ECONOMIC IMPACT OF FOREIGN EXPORT CREDIT SUBSIDIES ON THE U.S. COMMUTER AIRCRAFT INDUSTRY

Report to the Committee on Finance, U.S. Senate, on Investigation No. 332-143 Under Section 332 of the Tariff Act of 1930, as Amended

USITC PUBLICATION 1328

DECEMBER 1982

United States International Trade Commission / Washington, D.C. 20436

UNITED STATES INTERNATIONAL TRADE COMMISSION

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Preface

On June 16, 1982, at the request of the Committee on Finance of the United States Senate, and in accordance with provisions of section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), the United States International Trade Commission instituted investigation No. 332-143, Economic Impact of Foreign Export Credit Subsidies on the U.S. Commuter Aircraft Industry. The Committee on Finance requested the Commission to examine (1) the current structure of the U.S. commuter aircraft industry and that of major foreign competitors; (2) the current U.S. market for these aircraft; (3) the factors of competition in the market; (4) foreign government export policies relating to these aircraft and their impact on the competitive position of the U.S. industry; and (5) the likely future trends in the U.S. commuter aircraft market. Notice of the investigation was published in the Federal Register (47 F.R. 28480, June 30, 1982).

In the course of this investigation, the Commission collected data from questionnaires sent to producers, importers, and purchasers of commuter aircraft. Questionnaire responses were received from each of the 5 current producers and 10 importers of commuter aircraft. The total number of questionnaire respondents in the commuter airline industry was 38 of 50 firms surveyed; respondents represent approximately 60 percent of the estimated number of passengers transported by this industry in 1981. Testimony was presented to the Commission in a public hearing from the General Aviation Manufacturers Association, which represents all of the current manufacturers of commuter aircraft, and the Regional Airline Association, whose member airlines comprise over 90 percent of the passengers transported by commuter airlines in 1981. Additionally, information from published sources, from interviews with corporate executives representing producers, importers, and purchasers of commuter aircraft, and from public data gathered in three recent Commission countervailing duty investigations involving commuter aircraft (701-TA-174,-175,-188) were utilized.

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Note.--The whole of the Commission's report to the Committee on Finance of the United States Senate may not be made public since it contains certain information that would result in the disclosure of the operations of individual concerns. This report is the same as the report to the Committee except that the above-mentioned information has been omitted. Such omissions are indicated by asterisks.

Executive Summary

Commuter airlines are the fastest growing sector of the U.S. air transportation industry. Passenger traffic growth over the past 5 years has averaged 14 percent annually and is expected to increase at an annual rate of 10 percent over the next few years. Traditionally, these airlines have utilized domestically produced equipment. Commuter airlines expanded after deregulation in 1978 and increased their airplanes fleets, purchasing a number of foreign-built aircraft with a larger seating capacity than that available from U.S. producers. In addition, U.S. carriers also bought a number of foreign aircraft in the 15 to 19-passenger capacity that were competitive with U.S. products. Commuter airline officials indicate that their decisions to purchase foreign aircraft are due to such factors as passenger capacity, fuel efficiency, quality, and technology. U.S. producers contend that commuter airlines are purchasing foreign aircraft because of the existence of export credit subsidies. The major findings of this study are summarized as follows:

1. Structure of the domestic and foreign industry

o The U.S. commuter aircraft industry is the world's largest.

In 1981, the five U.S. producers of commuter aircraft delivered 677 airplanes, valued at $375 million compared to 594 planes valued at $155 million in 1977. In 1978, the peak U.S. production year, the U.S. industry produced 768 planes valued at $266 million. Approximately 75 percent of these aircraft were sold in the United States in the period 1977-81, and the remainder were exported. Over * * * percent of U.S. exports of commuter aircraft are 8 to 14-passenger models. U.S. producers face virtually no international competition in this category. Total exports increased from 143 planes, valued at $31.6 million, in 1977 to 196 planes, valued at $98.3 million, in 1981. These exports represented 24.0 percent of total commuter aircraft shipments in 1977 and 28.7 percent in 1981.

o U.S. producers concentrate production and exports in the smaller (8-19 seats) commuter aircraft.

The domestic aircraft industry produces 8 models for commuter airlines. The majority of U.S. production consists of nonpressurized aircraft with a seating capacity of 10 or fewer passengers. Currently, two U.S. producers manufacture commuter aircraft with a seating capacity of 15 to 19 passengers. U.S. commuter aircraft producers do not at this time manufacture commuter aircraft with a seating capacity exceeding 20 passengers. The only U.S.-built aircraft above this capacity is a modified corporate airplane. U.S. producers, according to testimony given at the U.S. International Trade Commission's hearings, appear reluctant to expand their operations beyond the manufacture of existing successful aircraft due to the adverse economic conditions affecting the commuter airline industry.

5. The future U.S. market

o The U.S. market for commuter aircraft is predicted to grow significantly in the next two decades.

Although the long-range outlook for commuter aircraft sales is good, the immediate future for such sales is not. The unstable economic environment and high interest rates have forced many airlines to delay purchasing new equipment. Industry sources indicate that orders for new aircraft are likely to be depressed through 1983. However, as the U.S. economy recovers, the growth in the airline industry should prompt a large number of new orders.

The major market for commuter aircraft will continue to be the United States. Industry marketing specialists estimate that the potential U.S. market for commuter aircraft during 1980-2000 will exceed 2,500 planes. Aircraft with a seating capacity over 30 passengers have been identified as the fastest growing segment of this anticipated demand. Data obtained from industry questionnaires indicate that almost 70 percent of commuter airlines' planned equipment acquisitions will be for planes in this category. In 1980, there were approximately 200 aircraft in the size range in service by U.S. commuter airlines. This number is expected to increase dramatically in the next decade as more aircraft of that size become available.

o Only one of three U.S. aircraft currently under development for the 30 to 50-passenger market is likely to go into production before the late 1980's.

Three of the aircraft being developed worldwide in the 30 to 50 passenger market segment involve U.S. firms. However, only 1 aircraft, a joint venture between a U.S. firm and a Swedish company (the SF340), is expected to go into production and is expected to be available in 1984. Ahrens Aircraft Corp. did not deliver any of its Ahrens 404 aircraft before going to bankruptcy proceedings. As of September 1982, Commuter Aircraft Corp. has no orders for its CAC 100 airplanes. Therefore, except for the one U.S. plane, commercial production of 30 to 50 passenger aircraft is unlikely before the late 1980's.

o Each $100 million in commuter aircraft production not undertaken by U.S. firms results in a loss of $210 million in production and more than 2700 jobs in all industry sectors.

Assuming no significant additional entry into this market segment, for each hypothetical $100 million in production not undertaken by U.S. commuter aircraft manufacturers, the Commission estimates a total loss of 2,723 jobs and a $209.6 million loss in total output in all sectors of the U.S. economy. The majority of the lost employment and production would be in the aircraft sector--with a estimated loss of 1,363 jobs and $118.3 million in production. In other manufacturing sectors, 596 jobs and $54.7 million in output would be lost. The loss in other miscellaneous industries would total 764 positions and $36.6 million in production.

o Imports constitute a growing share of the U.S. market.

During 1977-80, U.S. apparent consumption increased 34.3 percent, rising to 634 planes in 1980. Consumption, in quantity, decreased 11.2 percent in 1981. The value of apparent consumption rose from $140.5 million in 1977 to $482.6 million in 1981.

The ratio of imports to apparent consumption was 4.4 percent in quantity and 12.2 percent in value in 1977. By 1981, these ratios had increased to 14.2 percent in quantity and 42.6 percent in value. Airline industry sources indicate that these ratios are likely to rise as new models of foreign commuter aircraft are introduced in the U.S. market.

o In 1981, approximately 81 percent of the commuter aircraft in use had a seating capacity of under 20 passengers.

There was a total of 1,443 commuter aircraft in use by U.S. commuter airlines in 1981. Of this total, approximately 51 percent were airplanes in the 8 to 14-passenger range, 30 percent in the 15 to 19-passenger range, 2 percent in the 20 to 29-passenger range, 13 percent in the 30 to 50-passenger range and 1 percent in the 57 to 60 passenger range. 1/ Approximately 57 percent of these 1,443 aircraft are powered by piston engines, 42 percent utilize turboprop engines, and the remainder have jet engines.

3. Factors of competition

o U.S. producers are equally competitive with foreign producers in raw material availability.

U.S. manufacturers are normally able to source all components for the manufacture of the planes domestically at competitive prices. The majority of foreign producers have been in existence long enough for similar relationships in their home markets to evolve.

o The U.S. commuter industry has a competitive advantage in labor costs.

According to industry sources, since the U.S. industry has been in existence longer than most foreign manufacturers, and the functions performed by employees are similar for all commuter aircraft, total labor expenses per dollar of output for U.S. producers are lower than their foreign counterparts. Additionally, many foreign manufacturers are wholly or partially state-owned, and stable employment is an important government objective. Thus, when orders for new aircraft decline, employment is not always decreased. U.S. producers are more readily able to lay off employees when orders decrease.

1/ Data regarding the remaining 3 percent of the aircraft in use by commuter airlines are not available.

- o Foreign commuter aircraft manufacturers have a competitive advantage in the area of capital formation.

Because of their special relationships to their respective governments, foreign manufacturers are often able to obtain capital in the form of loans, grants or loan guarantees to develop, improve, market and finance their products. This is due to the fact that the majority of foreign producers are owned wholly or in part by their respective governments. American producers, however, must depend on internal capital or the commercial market for these funds. The availability of such funds in the U.S. for domestic producers depends on the financial condition of the producer or the market outlook for their products and is not a function of government policy.

- o Opinions differ as to the comparative quality of domestically built and foreign-built commuter aircraft.

Domestic manufacturers maintain that the U.S. industry has an advantage over foreign competitors in the areas of pressurization, fuel efficiency and speed. Foreign manufacturers indicate that they have an advantage in aircraft durability and passenger capacity. Several U.S. commuter airline officials testified before the Commission that foreign planes are often superior for their needs to competing U.S.-built aircraft. They contend that domestic producers have not been responsive to the commuter market, producing derivations of corporate aircraft that are underpowered and subject to maintenance problems. 1/

- o Passenger capacity and fuel efficiency are the most important factors in the purchasing decisions of airlines for commuter aircraft.

Based on questionnaire responses, passenger capacity and fuel efficiency were cited as the most important purchase decision factors due to their influence on an airline's operating costs. In order to remain competitive with other modes of transportation, such as automobiles and trains, airlines must determine the optimal aircraft size and the frequency of its flights in order to minimize their costs. The size of the airplane and its fuel efficiency are the most important components in this decision. Airlines will choose the aircraft they perceive to be most economical for their route structure. Other criteria noted, in descending order, are quality, technology, price, technical and service support, and fleet standardization.

- o Financing ranks low as a decision factor for commuter aircraft purchases.

Based on questionnaire responses, U.S. airline operators reported that financing offered was not a critical factor in their decision to purchase

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1/ Transcript of the hearing in the in the matter of investigation Nos. 332-143 and 332-143 and 332-144, Sept. 28, 1982, pp. 97-102 and 110-115.

commuter aircraft. In a list of purchasing decision criteria, financing ranked number 10 out of 15 criteria cited by U.S. commuter airlines. Airline industry sources indicate that not only is financing an unimportant decision factor, but that it is not discussed until negotiations are almost concluded. U.S. airlines reported that in no instance did subsidized financing offered by foreign producers cause them to select a foreign commuter aircraft over a domestically-built one. The domestic aircraft producers, however, claim that financing is a factor in the decision-making process of commuter airline's aircraft purchases and that subsidized foreign financing was a factor in lost sales.

4. Foreign government export policies and their impact on the U.S. industry

o Most countries provide medium-term and long-term credit and other export incentives as a means of enhancing their exports.

Most foreign governments have developed systems to provide medium-term and long-term credits to exporters of capital intensive products such as aircraft. In the majority of countries exporting commuter aircraft to the U.S., official financial support is provided through the banking system or directly through government agencies. Official foreign-government support of export financing of commuter aircraft occurs in three ways--through government-supported insurance programs, through government-supported guarantee programs, and through direct government support of interest rates and capital supply.

o The methods of financing used by commuter airlines to purchase commuter aircraft changed significantly during 1977-81.

Questionnaire data indicate that, since 1977, leasing and seller financing of commuter aircraft purchases have increased in importance; bank loans have decreased in importance. In 1977, according to information supplied the Commission, banks were named as the most important source, leasing a distant second, and seller financing, third. In 1981, leasing surpassed bank financing in industry responses to the Commission's questionnaire, bank financing fell to the second most important source, and seller financing placed third. Rising interest rates and increasing difficulty by the airlines in obtaining bank loans have apparently caused these changes.

o Foreign export credit subsidies applied to commuter aircraft can reduce the cost of purchasing aircraft.

Airlines often can finance purchases of foreign aircraft at interest rates far below the rates they would have to pay if financing were obtained through normal commercial channels. The most generous financial terms offered by foreign producers can reduce the cost of purchasing an aircraft by 12.5 percent, compared to the cost of purchasing under prime rate financing. The least generous financial terms offered by foreign manufacturers can reduce the cost of purchasing an aircraft by 1.9 percent, compared with the cost of

purchasing under prime rate financing. In general, financing available to purchasers of domestic commuter aircraft is one-half to two percentage points above the prime rate.

- Alleged lost sales, due to export credit financing amounted to less than * * * percent of U.S. deliveries of all commuter aircraft and * * * percent of 15-19 seat aircraft during 1978-81.

Based on questionnaire responses of U.S. commuter aircraft producers, during 1978-81 there were a total of * * * sales lost to foreign manufacturers of commuter aircraft due to export credit financing. These sales amounted to an average of less than * * * percent of annual shipments over this period. If these sales had not been lost to imports, a total of * * * more persons would have been employed in the commuter aircraft industry according to questionnaire responses. Profits, over this period, would have gained an additional * * * million if these sales had not been lost. However, the majority of the lost sales are for * * * passenger capacity. These alleged lost sales, as a percentage of total U.S. shipments in this * * * seat category, represented * * * percent of U.S. deliveries of such aircraft in 1978, * * * percent in 1979, * * * percent in 1980, and * * * percent in 1981.

In 1981, U.S. producers alleged * * * lost sales to imports, due to foreign export credit subsidies. These imports were valued at * * * million. Assuming that the value of imports displaces an equal value of sales of U.S. aircraft, these * * * million in imports could displace * * * million in U.S. production in all sectors. This alleged U.S. output loss results in an employment loss of * * * jobs. The majority of the loss in employment and production would be in the aircraft manufacturing sector--with a loss of about * * * jobs and * * * million in output. 1/

However, the one-for-one displacement estimate may overstate the impact since, in general, the domestic industry could respond to an increase in imports by reducing price. With lower prices, total sales would likely expand and domestic output likely declines by less than the increase in imports. For this reason, the effect of the * * * million in commuter aircraft imports alleged to have received below market financing, considering the elasticity of demand, translates to a displacement of * * * jobs and * * * million in production in all sectors. In the aircraft manufacturing sector this loss would be * * * jobs and * * * million in output. Additionally, since imported aircraft normally contain U.S. components such as avionics, landing gear and hydraulics systems, the effect of imported aircraft on the aircraft supplying industry would be further lessened.

1/ The estimates of production and employment impact were calculated using the Bureau of Labor Statistics' economic growth model, which is based on the Input-Output Structure of the United States, 1972 Bureau of Economic Analysis, U.S. Department of Commerce.

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THE STRUCTURE OF THE U.S. INDUSTRY AND THAT OF MAJOR FOREIGN COMPETITORS

Product description

Commuter aircraft are civil airplanes: powered by piston, turboprop, turbojet, or turbofan engines; having a seating capacity ranging from 8 to 60 passengers and a payload capacity for all cargo not to exceed 18,000 pounds; and used in scheduled passenger transportation. 1/

Currently, there are 26 commuter aircraft models in operation, produced by manufacturers in 13 countries. Twelve of those models were produced by five U.S. companies. There are also 12 models in current stages of development, five of which are being developed by U.S. companies. The development of one of the new U.S. models is a joint effort by Fairchild Aircraft (U.S.) and Saab-Scandia of Sweden. All new models will be available during 1982-85. A listing of the commuter aircraft in service in 1981 and the new models currently under development are listed in appendix A.

U.S. industry

Currently, there are five U.S. producers of commuter aircraft: Fairchild Aircraft Corp., Gulfstream American Corp., Cessna Aircraft Co., Piper Aircraft Corp., and Beech Aircraft Corp. Additionally, there are two firms which have aircraft under development: Commuter Aircraft Corp. (Youngstown, Ohio) and Ahrens Aircraft Corp. (Ramsey, P.R.). However, Ahrens Aircraft Corp. is currently in chapter 11 bankruptcy proceedings. 2/ There is also a U.S. firm, International Aviation Corp. (Homestead, Fla.) which has purchased the manufacturing rights for an eight-passenger aircraft, currently produced in Switzerland. The firm plans to produce the aircraft in the United States by early 1983. 3/ The five producers operate 13 production or assembly facilities in the United States.

The domestic industry currently produces eight models for aircraft for commuter use. The majority of these are nonpressurized airplanes with a seating capacity of 10 or fewer passengers. U.S.-manufactured commuter airplanes now account for the majority of such aircraft in service. However, foreign producers are now competing in almost every segment of the commuter aircraft market and, as a result, U.S. companies have lost market share in the United States and in worldwide markets in recent years.

All U.S. commuter aircraft manufacturers produce other general aviation and/or corporate aircraft. Also, at least one U.S. company produces

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1/ Under the Federal Aviation Act, sec. 412, C2B the category "small airplanes" (which includes commuter airplanes) is defined as those planes with less than 60-passenger capacity and 18,000 pounds or less payload capacity. There are currently no airplanes specifically built for the commuter airplane market with less than 8-passenger capacity.

2/ "Ahrens Files for Bankruptcy," Flight International, July 1982, p. 118.

3/ "U.S. Distributor Buys Trislander Rights," Aviation Week and Space Technology, Sept. 6, 1982, p. 76.

components for military aircraft and missiles. An analysis of each of the five U.S. companies is provided in appendix B.

U.S. shipments.--U.S. producers' total shipments increased during 1977-79, as commuter airlines expanded their markets and purchased new equipment (table 1). Shipments increased to 768 units in 1979, or by 29.3 percent over the 1977 total. Shipments then decreased in 1980 and 1981, falling 0.9 percent and 11.0 percent, respectively. Approximately 71.3 percent of U.S. producers' shipments were sold in the United States in 1981, compared with nearly 76 percent in 1977 (table 2.) The value of shipments, however, increased annually, rising from $155 million in 1977 to $375 million in 1981, or by 142 percent. In part, the rising value of total shipments is, due to the increased number of * * * passenger planes produced in the United States. In 1977, aircraft with * * * seats accounted for * * * percent of the total value of shipments; by 1981, this figure had dropped to almost * * * percent.

Table 1.--Commuter aircraft: U.S. producers' total shipments (domestic and export), by seating capacity, 1977-81 1/

Seating capacity	1977	1978	1979	1980	1981
	Quantity (units)				
8-14	***	***	***	***	***
15-19	***	***	***	***	***
20-29	***	***	***	***	***
30-50	***	***	***	***	***
51-60	***	***	***	***	***
Total	594	575	768	763	677
	Value (1,000 dollars)				
8-14	***	***	***	***	***
15-19	***	***	***	***	***
20-29	***	***	***	***	***
30-50	***	***	***	***	***
51-60	***	***	***	***	***
Total	155,010	182,715	266,434	323,310	375,087

1/ Unit values within each seating capacity differ due to specific aircraft characteristics such as engines, avionics, pressurization, and any optional equipment.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 2.--Commuter aircraft: U.S. producers' domestic shipments, by seating capacity, 1977-81 1/

Seating capacity	1977	1978	1979	1980	1981
	Quantity (units)				
8-14	***	***	***	***	***
15-19	***	***	***	***	***
20-29	***	***	***	***	***
30-50	***	***	***	***	***
51-60	***	***	***	***	***
Total	451	395	541	548	483
	Value (1,000 dollars)				
8-14	***	***	***	***	***
15-19	***	***	***	***	***
20-29	***	***	***	***	***
30-50	***	***	***	***	***
51-60	***	***	***	***	***
Total	123,384	124,281	186,156	230,686	276,834

1/ Unit values within each seating capacity differ due to specific aircraft characteristics such as engines, avionics, pressurization and any optional equipment.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Contract awards.--U.S. producers' contract awards are the best indication of future deliveries. Depending on the industry backlog, deliveries of 15 to 19 seat or larger aircraft typically begin 1 to 2 years after the contract is made. However, aircraft with less than 14-passenger capacity are often sold through distributors; therefore, these data are not strictly indicative of future shipments. Domestic contract awards fluctuated during 1977-81, and in 1981 gained 12.4 percent in quantity and 160.8 percent in value (table 3) from the 1977 levels. U.S. producers' foreign contract awards followed the same trend as domestic awards. In 1981, these orders increased 87 percent in quantity and 209 percent in value over 1977 awards (table 4). Foreign awards in 1981 totaled 129 aircraft valued at $68 million. Aircraft with 8 to 14 passenger capacity constitute the majority of foreign contract awards.

Table 3.--Commuter aircraft: U.S. producers' domestic contract awards, by seating capacity, 1977-81, and January-August 1982 1/

Seating capacity	1977	1978	1979	1980	1981	Jan.-Aug. 1982
	Quantity (units)					
8-14 seats	***	***	***	***	***	***
15-19 seats	***	***	***	***	***	***
20-29 seats	***	***	***	***	***	***
30-50 seats	***	***	***	***	***	***
51-60 seats	***	***	***	***	***	***
Total	170	123	165	209	191	2/
	Value (1,000 dollars)					
8-14 seats	***	***	***	***	***	***
15-19 seats	***	***	***	***	***	***
20-29 seats	***	***	***	***	***	***
30-50 seats	***	***	***	***	***	***
51-60 seats	***	***	***	***	***	***
Total	49,812	67,754	89,648	106,722	129,913	2/

1/ Unit values within each seating capacity differ due to specific aircraft characteristics such as engines, avionics, pressurization and any optional equipment.

2/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 4.--Commuter aircraft: U.S. producers' foreign contract awards, by seating capacity, 1977-81, and January-August 1982 1/

Seating capacity	1977	1978	1979	1980	1981	Jan.-Aug. 1982
	Quantity (units)					
8-14 seats	***	***	***	***	***	***
15-19 seats	***	***	***	***	***	***
20-29 seats	***	***	***	***	***	***
30-50 seats	***	***	***	***	***	***
51-60 seats	***	***	***	***	***	***
Total	69	86	123	135	129	2/
	Value (1,000 dollars)					
8-14 seats	***	***	***	***	***	***
15-19 seats	***	***	***	***	***	***
20-29 seats	***	***	***	***	***	***
30-50 seats	***	***	***	***	***	***
51-60 seats	***	***	***	***	***	***
Total	22,152	40,603	63,270	56,306	68,456	2/

1/ Unit values within each seating capacity differ due to specific aircraft characteristics such as engines, avionics, pressurization and any optional equipment.

2/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Total contract awards for commuter aircraft reached their highest level in 1980, when 344 aircraft, valued at $192.5 million, were ordered. Contract awards declined in 1981 by 7.0 percent in quantity and 2.7 percent in value, as both foreign and domestic purchasers decreased their U.S. orders due to a falloff in ridership and high interest rates (table 5). Information regarding contract awards for January-August 1982 is available only for aircraft with 15 to 19 passenger capacity. These orders totaled * * * planes, valued at * * * million.

Table 5.--Commuter aircraft: U.S. producers' total contract awards, by seating capacity, 1977-81, and January-August 1982 1/

Seating capacity	1977	1978	1979	1980	1981	Jan.-Aug. 1982
	Quantity (units)					
8-14 seats	***	***	***	***	***	***
15-19 seats	***	***	***	***	***	***
20-29 seats	***	***	***	***	***	***
30-50 seats	***	***	***	***	***	***
51-60 seats	***	***	***	***	***	***
Total	239	209	288	344	320	2/
	Value (1,000 dollars)					
8-14 seats	***	***	***	***	***	***
15-19 seats	***	***	***	***	***	***
20-29 seats	***	***	***	***	***	***
30-50 seats	***	***	***	***	***	***
51-60 seats	***	***	***	***	***	***
Total	71,964	108,357	152,918	192,527	187,377	2/

1/ Unit values within each seating capacity differ due to specific aircraft characteristics such as engines, avionics, pressurization and any optional equipment.

2/ Not available.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Capacity.—The U.S. commuter aircraft industry's capacity to produce increased from 872 planes in 1977 to 1,125 planes in 1981, or by 29.0 percent (table 6). Capacity utilization increased to 83 percent in 1979, but decreased in the following 2 years. In 1981, domestic manufacturers were operating at 60 percent capacity. The industry attributes this decline to high interest rates, an unstable economy, decreased demand for commuter aircraft, and increased foreign competition in the U.S. market.

Table 6.--Commuter aircraft: U.S. producers' capacity, production, 1/ and capacity utilization rates, 1977-81

Item	1977	1978	1979	1980	1981
	Units				
Capacity----------units--	872	898	924	1,038	1,125
Production----------do----	594	575	768	763	677
Capacity utilization rate----------percent--	68	64	83	74	60

1/ Production data were not gathered, but they are assumed to approximate shipments.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Investment expenditures.--U.S. producers' 1/ investment expenditures for real estate, plants, and equipment increased annually during 1977-80, rising from * * * million in 1977 to * * * million in 1980. Expenditures then declined by 6.4 percent in 1981 due to decreasing sales in the industry (see table 7).

Large research and development (R&D) expenditures are especially important to the commuter aircraft industry so that producers may offer improved planes and remain competitive. R&D expenditures amounted to * * * million in 1977. They increased in the following 2 years, by 54.2 percent by 1979, and then fell by 3.5 percent in 1980. R&D amounted to * * * million in 1981, representing an increase of 4.9 percent over that of the previous year (table 7). The majority of this increase is attributable to research on the * * *. In general, research currently being conducted in the commuter aircraft industry is directed towards the increased use of composites and bonding techniques in the airframe structure to provide weight savings for greater fuel efficiency.

1/ Data do not include Beech Aircraft Corp.

Table 7.--U.S. producers' investment expenditures, 1977-81

(In thousands of dollars)

Item	1977	1978	1979	1980	1981
Real estate, plant, and equipment	***	***	***	***	***
Research and development	***	***	***	***	***
Total	***	***	***	***	***

1/ Data does not include * * *.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Profitability.—With one exception, U.S. producers of commuter aircraft are predominantly manufacturers of corporate and private use airplanes. Commuter production is generally a small portion of their total business. Net operating profits on all operations, of the U.S. industry during 1977-81 increased by 64.5 percent, reaching $237.4 million in 1981. The ratio of net operating profit to net sales trended downward over this period, reaching 7.6 percent in 1981 (table 8).

According to industry figures, commuter aircraft operations are generally more profitable than that of corporate operations. Net sales of commuter aircraft increased each year during 1977-81, rising from $155.0 million in 1977 to $364.7 million in 1981. Net operating profit fluctuated during this period. In 1979, profits increased 92.9 percent from the 1977 level, reaching $35.4 million. In 1980 and 1981, profits decreased, falling 19.3 percent and 9.9 percent, respectively. The ratio of operating profit to net sales trended downward over the 5-year period, rising to a high of 14.5 percent in 1978, and reaching a low of 7.1 percent in 1981 (table 9).

Employment.--Employment in the commuter aircraft industry tends to be cyclical, following the general pattern of the economy. Large fluctuations in employment are quite common in the industry as producers respond to slack demand by substantially reducing employment. The total number of persons employed by U.S. firms which produce commuter aircraft increased 18.6 percent during 1977-79 but declined in the following 2 years, representing a net gain of 4.7 percent over the 5-year period (table 10). Approximately 64 percent of those employed were directly engaged in the production of civil aircraft in 1981. The number of workers engaged in the manufacture of commuter aircraft is a small portion of total employment in all operations. Commuter aircraft employment increased 61.1 percent during 1977-80, reaching 5,586 workers in 1980. Due to declining orders for new commuter aircraft in 1980, U.S. producers decreased employment by 14.0 percent in 1981. Over the 5-year period, approximately 64 to 70 percent of the total number of persons employed in manufacturing commuter aircraft were production workers.

Table 8.--Profit-and-loss experience of U.S. producers on the overall operations of the reporting establishments in which all products are produced, by firms, 1977-81

Year and firm	Net sales	Cost of goods sold	Gross profit	General selling, and administrative expenses	Net operating profit	Ratio of net operating profit to net sales
	1,0000 dollars					Percent
1977:						
Beech Aircraft Corp	***	***	***	***	***	***
Cessna Aircraft Co	***	***	***	***	***	***
Fairchild Swearingen Aviation Corp	***	***	***	***	***	***
Piper Aircraft Co	***	***	***	***	***	***
Total or average	833,479	656,246	177,233	82,903	144,330	11.3
1978:						
Beech Aircraft Corp	***	***	***	***	***	***
Cessna Aircraft Co	***	***	***	***	***	***
Fairchild Swearingen Aviation Corp	***	***	***	***	***	***
Piper Aircraft Co	***	***	***	***	***	***
Total or average	1,078,444	870,518	207,926	101,075	175,851	9.9
1979:						
Beech Aircraft Corp	***	***	***	***	***	***
Cessna Aircraft Co	***	***	***	***	***	***
Fairchild Swearingen Aviation Corp	***	***	***	***	***	***
Piper Aircraft Co	***	***	***	***	***	***
Total or average	1,345,892	1,088,482	257,410	129,432	210,978	9.5
1980:						
Beech Aircraft Corp	***	***	***	***	***	***
Cessna Aircraft Co	***	***	***	***	***	***
Fairchild Swearingen Aviation Corp	***	***	***	***	***	***
Piper Aircraft Co	***	***	***	***	***	***
Total or average	1,370,495	1,140,862	229,633	154,360	171,273	5.4
1981:						
Beech Aircraft Corp	***	***	***	***	***	***
Cessna Aircraft Co	***	***	***	***	***	***
Fairchild Swearingen Aviation Corp	***	***	***	***	***	***
Piper Aircraft Co	***	***	***	***	***	***
Total or average	1,494,767	1,184,909	309,858	196,416	237,442	7.5

1/ Not reported.
2/ The calculation of the ratio of net operating profit to net sales excludes ***.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 9.--Profit-and-loss experience of U.S. producers on their commuter aircraft operations, by firms, 1977-81

Year and firm	Net sales	Cost of goods sold	Gross profit	General selling, and administrative expenses	Net operating profit	Ratio of net operating profit to net sales
	1,0000 dollars					Percent
1977:						
Beech Aircraft Corp	***	***	***	***	***	***
Cessna Aircraft Co	***	***	***	***	***	***
Fairchild Swearingen Aviation Corp	***	***	***	***	***	***
Piper Aircraft Co	***	***	***	***	***	***
Total or average	155,007	127,161	27,846	9,493	18,353	11.8
1978:						
Beech Aircraft Corp	***	***	***	***	***	***
Cessna Aircraft Co	***	***	***	***	***	***
Fairchild Swearingen Aviation Corp	***	***	***	***	***	***
Piper Aircraft Co	***	***	***	***	***	***
Total or average	182,714	145,082	37,631	11,159	26,472	14.5
1979:						
Beech Aircraft Corp	***	***	***	***	***	***
Cessna Aircraft Co	***	***	***	***	***	***
Fairchild Swearingen Aviation Corp	***	***	***	***	***	***
Piper Aircraft Co	***	***	***	***	***	***
Total or average	271,434	218,281	53,153	17,757	35,396	13.0
1980:						
Beech Aircraft Corp	***	***	***	***	***	***
Cessna Aircraft Co	***	***	***	***	***	***
Fairchild Swearingen Aviation Corp	***	***	***	***	***	***
Piper Aircraft Co	***	***	***	***	***	***
Total or average	314,507	264,985	52,522	23,968	28,554	9.0
1981:						
Beech Aircraft Corp	***	***	***	***	***	***
Cessna Aircraft Co	***	***	***	***	***	***
Fairchild Swearingen Aviation Corp	***	***	***	***	***	***
Piper Aircraft Co	***	***	***	***	***	***
Total or average	364,651	291,316	51,705	27,107	25,730	7.1

1/ Beech Aircraft Corp. did not produce commuter aircraft during 1977-81.
2/ Not reported.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 10.--Average number of employees in U.S. establishments producing commuter aircraft and all production and related workers directly engaged in the production of commuter aircraft, 1977-81

Item	1977	1978	1979	1980	1981
Average number of persons employed in reporting establishments:					
All persons	1/ 31,643	1/ 34,115	37,530	35,401	32,326
Production and related workers	1/ 21,116	1/ 22,515	25,534	23,526	20,533
Average number of persons employed in the production of commuter aircraft:					
All persons	3,467	4,262	5,181	2/ 5,586	4,804
Production and related workers	2,382	2,900	3,574	2/ 3,806	3,076

1/ Includes estimate of * * * employment.
2/ Employment does not include * * * data.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Barriers to entry into the industry.--The new entrant in commuter aircraft manufacturing faces several barriers. First, large amounts of capital are required to engage in such a venture. According to industry figures, approximately $100 million to $200 million (depending on the size of the plane) is required in nonrecurring costs alone to design, certify, and market aircraft. Additionally, there is a lengthy gap in the time that an airplane model is sold and the time that the manufacturer is able to recoup his costs. Approximately 3 to 4 years are often required in order for an established manufacturer to design, market, and deliver an airplane. The time period required for a new project would likely be even longer. As a general rule, a manufacturer needs to sell at least 200 aircraft of a given model to recover its development costs, although high interest rates may raise this breakeven point. 1/ The price is then initially based on the estimated cost of producing the aircraft years later. 2/ According to industry sources, only 5 to 7 percent of the selling price of each aircraft contributes to the amortization of the development costs. 3/

Another barrier a new entrant to the industry must overcome is his "newness" in the market. In an industry where performance is such a critical

1/ Impact of Advanced Air Transport Technology, Office of Technology Assessment, Congress of the United States, 1982, p. 40.
2/ Robert Newhouse, "A Sporty Game," The New Yorker, June 14, 1982, p. 66.
3/ Analyses of the Business Prospects of the CAC-100 Commuter Aircraft Program and the Commuter Aircraft Strategies of Major U.S. Manufacturers, ICF, Inc., June 28, 1982, p. 40.

concern, airlines must have confidence in the aircraft and its manufacturer. Often commuter carriers are hesitant to contract with a new manufacturer because they have no proven product support capabilities. Additionally, when airlines place an order for new equipment with a manufacturer, they are assuming that the company will be able to stay in business and deliver the ordered aircraft. Once a producer fails to deliver a plane, the purchaser is forced to seek an aircraft from another manufacturer, and thus incur costly delays in improving its fleet.

Marketing of the aircraft.--Commuter airlines are the primary purchasers of commuter aircraft. All of the aircraft companies sell to these carriers in basically the same fashion. Initially, attempts to generate interest in the aircraft are made through articles and advertisements in trade journals. Additionally, a detailed sales campaign is planned that includes soliciting new purchasers and attempting to sell aircraft to purchasers that have already expressed interest in the product. In either case, the salesmen direct their attention to the president of the airlines, who typically makes the purchasing decisions. When a manufacturer is attempting to solicit business for a new or existing airplane, the salesman will visit the airline and stress the virtues of the producing company, its reputation in the industry, and the airplanes it is currently producing and any future models. After the presentation is made, the salesman attempts to collect information on the routes served by the airline, the frequency of these routes, and the airline's cost factors. The data obtained will be carefully evaluated and a detailed economic analysis will be done. Typically, the salesman will then make an appointment for a followup conference to present the analysis or he will advise the prospective client that the report will be sent as soon as it is prepared. The route and economic analysis is the main sales tool used by commuter aircraft manufacturers. This report typically contains information on the direct costs of operating the company's aircraft over the airline's route structure. In some cases, the report also contains these statistics (as available) on competing aircraft. From this analysis, the salesman attempts to convince the carrier that his company's aircraft are best suited to the airline's present and future needs. Where an airline has directly contacted the company or has expressed its interest by filling out an "interest card" in a trade publication, a similar sales procedure is followed. However, under these circumstances, the manufacturer is usually able to prepare a route and economic analysis prior to the initial sales contact by soliciting the necessary information by phone. Additionally, the salesman is able to focus his presentation on the specific plane in which the airline has expressed interest. In both the soliciting of new business and the marketing of aircraft to interested purchasers, a direct mail program is instituted after the sales presentation is made. The potential purchasers are typically sent brochures, specifications, and press releases on a weekly or biweekly basis.

Airlines typically will solicit information from several manufacturers in order to make comparisons. Depending on the availability of aircraft in the particular size range, the airline often will initially look at six or seven different commuter aircraft. A "short list" is prepared from this information. The short list is a tabulation of data on the few models of aircraft that will best fit the carrier's needs. At this point, negotiations regarding such factors as price, spare parts, training of pilots and mechanics, and in some cases, financing of the aircraft, are undertaken with

the chosen manufacturers. Utilizing the negotiated offers, the airline then decides which aircraft to purchase.

According to industry sources, commuter aircraft manufacturers have found it difficult to sell airplanes to most commuter carriers in the past year, primarily due to an unstable economy, high interest rates, and a reduced rate of growth in commuter passenger traffic. Continuing depressed sales of these aircraft are being reflected in lower production rates and, in some cases, are forcing layoffs. 1/

Domestic producers are also attributing a portion of the blame for decreased sales to alleged unfair import practices by some foreign manufacturers. In this regard, there have been two countervailing duty complaints filed with the U.S. Department of Commerce and the U.S. International Trade Commission in 1982. The first complaint was filed by Commuter Aircraft Corp. on May 27, 1982, and alleged that the domestic industry was materially injured by reason of the sale of subsidized imported planes from France and Italy (Inv. Nos., 701-TA-174-175). The U.S. International Trade Commission determined on July 7, 1982, that there was no reasonable indication that the U.S. industry was materially injured or threatened with injury, or that the establishment of an industry in the United States was materially retarded by reason of these imports. 2/ On August 13, 1982, Fairchild Aircraft Corp. filed a countervailing duty petition alleging that the U.S. industry was materially injured due to the importation of Brazilian commuter aircraft. On September 27, 1982, the U.S. International Trade Commission determined that there was no reasonable indication of such injury or threat thereof. 3/ These are the only investigations regarding commuter aircraft that have been filed under U.S. trade laws over the period 1977 to date.

Major foreign competitors

There are a number of foreign manufacturers that supply commuter aircraft to the United States. These firms include de Havilland of Canada, Embraer of Brazil, British Aerospace of the United Kingdom, Aerospatiale of France, Short Brothers of Northern Ireland, Fokker B.V. of the Netherlands, Dornier of West Germany, Government Aircraft Factories of Australia, Israel Aircraft of Israel, Pilatus Britten-Norman of Switzerland, and CASA of Spain. Additionally, there are three firms, Saab Scania, Nutranio, and Aeritalia, which are engaged in joint ventures with established firms in order to formulate their commuter aircraft industry. Most of the foreign manufacturers are wholly or partially owned by their respective governments.

1/ "General Aviation Sag Spurs Output Cuts," Aviation Week and Space Technology, Dec. 14, 1981, p. 23 and "General Aviation Aircraft Deliveries Drop in April," Aviation Week and Space Technology, May 17, 1982, pp. 27-28.

2/ For views of the Commission see pages 3-24 in Certain Commuter Airplanes from France and Italy: Determination of the Commission in Investigation Nos. 701-TA-174 and 175 (Preliminary). . ., USITC Publication 1269, July 1982.

3/ For views of the Commission see pages 3-20 in Certain Commuter Airplanes from Brazil: Determination of the Commission in Investigation No. 701-TA-188 (Preliminary). . ., USITC Publication 1291, September 1982.

Foreign manufacturers of commuter aircraft currently produce 12 different models of airplanes. Only 2 of these planes are in the 8 to 14-passenger capacity category. There are 5 models with 15 to 19-passenger capacity. None of these aircraft are pressurized. The remainder have seating capacity ranging from 27 to 50 passengers. Two of the 27 to 50 passenger aircraft are pressurized. Additionally, these producers are developing eight new models of aircraft. The majority of these are pressurized aircraft with a seating capacity of 30 or more passengers. Foreign firms generally market their products in the same manner as domestic producers. The majority of foreign manufacturers produce other general aviation, military and/or corporate aircraft. An analysis of the foreign producers of commuter aircraft is provided in appendix C.

Foreign Trade

Tariff and international agreements

Commuter aircraft imported into the United States are classified for statistical purposes under a variety of import items, depending on the empty weight of the plane. The classifications according to the Tariff Schedules of the United States Annotated (1982) (TSUSA) are as follows:

TSUSA item	Article
	Airplanes, new, multiple engine:
694.4146--------	Less than 4,400 pounds empty weight
694.4148--------	4,400 pounds and over but less than 10,000 pounds empty weight
694.4155--------	10,000 to 33,000 pounds inclusive, empty weight

The Agreement on Trade in Civil Aircraft, resulting from discussions in 1978 and 1979 at the Multilateral Trade Negotiations, provides for the elimination of all customs duties on civil aircraft and most parts and equipment of such aircraft. The United States, the European Community, Canada, Japan, Austria, Romania, Sweden, Switzerland, and Norway are signatories. 1/ It also provides for the reduction or elimination of a number

1/ Duty reductions are not limited to signatories to the Agreements since under the General Agreement on Tariffs and Trade (GATT) such reductions apply to all GATT member countries.

of non-tariff barriers which have the effect of restricting trade in civil aircraft. 1/ As a result of this agreement, all imported aircraft from all countries except certain Communist nations not entitled to most-favored nation treatment, have entered the United States duty free since January 1, 1980. Prior to this date, the customs duty on commuter aircraft was 5 percent ad valorem for all countries with most-favored-nation status and 30 percent ad valorem for all Communist countries.

U.S. imports

Imports of commuter aircraft increased 281 percent in quantity and eleven fold in value during the period 1977-81 (see table 11.)

Table 11.—Commuter aircraft: U.S. imports, by seating capacities, 1977-81 1/

Seating capacity	1977	1978	1979	1980	1981
	Quantity (units)				
8-14	***	***	***	***	***
15-19	***	***	***	***	***
20-29	***	***	***	***	***
30-50	***	***	***	***	***
51-60	***	***	***	***	***
Total	21	19	46	86	80
	Value (1,000 dollars)				
8-14	***	***	***	***	***
15-19	***	***	***	***	***
20-29	***	***	***	***	***
30-50	***	***	***	***	***
51-60	***	***	***	***	***
Total	17,152	18,920	69,727	156,170	205,794

1/ Unit values within each seating capacity differ due to specific aircraft characteristics such as engines, avionics, pressurization and any optional equipment.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

The majority of these imports were planes with a seating capacity of 15 to 19 and 30 to 50 passengers. The largest increases in imports occurred in 1979, as commuter airlines purchased new equipment to serve added markets because of deregulation. In many cases, these additional routes required the use of

1/ Impact of Advanced Air Transport Technology, Office of Technology Assessment, Congress of the United States, 1982, p. 40.

larger (over 30 passenger) aircraft. The purchasers report that foreign-made aircraft were generally purchased because there were no comparable U.S.-manufactured products available that adequately met the performance criteria required for short-haul markets in the 30 to 50 passenger category. 1/ There were no imports of commuter planes with 51 to 60 passenger-seating capacity during 1977-81. However, Aerospatiale, of France, is currently developing an aircraft with a capacity of 42 to 49 passengers which will be imported into the United States in 1984. According to information obtained from industry sources, there have been no imports from a U.S. company's foreign subsidiary, joint venture partner, or licensee from 1977 to date.

U.S. exports

U.S. exports of commuter aircraft increased 37.1 percent in quantity and 210.7 percent in value during 1977-81 (table 12.) Exports reached their highest quantity in 1979 at 221 units, before declining 2.7 percent in 1980 and 8.8 percent in 1981. Over * * * percent of U.S. exports of commuter aircraft are 8-14-passenger capacity. U.S. producers face virtually no international competition in this category. 2/

Exports represented 24.0 percent of total shipments in 1977 and 28.7 percent in 1981. Export sales are important to commuter aircraft manufacturers, as the economies of scale involved with additional export sales can lower a firm's unit costs substantially, improve profitability, and thus increase competitiveness in the United States and abroad. Principal export regional markets for U.S.-manufactured commuter aircraft include South America and Australia.

1/ Transcript of the hearing in the matter of investigation Nos. 332-143 and 332-144, Sept. 28, 1982, pp. 51 and 86.

2/ Ibid., p. 6. There are only 2 foreign manufacturers who currently produce 8 to 14-passenger commuter aircraft: Government Aircraft Factories and Pilatus Britten-Norman. Both firms have had very limited success to date marketing their aircraft.

Table 12.--Commuter aircraft: U.S. producers' export shipments, by seating capacity, 1977-81 1/

Seating capacity	1977	1978	1979	1980	1981
	Quantity (units)				
8-14	***	***	***	***	***
15-19	***	***	***	***	***
20-29	***	***	***	***	***
30-50	***	***	***	***	***
51-60	***	***	***	***	***
Total	143	180	221	215	196
	Value (1,000 dollars)				
8-14	***	***	***	***	***
15-19	***	***	***	***	***
20-29	***	***	***	***	***
30-50	***	***	***	***	***
51-60	***	***	***	***	***
Total	31,626	58,434	80,278	92,624	98,253

1/ Unit values within each seating capacity differ due to specific aircraft characteristics such as engines, avionics, pressurization and any optional equipment.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

The Current U.S. Market

Description of U.S. market

Commuter airlines (also known as regional airlines) are the predominant users of the aircraft covered in this report. 1/ Commuter airlines are those carriers which perform at least five round trips per week between two or more points and publish flight schedules which specify the times, days of the week, and airports between which such flights operate. 2/ The principal function of the short-haul air transportation system provided by commuter airlines has been to provide small- and medium-size communities with access to the nation's primary air transportation system. These carriers utilize a variety of aircraft, differing in size and capability, according to their route structure and passenger loads.

The Civil Aeronautics Board originally restricted commuter airlines to airplanes smaller than 12,500 pounds gross takeoff weight (about 19 passengers) for the express purpose of confining their operations to service

1/ The Regional Airline Association, whose membership comprises approximately 90 percent of the volume of passengers carried by commuter airlines, testified before the Commission on Sept. 28, 1982.

2/ 1981 Annual Report, Regional/Commuter Airline Industry, Regional Airline Association, February 1982, p. 8.

that would not compete with larger airlines. As it became evident that these commuter carriers were not a threat to the major airlines, this limitation was changed in 1973 from an aircraft size limitation to a maximum payload limitation--either 30 seats or 7,500 pounds of cargo. Most airlines, however, preferred to continue utilizing smaller planes for several reasons. First, at this time, there were no modern aircraft available in the larger range that were specifically tailored to the economic and operational requirements of the commuter market. Additionally, the Federal Aviation Administration requires the addition of a cabin attendant for 20 or more seats, which adds another cost element for these carriers. More importantly, however, few commuter airline markets had the ridership or were financially able to support larger equipment in 1973. 1/

The Airline Deregulation Act is considered one of the single most important events in shaping the U.S. commuter airline industry. The act, passed in October 1978, formalized a number of significant changes in Federal policy and regulations aimed at making the air transportation system more efficient. The act made the smaller carriers eligible for Federal loan guarantees for aircraft purchases and also extended subsidy qualification to them under the Civil Aeronautics Board's (CAB's) Essential Air Service Program. 2/ Additionally, the act (coupled with subsequent action by the CAB) permitted commuter airlines to operate aircraft up to 60 passengers and 18,000 pounds cargo pay load capacity. Another key component of deregulation allows airlines the opportunity to enter new markets or exit from those which are no longer economical. As a result of this provision, the major airlines withdrew from unprofitable markets to concentrate on longer, higher density markets. Commuter airlines quickly moved into these abandoned routes. The Airline Deregulation Act, however, did not totally deregulate the commuter airlines. In some aspects, these carriers operate in a more constrained regulatory environment than they did before 1978. For example, they must now comply with more stringent reporting requirements and operating regulations; pilots must now hold the highest level of FAA license, and even the smallest aircraft must meet much stricter safety requirements. The growth of the industry has continued despite the new regulations.

In general, the commuter airline industry is highly disaggregated. In 1977, there were 163 scheduled commuter airlines. By 1981, there were approximately 277, with the top 10 carrying 37 percent of all passengers and the top 50 carrying over 82 percent of total passengers transported. 3/ The largest commuter carriers are capable of operating aircraft fleets and

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1/ Impact of Advanced Air Transport Technology, Office of Technology Assessment, Congress of the United States, 1982, p. 21.

2/ The Essential Air Service Program, established under sec. 419 of the Deregulation Act, guarantees "essential air service" for 10 years to all eligible communities (those receiving certified service on the date of passage, or those whose authorized service had been suspended, a total of 555 communities). Under this provision, commuter carriers providing this service receive a subsidy payment in addition to the passenger fares. See Impact of Advanced Air Transport Technology, Office of Technology Assessment, Congress of the United States, 1982.

3/ 1981 Annual Report, Regional/Commuter Airline Industry, Regional Airline Association, Feb. 1982.

providing services closely comparable with those offered by many major airlines. The industry also includes many small companies that operate 1 or 2 airplanes of less than 10 seats over a small number of routes. The largest commuter airlines have relatively sophisticated management and secure financing; the small commuter carriers are generally one-person operation and are more likely to be financially unstable. 1/

The number of passengers carried by these commuter airlines increased to 15.2 million in 1981, or by over 65 percent from the 1977 figure. There are a number of reasons for the rapid growth of commuter air service. First, the speed and convenience of air travel are more attractive as incomes rise, and the rising number of businesses moving to small communities has also increased the demand for short-haul service. Second, the withdrawal of the larger airlines from smaller communities resulted in a faster growth rate for commuter airline ridership than normal growth in the demand for air service would produce. Less capital is required to acquire or lease the smaller aircraft appropriate to this type of service. Therefore entry into the commuter airline industry has been relatively easy. Additionally, integration with the primary air transportation system has been improving in recent years as the major airlines, to whose longer routes the commuter carriers customarily feed passengers, have begun to share ticket counters, gate space, and baggage-handling and reservation service at a reasonable cost. 2/

The United States is the largest market in the world for commuter aircraft. Currently, there are over 1,443 commuter aircraft used by commuter carriers. Of this total, approximately 81 percent are aircraft with a seating capacity of under 20 passengers. 3/ However, there is a growing trend toward utilization of new larger (over 30-passenger capacity) turboprop aircraft by commuter carriers. Several aircraft manufacturers have formalized plans for development of new aircraft in this size range for the short-haul markets served by commuters. 4/

Factors influencing market demand

According to data received from the U.S. commuter airline industry, increased passenger traffic and route expansion were cited as the two primary factors influencing market demand. Other less important factors noted were passenger comfort, efficiency, the need to replace obsolete equipment, and the desire for more modern aircraft. Similar results were also found in a survey done by Forecast Associates in November 1981. 4/ In this study, operators cited expanded routes as the most significant factors, with increased frequency of flights, and the need for larger capacity aircraft as additional determinants. Regarding factors which inhibited growth of the industry, commuter airlines singled out Government regulations as the major hindrances, with rising fuel costs running a close second. Unattractive financing and/or

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1/ Impact of Advanced Air Transport Technology, Office of Technology Assessment, Congress of the United States, 1982, p. 27.

2/ Ibid.

3/ 1981 Annual Report, Regional/Commuter Airline Industry, Regional Airline Association, Feb. 1982, p. 29.

4/ See Appendix A for information on specific aircraft under development.

high interest rates on aircraft purchases were also cited as potential inhibitors. 1/

In 1981, high interest rates and an unstable economic environment have caused U.S. commuter airline to experience their slowest period of growth since deregulation in 1978. Both of these factors significantly influence new- equipment decisions. High interest rates especially affect commuter airlines, because most of their aircraft loans are tied to the prime interest rate. Additionally, there is a shortage of money available to commuter operators to finance new planes. Potential investors often must evaluate the average commuter carrier's high debt-to-equity ratio against growth potential before investing in commuter aircraft. 2/ According to industry sources, commuter carriers historically need 6 to 8 months of prosperity before they are willing to make a commitment to purchase new equipment. 3/

Apparent U.S. consumption

The quantity of apparent U.S. consumption of commuter aircraft increased annually during 1977-80 (table 13.) Consumption gained 34.3 percent in this period, rising to 634 planes in 1980. Due to high interest rates and the slumping economy, U.S. consumption, in quantity, decreased 11.2 percent in 1981. The value of apparent U.S. consumption rose each year during 1977-81, increasing from $140.5 million in 1977 to $482.6 million in 1981. The ratio of imports to apparent consumption reached 14.2 percent in quantity and 42.6 percent in value in 1981. The reason for the large difference in these ratios is the fact that a major portion of those aircraft imported into the United States are larger aircraft than those produced domestically, and thus have a much higher value.

1/ World Aerospace Weekly, Nov. 1981, p. 5.
2/ "Soft Commuter Market Ahead in 1982," Aviation Week and Space Technology, Nov. 9, 1981, p. 129.
3/ "Commuters Survive Recession, Aircraft Orders Drop" Aviation Week and Space Technology, Apr. 12, 1982, p. 29.

Table 13.--Commuter aircraft: U.S. producers' shipments, imports for consumption, exports of domestic merchandise, and apparent U.S. consumption, 1977-81

(Quantity in units; value in thousands of dollars)

Year	Producers' shipments	Imports	Exports	Apparent consumption	Ratio (percent) of imports to consumption
	Quantity				
1977	594	21	143	472	4.4
1978	575	19	180	414	4.6
1979	768	46	221	593	7.8
1980	763	86	215	634	13.6
1981	677	80	194	563	14.2
	Value				
1977	155,010	17,152	31,626	140,536	12.2
1978	182,715	18,920	58,434	143,201	13.2
1979	266,434	69,727	80,278	255,883	27.2
1980	323,310	156,170	92,624	386,856	40.4
1981	375,087	205,794	98,253	482,628	42.6

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

The large foreign percentage of apparent U.S. consumption is illustrated in figure 1. Virtually all commuter aircraft in the * * * category purchased by U.S. airlines in 1981 were produced domestically. Only in the * * * category is there aggressive competition between domestic and foreign manufacturers. Approximately * * * of * * * commuter aircraft purchased in the range * * * in 1981 were supplied by foreign producers. None of the foreign-produced aircraft were pressurized. This ratio has increased during 1977-81. Of the four new aircraft models in the * * * category available next year, three are foreign- built. There are no aircraft currently produced in the United States in the 20 to 29 passenger category; U.S. consumption of aircraft in this capacity is completely foreign sourced. A similar situation is found in consumption of 30 to 50 passenger-aircraft. In 1981, there were no U.S.-manufactured aircraft specifically built for the commuter market. The only U.S. offering was a modified corporate aircraft that was adopted, by commuter airlines to serve commuter operation. The domestic share of total U.S. consumption of commuter aircraft in this category was less than * * * percent in 1981. There were no new aircraft utilized in the United States in 1981 with a seating capacity of 51 to 60 passengers.

Factors of Competition in the Market

Raw materials

Regarding the availability of the necessary raw materials to produce commuter aircraft, the domestic industry, in general, indicates that it is equally competitive with major foreign competitors. U.S. producers are normally able to obtain all components for the manufacture of the planes domestically at competitive prices, due to established supplier relationships. Components are sometimes imported; however, this is usually by choice rather than of necessity. The majority of foreign manufacturers have been in existance long enough for similar relationships in their home markets to evolve. However, certain components, such as landing gear and avionics are usually sourced from the United States.

Labor costs

Generally, the U.S. commuter aircraft industry indicates that it has a competitive advantage in regard to labor costs, because of the existance of a skilled labor force. There is a general rule that with every doubling of the number of airplanes produced, a 25-percent reduction in direct labor costs is achieved. 1/ Since the U.S. industry has been in existence longer than most foreign manufacturers, and the functions performed by employees are similar for all commuter aircraft, total labor costs for U.S. producers should be lower than their foreign counterparts. Additionally, since many foreign manufacturers are either wholly or partially state owned, stable employment is an important objective in the industry. Thus, when orders for new aircraft decline, employment is not always reduced accordingly, and the foreign manufacturer is forced to absorb excess labor costs. U.S. producers are more

1/ Robert Newhouse, "A Sporty Game, Betting the Company," The New Yorker, June 14, 1982, p. 66.

Figure 1.--Commuter aircraft: Apparent U.S. consumption, by domestic and foreign sources, 1981

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

flexible, and large layoffs during periods of decreased orders are standard industry practice. The U.S. industry notes, however, that wages paid in the United States are somewhat higher than those in foreign countries. 1/

Capital formation

In the area of capital formation, the U.S. commuter aircraft producers strongly assert that they are at a competitive disadvantage compared with foreign manufacturers. As stated earlier in this report, foreign producers are frequently owned wholly or in part by their respective governments. These producers are often able to obtain capital in the form of loans, grants, or loan guarantees provided by the national government to develop, improve, market, and finance their products. American firms must depend on the commercial market for these funds.

Quality

According to data received in response to industry questionnaires, U.S. producers believe that U.S.-manufactured commuter airplanes are equal or superior to foreign products technologically. U.S. advantages noted by the industry include pressurization, fuel efficiency, and speed. However, commuter airline operators have contradicted this assessment, saying that domestically produced planes are derivations of corporate aircraft and are not totally suited for commuter use. The operators specifically criticized engine deficiencies and maintenance problems. Because the aircraft used in commuter airline operations fly more frequently than corporate airplanes, they must be more durable. Many foreign aircraft are adaptations of military planes and are more ruggedly built.

Price

The imported aircraft are marketed in the U.S. in the same manner as the domestic products. Price is sometimes used as an entry strategy for foreign commuter aircraft. Generally, similar aircraft (i.e., same seating capacity and engine and airframe technology) are comparably priced whether they are produced domestically or offshore. A complete listing of 1981 prices of commuter aircraft currently being marketed and underdevelopment is shown in appendix A.

1/ Data submitted in response to questionnaires of the U.S. International Trade Commission.

Foreign Export Credit Subsidies and Their Impact on the U.S. Industry

Export credit subsidies

Most countries can provide medium-term (2 to 5 years) and long-term (over 5 years) credit to encourage the export of domestic goods and services. The export credit mechanisms used vary widely from country to country, but these methods universally attempt to provide financing rates and terms that are more favorable than those which are available from private sources. Official support of export financing occurs in three ways--through Government-supported insurance programs, through Government-supported guarantee programs, and through direct Government support of interest rates and capital supply.

Insurance programs are a part of virtually all export financing packages offered by most governments and act to provide political and commercial risk insurance to exporters. The effect of such insurance reduces the risk to the financing organization and therefore permits longer payout terms and lower interest rates to purchasers who would not otherwise be considered qualified to receive the longer terms and lower rates. Some of the official export credit programs of competing countries also include in their export insurance programs other types of coverage, such as exchange-rate risk insurance and inflation insurance.

The second type of export credit support used by many governments is official guarantees for a major portion of the export financing provided by commercial banks or other private financial institutions. In return for providing the guarantee, the Government agency usually charges a fee to the financial institution.

Finally, official support for exports comes in the form of direct loans either to the buyer or seller. Official loans are typically offered at fixed interest rates at a level below commercially available market rates at the time of financing. In the majority of countries, official export credit is provided through individual banks or through specialized intermediaries. For other countries, the bulk of longer- term export credits are directly provided by Government agencies. 1/

Official export credit is monitored by the Organization for Economic Cooperation and Development (OECD), to which the U.S. and its major trading partners are members. The use of Government-sponsored financial programs is not considered anticompetitive by OECD member countries 2/ unless the level of official support exceeds OECD guidelines. The OECD guidelines on export credit financing are prescribed by the Group on Export Credits and Credit Guarantees (ECG) of the OECD Trade Committee. These OECD general guidelines do not apply to commuter aircraft, because such aircraft are covered by a separate OECD standstill agreement.

1/ The Export Performance of the United States, Edited by Center for strategic and International Studies, 1981, p. 191.

2/ The members of OECD are Australia, Austria, Belgium, Canada, Denmark, Finland, France, the Federal Republic of Germany, Greece, Iceland, Ireland, Italy, Japan, Luxemburg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

In 1976, the ECG reached an informal "Consensus" that stipulated minimum interest rates, maximum period for loan payback, and minimum down payments for most officially supported medium-term and long-term export credits. 1/ In 1978, these rules were formalized into the "Arrangement on Guidelines for Officially Supported Export Credits" (hereafter referred to as the Arrangement) in which all OECD members, except Iceland and Turkey, are participants. 2/

The Arrangement provided that the minumum down payment of 15 percent of the contract price be paid prior to the beginning of the credit period. 3/ In addition, interest rate minimums were established, based upon the relative wealth of the recipient country and the length of loan. These guidelines are adjusted periodically, to reflect general economic conditions of world capital markets.

The Arrangement excludes certain categories of exports, including military equipment, agricultural commodities, nuclear power plants, ships, and aircraft. Regarding the products covered by this report, only the financing of aircraft is included in a separate agreement, called the "Standstill" agreement, which was concluded in 1975. The terms of the standstill agreement are as follows: no more than 90 percent of a purchase may be financed with a maximum term of 10 years for large jet aircraft, 7 years for turboprop aircraft (i.e., most commuter aircraft) and helicopters, and 5 years for other subsonic aircraft. 4/ The Standstill does not set guidelines for interest rates, except that major participants must agree to refrain from granting more concessionary terms than those offered at the time the Standstill went into effect. To date, further OECD negotiations on interest rate guidelines have involved only large commercial aircraft. However, negotiations with supplying countries in regard to the financing of commuter aircraft are to begin in early 1983. 5/

Official subsidization of export financing has been a factor in international trade for more than 60 years. During this period, countries have been flexible in adjusting their official credit support to changing export competition. Table 14 gives an indication of the various programs offered by the United States and its major trading partners.

There are a number of elements to be considered in the competitiveness among the various official export credit support programs offered by major exporting countries. The most important elements are the number and variety of programs used, the effectiveness in the way the programs are used, and the quantity of funds available in relationship to total exports. In a 1980

1/ The Export Credit Financing Systems in OECD Member Countries, OECD, 1982, p. 7.

2/ Ibid, p. 8.

3/ G. Holliday, J. Gravelle, P. Wertman, D. Driscall & A. Khalid, Export-Import Bank: Selected Issues 22 (Congressional Research Service Report No. 81-109E.)

4/ The Erosion of America's Competitive Edge, The Labor Industry Coalition for International Trade, May 1982, p. 18.

5/ Telephone conversation with officials of the Treasury Department, Nov. 19, 1982.

Table 14.--Types of export credit and insurance programs available in the United States and selected trading partners, 1980

Type	United States	Canada	France	West Germany	Italy	Japan	United Kingdom
Preferential medium- and long-term fixed-rate export credits	X	1/ X	X	X	X	X	X
Financial guarantees	X	X	X	X			X
Commercial and political risk insurance	X	X	X	X	X	X	X
Inflation risk insurance			X				X
Exchange rate risk insurance		X	X	X	X	X	X
Mixed credits 2/	X		X	X		X	X
Performance and bid bond guarantees/ insurance	3/ X	X	X	X	X	X	X
Local cost support		X	X	X	X	X	X

1/ Long-term export credits only.

2/ Although the countries indicated have used mixed credits, the extent of this usage has varied widely.

3/ Offered through the Overseas Private Investment Corp.

Note.--The x indicates the existence of a program. It does not provide a comparative analysis of the specific terms of the programs offered by individual countries.

Source: The Export Performance of the United States: Political Strategic and Economic Implications Center for Strategic and International Studies, 1981, p. 211.

survey conducted for the the U.S. Government, the Eximbank was compared with similar institutions in France, Germany, Italy, Japan, and the United Kingdom regarding the competitiveness of official export support programs. The United States' overall position in this survey on competitiveness was next to last, only ranking higher than Italy. 1/

The financing of aircraft purchases

Since 1977, according to responses to questionnaires, the financing of commuter aircraft has changed significantly. As bank loans have become more

1/ Export-Import Bank of the United States, Report to the U.S. Congress on Export Credit Competition and the Export-Import Bank of the United States, Oct. 1980, p. 30.

costly and more difficult to obtain, leasing and seller financing have become much more common. Foreign manufacturers in particular are offering seller financing to commuter airlines while at the same time, loan guarantees offered by foreign governments are growing in significance.

Foreign manufacturers often offer favorable financial terms, which significantly reduce the costs of purchasing foreign commuter aircraft as indicated in questionnaire responses. The effect of these terms depends on the specific terms offered and the market credit terms available to the purchaser.

Sources of financing.--Between 1977 and 1981, commuter airlines significantly changed their methods of financing aircraft purchases. As table 15 shows, in 1977 and 1978, commercial bank loans were the most widely used source of financing; since then, leasing and seller financing have increased in importance. 1/ In 1980 and 1981, leasing from private investors was the most widely used method of financing aircraft and bank loans were second. However, seller financing was almost as popular as bank loans.

Table 15.--Commuter aircraft: Sources of aircraft financing and number of aircraft purchasers identifying each source, 1977-81 1/

Source	1977	1978	1979	1980	1981
Banks	12	8	9	8	8
Sellers	2	3	5	7	6
Insurance companies	1	1	2	3	5
Leasing 2/	4	6	7	14	11
Other	1	0	2	4	3

1/ Some purchasers identified more than 1 source of financing in each year.
2/ Includes lease-purchase agreements.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

The change in aircraft-financing methods seems to have been caused by several factors. Banks have been reluctant to lend money to the airlines recently because of the air transport sector's poor financial performance. High interest rates have made it particularly difficult for airlines to use bank financing. Leasing can have significant tax benefits, because it can shift interest costs from unprofitable to profitable firms. The profitable firms are better able to take advantage of the tax deductibility of interest costs. Recent legislation has made it easier to gain tax benefits through leasing. Furthermore, higher interest rates increase the importance of the

1/ An earlier study confirms that bank loans were the most important source of long-term financing for commuter airlines in the early years of this period. Federal Aviation Administration, "Commuter Air Carrier Loan Guarantee Study," report prepared by The Aerospace Corporation, DOT-FA79WA1-010, January 1980, p. 37.

tax deductibility of interest costs; poor airline profits make shifting these costs from airlines to lessors more desirable. 1/

As bank loans have become more difficult to get and more costly, both foreign and domestic producers of commuter aircraft have increased seller financing. Foreign producers, however, have more widely adopted seller financing than domestic producers. Domestically produced aircraft are still often sold without seller financing. At least one major domestic producer, * * *, offers no seller financing at all. 2/ Foreign producers of commuter aircraft almost always use seller financing. From 1980 to 1982, 13 of the 15 sales of foreign made commuter aircraft for which detailed information on financing are available were financed with assistance either from the seller or from the official export credit agency of the seller's country. 3/

Sources of guarantees.--Loan guarantees can have an important effect on interest costs. A loan guarantee is a promise by a creditworthy entity to repay a loan if the borrower defaults. Because a loan guarantee can significantly reduce the risk that a lender will not be repaid, it may greatly reduce the interest rate the lender charges on the loan.

Foreign export credit agencies often offer loan guarantees to reduce purchasers' interest costs. Foreign loan guarantees have grown in importance in the U.S. commuter aircraft market, as table 16 shows. While from 1977 to 1979, the U.S. Government was commuter airlines' primary source of loan guarantees, in 1980 and 1981, foreign governments were as significant a source of guarantees as was the U.S. Government.

The majority of U.S. Government loan guarantees are granted by the Federal Aviation Administration (FAA). These loans are available on purchases of both domestic and foreign aircraft. During 1977-81, the FAA guaranteed loans worth $89.9 million; 62.9 percent of this amount was used to purchase foreign aircraft. 4/ A second program used by commuter airlines is the Business and Industry Loan Program administered by the Farmers Home Administration, U.S. Department of Agriculture. Since 1978, more than 19 commuter airlines have obtained guarantees, totaling almost $42 million. 5/

1/ Both domestic and foreign aircraft are leased. The lessor is almost always a domestic corporation. Financing terms can influence the competition between aircraft, even if the airline leases the plane from a domestic lessor, because if the lessor's purchasing costs are reduced by an attractive financing package, it will be able to pass those savings on to the airline by lowering the lease payments.

2/ * * *.

3/ * * *.

4/ In January-July 1982 the FAA guaranteed an additional $3.8 million in loans. The amount of the 1982 loans used to purchase foreign aircraft is unknown. The FAA loan guarantee program received no funding for fiscal year 1983, which began on Oct. 1, 1982. However, $50 million of funding for fiscal year 1982 is still available for use in 1983. Letter of Edward W. Stimpson to Kenneth R. Mason, Oct. 6, 1982.

5/ Ibid. Airlines may use Farmers Home Administration guaranteed loans for purposes other than buying aircraft.

Table 16.--Commuter aircraft: Sources of loan guarantees, and number of purchasers identifying each source, 1977-81 1/

Source	1977	1978	1979	1980	1981
Sellers	1	0	1	2	1
U.S. Government 2/	3	1	5	6	5
Foreign governments	1	1	3	6	5
Other	2	4	3	4	1

1/ Purchasers were permitted to identify more than 1 source.
2/ All U.S. Government guarantees are from the Federal Aviation Administration, except for 2 in 1977.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Credit terms available on domestic aircraft.--Purchasers generally finance domestic aircraft at interest rates that are from 0.5 to 2 percentage points above the prime rate, the rate commercial banks charge their most creditworthy borrowers. From 1977 to 1981, the prime rate rose substantially and became increasingly volatile. The range of prime rates seen in each year is shown in table 17.

Table 17.--Interest rates: Minimum and maximum prime rates, January 1977-August 1982

(In percent)

Period	Minimum	Maximum
1977	6.25	7.75
1978	8.00	11.75
1979	11.75	15.50
1980	11.00	21.50
1981	15.75	20.50
January-August 1982	13.50	16.50

Source: Morgan Guaranty Trust Co., "World Financial Markets," various issues.

U.S.-manufactured aircraft are still commonly purchased using market financing. The most creditworthy commuter airlines are able to obtain bank financing at interest rates from 0.5 to 1.5 percentage points above the prime rate. Less creditworthy airlines pay higher interest rates, as much as 6

percentage points over the prime rate. 1/ Commuter aircraft are also often purchased by leasing companies; these firms generally pay interest rates no more than 2 percentage points above prime. Before 1979, interest rates on aircraft purchases were generally fixed for the life of the contract; since then, these rates have usually fluctuated with the prime rate. Usually, from 80 to 90 percent of the aircraft is financed, and the term of the loan ranges from 7 to 12 years.

Financing of domestic aircraft under an FAA loan guarantee usually carries an interest rate of 0.5 to 1 percentage point over the prime rate. This rate is commonly fixed for the life of the contract. The fee for an FAA guaranteed loan is 0.25 percentage point and is paid by the lender. No more than 90 percent of the aircraft's cost may be financed under an FAA guaranteed loan. The terms of these loans are usually slightly longer than the terms of loans without guarantees.

Information is available on seller financing offered by one domestic manufacturer, Beech. This information is shown in table 18. Beech has given some, but not all, purchasers financing at below market interest rates for the first year of their contract. For subsequent years, the interest rates Beech offers are at approximately the same level as market interest rates.

Table 18.--Commuter aircraft: Terms of financing offered by Beech, October 1981-March 1982

Date of financing	Prime rate	Interest rate		Yearly
		First year	Subsequent year	
	Percent			
October 1981	18.00	15	Prime + 1.5	8
December 1981	15.75	1/ 18	Prime + 1	8
December 1981	15.75	1/ 18	Prime + 1	8
December 1981	15.75	15	Prime + 1.5	8
December 1981	15.75	Prime + 1	Prime + 1	8
February 1982	16.50	18	18	6
March 1982	16.50	15	Prime + 1	9

1/ This rate is for 6 months only.

Source: Data were taken from official records of the FAA by Avmark Inc. and presented in "Financing of Aircraft: The Need of a Package," Respondent's exhibit 5, presented at the hearing in investigation No. 701-TA-188 (Preliminary), Sept. 8, 1982, except for data on the prime rate, which are from Morgan Guaranty Trust Co., World Financial Markets, various issues.

1/ Prime plus 6 percentage points is the highest rate paid by air carriers on bank loans according to a recent survey. See footnote 1, p.28. An executive of one commuter airline testified that in 1981, when the prime rate varied from 15.75 to 20.5 percent, his average interest rate was 19.5 percent. Testimony of Mr. William Britt, Sept. 28, 1982, transcript of the hearing, p. 103.

Credit terms available on foreign built aircraft.--Information is available about credit terms offered on purchases of several foreign aircraft. Present value analysis was used to determine the extent to which typical terms of financing reduced the cost of purchasing these aircraft. The present value is the price of the aircraft adjusted to reflect the value of financing concessions. The extent to which export credits reduce the purchasers' costs can be found by comparing the present value of the contract with the aircraft's price. 1/ Because market interest rates vary with the creditworthiness of the purchaser at the time the loan is made, these calculations are done using three different market interest rates: 14 percent, 16 percent, and 20 percent.

The most generous financial terms were those offered on the * * *. The terms typically offered reduce the cost of * * * by 12.5 percent to 25.0 percent. The least generous terms were those offered on the * * *. These terms reduced the cost of a * * * by from 1.9 percent to 18.3 percent. On the other planes considered, export credits, reduced their costs by from 6.7 percent to 23.0 percent. The effects of financing on the cost of four foreign aircraft are summarized in table 19.

The savings due to favorable terms of financing are somewhat reduced, because interest costs are tax deductible. The results of present-value calculations that take into account the tax treatment of interest payments are in table 20. 2/ These results indicate that even considering the effects of taxes, favorable financing terms significantly reduce the cost of foreign aircraft. The cost of the * * * was reduced by 9.6 percent to 18.3 percent. The cost of the * * * was reduced by from 1.4 percent to 15.0 percent. The cost of the other planes considered was reduced by from 5.3 percent to 18.8 percent.

Information concerning the financing terms offered on aircraft from four different foreign countries is summarized below.

* * * * * * *

1/ Present-value analysis is briefly described in app. D.

2/ The effect of taxes was included in the present-value calculations by deducting 30 percent of each interest payment from each total payment to represent the value of the tax deduction and by multiplying the market interest rates by one minus the tax rate. The marginal tax rate paid by the typical purchaser of commuter aircraft is unknown; a 30-percent tax rate was used in another study, sponsored by one importer of foreign aircraft E.M. Kaitz, "Aircraft Financing", Respondent exhibit 2, transcript of the conference on inv. No. 701-TA-188, Sept. 8, 1982.

3/ * * *.

* * * * * * *

Table 19.-- Commuter aircraft: Effects of financing on the cost of purchasing aircraft

* * * * * * *

Table 20.--Commuter aircraft: Effects of financing on the after-tax cost of purchasing aircraft assuming a tax rate of 30 percent 1/

* * * * * * *

Sales experience of the U.S. industry, 1977 to September 1982

(Information contained in the following section is alleged by the domestic commuter aircraft industry. Data received from U.S. purchasers of commuter airplanes do not substantiate these claims.)

Volume of lost sales.--According to data received in response to industry questionnaires, domestic producers of commuter aircraft indicate that they have lost a number of U.S. sales during the period 1977-September 1982 due to export credit financing. Lost sales in the industry, as noted by two producers, 1/ are listed in the table 21.

Table 21.--Commuter aircraft: Lost sales, 1977-81 and January-September 1982

Seating capacity	1977	1978	1979	1980	1981	Jan.-Sept. 1982
* * *----------	***	***	***	***	***	***
* * *----------	***	***	***	***	***	***
Total----------	***	***	***	***	***	***

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

These sales amounted to an average of less than * * * percent of total U.S. deliveries of commuter aircraft during 1977-81. However, the majority of these alleged lost sales are for planes with * * * passenger capacity over the period 1977-81. These lost sales, as a percentage of total U.S. deliveries of planes in this category, represented * * * percent of total deliveries in 1978, * * * percent in 1979, * * * percent in 1980 and * * * percent in 1981. Domestic producers indicate that these sales were lost to aircraft manufacturers in * * * and * * * which offer export credit financing at below market rates.

Impact of lost sales.--The U.S. commuter aircraft industry contends that the increased offering of below-market financing by foreign manufacturers is the reason for their declining sales, employment, and profits. The commuter airline industry disagrees with this analysis, stating that foreign export financing did not cause displacement of any domestic sales.

U.S. commuter aircraft industry perspective.--According to data received in response to industry questionnaires, several manufacturers feel that they have lost a significant number of commuter airplane sales due to export credit subsidies. A case study detailing an alleged lost sale due to

1/ Only * * * and * * * provided statistical data on lost sales. * * * indicated that due to the existance of below market financing, their sales were lost to foreign aircraft in the * * * capacity. * * * indicated that they had lost sales due to export financing, but did not provide specific details. * * * and * * * indicate that they did not lose any sales in this period.

export credit financing can be found in app. E. The impact on certain industry indicators, if these sales had not been lost, is listed in table 22.

Table 22.--Commuter aircraft: Impact of lost sales on certain industry indicators, 1978-83

Item	1978	1979	1980	1981	1982	1983
Production added----------units--	***	***	***	***	***	***
Employment added:						
All persons----------	***	***	***	***	***	***
Production and related---------	***	***	***	***	***	***
Research and development expenditure-------1,000 dollars--	***	***	***	***	***	***
Profits (loss) before taxes added----------1,000 dollars--	***	***	***	***	***	***
Investment added----------do----	***	***	***	***	***	***

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

* * * , did not feel that they had lost any sales to foreign manufacturers due to the availability of more favorable financing arrangements. * * * currently manufactures commuter aircraft with * * *. In this category there is only * * * foreign competitor, and this firm has had only limited success in the U.S. market. * * *.

The majority of the lost sales were to aircraft manufacturers in * * * and * * *. Regarding financial arrangements offered by * * * of * * *, domestic producers indicate that airlines are offered interest rates of * * * to * * * percent for loan terms of approximately 8 years, * * * required, and grace periods of up to * * * months prior to the initial loan payment. * * *, allegedly offered * * * percent financing to U.S. purchasers of its * * * seat aircraft. Industry sources indicate that while there is * * *. Because the monthly cost of owning foreign aircraft is lower due to export credit financing, the corresponding cost per seat-mile is less. Therefore, an airline can purchase a larger, more expensive airplane than originally planned. * * *.

* * * * * * *

U.S. commuter airline industry perspective.--Although export credits are attractive to U.S. airline operators, other criteria are considered more important to those operators in deciding on an aircraft to purchase. In the Commission's questionnaires, purchasers were asked to rank the criteria used in making their aircraft purchasing decision. Those criteria, and the results of the airline operator's responses, are shown in table 23. The financial package offered by aircraft producers ranked as the 10th most important criteria considered when purchasing a commuter aircraft. Most important, in descending order, are passenger capacity, fuel efficiency, quality, technology, and price. Operators allege that not only is financing an unimportant decision factor, but that it is not even discussed until negotiations are almost concluded. 1/

Table 23.—Weighted ranking of selected criteria in the purchasing of commuter aircraft

Ranking 1/	Criteria	Number of purchasers selecting criteria		
		Most important	2d most important	3d most important
1	Passenger capacity	5	3	3
2	Fuel efficiency	0	4	7
3	Quality	4	2	3
4	Technology	8	1	0
5	Price	2	5	1
6	Technical and service support	1	2	0
7	Fleet standardization	1	2	0
8	Engine characteristics	0	0	2
9	Availability	2	2	2
10	Financial package	0	1	3
11	Reputation	0	2	1
12	Range	1	1	1
13	Seat/mile cost	1	0	0
14	Pressurization	0	1	0
15	Speed	0	1	0

1/ Overall ranking, based on the questionnaire responses of U.S. commuter airline companies.

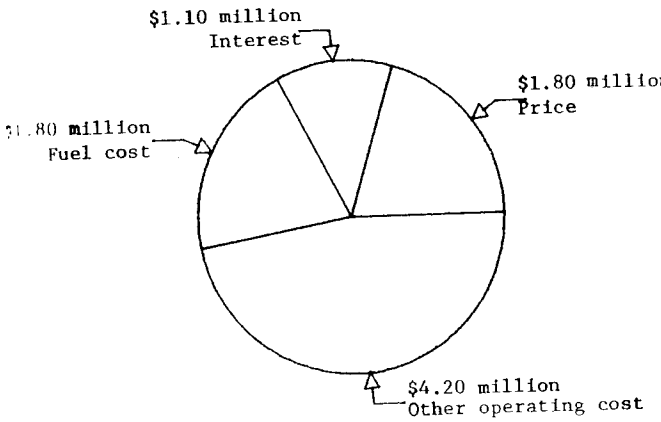
Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

1/ Transcript of the hearing in investigation Nos. 332-143 and 332-144, Sept. 28, 1982, pp. 54, 187, and 188.

Impact on U.S. commuter airline industry.--Export credit subsidies provided by foreign governments to their commuter aircraft manufacturers have benefited U.S. airline companies, permitting annual interest savings, in certain instances, of up to $100,000 per aircraft. This savings, to the extent that foreign commuter aircraft are purchased by U.S. companies and to the extent that subsidized aircraft credits are used, has had an impact on U.S. commuter airlines. The effect of subsidized export credits applied to a commuter aircraft offering in the United States are shown in figure 2. The graphs are based on hypothetical offerings of two competing identical aircraft—one receiving subsidized financing at the rate of 10 percent; the other offered at a commercial rate of 16 percent. The relationship of the operating cost components for commuter aircraft are based on actual experiences provided in response to U.S. International Trade Commission questionnaires. 1/ Without subsidized financing, interest costs are 12 percent of total operating costs. As demonstrated in the graphs, the financing package does alter significantly the cost to the purchaser of operating the aircraft. In this example, choosing aircraft B would save the purchaser more than $450,000 in interest, or about $64,000 annually during the loan period. Interest savings would be larger on a more expensive aircraft.

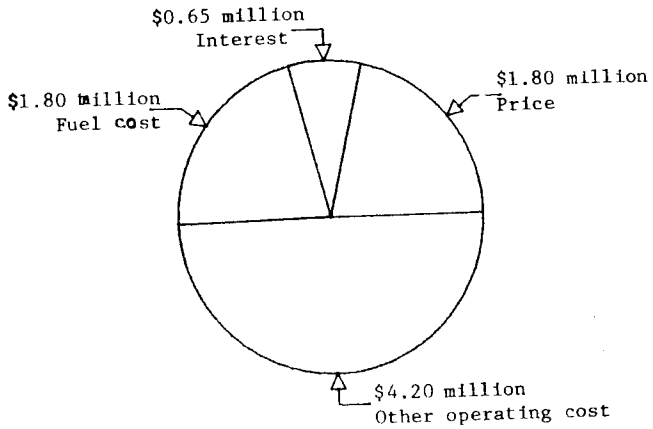
Figure 2.—Effects of subsidized export credits applied to U.S. commuter aircraft

Aircraft A



Price----------	$1.8 million
Amount financed--	$1.6 million
Interest rate----	16 percent
Years financed---	7 years
Operating life---	10 years
Total operating cost----------	8.9 million

Aircraft B



Price----------	$1.8 million
Amount financed--	$1.6 million
Interest rate----	10 percent
Years financed---	7 years
Operating life---	10 years
Total operating cost----------	8.4 million

1/ The relationship of the cost components are based on an average of typical operating experiences as reported by domestic commuter airlines.

Potential employment/production impact of lost sales to imports

In 1981, the domestic industry alleged lost sales of * * * aircraft due to credit subsidized imports from * * *. 1/ These sales were valued at * * * million; this figure was used as the estimate of the change in production due to credit subsidies. The loss of * * * million in domestic commuter aircraft production is estimated to displace * * * million in domestic production and * * * workers, as shown in table 24.

The effect of this decrease in U.S. aircraft manufacturing on production in other U.S. industries was estimated using the input-output model of the Bureau of Labor Statistics (BLS). The BLS model represents the best available method of estimating these effects; however, certain reservations must be kept in mind when using the BLS model. The coefficients used in the model were estimated using 1977 data, and they have not been adjusted for the effects of technological change that took place between 1977 and 1981. The BLS model double counts certain products when determining the total value of output lost. For example, the value of steel used in an aircraft part is counted both separately and because it is included in the value of the parts. This double counting will inflate the estimate of lost output, but will not affect the estimate of the lost employment.

Table 24.—Effects of a loss of * * * million of U.S. commuter aircraft production on domestic employment and output, 1981

Industry sector	Employment lost	Output lost
	---Number of employees---	---Million dollars---
Aircraft	***	***
Other manufacturing	***	***
Other	***	***
Total	***	***

1/ Due to the nature of the BLS input-output model, certain components of aircraft are double counted, therefore the "output lost" data is overstated.

Source: Estimated by the staff of the U.S. International Trade Commission.

The estimates in table 24 ignore the effect of imports of aircraft on U.S. exports of aircraft parts. Additionally the data assumes that an increase in imports due to export credit subsidies leads to an equal decrease in domestic production. Thus they may overestimate the effect of these subsidies on U.S. industry. Estimates in appendix F indicate that an increase in imports reduces domestic aircraft production by only * * * percent of the increase. These estimates suggest that * * * million increase in imports leads to a * * * million decline in domestic production. A * * * million

1/ Another domestic producer, * * *, also said that it lost sales because of export credit subsidies, but did not estimate the volume of those lost sales.

decline in domestic U.S. commuter aircraft production will displace * * * million in domestic production and elimate the jobs of * * * workers, as shown in table 25.

Table 25.--Effects of a loss of * * * million of U.S. commuter aircraft production on domestic employment and output, 1981

Industry sector	Employment lost	Output lost
	---Number of employees---	---Million dollars---
Aircraft	***	***
Other manufacturing	***	***
Other	***	***
Total	***	***

1/ Due to the nature of the BLS input-output model, certain components of aircraft are double counted, therefore the "output lost" data is overstated.

Source: Estimated by the staff of the U.S. International Trade Commission.

Likely Future Trends in the U.S. Market

Commuter airline passenger boardings have been growing at an annual average rate of 14 percent during 1977-81. Due to the downturn in the economy, however, the rate of growth has declined substantially in 1980 and 1981. 1/ Nonetheless, industry marketing specialists forecast a yearly average increase of 10 percent in passengers carried through 1990 --approximately 40 million passengers compared with 15 million in 1981. 2/ Because of increasing traffic expanding route systems, and spiraling operating costs, commuter airlines anticipate the need to replace older, expensive-to-maintain, piston aircraft and older, less fuel efficient, turboprops. Information obtained from industry questionnaire responses indicates that in the next 5 years most airlines anticipate replacing these older aircraft with 30 to 50 passenger aircraft (table 26).

1/ Regional Airline Association, 1981 Annual Report, Regional/Commuter Airline Industry, February 1982, p. 7.

2/ "Industry Experts Bullish on U.S. Future in Commuter Plane Market," Commuter Air, February 1981, p. 15.

Table 26.--Commuter Aircraft: U.S. commuter airlines' future contract awards for domestic and foreign, by seating capacities, 1982-86

Year	Seating capacity					
	8 to 14	15 to 19	20 to 29	30 to 50	51 to 60	Total
1982	***	***	***	***	***	***
1983	***	***	***	***	***	***
1984	***	***	***	***	***	***
1985	***	***	***	***	***	***
1986	***	***	***	***	***	***
Total	***	***	***	***	***	***

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Industry forecasts of future demand for commuter aircraft vary widely, however, there is a general consensus that the major market for these aircraft will continue to be in the United States. Worldwide demand for 12 to 60 passengers commuter aircraft, 1/ during 1980-2000 has been estimated by manufacturers, suppliers, and government agencies. These estimates are listed below: 2/

	Airplanes
Aerospatiale	***
British Aerospace	***
Dowty Rotol	***
Federal Aviation Admin-- Office of Technology Assessment	5,398
	4,600
Fairchild Swearingen	***

Industry sources indicate that the potential U.S. market for new commuter aircraft in this period is 2,500 planes. 3/ Aircraft with a seating capacity over 30 passengers have been identified, in various market studies, as the fastest growing segment of this anticipated demand. In 1980, there were approximately 200 aircraft with passenger capacity greater than 20 in service by U.S. commuter airlines. This number is expected to increase dramatically in the next decade as more aircraft of that size become available. 4/

1/ No estimates are available for airplanes in the 8 to 11 seat range.
2/ Information compiled from various industry and business publications and from personal interviews.
3/ Impact of Advanced Air Transport Technology, Office of Technology Assessment, Congress of the United States, 1982, p. 40.
4/ Ibid.

In spite of these projections, most U.S. producers appear reluctant to increase their activity in the commuter aircraft market. 1/ Of the 12 models of aircraft currently under development (see app. A for list), four involve U.S. companies. The future of two of these airplanes, the 404 Ahrens and the CAC 100, is in doubt. (Ahrens Aircraft Corp. did not deliver any of its Ahrens 404 aircraft before going to bankruptcy proceedings. As of September 1982, Commuter Aircraft Corp. has no orders for its CAC 100 airplane.) The SF 340 is to be produced by a joint venture between Fairchild Aircraft Corp. and Saab Scania of Sweden, partly produced in Sweden and the U.S. The only aircraft under development independently by a U.S. firm is the Beech 1900, a 19-seat airplane.

In the segment of the commuter market expected to grow most quickly (airplanes of 30 to 50 passengers) there are 8 airplanes currently under development. Three of these aircraft involve U.S. firms. However, as noted above, only one project, the SF 340, is considered by industry sources to be a serious competitor. Because of the small number of U.S. planes offered in this market segment, imports are expected to obtain an even larger share of U.S. consumption of commuter aircraft.

In the absence of increased U.S. production of 30 to 50 passenger capacity aircraft, the U.S. market for such aircraft will be supplied by imports. Based on 1980 production/employment relationships, each $100 million in production of commuter aircraft not undertaken by U.S. firms, translates into an estimated $210 million in lost production opportunities in all sectors of the U.S. economy and 2,700 jobs, not created. 2/ In the aircraft sector alone, about $118 million in potential production is lost along with approximately 1,360 jobs. The estimated effects on the entire U.S. economy, assuming lost production opportunities of $100 million, is summarized in the following table.

Effects of $100 million in U.S. production of commuter aircraft on the output and employment in all U.S. industry sectors

Industry sector	Employment lost	Output lost
	Number of employees	Million dollars
Aircraft	1,363	118
Other manufacturing	596	55
Other	764	37
Total	2,723	210

1/ Ibid.

2/ These estimates are based on the BLS input-output model. In the BLS model, certain components of aircraft are double counted, therefore the "output lost" data is overstated.

Appendix A

A Listing of Commuter Aircraft Models Currently is Service in 1981 and New Models Under Development

Aircraft	Manufacturer	Country	Number of seats	1981 Price (in current U.S. dollars)
Cessna 402	Cessna	United States	8	$333,606
Chieftan	Piper	United States	8	$377,620
Islander (BN-2)	Pilatus Britten-Norman	Switzerland	8	$301,930
1020	Piper	United States	9	$370,000
1040	Piper	United States	9	$700,000
Titan	Cessna	United States	10	$478,910
Nomad 22B	Government Aircraft Factories	Australia	13	Not available
Heron 1/	de Havilland	Canada	14	Not available
99	Beech	United States	15	$1,335,000
Nomad 24A	Government Aircraft Factories	Australia	16	$1,196,308
Trislander	Pilatus Britten-Norman	Switzerland	17	$514,120
Jetstream 1/	British Aerospace	United Kingdom	17	Not available
Bandeirante	Embraer	Brazil	18	$1,495,998
Metro	Fairchild Swearingen	United States	19	$1,845,000
Twin Otter	de Havilland	Canada	19	$1,170,000
Arava	Israel Aircraft Industries	Israel	19	$1,650,000
Nord 262 1/	Aerospatiale	France	27	Not available
C-212	Casa	Spain	27	$2,121,700
SD 3-30	Short Brothers	N. Ireland	30	$2,870,000
C-1C	Gulfstream	United States	32	$3,000,000
580/600 1/	Convair	United States	44	Not available
Martin 404 1/	Martin	United States	44	Not available
Dash 7	de Havilland	Canada	50	$5,020,000
BAe 748	British Aerospace	United Kingdom	50	$6,500,000
F-27	Fokker	Netherlands	50	$6,350,000
YS-11 1/	Nihon	Japan	60	Not available

Aircraft no longer in production.

Source: 1981 Annual Report, Regional/Commuter Airline Industry, Regional Airline Association, January 1982.

Commuter aircraft under development include:

Aircraft	Manufacturer	Country	Number of seats	Year available	1981 Price current dollars
228-100	Dornier	Germany	15	1982	Not avail.
228-200	Dornier	Germany	19	1982	$1,60
Jetstream 31	British Aerospace	United Kingdom	19	1982	$2,20
1900	Beech	United States	19	1983	$1,60
Ahrens 404 1/	Ahrens Aircraft	United States	30	1982	$1,80
Brasilia	Embraer	Brazil	30	1985	$3,20
SF 340	Saab/Fairchild	Sweden/ United States	34	1984	$3,7
Shorts 360	Short Brothers	N. Ireland	36	1982	$3,25
Dash	de Havilland	Canada	36	1984	$3,92
CN-235	Casa/Nutranio	Spain/Indonesia	38	1984	$3,85
ATR 42	Aerospatiale/ Aeritalia	France/Italy	42-49	1985	$5,00
CAC	Commuter Aircraft Corp.	United States	50	1984	$5,000

1/ Company currently in bankruptcy proceedings.

Appendix B

An Analysis of U.S.-Based Commuter Aircraft Manufacturers

Beech Aircraft Corp.—Beech Aircraft Corp. was founded in 1932 as a private firm; however in 1980, Beech became a wholly- owned subsidiary of the Raytheon Corp. The firm continues to be operated as a separate entity under its former management at its original locations, but representatives of Raytheon sit on the board of directors. Beech Aircraft Corp., according to company officials, is currently engaged in the production of civil and military aircraft, missle targets, aircraft and missle components, and cryogenic equipment for spacecraft. 1/ The company presently markets two basic models of aircraft utilized by commuter carriers: the C99 and the 1900 15 and 19 seat aircraft, respectively. The former is a non-pressurized aircraft, while the later is pressurized. Earlier versions of the Beech 99 aircraft established the firm as a major supplier of 19-passenger commuter aircraft; however, they face strong competition from both foreign and domestic manufacturers. Beech seems to have focused its attention on new aircraft to defend its traditional market through the introduction of the 1900. However, like Cessna and Piper, a large portion of their product line is small aircraft for other uses. Beech occupies 3.4 million square feet of plant area at its five major facilities in Wichita, Liberal, and Salina, Kans.; Boulder, Col.; and Selma, Ala. The Salina division supplies all wings used for commuter planes; nose, tail and control surfaces are made in Liberal, Kans. Detailed parts for commuter planes are manufactured in Wichita. Final assembly of the C99 airplane is in Selma, Ala., and the 1900 is to be assembled in Wichita, Kans. 2/

Fairchild Aircraft Corp.—Fairchild Aircraft Corp. (formerly Fairchild Swearingen) was formed in 1972, and is a wholly- owned subsidiary of Fairchild Industries, Inc. At their production facilities in San Antonio, Tex., Fairchild Swearingen currently manufactures the Metro III, a pressurized commuter aircraft. Fairchild is the leading domestic producer of 19 passenger turboprop commuter aircraft and is pursuing an aggressive marketing program in this market segment. 3/ The company entered into a joint-venture agreement in January 1980 with Saab Scandia A.B. of Sweden to develop and manufacture the SAAB/Fairchild 340 commuter airplane. The agreement calls for the two firms to share equally all costs associated with development of this aircraft. The majority of the component parts for this airplane will be manufactured by divisions of the parent firm in Republic, N.Y. and Hagerstown, Md. Final assembly is scheduled to be completed in Sweden. Additionally, Fairchild manufactures an executive airplane version of its commuter plane, called the Merlin. Total operating profits for the commercial aerospace division of Fairchild Industries (which includes production of commuter and executive aircraft, subcontracts, and manufacture of airline seats) amounted to a loss of $28.1 million in 1981. The operating losses in this segment of Fairchild Industries center on the costs of several new commercial aircraft. The company elected to expense the engineering costs associated with the development of the SAAB/Fairchild 340 aircraft. In 1981, these expenses amounted to $12 million. Additionally, the company completed design and certification of a derivation of their existing commuter aircraft. 4/

1/ Jane's All The World's Aircraft, 1981-82, p. 277.

2/ Ibid.

3/ "Analyses of the Business Prospects of the CAC-100 Commuter Aircraft Program and the Commuter Aircraft Strategies of Major U.S. Manufacturers, ICF Inc., June 28, 1982, p. 21.

4/ Fairchild Industries, Inc. Annual Report 1981, pp. 13 and 14.

Gulfstream American Corp.--Gulfstream American Corp. (Savannah, Ga.), originally a division of Grumman Corp., was purchased from Grumman in 1978 and has since operated as a wholly independent company. The firm's principal output is the G-3 executive airplane. However, Gulfstream American is currently involved in a program to convert one of its executive turboprop airplanes into a commuter aircraft. Due to a strong demand for corporate aircraft, Gulfstream American has subcontracted with Haze International (Birmingham, Ala.) to perform the necessary airplane modifications. Capital expenditures by the firm in all aerospace operations amounted to $45.9 million in 1981, representing an increase of 63.9 percent over the 1980 amount of $28.0 million. Net income for the firm amounted to $12.4 million in 1981. 1/ For the period January through June 1982, Gulfstream American had a return on assets of * * * percent. 2/

Cessna Aircraft Co.--Cessna Aircraft Co. was founded in 1911 and incorporated on September 7, 1927. It is an independent company which manufactures a variety of smaller aircraft. The company has four plants in Wichita, Kans. engaged in the production of commercial and military aircraft. Two models of Cessna-built planes are marketed as commuter aircraft: the Cessna 402 and the 404 Titan. The firm's traditional markets are for small general aviation and corporate aircraft. Cessna appears to be concentrating its focus on noncommuter markets, but is currently selling to small commuter carriers. Capital expenditures by the company involving aircraft amounted to $17.1 million in 1981. Employment figures are not available. Net earnings for Cessna's aircraft operations in 1981 totaled $60.6 million. According to industry officials, for the 9-month period ending June 30, 1982, the company had a * * * percent return on assets. 3/ * * *. 4/

Piper Aircraft Corp.--Piper Aircraft Corp., located in Lock Haven, Pa., was originally incorporated in 1937. In 1978, the firm became a wholly- owned subsidiary of the Bangor Punta Corp. Piper has traditionally specialized in the production of small (8 to 10 passenger) commuter aircraft. The Navajo Chieftan, T-1020 and T-1040, are the three planes that are manufactured for this market. The company also markets a number of general aviation aircraft for personal and corporate use. Piper employed approximately 6,328 employees in 1981, representing a decline of 7.8 percent from the 1980 total of 6,867 workers. Capital expenditures in 1981 amounted to $5.1 million. In 1980, these expenditures totaled $15.5 million. The firm's operating profit reached $17.6 million on $409.5 million in sales in 1981. The profit margin was 4.3 percent in 1981, compared with 6.7 percent in 1980. 5/ Piper aircraft has a Swiss subsidiary named Piper Aircraft International. The firm also has license arrangements with Embraer, of Brazil; Aero Mercantile, of Colombia; Chincul, of Argentina; and Aero Salfa, of Chile. 6/

1/ Gulfstream Aerospace Corporation and Subsidiaries Annual Report, 1981, pp. 12-14.

2/ Telephone conversation with officials of the General Aviation Manufacturers Association, Aug. 30, 1982.

3/ Telephone conversation with officials of the General Aviation Manufacturers Association, August 30, 1982.

4/ Data submitted in response to questionnaires of the U.S. International Trade Commission.

5/ Bangor Punta Corporation Annual Report, 1981, p. 6.

6/ Jane's All The World's Aircraft, 1981-82, p. 277.

Appendix C

An Analysis of Foreign Manufacturers of Commuter Aircraft

de Havilland.—The de Havilland Aircraft of Canada Limited (de Havilland) was established in early 1928 as a subsidiary of the de Havilland Aircraft Co. Ltd. On June 26, 1974, ownership was transferred to the Canadian government, which planned to operate the company only until responsible Canadian investors were found to purchase and operate the company. The Canadian Government now owns all but one share of de Havilland stock. 1/ The company currently manufactures two turboprop commuter aircraft (Twin Otter and Dash 7) and is in the process of developing a turboprop commuter airplane with 32 to 36 seats (Dash 8). In 1981, de Havilland facilities covered a total area of 1.2 million square feet at Downsview for manufacturing, engineering, and marketing departments. Approximately 4,700 people were employed in 1981. 2/

Embraer.—Embraer, of Brazil, was created on August 19, 1969, and came into operation as of January 2, 1970. The industry's development was aided by the United Nations Development Program and the Federal Aviation Administration. 3/ The company is a quasi-private/Government entity; 92 percent of the subscribed capital held by 222,480 public shareholders, who benefit from tax concessions for investing in an advanced industry. The Government of Brazil has an 8-percent holding; however, the Government holds 51 percent of the voting shares. 4/ Embraer now has an authorized capital of CR $4.84 billion, of which CR $3.62 billion had been subscribed by December 1980. Since August 1974, Embraer has had a comprehensive cooperative agreement with Piper Aircraft Corp. (United States) involving the manufacture in Brazil of several models of single- and twin-engine airplanes. Additionally, the Brazilian firm produces military training and business aircraft. Embraer currently manufacturers the Bandeirante, which is an 18 seat non-pressurized commuter airplane; however, development of a 30-seat twin turboprop commuter aircraft was undertaken in 1979. 5/ The firm had a workforce in May 1981 of 5,929 persons and a factory area of 1.4 million square feet. 6/ Profitability figures are not available for Embraer, however; according to industry data, total revenues increased 42 percent between 1978 and 1980, mostly on the strength of increased exports. 7/

British Aerospace.—British Aerospace Public Ltd. Co. (British Aerospace) of the United Kingdom, was established by the Aircraft and Shipbuilding Industries Act of 1977, as a result of which, on April 29, 1977, the ownership of four separate companies was vested in the corporation. Initially, the four firms continued to trade under their existing names; however, as of 1978, a new structure for British Aerospace was implemented, whereby the corporation functioned through two operating groups: Aircraft and Dynamics. Currently, the ownership of British Aerospace is structured as follows: the British

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1/ "Canada Provides $500 million in Loan Guarantees for Dash 8," Aviation Week and Space Technology, Feb. 9, 1981.
2/ Jane's All the World Aircraft, 1981-82, p. 22.
3/ Ibid., p. 9.
4/ "Brazil Aerospace Today - The Industry that Can't Stop Growing," Interavia, July 1981, p. 707.
5/ Department of Commerce, "AEROSPACE: Brazil has Credible Aircraft Manufacturer," July 3, 1981.
6/ Jane's All the World Aircraft, 1981-82, p. 9.
7/ "Quasi-Public Ownership," Aviation Convention News, Nov. 1, 1981, p. 89.

Government, 48.43 percent, shareholders, 48.43 percent, and employees, 3.14 percent. There were approximately 60,000 people employed in aircraft operations in 1981. The company is currently manufacturing a 50-seat commuter airplane (748) and has begun work on a new version of an existing commuter plane (Jetstream 31). The firm is also a major participant in Airbus Industries and a builder of medium transports. British Aerospace employed approximately 79,000 workers in 1981. 1/

Aerospatiale.--The Societe Nationale Industrielle Aerospatiale (Aerospatiale) was formed on January 1, 1970, by a decision of the French Government as a result of the merger of Sud-Aviation, Nord-Aviation and SERES companies. It is the largest aerospace company in the Common Market countries on the European continent, with a registered capital of 447.4 million francs. Aerospatiale is owned by the Government of France. In addition to its commuter aircraft operations, Aerospatiale produces military trainers, large transports (as a participant in the Airbus Industries Consortium), helicopters, guided missles, spacecraft, and research rockets. Aircraft facilities extend over a total area of 105.4 million square feet and the operations employed a staff (including subsidiary companies) of 38,200 workers in 1980. 2/ Profitability figures are not available. Under France's 1983 Transportation Ministry budget, $405 million has been allocated for the country's civil aviation programs. This figure includes funding of $31.8 million specifically provided for Aerospatiale's new commuter aircraft. 3/

Short Brothers.—Short Brothers (Shorts) was first established in 1898, and in 1901, they began the manufacture of balloons. In March 1909 Shorts opened their aircraft factory at Shellbeach, Isle of Sheppey. In June 1936, Short Bros., in collaboraton with Harland and Wolff Ltd., formed a new company known as Short and Harland Ltd., to build aircraft in Belfast. The name Short Bros was readopted on June 1, 1977. The British Government now owns, directly or indirectly, 100 percent of the issued shareholding. The company's current products include 30- and 36-seat commuter airplanes and a van turbo-prop light transport (used for cargo and miscellaneous operations). Internationally, Shorts is collaborating as a risk sharing partner with Fokker B.V. of the Netherlands in production of a medium transport. Additionally, the firm supplies components to many American and British aerospace companies. 4/ Employment and profitability figures are not available for Short Bros.

Fokker B.V..--Fokker B.V. forms the entire aircraft industry in the Netherlands, with six plants in which a total of 8,900 people were employed in 1981. Until February 1980, Fokker and the Federal Germany company VFW were merged into Fokker-VFW B.V., Netherlands Aircraft Factories. The firm currently produces one model of commuter aircraft, a 50-seat turbprop airplane (F-27). This plane has been in series production for many years, both by Fokker B.V. and, for a period, by Fairchild Industries in the United States.

1/ Jane's All the World Aircraft, 1981-82, pp. 235-236.

2/ Ibid., p. 44. Data are last data available.

3/ "French Propose $405 million for Civil Aviation," Aviation Week and Space Technology, Oct. 4, 1982, p. 32.

4/ Jane's All the World Aircraft, 1981-82, p. 260.

However, Fokker B.V. also manufactures medium transport aircraft (F-28) and components for military and civil airplanes. 1/ Profit figures for Fokker B.V. are not currently available.

Dornier GmbH.--Dornier GmbH, formerly Dornier-Metallbauten, was formed in 1922 as the successor to the "Do" division of the former Zeppelin Werke, Lindau, GmbH. In 1981, Dornier employed approximately 8,500 persons; 43 percent, as production workers; 32 percent, in research and development; and 25 percent, in technical and logistic support. The firm manufactures utility and training aircraft, in addition to two models of commuter aircraft (228-100 and 228-200). Additionally, the company is involved in license production of components for a leading U.S. military aircraft manufacturer. Dornier is a privately owned company. The firm first produced commuter airplanes in 1981. 2/ Industry sources indicate that, to date, Dornier has not imported any of these commuter planes into the United States. The firm's gross sales in 1981 amounted to $604 million, compared with $502 million in 1984. 3/

Government Aircraft Factories.--The Government Aircraft Factories (GAF) are part of the Defense Production facilities owned by the Australian Government and operated by the Department of Industry and Commerce. Their functions include the design, development, manufacture, assembly, maintenance, and modifications of aircraft, target drones, and guided weapons. Currently GAF manufactures two models of a twin-engine turboprop short takeoff and landing (STOL) airplane called the Nomad. The company is also a subcontractor for Boeing and Fokker B.V. In 1981, the firm had a workforce of approximately 2,500 persons. Profitability information for Government Aircraft Factories is not available. 4/ In October 1982 the firm announced that they would end production of their commuter aircraft by the end of 1984.

Israel Aircraft Industries Ltd.--Israel Aircraft Industries Ltd. was established in 1953 as Bedek Aircraft Co. The change of name to Israel Aircraft Industries was made on April 1, 1967. Israel Aircraft Industries is owned by the Government of Israel. The firm is composed of several divisions, plants and subsidiary companies. These underwent a major reorganization in late 1977 and are now disposed in the following divisions: Bedek Aviation Division, Aircraft Manufacturing Division, Engineering Division, Electronics Division, Combined Technologies Division, and Airborne Systems Marketing Group. The Aircraft Manufacturing Division produces the Arava commuter airplane for 19 to 20 passengers, in addition to military and corporate aircraft. The firm is also engaged in the manufacture of a large variety of spares and assemblies for aircraft and jet engines to meet Israeli Air Force requirements. As a subcontractor, to many U.S. and European aircraft manufacturers, the division produces major aircraft structures, flight control surfaces, cargo loading systems, and miscellaneous spare parts. In 1981 Israel Aircraft Industries employed over 22,000 people in all its facilities, which

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1/ Ibid., p. 151.
2/ Ibid., p. 77.
3/ "German Industry Faces Funding Cuts," Aviation Week and Space Technology, Sept. 6, 1982, p. 221.
4/ Jane's All the World Aircraft, 1981-82, p. 5.

occupied a total covered floor area of 4.8 million square feet. 1/ Information as to the profitability of the firm is not currently available.

Pilatus Britten-Norman.--Pilatus Britten-Norman Ltd. is a subsidiary of the Swiss firm Pilatus Aircraft Ltd. Prior to 1979, this firm operated under the name Britten-Norman Ltd, and was a British corporation. There are two commuter aircraft currently produced by this company: the Islander and the Trislander. Both the Islander and the Trislander are currently manufactured at Benbridge, Isle of Wright. The Islander, however, is also produced in Romania and under license in the Philippines. Employment and profit figures are not available. 2/ In September 1982, International Aviation Corp. of Homestead, Fla., purchased the manufacturing rights for the Trislander. The firm plans to produce the aircraft in the United States. 3/

CASA.--Construcciones Aeronautics SA (CASA) of Spain, has manufactured transport aircraft since 1923. It is one of Europe's largest aerospace companies with engine and space divisions, and a staff of 8,300. The firm's major activity is the manufacture of airframes and components, with work for foreign customers predominating. Restructuring of the company took place in 1977 when CASA was combined with the Hispano Aviacion, SA, and again in 1973 with Empresa Nacional de Motores de Aviacion. The former had manufactured 13 different aircraft types, and the latter had built and delivered aircraft engines. In recent years, the main products of CASA have been their commuter airplane and an advanced turbofan military trainer. Additionally, the firm is a participant in the Airbus Industries Consortium and a supplier of large transport components to the United States. CASA also performs overhaul and maintenance work on Spanish army aircraft and helicopters. The firm currently operates major facilities at Getafe, Ajaluir, Cadiz, and Seville. The commuter aircraft produced by this Spanish firm are manufactured at the Seville facility, with corporate offices located in Madrid. CASA is controlled by the Spanish Government through the Instituto National de Industrio, which holds 69.5 percent of the present capital of $22 million. Northrop of the United States has a 13.3-percent holding, and Germany's MBB, 11 percent. Of the remaining 6.2 percent, 5 percent is in the hands of two Spanish banks. The 1981 profit for CASA is estimated to have been $5 million, or 60 percent above the 1980 figure. Sales volume in 1981 is estimated to have amounted to $250 million (up 45 percent), and export sales, to $162 million (up 85 percent). 4/

Saab Scandia.--Saab Scandia was originally founded in 1937 as Svenska Aeroplan AB for the production of military aircraft. The company name was changed to Saab Aktiebulag in May 1965, and the company later merged with Scandia-Vabis to form the present company. Saab Scandia employs nearly 40,000 employees, organized in 4 operating divisions. Of the total, about 6,000 employees work for the Aerospace Division. Current aerospace activities include production of military aircraft and development with Fairchild

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1/ Jane's All the World Aircraft, 1981-82, p. 112.

2/ Ibid, p. 265.

3/ "U.S. Distributor Buys Trislander Rights," Aviation Week and Space Technology, Sept. 6, 1982, p. 76.

4/ "Market-Wise CASA Links Future to Burgeoning commuters," Commuter Air, June 1982, pp. 23 and 24.

Aircraft (United States) of a 34-seat commuter aircraft. Saab-Scandia reports that it has arranged a Swedish Government loan on commercial terms to finance part of its development. 1/ A new production facility of 269,000 square feet has recently been completed for the production of this airplane. 2/

Nutranio.--Nutranio of Indonesia developed from the air force overhaul base at Bandoeng. The firm was officially inaugurated in 1976 when Lipnur (Lembaga Industri Penerbangari Nutranio) combined its aircraft industry activities with those of the Pertamina oil company. Nutranio had a work force of approximately 5,000 persons in 1981. Many of the Indonesian engineers had previously been employed in foreign aircraft plants. The Indonesian firm manufactures CASA (Spain) commuter aircraft under license at its Bandoeng facility. Additionally, the firm is currently in a joint venture with the Spanish firm CASA as a 50-50 partnership in an $80-million project to design and build a pressurized 30 to 40 seat short-haul turboprop aircraft (CN 235). Information regarding the profitability of Nutranio is unavailable. 3/

Aeritalia.--Societa Aerospaziate Italiana (Aeritalia) is a joint stock company which was formed on November 12, 1969 by an equal shareholding of FIAT and IRI-Finmeccanica to combine the two firm's aerospace activities. The company became fully operational in 1972. Aeritalia is a Government-owned company. In 1976, IRI-Finmeccanico purchased the Aeritalia stock owned by Fiat, thus acquiring complete control of the company's stock capital. In addition to its partnership with Aerospatiale of France in the ATR 42 commuter aircraft program, Aeritalia is working with Embraer of Brazil on production of military aircraft. The firm is also responsible for designing and manufacturing components for a major U.S. aircraft company. Aeritalia absorbed Partenavia, in which Aeritalia had held a major shareholding for several years, during 1981. This acquisition opens new prospects for the company in the field of commuter aircraft because Partenavia has in its plans two twin turboprops in the 14- and 19-seat range. Aeritalia had a total work force of approximately 12,000 people in 1981. In 1981, the firm achieved sales of * * * million and a profit of approximately * * * million. New orders for military and civil aircraft totaled * * * million and * * * million, respectively. Aeritalia's new investments amounted to * * * million in 1981. 4/

1/ Dr. W. Stephen Piper, Office of the United States Trade Representative, "The Commuter Aircraft Industry: International Trade Aspects," July 30, 1980.

2/ Jane's All the World Aircraft, 1981-82, p. 176-177.

3/ "Market Wise (ASA Links Future to Burgeoning Commuters)," Commuter Air, June 1982, pp. 23 and 24.

4/ * * *.

Appendix D

Present-Value Analysis

The effects differences in terms of financing have on purchasers' costs of equipment can be measured by calculating the present value of the future payments required under the terms of each contract. The present-value method is the most common way of comparing the costs of two different contracts that call for a series of payments to be made. The present value is the amount of money that if paid today would be equivalent to a schedule of future payments, assuming that the firm faces a given market rate of interest.

The present value is a weighted sum of a series of payments. Payments that are further into the future receive lower weights, because if a purchaser can postpone payments for its equipment, it may be able to reduce its other borrowings or to retain its earnings in interest-bearing accounts for a longer period of time. 1/ Thus, purchasers will prefer financing packages that allow them to postpone payments for as long as possible. As a result, the full cost of a purchase will depend not only on the price and the offered interest rate, but also on other factors affecting the timing and size of the payments. The benefits of postponing payments depend on the market interest rates, because were payments not postponed, the purchaser would have to reduce its lending or increase its borrowing at these rates. Therefore, present value will also depend on the market interest rate.

The present value of a future payment required by a contract can be thought of as the amount of money that would have to be invested in interest-bearing securities today if the securities were to be cashed in the future to make the contractual future payment. The amount of investment needed today is called the discounted value of the future payment, and it decreases the higher the market interest rate and the further into the future the payment must be made. The present value of a series of future payments is the sum of their discounted values. Because present value depends on all factors affecting the size and timing of payments, computing present values requires comprehensive information on the financing terms involved in a contract. A major advantage of using present values is that two contracts that may vary in many different respects, such as interest rates, repayment periods, and down payments, may be compared on the basis of a single measure.

1/ The formula for determining the present value (PV) of a series of future payments (P_t) is:

$$PV = \sum_{t=o}^{n} \frac{P_t}{(1+r)^t}$$

Where t is the time period and r is the market rate of interest. The term $1/(1+r)^t$ is called the discount factor. Because the discount factor gets smaller with an increase in time, payments further into the future are discounted more than earlier payments. That is, if an investment were to be made today, the longer it were allowed to collect interest or the higher the interest rate, the smaller the amount that would have to be invested to make a given future payment.

Appendix E

Case Study: Lost Sale Due to Export Credit Financing Claimed By * * *

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Appendix F

Estimating the Relationship Between Changes in Imports and Changes in Domestic Production

Studies of how imports affect domestic industries often assume, for simplicity, that if imports increase, domestic production decreases by an equal amount. However, such a decrease will only equal the increase in imports under special circumstances. In general, the domestic industry will respond to an increase in imports by reducing price. With lower prices, total sales, will expand and domestic sales will most likely fall by less than the increase in imports. The extent to which an increase in imports will reduce domestic production will depend on the extent to which domestic producers reduce their sales and buyers increase their purchases when price falls.

The reactions of producers and purchasers to changes in prices are measured by the elasticities of supply and demand; such elasticities determine the ratio of the decrease in production to the increase in imports. Estimates of supply and demand elasticites for aircraft made by the Commission indicate that an increase in imports reduces domestic production of aircraft by 43 percent of the increase.

The ratio of import changes to production changes

The ratio of the change in domestic production to the change in imports is given by the following formula.

$$\frac{dQ}{dM} = \frac{E_s}{E_s - E_d}$$

Where dQ is the change in domestic production, dM is the change in imports, E_s is the elasticity of supply and E_d is the elasticity of demand.

A detailed discussion of the derivation of this formula is given in a recent Commission report. 1/ Therefore, this appendix will only briefly describe this derivation.

The market for aircraft can be described using two equations

$$S(P) = Q \qquad 1$$

$$D(P) = M + Q \qquad 2$$

1/ The Impact of Foreign Trade-Related Performance Requirements On U.S. Industry and Foreign Investment Abroad; Report to the President on Investigation No. 332-142 . . ., U.S. International Trade Commission, September 1982, app. F.

Equation 1, the supply function, states that the domestic industry's production, Q, is determined by price, P. Equation number 2, the demand function, states that total purchases, the sum of imports, M, and domestic sales, Q, are also determined by price. 1/ Factors other than price will influence demand and supply, but because these factors will not affect the derivation, they are not included in the equations.

Totally differentiating equations 1 and 2 we find

$$dQ - S_p\, dP = 0 \qquad 3$$

$$dQ - D_p\, dP - dM = 0 \qquad 4$$

Where S_p and D_p are the derivatives of the supply and demand curves with respect to price, and dP is the change in price.

Equations 3 and 4 can then be solved for dQ

$$dQ = \frac{S_p}{S_p - D_p}\, dM \qquad 5$$

By the definition of elasticity

$$E_s = S_p\, (P/Q) \qquad 6$$

$$E_d = D_p\, (P/Q) \qquad 7$$

so we can multiply the numerator and denominator of the right hand side of equation 5 by P/Q, and then divide both sides by dM

$$\frac{dQ}{dM} = \frac{E_s}{E_s - E_d} \qquad 8$$

1/ This form of the demand function assumes imports are a perfect substitute for domestic production. Because aircraft are a very heterogeneous product, imports are unlikely to perfectly substitute for the domestic product. To the extent that imports are not perfect substitutes, their effect on domestic production is reduced.

If the assumption of perfect substitutability is dropped, then estimating the relationship between import changes and domestic production would require estimating the degree of substitutability between imports and the domestic products. Because of data limitations, attempts to estimate the degree of substitutability failed. Therefore, the assumption of perfect substitutability was used.

This ratio will equal one only if the demand elasticity is zero or if the supply elasticity is infinite. The demand elasticity will equal zero only if purchasers do not buy more of a product when its price falls. The supply elasticity will be infinite only if producers stop selling a product when its price falls.

Estimating the elasticities of demand and supply

Elasticities of demand and supply for the aircraft industry were estimated with an econometric model. The estimated elasticity of demand is -3.35; the estimated elasticity of supply is 2.52. 1/ Therefore, the estimated ratio of the change in domestic production to the change in imports is .43.

The econometric model expresses demand as a function of price, as represented by the aircraft sector's output deflator. To adjust for inflation, this price is divided by the wholesale price index. The output price, therefore, is expressed in constant dollars. Demand is also a function of passenger-miles of both U.S. and foreign airlines. These two variables are entered separately, rather than added together, because foreign airlines may be less likely to buy U.S.-made aircraft than U.S. airlines. Because airlines often order planes far in advance, and because they consider more than 1 year's traffic level when determining their equipment needs, lagged passenger-mile variables were also included in the demand function. Different lag structures were tried; a 3-year lag was selected because equations using shorter lags explained much less of the variance in demand and had coefficient estimates with much higher variances. A lagged price term was used in some demand estimations, but it was insignificant, so it was dropped. Because industry sources indicated that airline deregulation increased the demand for commuter airplanes, a dummy variable that equaled one in the years after deregulation and zero otherwise was also included. 2/

Supply is also expressed as a function of the price of aircraft and certain other variables. A lagged aircraft price term is included, because manufacturers may take time to adjust to price changes. The supply function includes input prices, because if it becomes more expensive to produce aircraft, all else equal, manufacturers will probably produce less. These prices are also deflated by the wholesale price index. A time-trend variable

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1/ These estimates are of the short-run elasticities of supply and demand. If purchasers and producers have more time to adjust to price changes, they are likely to make larger changes in their purchases and output. The long-run elasticities of supply and demand, therefore, are probably larger than the short-run elasticities. Because the ratio of the change in domestic production to the change in imports depends on the ratio of these elasticities, it is not certain how the use of long-run rather than short-run elasticities would affect the results.

2/ One variable that could influence the demand for U.S. aircraft is the output of foreign producers. Because data on this variable are unavailable, however, it was excluded from the model. Excluding this variable would only seriously bias the estimated coefficients if the excluded variable were highly correlated with the included variables.

is also included, because as time passes, technological progress makes it less costly to produce planes.

The demand and supply functions were estimated using annual data from 1958 to 1981. In both functions, output was defined as civilian aircraft produced for domestic use or for export. Output was measured in constant dollars. Price data were from official statistics of the U.S. Department of Labor, other data were from Aerospace Facts and Figures. 1/

The demand and supply functions were estimated using two-stage least squares, because each function used an endogenous variable, price, as an explanatory variable. Several problems were encountered in these estimations. Because the number of explanatory variables in each equation was large relative to the number of observations and because some of the explanatory variables were highly correlated with each other, the estimates of the coefficients had high variances. 2/ These problems, however, will not bias the estimates.

A log-linear form of the equations was estimated; results are presented in tables 25 and 26. The regression equations are statistically significant, and explain a large amount of the variance in demand and supply. Because of the problems encountered in the estimations, however, the individual coefficient estimates are often disappointing. In general, these coefficients are only significant at very low levels of confidence. Furthermore, the price of nonferrous metals should be negatively related to supply; these results suggest a positive relationship.

1/ (Aerospace Industries Association, Washington, D.C., various years).

2/ Another reason these estimates had high variances may be autocorrelation. The Durbin-Watson test for autocorrelation was inconclusive. If autocorrelation is present, the variances of the estimates may increase and the significance tests used to evaluate the estimates will be biased. Autocorrelation, however, will not bias the estimates themselves.

Table 27.--Aircraft: Estimated demand function for aircraft

Variable 1/	Coefficient	T ratio
Intercept	-1.07	-1.69
Price	-3.35	2/ -2.13
Deregulation dummy	.18	1.22
Passenger-miles U.S. airlines (PM)	1.21	1.57
PM lagged once	1.35	1.16
PM lagged twice	.77	.63
PM lagged thrice	-.83	-1.00
Passenger-miles foreign airlines (PMF)	-2.10	-1.26
PMF lagged once	-1.06	-.51
PMF lagged twice	.11	.06
PMF lagged thrice	1.49	.90
Regression as a whole: F ratio	-	3/ 22.69
R^2	-	.95

1/ All variables except the deregulation dummy are in log form.
2/ Significant at the 5-percent level.
3/ Significant at the 1-percent level.

Source: Estimated by the staff of the U.S. International Trade Commission.

Table 28.--Aircraft: Estimated supply function for aircraft

Variable 1/	Coefficient	T ratio
Intercept	3.00	7.62
Price	2.52	1.57
Price lagged once	-.67	-.42
Iron and steel price	-3.00	-2.52
Bolts and rivets price	-.55	-1.12
Nonferrous metals price	2.37	3.12
Time trend	.07	4.91
Regression as a whole: F-ratio	-	3/ 21.80
R^2	-	.89

1/ All variables except the time trend are in log form.
2/ Significant at the 5-percent level.
3/ Significant at the 1-percent level.

Source: Estimated by the staff of the U.S. International Trade Commission.

The estimated elasticities of demand and supply, however, only depend the estimates of the coefficients of the pricing variables. These estimat both have the expected sign. Demand is negatively related to price; suppl positively related to price. The estimated price elasticity of supply is significantly greater than 0 at a 14-percent level. 1/ This significance level is higher than the 5-percent level usually considered acceptable in econometric models. However, because of the small number of observations the highly correlated explanatory variables, these estimators had a high variance; therefore, they are particularly likely to appear to be insignificant. The price coefficient in the demand function is significant less than zero at the 5-percent level. Because the log-linear form of the demand and supply equations was used, the estimated coefficients on the pricing variables are equal to the elasticities. The estimated elasticity demand is -3.35; the estimated elasticity of supply is 2.52.

1/ If supply is unrelated to price, the elasticity of supply is zero and changes in imports do not affect domestic production.

The estimated elasticities of demand and supply, however, only depend on the estimates of the coefficients of the pricing variables. These estimators both have the expected sign. Demand is negatively related to price; supply is positively related to price. The estimated price elasticity of supply is not significantly greater than 0 at a 14-percent level. 1/ This significance level is higher than the 5-percent level usually considered acceptable in econometric models. However, because of the small number of observations and the highly correlated explanatory variables, these estimators had a high variance; therefore, they are particularly likely to appear to be insignificant. The price coefficient in the demand function is significantly less than zero at the 5-percent level. Because the log-linear form of the demand and supply equations was used, the estimated coefficients on the pricing variables are equal to the elasticities. The estimated elasticity of demand is -3.35; the estimated elasticity of supply is 2.52.

1/ If supply is unrelated to price, the elasticity of supply is zero and changes in imports do not affect domestic production.

Appendix G

Letter to the Commission from the Committee on Finance, United States Senate, and Notice of Investigation in the Federal Register

United States Senate
COMMITTEE ON FINANCE
WASHINGTON, D.C. 20510

May 24, 1982

The Honorable
William Alberger
Chairman
U.S. International Trade Commission
701 "E" Street, N.W.
Washington, D.C. 20436

Dear Mr. Chairman:

Pursuant to section 332 of the Tariff Act of 1930, as amended, the Senate Committee on Finance requests that the Commission undertake a study to evaluate the impact of export credit subsidies by foreign governments on U.S. producers of commuter aircraft.

As low density airline service becomes subject to greater competition, the Committee feels it should have available information on the implications of foreign export credit subsidies on the domestic competitive position of the U.S. commuter aircraft industry.

The Committee requests that your study examine: (1) The current structure of the U.S. commuter aircraft industry and that of major foreign competitors; (2) the current U.S. market for these aircraft; (3) the factors of competition in the market; (4) foreign government export policies relating to these aircraft and their impact on the competition position of the U.S. industry; and (5) the likely future trends in the U.S. market.

In accordance with your existing authorities, the Commission should obtain from the Executive Branch (among other sources, if any) such information as it has available or may develop on relevent foreign practices.

We would appreciate your report no later than eight months from receipt of this letter, and your staff should consult regularly on the Commission's progress with our staff as the study progresses.

Sincerely,

Bob Dole
Chairman

FOR FURTHER INFORMATION CONTACT:
Carol McCue Verratti, Esq., Office of the General Counsel, telephone (202) 523–[illegible].

By order of the Commission.
Issued: June 25, 1982.
Kenneth R. Mason,
Secretary.
[FR Doc. 82–17653 Filed 6–29–82; 8:45 am]
BILLING CODE 7020–02–M

[332–143]

Economic Impact of Foreign Export Credit Subsidies on the U.S. Commuter Aircraft Industry

AGENCY: International Trade Commission.

ACTION: Following receipt on May 27, 1982, of a request from the Committee on Finance of the U.S. Senate, the Commission instituted investigation No. 332–143 under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), for the purpose of gathering and presenting information on the impact of export credit subsidies by foreign governments on the competitive position of U.S. producers of commuter aircraft. The study will present information on (1) the current structure of the U.S. commuter aircraft industry and that of major foreign competitors; (2) the current U.S. market for these aircraft; (3) the factors of competition in the market; (4) foreign government export credit policies relating to these aircraft and their impact on the competitive position of the U.S. industry; and (5) the likely future trends in the U.S. market.

EFFECTIVE DATE: June 16, 1982.

FOR FURTHER INFORMATION CONTACT: Ms. Deborah Ladomirak or Mr. Aaron Chesser, Machinery and Equipment Division, U.S. International Trade Commission, Washington, D.C. 20436, telephone 202–523–0131 or 202–523–0353, respectively.

Public Hearing

A public hearing in connection with the investigation will be held in the Commission Hearing Room, 701 E Street NW., Washington, D.C. 20436, beginning at 10:00 a.m., e.d.t., on September 28, 1982, to be continued on September 29, 1982, if required. All persons shall have the right to appear by counsel or in person, to present information, and to be heard. Requests to appear at the public hearing should be filed with the Secretary, United States International Trade Commission, 701 E Street NW., Washington, D.C. 20436, not later than noon, September 21, 1982.

Written Submissions

In lieu of or in addition to appearance at the public hearing, interested persons are invited to submit written statements concerning the investigation. Commercial or financial information which a submitter desires the Commission to treat as confidential must be submitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. All submissions requesting confidential treatment must conform with the requirements of § 201.6 of the Commission's Rules of Practice and Procedure (19 CFR 201.6). All written submissions, except for confidential business information, will be made available for inspection by interested persons. To be ensured of consideration by the Commission, written statements should be submitted at the earliest practicable date, but no later than October 6, 1982. All submissions should be addressed to the Secretary at the Commission's Office in Washington, D.C.

By order of the Commission.
Issued: June 21, 1982.
Kenneth R. Mason,
Secretary.
[FR Doc. 82–17656 Filed 6–29–82; 8:45 am]
BILLING CODE 7020–02–M

[332–144]

Economic Impact of Foreign Export Credit Subsidies on Certain U.S. Industries

AGENCY: International Trade Commission.

ACTION: Following receipt on May 27, 1982, of a request from the United States Trade Representative, the Commission instituted investigation No. 332–144 under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), for the purpose of gathering and presenting information on the impact of export credit subsidies by foreign governments on the competitive position of U.S. producers of civil transport aircraft, commuter size and larger; heavy electrical equipment; and self-propelled railcars. For each of the three domestic industries, the study will present information on the following: (1) current industry structure, including major foreign competitors, and the current U.S. market; (2) factors of competition in the U.S. market and foreign trade; (3) comparison of sales and terms of sale of imported and domestically produced products; and (4) assessment of the impact of actual and lost sales and foreign offers for sales resulting from foreign export credit subsidies on the competitive position of the U.S. industry.

EFFECTIVE DATE: June 16, 1982.

FOR FURTHER INFORMATION CONTACT: Mr. Ronald J. DeMarines or Mr. Aaron Chesser, Machinery and Equipment Division, U.S. International Trade Commission, Washington, D.C. 20436, telephone 202–523–0259 or 202–523–0353, respectively.

Public Hearing

A public hearing in connection with the investigation will be held in the Commission Hearing Room, 701 E Street NW., Washington, D.C. 20436, beginning at 10:00 a.m., e.d.t., on September 28, 1982, to be continued on September 29, 1982, if required. All persons shall have the right to appear by counsel or in person, to present information, and to be heard. Requests to appear at the public hearing should be filed with the Secretary, United States International Trade Commission, 701 E Street NW., Washington, D.C. 20436, not later than noon, September 21, 1982.

Written Submissions

In lieu of or in addition to appearance at the public hearing, interested persons are invited to submit written statements concerning the investigation. Commercial or financial information which a submitter desires the Commission to treat as confidential must be submitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. All submissions requesting confidential treatment must conform with the requirements of § 201.6 of the Commission's Rules of Practice and Procedure (19 CFR 201.6). All written submissions, except for confidential business information, will be made available for inspection by interested persons. To be ensured of consideration by the Commission, written statements should be submitted at the earliest practicable date, but no later than October 6, 1982. All submissions should be addressed to the Secretary at the Commission's Office in Washington, D.C.

By order of the Commission.
Issued: June 21, 1982.
Kenneth R. Mason,
Secretary.

[FR Doc. 82–17657 Filed 6–29–82; 8:45 am]

BILLING CODE 7020–02–M

UNITED STATES
INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C. 20436

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