COMMISSION DECISION

of 30 July 1997

declaring a concentration compatible with the common market and the functioning of the EEA Agreement

(Case No IV/M.877 — Boeing/McDonnell Douglas)

(Only the English text is authentic)

(Text with EEA relevance)

(97/816/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to the European Economic Area (EEA) Agreement, and in particular Article 57 (1) thereof,

Having regard to Council Regulation (EEC) No 4064/89 of 21 December 1989 on the control of concentrations between undertakings [1], as amended by the Act of Accession of Austria, Finland and Sweden, and in particular Article 8 (2) thereof,

Having regard to the Agreement between the European Communities and the Government of the United States of America regarding the application of their competition law [2], and in particular Articles II and VI thereof,

Having regard to the Commission decision of 19 March 1997 to initiate proceedings in this case,

Having given the undertakings concerned the opportunity to make known their views on the objections raised by the Commission,

Having regard to the opinion of the Advisory Committee on Concentrations [3],

Whereas:

(1) On 18 February 1997, the Commission received notification of a proposed concentration pursuant to Article 4 of Regulation (EEC) No 4064/89 (Merger Regulation) by which the Boeing Company (Boeing) would acquire control within the meaning of Article 3 (1) (b) of the Merger Regulation of the whole of McDonnell Douglas Corporation (MDC).

(2) After examination of the notification, the Commission decided on 7 March 1997 to continue the suspension of the concentration until a final decision was reached. The Commission subsequently concluded that the proposed concentration falls within the scope of the Merger Regulation and raised serious doubts as to its compatibility with the common market, and by decision of 19 March 1997 it accordingly initiated proceedings pursuant to Article 6 (1) (c) of the Merger Regulation.

I. THE PARTIES

(3) Boeing is a United States corporation whose shares are publicly traded. Boeing operates in two principal areas: commercial aircraft, and defence and space. Commercial aircraft operations involve development, production and marketing of commercial jet aircraft and providing related support services to the commercial airline industry worldwide. Defence and space operations involve research, development, production, modification and support of military aircraft and helicopters and related systems, space systems and missile systems, rocket engines, and information services.

(4) MDC is a US corporation whose shares are publicly traded. MDC operates in four principal areas: military aircraft; missiles, space and electronic systems; commercial aircraft; and financial services. Operations in the first two industry areas involve the design, development, production and support of the following major products: military transport aircraft; combat aircraft and training systems; commercial and military helicopters and ordnance; missiles;

[1] OJ L 395, 30. 12. 1989, p. 1; corrected version OJ L 257, 21. 9. 1990, p. 13.
[2] OJ L 95, 27. 4. 1995, p. 47.
[3] OJ C 372, 9. 12. 1997.

satellites; launching vehicles and space station components and systems; lasers, sensors; and command, control, communications, and intelligence systems. In the commercial aircraft area MDC designs, develops, produces, modifies and sells commercial jet aircraft and related spare parts. MDC is also engaged in aircraft financing and commercial equipment leasing and in the commercial real estate market, for itself and for commercial customers.

II. THE OPERATION

(5) On 14 December 1996, Boeing and MDC entered into an agreement by which MDC would become a wholly owned subsidiary of Boeing.

III. THE CONCENTRATION

(6) The operation constitutes a concentration within the meaning of Article 3 of the Merger Regulation since Boeing acquires within the meaning of Article 3 (1) (b) of the Regulation control of the whole of MDC.

IV. THE COMMUNITY DIMENSION

(7) Boeing and MDC have a combined aggregate worldwide turnover in excess of ECU 5 billion (Boeing ECU 17 billion, MDC ECU 11 billion). Each of them has a Community-wide turnover in excess of ECU 250 million (Boeing [. . .] [4], MDC [. . .]), but they do not both achieve more than two thirds of their aggregate Community-wide turnover within one and the same Member State. The notified operation therefore has a Community dimension.

V. THE IMPACT OF THE OPERATION WITHIN THE EUROPEAN ECONOMIC AREA

(8) Not only does the operation have a Community dimension within the legal sense of the Merger Regulation (Section IV above), it also has an important economic impact on the large commercial jet aircraft market within the EEA, as will be shown below in Section VII 'Competitive assessment'.

(9) The relevant market for the purposes of assessing the operation is the world market for large commercial jet aircraft. The EEA is an integral and important part of this world market, and its competitive structure is very similar. According to Boeing's 1997 Current Market Outlook, European airlines will account for about 30 % of cumulated forecast world demand over the next ten years. The average market shares of Boeing and MDC in the EEA over the last 10 years have been 54 % and 12 % respectively (in the world 61 % and 12 % respectively). As far as the existing fleet in service in the EEA is concerned, Boeing has a share of about 58 %, MDC about 20 %, and Airbus about 21 % [5] (corresponding world figures are 60 %, 24 %, and 14 %).

(10) It is therefore evident that the operation is of great significance in the EEA as it is in the world market of which the EEA is an important part.

VI. COOPERATION WITH THE US AUTHORITIES

(11) In compliance with the Agreement between the European Communities and the Government of the United States of America regarding the application of their competition laws ('the Agreement'), the European Commission and the Federal Trade Commission have carried out all necessary notifications. Pursuant to Article VI of the Agreement, the European Commission has sought an appropriate way to take account of important national interests of the United States, particularly those stemming from the consolidation of the US defence industry. Furthermore, pursuant to Article VI of the Agreement, the European Commission notified to the US authorities on 26 June 1997 its preliminary conclusions and concerns and asked the Federal Trade Commission to take account of the European Union's important interests in safeguarding competition in the market for large civil aircraft. Chairman Pitofsky of the Federal Trade Commission responded with a letter the same day indicating that the Federal Trade Commission would take into account the expressed interests of the European Communities when reaching its decision. On 1 July 1997, the Federal Trade Commission reached a majority decision not to opposte the merger.

(12) On 13 July 1997, pursuant to Articles VI and VII of the Agreement, the US Department of Defence and Department of Justice, on behalf of the US Government, informed the European Commission of concerns that: (i) a decision prohibiting the proposed merger could harm important US defence interests; (ii) despite any measures the Commission could impose on a third party purchaser, a divestiture of Douglas Aircraft Company (DAC)

(4) In the published version of the Decision, some information has hereinafter been omitted, pursuant to the provisions of Article 17 (2) of Regulation (EEC) No 4064/89 concerning non-disclosure of business secrets.

(5) *Source:* UK Department of Trade and Industry.

would be likely to be unsuccessful in preserving DAC as a stand-alone manufacturer of new aircraft, resulting in an inefficient disposition of whatever of DAC's new aircraft manufacturing operations that potentially could be salvaged by Boeing, and in the loss of employment in the United States; and (iii) any divestiture of DAC to a third party that would not operate DAC as a manufacturer of new aircraft would be anti-competitive in that it would create a firm with the incentive and means to raise price and diminish service in respect of the provision of spare parts and service to DAC's fleet-in-service, a large portion of which is owned by US airlines. The Commission took the above concerns into consideration to the extent consistent with Community law. In particular, as far as US defence interests are concerned, the Commission has in any event limited the scope of its action to the civil side of the operation since it has not established that a dominant position has been strenghtened or created in the defence sector as a result of the proposed concentraion. The Commission has not pursued further the concerns it expressed in its 'Statement of objections' concerning the effect of the concentration on the international market for fighter aircraft. As far as DAC is concerned, the Commission, for reasons outlined below, has not considered a divestiture as a remedy to resolve the competition problems created by the concentration.

VII. COMPETITIVE ASSESSMENT

A. RELEVANT PRODUCT MARKETS

(13) The concentration affects the market for large commercial jet aircraft.

1. *New large commercial aircraft*

(14) From the demand side, a customer will generally approach a purchasing decision in several stages, considering firstly operating requirements, then technical requirements, and finally economic and financial aspects. Operating criteria will include routes to be flown (traffic density and distance), optimal seating or loading and flight frequency (trade-offs between fewer flights with larger aircraft, and the converse), and the availability of airport slots. Technical characteristics will include range, capacity, performance and reliability, fleet commonality (that is, the degree of facility with which new aircraft can be integrated into existing fleets), and maintenance and service networks. Finally, alternative aircraft will be evaluated on the basis of net present value according to purchase price, forecast operating revenues and costs, and residual value.

(15) It is widely accepted that the regional jet market (including, for example, Fokker, Bombardier and British Aerospace models) is distinct from the large commercial jet aircraft market on which Boeing, MDC and Airbus are active. None of the latter three manufacturers have products below the 100 seat/1 700 nautical mile maximum-range thresholds, which are considered to be the approximate combined upper limits for the specific requirements of regional carriers. For the most part, regional jets are incompatible with families of large jets in terms of range, operating characteristics, cargo carrying, and so on. Major airlines acquiring regional jets use them in specific regional applications or subsidiaries (examples being British Airways and Swissair/Crossair).

(16) It is also widely accepted that the only aircraft concerned are Western-built jets, since non-Western aircraft (such as the Russian Ilyushin) cannot compete on technical grounds in their current versions, for reasons of reliability, after-sales service and public image.

The notifying party identified the relevant product markets as 'narrow-body and wide-body commercial jet aircraft'. The Commission's investigation has revealed that varying opinions exist on the part of manufacturers and customers as to the appropriate segmentation of the overall market. Segmentation of the large commercial jet aircraft market cannot be definitive, in view of the complexity of the demand-side purchasing criteria already enumerated. However, the narrow-body (or single-aisle) and wide-body (or twin-aisle) distinction proposed by the notifying party seems to be generally accepted as a valid segmentation. Narrow-body aircraft have as operating characteristics a range of approximately 2 000 to 4 000 nautical miles and seating capacity for about 100 to 200 passengers, whilst for wide-body aircraft the corresponding parameters are 4 000 to 8 000+ nautical miles and 200 to 400+ passengers. A further segmentation of the narrow-body and wide-body markets is given below (paragraph 38).

It is therefore concluded that there are two separate relevant markets within the overall market for large commercial jet aircraft, the market for narrow-body aircraft and the market for wide-body aircraft. Since the structure of the narrow-body and the wide-body markets is similar and the competition problems resulting from the proposed merger are the same for both markets, the Commission will assess below the effects of the merger on both markets together.

2. *Second-hand aircraft*

(17) As already stated, the overall product market consists of large commercial jet aircraft. There exist significant sales of these aircraft on a second-hand basis. It is estimated that about 30 % of passenger aircraft delivered change airlines whilst remaining in passenger use; over two thirds of total demand for freighters is met by the conversion of used passenger aircraft. However, in line with previous practice of the Commission (Commission Decision 91/619/EEC of 2 October 1991 in Case IV/M.053 — Aerospatiale-Alenia/de Havilland) [6], it is appropriate to consider the second-hand aircraft market as separate from the new aircraft market.

(18) Firstly, it must be noted that in any event constraints due to the inherent longevity of the goods in question should be distinguished from constraints arising from competitive pressures due to the availability of goods from alternative suppliers. In the large commercial jet aircraft sector, where the life-span of the products can be over 20 years, the existence of a large fleet in service will *per se* impose (probably cyclical) constraints on the opportunities for manufacturers to sell new aircraft.

(19) As far as the actual market for second-hand, large commercial jet aircraft is concerned, its characteristics indicate that it is separate from that for new aircraft. The capital prices of second-hand aircraft are lower, whereas the running costs tend to be higher, and such aircraft clearly have a shorter life. The Commission's investigation has revealed that used aircraft may be a feasible alternative for smaller airlines where limited financial resources constrain them to buy other equipment. For large airlines, used aircraft typically cannot be acquired in sufficient numbers or configuration commonality to meet longer-term requirements; whilst used aircraft can sometimes meet specific short-term needs, they tend to be complements to, rather than substitutes for, new aircraft. Therefore, sales of second-hand aircraft must be considered to constitute a market distinct and separate from the market for new aircraft on which Boeing and MDC are active. The market for second-hand aircraft will not, therefore, be taken into account in what follows.

B. RELEVANT GEOGRAPHIC MARKET

(20) Large commercial jet aircraft are sold and operated throughout the world under similar conditions of competition. Relative transportation costs of delivery are negligible. Therefore, the Commission considers that the geographic market for large commercial jet aircraft to be taken into account is a world market.

C. EFFECTS OF THE CONCENTRATION ON THE MARKET FOR LARGE COMMERCIAL JET AIRCRAFT

I. ***Current structure of the market for large commercial jet aircraft***

1. *The competitors*

(21) There are currently three competitors on the worldwide market for large commercial jet aircraft: Boeing, Airbus and MDC.

(22) Boeing is a fully integrated aerospace company, active in all aerospace sectors: commercial, defence and space (see above). Boeing is the world's leading company in large commercial jet aircraft, sales of which represent about 70 % of its revenues.

(23) MDC is another fully integrated aerospace company, also active in all sectors of aerospace (see above). MDC is the world's third largest manufacturer of large commercial jet aircraft, as well as the world's leading producer of military aircraft and the second leading defence firm in the world. Of its 1996 turnover, around 70 % came from military and space businesses and the rest was related to large commercial jet aircraft.

(24) Airbus Industrie is the world's second largest producer of large commercial jet aircraft. Airbus was established in December 1971 as a *groupement d'intérêt economique* (GIE), or a consortium of economic interests. The members of the Airbus consortium include privately owned Daimler-Benz Aerospace Airbus of Germany (DASA) (37,9 %) and British Aerospace (20 %), respectively, and government-owned Aerospatiale of France (37,9 %) and CASA of Spain (4,2 %). The partnership is unique in that each member operates under the laws of the country in which it

[6] OJ L 334, 5. 12. 1991, p. 42.

is incorporated. Partners finance their own research, development and production of aircraft, while Airbus Industrie oversees the marketing and servicing of aircraft. Fully equipped sections of Airbus aircraft are manufactured at separate locations throughout Europe, then transported to France or Germany for final assembly. For example, Aerospatiale manufactures the cockpit, DASA produces fuselage sections and aircraft wings are manufactured by British Aerospace. Work is distributed according to the core competences of each partner.

2. *The customers*

(25) Customers of large commercial jet aircraft are airlines (including scheduled and non-scheduled operators) and leasing companies. 561 airlines operating western aircraft from manufacturers which are still on the market have been identified, of which 246 airlines operate more than five aircraft. However, relatively few of these purchase aircraft in a given year. Even over a longer period, demand tends to remain concentrated among a few very large companies; for example, during the period 1992 through 1996, Boeing's five largest customers accounted for more than [...] of its sales for each year. Furthermore, it is estimated that half the world jetliner fleet is operated by the 12 largest airlines. Leasing companies account for an estimated 20 % of demand.

(26) The demand for large civil jet aircraft is driven by the demand for air transportation, which has been growing in a cyclical but steady manner since its beginnings in the late 1950s. Among the latest main factors that have contributed to the industry growth, developments such as the air transport liberalization process within the Community and the additional demand from China and the former eastern block are to be emphasized.

(27) The market is in a process of expansion and strong growth in demand is predicted, although conditioned by the cyclical nature of the industry. In its 1997 Current Market Outlook, Boeing forecasts that over the next 10 years the total market potential is 7 330 aircraft or the equivalent of US $ 490 billion (in 1996 US dollar terms). Most of this demand will correspond to three main regional areas: Asia-Pacific (1 750 aircraft), North America (2 460 aircraft) and Europe[7]; customers from the latter are expected to purchase 2 070 aircraft or an equivalent US $ 137 billion. In other words, European customers will account for more than 28 % of the cumulated demand. If this percentage remained stable, in 20 years (18 according to MDC), the value of European purchases would amount to US $ 307,5 billion, of a total market potential that would reach US $ 1 100 billion.

3. *Market shares*

(28) With respect to the calculation of market shares, the notification does not propose one specific method of calculation but provides figures for each of the last 10 years on backlog, new firm orders and net orders both in terms of value and units of aircraft. Backlog data is widely seen as the best indicator of market position in this industry; to have a complete picture of the market, the development of this indicator over the last 10 years needs to be evaluated. The yearly backlog reflects the development of net orders (number of new firm orders minus number of cancelled orders) over a certain period. It is also appropriate to base the analysis on the backlog in terms of value and not in terms of units in order to take into account the different prices and sizes of the various types of aircraft. This is necessary since, for the purpose of calculation of market shares the same weight cannot be given to, for example, a Boeing 737-300 with a price range of US $ 38 to 44 million as to a Boing 747-400 with a price range of US $ 156 to 182 million. Value shares are calculated in US dollars, since this is the currency in which prices are expressed in this market.

(29) According to the figures provided in the notification and by Airbus, the worldwide market shares in the overall market for large commercial jet aircraft in terms of backlog value as of 31 December 1996 are the following (see Annex 1):

	(%)
Boeing	64
Airbus	30
MDC	6
Total	100

(30) Although the notification includes the British Aerospace RJ products line and the Fokker 70/100 in the segment for narrow-body aircraft, it is the view of the Commission that these types of aircraft are in a different market (see above). In any event, it makes no significant difference whether or not the British Aerospace and the Fokker aircraft are to be included in the market for large commercial aircraft, given their marginal position. Similarly, existing Russian aircraft (such as the Ilyushin) are not to be included either, since, although they have reached a certain stage of technical development, it appears that they do not yet constitute a real alternative, for reasons of reliability, after-sales service and public image.

(7) In Boeing's report this term refers to continental Europe, excluding former Soviet Union States and including Turkey.

(31) For the period 1987 to 1996, the average shares of the backlog were the following:

(%)

Boeing	61
Airbus	27
MDC	12
Total	100

(32) As can be seen from the table in Annex 1 and the graph in Annex 2, there was an increase in the share of Airbus from around 24 % in 1987 to around 27 % in 1989. Since 1989, the share of Airbus has remained more or less stable. There was a decrease of Boeing's share in 1989, followed by an increase over the years until 1996 (from 57 % to 64 %). In contrast, there was a continuous decrease in MDC's share from around 19 % in 1988 to around 6 % in 1996.

(33) The development in both the wide-body and narrow-body markets was similar to that in the overall market (see Annex 1 and the graphs in Annexes 3 and 4). In the wide-body market, in 1989, there was a significant increase in the share of Airbus from 13 % to 31 %, largely due to orders for the new A 330 and A 340 models; this was followed by a more or less stable share of the order of 30 %. For Boeing in 1989 there was a significant decrease to around 50 %, followed by a continuous increase to more than 70 %. For MDC there was a continuous decrease from around 20 % to around 2 %. In the narrow-body market, from 1989 Airbus increased its market share to over 30 %. Boeing's share was more or less stable at around 55 % and MDC's share decreased from 19 % to 11 %.

(34) The market structure within the EEA shows more or less the same pattern as the world market (see Annex 5) as the following table illustrates:

(%)

Backlog	31. 12. 1996	Average 1987/1996
Boeing	61	54
Airbus	37	34
MDC	2	12
Total	100	100

(35) As evidenced in the tables in Annex 5 and the graphs in Annexes 6, 7 and 8, in the EEA the development in the overall market and in both the wide-body and narrow-body markets was similar to that in the world market. In the overall market, from 1989 Boeing increased its market share continuously from around 50 % to over 60 %. After a significant increase from 20 % to 33 % in 1989, the market share of Airbus showed a slight increase whilst MDC's market share decreased continuously from 1988 from around 20 % to 2 %. In the wide-body market between 1987 and 1989 there was a significant increase in the share of Airbus from around 11 % to around 36 %, followed by a more or less stable share of the order of 30 %. For Boeing in 1989 there was a significant decrease to around 51 %, followed by a continuous increase to about 69 %. For MDC there was a continuous decrease from around 19 % in 1990 to around 1 % in 1996. In the narrow-body market, from 1989 Airbus increased its market share to around 47 %, Boeing's share was more or less stable at around 50 % and MDC's share decreased from around 19 % to 2 %.

(36) The overall world-wide assessment leads to the conclusion that, after a significant improvement in the late 1980s and early 1990s, Airbus maintained its position in large commercial aircraft on the same level. Boeing increased its market share during the 1990s to more than 60 % whilst there was a continuous decrease in the market share of MDC, in particular in the wide-body market. The combined market share of Boeing and MDC from 1989 was more or less stable at around 70 %.

(37) The very high market shares of Boeing already indicate a strong position in the overall market for large commercial aircraft as well as in the two markets proposed in the notification. Furthermore, after making an inroad into Boeing's position in the 1980s, Airbus was not able significantly to improve its position during the 1990s whilst Boeing, already starting from a high level, was able to increase its market share more or less continuously during this period. This indicates that it was difficult for Airbus to attack Boeing's position in the market even after having gained a market share of nearly 30 % in the 1980s. This is also reflected by the fact that Airbus has not succeeded in making a significant inroad in most of the top 10 operators' fleets (see table in paragraph 69). The market power of Boeing, allowing it to behave to an appreciable extent independently of its competitors, is an illustration of dominance, as defined by the Court of Justice of the European Communities in its judgment in Case 322/81 Michelin v. Commission [8].

4. *Market segments*

(38) Within the overall large commercial jet aircraft market, a number of segments can be identified. The following table illustrates what amounts to an approximate consensus within the industry [9] on this segmentation.

[8] [1983] ECR 3461.

[9] Including Boeing itself (1997 Current Market Outlook).

Commercial aircraft segments

	Narrow-body		Wide-body		
Approximate seating capacity	100-120	120-200	200-320	320-400	400+
Boeing	737-500 737-600	737-300 737-400 737-700 737-800 757-200 757-300	767-200 767-300	777-200 777-300	747-400
MDC	MD-95	MD-80 MD-90		MD-11	
Airbus		A319 A320 A321	A310 A300	A330-200 A340-200 A330-300 A340-300	

According to a submission made to the Commission by MDC, although there is some degree of fluidity between segments, this tends to be driven by cost considerations arising from fleet commonality; it remains the case that some 70 % of aircraft are used in such a way that the segmentation indicated above is valid. In particuliar, the 100-120 seat narrow-body aircraft segment can only be substituted by the 120-200 seat narrow-body aircraft (to a very limited extent) because of the higher per-trip operating costs of the latter. At the other extreme in the segment of wide-body aircraft, there is only Boeing's 747-400. Furthermore, it appears that on certain long-range routes with a high density of passengers, such as routes from Europe or the USA to Japan, there is currently no alternative to Boeing's 747, which combines the largest capacity with the longest range of all existing aircraft. The same applies to certain domestic routes with very high traffic density and severe slot constraints.

According to Boeing's notification, airlines are increasingly making aircraft purchasing decisions based upon 'families of aircraft'; having selected the family, an airline will afterwards select the model. Even though Boeing argues that both Airbus and itself would be able to offer such families, it is clear from the above table that only Boeing enjoys the benefits arising from the ability to offer a complete family of aircraft, due to its presence in every segment, unlike Airbus.

(39) A further segment within the overall market for large commercial aircraft is that of freighters. While freighters have similar basic design definitions to passenger models, they need to be adapted to include large loading doors on the main deck, structural reinforcement for the increased payload, and adapted loading and cabin systems. From a demand-side point of view, freighter configurations of large commercial aircraft are not substitutable by passenger configurations. However, the Commission considers that freighter aircraft do not constitute a separate relevant market, given the high supply-side flexibility between passenger and freighter aircraft. New and converted aircraft could be supplied in the short term without incurring significant additional costs or risks.

5. *Fleet in service*

(40) Boeing, as the company itself states in its 1995 annual report, has led the world production of commercial aeroplanes for more than three decades and has built more jet aircraft than all the other manufacturers combined. Given the typical long operating life of these products, Boeing has by far the broadest customer base which gives it a significant competitive advantage *vis-à-vis* its competitors.

(41) It is estimated that Boeing has a share of around 60 % of the current worldwide fleet in service of western-built, large passenger aircraft. The share of MDC is around 24 % and that of Airbus only around 14 % even more than 25 years after Airbus began operations. The remaining 2 % are related to Lockheed aircraft still in operation; Lockheed has,

however, no longer been active in the production of commercial aircraft since 1984. It is true that the existence of a large fleet in service is not a guarantee of the success of a supplier of commercial aircraft, particularly when a supplier offers only a limited range of aircraft types. However, where a large fleet in service is combined with a broad product range, the existing fleet in service can be a key factor which may often determine decisions of airlines on fleet planning or acquisitions. Cost savings arising from commonality benefits, such as engineering spares inventory and flight crew qualifications, are very influential in an airline's decision-making process for aircraft type selections and may frequently lead to the acquisition of a certain type of aircraft even if the price of competing products is lower. The importance of the existing fleet in service for the choice of new aircraft has been underlined by all airlines which replied to the Commission's questions on this point.

(42) In this context, it should be noted that Boeing has not only by far the largest fleet in service, but also by far the broadest product range and it offers a family of aircraft which covers all conceivable segments of large commercial aircraft.

6. *Exclusive deals*

(43) Boeing has recently entered into exclusive arrangements for the supply of large commercial jet aircraft to American Airlines (American), Delta Airlines (Delta), and Continental Airlines (Continental). In November 1996, American and Boeing agreed on a long-term partnership that will make Boeing the exclusive supplier of jet aircraft to American until the year 2018. American placed firm orders for 103 aircraft, including 75 orders for the next generation 737 family of jetliners, twelve orders for the 777-200, twelve 757s and four 767-300ERs. Based on Boeing's list prices, the order is valued at about US $ 6,6 billion. American also obtained price-protect 'purchase rights' for 527 additional jets during the more than 20-year exclusivity period. These purchase rights enable American to determine when it wants to exercise its options to buy aircraft, with as little as 15 months advance notice before delivery for narrow-body aircraft and 18 months before delivery for wide-body aircraft, compared to the traditional 18 to 36 month delivery period. It has been reported that American did not have to pay for these purchase rights but received them in exchange for the commitment to buy only Boeing jets. At the same time, it appears that Boeing offered retroactive price reductions on aircraft purchased by American in previous campaigns.

(44) On 20 March 1997, Boeing concluded a second long-term exclusive arrangement with a major airline when Delta agreed to purchase exclusively Boeing aircraft for the next 20 years. Delta placed 106 firm aircraft orders until the year 2006, including ten 767-300ERs, five 757/200 twin jets, seventy next-generation 737s and twenty-one 767-400ERXs. The total order is valued at US $ 6,7 billion. The plan also includes 124 options with an estimated value of US $ 8,3 billion, as well as 414 rolling options for aircraft until 2018. Finally, on 10 June 1997, Continental agreed in principle on 35 firm orders and further purchase options from Boeing, with a condition that Continental will meet all its large aircraft supply requirements exclusively from Boeing for the next 20 years.

(45) The fact that three of the biggest airlines in the world have locked themselves into a 20-year supply agreement with a single supplier is already an indication that Boeing enjoys a dominant position in the large commercial aircraft market. Furthermore it is likely that those three deals were facilitated by the proposed merger (as explained below). Although, as indicated, the customers are to receive economic benefits from the deals, these are likely to be more than offset by the rigidity incurred by being locked into a single supplier for so long a period, during which it might prove to be the case that competitors' prices become lower, their technology and related services superior.

(46) The existing exclusive deals between Boeing and the three airlines in question will have important foreclosure effects on the worldwide market for large commercial jet aircraft over the next 20 years. It is estimated that 14 400 new aircraft will be delivered worldwide between 1997 and 2016, of which about 2 400 are on firm order with Boeing, MDC or Airbus. There thus remains an open market for about 12 000 aircraft. However, Boeing's exclusive deals including options and purchase rights, account for an estimated 13 % of this open market (or over 30 % of the US market).

7. *Future market growth*

(47) The parties have argued that the supply of second-hand aircraft and the purchasing power of airlines already constrain Boeing's market power, and will continue to do so.

The Commission's view that second-hand aircraft are not in general effective substitutes for new aircraft has already been explained (see above). This is particularly likely to hold true over the next 20 years, when demand for aircraft is expected to grow by more than 80 %. Second-hand aircraft could not possibly meet more than a fraction of

this growing demand, particularly given that a high proportion (more than 80 %) of the existing world fleet in service will need to be retired and replaced during this same period.

The anticipated market growth will also lessen whatever buying power airlines are able to exercise. During a period when demand for air transport is forecast to increase very significantly (a 5 % annual rate is foreseen), airlines in trying to meet this demand will to an extent find themselves vying with each other to obtain new aircraft, which will put them in a less favourable negotiating position *vis-à-vis* suppliers. Furthermore, the buying power of airlines *vis-à-vis* Boeing is, in any event, limited given Boeing's monopoly in the largest wide-body segment and, at least after the proposed concentration, in the smallest narrow-body segment.

8. *Potential competition*

(48) In its notification Boeing states that there are potential new entrants to the large commercial jet aircraft market, particularly companies situated in Russia, India and the Far East (China, Japan, South Korea and Indonesia).

(49) However, Boeing itself effectively admits that there are massive barriers to entry to this market. Initial development and investment costs are huge (over US $ 10 billion to develop a new wide-body jet, according to Boeing). The production process itself is characterized by very significant learning curve effects and economies of scale and scope, which must be attained if a new entrant is to compete effectively over time. Very strict safety regulations need to be complied with at US, European and other national levels.

(50) Again, in Boeing's notification potential entrants which are identified are likely to be active mainly in the regional jet market, and as such will not compete on the large commercial jet market (see above under market definition). This is confirmed by replies from (for example) Far Eastern companies supplied to the Commission; such companies are involved either in the regional jet market, or are subcontractors to Boeing for large jet aircraft programmes.

(51) It can therefore be excluded that potential competition will have any significant impact on the present competitive situation over the foreseeable future.

9. *Conclusion*

(52) In view of the various characteristics of the current structure of the markets for large commercial jet aircraft, as described above, in particular the existing market shares of Boeing, the size of its fleet in service, the recent conclusion of long-term exclusive supply deals with major customers, and the lack of potential new entrants, the Commission has reached the conclusion that Boeing already enjoys a dominant position on the overall market for large commercial aircraft as well as on the markets for narrow-body and wide-body aircraft.

II. ***Strengthening of Boeing's dominant position***

(53) The proposed concentration would lead to a strengthening of Boeing's dominant position in large commercial aircraft through:

— the addition of MDC's competitive potential in large commercial aircraft to Boeing's existing position in this market,

— the large increase in Boeing's overall resources and in Boeing's defence and space business which has a significant spill-over effect on Boeing's position in large commercial aircraft and makes this position even less assailable.

1. *Impact of MDC's commercial aircraft business*

(54) The immediate effect of the proposed concentration would be that:

(a) Boeing would increase its market share in the overall market for large commercial aircraft from 64 % to 70 %;

(b) by taking over the activities of MDC, Boeing would, in future, be faced with only one competitor in this market;

(c) Boeing would increase its customer base from 60 % to 84 % of the current fleet in service;

(d) Boeing would increase its capactiy in commercial aircraft, particularly in terms of skilled work force;

(e) Boeing would increase its ability to induce airlines to enter into exclusivity deals, thereby further foreclosing the market.

(a) **Increase in market share**

(55) In the overall market for large commercial aircraft, Boeing would increase its market share in terms of current backlog from 64 % to 70 %. In the wide-body market, there would be an increase from 71 % to 73 %. In the narrow-body market, Boeing's market share would increase from 55 % to 66 %.

(56) Furthermore, Boeing would add to its already-existing monopoly in the largest wide-body segment a further monopoly in the smallest narrow-body segment of aircraft with 100 to 120 seats. This segment is particularly important since it is, to a great extent, used by large airlines to feed their hubs and to achieve profitable operations on low-traffic routes. On these routes, it is difficult to substitute aircraft of 100 to 120 seats by larger narrow-body aircraft such as the Airbus 319, due to the higher per-trip operating costs of the latter. For the time being, the only competing aircraft in the smallest narrow-body segment are the Boeing 737-500 and 737-600 and the MD-95. It has to be noted that, even if Airbus has undertaken some discussions with China and other Asia manufacturers about the development of a 100-seater, these negotiations are still at an early stage and the investment decision will depend on market and development scenarios; consequently, this project is not likely to have any influence in the market in the foreseeable future. Boeing would also achieve a near monopoly in the freighter segment. For deliveries of new freighters in the period 1990-96, the average annual world-wide market shares of Boeing and MDC were 67 % and 23 % respectively, that is 90 % combined.

(57) However, since, as outlined below, MDC is no longer a real force in the market for commercial aircraft, and in the absence of another potential buyer of its commercial aircraft business, it is likely that Boeing would have obtained, over time, a monopoly in the 100 to 120 seats segment and a near monopoly in the freighter segment even without the present concentration.

(b) **Competitive potential of MDC**

(i) The competitive influence of MDC was in the past greater than reflected by its market share

(58) Although, as outlined above, the market share of MDC has been continuously declining, it appears that the impact of MDC on the conditions of competition in the market for large commercial aircraft was higher than reflected by its market share in 1996.

The Commission has received replies from 31 airlines which have all purchased new large commercial aircraft over the last five years. Two of them purchased only MDC aircraft. Out of the remaining 29 airlines, 20 stated that in those cases where they had placed orders with Boeing or Airbus, MDC had been in competition for all or a part of the orders. Out of the 20 airlines, 13 stated that competition from MDC had an influence on the outcome of their negotiations with the winner of the bid in terms of a better price or better purchasing conditions. Two airlines stated that this influence was of major importance and three stated that this influence was of minor importance. Seven airlines stated that the influence of MDC's competition was of significant importance.

This is confirmed by a study conducted by Lexecon Ltd. on behalf of Airbus and presented at the Hearing, in which 52 aircraft-supply competitions between 1994 and 1996 were analysed, comparing those in which MDC participated with those in which it did not participate. In this study, it was found that the MDC presence led to a reduction of over 7 % in the realized price as compared with the list price as far as orders placed with Airbus were concerned.

(ii) However, today MDC is no longer a real force in the market for the sale of new aircraft on a stand-alone basis

(59) The Douglas Aircraft Company (DAC), which operates the commercial aircraft business of MDC, generated in 1996 operating earnings of US $ 100 million as compared with US $ 39 million and US $ 47 million in 1995 and 1994 respectively. Furthermore, DAC has still a firm backlog of US $ 7 billion. However, it appears that the operating earnings of DAC were essentially related to DAC's spare parts and product support business rather than to the sale of new aircraft. In contrast to the broader and more modern families of aircraft offered by Boeing and Airbus, DAC currently offers only three types of narrow-body and one type of wide-body aircraft which do not provide, according to Boeing, significant commonality benefits and are all themselves derivatives of earlier Douglas models, rather than entirely new designs. It appears that these are the main reasons for the continuous decline of DAC's market shares. Furthermore, the current backlog covers only a limited period of future production. Since the cancellation of the MDXX program in October 1996, DAC has virtually received no new firm orders. This reflects the perception of airlines that MDC is no longer committed to the commercial aircraft business and may leave the market over time. In this context, it is also important that DAC lost over the last nine months its core customers American, Northwest Airlines, Delta and Continental, the four largest operators of DAC aircraft. The loss of these 'mainstream' airline customers, which are points of reference for others and one of which, Delta, was even the launch customer for the MD90, gave a further signal to the market that DAC would have no prospects in

the market for large commercial aircraft. In these circumstances, it has to be concluded that DAC is today no longer a real force in the market on a stand-alone basis.

(iii) It is unlikely that a third party would acquire MDC's commercial aircraft business

(60) In theory, without the merger DAC could have been a candidate for a take-over by other aerospace companies. [...]. However, DAC's position on the market deteriorated dramatically in 1997. Extensive market enquiries carried out by the Commission made it clear that it is in practice highly unlikely that a third party would acquire DAC. It appears that this is *inter alia* due to the deterioration of the situation of DAC. Neither Airbus, the only competitor left in the market for large commercial aircraft, nor one of its parent companies showed an interest in the acquisition of DAC. Furthermore, no other potential buyers were interested in entering the market for large commercial aircraft through the acquisition of DAC. It appears, therefore, that, given the current competitive situation of DAC, only Boeing is prepared to take over MDC's commercial aircraft business.

(iv) The competitive potential of MDC's commercial aircraft business can, however, be a significant factor in the market when it is integrated into the Boeing group

(61) Boeing has stated that it could decide on the continuation or discontinuation of DAC's product lines only once it has had access to DAC's internal data. According to Boeing such a decision would, furthermore, depend on a number of different factors including social and political considerations. There are, however, indications that Boeing could, despite the current difficult situation of DAC, decide to continue all or some of DAC's product lines, at least for a certain time. In the event that Boeing continues production of DAC aircraft, the existing negative perception of MDC's prospects could be removed. That could equally remove the reluctance, to a certain extent, on the part of airlines to buy DAC aircraft stemming from uncertainty about the future of its commercial aircraft business. As a part of the Boeing Group, DAC aircraft could be marketed together with Boeing aircraft and Boeing would be able to decide when to put DAC aircraft into a competition and when not.

If, by contrast, Boeing were to decide to phase out production of all or some DAC aircraft over time, Boeing would be better placed than Airbus to gain the market shares freed by such a decision. Through Boeing's preferential access to the large existing customer base of DAC, as outlined below, Boeing would be in an advantageous position to replace, over time, DAC aircraft which are in service today.

(c) **Fleet in service**

(62) Boeing would increase its share in the existing fleet in service from 60 % to 84 % (as opposed to only 14 % for Airbus) and would, therefore, increase its long-term relationships with customers and its position in customer support. It would also significantly broaden its customer base. It appears that out of the 561 airlines operating Boeing, MDC and Airbus aircraft at the end of 1996, 75 operators use only MDC aircraft and 10 operators use only MDC and Airbus aircraft. In addition to the 316 airlines operating only Boeing aircraft, the 50 airlines operating Boeing and MDC, the 62 airlines operating Boeing and Airbus and the 26 airlines operating Boeing, MDC and Airbus (only 22 airlines operate exclusively Airbus), Boeing would also get access to a further 85 airlines which do not as yet operate Boeing aircraft.

(63) The opportunity for closer contacts with those airlines resulting from ongoing support activities could provide opportunities for future sales by allowing Boeing to influence customer needs. However, it has to be recognized that Boeing already has close contacts with a large number of airlines through its own product support activities.

(64) In general, the acquisition of MDC's spare-parts and maintenance business may confer on Boeing significant additional leverage over existing MDC aircraft users, whose combined MDC fleets constitute, as already stated, 24 % of the total aircraft fleet worldwide.

(d) **Use of MDC's capacity**

(65) According to Boeing only [...] of its production capacity is in use, which leaves spare capacity of [...]. However, it appears that these figures are only related to tooling capacity and not existing workforce. There are indications that Boeing seeks in particular access to MDC's engineers for its own commercial aircraft development and production. In MDC's 1996 annual report, it is reported in relation to a plan for a future commercial jetliner, that several hundred engineers of MDC began work for Boeing on this project in December 1996.

(66) The Commission accepts that it is relatively difficult to transfer engineering personnel working

on combat aircraft production to commercial aircraft production. However, that is not a major problem for engineers working on military transport aircraft. In fact, MDC agrees that fluctuations in commercial and C17 programmes (military transporter) have sometimes caused production workers to move back and forth between the commercial programmes and the C17 programme.

(67) In the aircraft industry, flexibility of capacity, or the ability to increase and decrease production easily, is an important factor. From the standpoint of the airlines, a manufacturer that can offer the required delivery slots in periods of rapidly increasing demand clearly has an advantage. One crucial element for a rapid increase in capacity is the availability of skilled labour, which would be increased for Boeing through the access to MDC's workforce.

(e) **Exclusive deals**

(68) The proposed merger would significantly enhance Boeing's capacity to enter into agreements such as those concluded with American, Delta and Continental. It should be noted that such airlines are amongst the world's largest and are 'launch customers' for new aircraft models, that is to say, they are in effect the only airlines with sufficient resources to commit themselves to entirely new aircraft models or new families of aircraft. In particular, with respect to those airlines which currently operate both Boeing and MDC aircraft, within the framework of an exclusivity deal, Boeing could also offer the provision of additional MDC aircraft, as well as spare-parts and support services for older MDC aircraft. On the other hand, where airlines which have ordered MDC aircraft want to streamline their fleet, Boeing, being in control of MDC, would simply cancel those MDC orders and the penalties which normally have to be paid by airlines in the event of cancellation of orders would be of no significance. It is reported that, within the framework of the exclusivity deal, Boeing has offered to take back the MD-90s that have already been delivered to Delta and to cancel existing orders for further MD-90s. However, Boeing, when asked by the Commission, was not in a position either to confirm or to deny those arrangements.

(69) As an illustration of the link, both actual and potential, between the size of the existing MDC fleet in service of major airlines and the increased opportunity following the merger for Boeing to conclude further exclusive supply agreements with such airlines, it is noteworthy that American, Delta, and Continental, with which exclusive supply agreements already exist ([10]), are first, third, and fourth respectively with regard to the size of their MDC fleet in service.

World fleet — Top ten operators

Airline	Boeing	DAC	Airbus	Total ([1])
American	242	311	35	663
United	503	52	36	591
Delta	336	150		539
US Airways	250	99		423
Northwest	126	229	50	405
Continental	183	119	4	306
Southwest	243			243
British Airways	203	7	10	228
Lufthansa	123		92	215
TWA	79	111		204

([1]) Total figures include 86 Lockheed aircraft, 130 Fokker and 7 Concorde. *Source:* Airbus.

([10]) The Delta and Continental deals were announced after the merger; the American deal was announced only some weeks before the merger.

It is also noteworthy that prior to those agreements, exclusivity deals had never before been entered into in the large commercial aircraft sector and that their duration itself is unprecedented.

(70) More generally, Boeing's broader product range after the merger, its financial resources and its higher capacity which enables it to respond to airlines' needs for deliveries on a short lead time would, in combination, significantly increase Boeing's ability to induce airlines to enter into exclusive deals. It should be noted that it would be impossible for Airbus to offer exclusive deals because Airbus is unable to offer a full 'family' of aircraft.

(71) The potential effect of exclusive deals with the world's top ten airlines would be to block over 40 % of the worldwide market (based on those airlines' existing fleet in service as a proportion of the worldwide fleet). Such a scenario is quite feasible, since there could be a knock-on effect wereby further large airlines would not want to miss out on the apparent advantages accruing to their competitors who have already entered into exclusive deals. The result could be a split worldwide market, with the biggest airlines with the largest fleets exclusively controlled by Boeing following the merger, leaving competition possible only for the supply of the aircraft requirements of smaller airlines.

Furthermore, those deals are likely to have an extended effect beyond their already very long-frame, given the very long operating life typical of the industry's products. Thus, Boeing estimates that aircraft designed after 1980 may have an operating life of between 28 and 31 years. This implies in fact that aircraft bought in the last years of the deal, even if it is not renewed, could cover the airlines' needs up to the years 2045 to 2047. Moreover, it is also reasonable to consider that after such an extremely long period of purchasing exclusively from Boeing, airlines would probably not be inclined to face the costs of switching to a different family of aircraft.

2. *Overall effects resulting from the defence and space business of MDC*

(72) The overall effects resulting from the take-over of MDC's defence and space business would lead to a strengthening of Boeing's dominant position through:

(a) an increase in Boeing's overall financial resources;

(b) an increase in Boeing's access to publicly funded R&D and intellectual property portfolio;

(c) an increase in Boeing's bargaining power *vis-à-vis* suppliers;

(d) opportunities for offset and 'bundling deals'.

(a) **Financial resources**

(73) Following the concentration, Boeing will become the largest integrated aerospace company in the world with estimated 1997 revenues in excess of US $ 48 billion. Based on the figures for 1995, Boeing's commercial aircraft operations accounted for around 70 % of its total business. For MDC the ratio is just the opposite; around 70 % of its total business was related to defence and space operations. Without taking into account the recently completed acquisition of Rockwell Defence and Aerospace, Boeing will approximately triple its defence and space activities through the proposed take-over of MDC. This will significantly increase Boeing's ability to cope with the economic cycles in commercial aircraft given that, despite budget constraints in recent years, revenues achieved in the defence and space sector appear to be much more stable than those generated in the commercial sector.

(74) Since Airbus is a *groupement d'intérêt économique* (GIE) and as such does not publish its own financial accounts, a detailed financial comparison between Airbus and Boeing or MDC is not possible. However, the relative magnitude of the three organizations is indicated by their respective total turnover figures for 1996.

	(billion US $)
Airbus	8,9
Boeing	22,7
MDC	13,8

The aerospace turnover of each of the four Airbus partners in 1996 was as follows:

	(billion US $)
Aerospatiale	10,1
BAC	11,6
DASA	8,8
CASA	0,9

However, despite arguments to the contrary made by Boeing, it is not appropriate to include the turnover of the four Airbus partners in that of Airbus. As far as turnover from military aerospace activities is concerned, it is important to note that

the four Airbus partners do not together constitute an integrated business entity, as do both Boeing and MDC, which are individual stand-alone companies. Moreover, the only Airbus partner with significant non-aerospace connected activities is DASA, which is part of the Daimler-Benz group. It is clear that Daimler-Benz would not find it economically rational to use its other activities (mainly motor vehicle manufacture) to subsidize Airbus to any significant extent, particularly since its shareholding is only about 37 % (see above).

(75) The soundness of the financial structures of both Boeing and MDC are indicated by their ratios of debt to equity (US $ 4,1:10,5 billion and US $ 3,4:3,0 billion respectively) ([11]).

(76) The following 1996 operating results indicate the individual and combined strength of Boeing and MDC ([12]):

([11]) *Source:* Boeing and MDC Annual Reports 1996.
([12]) *Source:* Boeing and MDC Annual Reports 1996.

	Boeing	MDC	Combined
Profits	1,4	0,79	2,19
Cash flow (beginning of year plus changes = year-end balance)	3,73 + 0,64 = 4,37	0,8 + 0,3 = 1,1	4,53 + 0,94 = 5,47

(77) Including MDC, Boeing's pre-tax profits have been forecast by Lehman Brothers to climb from US $ 4,4 billion in 1997 to US $ 7,3 billion in 2000, on sales of US $ 54,8 billion in that year. With respect to cash, Lehman Brothers state that 'Boeing could have US $ 15 billion in cash on the balance sheet by the end of the decade, and early in the next century they could have in the mid US $ 20 billion range' ([13]).

(78) The accounts of Boeing and MDC are not transparent with regard to the profit margins achieved on their various individual models. Financial analysts calculate that significant differences exist between the profit margins made by Boeing on its various models. In particular, it is estimated that margins are significantly higher (around 30 %) on the 737 and 747 models (the smallest and largest respectively) than on the 757 and 767 models (the mid-size aircraft); where margins are estimated at around 18 % ([14]). This probably reflects the near-monopoly position of Boeing in the smallest and largest segments (see above, under passenger aircraft market definition). Boeing is therefore probably able to cross-subsidize sales of mid-sized aircraft, where competition is stronger, because of the higher margins it achieves on the smallest and largest aircraft where there are fewer or no competing aircraft. It can therefore be anticipated that, with the addition of products from MDC, Boeing would have opportunities, where it thought appropriate, to set prices at zero-profit or below-cost levels within the mid-size segment, financed by the higher margins achieved in the smallest and largest segments. Besides such turnover, cash and profits combination, the doubling of governmental-funded military R&D and the tripling of Boeing's general revenues generated in the defence and space sector will increase the scope of cross-subsidization of Boeing's sales in commercial aircraft in cases where Boeing wants to meet specific competition (such as in the mid-size segment of the wide-body market).

(79) A possible example of such pricing tactics already employed by Boeing in fact involved the 737 model itself. Concerning an order for new commercial jet aircraft placed by Scandinavian Airline Systems (SAS) in March 1995, the newspaper *The Washington Post* has reported ([15]):

> 'SAS's internal evaluating committee had recommended the purchase of 50 of Douglas' proposed new 100-seat MD-95 jetliners for US $ 20 million each. Instead, [SAS Chairman] said that SAS would order 35 of a new version of Boeing's venerable 737 at about US $ 19 million per plane, a steep discount from Boeing's list price. "It was clear that Boeing's strategy was to prevent Douglas from ever launching the MD-95", recalled one salesman involved in the competition.'

([13]) Source: Lehman Brothers, 22 April 1996.
([14]) Source: Lehman Brothers, 22 April 1996.
([15]) Source: The Washington Post, 5 April 1997.

(80) According to data supplied by Boeing, the lowest published 1996 price for a 100-seater 737 aircraft would be US $ 32 million. On the assumption that financial analysts' calculations of a profit margin of about 30 % on a Boeing 737 aircraft are approximately correct([16]), an actual sales price to SAS of US $ 19 million per aircraft would imply that no profit whatsoever accrued to Boeing on this particular transaction (US $ 32 million less 30 % = approximately US $ 22 million).

(81) It is clear that, as already stated, the addition of products from MDC (in particular the small-segment MD-95) and the large increase in its overall resources would enhance Boeing's opportunities to engage in such pricing practices, especially in view of its strong, and increasingly strengthening, cash-flow position as outlined above.

(82) A past example of Boeing's preparedness to use its overall strength in resources to pressurize not just competitors but also customers can be found in a letter addressed to a Japanese aircraft leasing company on signing an order for Airbus aircraft, as reported at the Hearing:

> 'I want you to know that the Boeing Company takes such a decision ... extremely seriously. This not only comes as a shock to me and my colleagues here, but will surely have a negative impact on the future of the long-term relationship our two companies have enjoyed over the many years'.
>
> '... More significantly, it could have undesirable implications for the Japan America aerospace industry cooperation'.
>
> (signed Mr Ronald Woodard, Boeing Commercial Airplane, Group President, 17 December 1996).

(b) **Access to publicly-funded R&D**

(83) The large increase in its defence and space activities will give Boeing a much greater access to R&D which is funded by the US Department of Defence (DoD), the National Aeronautics and Space Administration (NASA) or other public bodies. This is the case, in particular, with respect to R&D for military aircraft.

(i) R&D in the US aerospace industry is, to a large extent, funded by the Government

(84) According to figures compiled by the Aerospace Industries Association of America, in the United States total R&D (federal and company funding) which is performed by industry amounts on average to 3 to 4 % of net sales of manufacturing companies. By contrast, in the aerospace sector, total US industrial R&D amounts to 12 to 14 % of net sales. Across industry as a whole, companies fund around 80 % of total industrial R&D, whilst federal funding represents around 20 %. In the aerospace industry, the ratio is again completely different: around 60 % of total industrial R&D is funded by the US Government and only 40 % by companies themselves.

(85) In 1994, the federal funds for industrial R&D in the overall aerospace sector amounted to US $ 8,8 billion. Out of this amount, around US $ 8 billion was spent on development, the remainder being attributed to basic and applied research. The main sources for funding industrial R&D were the DoD and NASA. DoD's total budget for aeronautics R&D (for aircraft and related equipment) amounted to US $ 6,8 billion and NASA's budget for aeronautics R&D amounted to US $ 1,5 billion. The figures for 1995 were US $ 7,1 billion and US $ 1,3 billion respectively. DoD's prime contract awards for research, development, test and evaluation (RDT&E) related to aircraft amounted to US $ 5,8 billion in 1994 and to nearly the same amount in 1995.

(86) In general, DoD's expenditure for R&D is much larger than those of the European Ministries of Defence (MoDs). In 1996, the total DoD appropriation for R&D was US $ 34,8 billion. By contrast, the total combined R&D budget for the MoDs in the Community (excluding Austria, Sweden and Finland) amounted to US $ 11,7 billion. Out of this amount, US $ 10,6 billion was accounted for by the MoDs of France, Germany and the United Kingdom, the countries of the main Airbus partners. With respect to space activities, the relationship is similar. In 1996, the total budget of NASA was US $ 13,8 billion. By contrast, the contribution of the Member States to the budget of the European Space Agency (ESA), which represents by far the largest part of the space budget within the Community, was US $ 3,1 billion. Furthermore these figures, which are clearly disproportionate, are not even strictly comparable since the MoDs in the Community do not necessarily coordinate their behaviour as a matter of course.

([16]) Source: Lehman Brothers, 22 April 1996.

(ii) US R&D in the defence sector and in the public space sector normally receives full funding by the Government

(87) Unlike production or procurement programmes, which are generally performed under firm fixed-price contracts, defence and space developmental programmes are normally performed under cost/reimbursement-type contracts. The most important R&D contracts are the engineering and manufacturing development (EMD) contracts, which are used to finance the engineering and manufacturing development of a system prior to entering the production phase of a programme. These contracts are usually cost plus award fee (CPAF) or cost plus incentive fee (CPIF) contracts.

(88) CPAF contracts involve cost-reimbursement, plus an award fee which is based on an award plan negotiated at the beginning of the contract. CPIF contracts involve cost reimbursement, plus an incentive fee which is based on performance and schedule milestones. In some instances, a contractor may have invested in R&D at its own expense in the early phases of a defence programme. These initial R&D costs are usually included in the total programme costs when the contractor obtains a later DoD production contract for the item. Furthermore, the independent research and development (IR&D) cost reimbursement programme of the DoD enables eligible DoD contractors to recover a portion of the costs of their own in-house, independent R&D through overhead payments on all DoD cost-plus contracts. Since 1991, the definition of allowable IR&D includes all projects of potential interest to the DoD. It follows that the vast majority of R&D for defence products or with possible defence-related applications is funded by the DoD. Similarly, defence programmes, space-related technology and programmes often receive full funding for R&D, particularly if the programme's primary customer will be the US Government.

(iii) Through the proposed merger Boeing, in particular, will greatly increase its number of R&D contracts in the defence sector

(89) Over the last five years, on average Boeing achieved annual revenues from federal R&D contracts of around [...]. On average, [...] of these revenues were generated by R&D for NASA space programmes, in particular the International Space Station. Although Boeing is currently, only to a limited extent, a manufacturer of military aircraft (AWACS, KC-135 tanker) and does not manufacture fighter aircraft, the second largest segment of Boeing's R&D revenues was that of military aircraft. On average, military aircraft accounted for [...] of Boeing's R&D revenues resulting from contracts with the US Government. The reason is that Boeing is involved in major programmes for the development of military aircraft, such as the F-22 fighter aircraft, the Joint Strike Fighter and the tilt rotor V-22 aircraft. Over the last five years, MDC received on average between [...] and [...] per year. The military aircraft segment accounted for nearly [...] of these revenues. Therefore, as a result of the proposed merger, Boeing will more or less double its R&D revenues in the military aircraft segment.

(90) It should be noted that the merged company Boeing/MDC would be, to a greater or lesser extent, involved in all current DoD programmes with the highest R&D budgets. These programmes and their R&D budgets are the following:

Budget

(million US $)

	1995	1996	
F-22	2 281	2 165	two-thirds Lockheed one third Boeing
F/A-18	1 249	824	MDC
V-22 Osprey	453	737	Boeing
RAH-66 Comanche	475	292	Boeing
B-2	366	589	Team leader: Northrop Grumman with major participation of Boeing
JSF	182	193	Boeing and Lockheed in competition
C-17 Globemaster III	184	71	MDC

(91) It appears that the most important aircraft programmes in the foreseeable future will be the Joint Strike Fighter (JSF), the F-22 and the F/A-18. System leader for the F-18 is MDC and the F-22 is developed by Lockheed and Boeing together. The final contract for the JSF is currently in competition between Boeing and Lockheed. The Commission considers that the merged company, Boeing/MDC, would have, after the merger, a better chance of becoming the final prime contractor for the development of the JSF, given the combination of their technological resources.

(iv) The large increase in Boeing's defence R&D will confer a number of general competitive advantages on the company

(92) As discussed below, an obvious advantage resulting from defence R&D for a manufacturer of commercial aircraft is the possible transfer of technology, developed under public funding to the commercial sector. However, technology transfers are not the only means by which manufacturers of commercial aircraft benefit from military R&D. The extensive participation of private companies in highly sophisticated military R&D projects helps train technical personnel in those companies and therefore increases general know-how. Military R&D also pays for basic equipment, such as highly specialized tools, that may later be used for commercial aeronautics work. And even if a military R&D project does not lead to a specific technological advance ('failed programmes'), it may have commercial utility to the company that carried it out by informing the company of research 'dead-ends' that should be avoided.

(93) Such increases in general know-how will, in particular, arise in the areas of design and manufacturing processes. For example, the US DoD is supporting a major programme on the use of synthetic environments design technology which links advanced CAD/CAM systems with product modelling and simulation and which will significantly reduce the time and risk involved in putting new aircraft into production. These techniques are equally applicable to civil programmes. Other examples are the know-how for applying new composites technology on military programmes such as the V-22, F-22 and the B-2, which provided the knowledge required to design and manufacture composites structures now used for the B-777, or the design manufacturing and producibility simulation, an engineering system developed by MDC over the course of its military programmes which leads to a significant reduction in the timing of the overall design cycle and was a model for the development of the MD-XX. In this context, it should be noted that Boeing, in its reply to the Statement pursuant to Article 18, stated that it used know-how in computing and software applications, advanced tooling, manufacturing and automation in the manufacture of electronic products resulting from its commercial programmes on military programmes such as the F-22, V-22 and RAH-66. Although Boeing asserts that there are no significant benefits for the commercial sector resulting from know-how gained in military programmes, these examples prove, however, a cross fertilization of know-how between the commercial and military sectors.

(v) Through the proposed merger Boeing will greatly increase the benefits obtained from the transfer of military technology to commercial aircraft

(94) Much technology developed in the defence sector can be applied to commercial aircraft uses. The main increase in Boeing's military R&D will be related to military aircraft and, in particular, to fighter aircraft. Although fighter aircraft technology is not wholly transferable because of the more compact packaging of systems, that technology can, however, be transferred to a large extent. The following list provides an estimate by Lockheed Martin of the percentages of a number of fighter aircraft systems or types of technology that are transferable to commercial applications:

— navigational aids	(100 %)
— general avionics	(30 %)
— cockpit displays	(100 %)
— avionic software processes	(80 %)
— sub-systems technology	(90 %)
— sub-systems hardware	(10 %)
— flight control techniques	(60 %)
— composite materials	(60 to 100 %)
— advanced structural metallics	(100 %).

(95) It is true, as stated by Boeing and MDC, that a recipient of public funding for military R&D may often subcontract a significant amount of the work involved. However, this does not reduce the opportunity for a prime contractor, such as Boeing or MDC, to gain full advantage of the know-how and technological expertise generated by such programmes, since the prime contractor will always have access to full details of the R&D work carried out. It is in any event questionable to what extent and with what frequency publicly funded R&D work is put out to subcontractors. For example, MDC stated that composites are usually

developed by material suppliers and not by Boeing or MDC. However, in the framework of the DoD-funded manufacturing technology programme, the development of low-cost composites was contracted to Boeing for fuselage applications and to MDC for wing applications. That manufacturing technology programme was the most important part of the DoD's 1996 budget for technology transfer initiatives for which a total of US $ 1 768 million was requested.

(96) Besides its leading position in fighter aircraft, MDC is also one of the leading manufacturers of military transport aircraft. It appears that technology developed in the military transport sector can be fully used for commercial applications. MDC recently announced that it has decided to produce a commercial version of its C-17 military transport aircraft. In this context, a historic example is the Boeing 747 which was developed at its initial stage for a military transport competition.

(97) With respect to commercial applications of military technology, Boeing has stated that, in terms of the 1992 Bilateral Agreement on Large Civil Aircraft between the Community and the US, it has derived no identifiable benefits to commercial programmes from its defence and other US Government programmes during the period since 1993. However, Boeing in a statement during the oral hearing on 13 June 1997 admitted that there exists at least a broad commonality between military and commercial research applications. Boeing has claimed that such commonality benefits the whole industry rather than individual companies such as itself. However, this seems highly unlikely, given that military research contracts are subject to security and confidentiality rules. In particular, NASA has made use of 'limited exclusive rights provisions' which provide for protection of information from non-government parties participating in agreements with NASA. For example, many programmes concerning the high speed civil transport (HSCT), the proposed successor to Concorde, are protected from public disclosure for at least five years.

(98) In this respect, the Commission stresses that in this decision it is not considering the interpretation of the notion of 'indirect support' in Article 5 of the abovementioned Agreement, but rather carrying out an economic analysis for the purposes of the Merger Regulation. In this context, it is not decisive whether or not, over the last three years, Boeing derived an identifiable reduction in costs for one of its specific current commercial programmes. In the procedure under the Merger Regulation, all that is significant is that the large increase in Boeing's military R&D, as outlined above, would over time confer on it a significant competitive advantage *vis-à-vis* its only remaining competitor in large commercial aircraft.

(99) The Commission considers that to be especially true since in the United States the line between the defence and civil aircraft programmes is much less clear than in the European Union, because of the US policy that defence, space and commercial technology are highly linked. For instance, in August 1995, the National Space and Technology Council stated:

> 'the significant basic technological commonality between military and civil aviation products and services must be exploited to increase the productivity and efficiency of our R&D development activities. This requires government and industry, working together, to actively seek technological goals that are common to both civil and military applications ... DoD, the Federal Aviation Administration (FAA) and NASA must expand their focus on encouraging this early consideration of dual-use applications in technology development programmes.'

Again in a December 1995 Congressional Research Service Report it was stated:

> 'In DoD, dual-use technology development was emphasized, both to expand the commercial manufacturing base for producing military products and to help exploit military technology for civilian purposes'.

Many such examples could be provided of the US Administration's emphasis on dual-use technology; if there were no transfer between military and civil applications in the aerospace sector, such a dual-use policy would make no sense.

Indeed, there are many instances of the direct transfer of final products from military to commercial applications, for example:

— the B52 (for aerodynamics) and the KC135 (for wings, cockpit, and engine design) contributed to the development of the B707, and later to the B727, B737, and B757,

— the B777 benefited from systems integration technologies gained from the development of AWACS,

— the MD11 derived production-line benefits from the KC10.

The most important impact of transfer from military to civil applications results, however, from effects at the level of underlying technology, which leads to significant increases in productivity and cost savings.

(100) It may be argued that Boeing's benefits resulting from publicly funded defence, space and civil R&D and the increase of those benefits after the proposed merger should be compared with prospective public aid available for the development of commercial aircraft which its only remaining competitor, Airbus, may receive in the future. As far as military and space R&D is concerned, there is, as outlined above, and undoubtedly will remain, an extremely large difference in favour of Boeing between such expenditure in the United States and in Europe. As far as civil R&D is concerned, the level of funding provided by the US Government, and in particular by NASA, is far in excess of the level of funding provided for similar purposes in Europe. For example in Germany, the country of one of the major Airbus partners, the federal budget for civil aeronautics R&D amounted in 1995 to DM 142 million (around US $ 90 million). In the same year, NASA's budget for aeronautics R&D amounted to US $ 1,3 billion. There was in 1995 also a federal budget of DM 208 million (around US $ 130 million) for general aviation research. This figure must, however, be compared with the budget of US $ 2,2 billion of the US Federal Aviation Administration for research, engineering and development. Numerous statements by US Government officials, including in particular NASA officials, also emphasize the increasing focus on facilitating commercial applications of such R&D to the exclusive benefit of US industry. This is true both for sub-sonic aircraft and for the HSCT, which is benefiting from large, explicitly targeted levels of government-funded R&D. None of this is subject to any form of reimbursement obligation.

By contrast, under limitations imposed under the 1992 Agreement on Trade in Large Civil Aircraft between the Community and the United States, *inter alia,* explicit limits and reimbursement conditions are established on the type of government support which has typically been granted in Europe and which, it is understood, will remain the mainstay of future European government support for the aeronautical industry, that is royalty based loans. Such loans may be provided up to a limit of one-third of the total development expenditure for a new large civil aircraft, subject to interest payments and reimbursement.

(101) The disproportion between public R&D support already existed before the proposed merger but its effects were, at least in part, mitigated by the fact that the benefits resulting from US government-funded R&D were split between two competing companies and, furthermore, in the case of MDC only related to a limited commercial aircraft business. After the merger, total government-funded R&D of Boeing and MDC would be concentrated in one single entity which has by far the largest commercial aircraft business in the world.

(vi) Intellectual property

(102) In a high-technology industry such as commercial aircraft manufacturing, intellectual property, whether patented or in the form of unpatented know-how, is extremely important for the competitive potential of the players in the market. The combination of the world's leading manufacturer of commercial aircraft with the world's leading manufacturer of military aircraft will lead to the combination of two large portfolios of intellectual property. There are more than 500 published patents which belong to Boeing and might be of relevance for commercial aircraft. MDC is estimated to hold around 150 such patents[17]. 86 Boeing patents and 26 MDC patents could potentially restrict access to important future technology. These include the following areas:

— aircraft structures, where considerable R&D has been made in order to produce lighter, more resistant materials allowing for increased aircraft range, speed and payload, as well as extending aircraft life and reducing maintenance costs; it appears that both Boeing and MDC have taken out patents to enable them to exploit certain of such areas exclusively,

— composites, that is a combination of two or more discrete material constituents, which offer a very important improvement in performance for airframe structures in terms of weight reduction, specific strength and stiffness, fatigue resistance and design flexibility (for example, Boeing's all-composite B-2 wings),

— aerodynamics, where recent innovations contribute to lower fuel costs, less noise on take-off and landing, improved range and speed and shortened development cycles,

— flight controls, which have been among the areas where the most specular technological progress has been made in recent years; Boeing and MDC have been active in this area, *inter*

[17] *Source:* Airbus's submission to the Commission.

alia in the framework of NASA's advanced subsonic technology programme, and Boeing has started patenting technology in the field of fly-by-light,

— electricity and electronics, which are vital for safety and cost effectiveness and where R&D has been done extensively by both Boeing and MDC, especially through contracts from government agencies.

(103) To sum up, the Commission considers the combination of Boeing's and MDC's know-how and patent portfolios to be a further element for the strengthening of Boeing's dominant position in large commercial aircraft.

(c) **Bargaining power *vis-à-vis* suppliers**

(104) Aircraft manufacturers depend on numerous third-party suppliers for a variety of goods and services ranging from materials and components to the larger systems, structural parts of the airframe and engines. In many cases, the suppliers are also involved in the design and development of the aircraft. Large suppliers, especially airframe manufacturers, sometimes enter into risk- and revenue-sharing agreements with the aircraft manufacturers.

(i) The proposed merger will lead to a large increase in Boeing's buying power

(105) It is estimated that at least 50 % of the activities of an aircraft manufacturer are based on third-party supplies. In 1996 Boeing achieved around [...] aeronautical sales and MDC around US $ 11 billion. It is obvious that the combination of those aeronautical activities would lead to a large increase in Boeing's buying power vis-à-vis its suppliers. Boeing has provided a list of suppliers whose sales to Boeing Commercial Airplane Group are US $ 10 million or more and has given an estimate of the percentage of their sales to Boeing, MDC and Airbus in relation to the total sales of these suppliers. Out of [...] suppliers where Boeing was able to give an estimate, [...] companies supplied to both Boeing and MDC, and [...] of these companies achieved 50 % or more of their total turnover or of their turnover in the overall aerospace sector, or in some cases in the commercial sector, with sales to Boeing and MDC. However, the number of suppliers achieving 50 % or more with sales to Boeing and MDC must, in reality, be significantly higher since Boeing was only partially able to include sales in the defence and space sector. Therefore, supply relations resulting from MDC's large military business were only taken into account to a limited extent. In this context, it should also be noted that most suppliers in the aerospace sector questioned by the Commission indicated that the consequences of losing Boeing/MDC as a customer would be very critical for them.

(ii) Boeing's increase in buying power could significantly weaken the competitive position of Airbus

(106) Following the concentration, Boeing would reinforce, in particular, its buying power with respect to the many suppliers that furnish parts for both civil and military applications. The addition of MDC's buying power, especially in the military sector, to Boeing's already strong position in commercial aircraft would increase suppliers' overall reliance on Boeing and might put them in a position where they could not resist giving Boeing priority over Airbus. Boeing would be able to exert pressure on numerous suppliers to discourage them from working with its only competitor, Airbus, or to induce them to favour Boeing over Airbus in terms of resource allocation.

(107) There are indications that Boeing's existing buying power may have had some influence on the access of Airbus to suppliers as risk-sharing partners. For example, it has been widely reported that at the beginning of the year Northrop Grumman decided not to participate as a risk-sharing partner in the development of the A3XX. Following its refusal, Northrop Grumman announced that it had been awarded a US $ 262 million contract to upgrade AWACS radar by prime contractor Boeing. Boeing also recently awarded to Northrop Grumman a US $ 400 million contract to produce passenger and cargo doors for its 737, 757 and 767 aircraft. In this context it should also be noted that supplies to Boeing represent by far the largest part of Northrop Grumman's commercial aircraft business. After the proposed merger, these supplies would be combined with Northrop Grumman's supplies to MDC's defence business which are in terms of absolute figures even higher than the existing commercial supplies to Boeing.

(108) In general, it seems likely that the increase in Boeing's buying power could significantly weaken the competitive position of Airbus and, in turn, strengthen the position of Boeing.

(d) **Offset and 'bundling' deals**

(109) Offset deals are a mechanism whereby a supplier provides technology or production capacity in the

purchasing country in exchange for that country purchasing the supplier's product. Direct offset consists of production or technology related to the product being sold. Indirect offset is unrelated to the product, but typically in a related technology field.

(110) Offsets in commercial aircraft sales are less common than in military aircraft sales where they are the rule. In the commercial aircraft sector, offsets have also, in part, been limited by international agreement. However, it appears that in the commercial aircraft sector offsets do play quite a significant role, particularly in countries with State-owned national carriers. Two recent instances may be cited as examples. In 1996 Malaysian Airlines ordered 25 aeroplanes from Boeing on the basis of an offset programme to help Malaysia develop its avionics and composite materials industry. According to the press, the Department of Trade and Industry of South Africa has recently imposed a 50 % offset requirement on all long-term government purchases. This new offset policy will also apply to South African Airways where attempts to purchase seven new aircraft from Boeing were frozen pending the formalization of new offset rules. Boeing itself has stated that in the past it has entered into a number of commercial offset deals.

(111) More generally, it appears that the possibility of offset deals already confers a significant competitive advantage on US civil aerospace manufacturers. In a report of *Manufacturers Alliance* on offsets in foreign sales of defence and non-defence equipment dated February 1997, the following statement of the Director of the Office of Aerospace, US Department of Commerce, is reported:

> 'The Administration concludes, as in the case of defence trade offsets, that the greater flexibility of US manufacturers in offering offsets provides an important competitive advantage for US firms. For example, it is difficult for Airbus, a joint venture of four governments, to source components in non-member countries, since work must be shared among the four countries. Because of their greater flexibility in this regard, Boeing and McDonnell Douglas have had more success in penetrating East Asian markets in particular.'

(112) Boeing already has substantial offset capacity, given its large commercial aircraft business. In particular, by adding the defence business of MDC, Boeing's offset capacities would significantly increase, which would result in a further competitive advantage. Similarly, the concentration would increase Boeing's ability to enter into 'bundling' deals in certain countries, combining the marketing of Boeing's commercial and MDC's military aircraft.

VIII. CONCLUSION

(113) For the reasons outlined above, the Commission has reached the conclusion that the proposed concentration would lead to the strengthening of a dominant position through which effective competition would be significantly impeded in the common market within the meaning of Article 2 (3) of the Merger Regulation.

IX. REMEDIES

A. UNDERTAKINGS SUBMITTED BY BOEING

(114) With a view to removing the competition concerns, Boeing has given the Commission the following undertakings:

(115) ***Boeing proposal on leveraging of DAC installed base***

1. Boeing undertakes to provide the following structural remedy: for a period of 10 years Boeing will maintain DAC in a separate legal entity and will supply to the Commission a report certified by an independent auditor which describes the business performance and results on a commercial line of business basis for the continued DAC business activities. The report will also be made available to the public. On these conditions, Boeing will have the right to manage fully the separate legal entity and make all business decisions it deems appropriate. The above period may be reduced in agreement with the Commission should Boeing not maintain two or more of the DAC aeroplane programmes.

2. Boeing commits to providing customer support for DAC aircraft at the same high quality level provided for Boeing aircraft. This includes all of Boeing's traditional services available from time to time for Boeing aircraft (which currently include the global network of field representatives, 24-hour technical service hotline, all aspects of spares support, including next-day shipment, responsive AOG support and world-class maintenance and flight training). Boeing also will apply the same Boeing guidelines and procedures for spare parts availability and pricing, and ensure appropriate levels of engineering support.

3. Boeing agrees it will not withhold or threaten to withhold support for DAC aircraft (including spare parts) or penalize or threaten to penalize an operator with respect to support for its DAC aircraft (for example, by raising prices or increasing delivery times for spare parts) because the operator proposes to purchase another manufacturer's aircraft. Boeing undertakes to continue to make publicly available the information (including pricing) currently available in the DAC spare parts catalogue.

4. Boeing will not use its privileged access to the existing fleet in service of DAC aircraft in order to leverage its opportunities for persuading current DAC operators to purchase Boeing aircraft. In particular, Boeing will not provide spare parts and product support on more favourable terms to some DAC operators rather than others, in order to persuade them to purchase Boeing aircraft.

(116) ***Boeing proposal on exclusive agreements***

Boeing will not enter into any additional exclusive agreements until 1 August 2007 except for those campaigns in which another manufacturer has offered to enter into an exclusive agreement.

Boeing will not enforce its exclusivity rights under the agreements with American, Delta and Continental announced on 21 November 1996, 20 March 1997 and 10 June 1997, respectively.

An exclusive agreement for the purposes of this undertaking means a contractual commitment by a customer not to purchase or lease any other aircraft manufacturer's commercial jet aircraft or within a specific range of maximum take-off gross weight capability or to purchase a fixed percentage of aircraft from one manufacturer.

(117) ***Boeing proposal on patents***

Boeing will, upon request by a commercial aircraft manufacturer, license on a non-exclusive, reasonable royalty-bearing basis, any 'government-funded patent' which could be used in the manufacture or sale of commercial jet aircraft. Boeing will also licence the know-how related to such a patent which is necessary for the full, effective and rapid exploitation of the patent.

'Government-funded patent' means any patent which claims an invention conceived or first actually reduced to practice by Boeing in the performance of one or more of its contracts with the US Government, and which Boeing legally may so license.

Boeing also will license on a non-exclusive, reasonable royalty-bearing basis any blocking patent, including the related know-how as defined in the first paragraph, to another aircraft manufacturer which agrees to similar terms for cross-licensing of its blocking patents.

If Boeing and the other commercial aircraft manufacturer cannot agree on the royalty or whether the patent is a 'government-funded patent' which could be used in the manufacture or sale of commercial jet aircraft or whether the patent is blocking, such disagreement shall be submitted to independent arbitration under terms and procedures to be mutually agreed between Boeing and the other manufacturer.

For a period of 10 years, or until such earlier time as the Commission agreed that similar information is provided pursuant to governmental bilateral agreements or a significant change has occurred in the competitive environment including market share and product line, Boeing will supply to the Commission an annual report of its current unexpired patents which claim an invention conceived or first actually reduced to practice by Boeing in the performance of one or more of its contracts with the US Government.

(118) ***Boeing proposal on transparency of R&D projects***

In order to provide increased transparency regarding US Government aeronautics R&D projects in which Boeing participates, Boeing will supply to the Commission an annual report for 10 years, or until such earlier time as the Commission has agreed that similar information is provided pursuant to governmental bilateral agreements or a significant change has occurred in the competitive environment including market share and product line, which contains the following information for non-classified aeronautics R&D projects (that is projects which are not classified under US Government national security laws and regulations):

— name of project,

— description of project adequate to enable an understanding of the nature of the R&D being performed,

— authority contracting the project,

— description of Boeing's participation in the project,

— value of Boeing's contract,

— description of application of that year's results which have been incorporated or which Boeing intends to incorporate in large commercial aircraft. In subsequent reports, Boeing will advise the Commission of results from R&D projects identified in prior reports which have been incorporated or which Boeing intends to incorporate in large commercial aircraft. Upon request of the Commission with respect to a particular R&D project identified in a prior report, Boeing will identify whether it is studying the feasibility of application of the results for incorporation into large commercial aircraft,

— description of patents obtained by Boeing that year for an invention conceived or first actually reduced to practice by Boeing in the performance of its contract.

Upon request of the Commission, Boeing will provide another version of the report which complies with all applicable US laws and regulations with regard to disclosure of information which the Commission may provide to other aircraft manufacturers.

(119) *Boeing proposal on suppliers*

In order to meet the Commission's concerns that Boeing could leverage its supply relationships to discriminate against other manufacturers of large commercial aircraft, Boeing makes the following commitments.

1. Boeing will not exert or attempt to exert undue or improper influence on its suppliers, directly or indirectly, by promising an increase in supplies or subcontracted R&D activities, threatening to decrease supplies or subcontracted R&D activities, or leveraging in any other way its own supply relationships, in order that these suppliers should:

   — refuse to take up or seek out supply relationships with other manufacturers of large commercial aircraft,

   — refuse to increase their supply relationships with other manufacturers of large commercial aircraft,

   — refuse to enter into subcontracts with other manufacturers on research or development for large commercial aircraft,

   — refuse to enter into risk-sharing partnerships with other manufacturers of large commercial aircraft,

   — delay R&D activities for or supplies to other manufacturers of large commercial aircraft,

   — grant preferential treatment to Boeing in terms of lead times for supplies or priority for R&D activities subcontracted by Boeing without a reasonable business justification.

2. Boeing retains its right to select its suppliers, enforce its contracts with respect to price, quality scheduling and delivery and to protect its proprietary information.

B. ASSESSMENT

(120) There are two areas of competition problems:

— the additional competitive potential of MDC in commercial aircraft (horizontal effects),

— the large increase in Boeing's defence and space business (overall effects).

(121) Although DAC, which operates the commercial business of MDC, is no longer a real force in the market, the concentration would nonetheless lead to a strengthening of Boeing's dominant position in large commercial aircraft. As a consequence of the undertakings submitted by Boeing:

— Boeing's enhanced capability to enter into exclusive agreements will become irrelevant in the foreseeable future given that Boeing is not allowed to enter into future exclusive agreements for a period of 10 years. Furthermore, the abandonment of the exclusivity rights in the three existing exclusive agreements will remove the foreclosure of the market resulting from the exclusivity,

— the competitive advantages of Boeing's access to DAC's fleet in service are further reduced by Boeing's commitments not to leverage the product support for the DAC fleet with respect to the purchase of new aircraft,

— the risk that Boeing, by continuing the production lines of DAC, may use DAC aircraft as 'discount' aircraft is reduced if DAC is operated as a separate legal entity with annual public reporting obligations certified by an independent auditor.

(122) As regards, the strengthening of Boeing's dominant position resulting from its large increase in the defence and space business, the undertakings submitted by Boeing have the following consequences:

— the commitment on patents gives other aircraft manufacturers access to intellectual property gained by publicly funded R&D and also with respect to blocking patents, meets the general concern about Boeing's increased patents portfolio,

— the commitment on transparency contributes to more discipline in publicly funded R&D and makes the spill-over from defence and space R&D to the civil sector more transparent,

— the commitments on supply relationships reduce the risk that Boeing may abuse its increased bargaining power in order to impede competitors through *inter alia* exclusive contracts with suppliers.

(123) The Commission has taken into consideration two specific aspects of the present case. Firstly, post-concentration there will be only two operators on the market for large commercial aircraft, Boeing and Airbus. In the absence of any interest on the part of Airbus to acquire DAC, but also in the absence of any interest of other companies to enter this market through an acquisition of DAC, it is highly unlikely that a buyer could be found for DAC. A commitment on a divestiture would not therefore have resolved the competition problems resulting from the horizontal effects. Secondly, the spill-over effects from the defence and space business on the commercial aircraft business are by their very nature difficult to quantify or even fully identify. They are difficult to address fully in the context of the present procedure under the Merger Regulation.

Moreover, within the framework of the Agreement between the European Communities and the Government of the United States of America regarding the application of their competition laws, the Commission has also taken into consideration the important interests of the United States of which the Commission was informed by the US Department of Defence and Department of Justice, on behalf of the US Government (see paragraph 12).

The package of undertakings submitted by Boeing contains a combination of structural and behavioural elements. In the specific circumstances explained above, relating in particular to the manifest absence of any possible buyer for DAC, the Commission accepts this combination of undertakings, which should be treated as a whole, and considers that, on balance, they adequately address the competition problems identified in the present decision and removes the concerns about a strengthening of Boeing's dominant position in the market for large commercial aircraft. To ensure full compliance by Boeing with its commitments, in application of Article 8 (2), second subparagraph, the Commission shall monitor this compliance. In particular, Boeing shall allow the Commission, or any expert appointed by the Commission, access to internal data relevant to the implementation of this monitoring, and, whenever requested by the Commission, be prepared to discuss its compliance with the commitments.

X. FINAL CONCLUSION

(124) Consequently, the Commission concludes that, subject to full compliance with the commitments made by Boeing, as set out in recitals 114 to 119, the proposed concentration will not create or strengthen a dominant position as a result of which effective competition would be significantly impeded in the common market or in a substantial part of it,

HAS ADOPTED THIS DECISION:

Article 1

Subject to full compliance by Boeing with the conditions and obligations contained in the commitments as set out in recitals 114 to 119 of this Decision and with the obligation to submit to monitoring of its compliance with these commitments as set out in recital 123, the concentration by which the Boeing Company acquires control of the whole McDonnell Douglas Corporation is declared compatible with the common market and the functioning of the EEA Agreement.

Article 2

This Decision is adressed to:

The Boeing Company
7755 East Marginal Way South
Seattle, WA 98 108
USA.

Done at Brussels, 30 July 1997.

For the Commission
Karel VAN MIERT
Member of the Commission

ANNEX 1

IV/M.877 — BOEING/MDC

Large commercial jet aircraft

Backlog market shares evolution by value — 1987/1996 — World

1. *Market shares — total*

(%)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Average 87-96
Total Boeing	62	61	57	59	62	62	62	59	64	64	61
Total MDC	14	19	16	16	12	10	9	8	8	6	12
Boeing + MDC	76	80	73	75	74	72	71	67	71	70	73
Total Airbus	24	20	27	25	26	28	29	33	29	30	27

2. *Market shares — narrow body*

(%)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Average 87-96
Total Boeing	50	55	61	60	64	64	62	56	54	55	58
Total MDC	19	20	16	15	11	11	11	11	14	11	14
Boeing + MDC	69	75	77	75	75	75	73	67	68	66	72
Total Airbus	31	25	23	25	25	25	27	33	32	34	28

3. *Market shares — wide body*

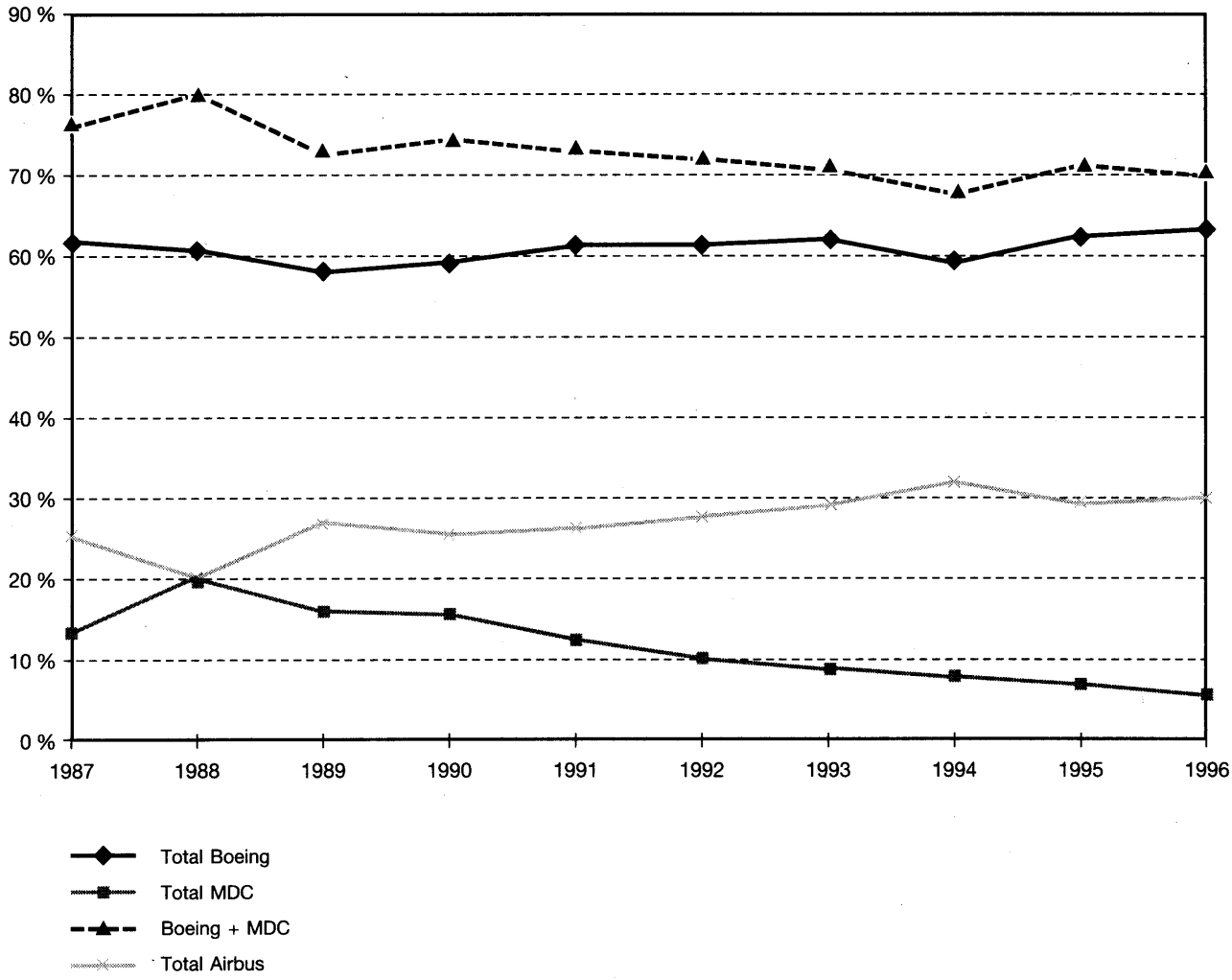
(%)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Average 87-96
Total Boeing	74	68	53	59	60	60	62	61	70	71	64
Total MDC	8	19	16	16	13	10	7	6	3	2	10
Boeing + MDC	83	87	69	75	73	70	69	67	73	73	74
Total Airbus	17	13	31	25	27	30	31	33	27	27	26

Source: MDC data: MDC part of the notification
Boeing data: Boeing's notification
Airbus data: Airbus — Airclaims CASE database.

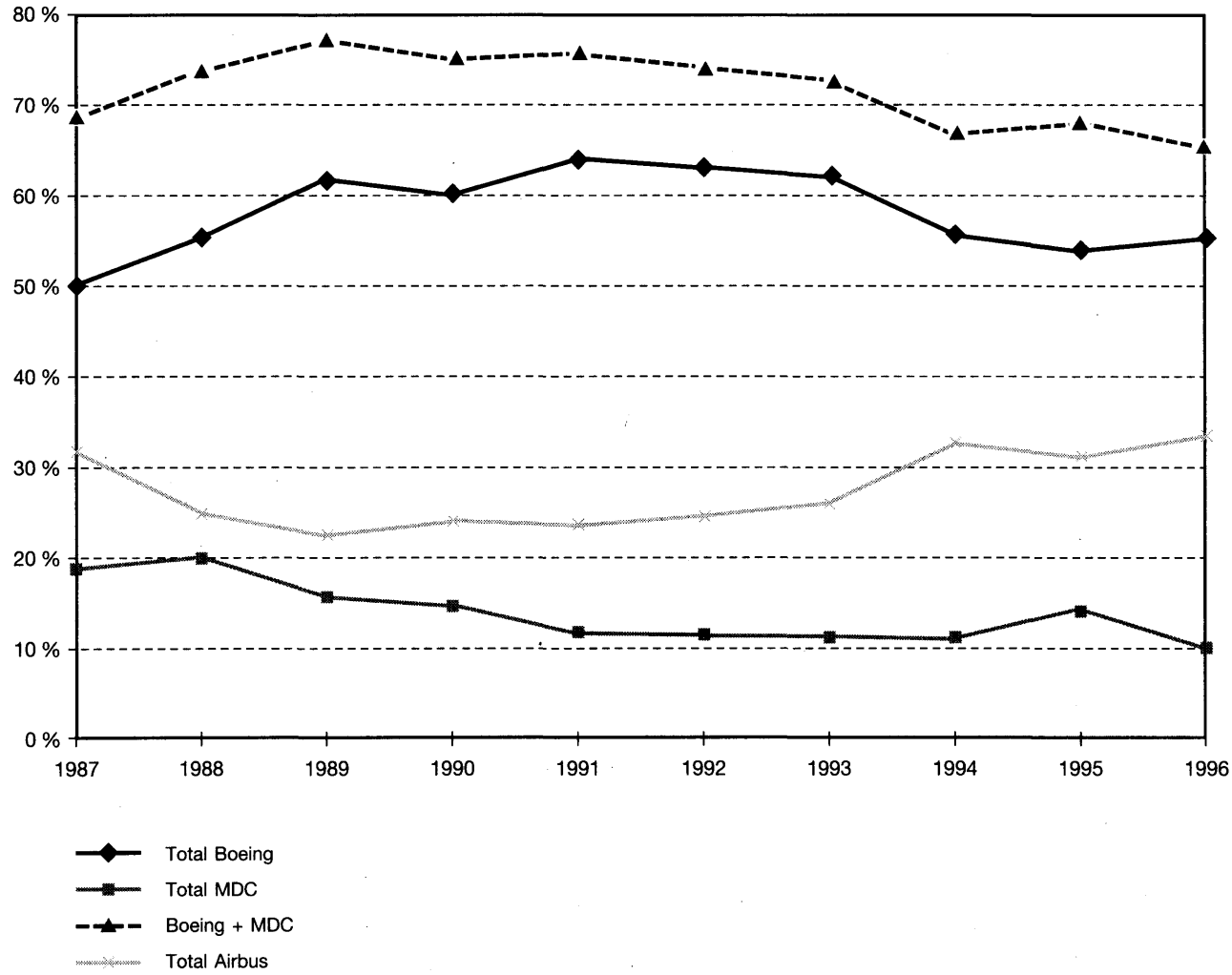
ANNEX 2

Narrow and wide body in value (world)



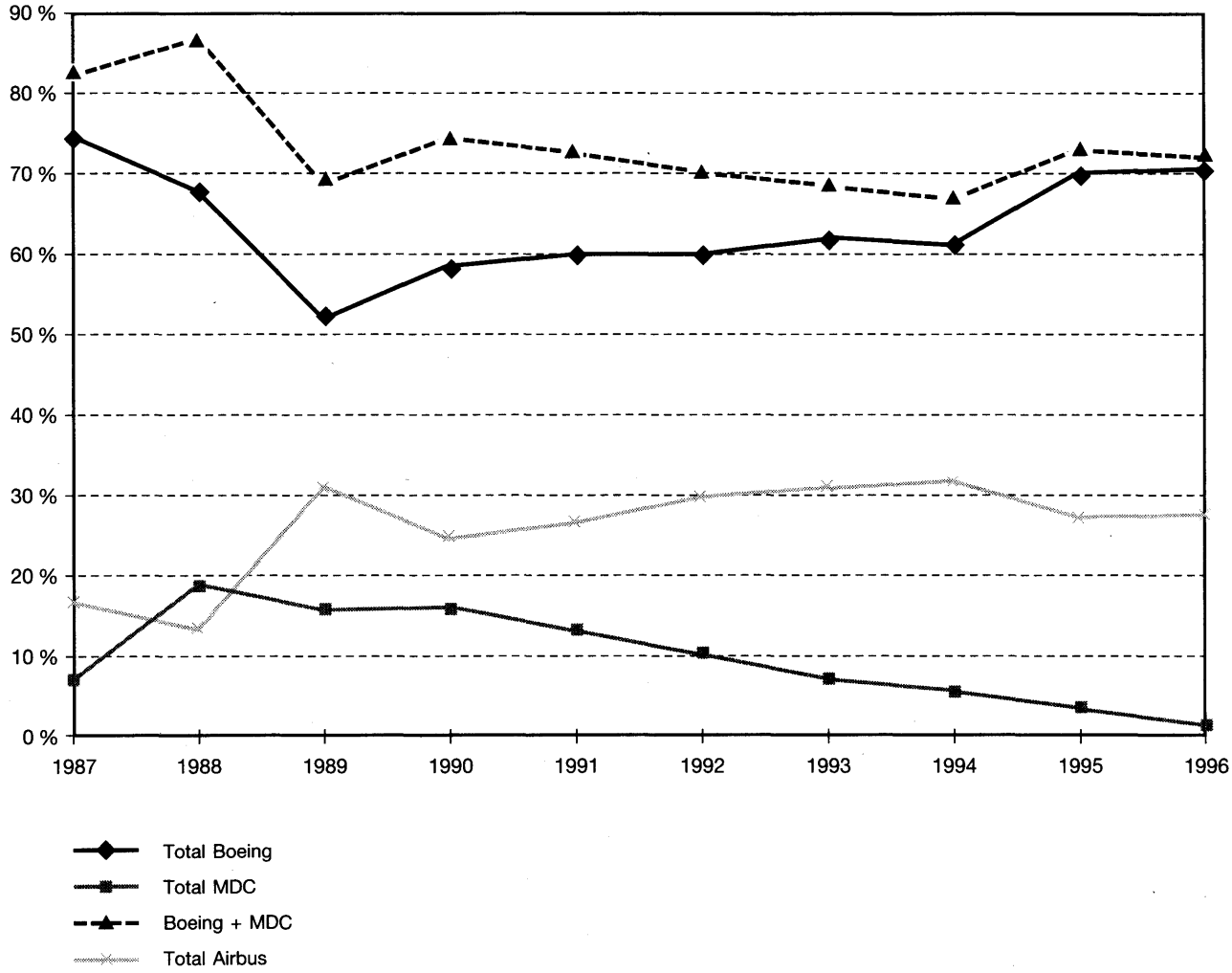
ANNEX 3

Narrow body in value (world)



ANNEX 4

Wide body in value (world)



ANNEX 5

IV/M.877 — BOEING/MDC

Large commercial jet aircraft

Backlog market shares evolution by value — 1987/1996 — EEA

1. *Backlog evolution by aircraft model — Market shares by value — EEA*

(%)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Average 87-96
Total Boeing	63	59	51	50	53	52	45	48	58	61	54
Total MDC	10	21	16	18	14	13	15	12	4	2	12
Boeing + MDC	73	80	67	67	67	64	59	61	62	63	66
Total Airbus	27	20	33	33	33	36	41	39	38	37	34

2. *Market shares — Narrow body*

(%)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Average 87-96
Total Boeing	48	48	52	51	52	51	33	35	50	50	47
Total MDC	12	24	19	16	13	10	10	8	5	2	12
Boeing + MDC	60	72	70	67	65	61	44	43	55	53	59
Total Airbus	40	28	30	33	35	39	56	57	45	47	41

3. *Market shares — Wide body*

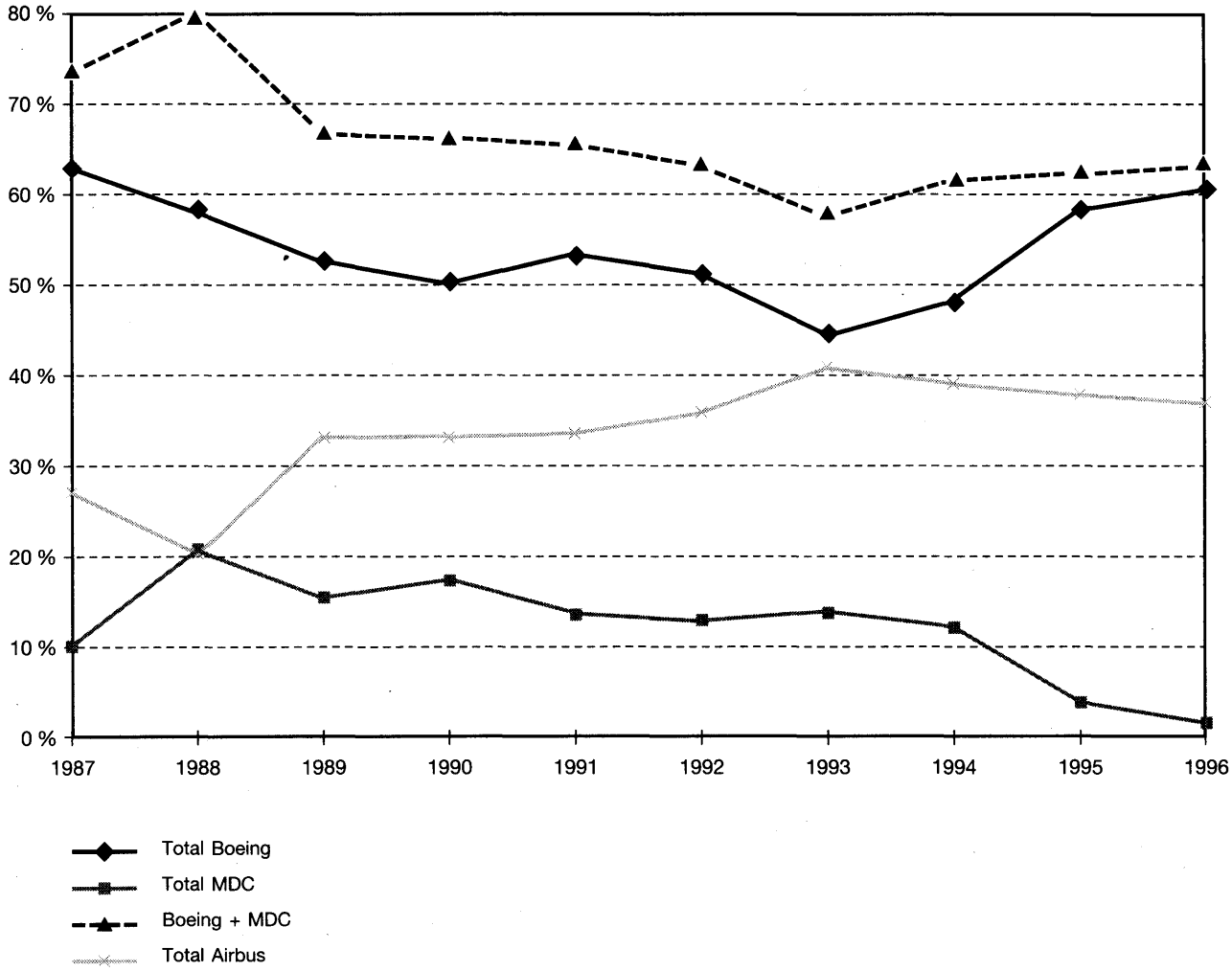
(%)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Average 87-96
Total Boeing	81	76	51	48	54	52	50	56	65	69	60
Total MDC	8	16	13	19	14	15	16	15	3	1	12
Boeing + MDC	89	92	64	67	68	66	66	71	68	70	72
Total Airbus	11	8	36	33	32	34	34	29	32	30	28

Source: MDC data: MDC part of the notification
Boeing data: Boeing's notification
Airbus data: Airbus — Airclaims CASE database.

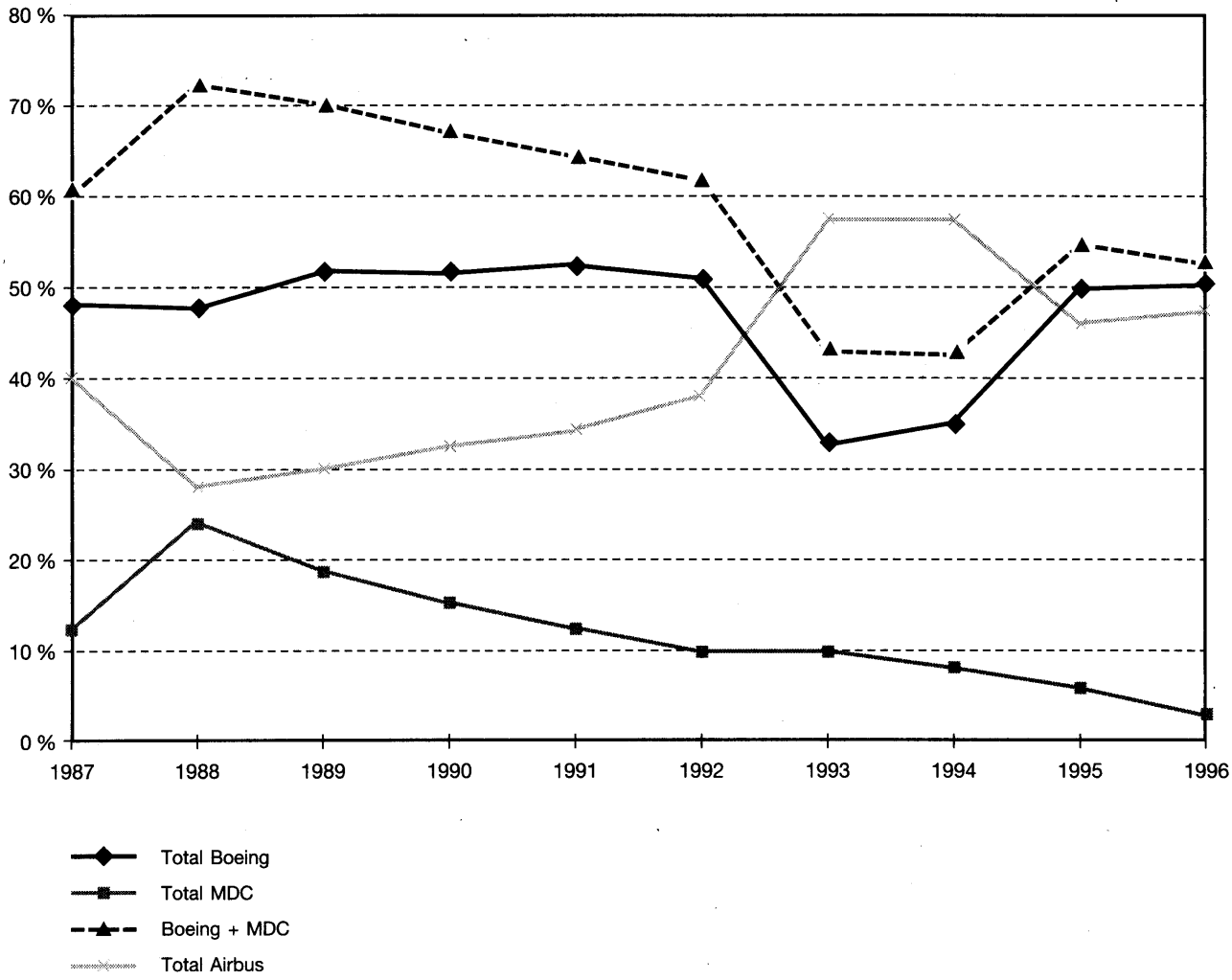
ANNEX 6

Narrow and wide body in value (EEA)



ANNEX 7

Narrow body in value (EEA)



ANNEX 8

Wide body in value (EEA)

