

additional management skills. These factors must be balanced against the high debt of a carrier, such as Braniff, which in Eastern's case, made this kind of takeover prohibitive. Takeovers will occur where there are clear-cut advantages such as for Pan American in its acquisition of National.

There is a real possibility that the equipment financing problem could be met by the development of investment groups who own and lease aircraft on a different basis than has been done historically. This will not be so much a method of financing aircraft from the standpoint of the airline, as an investment opportunity. A carrier might be able to approach the problem of developing markets from the standpoint of where a developmental opportunity exists, the best way to develop it, the kind of equipment needed to develop it, and where to lease that equipment, rather than how to utilize existing equipment.

#### AIRLINE PASSENGER DEMAND

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Airline passenger demand is determined by three sets of forces: (1) fares and costs, (2) consumer income, and (3) technological and structural changes in the economy. In the long run, airline fares tend to follow the cost of producing airline service. Fuel and labor are the dominant cost factors. Fuel prices will rise somewhat faster than inflation in general but improvements in airline efficiency and aircraft/engine technology should hold fuel costs in line with inflation. Airline labor costs, which have risen at an above-average rate historically, will probably rise less rapidly due to deregulation. Airline capital costs have escalated in recent years and are expected to continue to do so. On balance, total airline unit costs are expected to rise about in line with the inflation rate.

Real yields are thus likely to be flat over the next ten to twenty years. Unit costs for fuel and labor should be flat or downward in real terms but capital costs will increase. Efficiency factors such as utilization, seat density and load factor will improve somewhat but not nearly as much as in the past eight years. From a forecasting standpoint, an assumption of constant real yield is a blessing since it wipes out the effect of price elasticity -- a subject on which nobody seems to agree.

Although average real yield will probably remain relatively flat, deregulation will result in a wider variety of price/service options for air travelers which, on balance, should be a stimulant to demand.

If fares are neither a drag nor a stimulus to growth, then changes in the economy and population will be the vital considerations. Most forecasters, except the FAA, agree that income elasticity is strongly positive, so that the consensus economic projection of 3 percent annual growth in real disposable personal income (DPI) implies at least 4-1/2 percent to 6 percent market growth. However, the growth of true discretionary income and how it is distributed among various demographic age-income cells is viewed as a better growth indicator than the gain in aggregate DPI.

There is no consensus among forecasters with respect to a "realistic" assumption regarding future passenger load factor levels. The FAA forecast of 63 percent seems to fall within the bounds of expectations.

Among other potential growth factors, teleconferencing was viewed as a negligible influence

for the next decade and private business aircraft were not a threat to airline demand. Diversion from surface modes is primarily a historical phenomenon -- from railroads in the 1950's and from autos in the 1970's. People seem to be getting more accustomed to small cars and willing to use them for intercity trips - and would be even more likely to use autos if the 55 m.p.h. speed limit were repealed. Airport or airway congestion was expected to become worse since no new airports are expected; however, this will not be a constraint on airline growth because there are many ways to overcome the congestion problem. General aviation may face a more serious airport constraint as small airports close, air carrier airports become very expensive and reliever airports are expanded at an uneven pace.

The need for better market research data on air travel based on general population surveys, such as the ATA/Gallup survey, was discussed at length. Airlines strongly oppose in-flight surveys other than their own proprietary surveys. The airframe and engine manufacturers seem to be willing to underwrite a major research effort through the Aerospace Industries Association at a cost far in excess of the \$13,000 for the ATA/Gallup survey. Airlines, manufacturers, government and academics agreed on the need for much better information in the public domain and seem to be willing to share the cost.

#### AIRLINE CARGO DEMAND

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The objectives of the cargo session were: (1) to identify threats to and opportunities for the air freight industry (The "industry" does not include specialized small package overnight services.); (2) to develop a consensus about growth rates, 1980-1990; (3) to identify important issues; and (4) to identify important areas for research.

#### Threats and Opportunities

The prime outside or major threats are possibilities of disruptive pricing and/or lack of availability of fuel. There are direct threats of increased operating costs, and indirect threats of depressed demand from economic recession.

Trucking deregulation in the U.S. is a threat because no one is quite sure how the new structure will work out. There is a threat of increased competition within a 500-mile radius of major airports.

Other outside threats are new "institutional barriers" affecting international traffic. These are changing trade agreements, shifts in bilateral agreements aimed at protecting flag carriers, shifting currency exchange rates, and various restrictions on free trade.

Outside, or macro-opportunities include modal expansion as an attractive strategic option resulting from truck and rail deregulation. This opens the way for imaginative operators to move into complementary transport modes. An example is the new services offered by the Flying Tiger Line.

Third World economic expansion may offer opportunities for airlines and related air freight businesses that are capable of taking advantage of such changes.

Several participants thought the high inflation rates would increase the apparent value of products relative to the cost of air freight. More commodities would, therefore, cross the "threshold of eligibility" for movement by air freight.

From an industry or micro-viewpoint, threats were from lack of facilitation. Constraints to growth of air freight include possible saturation of key airports, imposition and tightening of curfews, and the lack of facility expansion to handle large wide-bodied aircraft.

Another threat is low yields from excess capacity in most world air lanes and related competitive pricing. This results in inadequate financial returns for needed investment in air cargo equipment and facilities. Low returns extend to aircraft design and manufacture, with little incentive for airframe manufacturers to build new cargo airplanes or for airlines to expand cargo capacity.

A final industry threat is the lack of "real understanding" of the differences in the nature of the passenger and freight businesses by some carrier managements.

Participants felt that the industry "is its own opportunity," but industry members must cease fighting among themselves (e.g., predatory pricing), learn more about market needs, and learn to market and sell more effectively. Better market research is necessary.

Another opportunity is more containerization. Panel members agreed that though this was nothing new, the potential has never come close to realization. With good understanding of markets, and with the new freedom of deregulation, there is great opportunity for companies to exploit containerization.

An integrated physical distribution/transportation network is now more feasible than two to three years ago. While it might take heavy investment, there is a great opportunity to develop a system ranging from transport to warehousing to sophisticated information systems networks, to serve industry's total distribution needs.

Finally, expansion of international trade among Third World and developed countries is expected to provide opportunities for expansion.

#### Consensus Forecasts

Revenue ton-miles are the best forecast unit. The small package overnight market segment is excluded from the forecast.

The consensus was that domestic air freight would grow 5.5 percent per year over the next ten years. International air freight would grow at a 6 percent rate.

Mail is a revenue generator for many airlines. A range from 0 to 6 percent in annual growth led to a group forecast of 3 percent.

#### Issues

There is good potential for air freight growth, but it is inhibited by some managements' lack of understanding of the contribution of air freight to profits.

There is a need to understand industry structural changes now in process. There is a revolution in the air freight industry. How changes in rates, integrated services, and related factors will affect the industry need to be studied thoroughly. Few within the industry know the potential for air freight, and most have no idea where to look for answers.

Should the combination airlines really be in the "air freight business?" Air freight management should study the reasons for the historic frustration between them and passenger management. Much of this frustration arises because each group within the airline has vastly different perspectives and objectives; neither looks at the issue holistically.

The different viewpoints make it most difficult for either side to understand the motives and actions of the other. Many air freight managers feel they are in the freight industry per se, and they attempt to compete in the "total freight" marketplace. Because of constraints placed on them by the passenger side of the business they are unable to optimize their position.

Perhaps the real problem is with the vision of "what business are we really in?" It is conceivable that the combination carrier should not consider itself to be in the air freight business per se, but that air freight carriage should be viewed as simply a means to dispose of excess inventory. From this viewpoint, the business can be approached from a completely different perspective. The sale of excess space becomes contributory to the movement of a given airplane between two points and the freight department becomes a creative disposer of space, lowering the seat load factor "upstairs" needed for breakeven.

Another issue is fractionated decision-making to ship by air. Many now making shipping decisions (particularly small packages where secretaries, clerks and business managers make the decisions) do not consider most combination carriers as being in the air freight business. These hundreds of thousands of decision makers think first of Emery, Airborne, or Federal Express, and not often of TWA, American, or United. This is a marketing problem and opportunity for combination airlines.

Intermodality development is another issue. There is a real need to provide shippers with single point responsibility and uniform tariffs, legal documentation, and liability across transportation modes.

Finally, there is the inability of the airlines to earn an adequate return to justify expansion. This will continue to inhibit growth.

#### Research Needs

There are three research needs:

1. To better define air freight markets by isolating discrete components that create demand for movement by air -- an evaluation of "marketplace needs" -- what are the motivating factors, who really controls the mode and carrier decisions, and so on. To develop a realistic understanding of the total market for air freight is to develop opportunities for segmentation.

2. To develop new forecasting methods encompassing factors not quantifiable. This was touched on in other Transportation Research Board sessions during discussions of some of the problems connected with use of econometric models in the unpredictable world of the 1980's. Econometric models and the like applied to air freight in today's world -- using either historic or current data -- would prove to be most misleading.

3. To find ways to identify aircraft characteristics and specifications needed by the airline industry to meet the needs of the next ten to twenty years. Needs have to be integrated and based on factors other than operating costs (the dominant driver in present decision making). Such factors as an understanding of future world air network flows, relative market sizes and characteristics, demand in the developed and Third World countries, energy efficiency, and the need for both manufacturers and operators to achieve adequate returns on investment need to be studied.