf of companies co-operating in multi-national European programmes.

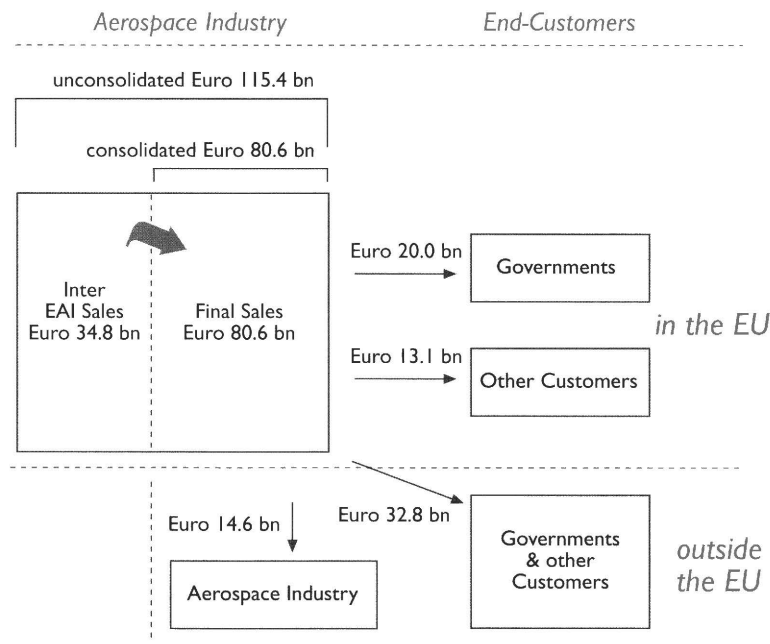
Sales to end-customers stood at 66 billion Euro. EU Governments procured products and services worth 20 billion Euro, and other customers in the EU – mainly airlines – 13 billion Euro. End-customers outside the EU accounted for almost the same compound turnover of 33 billion Euro reported.

The aerospace industry outside the EU received supplies worth 14.6 billion Euro, the US industry being by far the biggest customer. Details of that may be found on page 15.

The EAI received supplies from within their own sector worth 35 billion Euro and supplies from outside the EAI of 39 billion Euro. Deducting supplies from the overall turnover results in a Value Added generated by the EAI of more than 41 billion Euro in 2001.

Fig. 7 Breakdown of 2001 EU Aerospace Industry Turnover by Customer considering Inter Aerospace Industry Sales

Total: 115.4 billion Euro unconsolidated
34.8 billion Euro Inter EU Aerospace Industry Sales
80.6 billion Euro consolidated, i.e. excl. Inter EU Aerospace Industry Sales



Source: AECMA

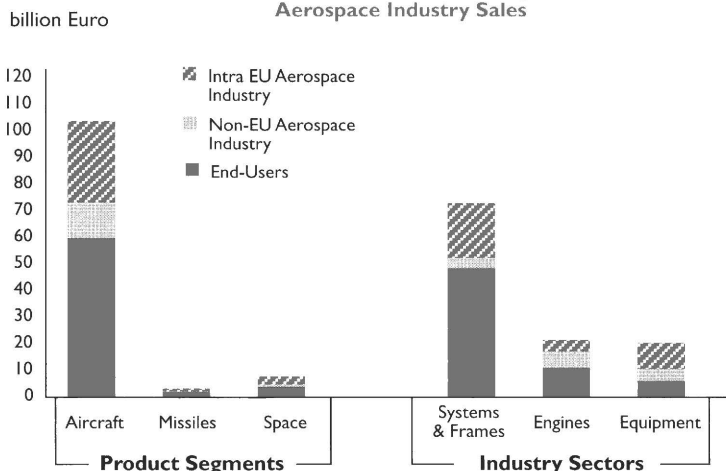
At segment and sector level (figure 8) there is a wide variation in the respective customer bases.

In the aircraft segment, 58 % of the unconsolidated turnover is made with end customers. The balance of the aircraft turnover is made with aerospace industry companies, 70% of which is EU internal trade. In the missiles segment, unconsolidated turnover is made up of 60% to end-customers, of the remainder 87% to be allocated to EU suppliers. The space segment features the highest ratio of unconsolidated to consolidated turnover, which means that the involvement of the supply chain is strongest there.

Each of the three industry sectors shows a specific trade pattern. The “Systems & Frames” industry sector (representing end products like aircraft, helicopters, satellites, launchers, missiles and their frames) traditionally reflects the results of the “Aircraft” product segment, as aircraft contribute more than 90% to the turnover. In the “Engine” sector, sales to aerospace companies outside the EU are 40% higher than to the EAI, demonstrating the strong competitiveness of the Engine sector outside the EAI community. In the “Equipment” sector, 70% of the sales accrued are to aerospace companies. More than 68% of this turnover is with European companies.

Fig. 8 Breakdown of 2001 EU Aerospace Industry Turnover by Customer considering Inter Aerospace Industry Sales on Segment and Sector Level

Total: 115.4 billion Euro unconsolidated
34.8 billion Euro Inter EU Aerospace Industry Sales
80.6 billion Euro consolidated, i.e. excl. Inter EU Aerospace Industry Sales



Source: AECMA

Turnover Share of EU Governments

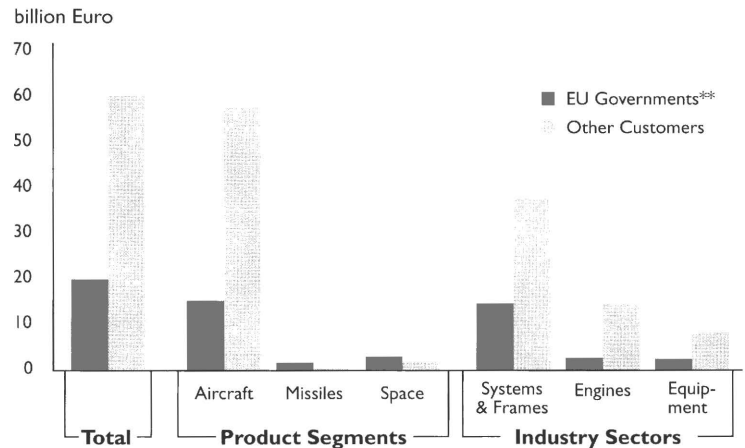
The overall low dependence of the industry on contracts acquired from EU Governments is demonstrated in figure 9. Of course, the extent varies for product segment and industry sector.

Taking a product segment perspective, aircraft is the segment least dependent upon EU governments, with 79% of the sales stemming from other customers. For missiles without a civil market, industry has to rely predominantly on EU governments, which constitute some 77% of missile turnover. Space activities have always been largely government oriented or sponsored, but the civil market has been of growing importance for the EU space segment. Today, the market share of EU Governments accounts for 62% of the segment turnover.

From an industry sector point of view, the Systems & Frames sector dominates the total industry's result, with 28% of the turnover made with EU Governments. In the Engine sector, the EU Government share is 16%, whereas the Equipment sector depends for about one quarter of its business on the public customer.

Fig. 9 Breakdown of 2001 EU Aerospace Industry Turnover* by EU Governments** / Other Customers

Total: 80.6 billion Euro



Source: AECMA

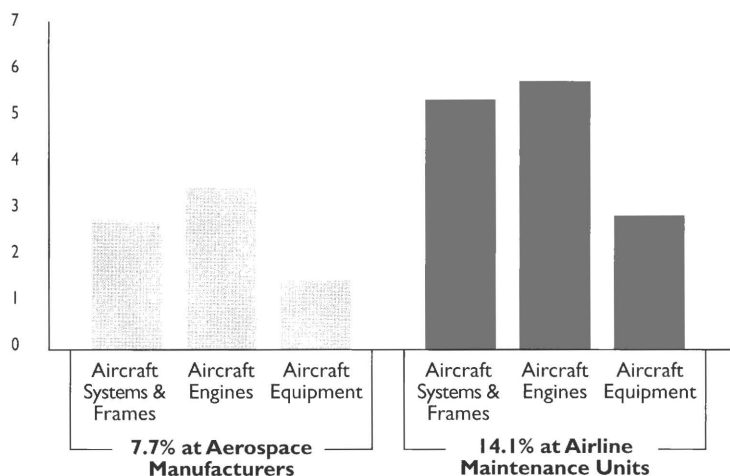
(*) consolidated turnover

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

Fig. 10 Breakdown of 2001 EU Aerospace Industry Turnover* resulting from Sales of Aircraft Maintenance

Total: 17.6 billion Euro = 21.9% of total turnover*

% of total turnover*



Source: AECMA

(*) based on consolidated turnover of 80.6 billion Euro incl. maintenance

Turnover in Maintenance

Total turnover resulting from sales of maintenance services in the EU reached more than 17.6 billion Euro in 2001, which corresponds to about 22% of the total turnover.

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, and they are doing so successfully to a growing extent. Large maintenance units originally founded by EU airlines to maintain their own fleet are particularly important, not only for their parent company airlines but also as maintenance providers for third party airlines. They account for 65% of the EU turnover from aircraft maintenance (figure 10).

Domestic and Export Turnover

The relative contributions of the home market sales and exports on the civil and military sides of total turnover are shown in figure 11. The figures demonstrate the high level of engagement in civil markets, which account for 70% of the turnover. Of this, 71% (2000: 62%) has been sales to customers outside the European community, giving testimony to the global competitiveness of the EAI's civil products and services.

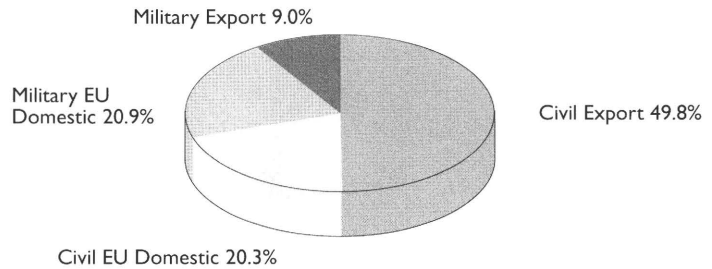
On the military side, the domestic market has maintained its importance for the EAI and now accounts for 70% (2000: 71%) of the turnover from military products and services.

The aerospace industry serves a truly global market. Exports now account for more than 59% (2000: 52%) of the European aerospace business. Export success is mainly driven by civil products, which contribute 85% to the overall export volume of all product segments.

In the US, 60% of the aerospace industry companies' sales are for the civil market. The export share of the US aerospace industry amounts to 56% of the overall sales.

Fig. 11 Breakdown of 2001 Aerospace Industry Turnover* by Export/Domestic and Civil/Military

Total: 80.6 billion Euro



Exports: 58.8% of Turnover
Civil: 70.1% of Turnover

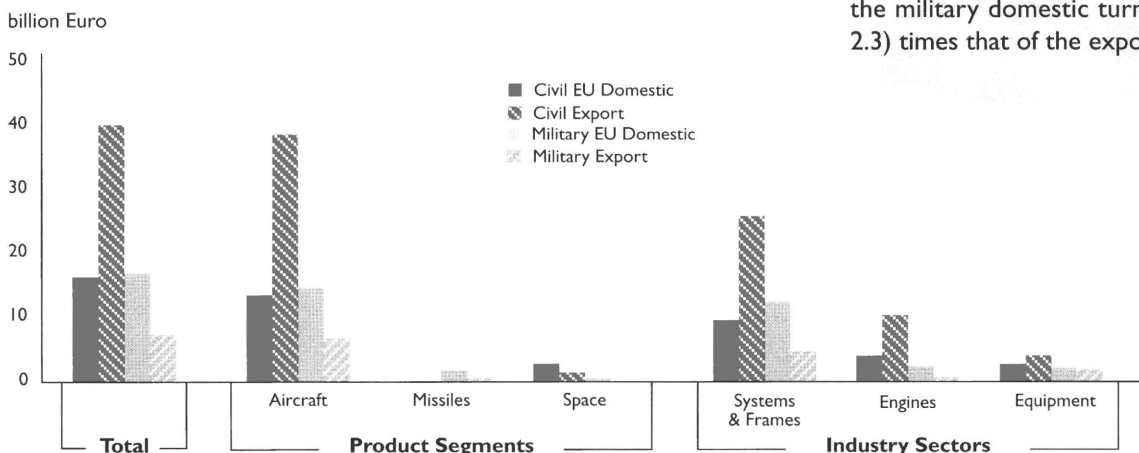
Source: AECMA
(* based on consolidated turnover.

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. As previously mentioned, the overall breakdown of the business by civil and military is well reflected in the pattern of the business for the Aircraft segment. The exclusively military market for 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 81% of the overall 2001 export sales being provided from this segment. The significance of exports became more apparent; the EAI exported 2.9 (2000: 1.7) times more civil aircraft products and services than it sold on the domestic market. On the military side aircraft are also the key product. In contrast with the civil business, the military domestic turnover is almost 2.2 (2000: 2.3) times that of the export turnover.

Fig. 12 Breakdown of 2001 EU Aerospace Industry Turnover* by Domestic / Export and by Civil / Military on Segment and Sector level

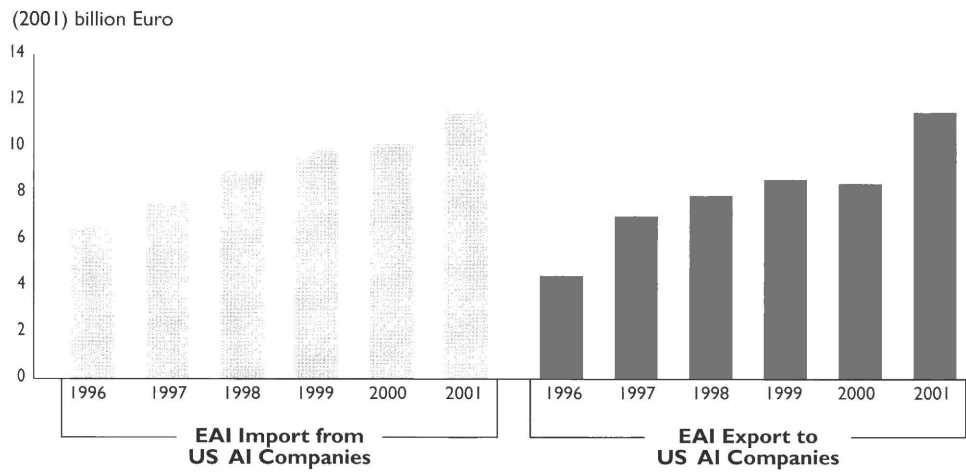
Total: 80.6 billion Euro



Source: AECMA (*) consolidated turnover

The intra-aerospace industry business exhibits a strong link between the EU and the US industries, with a rapidly growing interdependence between them (figure 13). Exports from Europe to the US aerospace industry have grown by 157% in real terms between 1996 and to 2001. While in 1996 the EAI imported almost 50% more from the US aerospace industry than vice versa, industry-to-industry trade is now balanced at a level of 11.5 bn Euro.

Fig. 13 EU-US Aerospace Industry-to-Industry Turnover



Source: AECMA
AI: Aerospace Industry

Trade Balance

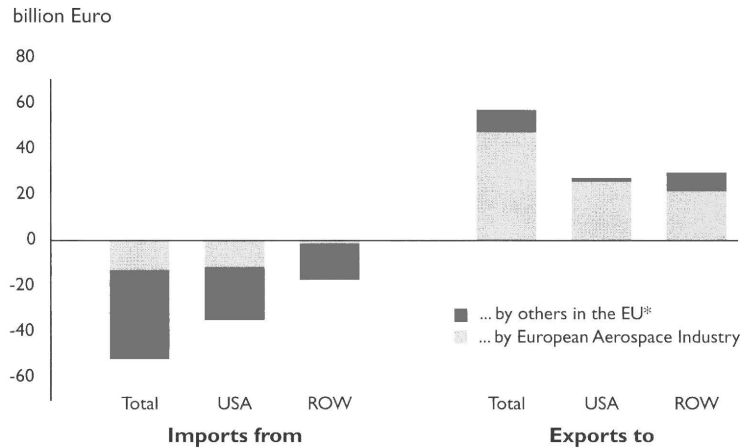
Imports and Exports

In 2001 the European Aerospace Industry imported components from outside the EU at a value of 13 bn Euro, with imports worth 11.6 billion coming from the US. Exports from the EAI amounted to more than 47 billion Euro, again the US being the main customer region with sales of 25.7 billion Euro (figure 14).

Market players in the EU Member States other than the EAI (e.g. airlines) imported aerospace industry products worth some 39 billion Euro, more than 23 billion Euro of which are originated from the US, according to Eurostat (figure 14).

Trade among EU Aerospace Industry companies is traditionally extensive. In 2001, EAI companies have reported a total 27 billion Euro imports from partner companies located in other EU member states (not part of figure 14). This demonstrates that the aerospace supply chain is operating in a real European context, and that cross-border trade barriers among EU Member States need to be removed or at least minimised to guarantee efficiency in the supply chain.

Fig. 14 2001 Aerospace Import and Export of the EU



Source: AECMA, Eurostat
 ROW: Rest of World
 (*) estimated, including Governments, Airlines etc.

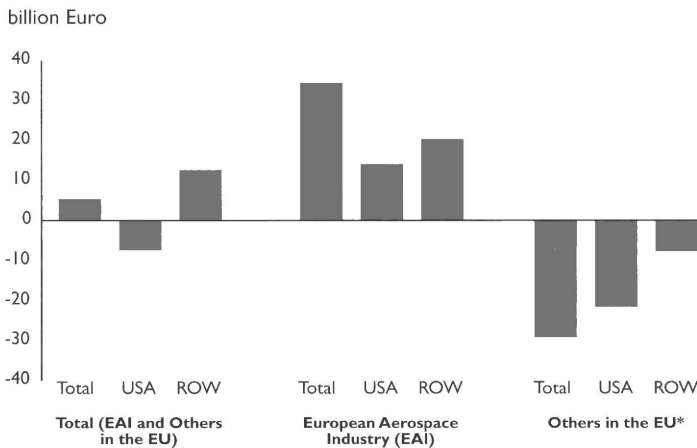
EU Trade Balance Contribution

Based on import and export information provided above, the EAI achieved a 34.5 billion Euro surplus of exports over imports (25.5 billion Euro in 2000). Of this amount, trade balance with the US accounted for 14.1 bn Euro.

For other market players in the EU (e.g. airlines) the balance is -29.1 billion Euro*. In total, a 5.4 billion Euro positive trade balance remains, roughly composed of a -7.3 billion balance with the US and a +12.7 billion balance with Rest of the World (figure 15). This 5.4 billion Euro has to be viewed in the light of a 45 billion negative overall trade balance of the EU15 in 2001: Aerospace provides to the EU economy a solid contribution which could be achieved in the face of strong competition with the US and other aerospace players like Canada and Japan. According to Eurostat, it is only in aerospace, pharmaceuticals, scientific instruments and chemicals that the EU has high-technology product trade surpluses. This also demonstrates that aerospace is an industry sector worth further public attention and investment.

(*) Source: Eurostat

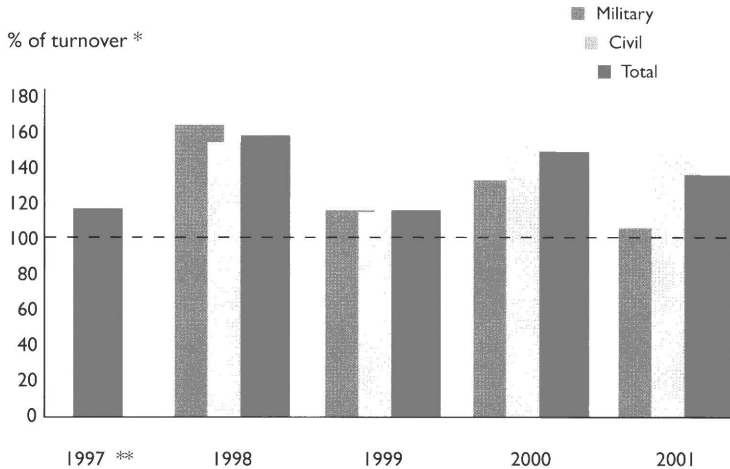
Fig. 15 Aerospace Trade Balance of the EU
 2001 Trade Balance Total: 5.4 billion Euro



Source: AECMA, Eurostat
 ROW: Rest of World
 (*) estimated, including Governments, Airlines etc.

Order Intake Trend

Fig. 16 Breakdown of 2001 EU Aerospace Industry Order Intake*
2001 Total: 158 billion Euro



Source: AECMA

(*) unconsolidated order intake in percentage of unconsolidated turnover

(**) breakdown not available

The order intake is a good indicator of continued growth or at least a sustained level of business. In 2001, the overall order intake equated to the turnover from almost 1.4 years of business (figure 16). The orderbook slightly increased to 330 Euro billion at the end of 2001, which corresponds to around 3 years of workload.

The civil aircraft market was particularly active with about 150% order intake related to turnover. On the military side, the order intake reduced to 107% of the 2001 military turnover, while the A400M transport aircraft and the METEOR missile orders are awaited.

It should be noted that relative order book and order intake figures are weighted averages, which may vary considerably from one company to another.

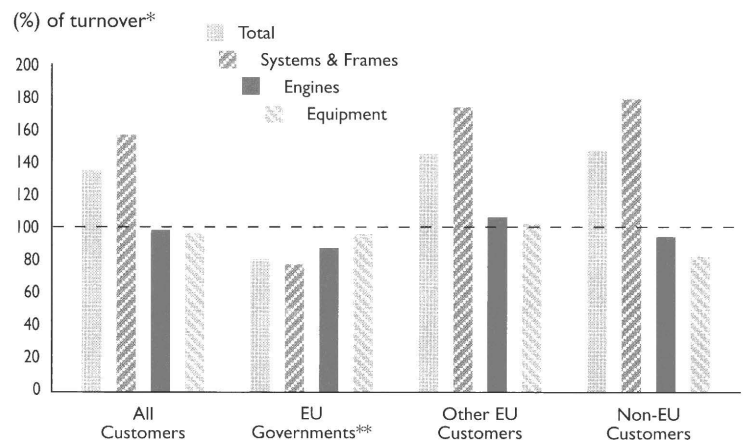
Order Intake by Customer

The breakdown of the 158 bn Euro order intake among customer groups shows non-EU Government customers as the strongest market segment (figure 17).

In this segment, both EU based and export customers ordered products and services worth 150% of the respective 2001 turnover. The prevailing industry sector was Systems & Frames with about 180% of turnover or 105 bn Euro in total.

EU governments placed orders worth 16 bn Euro, i.e. 82% (2000: 130%) of the respective 2001 turnover. Equipment was the only sector which reached turnover level, followed by the Engines sector with 90%.

Fig. 17 Breakdown of 2001 EU Aerospace Industry Order Intake*
2001 Total: 158 billion Euro



Source: AECMA

(*) based on unconsolidated order intake in percentage of unconsolidated turnover

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

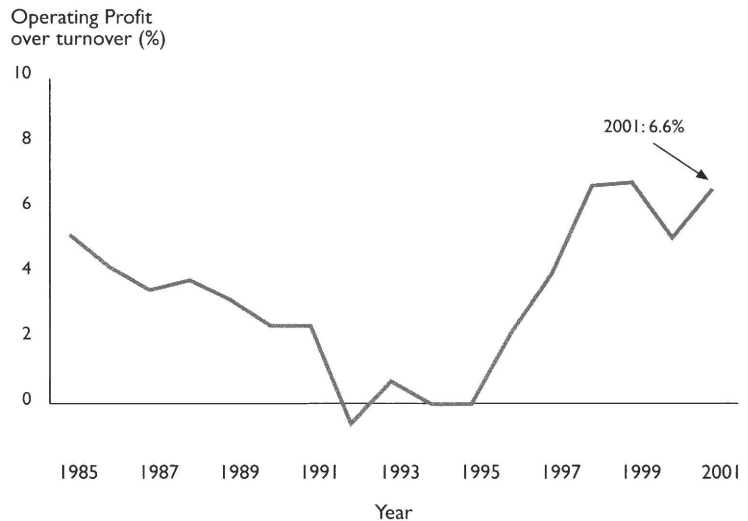
Competitiveness

Operating Profit Margin

Following a reduction from 6.8% to 5.1% between 1999 and 2000, the EAI showed an increased profit margin of 6.6% in 2001 (figure 18).

For comparison, the US aerospace industry's operating margin was reported to be 7.5% in 2001.

Fig. 18 EU Aerospace Industry Operating Profit Margin

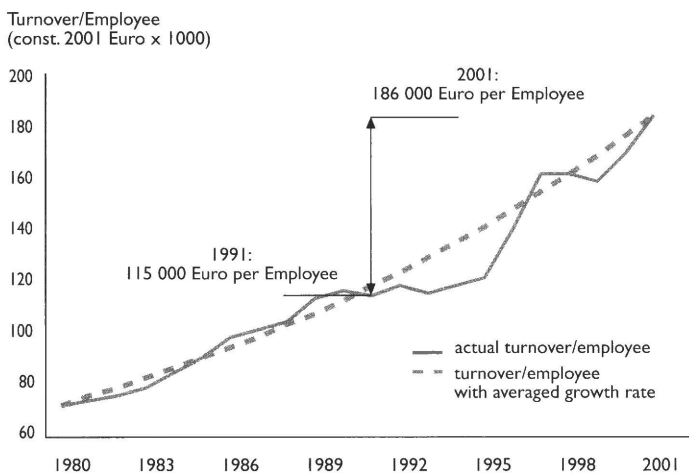


Source: AECMA

Turnover per Employee

Fig. 19 EU Aerospace Industry Turnover per Employee^{*,+}

Average Growth (real terms) 1980 - 2001: 4.6%*



Source: AECMA

(*) based on consolidated turnover (constant Euro) and annual average no. of employees
 (+) including estimations for Sweden until 1992 and non-AECMA companies until 1995

As a result of productivity improvement, the turnover per employee shows an overall long-term growth of 4.6% per year (figure 19) in real terms, i.e. excluding inflation in prices. During the 1991-2001 decade, this is equivalent to a growth in specific output of 62%.

This productivity increase results from a number of factors. Consolidation of the industry reduces administration and support departments. Moreover, these factors include larger share of materials and bought-out items benefiting from economies of scale, as production throughput has grown due to successful market penetration with EAI products. Rationalisation of manufacturing has been achieved through outsourcing of services and investment in automation. Further cost efficiency was possible by means of increased utilisation of information technology. The industry focusses on global competition and profitability.

Research & Development (R&D)

Trend and Breakdown of R&D

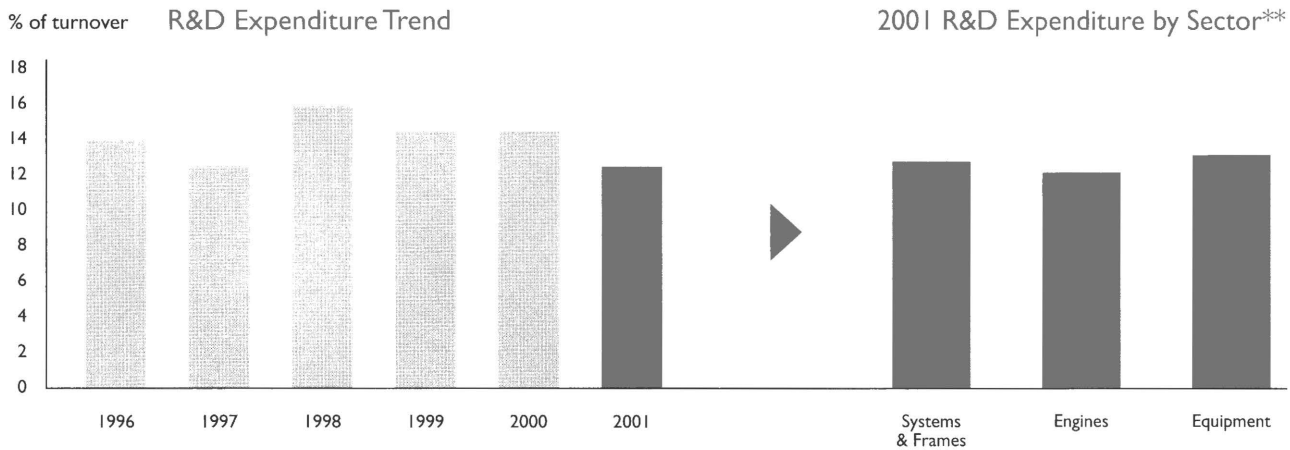
As in all high-technology industries, R&D is an indispensable driver for future success of the European Aerospace Industry. This is true for both the civil and the military market.

The aerospace industry is among the industry sectors with the highest share of R&D expenditure in relation to turnover. The investment in research and development in the EAI amounted to 10 billion Euro in 2001. This equates to an investment of 12.5% of turnover (figure 20). R&D investment in the civil area accounted for 53% of this value.

R&D investment supports all sectors of the aerospace industry on a comparable level.

Fig 20 2001 R&D Expenditure* of EU Aerospace Industry

2001 Total: 10.0 billion Euro = 12.5% of turnover*

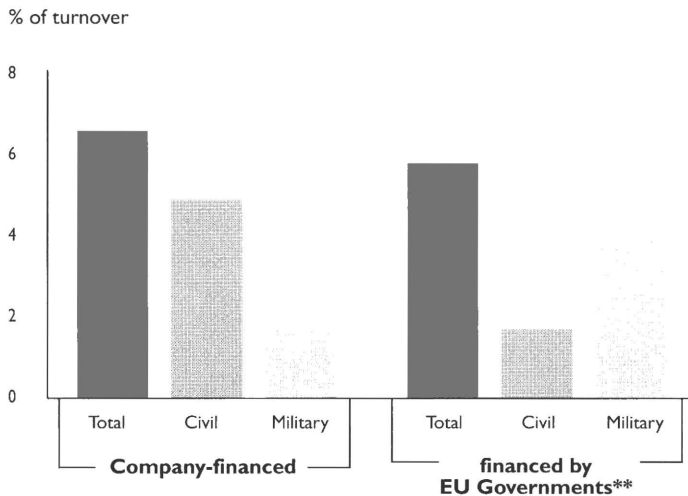


Source: AECMA
 (*) consolidated
 (***) related to sectoral turnover

Financing of R&D

Fig 21 2001 R&D Expenditure* of EU Aerospace Industry

2001 Total: 10.0 billion Euro = 12.5% of turnover*



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

In 2001, 53% of the total aerospace R&D expenditure in Europe was financed by the industry itself (figure 21).

On the civil side, three quarters of the funding was provided by industry, with only one quarter being derived from governments. In the military field, which traditionally features development to order, almost 30% of expenditure was financed by industry in 2001.

The industry dedicated 74% of their R&D funds to civil projects.

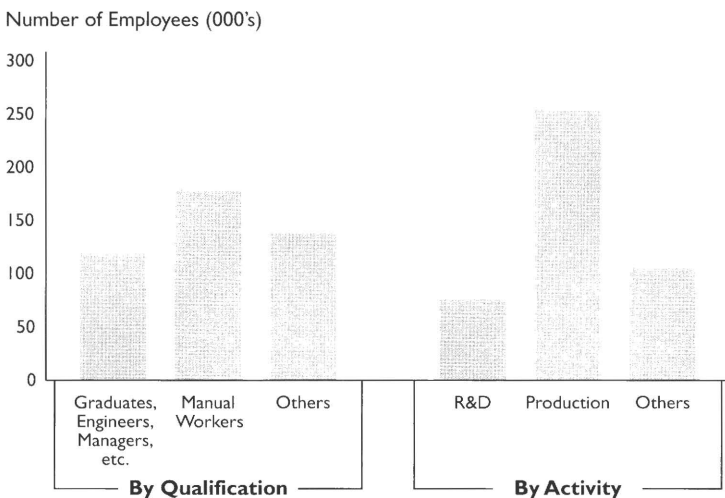
Employment

Total direct employment in the EAI at the end of the year 2001 was about 435 500 employees. Some 6 400 new jobs have been generated by the EAI during 2001, increasing employment by 1.5%.

The additional employment provided within the supply chain outside the EAI (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 70 000 employees working in EAI subsidiaries located in the US and other countries outside the EU. This additional employment is also not represented here.

Fig. 22 Breakdown of 2001 Direct EU Aerospace Industry by Qualification and Activity
Total: 435 500 employees



Source: AECMA

Employment by Qualification and Activity

The EAI provides a large number of highly skilled jobs, with 27% of all employees having a university degree or equivalent (figure 22). Another 32% (which includes technicians, draughtsmen, craftsmen, secretaries etc.) received an education at institutions 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.

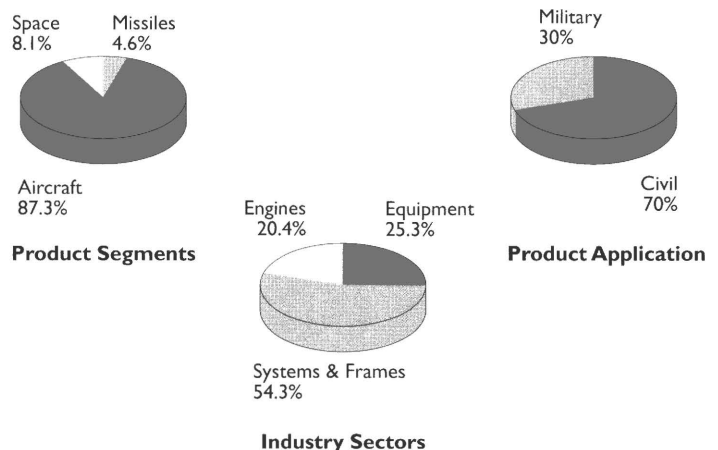
With a share of 59 percent of all employees, the production area (including maintenance) is the prominent one. However, the fact that 17% of the staff work in the field of R&D once more demonstrates the importance of R&D to the EAI.

Employment by Product Segment and Industry Sector

If employment is analysed with respect to product segments, 87% of all direct aerospace employees in the EU were employed on Aircraft related activities at the end of the year 2001 (figure 23). This means some 380 300 employees, 6 400 less than in 2000. The workforce in space programmes was 35 100 (8%), while missile programmes employed 20 100 (5%) specialists. Both segments' workforces were above their 2000 levels.

54% of the EAI's workforce is employed by (non-engine) prime contractors or overall system level companies (Segment "Systems & Frames"). Direct employment in their supply chain is shared between the Engine sector (45%) and the Equipment sector (55%).

Fig. 23 Breakdown of 2001 Direct EU Aerospace Industry Employment by Product Segment, Industry Sectors and Application
Total: 435 500 employees

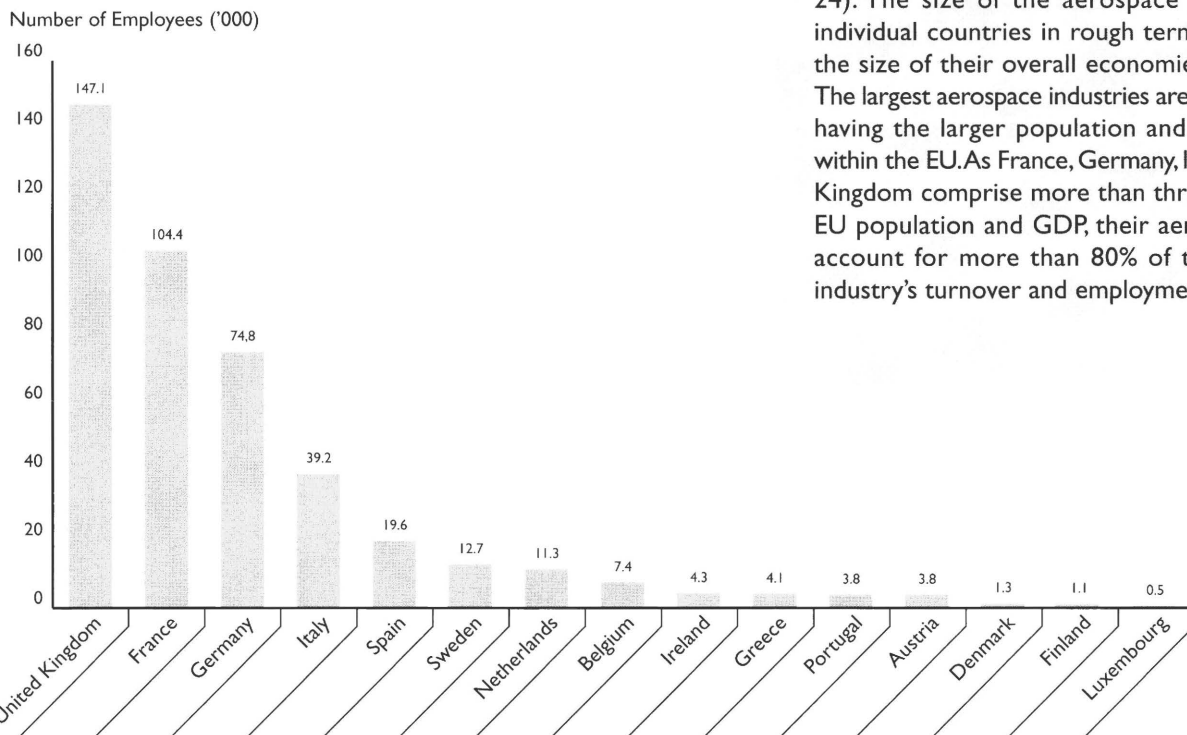


Source: AECMA

Employment in the EU Member States

Fig. 24 Contribution to 2001 Direct EU Aerospace Industry Employment

Total: 435 500 employees



Source: AECMA

The industry features activities in all 15 Member States of the European Union, with no exceptions (figure 24). The size of the aerospace industries in the individual countries in rough terms 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. As 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 80% of the EU aerospace industry's turnover and employment.

Employment growth

Following a downward trend until the mid Nineties (see figure 1), after 1995 employment in the European aerospace industry has developed more strongly than the overall employment in the EU. In 2000 the aerospace industry provided 11% more jobs than in 1995, with further growth in 2001. This relative increase is 60% above the overall job growth in the EU from 1995 to 2000 (figure 25). In the same period, the aerospace industry workforce managed to raise output per employee by 25%, as previously demonstrated in figure 19.

Fig. 25 Employment Growth

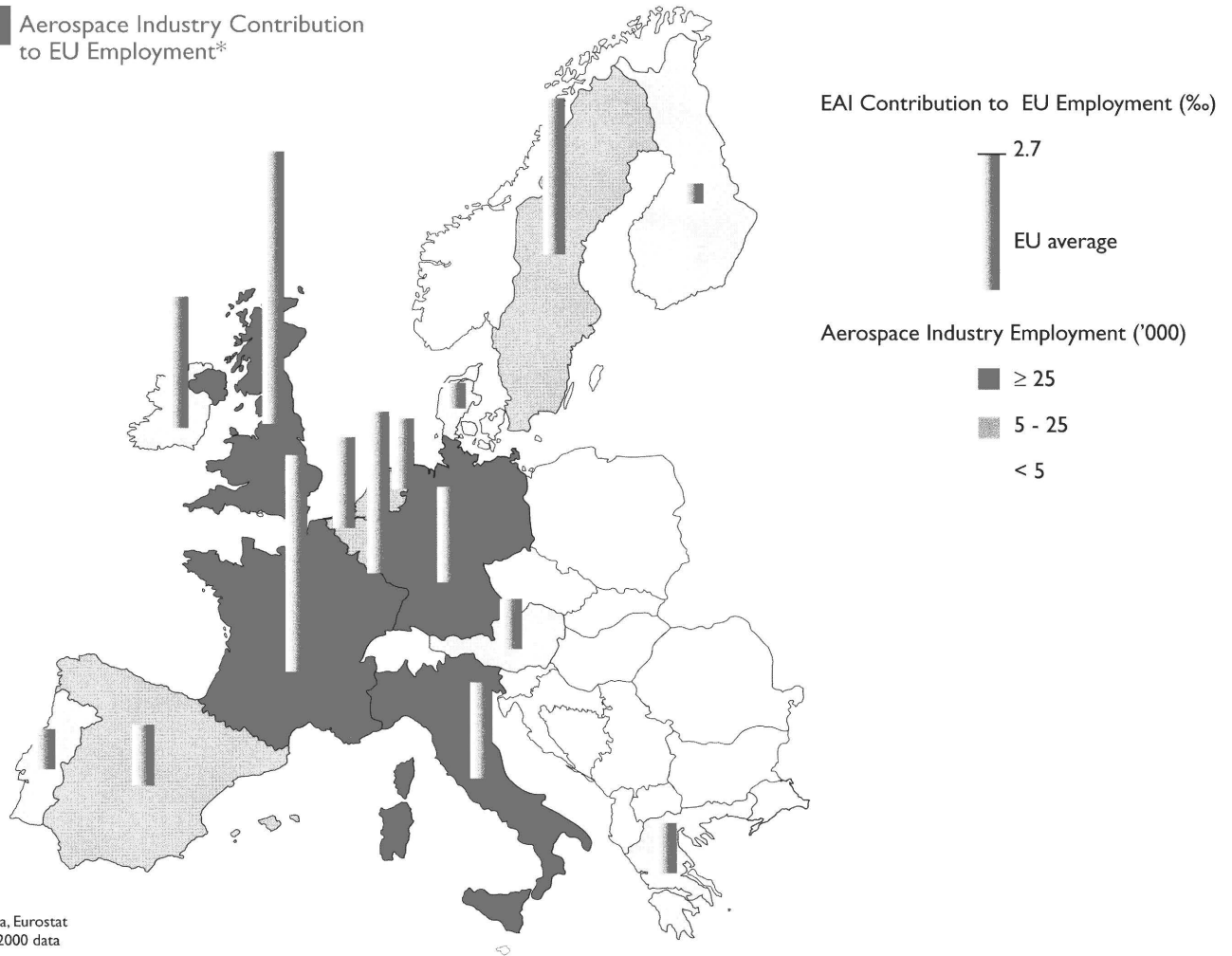
1995=100%



(full and part time employees)

Source: AECMA, Eurostat

Fig. 26 Aerospace Industry Contribution to EU Employment*



Source: Aecma, Eurostat
(* based on 2000 data)

Aerospace Industry Contribution to EU Employment

In terms of direct employment, the EAI provides for about 0.3% of all the jobs in the EU. If employment generated in the supply chain outside the EAI is included, the figure would amount to about 0.8%.

Within the EU's transport equipment sector, the aerospace industry contributes 17% of the jobs.

The relative importance of the aerospace industry compared to the overall EU employment varies within the EU. This variation is not necessarily correlated to the absolute size of the population, the GDP and the

aerospace industry of a country. For example, the smallest country of the EU, Luxembourg, ranks in the group with a share above average. The group of countries with an above-average-share in overall employment comprises France and the United Kingdom but also Luxembourg and Sweden (figure 26). On the other hand in Germany, which has the biggest GDP, the relative importance of aerospace employment is below the EU average.

For detailed data see the tables section.

Structure of the European Aerospace Industry

Size of the EAI Companies

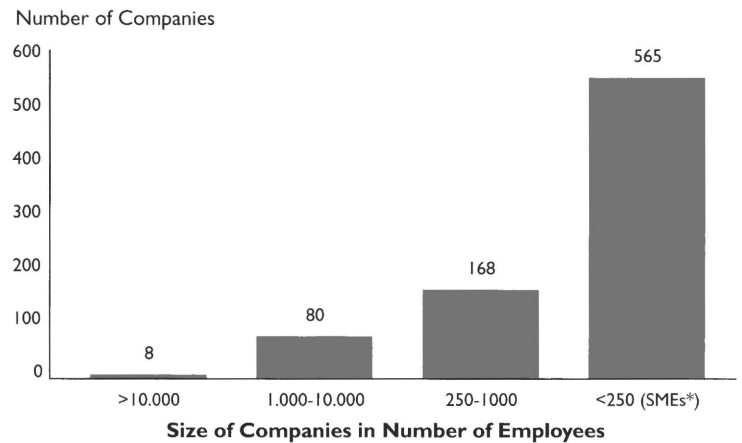
The EAI is characterised by a small number of very large firms, a larger number of medium sized companies, and a very large number of small enterprises (figure 27).

The information presented herein describes the industry structure at the end of the year 2001 and does not reflect the restructuring which continued after.

Eight companies have been reported with more than 10 000 employees, i.e. just 1% in number. The number of smaller companies with less than 1000 employees amounts to 733, which is 8 times the number of the larger companies.

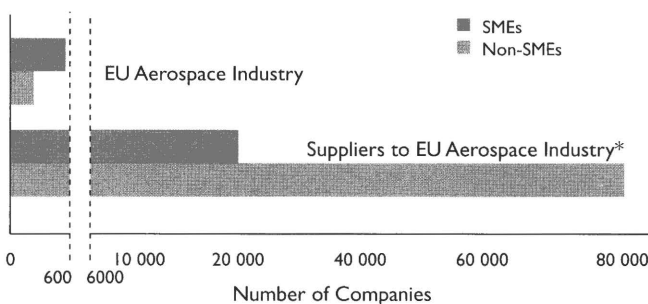
565 companies or almost 70% of all those belonging to the EAI in 2001 comply with the employment criteria contained in the European Commission definition of SMEs (Small and Medium-sized Enterprises). The majority of these SMEs belongs to the equipment sector, which will be further detailed in the SMEs' chapter of this report.

Fig. 27 Structure of the EU Aerospace Industry in 2001 by Company Size
Total: 821 companies



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

Fig. 28 The EU Aerospace Industry SMEs and Suppliers



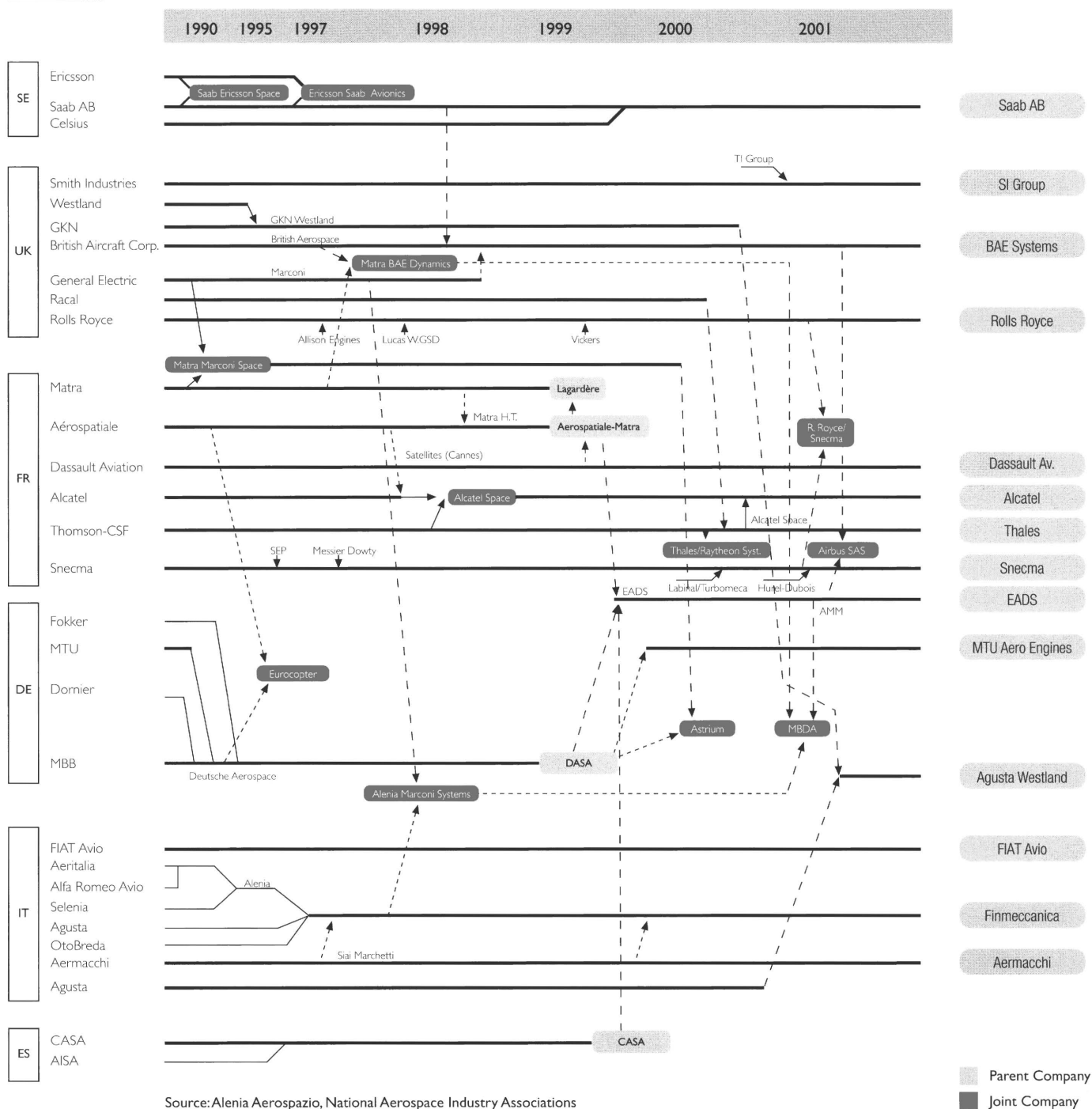
Source: AECMA
(*) Number of supplier companies estimated

EAI SMEs and Suppliers

In addition to the companies directly pertaining to the EAI, 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 28). Thus, aerospace provides impetus to a large number of SMEs within the EU, not only among the classical aerospace manufacturers represented by the EAI, but also throughout the supply chain.

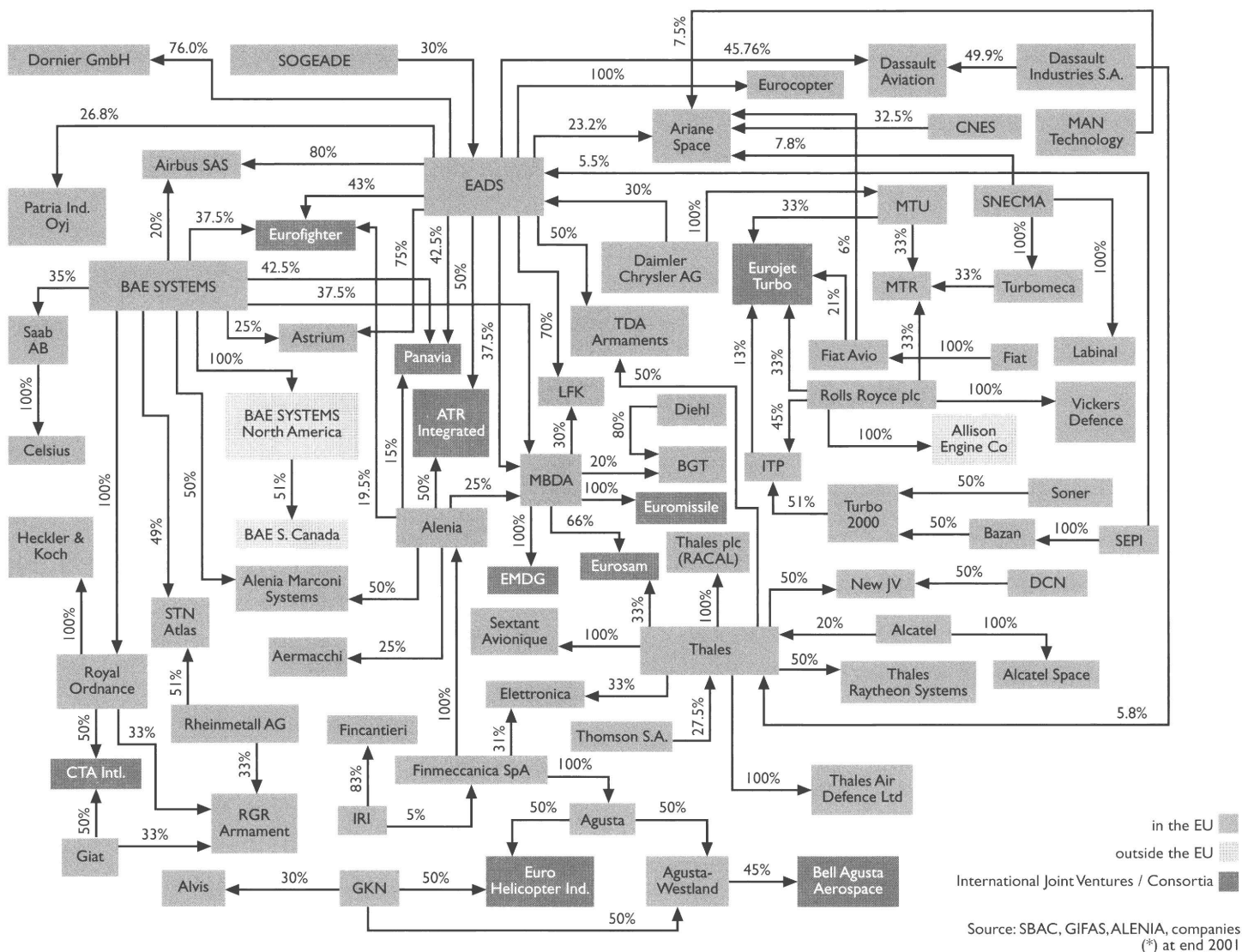
The structure of the European aerospace industry has undergone profound changes in the last decade (figure 29). A process of mergers and rationalisation has taken place to enable the EAI primes to cope with US competition and reduced customer budgets. This has in particular led to the formation of global players such as BAE SYSTEMS in 1999 and EADS in 2000, which generate aerospace related turnover in the region of 20 to 30 billion Euro. In global comparison, they rank number 2 (EADS) and number 4 (BAE SYSTEMS) after US based Boeing and Lockheed Martin respectively. Today European companies are approaching a status equivalent to the US groupings, giving European industry the ability to face the challenges present in all parts of the global aerospace market.

Fig. 29 Consolidation Process in the European Aerospace Industry



The global aerospace industry comprises a complex network of companies, joint ventures, international consortia and partnership agreements. The major European aerospace and defence cross holdings are shown in figure 30. After decades of operation as a joint venture, in 2001 Airbus Industrie became a genuine transnational aerospace company. It is one of only two manufacturers in the market of large commercial aircraft. In other areas, such as helicopters and missiles, European firms already exist and similar transnational links are growing between European, US and Asian companies at all levels of the supply chain. Linkages with Australia and South Africa will be augmented with further commercial and technological relationships in Asia and the Far East. The EAI will continue to play its part in globalisation.

Fig. 30 Major European Aerospace and Defence Industry Crossholdings*



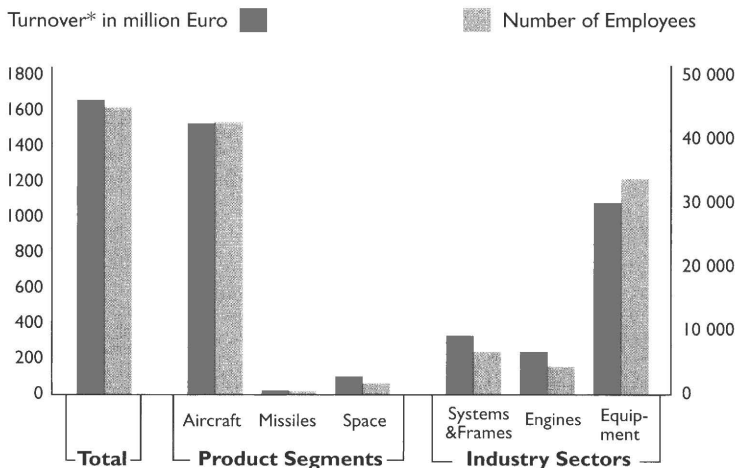
Small and Medium-sized Enterprises (SMEs)

According to the EU definition, a small and medium-sized enterprise (SME) has less than 250 employees, less than 40 million Euro turnover and is less than 25% owned by a non-SME. Though the contribution of these companies to the industry's overall turnover and employment is comparatively small, they are nevertheless considered vital for the development of the aerospace industry due to their high degree of flexibility and creativity.

SME Turnover and Employment

Fig. 31 2001 Turnover* and Employment of EU Aerospace Industry SMEs**

Total Turnover*: 1 665 million Euro
Total Employment: 45 059 employees



Source: AECMA
(*): consolidated turnover
(**): excl. suppliers from outside the EU Aerospace Industry

As might be expected, the main customer group for SMEs is represented by the EAI itself. The EAI – mainly through its primes – account for 68% of the SMEs' (unconsolidated) turnover.

The balance of the SME's sales of 1.67 bn Euro was to non-EAI customers. Some 11% of turnover (or products worth 580 mio Euro) have been shipped to the non-EU aerospace industry and 21% (or 1085 mio Euro) went directly to end-users (figure 32).

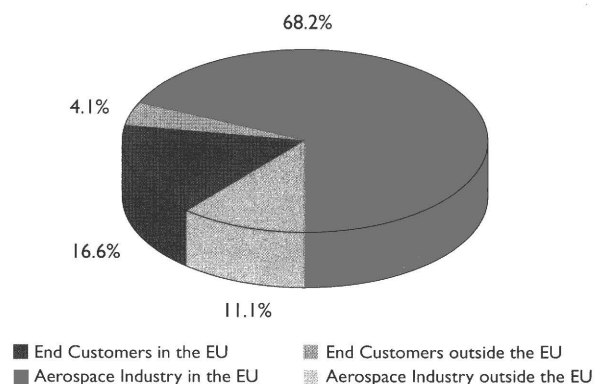
In 2001, the 565 SMEs of the EAI achieved a 5.2 billion Euro turnover (unconsolidated turnover, figure 32 below), a growth of 3.2% in real terms compared to the year 2000. This turnover was brought about by 45 000 employees.

The SMEs' consolidated turnover and employment for the various product segments and industry sectors is shown in figure 31. In line with the overall industry, SMEs are predominantly supplying the Aircraft product segment (92% of SMEs' turnover). However, strongly deviating from the repartition of the overall industry, a majority of 65% of all SMEs' employees are working in the Equipment sector.

Aircraft maintenance plays an important role not only for the EAI as a whole, but also for its SMEs. The portion of turnover from this task is estimated at 25%.

Fig. 32 2001 Turnover of EU Aerospace Industry SMEs* by Customer

Total turnover: 5 236 million Euro



Source: AECMA
(*): excl. suppliers to EU Aerospace Industry from other industry sectors

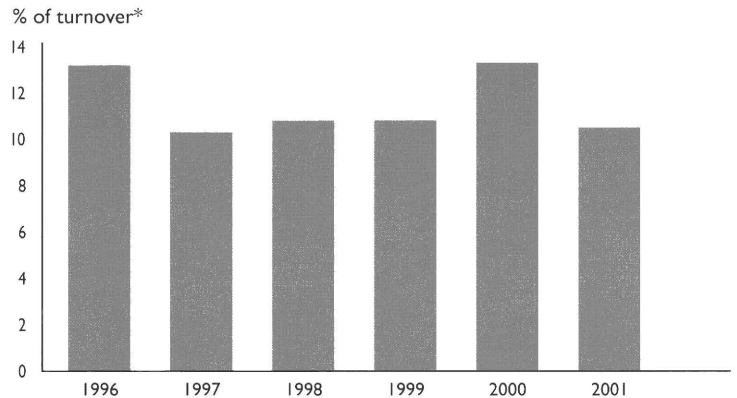
Small and Medium-sized Enterprises (SMEs)

SME Research & Development

A high level of R&D expenditure is not only a characteristic of large aerospace companies but also of the EU Aerospace Industry SMEs.

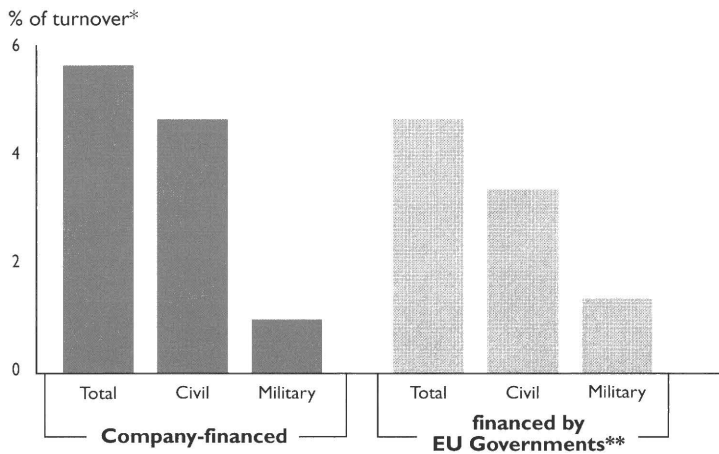
SMEs invested in the range of 10 to 13% of turnover in R&D through the last years (figure 33). In 2001, the companies contributed 175 million Euro to aerospace R&D. As a percentage of consolidated turnover, R&D expenditure for these companies is – as already in 2000 - only slightly lower (at 10,5%) than the EAI average (at 12,5%).

Fig. 33 R&D Expenditure* of the EU Aerospace Industry SMEs
Trend 1996 to 2001



Source: AECMA
(*) consolidated

Fig. 34 2001 R&D Expenditure* of EU Aerospace Industry SMEs
Total: 175 million Euro = 10.5% of turnover*



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

54% of R&D investment was provided by the SMEs themselves. The SMEs' R&D focus is clearly on the civil side, regardless of the source of financing. In total, 76% of the R&D expenditure was dedicated to civil programmes (figure 34).

In general SMEs indicate that, in view of their financial framework, they must aim for near term market application of their technology development. Moreover it should be recalled that R&D at SMEs needs further public attention, since their R&D expenditure per employee rate is still behind the overall industry average.

EU Accession Countries

The Czech Republic, Poland and Romania are among the next countries to join the EU. The EU has a strong focus on the successful enlargement of its community, as does the European Association of Aerospace Industries (AECMA). The accession countries quoted below feature aerospace industries with strong capabilities and a long history.

The Czech Republic

In the beginning of the year 2000, the aerospace industry association of the Czech Republic AAM CR (Association of the Aviation Manufacturers in the Czech Republic) became a full member of AECMA.

Their aerospace industry comprises 36 companies, with 29 being SMEs. They employ almost 9800 workers, of which 2100 are engineers and graduates. The consolidated turnover amounts to 460 mio Euro.

Though the Czech Association has supported production of AECMA's Facts & figures brochure since they joined AECMA, their data are not yet included in the tables and diagrams exposed elsewhere in this brochure, because the statistics in this brochure represent the industry of the current EU member states.

Poland

The Polish Association of Aviation Industry was founded in 2000. It has expressed its intention to join AECMA.

Two workshops have been organised and held in Warsaw with the support of the TALEX Office of the Enlargement Directorate and with the participation of DG Enterprise.

The Polish aerospace industry comprises 13 major companies. They reportedly employ almost 40 000 people.

Romania

As part of its EU integration process, the Romanian aerospace industry plans to join AECMA.

The first conference in this country on "European and Romanian Aerospace – European Union Accession Challenges and Opportunities" took place in May 2001 in Bucharest, and was based on those given previously in Prague and Warsaw.

The Romanian aerospace industry comprises 15 companies and employs more than 10 000 people.

International Aspects

Global Comparison

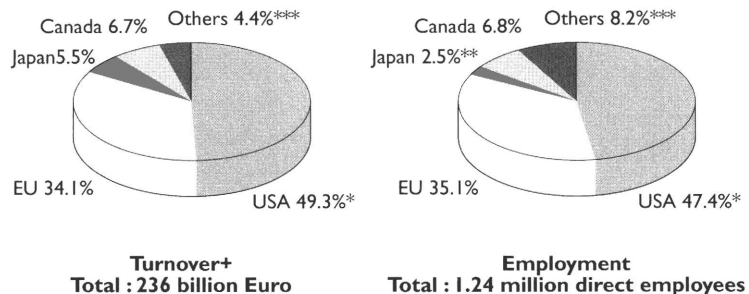
The aerospace manufacturing countries of the world (except the CIS and the PR China) are estimated to have achieved a combined sales volume of 236 billion Euro in 2001. This means a solid increase in comparison to 2000.

The figure represents consolidated sales for the respective entities shown, i.e. supplies within the industry of a given entity have been eliminated. It does however include sales among the industries of the entities.

The US aerospace industry, with almost 50% of the world-wide turnover and direct aerospace industry employment, remains the dominant player in the global market place (figure 35).

The EAI has contributed about one third to sales and employment. This makes the EAI the incontestable number two globally.

Fig. 35 2001 Comparative Aerospace Industry Turnover and Employment



Source: AECMA, AIA, AIAC, SJAC, U.S. Census Bureau, Company Reports

(+) consolidated turnover

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

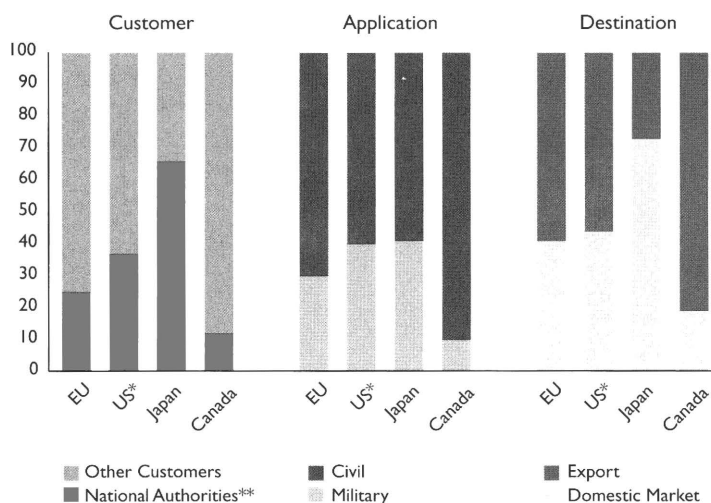
(**) excluding company staff not directly related to development/manufacturing of aerospace products

(***) excluding PR China and CIS

(Note: Japans AI employment includes company staff only directly related to aerospace production, i.e. the figure is not comparable with that of other countries)

Fig. 36 2001 Comparative Aerospace Industry Turnover Breakdown⁺

% of total turnover



Source: AECMA, AIA, U.S. Census Bureau, AIAC, Strategis, SJAC

(+) estimate, based on consolidated turnover

(*) excluding sales not associated to aerospace

(**) including defence and space agencies

Significant differences can be noted for the four largest aerospace manufacturing entities in respect of their customer base.

Firstly, Canada and then the EU are the least dependent on orders from their national authorities, while in Japan national agencies are the main customers (figure 36).

As for product application, Canada's aerospace industry is almost 90% engaged in civil products and services, followed by the EU with 70%. The US and Japan make about 60% of their turnover with civil products and services. On a global scale, two thirds of the sales were for civil markets.

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 59% and 56% respectively of their sales. Japan mainly produces for the home market.

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
ROW	Rest of World (outside EU and US)
SJAC	Society of Japanese Aerospace Companies
SMEs	Small and Medium-sized Enterprises
US	United States of America

Consolidated Turnover - Breakdown by Industry Sectors

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 supply a substantial part of their output to the EAI's Systems & Frames 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 Systems & Frames manufacturers from the consolidated Systems & Frames turnover,
- add turnover of Engines supplied by the EAI to the European Systems & Frames 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 Systems & Frames and Engines manufacturers in the consolidated Equipment turnover.

Breakdown of EU Aerospace Industry data

		Industry Sectors			
		Systems & Frames	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	Systems & Frames = a + d + g	Engines = b + e + h	Equipment = c + f + i	Total* = ∑ (a...i)

■ * for financial data, this means unconsolidated

Definitions

EU

The term EU as used in the AECMA Facts & Figures data covers the 15 Member States of the European Union: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden, United Kingdom.

Consolidated / Unconsolidated 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. The consolidated turnover therefore represents all sales to end-user customers as well as to aerospace companies outside the EU.

Turnover data provided by the companies is consolidated at company level.

Research & Development (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 as comprising:

- 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.

Segments

Systems & Frames

- Complete systems of and/or airframes for aeroplanes, helicopters and gliders, ground installations,....,their subsystems and parts, spares and maintenance
- Complete systems of and/or airframes for missiles, ground installations,...., their subsystems and parts, spares and maintenance
- Complete systems of and/or airframes for space vehicles, satellites, launchers, ground installations,...., their subsystems and parts, spares and maintenance
- Service Providers, Consultants, etc.

Engines

- Piston engines, turboprops, turbojets, jet engines, their subsystems and parts, spares and maintenance, for installation in aircraft systems
- Engines, their subsystems and parts, spares and maintenance, for installation in missile systems
- Propulsion devices, their subsystems and parts, spares and maintenance, for installation in space vehicles, satellites, launchers

Equipment

- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in aircraft systems
- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in missile systems
- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in space vehicles, satellites, launchers

Sectors

Aircraft

- Complete systems of and/or airframes for aeroplanes, helicopters and gliders, ground installations,....,their subsystems and parts, spares and maintenance
- Piston engines, turboprops, turbojets, jet engines, their subsystems and parts, spares and maintenance, for installation in aircraft systems
- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in aircraft systems
- Service Providers, Consultants, etc.

Missiles

- Complete systems of and/or airframes for missiles, ground installations,...., their subsystems and parts, spares and maintenance
- Engines, their subsystems and parts, spares and maintenance, for installation in missile systems
- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in missile systems
- Service Providers, Consultants, etc.

Space

- Complete systems of and/or airframes for space vehicles, satellites, launchers, ground installations,...., their subsystems and parts, spares and maintenance
- Propulsion devices, their subsystems and parts, spares and maintenance, for installation in space vehicles, satellites, launchers
- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in space vehicles, satellites, launchers
- Service Providers, Consultants, etc.

Aecma Facts & Figures 2001

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

Year	Turnover** (const. 2001 bn Euro)	Employees ⁺ (x1000 at Year End)
1980	39.1	547
1981	41.6	579
1982	43.1	560
1983	44.0	559
1984	46.8	540
1985	49.9	558
1986	55.5	566
1987	57.9	569
1988	59.4	565
1989	64.2	563
1990	65.8	561
1991	62.3	525
1992	59.8	480
1993	53.4	437
1994	50.3	408
1995	48.3	387
1996	54.2	382
1997	63.5	395
1998	66.7	422
1999	68.1	427
2000	73.2	429
2001	80.6	436

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 %	Other Customers in %
1980	53.2%	46.8%
1981	47.7%	52.3%
1982	47.2%	52.8%
1983	48.2%	51.8%
1984	48.3%	51.7%
1985	47.2%	52.8%
1986	47.0%	53.0%
1987	47.8%	52.2%
1988	45.3%	54.7%
1989	41.6%	58.4%
1990	39.0%	61.0%
1991	40.4%	59.6%
1992	37.7%	62.3%
1993	38.0%	62.0%
1994	38.3%	61.7%
1995	36.2%	63.8%
1996	28.1%	71.9%
1997	23.6%	76.4%
1998	25.4%	74.6%
1999	26.1%	73.9%
2000	23.7%	76.3%
2001	24.9%	75.1%

Source: AECMA

(*) based on consolidated turnover in constant 2001 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 %	Military in %
1980	32.5%	67.5%
1981	34.1%	65.9%
1982	32.8%	67.2%
1983	35.4%	64.6%
1984	35.4%	64.6%
1985	36.2%	63.8%
1986	40.6%	59.4%
1987	39.6%	60.4%
1988	42.8%	57.2%
1989	49.1%	50.9%
1990	50.8%	49.2%
1991	53.0%	47.0%
1992	57.4%	42.6%
1993	56.9%	43.1%
1994	55.4%	44.6%
1995	54.1%	45.9%
1996	57.7%	42.3%
1997	60.6%	39.4%
1998	62.6%	37.4%
1999	68.6%	31.4%
2000	70.9%	29.1%
2001	70.1%	29.9%

Source: AECMA

(*) based on consolidated turnover in constant 2001 prices; incl. estimations for Sweden until 1992 and non-AECMA companies until 1995.

Fig. 4: EU Aerospace Industry Turnover* Growth from 2000 to 2001

Constant 2001 mio Euro	Total Sales	EU Governments	Other Customers	Military Exports	Military Domestic	Civil Exports	Civil Domestic	Total Domestic	Total Export	Total Military	Total Civil
2000 (revised)	73 175	17 377 23.7%	55 797 76.3%	6 083 8.3%	15 177 20.7%	32 018 43.8%	19 897 27.2%	35 047 47.9%	38 101 52.1%	21 260 29.1%	51 915 70.9%
2001	80 580	20 039 24.9%	60 542 75.1%	7 279 9.0%	16 824 20.9%	40 142 49.8%	16 336 20.3%	33 160 41.2%	47 421 58.8%	24 103 29.9%	56 478 70.1%
Change 2000 to 2001 (%)	7 405 +10.1%	2 662 +15.3%	4 745 +8.5%	1 196 +19.7%	1 647 +10.9%	8 124 +25.4%	-3 561 -17.9%	-1 914 -5.5%	9 320 +24.5%	2 843 +13.4%	4 563 +8.8%
Contribution to total growth of +10.1%		+3.6%	+6.5%	+1.6%	+2.3%	+11.1%	-4.9%	-2.6%	+12.7%	+3.9%	+6.2%

Source: AECMA

(*) based on consolidated turnover

Fig. 5: Industry Sector Contribution* to 2001 EU Aerospace Industry Turnover
Total: 80.6 billion Euro

	Turnover in billion Euro	%
Systems & Frames	43.7	54.2%
Engines	15.8	19.6%
Equipment	21.1	26.2%
Total	80.6	100.0%

Source: AECMA, estimated

The figures reallocate internal turnover within the industry; i.e. Systems & Frames figures exclude EU-supplied Engines and Equipment; Engines figures exclude EU-supplied Equipment but include Engines supplied to European Systems & Frames manufacturers; Equipment figures include Equipment supplied to European Systems & Frames and Engines Manufacturers.

(*) based on consolidated turnover and 5 years' average.

Fig. 6: Breakdown of 2001 EU Aerospace Industry Turnover* by Product Segment
Total: 80.6 billion Euro

	Turnover (billion Euro)		%	
Aircraft	73.5	91.2%	91.2%	
Aircraft Final Products ⁺ (a)	36.7	45.6%	45.6%	
Large Civil Aircraft	20.4	25.3%	25.3%	
Regional Aircraft	1.3	1.6%	1.6%	
Business Jets	1.5	1.9%	1.9%	
Helicopter (civ. & mil.)	3.9	4.9%	4.9%	
Military Aircraft	9.6	11.9%	11.9%	
Aerostructures ^(a)	3.2	3.9%	3.9%	
Aircraft Engines ^(a)	9.4	11.7%	11.7%	
Aircraft Equipment ^(a)	6.5	8.1%	8.1%	
Aircraft Maintenance	17.6	21.9%	21.9%	
Missiles ⁺	2.3	2.8%	2.8%	
Space ⁺	4.9	6.0%	6.0%	
Total	80.6	100%	100%	

Source: AECMA, Aircraft breakdown estimated

(*) based on consolidated turnover

(+) data comprises EU and non-EU supplied engines and equipment

(a) excluding maintenance

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Fig. 8: Breakdown of 2001 EU Aerospace Industry Turnover by Customer

Total: 115 437 mio Euro unconsolidated
34 857 mio Euro Inter EU Aerospace Industry Sales
80 580 mio Euro consolidated, i.e. excl. Inter EU Aerospace Industry Sales

mio Euro		End-Users	Non-EU Aerospace Industry	Intra EU-Aerospace Industry	Total
Product Segments	Aircraft	59 903	13 555	30 615	104 073
	Missiles	2 082	181	1 182	3 444
	Space	3 988	872	3 060	7 920
	Total unconsolidated	65 973	14 607	34 857	115 437
Total consolidated		80 580		-	80 580
Industry Sectors	Systems & Frames	48 573	3 898	20 700	73 171
	Engines	11 213	6 100	4 349	21 661
	Equipment	6 186	4 610	9 808	20 605
	Total unconsolidated	65 973	14 607	34 857	115 437
	Total consolidated	80 580		-	80 580

Source: AECMA

Fig. 9: Breakdown of 2001 EU Aerospace Industry Turnover* by EU Governments / Other Customers**

Total: 80 580 million Euro

mio Euro		EU Governments -civil-	EU Governments -military-	Other Customers -civil-	Other Customers -military-	Total
Product Segments	Aircraft	708	14 567	51 445	6 739	73 459
	Missiles	0	1 732	0	530	2 262
	Space	2 507	524	1 808	21	4 860
	Total	3 215	16 824	53 253	7 289	80 580
Industry Sectors	Systems & Frames	2 326	12 377	33 049	4 720	52 471
	Engines	472	2 318	13 869	653	17 313
	Equipment	418	2 129	6 335	1 916	10 796
	Total	3 215	16 824	53 253	7 289	80 580

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

Fig. 10: Breakdown of 2001 EU Aerospace Industry Turnover* resulting from Sales of Aircraft Maintenance

Total: 17 618 million Euro = 21.9% of total turnover*

	at Aerospace Manufacturers		at Airline Maintenance Units		Total	
	mio Euro	%	mio Euro	%	mio Euro	%
Aircraft Systems & Frames	2 224	2.8%	4 385	5.4%	6 609	8.2%
Aircraft Engines	2 828	3.5%	4 642	5.8%	7 470	9.3%
Aircraft Equipment	1 179	1.5%	2 360	2.9%	3 539	4.4%
Total Maintenance Turnover	6 231	7.7%	11 387	14.1%	17 618	21.9%

Source: AECMA (*) based on consolidated turnover of 80580 mio Euro (**) incl. ESA, national aerospace research establishments and agencies

Fig. 11-12: Breakdown of 2001 EU Aerospace Industry Turnover* by Civil / Military and by Domestic / Export

Total: 80.58 billion Euro

billion Euro		Civil EU Domestic	Civil Export	Military EU Domestic	Military Export	Total
Product Segments	Total	16.34	40.14	16.82	7.28	80.58
	Aircraft	13.48	38.67	14.57	6.74	73.46
	Missiles	0.01	0.00	1.73	0.52	2.26
	Space	2.84	1.47	0.52	0.02	4.86
Industry Sectors	Systems & Frames	9.56	25.83	12.38	4.71	52.47
	Engines	4.03	10.31	2.32	0.65	17.31
	Equipment	2.74	4.01	2.13	1.92	10.80

Source: AECMA (*) consolidated turnover

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Fig. 13: Trend of Aerospace Industry-to-Industry Turnover

Year	EAI Export (2001 billion Euro)		EAI Import (2001 billion Euro)	
	to AI Companies in the US	to AI Companies in ROW	from AI Companies in the US	from AI Companies in ROW
1996	4.47	1.86	6.54	0.61
1997	7.04	2.00	7.57	0.78
1998	7.91	1.90	8.97	1.13
1999	8.61	2.73	9.84	1.66
2000	8.42	3.28	10.15	2.15
2001	11.51	3.10	11.56	1.34

Source: AECMA
AI: Aerospace Industry
ROW: Rest of World

Fig. 15: Aerospace Trade Balance of the EU
2001 Trade Balance Total: 5.4 billion Euro

billion Euro	European Aerospace Industry	Others in the EU *	Total (EAI and Others in the EU)
with USA	14.1	-21.5	-7.4
with ROW	20.4	-7.7	12.7
Total	34.5	-29.2	5.4

Source: AECMA, Eurostat
(* estimated
ROW: Rest of World)

Fig. 16: EU Aerospace Industry Order Intake Trend

in (%) of turnover *	1997	1998	1999	2000	2001
Civil		155%	116%	156%	149%
Military		165%	117%	134%	107%
Total (weighted)	118%	159%	117%	150%	137%
in 2001 Euro bn	1997	1998	1999	2000	2001
Civil		97.7	83.2	121.7	122.8
Military		56.3	36.4	42.8	35.3
Total	104.2	154.0	119.6	164.5	158.1

Source: AECMA
(* unconsolidated order intake and turnover)

Fig. 18: EU Aerospace Industry Operating Profit Margin

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
EU Aerospace Industry Operating Profit in % of Turnover	5.2%	4.2%	3.5%	3.8%	3.2%	2.4%	2.4%	-0.6%	0.7%	0.0%	0.0%	2.2%	4.0%	6.7%	6.8%	5.1%	6.6%

Source: AECMA

Fig. 19: EU Aerospace Industry Turnover per Employee

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Turnover/Employee ** (constant 2001 Euro x 1000) Actuals	72	74	76	79	85	91	99	102	105	114	117	115	119	116	119	122	141	163	163	160	171	186
Turnover/Employee (constant 2001 Euro x 1000) at average growth rate	72	76	79	83	87	91	95	99	104	108	113	119	124	130	136	142	149	156	163	170	178	186

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

Fig. 14: 2001 Aerospace* Industry Import and Export of the EU

billion Euro		by European Aerospace Industry	by Others in the EU **	Total (by EAI and Others in the EU)
Imports from	USA	11.6	23.2	34.8
	ROW	1.3	15.8	17.2
	Total Import	12.9	39.1	52.0
	USA Aerospace Industry USA other Customers	11.5 14.2	0.0 1.8	11.5 15.9
Exports to	ROW Aerospace Industry ROW other Customers	3.1 18.6	0.0 8.1	3.1 26.8
	ROW Total	21.7	8.1	29.9
	Total Export	47.4	9.9	57.3
Balance				5.4

Source: AECMA, Eurostat
(* Trade Items:
CN code 88 (Eurostat): aircraft, spacecraft, and parts thereof
CN code 84 extracts (Eurostat): engines for aircraft, spacecraft, and parts thereof
(**) estimated as balance of totals and industry
ROW: Rest of World

Fig. 17: Breakdown of 2001 EU Aerospace Industry
Order Intake* by Customer
2001 Total: 158 billion Euro

	EU Governments**	Other EU Customers	Non EU Customers	All Customers
Systems & Frames	11.2	50.1	55.2	116.5
- in % of turnover**	79%	176%	181%	159%
Engines	2.3	8.7	10.5	21.6
- in % of turnover**	89%	108%	96%	100%
Equipment	2.4	12.7	5.0	20.1
- in % of turnover**	98%	104%	84%	98%
Total	15.9	71.5	70.7	158.1
- in % of turnover**	82%	147%	149%	137%

Source: AECMA
(* based on unconsolidated order intake in percentage of
unconsolidated turnover
(**) including ESA, national aerospace research establishments
and agencies

Fig. 20-1: R&D Expenditure of the EU Aerospace Industry (Trend)

(at 2001 economic conditions)	Turnover* (billion Euro)	R&D* (billion Euro)	R&D* related to turnover
1996	54.2	7.6	14.0%
1997	63.5	7.9	12.5%
1998	66.7	10.6	15.9%
1999	68.1	9.9	14.5%
2000	73.2	10.6	14.5%
2001	80.6	10.0	12.5%

Source: AECMA
(* consolidated)

Fig. 20-2: 2001 R&D Expenditure of the EU Aerospace Industry
Total: 10.0 billion Euro = 12.5% of Turnover

Sector	R&D Expenditure* in billion Euro	R&D Expenditure in (%) of Sector turnover*
Systems & Frames	6.6	12.6%
Engines	2.1	11.9%
Equipment	1.4	13.0%
Total**	10.0	12.5%

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

Fig. 21: 2001 R&D Funding* in the EU Aerospace Industry
Total: 10.0 billion Euro = 12.5% of Turnover

		R&D Expenditure* in % of turnover	R&D Expenditure* in billion Euro
Company-financed	Civil	4.9%	4.0
	Military	1.7%	1.4
	Total	6.6%	5.4
financed by EU Governments**	Civil	1.7%	1.4
	Military	4.1%	3.3
	Total	5.8%	4.7
Grand Total		12.5%	10.0

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

Fig. 22: Breakdown of 2001 Direct EU Aerospace Industry Employment by Qualification and Activity
Total: 435 539 employees

		Number of Employees
by Qualification	Graduates, Engineers, Managers, etc.	118 963
	Manual Workers	178 767
	Others	137 809
	Total	435 539
by Activity	R&D	76 152
	Production	254 085
	Others	105 302
	Total	435 539

Source: AECMA

Fig. 23: Breakdown of 2001 Direct EU Aerospace Industry Employment by Segments, Sectors and Product Application
Total: 435 539 employees

No. of Empl.	Product Segments	Industry Sectors	Application
Aircraft	380 346		
Missiles	20 078		
Space	35 115		
Systems & Frames		236 604	
Engines		89 018	
Equipment		109 917	
Civil*			304 877
Military*			130 662

Source: AECMA
(* estimate

Fig. 24: Contribution to Direct EU Aerospace Industry Employment
Total: 435 539 employees

Country	Number of Employees
Austria	3 844
Belgium	7 447
Denmark	1 346
Finland	1 108
France	104 378
Germany	74 810
Greece	4 089
Ireland	4 320
Italy	39 157
Luxembourg	540
Netherlands	11 261
Portugal	3 849
Spain	19 586
Sweden	12 703
UK	147 101
Total	435 539

Source: AECMA

Fig. 25: Employment growth

	Number of Persons employed in the EU ('000)	Number of Persons employed by the EU Aerospace Industry ('000)
1995	148 323	387
1996	149 147	382
1997	150 070	395
1998	152 494	422
1999	155 498	427
2000	158 372	429
2001	n/a	436

Source: Eurostat, AECMA

Fig. 26: Aerospace Industry Contribution to EU Employment

Country	Number of Aerospace Industry Employees per 1000 Persons employed
Austria	1.0
Belgium	1.8
Denmark	0.5
Finland	0.4
France	4.3
Germany	1.9
Greece	1.0
Ireland	2.6
Italy	1.9
Luxembourg	3.2
Netherlands	1.4
Portugal	0.8
Spain	1.2
Sweden	3.1
UK	5.4
EU	2.7

Source: AECMA, Eurostat
(* based on year 2000 data, including full and parttime employees

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Fig. 27: Structure of the EU Aerospace Industry by Company Size

Size of Companies in Number of Employees	Number of Companies
> 10.000	8
1 000 - 10 000	80
250 - 1 000	168
<250 (SMEs*)	565
Total	821

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

Fig. 28: The EU Aerospace Industry's SMEs and Suppliers

	Number of Companies	
	SMEs	Non-SMEs
EU Aerospace Industry	565	256
Suppliers to EU Aerospace Industry*	20 000	80 000

Source: AECMA
(* estimate)

Fig. 31: 2001 Turnover* and Employment of EU Aerospace Industry SMEs**

Total Turnover*: 1 665 million Euro
Total Employment: 45 059 employees

		Turnover* in million Euro	Number of employees
Product Segments	Aircraft	1 534	42 707
	Missiles	26	561
	Space	105	1 791
	Total	1 665	45 059
Industry Sectors	Systems & Frames	334	6 723
	Engines	245	4 439
	Equipment	1 085	33 897
	Total	1 665	45 059

Source: AECMA
(* consolidated turnover
(**) excl. suppliers from outside the EU Aerospace Industry)

Fig. 32: 2001 Turnover of EU Aerospace Industry SMEs* by Customer
Total Turnover: 5 236 million Euro

	Turnover million Euro	
	in the EU	outside the EU
End Customers	871	214
Aerospace Industry	3 571	580
Total	5 236	

Source: AECMA
(* excluding suppliers from outside the EU Aerospace Industry)

Fig. 33: R&D Expenditure of the EU Aerospace Industry SMEs
Trend 1996 to 2001

	1996	1997	1998	1999	2000	2001
Turnover* (2001 mio Euro)	1 650	1 537	1 651	1 375	1 638	1 665
R&D* (2001 mio Euro)	217	159	178	149	218	175
R&D related to turnover	13.2%	10.3%	10.8%	10.8%	13.3%	10.5%

Source: AECMA
(* consolidated)

Fig. 34: 2001 R&D Funding* in the EU Aerospace Industry SMEs
Total: 175 million Euro = 10.5% of turnover

R&D Funding* in		million Euro	% of turnover
Company-financed	Civil	77	4.7%
	Military	18	1.0%
	Total	95	5.7%
financed by EU Governments**	Civil	56	3.4%
	Military	23	1.4%
	Total	79	4.7%
Grand Total		175	10.5%

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

Fig. 35: 2001 Comparative Aerospace Industry Turnover and Employment

	Turnover ⁺ in billion Euro	Employment ⁺⁺ ('000)
USA*	116.6	588.6
EU	80.6	435.5
Japan	13.0	31.3 **
Canada	15.9	83.6
Others***	10.3	102.0
Total	236.3	1241.0

Source: AECMA, AIA, AIAC, SJAC, U.S. Census Bureau, Company Reports
(+) consolidated turnover
(++) at year end
(*) excluding sales and employment not directly pertaining to aerospace
(**) includes company staff only directly related to aerospace production (i.e. figure not comparable with other regions)
(***) estimate, PR China and CIS not included

Fig. 36: 2001 Comparative Aerospace Industry Turnover Breakdown⁺

		EU	US*	Japan	Canada
Customer	National Authorities**	25%	37%	66%	12%
	Other Customers	75%	63%	34%	88%
Application	Military	30%	40%	41%	10%
	Civil	70%	60%	59%	90%
Destination	Domestic market	41%	44%	73%	19%
	Export	59%	56%	27%	81%

Source: AECMA, AIA, U.S. Census Bureau, AIAC, Strategis, SJAC
(+) estimate, based on consolidated turnover
(*) excluding sales not associated to aerospace
(**) including defence and space agencies

Currency Conversion Table

For calculations in this brochure, the following year 2001 average* exchange rates have been used:

Euro Exchange Rates 2001

	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxembourg	Netherlands	Austria	Portugal	Finland	Sweden	UK	Czech Rep.	USA	Canada	Japan
1 Euro =	1.000	7.452	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	9.255	0.6218	34.07	0.895	1.386	1.087
	Euro	DKK	Euro	Euro	Euro	Euro	Euro	Euro	Euro	Euro	Euro	Euro	Euro	SEK	GBP	CZK	USD	CAD	100 YEN

US\$ Exchange Rates 2001

	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxembourg	Netherlands	Austria	Portugal	Finland	Sweden	UK	Czech Rep.	USA	Canada	Japan
1 US\$ =	1.11732	8.32626	1.11732	1.11732	1.11732	1.11732	1.11732	1.11732	1.11732	1.11732	1.11732	1.11732	1.11732	10.34078	0.69475	38.06704	1.000000	1.54860	1.21453
	Euro	DKK	Euro	Euro	Euro	Euro	Euro	Euro	Euro	Euro	100 Euro	Euro	Euro	SEK	GBP	CZK	USD	CAD	100 YEN

Source:
European Commission
Directorate General for Economic and Financial Affairs (DG ECFIN)
15 January 2002

* rates are annual averages based upon daily rates through the calendar year

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The European Association of Aerospace Industries (AECMA) has the objective of promoting the competitive development of the European Aerospace Industry, and representing the Industry on a European level in all matters of common interest.

Members of the Association are the national aerospace associations of Austria, Belgium, the Czech Republic, Denmark, France, Finland, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden and the United Kingdom as well as the largest European aerospace companies. It thereby represents the European Aerospace Industry almost in its entirety on the level of aircraft and systems, engines, equipment and components.

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