

- What would be the appropriate balance between the regulatory approach and the voluntary technology-based approach to further improve aviation safety?

#### The Impact of Economic/Business Cycles

Aviation is, and will continue to be, highly dependent upon economic conditions. There has been a recent increase in economic uncertainty. Business cycles have become more drastic as evidenced by increased volatility in cycle length and the depth of the recent recession. This has added to the risk-avoidance philosophy and, therefore, to the increased cost of capital. A contributing factor in the economic uncertainty is that external forces seem to be having a greater impact on domestic conditions. This is not just a U.S. phenomenon; it can be observed throughout the industrialized world.

The interplay of worldwide economic forces has a direct effect on currency valuation. Thus, there seems to be increased fluctuation in currency exchange rates. Some people claim that the effects of currency fluctuations on international air passenger volumes balance out. They argue that, as the dollar gets stronger and, say, the pound or mark gets weaker, all that happens is that there is a switch in the passenger origin split from east to west. This pattern is reversed when the exchange rates move in the opposite direction. The session participants did not agree with this theory. They believe that currency fluctuations have a ratcheting-down effect on international air passenger volumes. Consider an American resident who is planning a vacation in Europe. The decision making process is quite long, perhaps six to twelve months, or even longer. If the currency exchange rate becomes unfavorable during that period, he may well decide not to make the trip. But, his counterpart in Europe is not aware of the change yet; he is not involved in the decision making process because the rates were unfavorable to him a few months ago. Thus neither of them makes the trans-Atlantic journey. It follows that the interests of the aviation industry are best served by long cycles in exchange rate fluctuations. More rapid fluctuations will tend to exacerbate the problem of demand suppression.

#### COMMUTER INDUSTRY

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Five general forecast areas which the group determined were the most important for the commuter industry are:

- 1) Commuter industry traffic,
- 2) Financial capability of the industry,
- 3) Aircraft fleet,
- 4) Dynamics of the industry,
- 5) Airport facilities.

#### Traffic Growth

The first forecast developed was commuter industry passenger enplanements. In 1982 there were 18.5 million passengers boarded by the commuter airline industry. The forecast for 1992 is 40.2 million enplanements. This level would produce an average

annual growth rate of slightly less than 8.2 percent per year during the ten year period. The assumptions on which this forecast is based are:

- (1) The city pair markets now served by the commuter industry will grow at the same rate as the total air carrier industry rate of 4 percent per year for the ten year period;
- (2) The additional 4 percent per year growth will come from traffic gained from markets turned over to the commuter airlines by the other air carriers or traffic gained by reduced service by air carriers.

Although the replacement of air carrier service by commuters will produce significant growth for the commuter industry, it is not significant when compared to the total air carrier industry. In 1982 there were 237 commuter airline companies. These companies accounted for 1.2 percent of the total air carrier industry revenue passenger miles. The substantial growth during the ten year period, if obtained by the commuter industry, will produce approximately a 2.5 percent market share for the commuter industry by 1992.

The group concluded that in the case of traffic it was important to show that this would not be a fairly constant growth. Therefore, a five year forecast was also prepared. The 1987 forecast for commuter industry passenger enplanements is 29.2 million. This would produce a 9.7 percent average annual growth rate for the first five years and a 6.0 percent average annual growth rate for the remaining five years. This higher growth in the near term years is based on a higher growth rate for the near term general economy as it recovers from the recent recession.

Revenue passenger miles (RPMs) are forecast to increase from 2.6 billion in 1982 to 6.1 billion in 1992. This would produce a slightly higher growth rate for RPMs than for enplanements. This is based on increased average passenger trip lengths as commuter airlines gain additional markets from the air carriers.

#### Financial Environment

The second major area forecast was the expected financial environment for the commuter industry. It was determined that the sources of financial assistance would change during the ten year period. It was also established that when discussing financial sources two major areas must be examined. These major areas are financial sources for working capital and for financing new equipment. Today, the largest percentage of capital for the purchase of new equipment by the commuter carriers comes from the aircraft manufacturers. This assistance takes two forms. In each case the manufacturer finances its own aircraft sale. The manufacturer may charge the airline the established commercial interest rate or it may charge the airline a rate lower than the commercial interest rate in order to assure that it gains the sale from other manufacturer competitors. In many cases of sales to airlines in foreign countries the government of the manufacturer will assist the manufacturer in offering lower interest rates.

The second most important source are the various types of tax shelter leasing. The first is individual tax shelters, normally taking the form of limited partnerships. In this method a broker brings together a group of individual investors who through their joint investment in equipment gain the advantages of equipment tax shelter. The

second method is a corporate tax shelter system. In this case another firm purchases the equipment, leases it to the commuter airline, and retains the tax shelter benefits for itself. This is most often referred to as safe harbor leasing. The safe harbor leasing method is to be discontinued in the near future.

The third most important source of capital for financing equipment today are banks and other lending companies. The fourth source is the issuance of stock in the company. This can take three forms. The first is when a new carrier is formed by a group of investors who pool their capital to purchase equipment for the new company and are issued stock based on their investment. The second method is selling stock to the general public. The third source is the employees of the company who purchase stock from their own funds or are paid a portion of their wages in stock.

The primary source of funds for working capital is the cash flow generated by the revenues from doing business. The second most important is bank and lending company financing, the third is sale of stock and the fourth are the various tax shelters. From this it can be seen that today the most important source of financing for new equipment are the manufacturers, while for working capital cash flow is the most important source. By 1992 it is expected that the primary source of funds for new equipment will be the sale of stock to the general public, private venture capital and cash flow from the operation of the airline. The manufacturers will then be the second most important source while banks and finance companies will be the third most important. As for working capital, the sources are expected to remain the same: cash flow, bank financing and various types of stock sales.

Two other sources of capital available today were also discussed. These are Federal Aviation Administration (FAA) guaranteed loans and Civil Aeronautics Board (CAB) subsidies. Neither of these are expected to be in effect in 1992. The FAA guaranteed loan program terminated at the close of fiscal year 1983. Today, there are 78 points that are guaranteed service and various commuter airlines are paid subsidies by the CAB for serving these points. For FY 1984 the CAB has determined 120 points that require subsidy in order to assure air service. These 120 points are served by 40 commuter airlines in total. The subsidy allowed for service to these 120 points for FY 1984 will be \$50 million. However, the federal subsidy system is scheduled to be discontinued in 1988. The group discussed the various avenues available to these 120 points after 1988 and concluded that about one-third of these points are close enough to other larger airports so that discontinuance of service will not drastically inconvenience air travelers using these airports today. Fifteen to 20 percent of the points will have established the traffic levels required to support non-subsidized service. The remaining approximately 50 percent of the points will not have reached traffic levels required to be self-sufficient nor will they be within convenient driving distances of other airports.

Other sources of subsidy were discussed. The group members most knowledgeable about the subject believe that the states will not pick up the subsidy payments when the federal government discontinues its program. The importance of these points was also reviewed. Today, these approximately 60 points board between five to ten passengers a day. None board more than 20 passengers. No conclusions were reached as to how scheduled air service can be retained at these points after 1988 or if scheduled air service is even required.

## Revenues

In closing the discussion of sources of capital the group decided that a forecast of total industry revenues would be helpful. In 1982 the average yield of the commuter airlines was 35¢ per passenger mile and the total commuter industry revenue was \$950 million for the 237 carriers. The group forecasted the yield to increase at 2 percent per year in constant 1982 dollars during the ten year period which would bring the yield in 1992 to 43¢ per passenger mile in constant dollars. With the forecast yield and RPMs in 1992 total commuter industry revenues are expected to reach \$2.6 billion in 1982 dollars.

## Aircraft Fleet

The third major area investigated was the commuter industry fleet. In 1982 the 237 carriers had 1546 aircraft in their fleets. The group expected the fleet to grow to 1800 by 1992. Using the various forecasts established during the meeting a very simple fleet mix forecast was produced for 1992. The group forecast that the total fleet load factor would increase from 40 percent in 1982 to 45 percent in 1992. This means that a fleet producing 13.5 billion available seat miles (ASM) will be needed to carry the forecast RPMs. Today's fleet includes 714 aircraft with less than 15 seats, 526 in the 15-19 seat class, 123 in the 20-30 seat class, 145 in the 30-50 seat class and 38 with more than 50 seats. One possible combination for 1800 aircraft producing 13.5 billion ASMs in 1992 is 300 aircraft in the less than 15 seat class, 620 in the 15-19 seat class, 600 in the 20-40 seat class and 280 with more than 40 seats.

## Industry Structure

The fourth major area discussed was the expected industry dynamics during the forecast period. At the end of 1982 there were 237 commuter airlines but the composition of this number is far from static. In the several years since deregulation an average of 50 new companies entered and 50 old companies disappeared each year. By 1992 the committee expects the total number of companies in the commuter industry to decrease by one-half to a level between 120-150 commuter carriers. It is possible that none of these will be from today's 237 companies. By 1992 most if not all commuter companies will have contractual arrangements with larger carriers at points that are served by both. As an example, if a commuter carrier serves the large hubs of Denver and Omaha it will have an arrangement with one of the larger carriers at each of these hubs. That does not mean that it will be the same large carrier. Through these agreements the commuter will base its schedule on the larger carrier's schedule. The aircraft may be parked near each other. Common ticket check-in and luggage areas may be utilized. In addition, the group expects that of the largest 20 to 50 commuter carriers at least 50 percent will be owned by larger air carriers.

The question of the service that will be offered by an industry with less than one half the companies that it has today was raised. Today the air carriers and commuters serve a total of 865 airports. Of these 865 the commuters serve 817. Of these 817, 251 are served jointly by air carriers and commuters. The remaining 566 are served by commuters exclusively. By 1992 the committee does not expect the total number of airports served to

change significantly. Based on the previously stated assumption that the commuters will take over additional services from the air carriers, the number of points served exclusively will increase by 30 to 50, reaching a level of 590 to 610.

One additional point which is of interest to industry analysts and the general public is the amount of data that will be released to the general public in the future. Based on policies in effect today, within the next five years the only information that the commuter industry will release is that information available from the companies' annual reports to their stockholders. It is expected that this information would include system RPMs, system ASMs, system enplanements, system revenue and costs, the total of the fleet and the companies profit expectations.

### Airports

The final area investigated was airports and facilities. The operating members of the group suggested quite a long list of problems with airports and the facilities at the airports. Because of the length of the list the group decided to offer a short statement about the overall problems rather than dealing with specifics. The group concluded that the primary problems faced by commuters are access to the airports, the availability of terminal facilities, and the costs of terminal and airport facilities which the operators believe border on discrimination towards the commuters in some areas. The commuter carriers believe that the airport operators do not understand the commuter industry and its needs. The group believes that in the future because of the importance of the commuter airlines to the total air carrier industry, the airport operators will be more cooperative with the commuter airlines in terms of terminal and airport space and costs. However, because of the differences in numbers of passengers carried by air carriers and commuters at the larger airports, it is doubtful the commuter airlines will gain all the improvements they wish.

### BUSINESS AVIATION

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This session considered current market conditions and was dedicated to the subject "Measuring Business Aircraft Market Demand in a Changing Environment: 1980-1985). The participants represented business jet and turboprop manufacturers and associated major suppliers.

The agenda allowed exploration of the market conditions through presentations and discussion leading to a consensus finding regarding the 1983-1985 period. Discussion leaders from the business jet, turboprop and supplier participants essentially reviewed:

1. Aircraft market conditions 1980 to present
  - Economic drivers and indicators
  - Demand factors
  - Constraints (PATCO/fuel, etc.)
2. Market forecast techniques
  - Methodologies employed
  - Observations and/or lessons learned
  - Current methodologies if revised

3. Business aircraft sector outlook, 1983-1985
  - Macro forecast
  - Total market and heavy, medium, light sectors
  - Assumptions and key issues

4. Market research areas which would benefit both government and industry

### Historical Market Conditions 1980-1983

The period 1980-1983 was characterized as one economically driven with a production and retail market peak in early 1981 followed by steady retail market declines commencing in mid-1981. Increased end year 1981 inventory levels were followed by backlog erosion, and further retail market slowing along with increasing inventory levels. Turboprop production halved in 1982 and again in 1983. Business jet backlog carried production well into 1982 before declining about 30 percent below 1982 in 1983.

Attendant economic recession factors such as general business volume declines, energy related market sector disruption, high real interest rates, and the high dollar value against the international markets were instrumental in the retail market demand decline experienced for business aircraft.

In addition, other related factors were cited as probable factors influencing purchase deferral. These included: the Federal Aviation Administration controller strike and related airways control procedures; potential regulatory issues such as imposition of various additional tax measures on the industry; basically higher fuel and other recurring operational costs; and perhaps the higher list purchase prices although heavy discounting was reported. Positive influences specifically mentioned were the improved investment and depreciation allowances legislated during recent years.

### Market Forecast Techniques

Each participant had an opportunity to present a summation of previous and current forecast techniques employed in determining future market demand.

While these reviews ranged from relatively naive judgemental or internal consensus to advanced econometric models, it became apparent that the market dislocation experienced since 1981 has prompted much more company support for improved forecast methods.

It was found that to the extent the various economic models could currently portray future economic conditions, the use of various orders of economic models was useful in measuring basic market turning points and the relative magnitude of demand change over 6-8 quarters.

Key economic parameters in use and generally recommended during the discussion included:

- Real GNP - lagged
- Real cash flow
- Real corporate profits adjusted
- Capacity utilization - manufacturing
- Rental cost of capital
- Real interest rates
- Investment tax credit rate application differential
- Real business investment - sectorized
- Industrial production
- Dollar value - trade weighted