The original documents are located in Box 2, folder "Aircraft Noise (8)" of the James M. Cannon Files at the Gerald R. Ford Presidential Library.

THE WHITE HOUSE

WASHINGTON

September 10, 1976

MEMORANDUM FOR THE PRESIDENT

FROM: EDWARD SCHMULTS

SUBJECT: DOT Proposal on Noise Pollution and Aircraft Financing

Very briefly, I believe much more work should be done on the financing aspects of this proposal before you make a decision. Some threshold objections which I believe support my recommendation are as follows:

-- Precedential considerations are significant, i.e., should the federal government finance capital requirements for a major private industry.

-- The proposal is not really "free" -- we all know there is no "free lunch" -- another option would be to return the 2 percent tax to the public, with a resulting decrease in air fares and an increase in traveling.

-- Your Administration, which has championed the free enterprise system, should not, without more analysis, put forward a proposal which is based in part on the argument of "competitive equalization". What this means to me is government support of the weaker airlines which, on a worse case basis, will lead to more and more government assistance and eventually government ownership as these airlines are unable to survive unaided during business downturns. In a real sense, we weaken the stronger airlines which on their own are able to finance new aircraft. (See also the last point below).

-- There is no requirement that the money will be used to finance a new generation of jet aircraft and thus advance the competitive position of American airplane manufacturers in world markets. In today's Wall Street Journal there is an article that American Airlines is buying ten Boeing 727's to replace aging planes that burn too much fuel and don't meet federal noise standards. If the money can be spent this way, does the proposal make sense? This consideration should be given more thought.

-- Through this proposal, should the Administration really encourage an allocation of $2 - 2 1/2 billion over the next ten years into new jet aircraft? Isn't it possible this will be a misallocation of resources? Doesn't the market do a better job than government bureaucrats?

-- This proposal will be seen by some as a turnabout on airline regulatory reform. The air bills now before Congress, including the Administration's, have been seen by some market analysts as leading to a much more profitable airline industry. We should not make a quick decision on this proposal as industry circumstances seem to be improving.

-- The Administration may be viewed as being too closely allied with big business a la the Lockheed situation which has some parallel to this proposal. By supporting Lockheed with a loan guarantee, one can argue that the federal government really weakened the United States commercial air frame industry. Without the Lockheed guarantee, resources would have been deployed elsewhere and presumably Boeing and McDonnell-Douglas would be stronger world competitors today. Lockheed teaches that once into an industry it is tough to get the federal government out.

THE WHITE HOUSE

WASHINGTON

September 10, 1976

MEMORANDUM FOR: JIM CANNON

FROM: PAUL LEACH

SUBJECT: Airplane Financing

The following summarizes the information and opinions I have collected in analyzing the financing requirements of our trunk airlines through 1985. This is based on financial projections and analysis done by some of the most respected airline analysts on Wall Street.

Issues

Will the American trunk lines be able to finance the replacement of all of their old, noisy aircraft by 1985? If not, which ones will have trouble? (In addition, I have explored whether the airlines will be able to finance replacement and expansion of their fleets).

Assumptions

- All old noisy planes either replaced or retrofitted by the end of 1985
- Airline deregulation similar to the Administration bill is and, alternatively, is not passed during the 95th Congress.

Facts

About 750 planes will have to be replaced by 1985. This includes all B-707s, DC-8s, B-720s, L-188s and some B-727s and DC-9s. The total cost of replacing these planes will be about $10.5 billion. About $9 billion of this would be spent whether or not all old and noisy planes were banned by 1985. Another $10-15 billion would be required if the airlines are to expand their fleets to meet increased air travel demand over this period.

If the airlines breakeven in the 1976-1985 period, they will generate about $10.5 billion in cash flow from depreciation and amortization.

Conclusions

If airline regulatory reform is adopted, the airlines should earn a normal (10-12%) rate of return over this period. This should allow every airline to finance the replacement of all aircraft and the expansion of their fleets. The only airline which might have some trouble expanding it's fleet would be TWA.

If airline regulatory reform is not adopted, the airlines are likely to earn a subnormal rate of return (as they have an average over the past two decades). In the aggregate, the airlines will generate enough cash from depreciation, amortization and subnormal profits to finance the replacement of all their old, noisy planes. The only airlines that would experience severe problems financing the replacement of their fleets would be American, TWA and Eastern (and maybe Pan Am). However, with low profitability, all the airlines except Northwest, Delta, National (and possibly Continental and Braniff) would have difficulty financing replacement and expansion of their fleets.

THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

September 10, 1976

Honorable James M. Cannon
Executive Director
Domestic Council
The White House
Washington, D.C.

Dear Jim:

I am enclosing herewith a copy of the Delta letter. As you can see, Delta, even though they talk about their dissent with ATA, seems to be in accord with the type of aviation noise policy we are working on.

Sincerely,

Bill

William T. Coleman, Jr.

Enclosure

TEEP

DELTA AIR LINES, INC.
HARTSFIELD ATLANTA INTERNATIONAL AIRPORT
ATLANTA, GEORGIA 30320

DAVID C. GARRETT, JR.
PRESIDENT

May 19, 1976

Honorable William T. Coleman, Jr.
Secretary of Transportation
400 Seventh Street, S. W.
Washington, D. C. 20590

Dear Mr. Secretary:

As you are aware, Delta Air Lines found it necessary to take exception to the retrofit/replacement program proposed by the airline industry to you on May 14th. It is important, however, to note that we participated fully in the joint industry effort to reach agreement and our dissent relates primarily to the excessive scope of the program. We agreed to submit our views to you directly.

While we continue to believe that the preferred solution to the aircraft noise dilemma would be through normal retirement and replacement of the noisier aircraft in the industry fleet, we accept the reality of political and environmental factors which seem to mandate earlier action.

In all candor, we believe that with the industry's acceptance of the necessity for costly source-noise reduction, must be the government's acceptance of the necessity for preemptive federal action to preclude destructive state and local regulation of interstate air carrier operations. We cannot overemphasize the chaos which will follow should local communities be permitted to establish their own noise standards, flight profiles and operating hours. I am certain that you appreciate the serious dilemma with which the industry is faced.

Over the past several years, Delta has demonstrated through fleet planning its concern for the aircraft noise problem. Source-noise reduction has been a basic consideration in our fleet retirement and replacement program.

Since 1973, Delta has expended and/or committed over $1 billion for new aircraft purchase and aircraft source-noise modification. Of Delta's present 192 aircraft fleet, 55 are certificated to FAR Part 36. By the end of next year, 114 of the 192 aircraft fleet will be certificated to FAR Part 36. At that time, the Delta fleet will incorporate only 13 DC-8-61, 60 DC-9-32, and 5 B-727-95 aircraft not meeting FAR Part 36. The decibel-level improvement for Part 36 certification of the DC-9 and B-727 aircraft is so minimal as to be imperceivable to the human ear.

In a different context and further illustrating the benefits obtained via Delta fleet planning, is the 26.9% increase in available seat miles (ASM) per gallon of fuel which we have achieved since 1972, as indicated by the following table:

	ASM (billions)	Fuel (gallons)	ASM (per gallon)
1972	26.825	982,611,000	27.29
1976 (est.)	31.878	946,016,855	34.63

This trend will continue as Delta modernizes its fleet by aircraft retirement and replacement.

Noting the financial plight of the air carrier industry, it is of increasing concern that for each dollar expended, the greatest cost-benefit ratio be achieved. Hence, Delta urges first, that aircraft replacement rather than retrofit be encouraged; second, that only aircraft types which will achieve reasonably perceivable noise reduction be mandated for retrofit; and third, that minimum retrofit modification per aircraft type for the greatest noise-reduction per dollar spent be obtained through allowing "trade-off" criteria.

With regard to aircraft types which will achieve perceivable noise reduction by retrofit, Delta does not believe that the DC-9 and B-727 fall into this category, and hence, these aircraft should not be required to retrofit.

The noise levels of our DC-9-32 aircraft differ only slightly from the allowable requirements of Part 36. Noise certification measurements are made at specific points and with the aircraft at maximum gross weights. During normal operation for the DC-9 with our average 284 mile route segment for this aircraft, gross weights are consistently under the maximum, thereby generating less noise. It would be expected that the noise is much lower than that permitted by Part 36. It is generally agreed among the noise experts that differences of 2-3 EPNdB are not repeatable even in test flight examinations and become lost in the varying effects of terrain and atmospheric conditions encountered in day-to-day operation.

Normal operation of our original fleet of B-727 aircraft is similar to that of the DC-9 in that seldom are these at maximum gross weight, routinely generating less noise than that permitted under Part 36.

Since certificated limits for B-727 under Part 36 are higher than actual DC-9-32 noise levels, at those airports that might require only a Part 36 aircraft operation, greater noise would actually result by substituting a noise certified B-727 for the DC-9. In purchasing new B-727-200 aircraft in 1972, however, Delta realized the need to achieve as much noise reduction as possible and initiated its policy to purchase only aircraft which could meet Part 36 criteria. At the time this was by no means a retrofit decision but applicable only to new aircraft. Now through the process of attrition and standardization, it is planned that the entire B-727-200 fleet will meet the same noise criteria.

Although Delta has concern about the economics of modification to DC-8's to meet Part 36 noise levels, we concur with the ATA proposed modification of these aircraft since there is a larger differential between existing noise generation and that which will be permitted by Part 36. In Delta's operation with this aircraft, again due to shorter stage lengths, maximum gross weights are not required a large portion of the time. We would expect our noise generation to be lower than those values commonly attributed to this aircraft.

There can be little question that modification costs for retrofit of DC-8 aircraft (and probably B-707) is fluid. Per unit cost is dependent upon the number of aircraft which would finally be modified and, at this time, an estimate cannot be made as to numbers with any degree of accuracy.

Delta considers it imperative that final noise limitations imposed allow the capability of criteria "trade-offs." We are informed by the manufacturers that such allowances will permit reduction in the unit costs of the modification with little variance in the resulting noise reduction, and further, due to reduced complexity of design, reduced increased operating costs brought about by the installation. Delta believes that this "trade-off" concept warrants further, and serious, inquiry.

With reference to the recent proposal submitted by the airline industry, excepting Delta, it was with reluctance that we found it necessary to dissent. While the proposal is laudatory in its scheme to facilitate financing for new aircraft purchase (which is highly desirable), Delta cannot accept the proposal as an appropriate vehicle. While we concur that an incentive to replace, rather than retrofit, must be a part of any successful program, we insist that

any such device be collateral to the acknowledged primary purpose, that is, to reduce source-noise at least cost.

We believe that the proposal as it stands would be financially and politically unacceptable without major modification to the disadvantage of the many carriers that have expended significant funds to modernize and modify their fleets without assistance. The potential disparity and inequity is too great to ignore.

Delta views the airline industry proposal as attempting to deal with two separate problems: first, source-noise reduction, and second, replacement of the aging industry fleet in the midst of economic plight. Delta submits that the two problems must be dealt with separately to avoid gross inequity. Delta's proposal deals foremost with source-noise reduction.

Financing fleet modernization, beyond that minimally necessary to obtain source-noise reduction, must be accomplished through justifiably needed fare increases. Such fare increases must continue to be sought by the carriers and timely granted by the Civil Aeronautics Board to ensure an adequate return on investment, and thus return the industry to a profit position whereby it can itself finance necessary fleet acquisition and retirement. Hopefully, the Department of Transportation will support such carrier requests to the Civil Aeronautics Board.

With the above comments noted, Delta is convinced that the preferred course of action should be a simple program designed to achieve the best cost-benefit ratio for source-noise reduction with minimum cost, complexity and governmental involvement. This program would incorporate the following features:

a) creation of a fund financed by collection of an amount equivalent to 2% of passenger and waybill revenues, premised upon a corresponding reduction in the existing passenger tax;

b) acceptance of a time-phased schedule to start immediately for retrofit/replacement of non-Part 36 B-707/DC-8 aircraft (possibly including B-747 aircraft), any retrofit to be accomplished within the state of the art and noise criteria trade-offs allowed;

c) reimbursement to be disbursed from the fund as required for retrofit or, alternatively, an equivalent amount for replacement;

d) funds to be targeted for zero-balance with the surcharge to be reduced/eliminated accordingly; and

e) acknowledgment that there will be no retroactive application of new noise abatement technology to other aircraft presently in airline fleets.

This proposal would provide sufficient funds to each carrier to comply fully with the minimum aircraft modification to be mandated, and would also provide that carriers able to retire and replace non-Part 36 B-707/DC-8 aircraft would have the incentive to do so. Independent carrier financial and managerial integrity would be maintained and maximized.

The Delta proposal is simple, straightforward, and would result in the least inequitable disparity while accomplishing the objective. While the proposal would result in a disparity of benefits disbursed to the carriers, Delta recognizes that the problem must be dealt with collectively if a solution is to be successful.

In closing, I encourage your serious consideration of our comments and proposal. If we can be of any assistance, or provide additional information, please let me know.

Sincerely,

David C. Garrett, Jr.

DCG:br

cc: Mr. Donald T. Bliss ✓
Mr. Paul R. Ignatius
Air Line Chief Executive Officers

[1976]

THE WHITE HOUSE
WASHINGTON

Sat, Sept. 11

JMC:

THESE ARE THE REPORTS PAUL LEACH WAS SPEAKING WITH YOU ABOUT.

cameron

H.C. WAINWRIGHT & CO.
Established 1868

INDUSTRY REVIEW

July 8, 1976 AIRLINE INDUSTRY

This report focuses on (1) the near-term financial outlook for the airline industry, and (2) long-term industry prospects under two differing assumptions: a changed and an unchanged regulatory structure. The Appendix presents 1976 and 1977 earnings estimates for selected carriers, as well as detailed quarterly projections for the remainder of 1976.

Commentary

It is becoming increasingly evident that the airline industry is in the midst of a substantial recovery that could lift earnings to a record level this year. Rapid traffic growth, higher fares, modest capacity additions, and favorable expense comparisons are all contributing to this improving pattern. Next year could see even further profit progress if capacity planning remains conservative and fare increases continue to at least offset inflationary cost pressures. Although the industry remains in a poor financial condition, a prospective decrease in capital expenditures this year and next, together with the anticipated profit improvement and an expected increase in depreciation, should provide sufficient flexibility for a reduction in long-term debt and a consequent strengthening of the balance sheet.

Some observers contend that a change in the current regulatory structure will jeopardize the ability of the airlines to realize a reasonable return on investment. In the opinion of this analyst, however, a loosening of the regulatory grip would be a positive development; the real risk is the possibility of a subsequent reimposition of regulatory control – and perhaps to a greater degree than has existed in the past – if things do not work out as planned. The proponents of regulatory reform argue that less CAB influence will improve operating efficiency and lead to lower prices, increased demand, and perhaps higher service levels. However, this particular combination is only one of many possibilities that could attend regulatory reform, and one must accordingly consider the likelihood of a Government policy response if events run contrary to what is perceived as being in the public interest.

(See Index of Tables on following page)

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1976 Industry Outlook

In the first quarter of 1976, the industry's seasonal operating loss of $125 million was essentially unchanged from the level of the comparable 1975 period. Scheduled traffic expanded 9.9%, but yields declined 0.5%, holding the scheduled passenger revenue gain to just 9.3%. With cargo and charter revenues up 6.7% and 13.2%, respectively, total revenues rose only 9.5%. Since total operating expenses advanced 9.2% (labor 9.6%, fuel 12.8%, depreciation 3.7%), there was no material improvement in operating results.

For the remainder of the year, however, growth is expected to improve sharply relative to expenses. This prospect rests on the anticipated continuing strength in traffic, coupled with higher yields, the latter stemming from fare hikes, a narrowing of discount fares, and a relatively moderate rate of cost increases.

Traffic. In developing a traffic forecast, this analyst continues to believe that the two most critical influences are the rate of change in real GNP and in real fares (constant dollar fares as measured by yields, or revenue per revenue passenger mile). As first indicated in the July 16, 1975 *UAL Basic Report,* and again in the September 12, 1975 *Airline Industry Review,* it appears that positive trends in both of these indicators will continue to support a favorable traffic pattern in 1976. Table 1, which is an expansion of earlier presentations, indicates yearly traffic changes since 1956. The table is arranged in descending order of growth rates rather than chronologically. As is readily apparent, the relative traffic growth for each year has generally been a function of changes in real GNP and/or real fares. The most striking exception to this rule was 1973, which was characterized by a sharp decline in consumer confidence.

Real GNP is expected to climb 6%-7% this year; it also appears that real fares will decline, in spite of the recently favorable fare adjustments. With yields perhaps rising 4%-5% for the year and a projected inflation rate of 7%, real fares could drop 2%-3%. While this would be only half the decline achieved in many past years, it nevertheless continues the downtrend established by the 6.8% reduction in 1975. A fare decline of this magnitude, combined with estimated real GNP growth of 6%-7%, could stimulate 12%-plus traffic growth for the full year.

(See Table 1 on following page)

Table 1

Historical Traffic Analysis (a)
(Listed in descending order of growth rates)

	Domestic Airline Industry Traffic Growth	Real GNP	Real Fares
1967	25.0%	2.6%	– 6.4%
1965	17.6	6.3	– 2.9
1966	16.0	6.5	– 6.7
1959	15.1	6.4	2.3
1968	15.0	4.7	– 4.7
1964	14.5	5.5	– 2.5
1963	14.3	4.0	– 5.7
1957	13.2	1.4	– 4.3
1956	12.7	1.8	– 3.9
1972	10.8	6.2	– 1.6
1969	9.3	2.7	– 2.2
1962	7.8	6.6	1.4
1973	6.6	5.9	– 2.1
1960	3.9	2.5	1.9
1974	2.2	–2.2	2.7
1971	1.8	3.3	0.2
1975	1.6	–2.0	– 6.8
1961	1.0	1.9	1.7
1970	0.3	–0.4	– 2.7
1958	–0.3	–1.1	3.7
1976 (e)	13.0	6.5	– 2.5
1977 (e)	7.0	3.0	– 1.8

(a) Year-to-year percentage change.
(e) Estimated.

Yields. Four fare increases have been approved since November 1975:

November 15, 1975	3.0%
February 1, 1976	1.0
March 1, 1976	2.0
May 15, 1976	2.0

Table 2 shows the actual year-to-year carryover effect of these increases for 1976 and 1977. Many carriers have also recently filed for another 2.0% hike effective July 7, 1976, which is not included in Table 2.

(See Table 2 on following page)

Table 2

Domestic Airline Fares & Yields
(% Increase year-to-year)

	Fares					Yields
	1 Qtr.	2 Qtr.	3 Qtr.	4 Qtr.	Year	Annual
1977	3.7%	1.0%	0.0%	0.0%	1.2%	7.0%(e)
1976	4.4	7.2	8.2	6.6	6.6	4.0 (e)
1975	12.5	6.8	4.0	3.5	6.6	1.5
1974	7.1	12.5	14.7	14.6	12.3	13.0
1973	2.7	3.0	3.1	3.1	3.0	3.6

(e) Estimated.

For 1973 and 1974, annual price and yield adjustments did not differ materially. Last year, however, fares climbed 6.6% while yields rose only 1.5%, the difference due to expanded use of discount fares, which were recommended by the airlines and approved by the CAB. The yield/fare gap is expected to narrow in 1976 as the number and size of available discount plans diminish. Accordingly, with traffic perhaps up 12%-14% and yields gaining 4%-5%, passenger revenues may expand 16%-17% for the full year. Other revenue components (principally charter and cargo) are not expected to materially raise total revenue growth above this range.

Capacity. Industry capacity, as measured by available ton miles or available seat miles, will probably rise a moderate 5%-7% in 1976, reflecting the industry's poor financial condition and management's recognition that conservative capacity planning is necessary – at least until the traffic and earnings outlook is more assured. The capacity gains that are achieved will be attributable to increasing seating configuration density and airplane utilization levels rather than the purchase of new aircraft.

In order to develop a more meaningful capacity projection, this analyst has concentrated on managements' intentions with regard to the purchase and sale of aircraft. The number of seats owned or leased is used as the starting measure of capacity in order to account for changes in aircraft sizes and to better gauge the available physical plant. The quantification of fleet size also allows a distinction to be drawn between changes in physical capacity, which largely influence fixed costs, and utilization rates, which affect the smaller variable cost component. Generally speaking, shifts in the number and size of aircraft are longer term decisions that require considerable lead times, whereas utilization rates may vary considerably over the short term.

According to the data in Table 3, the number of seats increased sharply in 1968 and 1969. The rate of gain slowed in 1970 and 1971, but still exceeded traffic growth. In the subsequent two-year period, seating capacity grew less rapidly than traffic, but did not decline proportionately when traffic weakened in 1974 and 1975. As shown in Table 3, the seat and traffic indices stood at 171 and 157, respectively, at year-end 1975. Modest physical capacity additions and stronger traffic gains are in prospect for 1976 and 1977. Accordingly, *by the end of 1976, traffic growth may have finally caught up with the rapid pace at which the number and size of aircraft were increased during the late 1960's and early 1970's.* On the assumption that the 1976 utilization rate approximates that of 1968 – which would

represent a 5.6% increase over the 1975 level – the passenger load factor could approach 59%. In reality, however, this utilization rate may not be reached since many carriers are increasing their seating configurations to obtain the same number of projected available seat miles.

Table 3

Traffic/Capacity Analysis (a)

Year	Seats (b)	Available Seat Miles Per Seat (c) (000,000)	Available Seat Miles (d) (000,000)	Revenue Passenger Miles (f) (000,000)	Passenger Load Factor (g)
1977 (e)	207,852	1.209	251,246	147,703	58.8%
1976 (e)	204,475	1.148	234,809	138,040	58.8
1975	203,828	1.087	221,518	120,730	54.5
1974	208,166	1.066	221,827	124,081	55.9
1973	209,034	1.126	235,415	126,563	53.8
1972	202,140	1.078	217,901	118,054	54.2
1971	186,795	1.122	209,497	104,146	49.7
1970	178,802	1.087	194,383	100,530	51.7
1969	167,092	1.120	187,096	98,621	52.7
1968	142,459	1.152	164,132	90,027	54.9
1967	119,119	1.094	130,356	76,896	59.0

	% Change from Prior Year	Index 1967=100	% Change from Prior Year	Index 1967=100
1977 (e)	1.7%	174	7.0%	192
1976 (e)	0.3	172	14.3	180
1975	(2.1)	171	(2.7)	157
1974	(0.4)	175	(2.0)	161
1973	3.4	175	7.2	165
1972	8.2	170	13.4	154
1971	4.5	157	3.6	135
1970	7.0	150	1.9	131
1969	17.3	140	9.5	128
1968	19.6	120	17.1	117

(a) Includes scheduled and nonscheduled data for American, Delta, National, Northwest, Pan Am, TWA, and United.

(b) A measure of physical capacity; a total of all aircraft seats in the fleet by year-end, using a fixed number of seats per aircraft type.

(c) Available seat miles per seat is a measure of equipment utilization, derived by dividing available seat miles by the number of physical seats.

(d) Customary measure of total capacity.

(e) Estimated.

(f) Customary measure of traffic.

(g) Revenue passenger miles divided by available seat miles.

Operating Expenses. While fuel costs accounted for the largest portion (36%) of the total 1975 increase in operating expenses, labor costs are expected to represent the largest increment in 1976. Although only modest additions are likely to be made to average employment levels, total wage per employee may climb 10%-11%, thereby adding $600 million to the labor bill (see Table 4). It now appears that fuel costs may average just 32¢ per gallon for the year, compared with 29¢ for 1975. This figure is somewhat less than the 35¢ projection made last September, and reflects the December 1975 Energy Policy and Conservation Act, which has stretched out anticipated higher prices from decontrol over a 40-month period. With consumption expected to be up 4%-5%, total fuel costs may rise no more than 15%, as compared with 18% last year. Continuing the trend established in 1974, no material change is expected in the depreciation and rentals area. Because of borrowing restrictions, ample capacity, and the competitive uncertainty created by the possibility of regulatory change, capital spending is being held to modest levels. With system available ton miles perhaps expanding 5% this year, having shown no change last year, "other expenses" may climb 12%-14%, versus 8.7% for 1975. While the slowing in the inflation rate has restricted increases in this area over the past six months, an anticipated acceleration in inflation over the remainder of the year will probably add to the 10% rate of gain in "other expenses" reported for the first quarter.

Based on the above assumptions, operating expenses may climb 11% for the full year, up from the 8.4% increase of 1975, as indicated in Table 4.

Table 4

Operating Expenses
(In millions)

	Actual		Estimated	Cost Increment		% Change	
	1974	1975	1976	1975/ 1974	1976/ 1975	1975/ 1974	1976/ 1975
Labor	$ 4,820	$ 5,138	$ 5,733	$ 318	$ 595	6.6%	11.6%
Fuel	2,079	2,454	2,804	375	350	18.0	14.3
Depreciation & rentals	1,671	1,686	1,701	15	15	0.9	0.9
Other expense	3,687	4,009	4,506	322	497	8.7	12.4
Total operating expense	$12,257	$13,287	$14,744	$1,030	$1,457	8.4	11.0

With revenues expected to rise 17% and operating expenses 11%, operating income should reach $850 million, a quantum jump above the $88 million reported for 1975, and approximately 40% above the 1974 level. On the assumption that other nonoperating income reaches at least $75 million while interest expense declines slightly to $245 million, reflecting a net reduction in long-term debt, then pretax earnings would reach million. On a 43% effective tax rate, net income could climb to the $350-$400 million range.

(See Table 5 on following page)

Table 5

1976 Prospects
(System trunks)

	Actual		Estimated	% Change from Prior Year		
	1974	1975	1976	1974	1975	1976
Revenue						
Scheduled RPM (a)	150,803	150,002	168,863	0%	(1%)	13%
Yield	7.05¢	7.37¢	7.64¢	15	4	4
Scheduled passenger revenue (a)	$10,632	$11,054	$12,907	15	4	17
Charter RPM (a)	10,153	9,148	10,871	(10)	(10)	19
Yield	3.34¢	3.94¢	3.93¢	19	18	0
Charter revenue (a)	$ 339	$ 360	$ 428	7	6	19
Cargo revenue (a)	1,250	1,298	1,518	11	4	17
Other revenue (a)	643	663	743	618	3	12
Total revenue (a)	$12,864	$13,375	$15,596	18	4	17
Expenses						
Headcount	264,264	258,578	259,800	(2%)	(2%)	1%
Wages per employee	$18,241	$19,882	$22,063	8	9	11
Wages and fringes (a)	$ 4,820	$ 5,138	$ 5,733	6	7	12
Fuel consumption (a)	8,495	8,407	8,769	(11)	(1)	4
Cost per gallon	24.5¢	29.2¢	32.0¢	92	19	10
Fuel cost (a)	$ 2,079	$ 2,454	$ 2,804	70	18	14
Depreciation and rentals (a)	$ 1,671	$ 1,686	$ 1,701	4	1	1
Available ton miles (a)	43,568	43,627	45,687	(6)	0	5
Unit cost	8.46¢	9.19¢	9.86¢	27	9	7
Other expenses (a)	3,687	4,009	4,506	21	9	12
Total expenses (a)	$12,257	$13,287	$14,744	18	8	11
Operating profit (loss) (a)	$ 607	$ 88	$ 852	25	(86)	868
Other nonoperating income (a)	95	66	76	63	(31)	15
Net interest expense (a)	251	267	245	0	6	(8)
Pretax income (loss) (a)	$ 447	($ 121)	$ 682	55	NM	NM
Tax (a)	199	(36)	293	75	NM	NM
Effective tax rate	44.5%	29.3%	43.0%	12	(34)	47
Net income (loss) (a)	$ 248	($ 86)	$ 389	42	NM	NM

(a) In millions.
NM Not meaningful.

1977 Industry Outlook

The industry outlook for next year rests on several economic assumptions. Real GNP growth is likely to slow from the 6%-7% average of 1976, to perhaps 3%-4% next year, while real disposable personal income may rise only 2%-3%, versus a possible 4%-5% rate of gain for 1976. In addition, the inflation rate may indeed accelerate to 8%-10% from 6%-8%

anticipated for the current year. While this outlook is somewhat discouraging, there is a growing possibility of a favorable policy response from Washington, perhaps in the form of tax rate reductions for both individuals and corporations (refer to *Economic-Investment Department Comments* of June 1, 1976). While such a development may not occur until mid-1977, the anticipation of it could stimulate output and reduce inflationary pressures even before the fact, thereby improving the 1977 economic climate. However, since such an action is still far from the formulation stage, this analyst has relied on the above, possibly conservative, economic assumptions.

The airline industry may experience a continued uptrend in profits next year, even with modest economic growth and renewed inflationary pressures. This prospect assumes that capacity planning will remain conservative and that fare hikes will at least offset inflationary cost increases.

Revenues. Based on the data in Table 1, it would seem realistic to expect traffic to rise 5%-10% for 1977, if real GNP growth is 3%-4%, and real fares to decline perhaps 2%. This latter assumption is based on average fare increases of 7%, no new discount fares, and a 9% year-to-year advance in the consumer price index. Accordingly, with a 7% gain in both traffic and fares, passenger revenues could climb 14%-15% above the indicated 1976 figure. With increased charter and cargo revenue growth – stemming from relaxed charter rules and increasingly active freight solicitation efforts – the total revenue comparison could actually exceed the 15% level. However, the 14%-15% projection is being retained to stay within the boundaries of conservatism.

Operating Expenses. While the ariline industry may face intensified cost pressures because of a reacceleration of inflation, the anticipated revenue gain could more than offset the increase in operating expenses, to the benefit of operating profits. This improvement is contingent upon a number of assumptions, however.

(1) Capacity, as measured by available seat miles, should expand at the same 7% rate as traffic, thus maintaining the passenger load factor at the anticipated 1976 level. With a modest increase in the number of net new aircraft in the industry's fleet (refer to Table 3), and the ongoing substitution of narrowbody for widebody planes, most of the gain in available seat miles will stem from greater utilization of existing equipment, as well as conversion to denser seating configurations. The incremental cost of this capacity expansion should accordingly be less than the purchase of new aircraft would entail.

(2) On balance, airline managements will continue their efforts to raise productivity and to keep average headcount from rising more than 5% above the 1976 level, or slightly below the 7% gain anticipated for both traffic and capacity. Since only limited additions will be made to fixed plant, the expected rise in volume should not necessitate a matching percentage increase in employment. On the assumption that contractual wage rates climb perhaps 9%, total labor costs would advance 14%-15%.

(3) Per gallon fuel costs will average 10% higher than the 1976 figure, limiting total fuel cost increases to 15%-16%. This is consistent with the provisions of the December 1975 Energy Act.

(4) Depreciation and rental payments will not change significantly.

(5) All other operating expenses are expected to rise 16%-17%, or 9% on a unit basis, in line with the projected inflation rate.

Based on the above cost assumptions, total operating expenses would expand 13%-14%, lifting operating profits above the $1.0 billion mark. After nonoperating items, and with a 40%-45% effective tax rate, net income could reach $550-$600 million, almost 50% above the projected 1976 level. Note that this improvement represents an expansion in net profit margins to just 3.2% from a projected 2.5% for 1976.

Table 6

1977 Prospects
(System trunks)

	Estimated 1976	Estimated 1977	% Change
	(In millions)		
Revenue	$15,596	$17,923	14%-15%
Expenses			
Wages and fringes	$ 5,733	$ 6,570	14%-15%
Fuel	2,804	3,256	15%-16%
Depreciation and rentals	1,701	1,699	0%
Other	4,506	5,257	16%-17%
Total	$14,744	$16,782	13%-14%
Operating profit	852	$ 1,141	30%-35%
Other non-operating income	76	60	(20%-25%)
Net interest expense	245	240	(0- 5%)
Pretax income	$ 682	$ 961	40%-45%
Tax	293	384	30%-35%
Effective tax rate	43.0%	40.0%	(5%-10%)
Net income	$ 389	$ 577	45%-50%

Assumptions

RPM	+ 7%
Yield	+ 7
ASM & ATM	+ 7
Headcount	+ 5
Wage rates	+ 9
Fuel consumption	+ 5
Fuel cost/gal.	+10
Depreciation & rentals	no change
Other unit costs	+ 9

Longer Term Outlook – The Consequences and Risks of Deregulation

To place the longer term outlook into perspective, it is useful to review the 1970-1975 period when the character of the airline industry underwent a complete change. At the start of 1970, most industry observers were anticipating 10%-12% average annual traffic growth for 10 to 15 years ahead, and a stretching out of future fare increases, which had jumped 18% in the past two years alone. In addition, the new widebody aircraft were expected to attract new passengers as well as relieve inflationary cost pressures once the initial break-in period was over. The focus was then on how soon the industry would reach the CAB's prescribed rate of return (then 10.5%), and whether the CAB would retard growth prospects by acting to prevent industry returns from exceeding the standard – an inevitable problem, it was thought, that would have to be dealt with in the future.

As it happened, traffic growth fell short of expectations as a result of two economic declines and a rising trend in real fares, placing the industry in an extended overcapacity position. Since the primary competitive tool available to managements was (and still is) scheduling, advertising, and flight comfort, the capacity problem was not easily solved, and the airlines found it increasingly difficult to bring expenses into realistic alignment with revenues. The situation was exacerbated by inconsistent CAB decisions with respect to route awards and fare adjustments, a sharply accelerated inflation rate, a tripling of fuel costs, and a slowing in the rate of productivity improvement – all of which drove profitability far below the expectations of the late 1960's. In view of these extended difficulties, it is indeed suprising that all carriers survived the 1975 recession.

Since the advent of the jet age, the airline industry has never achieved more than a 12% rate of return on total invested capital. This situation seems somewhat anomalous in view of the several years of sharp traffic increases and substantial productivity gains stemming from technological advancements especially since the survival of a highly cyclical industry would seem to hinge on the attainment of at least a 10% average return over an extended period in order to keep and attract new capital. In actuality, returns have averaged less than half this percentage. The fault lies, in large part, with the regulatory structure, which has tended to encourage the development and expansion of an air transport system that provides an extensive public service (service as measured in terms of convenient departure times to a large number of points, with readily available space) and that, at least partially, offsets inadequate rates of return by insulating carriers from risks associated with entry and price competition. *The experience of the past five years has thus clarified the primary issue: unless greater flexibility is introduced by allowing fares and service levels to be raised or lowered as demand and profitability dictate, an environment will be perpetuated which tends to inflate service levels and to keep profitability at inadequate levels.* This fundamental choice is at the heart of the deregulation issue, and its ultimate resolution will determine the financial health of the industry for years to come.

As has been suggested in the past, there is some hope for the airlines beyond 1977; if the number of aircraft purchases is limited, the industry should be able to recoup cost increases for higher passenger load factors and fare hikes. However, unless the competitive nature of the industry is significantly altered, this analyst believes that average profitability levels will remain inadequate over an extended period to sustain a financially independent industry. The real issue is this: if the regulators, either knowingly or unknowingly, create a system that

mandates – or, by its nature, encourages – uneconomic service levels, the price will ultimately be paid by the public, either through subsidies or nationalization. The industry can never attain maximum operating efficiency and the optimum price/service relationship under a system that both protects carriers from and interferes with managements' responses to the realities of the marketplace.

While fully recognizing the industry's limited long-term earnings visibility – because of its sensitivity to economic cycles, its high operating and financial leverage, and its elusive demand trends – this analyst has nevertheless made a series of assumptions on key earnings determinants to lend some perspective to the deregulation issue. At the outset, it has been assumed that annual real GNP growth will average 3.0%-3.5% for the 1978-1982 interval, and that the inflation rate will average 6%. Against this broad economic backdrop, two earnings estimates for the system trunks have been derived for the year 1982, one based on continued tight regulatory control and the other on greater management control over prices, and route entry and exit.

Under a basically CAB-controlled industry (refer to column 1 in Table 7), nominal average traffic would grow at perhaps 5% annually, assuming modest overall economic growth, with fares increasing in line with the general inflation rate, thereby precluding the otherwise stimulating effects of a reduction in real fares. While charter business might rise as a percentage of total traffic, growth would be somewhat limited. On this basis, total revenues would advance 11%-12%, reaching $30.0 billion by 1982. If rates of return continue at modest levels and managements are somewhat more conservative in capacity planning as a result of the 1970-1975 experience, the passenger load factor could plateau at the 60% level, significantly above the 50%-55% range of recent years. However, there is no particular reason to believe that aircraft utilization (as measured by available seat miles per number of aircraft seats) would change materially from the projected 1977 peak.

Under continued regulation, the greatest cost pressure would probably be in the area of fuel. While consumption might climb just 4.6%, in line with the increase in available seat miles, prices could rise to 57¢ per gallon, or by 10% per year. On the assumption that wage rates rise 7% per year and headcount increases with capacity, total labor expenses would expand almost 12% per year. Even with depreciation and rentals advancing only 5.3% and other expenses climbing at a rate of 10.9% (reflecting average growth of 4.6% in capacity and 6.0% in unit costs), total operating expenses would rise 11.7%, holding operating profits to around $1.5 billion. After non-operating items, net profits would remain at approximately the 1977 level. Thus, barring major technological developments, profit prospects appear rather bleak under the current regulatory system. The carriers' operating and marketing strategies would be expected to remain essentially unchanged – although there is the possibility that managements will in either case participate to a greater extent in the charter market.

Table 7 summarizes the foregoing assumptions under a "regulated" environment; the discussion of possible consequences under deregulation follows Table 7.

(See Table 7 on following page)

Table 7

Projected 1982 Industry Net Income

		Base Year	(1) Regulation		(2) Deregulation	
	1974	1977	1982	5-Year Growth Rate	1982	5-Year Growth Rate
Revenue: RPM (a)	179,734	192,315	245,448	5.0%	309,725	10.0%
Yield	7.42¢	7.94¢	10.63¢	6.0%	9.20¢	3.0%
Passenger revenue (a)	$ 13,335	$ 15,269	$ 26,091		$ 28,495	
Other revenue (a)	2,261	2,654	4,535		4,953	
Total revenue (a)	$ 15,596	$ 17,923	$ 30,626	11.3%	$ 33,448	13.3%
Passenger load factor:						
Seats	263,539	269,029	336,414	4.6%	329,460	4.1%
ASM/Seats	1.160	1.216	1.216	0.0%	1.343	2.0%
ASM (a)	305,670	327,066	409,080	4.6%	442,464	6.2%
Load factor	58.8%	58.8%	60.0%		70.0%	
Operating expenses:						
Headcount	259,800	272,790	341,574	4.6%	331,890	4.0%
Wages per employee	$ 22,063	$ 24,084	$ 33,779	7.0	$ 33,779	7.0
Wages and fringes (a)	$ 5,733	$ 6,570	$ 11,538	11.9	$ 11,211	11.3
Fuel consumption (a)	8,769	9,207	11,529	4.6	12,438	6.2
Cost per gallon	32.0¢	35.4¢	57.0¢	10.0	57.0¢	10.0
Fuel cost (a)	$ 2,804	$ 3,256	$ 6,571	15.1	$ 7,090	16.8
Depreciation and rentals (a)	$ 1,701	$ 1,699	$ 2,194	5.3	$ 2,194	5.3
Other expenses (a)	$ 4,506	$,5,257	$ 8,819	10.9	$ 9,515	12.6
Total operating expenses(a)	$ 14,744	$ 16,782	$ 29,122	11.7%	$ 30,010	12.3%
Operating profit (a)	$ 852	$ 1,141	$ 1,504	5.7%	$ 3,438	18.0%
Other income (a)	76	60	100	10.8	100	10.8
Net interest expense (a)	245	240	500	15.8	250	0.8
Pretax income (a)	$ 682	$ 961	$ 1,104	2.8%	$ 3,288	27.8%
Tax (a)	293	384	442	2.9	1,315	27.8
Effective tax rate	43.0%	40.0%	40.0%		40.0%	
Net income (a)	$ 389	$ 577	$ 662	2.8%	$ 1,973	27.8%

(a) In millions.

In a deregulated environment, on the other hand, the perspective changes considerably (see Column 2 of Table 7). A more competitive operating climate would allow managements greater scope in setting fare and service levels and in determining the specific markets to be serviced. With more aggressive solicitation efforts and the establishment of an optimal traffic/price relationship in each market, overall revenue growth might accordingly be somewhat greater than in a regulated framework. As indicated in Table 7, one possibility is that fares would rise only 3%, and with real fares thus dropping approximately 3%, traffic growth could reach 10%. On this basis, and on the further assumption that cargo business follows a similar growth pattern, passenger and total revenue growth could exceed 13%.

It is not unrealistic to assume that the passenger load factor could reach the 70% level under deregulation, on the strength of more aggressive efforts to reduce peaking restraints and expanded use of charter and possibly part-charter flights. In addition, with more efficient use of aircraft, available seat miles per seat could show a 2% average annual increase, thereby reducing the requirement for additional seats to a 4.1% rate of gain, versus the estimated 4.6% under a regulated environment.

Application of the same growth assumptions for wage rates, fuel prices, depreciation and rentals, and inflation would result in a more rapid rise in total operating expenses under deregulation, 12.3% versus 11.7%. This higher rate would reflect increased fuel consumption and other expenses associated with flying a greater number of seat miles. However, some offset would be provided by somewhat greater productivity gains (headcount and available seat miles rising 4% and 6.2%, respectively, versus 4.6% and 4.6% under regulation), stimulated principally by the more competitive operating environment. Hence, both operating and net profits could conceivably be materially greater than the Column (1) estimate. It should be emphasized that the transition to a deregulated structure may have a dramatic effect on the number of carriers in the industry and on the price and service levels in each market. It has, of course, been assumed that the CAB, as well as local political groups and the Justice Department, will not impose policies that would interfere with the competitive market adjustment process.

To arrive at a projection of the respective rates of return that could be achieved in both a regulated and nonregulated industry, this analyst has constructed an estimate of future capital requirements for both situations. Based on the figures in Table 7, the net new seats added to the total fleet would equal 67,385 in the regulated industry and 60,431 in the deregulated environment. With a replacement requirement of 6.25% of the 1977 fleet each year, the total number of seat purchases could reach 151,455 and 144,501, respectively, as indicated in Table 8. On the assumption that the average cost per seat at the beginning of 1978 will be $95,000, and that inflation raises this amount by 6% per year, then total capital requirements under either industry structure could reach $16-$17 billion for the 1978-1982 period.

(See Table 8 on following page)

Table 8

Projected Capital Expenditures 1978-1982 (a)

	1978	1979	1980	1981	1982	Total 1978-1982
Regulation						
Replacement seats	16,814	16,814	16,814	16,814	16,814	84,070
New seats	13,477	13,477	13,477	13,477	13,477	67,385
Total purchased seats	30,291	30,291	30,291	30,291	30,291	151,455
Total cost per seat	$100,700	$106,742	$113,147	$119,935	$127,131	$113,529
Total capital outlay (b)	$ 3,050	$ 3,233	$ 3,427	$ 3,633	$ 3,851	$ 17,194
Deregulation						
Replacement seats	16,814	16,814	16,814	16,814	16,814	84,070
New seats	12,086	12,086	12,086	12,086	12,086	60,431
Total purchased seats	28,900	28,900	28,900	28,900	28,900	144,501
Total cost per seat	$100,700	$106,742	$113,147	$119,935	$127,131	$113,529
Total capital outlay (b)	$ 2,910	$ 3,085	$ 3,270	$ 3,466	$ 3,674	$ 16,405

(a) Assumptions for base and terminal years:

	1977	*1982*
Regulation		
Revenue passenger miles (b)	*192,315*	*245,448*
Available seat miles (b)	*327,066*	*409,080*
Passenger load factor	*58.8%*	*60.0%*
ASM/Seats	*1.216*	*1.216*
Number of aircraft seats	*269,029*	*336,414*
Total cost per seat	*$ 95,000*	*$127,131*
Deregulation		
Revenue passenger miles (b)	*192,315*	*309,725*
Available seat miles (b)	*327,066*	*442,464*
Passenger load factor	*58.8%*	*70.0%*
ASM/Seats	*1.216*	*1.343*
Number of aircraft seats	*269,029*	*329,460*
Total cost per seat	*$ 95,000*	*$127,131*

(b) In millions.

Table 9 summarizes this analyst's estimates of sources and uses of funds, capitalization, and rates of return, using the projections of Tables 7 and 8. The five-year total net income calculation assumes an earnings stream in each year matching the 1978-1982 growth rate. While such a consistent pattern is not realistic in a cyclical industry, the five-year total is not considered unreasonable. As the table indicates, earnings in a deregulated industry could more than double the profits available under a regulated structure, which accounts for the major difference in total available funds. Furthermore, to meet the projected capital expenditures that continued regulation would entail, the airlines would need at least $3.0 billion of additional debt. Although the projected 1982 debt to equity ratio would then be 53%, or considerably below the 1975 level, the capital structure evolved in a freer market

would probably reflect considerably less long-term debt. In addition, rates of return on total capital and equity would most likely remain inadequate under the present industry structure, while more realistic levels would be attainable within a deregulated environment.

Table 9

Projected Source and Use of Funds, Capitalization, and Rate of Return 1978-1982
(In millions)

	1974	1975	1976	1977	Regulation 1978-1982	Deregulation 1978-1982
rces: Net income	$ 259	($ 97)	$ 389	$ 577	$ 3,140	$ 6,416
Less dividends	51	52	55	55	500	1,000
Retained earnings	$ 208	($ 149)	$ 334	$ 522	$ 2,640	$ 5,416
Depreciation	1,032	1,050	1,050	1,100	7,000	7,000
Deferred taxes	139	30	175	200	1,246	2,246
Disposal of property	317	420	300	300	2,500	2,500
Other	25	105	50	50	500	500
Total	$ 1,721	$ 1,456	$ 1,909	$ 2,172	$13,886	$17,662
s: Capital expenditures	$ 1,576	$ 1,369	$ 1,000	$ 1,000	$17,194	$16,405
Net debt payments	108	(10)	809	1,072	(3,308)	757
Increase (decr.) working capital	37	97	100	100	—	500
Total	$ 1,721	$ 1,456	$ 1,909	$ 2,172	$13,886	$17,662
					1982	1982
italization:						
Long-term debt	$ 5,357	$ 5,406	$ 4,597	$ 3,525	$ 6,833	$ 2,768
Capitalized leases	4,410	4,345	4,280	4,216	3,910	3,910
Reserves	1,350	1,364	1,500	1,500	2,000	2,000
Equity	4,081	3,953	4,287	4,809	7,449	10,225
Total capital	$15,199	$15,069	$14,664	$14,050	$20,192	$18,903
urn on invested capital (a)	2.6%	0.6%	3.6%	5.1%	4.8%	11.2%
g-term debt & leases to otal capital	64.3%	64.7%	60.5%	55.1%	53.2%	35.3%
urn on equity	6.3%	(2.5%)	9.1%	12.0%	8.9%	19.3%

(a) Net income based on pre-interest, after tax.

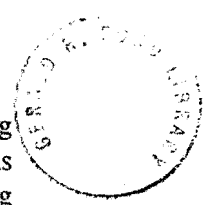
The foregoing analysis is an attempt to apply reasonable assumptions to key determinants of earnings and to the industry's financial position in order to build a framework for assessment of future prospects under both a regulated and a deregulated structure. Perhaps the most striking feature in this industry picture are the huge amounts of capital and the large earnings levels that will be necessary – in either case – to maintain a viable, financially independent industry. The direction toward less regulation appears to increase the chances of a more profitable industry; however, the nature of the regulatory reforms that will ultimately emerge is still quite uncertain.

Industry Position

Having initially defended the status quo, the airlines for the most part now favor fare flexibility, while advocating continued controls over entry and exit. It is generally felt that the CAB has not permitted adequate fare increases in the past, and that this situation could be corrected if left to the individual airlines. By arguing for continued controls over route entry and exit, the airlines are seeking to insulate themselves from potential competitive inroads, even though such inroads would probably be advantageous from the standpoint of improving overall operating efficiency. It should be stressed that the industry has evolved under the cloak of the CAB, which has protected it from new competitors and provided fare stability; in exchange, the carriers were expected to compete on the basis of service. The incentive for a particular carrier is presumably to become more efficient than the average and thereby take advantage of prices set on the basis of average efficiency. On the other hand, regulation was also a form of insurance against errors of judgment. For example, there is a tendency by some carriers to add excess capacity in order to gain market share, at the expense of operating efficiency and/or profitability.

Within the regulated environment, it is not surprising that many carriers lack the innovation, initiative and profit incentive that characterize most non-regulated industries. Accordingly, the industry may consider its advocacy of a flexible fare system as quite a concession to the regulatory reform issue. Importantly, however, in taking this position, the carriers are for the most part assuming that the industry's profit incentives and cost structure will not and/or cannot shift dramatically.

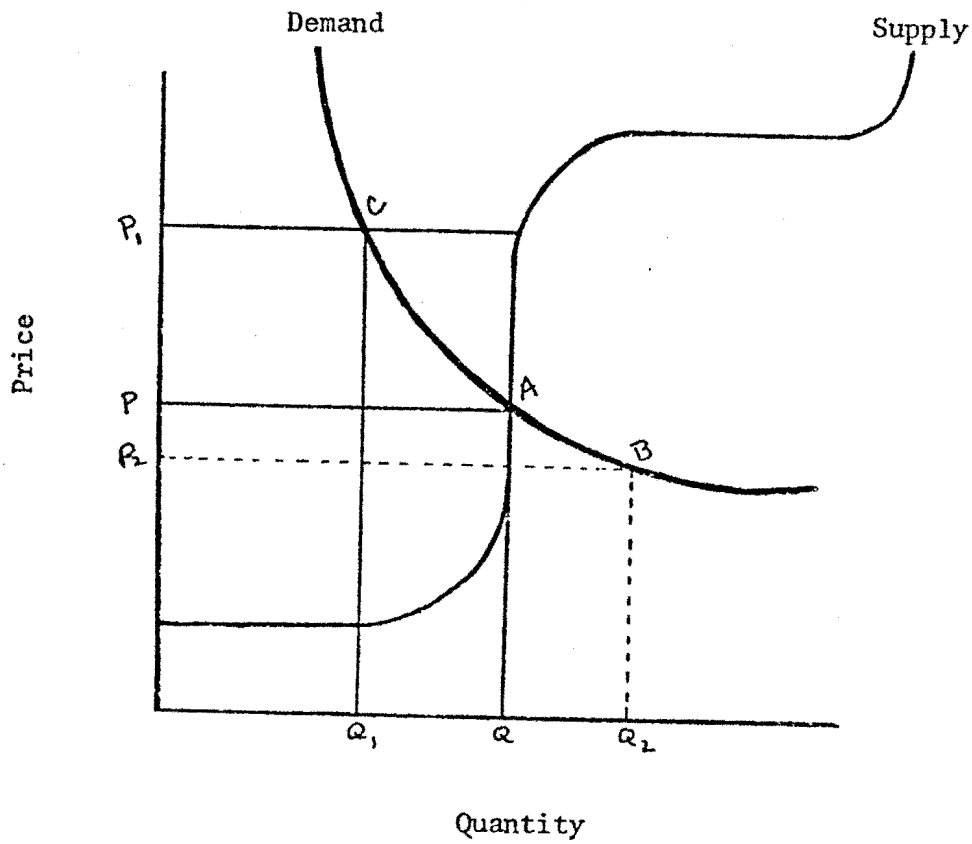
CAB Position



The CAB's major concern is to develop a system that will encourage greater operating efficiency, which has perhaps to a material extent been retarded by CAB regulation itself. As such, the Board has endorsed the basic principles of the Aviation Act of 1975 by advocating vastly broadened management control over fares, as well as eventual free entry and exit into all markets. This position appears to represent a dramatic shift toward reliance on the marketplace to decide such questions as what the public really wants in terms of price and quantity (service levels). Moreover, this approach could bolster average profitability by exposing carriers to the type of competitive pressure that would make it difficult for poorly managed companies to survive, and by allowing the public to decide the appropriate price/service tradeoff for all markets. In the judgment of this analyst, the CAB's position is very appealing, and its recommendations, if followed, would probably push the industry closer to the deregulated profitability levels projected earlier. However, the CAB has implied that service levels would not deteriorate (even to lightly traveled airports) and that prices would decline on average. In reality, though, it is by no means assured that this would indeed be the case under a freely competitive industry structure.

The following graph depicts the approximate shape of the industry demand and supply curves. As shown, the demand line slopes downward and to the right, indicating that the quantity of demand is influenced by the price level. The supply curve follows a step pattern, moving up and to the right. The step progression reflects the large unit of capacity added and the significant increase in physical plant when the industry orders additional aircraft.

Industry Demand/Supply Curves



The proponents of deregulation argue that regulation has created a disequilibrium that has inflated prices and supply relative to demand. This phenomenon is indicated by P_1, where the price level has opened a gap between demand and supply. Essentially, deregulators contend that a free market system would reduce prices, thereby causing the quantity of demand to shift from Q_1 to Q, or down the demand curve from C to A. A supply/demand equilibrium would then be reached at point A. Greater price competition could also lift the quantity of demand further out along the curve, to perhaps point B. In this case, so the argument goes, the entire supply curve could shift to the right, because of new entrants into the industry, and then create an equilibrium at point B.

However, another real possibility is that an equilibrium could be reached through a contraction in the supply curve relative to demand. In this case, an equilibrium would eventually be reached between A and C, or perhaps even above C, in which case the price level would not change significantly from current levels.

While it may be argued that new competitors would enter the industry and attempt to gain market share on profitable routes by lowering price, it is also possible that currently unprofitable markets would suffer from a combination of higher prices and reduced service. Certainly, the question of which influence would dominate is highly speculative. What is known, however, is that the rate of return is presently inadequate for the industry as a whole, especially in relation to the risk involved. Accordingly, it would seem more likely that the adjustment would tend toward less aggregate capacity (supply) and perhaps only a nominal reduction in price, until profitability reached attractive levels. While Washington has concluded that the adjustment process will occur along the present demand curve (or that perhaps both the supply and demand curve will shift to the right), it could be convincingly argued that regulation has inflated capacity more than it has depressed traffic. The CAB probably has had greater influence in stimulating the capacity competition that subsequently led to excesses than in depressing the incentive to maximize revenue through searching for optimum combinations of price and demand.

Accordingly, the real risk posed by deregulation appears to be whether the ultimate supply/demand equilibrium, which generates an adequate rate of return, will be politically acceptable. Since there seems to be at least an equal chance that service levels could contract relative to demand, this eventually could prompt a reimposition of Government controls, which could again lead to uneconomic service levels. This possibility, rather than the financial consequences per se, arouses the greatest concern in this analyst's mind.

More, rather than less, Government involvement in the business world has become commonplace. As such, the CAB's current support for less regulation represents a sharp break from tradition and is viewed by this analyst as a clearly positive development. On the other hand, while the CAB's stated intent and motivations appear well founded, one must question how far this commitment will extend once the program moves from the formulation and implementation stage and begins to directly shape the competitive forces of the marketplace. While this element does introduce a measure of uncertainty into the issue of regulatory change, it is focused more on the threat of ultimate Government reinvolvement, rather than on the concept of deregulation itself.

The form that deregulation will ultimately take is not yet apparent. However, the CAB's (and the Administration's) current position should be viewed as well-intended and constructive. The CAB may be forced to defend some unlikely positions – (1) that service levels will not decline or (2) that there will be no bankruptcies or mergers among present carriers – from the practical standpoint of gathering support for deregulation rather than from a full commitment to these possibilities.

In summary, a restriction of Government control with respect to fares and entry and exit should enhance industry profitability through some combination of shifts in fares, capacity, efficiency, innovation, and invested capital. While no one can foresee the magnitude or direction of the shift in any category, it does seem likely that the industry would achieve higher average rates of return than in the past.

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(See Appendix on following pages)

APPENDIX

Table 10 presents estimated 1976-1977 earnings per share for seven major domestic airlines.

Table 10

Possible 1976/1977 Earnings for Selected Carriers

	Earnings per share				1976	P-E on		
	Actual 1975	Estimated 1976	Estimated 1977	Recent Price	Range to Date	1977 Estimate	Current Dividend	Yield
American	($0.72)	$1.50	$2.00	14	15- 9	7	$–	–
Delta (a)	1.88	4.00	5.00	43	46-37	9	0.60	1.4%
National (a)	1.24	1.40	2.25	17	18-11	8	0.50	2.9
Northwest	2.01	2.75	4.00	32	34-23	8	0.45	1.4
Pan Am	(1.12)	1.00	1.25	6	8- 5	5	–	–
TWA	(6.68)	0.50	2.00	13	14- 8	7	–	–
UAL	(0.21)	2.25	3.50	28	30-21	8	0.60	2.1

(a) Calendar year basis.
( ) Designates loss.

As indicated in Table 10, each carrier is expected to report substantially improved earnings this year, in contrast with the weak 1975 results. The lowest rate of gain will probably be reported by National, reflecting the customary difficulty in realizing earnings potential following an extended strike. Next year, all carriers may enjoy further profit improvement if, as stated earlier, capacity planning remains conservative and fare increases fully offset inflationary cost pressures. The detailed 1976 quarterly earnings projections for each carrier are presented in the next seven pages. Note that the first-quarter figures in each case are actual.

(See tables on following pages)

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INDUSTRY ANALYSIS

JUNE, 1976

DOMESTIC TRUNK AIRLINES: A SHORTAGE INDUSTRY IN THE MAKING

Fleet & Capital Requirements, 1976-85

Summarized in this analysis are the general findings of our recently completed examination of the airline industry's fleet and capital requirements during the 1976-85 period. For each carrier, our approach has consisted of the following steps: (1) an analysis of 1976-85 fleet replacement needs due to the retirement of older aircraft; (2) an analysis of 1976-85 fleet expansion needs to accommodate traffic growth once the "slack" in the existing fleet is eliminated; (3) an assessment of total 1976-85 fleet acquisition and capital expenditure requirements; and (4) an examination of the impact of three different earnings "cases" on 1976-85 cash flow, on 1976-85 external financing requirements, and on the yearend 1985 debt/equity ratio.

The analysis is presented in three sections. The Industry Section contains our principal findings and conclusions. The Company Section contains analyses of the individual carriers. The Appendix contains a summary of our methodology and assumptions, which are only partially described in the main text in the interest of maintaining focus on our findings.

Summary

During the next 10 years, the domestic trunk airlines will experience two distinctly different equipment and capital requirement cycles. Through 1979 or thereabouts, the industry's aircraft replacement needs will be quite modest, and fleet expansion will be deferrable as load factors are allowed to rise and as utilization of the existing fleet is upgraded. During this period capital expenditures will be abnormally low, and positive cash flows should strengthen liquidity and balance sheets. By the decade of the 1980's, however, the airlines will have entered a major aircraft replacement cycle, and upgraded load factors and utilization will necessitate a resumption of normal fleet expansion to accommodate traffic growth. Even during the early 1980's, this reversal of the equipment cycle will cause a ballooning of capital requirements, a rapid depletion of liquidity, and, finally, the development of extremely large external financing needs.

We estimate that, for fleet replacement and fleet expansion alone, capital expenditure requirements will amount to $19.2 billion or more during the 1976-85 period, and that the airlines will be heavily dependent on external sources of financing in order to meet these and other requirements even with a substantially upgraded rate of return on regulatory investment (ROI). Because of the magnitude of the external financing burden, we are forced to conclude that powerful capital constraints lie ahead for the industry in the early 1980's. Moreover, unless the industry's average ROI is upgraded from 4.8% during 1971-75 to 9% or more during 1976-85, and unless government aviation policy is redirected to rebuild lender and investor willingness to supply needed private capital to the industry, a severe capital shortage and contraction of the industry's structure will almost certainly occur by 1985.

Investors in airline securities must be extremely careful to distinguish between the industry's potentially very favorable outlook for the next four years and the far more troublesome outlook for the 1980's. Particularly because the capital-raising burden will not be fully evident for several years in spite of its predictability, we expect the near-term performance of the airline stocks to remain influenced predominantly and favorably by the potential for strong cyclical earnings recovery at least during 1976 and 1977. Furthermore, the industry's longer-term scope for ROI improvement, which we believe to be the key to the performance of the airline stocks beyond 1976, should eventually be enhanced by a likely shift in government priorities away from the current deregulation thrust and toward preventing the airlines from becoming a "shortage" industry in the 1980's by working to upgrade and stabilize ROI. However, the longer-term outlook for the airline stocks will remain clouded until such a shift becomes more of a reality, for the timing of the shift may be substantially delayed by the masking of the problem during the next several years.

We expect the near-term relative performance of individual airline stocks to be more heavily influenced by 1976-77 cyclical earnings recovery potential than by long-term capital adequacy. However, we believe that balance sheet strength and capital adequacy will have a greater influence on valuation and on intra-industry tiering in the years ahead than ever in the past because of the approaching financing burden. Although the potential for a capital shortage has industrywide implications, Northwest Airlines, Delta Air Lines and, to a lesser extent, National Airlines are in exceptionally strong financial positions from which to capitalize on other carriers' capital constraints, while the remaining carriers are faced with capital-raising problems of varying degrees of severity. As cyclical considerations give way to longer-term structural prospects as the principal determinants of stock price performance, we would recommend partial or full shifting of airline holdings to carriers having relatively stronger financial resources until or unless government policy has undergone the appropriate redirection.

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INDUSTRY SECTION

Major Aircraft Replacement Cycle During the 1980's

The airline industry is about to enter a major equipment replacement cycle, as significant numbers of aircraft acquired during the late 1950's through the mid-1960's are approaching economic obsolescence. The normal process of obsolescence due to physical wear and tear as aircraft approach 20 years of age has been accelerated in this cycle by operating diseconomies caused by the recent tripling of jet fuel prices. Further acceleration of the obsolescence process is likely to result from prospective government imposition of noise standards requiring replacement of JT3D-powered aircraft (i.e., Boeing 707's and McDonnell-Douglas DC-8's) and, conceivably, retrofit of older JT8D engines (which power 727, 737 and DC-9 aircraft) over a six to ten-year period.

In Table 1, we have summarized the following: (1) a breakdown of the domestic trunk airlines' operating fleet as of yearend 1975; (2) the average age of each aircraft type as of yearend 1985; (3) the number of each aircraft type assumed to require replacement by 1985; and (4) the percentage of 1975 available seat-mile (ASM) capacity generated by the aircraft assumed to require replacement. As is shown in Table 1, the 683 aircraft judged to require replacement by 1985 generated 29.8% of the domestic trunks' 1975 capacity.

Table 1
Domestic Trunk Airlines
1976-85 Fleet Replacement Requirements

	12/31/75 Operating Fleet		Aircraft Requiring Replacement by 1985	
Type	Number	Avg. Age on 12/31/85	Number	Percent of 1975 ASM's [1]
747	95	14.9 years	6[2]	0.9%
DC-10	121	12.7	–	–
L-1011	78	12.0	–	–
707-300B/C	179	18.8	141[3]	7.1
707-100B	89	21.4	87[3]	5.1
707-300	10	25.5	10	0.6
720B	23	21.2	23	1.1
DC-8-61/62	59	17.3	32[3]	2.5
DC-8-20/50	85	23.0	85	3.2
727-200	379	14.7	–	–
727-100	380	19.7	257	8.7
DC-9-30	134	17.5	–	–
DC-9-10	27	18.9	27	0.5
737	84	17.0	–	–
L-188	15	26.8	15	0.1
Total	1758	17.4	683	29.8%

1) After strike adjustment.
2) Reflects phase-out from fleets of Delta, National, and Braniff.
3) Federal noise standards may require full phase-out of these aircraft types by 1985, rather than only partial phase-out as indicated.

Source: Civil Aeronautics Board; DLJ estimates.

A replacement analysis using specific time parameters (e.g., the 1976-85 period) involves a number of important uncertainties, not the least of which include: (1) Federal noise standards; (2) inflationary trends and their impact on the relative breakeven load factors of the older aircraft; (3) financial constraints; and (4) the availability and characteristics of new generation aircraft alternatives. Clearly, some degree of judgment is required in such an analysis. We have attempted to provide our best-guess assumptions in Table 1, but have more likely understated than overstated the industry's true 1976-85 replacement needs.

In our judgment, the aircraft types within the domestic trunk airlines' current fleet requiring full replacement by 1985 due to economical obsolescence and aging are: the L-188 (Electra), 707-300, 720B, DC-8-20/50, and DC-9-10. The 727-100 should be mostly phased out by 1985 due also to economical obsolescence and aging, but we have assumed the degree of phase-out to vary according to individual carriers' financial resources. We have assumed the 707-100B and 707-300B/C to be phased out by 1985 due to aging and to noise standards unless financially infeasible for a given carrier. We have assumed the DC-8-61/62 to be phased out by 1985 due to noise standards if financially feasible. We have also included in our replacement analysis those 747 aircraft either committed or earmarked to be sold for fleet simplification purposes.

It should be recognized that, where judgment has been an important determinant, we have tended to "understate" our aircraft replacement assumptions to as great an extent as we believe to be reasonable. For example, we have assumed that Federal noise standards, which are still in the process of being developed, will not force the full phase-out of JT3D-powered aircraft by 1985, although mandatory full phase-out is distinctly possible even by a date earlier than 1985. If full phase-out were required by 1985 rather than by the somewhat later date that we have assumed, then our replacement assumptions would have to be increased for American, Braniff, TWA, and United. We have assumed also that Federal noise standards will not require retrofit of the older JT8D engines and, thus, will not accelerate the retirement of 727, 737, and DC-9 aircraft. In fact, we have made no provision at all for the possibility that some DC-9-30 and 737 aircraft may be retired by 1985 even in the absence of noise retrofit requirements. In addition, we have permitted financial constraints to moderate our 727-100 replacement assumptions, which would otherwise have been more aggressive due to the very high breakeven load factor the 727-100 is likely to have by 1985. Finally, also as a reflection of financial constraints, we have not assumed availability of a new generation aircraft type having such dramatic operating efficiency advantages that it would accelerate the replacement of older, less efficient aircraft.

As can be noted in the Company Section of this analysis, the replacement cycle of the 1980's will be more burdensome for some carriers than for others. On the basis of the percentage of 1975 capacity requiring replacement, Continental, Northwest, and National appear to be the best-positioned, while American, Pan Am, TWA, and United appear to be the worst-positioned. It is conceivable that, subject to Federal noise constraints, carriers lacking adequate resources to finance the indicated replacement "requirement" could adopt a contingency strategy of re-investing capital in older aircraft to extend their useful lives to 25-30 years. However, while such a survival strategy would reduce capital expenditure requirements in the short run, its true effect would be to defer the replacement burden while in the meantime placing the carrier at a competitive disadvantage in respect to operating efficiency. Additional perspective into the impracticality of extending aircraft lives to 25-30 years may be gained from the realization that Eastern's Electras (L-188's), which are generally regarded as being antiquated and whose utilization has averaged only 2.1 hours/day during the past five years, are only 17 years of age at present.

The airlines' major aircraft replacement cycle will not begin in full force until around the turn of the decade. As a consequence, most carriers will be able to allow their fleets to continue to age and can defer replacement expenditures during the next several years. As will be shown later in this analysis, however, the replacement cycle will be highly burdensome for most carriers once it commences. Moreover, it will last throughout the full decade of the 1980's, for the "bulge" in aircraft deliveries during the late 1960's will extend the aging problem into the late 1980's, when a considerable number of aircraft remaining in the fleet at yearend 1985 becomes 20 years of age.

Fleet Expansion Must Resume Once the "Slack" in the Existing Fleet Is Eliminated

During the 1976-85 period, the airlines' fleet expansion requirements should be moderated by management efforts to increase load factors and to upgrade seating density and hours/day utilization of the existing fleet. Nevertheless, once the "slack" in the existing fleet is eliminated, a resumption of normal fleet expansion to accommodate traffic growth will be required if the present breadth of the U.S. air transportation is to be maintained, if capacity during peak travel periods (of the day, of the week, and of the year) is not to be highly inadequate, if crowding on "normal" flights is to be controlled, and if carriers operating at relatively high load factors are to maintain their competitive positions (by minimizing the diversion of market share to lower load-factor competitors).

The critical variables determining the actual degree of fleet expansion by 1985 will include: (1) the stability of the industry's structure (e.g., number of competing carriers, percentage of route system still served by each carrier, breakdown between scheduled and charter service); (2) the annual rate of traffic growth; (3) the level to which the industry's year-round average load factor can rise; and (4) the extent to which utilization of the existing fleet can be upgraded.

In Table 2 we have summarized our analysis of the industry's fleet expansion requirements during the 1976-85 period. Among our critical assumptions are the following:

1. Maintenance of the existing industry structure.

2. Deceleration in the domestic trunks' annual average rate of growth in scheduled revenue passenger miles (RPM's) from 8.7% during the 1966-75 period to 6.0% during the 1976-85 period.

3. An increase in the industry's year-round average scheduled load factor from 54.2% (strike-adjusted) in 1975 to 62.0% by 1985 in domestic operations, and from 50.0% (strike-adjusted) in 1975 to 57.0% by 1985 in international operations. At these higher year-round average load factors, flights during peak periods would be crowded and generally sold out.

4. A 19% increase in utilization of the existing fleet, resulting from a 7% increase in seating density (to CAB "standard" seating in wide-bodied aircraft plus a 5% increase in seating density of narrow-bodied aircraft) and a 12% increase in hours/day utilization (to a level 5% in excess of prior peak utilization).

Table 2
Domestic Trunk Airlines
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975 [1]	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	152.2	272.5	
Sched. ASM's	285.7	447.9	162.2
Sched. load factor	53.3%	60.8[2]%	
Required ASM's - Charter Service:			
Charter ASM's (@ 8% annual growth)	11.6	25.0	13.4
Total ASM Expansion Requirement			175.6
Less: ASM Expansion from Existing Fleet:			
Seating density [3]			21.0
Hours/day utilization [4]			35.7
Total Expansion from Existing Fleet			56.7
Net ASM Expansion Requirement			118.9

1) 1975 data are strike-adjusted.
2) 62% in domestic service; 57% in international service.
3) Except for Continental Airlines, assumes increase in seating density of wide-bodied aircraft to the CAB "standard" (384 seats in the 747,276 seats in the DC-10 and L-1011), and 5% increase in seating density of narrow-bodied aircraft.
4) Assumes increase in hours/day utilization to a level 5% in excess of the prior peak (attained in 1973).

Source: Civil Aeronautics Board; DLJ estimates.

As in the case of our fleet replacement analysis, we believe our estimate of fleet expansion requirements to tend toward understatement. Our 6% traffic growth assumption is modest (assuming no substantial contraction of the industry's route system), and both our 62% domestic load factor and our 19% utilization increase assumptions are ambitious. It may be noted in Table 2 that the effect of our utilization assumption has been to reduce our 1976-85 fleet expansion estimate by 32%, from 175.6 billion ASM's to 118.9 billion.

We have assumed the year-round average load factor to differ by carrier as a function of: (1) route structure (e.g., domestic versus international, short-haul versus long-haul, etc.); and (2) financial strength (i.e., capital constraints forcing high load factor operations for some carriers, and capital surpluses enabling other carriers to maintain relatively low load factor operations). Northwest, Braniff, and National appear to be relatively better-positioned to experience substantial load factor upgrading from beginning load factors that are low in relation to route structure potential. Western and United appear to be relatively worse-positioned due to high beginning load factors. It is conceivable that carriers lacking adequate resources to finance the indicated fleet expansion "requirement" could adopt a contingency strategy of permitting their load factors to rise to levels even higher than we have assumed. However, such a survival strategy would be at least partly self-defeating, for it would result in a diversion of market share to their lower load-factor competitors, particularly during peak travel periods.

Because of the considerable potential for additional improvement in load factors and aircraft utilization, capital expenditures for purposes of fleet expansion may remain below-normal for the next several years. By the turn of the decade, however, the "slack" in the airlines' existing fleet should have disappeared, and a resumption of normal fleet expansion to accomodate traffic growth will be required. This shift in the expansion cycle should coincide approximately with the commencement of the industry's replacement cycle.

1976-85 Capital Expenditure Requirements Will Be Immense

During the 1976-85 period, the airlines' capital expenditure requirements will be immense, if the industry is to maintain its existing structure. We estimate that, for fleet replacement and fleet expansion alone, the domestic trunks' capital expenditure requirements will amount to $19.2 billion or more during this period.

The development of our $19.2 billion estimate of the domestic trunk airlines' total fleet acquisition requirements during the 1976-85 period is shown in Table 3, p. 8. The estimate of new ASM capacity required during the period is taken from Tables 1 and 2. The estimate of 1976-85 fleet additions by aircraft type has been created on a carrier-by-carrier basis in light of each carrier's needs for: (1) frequency of service; (2) range; (3) fleet sizing; (4) balance of overall fleet mix; (5) 1986-90 fleet replacement requirements; and (6) fleet simplification. It may be noted that we have assumed a new generation aircraft, which we have designated "Model X", to be available by 1982-83 in the 185-200 passenger size and medium range category. We have used the 727-200 as a proxy for a possible new generation aircraft in the 140 passenger size category.

Because our analysis of fleet replacement and fleet expansion needs has made use of conservative assumptions, our estimate of net capital expenditures on new aircraft most likely represents an understatement of the industry's true capital expenditure requirements. Adding further to the tendency toward understatement are: (1) an assumed 5% annual rate of price inflation for new aircraft; and (2) an assumption that Federal noise standards will neither force full phase-out of JT3D-powered aircraft by 1985 nor require retrofit of JT8D engines.

Capital Shortage in the Making

Due primarily to fleet replacement and fleet expansion needs during the early 1980's, the airlines will be heavily dependent on external sources of financing in order to meet their total 1976-85 capital requirements even with an upgraded rate of return on regulatory investment. In our judgment, the external financing burden may generally be manageable if the industry can maintain at least a 9% average ROI during the 1976-85 period, a rate which would still fall considerably short of the CAB's 12% ROI "standard", but which would also represent considerable improvement from the 4.8% 1971-75 average. On the other hand, if the average ROI remains poor at 7% or below, the external financing burden is likely to be so onerous as to ensure a severe capital shortage and contraction of the industry's structure by 1985.

This difficult 10-year prospect, however, is heavily masked by the likelihood that the equipment cycle will be moving in precisely the opposite direction during the next four years. That is, from 1976 through approximately 1979 the industry's aircraft replacement needs will remain quite modest, and fleet expansion will be deferrable as load factors are allowed to rise and as utilization of the existing fleet is upgraded. Thus, during this period capital expenditure requirements will

Table 3
Domestic Trunk Airlines
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement[1]	97.03
Fleet Expansion[2]	118.87
Total Requirement	215.90

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	1976-85 Changes Additions	12/31/85 Operating Fleet
747	95	6	58	147
DC-10	121	–	161	282
L-1011	78	–	88	166
707-300B/C	179	141	–	38
707-100B	89	87	–	2
707-300	10	10	–	–
720B	23	23	–	–
DC-8-61/62	59	32	–	27
DC-8-20/50	85	85	–	–
727-200	379	–	239[3]	618[3]
727-100	380	257	–	123
DC-9-30/50	134	–	30	164
DC-9-10	27	27	–	–
737	84	–	–	84
L-188	15	15		–
Model X[4]	–	–	155	155
Total	1758	683	731	1806

3) Includes possible new generation aircraft in the 140 passenger size category.
4) New generation aircraft assumed to be in the 185-200 passenger size category.

C. 1976-85 Capital Expenditures ($ billions) on New Aircraft

Gross Capital Cost of New Aircraft[5]	$18.9
Plus: Spares	1.2
Less: Residual Value of Retired Aircraft	(.9)
Net Capital Expenditures on New Aircraft[6]	$19.2

5) Assumes 5% annual price inflation for new aircraft (e.g., 1981 new aircraft prices are assumed respectively to be: $44 million for the 747-200, $34.5 million for the DC-10-10 and L-1011, $12 million for the 727-200 and $150,000 per seat for the "Model X").
6) Plus an additional $1.7 billion if Federal noise standards require full phase-out of 707 and DC-8 aircraft by 1985.

Source: Civil Aeronautics Board; DLJ estimates.

remain depressed as the existing fleet is permitted to age, and positive cash flows should strengthen liquidity and balance sheets even with only modest profitability. However, by the turn of the decade, the airlines will have entered a major replacement cycle, and upgraded load factors and utilization will necessitate a resumption of fleet expansion, thereby leading to a sharp reversal of the equipment cycle, to a ballooning of capital requirements, to a rapid depletion of liquidity, and, finally, to the development of very large external financing needs.

Our cumulative 10-year cash flow and balance sheet analysis is summarized for each carrier and for the industry as a whole in Table 4, which provides for three different hypothetical average rates of return on regulatory investment during the 1976-85 period. As can be seen in the table, we have analyzed the industry's 1976-85 capital requirements in two steps. First, we have estimated each carrier's capital expenditure, debt retirement, and dividend maintenance requirements as well as its non-earnings sources of cash. Second, we have examined the impact of three different earnings "cases" on each carrier's (and on the industry's) 1976-85 cash flow, 1976-85 external financing requirements, and 1985 yearend debt/equity ratio.

For the industry, Case I represents a 7% average actual (not theoretical) return on regulatory investment during the 1976-85 period. Case II represents a 9% average ROI, and Case III represents an 11% ROI. It should be noted again that the industry's average ROI was only 4.8% during the 1971-75 period.

In the cash flow analysis in Table 4, the adequacy of a carrier's *internal* resources to finance 1976-85 capital commitments is indicated by the cumulative "12/31/85 Cash Surplus (Shortfall)." As can be seen in the table, in all three cases a substantial shortfall would be experienced by the industry as a whole and by all individual carriers except for Northwest and Delta (in Cases II and III). It is this shortfall which, for a given earnings "case", would have to be offset by external financing.

The manageability of a carrier's external financing requirement is best indicated by a comparison of the projected total amount of external financing required during the 1976-85 period to the carrier's present size (e.g., 1975 yearend equity capital) and prospective financial strength (e.g., indicated 1985 yearend debt/equity ratio). It should be noted that it is probably more meaningful to evaluate a carrier's total external financing needs in the manner just described than to focus on our indicated and somewhat artificial distinction between 1976-85 debt financing and equity financing. (As with other specific steps in our analysis, the methodology for this breakdown is provided in the Appendix.)

Under all three cases, the industry's aggregate external financing needs would be extremely large: $12.7 billion at a 7% average ROI, $10.9 billion at a 9% ROI, and $9.3 billion at an 11% ROI. These amounts would dwarf the industry's $4.0 billion of stockholders' equity as of yearend 1975.

In our judgment, Case I (7% average ROI) is most likely an unviable one, which would lead to a severe capital shortage. For in this case, not only would the total external financing requirement be extraordinarily large in relation to beginning (or even average) equity capital, but also the ending debt/equity ratio would be 70:30 or higher for eight out of eleven carriers (i.e., all except Northwest, Delta and National). After downward adjustment of the unrealistically large equity financings assumed for Eastern, Pan Am, and TWA, the debt/equity ratios for these eight carriers would in aggregate deteriorate somewhat by yearend 1985 from a very poor 77:23 ratio as of

2000 550 800 225 400 1050 2000 2450 325

Table 4 (Case I)

Domestic Trunk Airlines

Case I: 1976-85 Capital Requirements Assuming 7% Industry Average Return on Regulatory Investment

	AMR	BNF	CAL	DAL	EAL	NAL	NWA	PN	TWA	UAL	WAL	Industry
Operating Assumptions:												
% Capacity Replaced by 1985	36.2	24.4	6.7	25.4	23.9	20.6	15.4	36.8	36.3	35.3	30.9	29.8
% Sched. Load Factor in 1985	63.0	58.0	61.0	61.0	64.0	58.0	54.0	56.0	61.0	63.0	65.0	60.8[1]
Cash Flow Analysis ($mm):	478	207							521	530		
1976-85 Cash Requirements:												
Capital expenditures - flight eq.[2]	$3,113	$ 867	$ 493	$1,783	$2,020	$ 628	$1,174	$1,911	$2,674	$3,858	$ 719	$19,240
Capital expenditures - other	400	120	150	250	250	160	140	300	400	600	120	2,890
Debt retirement	225	233	364	449	619	172	272	343	744	515	133	4,069
Dividend maintenance	—	40	—	119	—	43	97	—	—	149	51	499
Total	$3,738	$1,260	$1,007	$2,601	$2,889	$1,003	$1,683	$2,554	$3,818	$5,122	$1,023	$26,698
1976-85 Cash Sources:												
12/31/75 cash surplus	$ 125	—	—	$ 50	—	—	—	—	$ 75	$ 300	—	$ 550
Depreciation & amortization	1,072	$ 352	$ 472	1,519	$1,021	$ 456	$1,036	$1,128	1,105	1,881	$ 376	10,418
Net income	286	200	72	597	95	171	540	211	204	498	127	3,001
Total	$1,483	$ 552	$ 544	$2,166	$1,116	$ 627	$1,576	$1,339	$1,384	$2,679	$ 503	$13,969
12/31/85 Cash Surplus (Shortfall)	(2,255)	(708)	(463)	(435)	(1,773)	(376)	(107)	(1,215)	(2,434)	(2,443)	(520)	(12,729)
Balance Sheet Analysis ($mm):												
12/31/75 Debt (incl. leases)	$1,212	$ 440	$ 493	$ 685	$1,456	$ 296	$ 352	$1,314	$1,902	$1,866	$ 259	$10,275
12/31/75 Equity	542	167	147	500	290	192	624	298	335	777	107	3,980
12/31/75 Debt/Equity Ratio	69:31	72:28	77:23	58:42	83:17	61:39	36:64	81:19	85:15	71:29	71:29	72:28
1976-85 External Financing:												
Debt Financing	$2,163	$ 683	$ 441	$ 435	$1,476	$ 357	$ 107	$1,112	$2,041	$2,326	$ 504	$11,645
Equity Financing	92	25	22	—	297	19	—	103	393	117	16	1,084
Total	$2,255	$ 708	$ 463	$ 435	$1,773	$ 376	$ 107	$1,215	$2,434	$2,443	$ 520	$12,729
12/31/85 Debt (incl. leases)	$2,760	$ 817	$ 571	$ 624	$2,048	$ 480	$ 187	$1,835	$2,795	$3,311	$ 584	$16,012
12/31/85 Equity	920	352	241	978	682	339	1,067	612	932	1,243	199	7,565
12/31/85 Debt/Equity Ratio	75:25	70:30	70:30	39:61	75:25	59:41	15:85	75:25	75:25	73:27	75:25	68:32
Memo:												
Assumed 1976-85 Average E.P.S.	$ 1.00	$ 1.00	$ .50	$ 3.00	$ .50	$ 2.00	$ 2.50	$ .50	$ 1.50	$ 2.00	$ 1.00	
Actual 1971-75 Average E.P.S.	(.27)	.96	.23	2.81	(.75)	1.99	1.85	(1.13)	(.46)	1.25	.88	—[3]

[1]62% in domestic service; 57% in international service.

[2]Does not include additional expenditures ($1.7 billion for the industry, divided among American, Braniff, TWA and United) required if Federal noise standards force full phase-out of 707 and DC-8 aircraft by 1985, rather than partial phase-out as assumed.

[3]During the 1971-75 period, the industry's return on regulatory investment ranged from 2.8% to 6.8% and averaged 4.8%.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

Table 4 (Case II)

Domestic Trunk Airlines

Case II: 1976-85 Capital Requirements Assuming 9% Industry Average Return on Regulatory Investment

	AMR	BNF	CAL	DAL	EAL	NAL	NWA	PN	TWA	UAL	WAL	Industry
Operating Assumptions:												
% Capacity Replaced by 1985	36.2	24.4	6.7	25.4	23.9	20.6	15.4	36.8	36.3	35.3	30.9	29.8
% Sched. Load Factor in 1985	63.0	58.0	61.0	61.0	64.0	58.0	54.0	56.0	61.0	63.0	65.0	60.8[1]
Cash Flow Analysis ($mm):												
1976-85 Cash Requirements:												
Capital expenditures - flight eq.[2]	$3,113	$ 867	$ 493	$1,783	$2,020	$ 628	$1,174	$1,911	$2,674	$3,858	$ 719	$19,240
Capital expenditures - other	400	120	150	250	250	160	140	300	400	600	120	2,890
Debt retirement	225	233	364	449	619	172	272	343	744	515	133	4,069
Dividend maintenance	—	40	—	119	—	43	97	—	—	149	51	499
Total	$3,738	$1,260	$1,007	$2,601	$2,889	$1,003	$1,683	$2,554	$3,818	$5,122	$1,023	$26,698
1976-85 Cash Sources:												
12/31/75 cash surplus	$ 125	—	—	$ 50	—	—	—	—	$ 75	$ 300	—	$ 550
Depreciation & amortization	1,072	$ 352	$ 472	1,519	$1,021	$ 456	$1,036	$1,128	1,105	1,881	$ 376	10,418
Net income	571	300	179	846	286	235	756	359	374	809	191	4,906
Total	$1,768	$ 652	$ 651	$2,415	$1,307	$ 691	$1,792	$1,487	$1,554	$2,990	$ 567	$15,874
12/31/85 Cash Surplus (Shortfall)	(1,970)	(608)	(356)	(186)	(1,582)	(312)	109	(1,067)	(2,264)	(2,132)	(456)	(10,824)
Balance Sheet Analysis ($mm):												
12/31/75 Debt (incl. leases)	$1,212	$ 440	$ 493	$ 685	$1,456	$ 296	$ 352	$1,314	$1,902	$1,866	$ 259	$10,275
12/31/75 Equity	542	167	147	500	290	192	624	298	335	777	107	3,980
12/31/75 Debt/Equity Ratio	69:31	72:28	77:23	58:42	83:17	61:39	36:64	81:19	85:15	71:29	71:29	72:28
1976-85 External Financing:												
Debt Financing	$1,916	$ 591	$ 341	$ 186	$1,476	$ 293	—	$1,022	$2,041	$2,054	$ 445	$10,365
Equity Financing	54	17	15	—	106	19	—	45	223	78	11	568
Total	$1,970	$ 608	$ 356	$ 186	$1,582	$ 312	—	$1,067	$2,264	$2,132	$ 456	$10,933
12/31/85 Debt (incl. leases)	$2,513	$ 725	$ 471	$ 375	$2,048	$ 416	$ 80	$1,745	$2,795	$3,039	$ 525	$14,732
12/31/85 Equity	1,167	444	341	1,227	682	403	1,283	702	932	1,515	258	8,954
12/31/85 Debt/Equity Ratio	68:32	62:38	58:42	23:77	75:25	51:49	6:94	71:29	75:25	67:33	67:33	62:38
Memo:												
Assumed 1976-85 Average E.P.S.	$ 2.00	$ 1.50	$ 1.25	$ 4.25	$ 1.50	$ 2.75	$ 3.50	$ .85	$ 2.75	$ 3.25	$ 1.50	
Actual 1971-75 Average E.P.S.	(.27)	.96	.23	2.81	(.75)	1.99	1.85	(1.13)	(.46)	1.25	.88	—[3]

[1]62% in domestic service; 57% in international service.

[2]Does not include additional expenditures ($1.7 billion for the industry, divided among American, Braniff, TWA and United) required if Federal noise standards force full phase-out of 707 and DC-8 aircraft by 1985, rather than partial phase-out as assumed.

[3]During the 1971-75 period, the industry's return on regulatory investment ranged from 2.8% to 6.8% and averaged 4.8%.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

Table 4 (Case III)
Domestic Trunk Airlines
Case III: 1976-85 Capital Requirements Assuming 11% Industry Average Return on Regulatory Investment

	AMR	BNF	CAL	DAL	EAL	NAL	NWA	PN	TWA	UAL	WAL	Industry
Operating Assumptions:												
% Capacity Replaced by 1985	36.2	24.4	6.7	25.4	23.9	20.6	15.4	36.8	36.3	35.3	30.9	29.8
% Sched. Load Factor in 1985	63.0	58.0	61.0	61.0	64.0	58.0	54.0	56.0	61.0	63.0	65.0	60.8[1]
Cash Flow Analysis ($mm):												
1976-85 Cash Requirements												
Capital expenditures - flight eq.[2]	$3,113	$ 867	$ 493	$1,783	$2,020	$ 628	$1,174	$1,911	$2,674	$3,858	$ 719	$19,240
Capital expenditures - other	400	120	150	250	250	160	140	300	400	600	120	2,890
Debt retirement	225	233	364	449	619	172	272	343	744	515	133	4,069
Dividend maintenance	–	40	–	119	–	43	97	–	–	149	51	499
Total	$3,738	$1,260	$1,007	$2,601	$2,889	$1,003	$1,683	$2,554	$3,818	$5,122	$1,023	$26,698
1976-85 Cash Sources:												
12/31/75 cash surplus	$ 125	–	–	$ 50	–	–	–	–	$ 75	$ 300	–	$ 550
Depreciation & amortization	1,072	$ 352	$ 472	1,519	$1,021	$ 456	$1,036	$1,128	1,105	1,881	$ 376	10,418
Net income	857	400	286	1,095	476	299	972	506	544	1,121	254	6,810
Total	$2,054	$ 752	$ 758	$2,664	$1,497	$ 755	$2,008	$1,634	$1,724	$3,302	$ 630	$17,778
12/31/85 Cash Surplus (Shortfall)	(1,684)	(508)	(249)	63	(1,392)	(248)	325	(920)	(2,094)	(1,820)	(393)	(8,920)
Balance Sheet Analysis ($mm):												
12/31/75 Debt (incl. leases)	$1,212	$ 440	$ 493	$ 685	$1,456	$ 296	$ 352	$1,314	$1,902	$1,866	$ 259	$10,275
12/31/75 Equity	542	167	147	500	290	192	624	298	335	777	107	3,980
12/31/75 Debt/Equity Ratio	69:31	72:28	77:23	58:42	83:17	61:39	36:64	81:19	85:15	71:29	71:29	72:28
1976-85 External Financing:												
Debt Financing	$1,630	$ 491	$ 234	–	$1,348	$ 248	–	$ 890	$2,041	$1,742	$ 382	$ 9,006
Equity Financing	54	17	15	–	44	–	–	30	53	78	11	302
Total	$1,684	$ 508	$ 249	–	$1,392	$ 248	–	$ 920	$2,094	$1,820	$ 393	$ 9,308
12/31/85 Debt (incl. leases)	$2,227	$ 625	$ 364	$ 169	$1,920	$ 371	$ 80	$1,613	$2,795	$2,727	$ 462	$13,353
12/31/85 Equity	1,453	544	448	1,476	810	448	1,499	834	932	1,827	321	10,592
12/31/85 Debt/Equity Ratio	61:39	53:47	45:55	10:90	70:30	45:55	5:95	66:34	75:25	60:40	59:41	56:44
Memo:												
Assumed 1976-85 Average E.P.S.	$ 3.00	$ 2.00	$ 2.00	$ 5.50	$ 2.50	$ 3.50	$ 4.50	$ 1.20	$ 4.00	$ 4.50	$ 2.00	
Actual 1971-75 Average E.P.S.	(.27)	.96	.23	2.81	(.75)	1.99	1.85	(1.13)	(.46)	1.25	.88	–[3]

[1] 62% in domestic service; 57% in international service.
[2] Does not include additional expenditures ($1.7 billion for the industry, divided among American, Braniff, TWA and United) required if Federal noise standards force full phase-out of 707 and DC-8 aircraft by 1985, rather than partial phase-out as assumed.
[3] During the 1971-75 period, the industry's return on regulatory investment ranged from 2.8% to 6.8% and averaged 4.8%.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

yearend 1975. Given lenders' exclusion of many of these carriers from debt financing of significant size at present, then, it seems virtually inconceivable that all or even most of the $11.8 billion in aggregate external financing required by these eight carriers by 1985 would be obtainable. Of course, at an average ROI below 7% (e.g., the 4.8% 1971-75 average) the prospects would be even bleaker, for external financing requirements would be greater, and the aggregate debt/equity ratio for the eight carriers would deteriorate significantly by 1985 from the poor 1975 base.

In contrast, we believe Case II (9% average ROI) to be generally a difficult, but manageable one. In this case, the total external financing burden would remain generally very heavy despite the higher ROI. However, only three (Eastern, TWA, and Pan Am) of the eleven carriers would have yearend 1985 debt/equity ratios amounting to 70:30 or higher, while the aggregate debt/equity ratio for the "intermediate five" carriers (Continental, Braniff, UAL, Western, and American) would improve from 71:29 at yearend 1975 to 66:34 by yearend 1985.

We would by no means assert that the task of raising $10.9 billion in aggregate external financing required in Case II would be easy, but three considerations cause us to be hopeful that it would generally be feasible. First, because of the substantially upgraded average ROI and earnings for each carrier under the Case II assumptions, most carriers (except Eastern and TWA) could quite conceivably raise more new equity capital than we have assumed, thereby reducing borrowing needs while actually increasing borrowing capacity. Second, as already mentioned, the balance sheet problem would be severe only for three rather than for eight carriers, and thus the financing problem would be more contained than in Case I. Third, the Federal government could eventually redirect its aviation policy to rebuild lender and equity investor willingness to supply needed private capital to the industry. This redirection could involve not only the prerequisite of allowing the capacity-constrained industry to upgrade its ROI to at least a 9% average, but also taking "active" steps to establish the financial health and stability of the U.S. air transportation system as the primary objective of government aviation policy. Such steps (e.g., loan guarantees funded by a ticket tax) might be academic in the face of the Case I financing burden and balance sheet condition of most carriers, but could be quite meaningful in Case II.

Case III (11% average ROI) should be manageable. The total external financing burden would still be heavy ($9.3 billion in aggregate). Yet the additionally upgraded average ROI and earnings would facilitate equity financing well in excess of our indicated assumptions, and the yearend 1985 debt/equity ratios, while still generally high, would undergo significant improvement from yearend 1975.

In Table 5 we have ranked the individual carriers, for each of the three cases, according to: (1) their yearend 1985 debt/equity ratios; (2) their total absolute amount of external financing required during the 1976-85 period; and (3) their 1976-85 external financing requirement as a percent of yearend 1975 stockholders' equity. On the basis of these rankings we would divide the industry into three "tiers" of financial strength, as follows:

Tier I	–	Northwest, Delta, National
Tier II	–	Continental, Braniff, UAL, Western, American
Tier III	–	Pan Am, Eastern, TWA

Table 5
Domestic Trunk Airlines
Individual Carrier Rankings: Balance Sheet Strength and External Financing Burden

A. Debt/Equity Ratio as of 12/31/85

Case I		Case II		Case III	
Northwest	15:85	Northwest	6:94	Northwest	5:95
Delta	39:61	Delta	23:77	Delta	10:90
National	59:41	National	51:49	National	45:55
Continental	70:30	Continental	58:42	Continental	45:55
Braniff	70:30	Braniff	62:38	Braniff	53:47
UAL	73:27	UAL	67:33	Western	59:41
Western	75:25	Western	67:33	UAL	60:40
American	75:25*	American	68:32	American	61:39
Pan Am	75:25*	Pan Am	71:29*	Pan Am	66:34
Eastern	75:25*	Eastern	75:25*	Eastern	70:30*
TWA	75:25*	TWA	75:25*	TWA	75:25*

B. 1976-85 Total External Financing Requirement ($millions)

Case I		Case II		Case III	
Northwest	$ 107	Northwest	–	Northwest	–
National	376	Delta	$ 186	Delta	–
Delta	435	National	312	National	$ 248
Continental	463	Continental	356	Continental	249
Western	520	Western	456	Western	393
Braniff	708	Braniff	608	Braniff	508
Pan Am	1215	Pan Am	1067	Pan Am	920
Eastern	1773	Eastern	1582	Eastern	1392
American	2255	American	1970	American	1684
TWA	2434	UAL	2132	UAL	1820
UAL	2443	TWA	2264	TWA	2094

C. 1976-85 Total External Financing Requirement (as % of 12/31/75 Equity)

Case I		Case II		Case III	
Northwest	17%	Northwest	–	Northwest	–
Delta	87	Delta	37%	Delta	–
National	196	National	163	National	129%
Continental	314	Continental	241	Continental	169
UAL	314	UAL	274	UAL	234
Pan Am	407	Pan Am	358	Braniff	304
American	416	American	364	Pan Am	308
Braniff	424	Braniff	364	American	311
Western	487	Western	427	Western	368
Eastern	611	Eastern	545	Eastern	480
TWA	726	TWA	675	TWA	625

*Assumes that these carriers are able to obtain the large amounts of equity financing indicated in Table 4 and in the individual carrier section of this analysis. Otherwise, the indicated debt/equity ratios will require significant upward revision.

Source: DLJ estimates.

Within these tiers some distinctions may be made. For example, within Tier I National's financial position would be a very distant "third" to those of Northwest and Delta. And within Tier II, Continental and Braniff appear to be better-positioned than UAL, Western, and American.

In summary, in light of our analysis of the airlines' fleet and capital requirements during the 1976-85 period, we are forced to conclude that powerful capital constraints, if not a severe capital shortage and structural contraction, lie ahead for the industry in the early 1980's. The external financing burden will be very heavy in all three earnings cases. We believe it will be manageable only for the Tier I carriers if the industry average ROI is 7% or below. But at a 9% ROI, the burden should be manageable at least for Tier I and Tier II carriers, given appropriate government policy focus on the industry's external financing needs. Thus, the adequacy of capital to maintain the present breadth of the U.S. air transportation system will depend in large part on the degree to which the industry's 1976-85 average ROI is upgraded from the 4.8% 1971-75 average.

Implications for Government Policy

In our judgment, government aviation policy will eventually have to be redirected to focus generally and specifically on the issue of most critical importance to the future of the U.S. air transportation system: *The very real and visible potential for a severe capital shortage during the 1980's.*

Currently, government policy has a considerably different focus, with the strong advocacy of deregulation aimed at increasing the role of free market forces (e.g., in route entry/exit and in pricing) and at reducing the cost of air travel to the consumer as the presumed result of further intensification of competition. The prospect of capital shortage and structural contraction will, over time, set into motion political forces that will cause a re-examination of this current deregulation thrust, as an increasing number of communities are faced with loss of service and as labor unions are faced with loss of employment.

The theory behind the current deregulation thrust is not necessarily flawed. However, the magnitude and timing of the industry's external financing needs raise very serious questions in respect to the practicality and appropriateness of deregulation. Specifically, the airlines are at present in great need not only of ROI upgrading, but also of increased *visibility* of the industry's future competitive structure and profit environment. The current need for both an upgraded ROI and improved visibility arises from the following two requirements.

First, despite the prospect of below-normal capital expenditures and improving liquidity during the next several years, the industry must place its "kick-off" round of orders for a new generation aircraft type by mid-1978 if it is to be able to take delivery of the aircraft by 1982 in time to replace the many aircraft that will require retirement during the early 1980's. It should be noted that the development of a new generation aircraft type offering improved productivity should in the long run be more important to the lowering of airfares than the further intensification of competition. For each carrier involved, not only will the initial order itself require considerable front-end cash advances, but more importantly the long-range nature of this commitment will require a reasonable degree of visibility and security in respect to the carrier's own future competitive and profit environment.

Second, because of the magnitude of the 1976-85 external financing burden, carriers will have to begin to accumulate externally supplied capital even during the next several years in anticipation

of the 1980's. However, long-term capital in substantial quantities will be withheld from many of the carriers in the absence of long-term structural visibility.

Many of the current deregulation proposals have the unfortunate effect of reducing the industry's longer-term structural visibility, particularly those involving increased route entry and a further intensification of competition. It is ironic that "freedom of entry", the most feared aspect of deregulation, is *not* likely to lead to massive and chaotic entry by carriers into new routes, at least not during the decade of the 1980's by which time existing fleets will be fully utilized and capital will not generally be available for aggressive fleet and route expansion. Yet merely by creating a somewhat open-ended threat of structural instability and by failing to focus directly on the need to rebuild lender and investor willingness to supply needed private capital to the industry, the deregulation thrust serves to increase the likelihood of a capital shortage. In short, the most devastating, although unintended, direct effect of deregulation could very well be one of ensuring massive contraction of the U.S. air transportation system, not as the result of intensified cutthroat competition as generally feared, but rather as the result of a severe capital shortage in the absence of adequate sources of external financing.

The recognition of this prospect by representatives of smaller cities which stand to lose service and by labor unions which stand to lose jobs will, in our judgment, eventually create a re-examination of government aviation policy priorities. When this takes place, government policy will have to reflect a resolution of two increasingly conflicting notions of "efficiency":

1. *"Economic" efficiency* - The air transportation system should be treated as belonging entirely in its own "private" domain, in which efficiency would be maximized by allowing free market forces to dictate the quantity and price of service.

2. *"Public welfare" efficiency* - The air transportation system should be treated as belonging at least partly in the "public" domain, in which efficiency would be maximized by allowing the government to influence the allocation of capital resources by: (a) broadening the number of markets having access to regularly scheduled services through the control of route entry and exit; and (b) permitting airfares to reflect the economic inefficiencies produced by the artificial allocation of resources.

As the industry's capital resources become increasingly constrained, the public welfare notion is likely to increase in importance. If a contraction of the air transportation system begins to take place, we believe the public and unions will demand a significantly *increased* government involvement, in contrast to the reduced involvement presumed to result from deregulation.

If the preservation of the breadth of the air transporation system were a hopeless cause under the current regulatory structure, then we would expect the government to continue to assume the risk of accelerated shrinkage of the system through the pursuit of deregulation objectives, for the surviving part of the system would at least theoretically reflect "economic efficiency" (unless government policies were subsequently reversed in a last-ditch attempt to rescue the system through subsidy or other forms of corporate "bail-out"). In our judgment, however, based upon our fleet and capital requirements analysis, the preservation of the breadth of the current system is not a hopeless cause requiring high-risk experimentation but rather is a manageable cause provided that: (1) the industry's ROI is permitted to rise to a 9% average or more; and (2) government policy focuses on the financial health and stability of the industry in order to restore the industry's access

to external sources of capital. Based upon this judgment and on the likely shift in the political appeal of public welfare efficiency versus economic efficiency, we expect government policy eventually to shift and become more favorable to the industry's ROI and capital-raising needs.

Since far-sighted planning has rarely been a characteristic of government policies (or of corporate strategies in the airlines industry, for that matter), it is reasonable to question the timing of such a shift due to the masking of the capital problem during the next several years. It is to be hoped, however, that government policy will not in the meantime run counter to the airlines' capital-raising needs by imposing a profits "ceiling" to restrict the normal cyclical earnings recovery that should continue at least through 1977, or by emphasizing the potentially more destabilizing aspects of deregulation such as free route entry. In addition, the government's final policy on noise standards will have a considerable effect on the industry's capital requirements. The government may be able to facilitate directly the raising of capital to meet noise standards (through loan guarantees funded by a ticket tax) and to fund the kick-off round of orders for a new generation aircraft type (through tax incentives and perhaps through permitting the industry to create a joint aircraft development mechanism). Finally, some regulatory reform involving the reduction of regulatory lag, the clarification of the 12% ROI standard, and possibly the introduction of pricing flexibility could have a beneficial effect on the industry's finances.

Investment Implications

Investors must be extremely careful to distinguish between the industry's fundamental outlook for the next three to four years and the outlook for the 1980's, insofar as capital requirements are concerned. Moreover, investors must not adopt too rigid a view of the industry's prospective structure, for if capital shortages do develop, airlines will have some leeway to restructure their operations (e.g., through asset redeployment, route system contraction, merger, operation at extremely high load factors, low-return but low-outlay capital reinvestment to extend the lives of economically inefficient aircraft beyond 20 years) without necessarily experiencing a financial crisis.

The potential for a capital shortage does not have clear-cut investment implications for the industry as a whole. In the first place, certain carriers (particularly Northwest and Delta) are in exceptionally strong positions from which they may be able to capitalize on other carriers' capital constraints, while other carriers have capital-raising problems of varying degrees of severity. More significantly, the impact of a prospective shortage could be favorable or unfavorable for the industry depending upon the nature and timing of the government's response to it.

On the positive side, it is now quite apparent that once the slack in the existing fleet disappears, the industry will not be vulnerable to another cycle of excess capacity for a very long time, if ever. In addition, shortages create "natural" pressures for higher profitability, and these should eventually be reflected both in airline operating results and in a more favorable government aviation policy.

On the negative side, however, practically a 180-degree shift in the current orientation of government policy will be required before it will begin to reflect recognition of the industry's capital problems, and the timing of the shift may be substantially delayed by the masking of the problem during the next several years. If, for example, the shift is delayed until 1980, the damage partly in the form of "opportunity cost" may be too extensive to prevent a capital shortage and structural contraction. Finally, the nature of government reaction to a financial crisis at a weak

carrier, were it actually to occur, is uncertain and therefore does not have clear investment implications even for stronger carriers.

We would attempt to relate the potential for a capital shortage to investment strategy in the following two ways:

1. *Investment time horizon* - Particularly because the capital-raising burden will not be fully evident for several years in spite of its predictability, we expect the near-term performance of the airline stocks to be influenced predominantly and favorably by the potential for strong cyclical earnings recovery in 1976 and 1977. However, we remain of the conviction that the performance of the airline stocks beyond 1976 will be more influenced by the longer-term scope for earnings and ROI improvement. We believe the nature and timing of government recognition of the capital-raising problem will be of critical importance to this longer-term scope. Our analysis provides a strong fundamental and political basis for an eventual shift in government priorities away from the current focus on deregulation and toward preventing the airlines from becoming a "shortage" industry in the 1980's by working to upgrade and stabilize ROI. Our analysis also suggests the severe consequences in the absence of such a shift. In any case, the potential for a capital shortage raises the stakes involved later this year in correctly assessing the longer-term outlook for government aviation policy, industry ROI, and industry structure.

2. *Stock selection* - We expect the near-term relative performance of individual airline stocks to be more heavily influenced by 1976-77 cyclical earnings recovery potential than by long-term capital adequacy. However, we believe that balance sheet strength and capital adequacy will have a greater influence on valuation and intra-industry tiering in the years ahead than ever in the past because of the magnitude of the approaching financing burden. Balance sheet strength and capital adequacy will determine not only a carrier's long-term exposure to or immunity from potential capital shortage, long-term competitive strength, and long-term ability to pay or increase dividends, but also its requirement for equity financings even of an anticipatory nature in the near term. As cyclical considerations give way to longer-term structural prospects as the principal determinants of stock price performance, we would recommend partial or full shifting of airline holdings to carriers having relatively stronger financial resources until or unless government policy has undergone the appropriate redirection.

COMPANY SECTION

AMERICAN AIRLINES

American's heavy 1976-85 external financing burden is very much a result of the Company's fleet replacement requirements. The average age of American's fleet is among the highest in the industry, and this aging problem is considerably aggravated by American's high exposure to Federal noise standards, which may force the phase-out of JT3D-powered aircraft (e.g., American's 90 707's) in advance of the expiration of their full useful lives.

Although we have accelerated the phase-out rate of 707's in light of prospective noise standards, we have assumed that American will be able to continue to operate 20 of its 707's beyond 1985 even though noise standards could conceivably force the full phase-out of these aircraft by 1985. To soften the impact of the 707 retirements we have assumed 727-100 retirements to take place at a slower rate than would be desirable.

Table 4-AA reveals that American's 1976-85 external financing needs should exceed $2 billion and its yearend 1985 debt/equity ratio should remain very high unless the Company's earnings per share attain at least a $2.00 annual average. The forced full phase-out of 707's by 1985 would add approximately $478 million to the Company's 1976-85 capital expenditure requirements. In view of American's poor profit performance in recent years and of the magnitude of American's prospective financing burden, the need for the Company to achieve and sustain a profits turn-around should be evident. It should be noted, however, that American's competitive position will not necessarily be in jeopardy if capital constraints force extremely high load factor operations or further retardation of 727-100 retirements, for its principal competitors (TWA and United) are also faced with a very heavy financing burden.

In our judgment, the size of American's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company in the industry's second tier.

Table 1-AA
American Airlines
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's
747	11	15.0 years	–	–
DC-10	25	13.6	–	–
707-300B/C	41	18.0	21*	4.9%
707-100B	49	21.8	49	23.7
727-200	48	16.3	–	–
727-100	58	19.9	29	7.6
Total	232	18.3	99	36.2%

*Federal noise standards may require full phase-out of this aircraft type by 1985, rather than only partial phase-out as indicated.

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-AA
American Airlines
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975 [1]	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	20.57	36.82	
Sched. ASM's	36.68	58.44	21.76
Sched. load factor	56.1%	63.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 6% annual growth)	1.71	3.06	1.35
Total ASM Expansion Requirement			23.11
Less: ASM Expansion from Existing Fleet:			
Seating density [2]			2.80
Hours/day utilization [3]			2.88
Total Expansion from Existing Fleet			5.68
Net ASM Expansion Requirement			17.43

1) 1975 data are adjusted for United Airlines strike.
2) See Table 2, footnote 3.
3) Assumes 8.06 hours/day versus a prior peak of 7.68 hours/day and 7.50 hours/day in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-AA
American Airlines
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement [1]	15.31
Fleet Expansion [2]	17.43
Total Requirement	32.74

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-AA) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-AA).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
747	11	–	–	11
DC-10	25	–	45	70
707-300B/C	41	21	–	20
707-100B	49	49	–	–
727-200	48	–	40 [3]	88 [3]
727-100	58	29	–	29
Model X [4]	–	–	35	35
Total	232	99	120	253

3) See Table 3, footnote 3.
4) See Table 3, footnote 4.

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft [5]	$3047
Plus: Spares	183
Less: Residual Value of Retired Aircraft	(117)
Net Capital Expenditures on New Aircraft [6]	$3113

5) See Table 3, footnote 5.
6) Plus an additional $478 million if Federal noise standards require full phase-out of 707 aircraft by 1985.

Source: Civil Aeronautics Board; DLJ estimates.

Table 4-AA
American Airlines
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	Case II	Case III
	$ 1.00	$ 2.00	$ 3.00
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment [1]	$ 3113	$ 3113	$ 3113
Capital expenditures - other [2]	400	400	400
Debt retirement	225	225	225
Dividend maintenance	–	–	–
Total	$ 3738	$ 3738	$ 3738
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	$ 125	$ 125	$ 125
Depreciation & amortization [3]	1072	1072	1072
Net income	286	571	857
Total	$ 1483	$ 1768	$ 2054
12/31/85 Cash Surplus (Shortfall)	$(2255)	$(1970)	$(1684)
Balance Sheet Analysis:			
Capital Structure as of 12/31/75:			
Long-term debt	$ 474	$ 474	$ 474
Capitalized lease obligations	737	737	737
Total debt	$ 1211	$ 1211	$ 1211
Stockholders' equity	$ 542	$ 542	$ 542
Debt/Equity Ratio	69:31	69:31	69:31
1976-85 External Financing Requirement:			
Debt financing	$ 2163	$ 1916	$ 1630
Equity financing	92	54	54
Total	$ 2255	$ 1970	$ 1684
% of 12/31/75 total equity	416%	364%	311%
Capital Structure as of 12/31/85:			
Long-term debt	$ 2412	$ 2165	$ 1879
Capitalized lease obligations [4]	348	348	348
Total debt	$ 2760	$ 2513	$ 2227
Stockholders' equity	$ 920	$ 1167	$ 1453
Debt/Equity Ratio	75:25	68:32	61:39

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$.13	$.20	$(1.69)	$.72	$(.72)	$(.27)

1) Net of residual value of retired aircraft (see Table 3-AA); additional $478 million will be required if Federal noise standards force full phase-out of 707 aircraft by 1985.
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

BRANIFF INTERNATIONAL

Braniff's heavy 1976-85 external financing burden results from the Company's moderate fleet replacement requirements and its high current debt/equity ratio.

The average age of Braniff's fleet is among the lowest in the industry, but the need to replace the older 727-100's and four DC-8-50's by 1985 could be extended to include the DC-8-62's if Federal noise standards force full phase-out of JT3D-powered aircraft by 1985. We have assumed that Braniff will be able to continue to operate all seven of its DC-8-62's beyond 1985. On the other hand, we have assumed phase-out of the Company's lone 747 for fleet simplification purposes, even though it is being deployed very profitably and is not committed for sale at present. If forced to accelerate the DC-8-62 phase-out, Braniff could: (1) retain the 747; and (2) capitalize on its current low load-factor operation by absorbing more traffic growth with its current fleet than we have assumed (in our 58% load factor projection in Table 2-BN), thereby further reducing its capital expenditures for fleet expansion.

Table 4-BN reveals that Braniff's 1976-85 external financing needs will be large in relation to current stockholders' equity (a reflection of a currently weak balance sheet), and would approximate $600 million assuming the Company's earnings per share attain a $1.50 annual average, up moderately from the approximately $1.00 average during the 1971-75 period. The forced phase-out of DC-8-62's by 1985 would add roughly $207 million to the Company's 1976-85 capital requirements, all other things being equal. However, provided that Braniff's average earnings per share are upgraded moderately from the $1.00 level, its debt/equity ratio should be satisfactory. Thus, the Company's financing task would appear to be greater in respect to the dollar amount to be raised than in respect to the balance sheet impact of needed debt financing.

In our judgment, the size of Braniff's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company in the industry's second tier, and potentially in the upper half of the tier depending upon the degree of earnings upgrading.

Table 1-BN
Braniff International
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's
747	1	15.0 years	1[1]	6.8%
DC-8-62	7	17.6	–[2]	–
DC-8-50	4	23.5	4	4.8
727-200	40	12.6	–	–
727-100	29	18.4	17	12.8
Total	81	15.7	21	24.4%

1) Assumed for fleet simplification.
2) Federal noise standards may require phase-out of this aircraft type by 1985.

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-BN
Braniff International
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	6.29	11.26	
Sched. ASM's	12.76	19.41	6.65
Sched. load factor	49.3%	58.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 9% annual growth)	.44	1.00	.56
Total ASM Expansion Requirement			7.21
Less: ASM Expansion from Existing Fleet:			
Seating density[1]			.71
Hours/day utilization[2]			.83
Total Expansion from Existing Fleet			1.54
Net ASM Expansion Requirement			5.67

1) See Table 2, footnote 3.
2) Assumes 8.78 hours/day versus a prior peak of 8.36 hours/day and 8.26 hours/day in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-BN
Braniff International
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement[1]	3.54
Fleet Expansion[2]	5.67
Total Requirement	9.21

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-BN) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-BN).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
747	1	1	–	–
DC-10	–	–	8	8
DC-8-62	7	–	–	7
DC-8-50	4	4	–	–
727-200	40	–	17	57
727-100	29	17	–	12
Model X[3]	–	–	10	10
Total	81	22	35	94

3) See Table 3, footnote 4.

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft[4]	$810
Plus: Spares	97
Less: Residual Value of Retired Aircraft	(40)
Net Capital Expenditures on New Aircraft[5]	$867

4) See Table 3, footnote 5.
5) Plus an additional $207 million if Federal noise standards require full phase-out of DC-8 aircraft by 1985.

Source: Civil Aeronautics Board; DLJ estimates.

Table 4-BN
Braniff International
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	**Case II**	**Case III**
	$ 1.00	**$ 1.50**	**$ 2.00**
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment[1]	$ 867	$ 867	$ 867
Capital expenditures - other[2]	120	120	120
Debt retirement	233	233	233
Dividend maintenance	40	40	40
Total	$ 1260	$ 1260	$ 1260
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	–	–	–
Depreciation & amortization[3]	$ 352	$ 352	$ 352
Net income	200	300	400
Total	$ 552	$ 652	$ 752
12/31/85 Cash Surplus (Shortfall)	$ (708)	$(608)	$ (508)
Balance Sheet Analysis:			
Capital Structure as of 12/31/75:			
Long-term debt	$ 250	$ 250	$ 250
Capitalized lease obligations	190	190	190
Total debt	$ 440	$ 440	$ 440
Stockholders' equity	$ 167	$ 167	$ 167
Debt/Equity Ratio	72:28	72:28	72:28
1976-85 External Financing Requirement:			
Debt financing	$ 683	$ 591	$ 491
Equity financing	25	17	17
Total	$ 708	$ 608	$ 508
% of 12/31/75 total equity	424%	364%	304%
Capital Structure as of 12/31/85:			
Long-term debt	$ 700	$ 608	$ 508
Capitalized lease obligations[4]	117	117	117
Total debt	$ 817	$ 725	$ 625
Stockholders' equity	$ 352	$ 444	$ 544
Debt/Equity Ratio	70:30	62:38	53:47

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$.46	$.85	$1.15	$1.30	$1.02	$.96

1) Net of residual value of retired aircraft (see Table 3-BN); additional $207 million will be required if Federal noise standards force full phase-out of DC-8 aircraft by 1985.
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

CONTINENTAL AIRLINES

Continental's moderate-to-heavy 1976-85 external financing burden is a result primarily of the Company's high current debt/equity ratio.

The average age of Continental's fleet is the lowest in the industry, and the Company is not exposed significantly to noise standard problems due to the absence of JT3D-powered aircraft from its fleet. In fact, Continental's five 720B's were retired at yearend 1975, and thus the remaining 1976-85 replacement requirement is practically negligible.

Table 4-CO reveals that Continental's 1976-85 external financing needs will be sizeable in relation to current stockholders' equity. However, this is a reflection more of the current weakness of the Company's balance sheet (77:23 debt/equity ratio as of yearend 1975) than of the absolute dollar amount of capital to be raised. Provided that Continental can upgrade its annual average earnings per share to $1.00 or more (from $.23 during 1971-75, and from a $.57-.68 range during 1971, 1972 and 1974), the Company's debt/equity ratio should be satisfactory. Thus, given an adequate profits turnaround, Continental's financing task would appear to be manageable.

In our judgment, the size of Continental's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company in the industry's second tier, and potentially in the upper half of the tier depending upon the degree of earnings turnaround.

Table 1-CO
Continental Airlines
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's
DC-10	16	12.3 years	–	–
720B	5	21.5	5	5.3%
727-200	36	14.4	–	–
727-100	2	19.0*	2	1.4
Total	59	14.6	7	6.7%

*Estimated.

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-CO
Continental Airlines
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	6.27	11.22	
Sched. ASM's	11.62	18.40	6.78
Sched. load factor	54.0%	61.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 12% annual growth)[1]	.23	.75	.52
Total ASM Expansion Requirement			7.30
Less: ASM Expansion from Existing Fleet:			
Seating density[2]			1.40
Hours/day utilization[3]			.61
Total Expansion from Existing Fleet			2.01
Net ASM Expansion Requirement			5.29

1) Includes Air Micronesia results.
2) As the single exception to the industry rule (see Table 2, footnote 3), assumes increase in DC-10 seating density to only 250 seats due to special cargo-oriented configuration, and 5% increase in seating density of narrow-bodied aircraft.
3) Assumes 9.12 hours/day versus a prior peak of 8.69 hours/day and 8.68 hours/day in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-CO
Continental Airlines
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement[1]	.88
Fleet Expansion[2]	5.29
Total Requirement	6.17

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-CO) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-CO).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
DC-10	16	–	10	26
720B	5	5	–	–
727-200	36	–	11	47
727-100	2	2	–	–
Total	59	7	21	73

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft[3]	$477
Plus: Spares	24
Less: Residual Value of Retired Aircraft	(8)
Net Capital Expenditures on New Aircraft	$493

3) See Table 3, footnote 5.

Source: Civil Aeronautics Board; DLJ estimates.

Table 4-CO
Continental Airlines
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	Case II	Case III
	$ .50	$1.25	$2.00
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment [1]	$ 493	$ 493	$ 493
Capital expenditures - other [2]	150	150	150
Debt retirement	364	364	364
Dividend maintenance	—	—	—
Total	$1007	$1007	$1007
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	—	—	—
Depreciation & amortization [3]	$ 472	$ 472	$ 472
Net income	72	179	286
Total	$ 544	$ 651	$ 758
12/31/85 Cash Surplus (Shortfall)	$(463)	$(356)	$(249)
Balance Sheet Analysis:			
Capital Structure as of 12/31/75:			
Long-term debt	$ 431	$ 431	$ 431
Capitalized lease obligations	62	62	62
Total debt	$ 493	$ 493	$ 493
Stockholders' equity	$ 147	$ 147	$ 147
Debt/Equity Ratio	77:23	77:23	77:23
1976-85 External Financing Requirement:			
Debt financing	$ 441	$ 341	$ 234
Equity financing	22	15	15
Total	$ 463	$ 356	$ 249
% of 12/31/75 total equity	314%	241%	169%
Capital Structure as of 12/31/85:			
Long-term debt	$ 508	$ 408	$ 301
Capitalized lease obligations [4]	63	63	63
Total debt	$ 571	$ 471	$ 364
Stockholders' equity	$ 241	$ 341	$ 448
Debt/Equity Ratio	70:30	58:42	45:55

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$ .59	$ .68	$ .01	$ .57	$(.68)	$.23

1) Net of residual value of retired aircraft (see Table 3-CO).
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

DELTA AIR LINES

Delta's light (and possibly nonexistent) 1976-85 external financing burden results from: (1) the Company's exceptionally strong internal cash generation, reflecting not only a relatively high degree of reported profitability but also the most conservative depreciation accounting policy in the industry (10-year lives and 10% residual value for all aircraft); and (2) 1976-85 fleet replacement requirements that are only moderate, even with inclusion of "voluntary" 747 retirements.

Because of Delta's financial strength, it is likely that the Company will replace aircraft more aggressively than we have assumed in order to remain a step ahead of its competitors (principally Eastern) in respect to fleet efficiency and to the replacement cycle beyond 1985. Specifically, Delta is likely to begin actively to phase-out its DC-9-30 aircraft prior to 1985 even though such phase-out is not economically required. Moreover, Delta may expand its fleet somewhat more aggressively than we have assumed in order to maintain a lower load factor in relation to Eastern. In this way, Delta would gain market share from Eastern, whose capacity should be capital-constrained, by having more available capacity during peak periods when Eastern's flights will be crowded or sold out. Thus, we may have underestimated Delta's 1976-85 capital expenditures by having made insufficient provision for "discretionary" capital spending. As indicated in Table 4-DL, however, even if Delta's annual earnings per share were to remain only at the approximately $3.00 average of the past five years, the Company's strong balance sheet and small financing requirements would nevertheless create considerable flexibility for such discretionary spending.

In all likelihood, then, we have understated Delta's traffic growth, which should exceed the industry average due to eventual market share penetration made possible by the Company's financial resources. Delta is well-positioned also to pursue route expansion and route acquisition opportunities that may arise, and to increase its dividend without jeopardizing its future fleet acquisition capability.

In our judgment, the size of Delta's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company in the industry's first tier.

Table 1-DL
Delta Air Lines
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's
747	3	14.5 years	3*	2.6%
L-1011	18	11.5	–	–
DC-8-61	13	17.3	13	10.4
DC-8-50	21	22.5	21	10.3
727-200	69	12.6	–	–
727-100	5	19.6	5	2.1
DC-9-30	62	17.0	–	–
Total	191	15.6	42	25.4%

*To be phased out of Delta's fleet in 1977.

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-DL
Delta Air Lines
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975 [1]	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	15.96	28.57	
Sched. ASM's	29.48	46.84	17.36
Sched. load factor	54.1%	61.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 38% annual growth)	.06	1.50	1.44
Total ASM Expansion Requirement			18.80
Less: ASM Expansion from Existing Fleet:			
Seating density [2]			1.76
Hours/day utilization [3]			4.37
Total Expansion from Existing Fleet			6.13
Net ASM Expansion Requirement			12.67

1) 1975 data are adjusted for National Airlines strike.
2) See Table 2, footnote 3.
3) Assumes 8.85 hours/day versus a prior peak of 8.43 hours/day and 7.71 hours/day in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-DL
Delta Air Lines
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement [1]	8.29
Fleet Expansion [2]	12.67
Total Requirement	20.96

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-DL) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-DL).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
747	3	3	–	–
L-1011	18	–	23	41
DC-8-61	13	13	–	–
DC-8-50	21	21	–	–
727-200	69	–	31	100
727-100	5	5	–	–
DC-9-30	62	–[3]	–	62[3]
Model X [4]	–	–	20	20
Total	191	42	74	223

3) No DC-9-30 retirements are assumed because none are economically required. In reality, however, Delta is likely to begin actively to phase out this aircraft type prior to 1985.
4) See Table 3, footnote 4.

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft [5]	$1745
Plus: Spares	138
Less: Residual Value of Retired Aircraft	(100)
Net Capital Expenditures on New Aircraft	$1783

5) See Table 3, footnote 5.

Source: Civil Aeronautics Board; DLJ estimates.

Table 4-DL
Delta Air Lines
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	**Case II**	**Case III**
	$3.00	**$4.25**	**$5.50**
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment[1]	$1783	$1783	$1783
Capital expenditures - other[2]	250	250	250
Debt retirement	449	449	449
Dividend maintenance	119	119	119
Total	$2601	$2601	$2601
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	$ 50	$ 50	$ 50
Depreciation & amortization[3]	1519	1519	1519
Net income	597	846	1095
Total	$2166	$2415	$2664
12/31/85 Cash Surplus (Shortfall)	$(435)	$(186)	$ 63
Balance Sheet Analysis:			
Capital Structure as of 12/31/75:			
Long-term debt	$ 469	$ 469	$ 469
Capitalized lease obligations	216	216	216
Total debt	$ 685	$ 685	$ 685
Stockholders' equity	$ 500	$ 500	$ 500
Debt/Equity Ratio	58:42	58:42	58:42
1976-85 External Financing Requirement:			
Debt financing	$ 435	$ 186	–
Equity financing	–	–	–
Total	$ 435	$ 186	–
% of 12/31/75 total equity	87%	37%	–
Capital Structure as of 12/31/85:			
Long-term debt	$ 455	$ 206	–
Capitalized lease obligations [4]	169	169	169
Total debt	$ 624	$ 375	$ 169
Stockholders' equity	$ 978	$1227	$1476
Debt/Equity Ratio	39:61	23:77	10:90

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$1.38	$2.63	$3.78	$4.39	$1.88	$2.81

1) Net of residual value of retired aircraft (see Table 3-DL).
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

EASTERN AIR LINES

Eastern's very heavy 1976-85 external financing burden is a result primarily of its extremely high current debt/equity ratio and also of its low internal cash generation relative to the Company's size.

While the average age of Eastern's fleet is among the highest in the industry, Eastern's replacement requirements are relatively moderate due to the absence of JT3D-powered aircraft from the Company's fleet. Nevertheless, in light of Eastern's financial condition, we have assumed 727-100 retirements to take place at a slower rate than would be desirable.

Table 4-EA reveals that Eastern's 1976-85 external financing needs should exceed $1.5 billion unless the Company's earnings per share attain an annual average level in excess of $1.50, and that its debt/equity ratio should remain extremely high under almost any reasonable earnings assumptions. In view of Eastern's poor profit performance in recent years, the magnitude of prospective financing requirements, and the weakness of Eastern's balance sheet, the need for the Company to achieve and sustain a very sizeable profits turnaround should be evident.

Eastern's competitive position may be vulnerable over the longer term if capital constraints force extremely high load factor operations or further retardation of 727-100 retirements, for its principal competitors (Delta and, to a lesser extent, National) enjoy exceptionally strong financial positions from which to capitalize on Eastern's constraints, should they persist or increase. It should be noted, further, that even if Eastern's reported earnings were substantially upgraded, its internal cash generation compared to that of Delta, its largest competitor, would suffer from the difference between the two carriers' depreciation policies. In 1975 alone, for example, Eastern's provision for depreciation and amortization was $98 million on a $1557 million revenue base, while Delta's provision was $139 million on a $1415 million revenue base. The 10-year cumulative impact of this differential can be seen by comparing Table 4-DL with Table 4-EA.

In our judgment, the size of Eastern's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company in the industry's third tier.

Table 1-EA
Eastern Air Lines
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's
L-1011	30	12.3 years	–	–
727-200	42	14.5	–	–
727-100	71	20.0	51	21.2%
DC-9-30	72	17.8	–	–
DC-9-10	9	18.6	9	2.0
L-188	15	26.8	15	0.7
Total	239	17.8	75	23.9%

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-EA
Eastern Air Lines
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975[1]	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	17.67	31.63	
Sched. ASM's	32.32	49.42	17.10
Sched. load factor	54.7%	64.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 18% annual growth)	.19	1.00	.81
Total ASM Expansion Requirement			17.91
Less: ASM Expansion from Existing Fleet:			
Seating density[2]			1.90
Hours/day utilization[3]			2.86
Total Expansion from Existing Fleet			4.76
Net ASM Expansion Requirement			13.15

1) 1975 data are adjusted for National Airlines strike.
2) See Table 2, footnote 3.
3) Assumes 8.10 hours/day versus a prior peak of 7.71 hours/day and 7.35 hours/day in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-EA
Eastern Air Lines
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement[1]	8.55
Fleet Expansion[2]	13.15
Total Requirement	21.70

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-EA) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-EA).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
L-1011	30	–	35	65
727-200	42	–	28	70
727-100	71	51	–	20
DC-9-30	72	–	–	72
DC-9-10	9	9	–	–
L-188	15	15	–	–
DC-9-50	–	–	30	30
Total	239	75	93	257

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft[3]	$1964
Plus: Spares	128
Less: Residual Value of Retired Aircraft	(72)
Net Capital Expenditures on New Aircraft	$2020

[3]See Table 3, footnote 5.

Source: Civil Aeronautics Board; DLJ estimates.

Table 4-EA
Eastern Air Lines
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	Case II	Case III
	$ .50	$1.50	$2.50
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment[1]	$2020	$2020	$2020
Capital expenditures - other[2]	250	250	250
Debt retirement	619	619	619
Dividend maintenance	–	–	–
Total	$2889	$2889	$2889
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	–	–	–
Depreciation & amortization[3]	$1021	$1021	$1021
Net income	95	286	476
Total	$1116	$1307	$1497
12/31/85 Cash Surplus (Shortfall)	$(1773)	$(1582)	$(1392)
Balance Sheet Analysis:			
Capital Structure as of 12/31/75:			
Long-term debt	$ 731	$ 731	$ 731
Capitalized lease obligations	725	725	725
Total debt	$1456	$1456	$1456
Stockholders' equity	$ 290	$ 290	$ 290
Debt/Equity Ratio	83:17	83:17	83:17
1976-85 External Financing Requirement:			
Debt financing	$1476	$1476	$1348
Equity financing	297	106	44
Total	$1773	$1582	$1392
% of 12/31/75 total equity	611%	545%	480%
Capital Structure as of 12/31/85:			
Long-term debt	$1588	$1588	$1460
Capitalized lease obligations[4]	460	460	460
Total debt	$2048	$2048	$1920
Stockholders' equity	$ 682	$ 682	$ 810
Debt/Equity Ratio	75:25	75:25	70:30

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$.29	$.82	$(2.76)	$.56	$(2.65)	$(.75)

1) Net of residual value of retired aircraft (see Table 3-EA).
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

NATIONAL AIRLINES

National's 1976-85 external financing burden is sizeable, but manageable due to: (1) relatively low replacement requirements, even with inclusion of "voluntary" 747 retirements; (2) a relatively low current scheduled load factor, which creates above-average potential to moderate fleet expansion requirements; and (3) a current debt/equity ratio that is not extremely high.

The average age of National's fleet is somewhat below the industry average, and the Company is not exposed to significant noise standard problems due to the absence of JT3D-powered aircraft from its fleet.

Table 4-NA reveals that National's 1976-85 external financing needs should approximate $300 million assuming the Company's earnings per share attain a $2.75* annual average, up moderately from the $2.00 average during the 1971-75 period. Under all three earnings cases assumed, National's debt/equity ratio would be reasonable, thus indicating the financing burden to be manageable unless the persistence of labor disruptions seriously impairs the Company's relative profitability.

National should have some financial flexibility, although to a lesser extent than Delta, to capitalize on competitors' (e.g., Eastern's) capital constraints, and to pursue route expansion and route acquisition opportunities that may arise. The extent to which National may increase its dividend should depend on the degree of earnings improvement from the $2.00 per share 1971-75 average.

In our judgment, the size of National's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company in the industry's first tier, but at a very distant third place behind Northwest and Delta.

*Due to a recent change in National's depreciation accounting policy, the depreciation figures in Table 4-NA should be reduced, and the Company's reported earnings potential should be correspondingly increased.

Table 1-NA
National Airlines
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's [1]
747	2	15.3 years	2[2]	8.0%
DC-10	15	12.6	–	–
727-200	25	17.8	–	–
727-100	13	20.5	13	12.6
Total	55	16.9	15	20.6%

1) After strike adjustment.
2) To be phased out of National's fleet in 1976.

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-NA
National Airlines
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975[1]	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	5.71	10.22	
Sched. ASM's	11.16	17.62	6.46
Sched. load factor	51.1%	58.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 32% annual growth)	.03	.50	.47
Total ASM Expansion Requirement			6.93
Less: ASM Expansion from Existing Fleet:			
Seating density[2]			.80
Hours/day utilization[3]			1.16
Total Expansion from Existing Fleet			1.96
Net ASM Expansion Requirement			4.97

1) 1975 data are strike-adjusted.
2) See Table 2, footnote 3.
3) Assumes 8.49 hours/day versus a prior peak of 8.09 hours/day and 7.69 hours/day (strike-adjusted) in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-NA
National Airlines
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement [1]	2.44
Fleet Expansion [2]	4.97
Total Requirement	7.41

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-NA) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-NA).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
747	2	2	–	–
DC-10	15	–	15	30
727-200	25	–	8	33
727-100	13	13	–	–
Total	55	15	23	63

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft[3]	$639
Plus: Spares	32
Less: Residual Value of Retired Aircraft	(43)
Net Capital Expenditures on New Aircraft	$628

3) See Table 3, footnote 5.

Source: Civil Aeronautics Board; DLJ estimates.

Table 4-NA
National Airlines
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	Case II	Case III
	$2.00	$2.75	$3.50
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment [1]	$ 628	$ 628	$ 628
Capital expenditures - other [2]	160	160	160
Debt retirement	172	172	172
Dividend maintenance	43	43	43
Total	$1003	$1003	$1003
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	—	—	—
Depreciation & amortization [3]	$ 456	$ 456	$ 456
Net income	171	235	299
Total	$ 627	$ 691	$ 755
12/31/85 Cash Surplus (Shortfall)	$(376)	$(312)	$(248)
Balance Sheet Analysis:			
Capital Structure as of 12/31/75:			
Long-term debt	$ 172	$ 172	$ 172
Capitalized lease obligations	124	124	124
Total debt	$ 296	$ 296	$ 296
Stockholders' equity	$ 192	$ 192	$ 192
Debt/Equity Ratio	61:39	61:39	61:39
1976-85 External Financing Requirement:			
Debt financing	$ 357	$ 293	$ 248
Equity financing	19	19	—
Total	$ 376	$ 312	$ 248
% of 12/31/75 total equity	196%	163%	129%
Capital Structure as of 12/31/85:			
Long-term debt	$ 357	$ 293	$ 248
Capitalized lease obligations [4]	123	123	123
Total debt	$ 480	$ 416	$ 371
Stockholders' equity	$ 339	$ 403	$ 448
Debt/Equity Ratio	59:41	51:49	45:55

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$1.35	$2.44	$2.41	$2.49	$1.24	$1.99

1) Net of residual value of retired aircraft (see Table 3-NA).
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

NORTHWEST AIRLINES

Northwest's very light, and quite possibly nonexistent, 1976-85 external financing burden results from: (1) 1976-85 fleet replacement requirements that are quite low; (2) having the industry's lowest current scheduled load factor, which creates well above-average potential to moderate fleet expansion requirements; and (3) very strong internal cash generation, reflecting not only a relatively high degree of reported profitability but also the second most conservative depreciation accounting policy in the industry (10-year lives/15% residual values for narrow-bodied aircraft and 15-year lives/10% residual values for 747 and DC-10 aircraft).

Northwest has one of the most modern fleets in the industry, and its fleet planning should not be affected by Federal noise standards, for it is likely to retire its entire 707 and 727-100 fleet well before any such standards potentially would apply. In fact, it has traditionally been Northwest's strategy to underutilize its aircraft, maintain them well, depreciate their book values rapidly, and then sell them at a substantial profit well before the end of their useful lives approaches. Northwest's fleet and financial position should enable the Company to maintain this strategy.

Table 4-NW reveals that Northwest's 1976-85 external financing needs will be minimal and that its debt/equity ratio will be extremely low even if average annual earnings per share amount only to $2.50 (versus a strike-depressed $1.85 average during the 1971-75 period). It would most likely require a resumption of persistent and serious labor disruptions to prevent Northwest from upgrading its earnings performance of the past five years.

Because of Northwest's financial strength, it is likely that the Company will expand its fleet more aggressively than we have assumed, even though we have already projected a 54% scheduled load factor, which would be well below the industry average (see Table 2-NW). Northwest will not necessarily find significant profit benefits in operating at an even lower relative load factor to gain additional market share from capital-constrained competitors, whose flights at peak periods will be crowded or sold out. Rather, Northwest will probably draw upon its financial resources to pursue route expansion and route acquisition opportunities as they arise.

It is highly likely, then, that we have understated Northwest's traffic growth, which should exceed the industry average due to market penetration and expansion made possible by the Company's financial resources. In addition, Northwest may decide to pursue carrier acquisition opportunities that may develop. Finally, Northwest is clearly well-positioned to increase its dividend without jeopardizing its future fleet acquisition capability.

In our judgment, the size of Northwest's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company at the top of the industry's first tier.

Table 1-NW
Northwest Airlines
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's*
747	18	14.3 years	–	–
DC-10	22	12.2	–	–
707-300B/C	10	17.5	10	4.7%
727-200	31	15.0	–	–
727-100	32	19.7	32	10.7
Total	113	16.3	42	15.4%

*After strike adjustment.

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-NW
Northwest Airlines
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975[1]	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	9.63	17.23	
Sched. ASM's	21.25	31.91	10.66
Sched. load factor	45.3%	54.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 14% annual growth)	.56	2.00	1.44
Total ASM Expansion Requirement			12.10
Less: ASM Expansion from Existing Fleet:			
Seating density [2]			1.90
Hours/day utilization[3]			1.90
Total Expansion from Existing Fleet			3.80
Net ASM Expansion Requirement			8.30

1) 1975 data are strike-adjusted.
2) See Table 2, footnote 3.
3) Assumes 7.14 hours/day versus a prior peak of 6.80 hours/day and 6.57 hours/day (strike-adjusted) in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-NW
Northwest Airlines
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement [1]	3.69
Fleet Expansion [2]	8.30
Total Requirement	11.99

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-NW) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day)during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-NW).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
747	18	–	4	22
DC-10	22	–	16	38
707-300B/C	10	10	–	–
727-200	31	–	12	43
727-100	32	32	–	–
Model X[3]	–	–	10	10
Total	113	42	42	113

3) See Table 3, footnote 4.

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft[4]	$1194
Plus: Spares	91
Less: Residual Value of Retired Aircraft	(111)
Net Capital Expenditures on New Aircraft	$1174

4) See Table 3, footnote 5.

Source: Civil Aeronautics Board; DLJ estimates.

Table 4-NW
Northwest Airlines
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	**Case II**	**Case III**
	$ 2.50	**$ 3.50**	**$ 4.50**
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment [1]	$ 1174	$ 1174	$ 1174
Capital expenditures - other [2]	140	140	140
Debt retirement	272	272	272
Dividend maintenance	97	97	97
Total	$ 1683	$ 1683	$ 1683
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	–	–	–
Depreciation & amortization[3]	$ 1036	$ 1036	$ 1036
Net income	540	756	972
Total	$ 1576	$ 1792	$ 2008
12/31/85 Cash Surplus (Shortfall)	$ (107)	$ 109	$ 325
Balance Sheet Analysis:			
Capital Structure as of 12/31/75:			
Long-term debt	$ 272	$ 272	$ 272
Capitalized lease obligations	80	80	80
Total debt	$ 352	$ 352	$ 352
Stockholders' equity	$ 624	$ 624	$ 624
Debt/Equity Ratio	36:64	36:64	36:64
1976-85 External Financing Requirement:			
Debt financing	$ 107	–	–
Equity financing	–	–	–
Total	$ 107	–	–
% of 12/31/75 total equity	17%	–	–
Capital Structure as of 12/31/85:			
Long-term debt	$ 107	–	–
Capitalized lease obligations[4]	80	$ 80	$ 80
Total debt	$ 187	$ 80	$ 80
Stockholders' equity	$ 1067	$ 1283	$ 1499
Debt/Equity Ratio	15:85	6:94	5:95

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$1.01	$.83	$2.40	$3.00	$2.01	$1.85

1) Net of residual value of retired aircraft (see Table 3-NW)
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

PAN AMERICAN WORLD AIRWAYS

Pan Am's very heavy 1976-85 external financing burden results from both the Company's fleet replacement requirements and its extremely high current debt/equity ratio.

The average age of Pan Am's fleet is among the highest in the industry, and this aging problem is reflected in the likely need for Pan Am to replace its entire 707 fleet by 1985 due to economic obsolescence and to wear and tear. The 727-100's, which we did not assume to require replacement, are deployed in the Company's intra-Germany service.

Table 4-PA reveals that Pan Am's 1976-85 external financing needs should exceed $1 billion and its debt/equity ratio should remain extremely high unless the Company's earnings per share attain at least a $1.00 annual average. In view of Pan Am's extremely poor profit performance in recent years, the magnitude of prospective financing requirements, and the weakness of the Company's balance sheet, the need for Pan Am to achieve and sustain a rather dramatic profits turnaround should be evident. Pan Am is not without recourse if capital constraints force higher load factor operations or slower retirement of 707 aircraft than we have assumed. The Company may be able to: (1) continue to restructure its route system and redeploy assets within its system, as it has in recent years; (2) operate at a scheduled load factor in excess of our 56% projection (see Table 2-PA); and (3) shift scheduled travel to charter flights as a means of increasing its overall load factor. On the other hand, Pan Am must above all demonstrate the economic viability of the extraordinarily complex and not necessarily profit-oriented competitive environment of its international markets.

In our judgment, the size of Pan Am's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company in the industry's third tier.

Table 1-PA
Pan American World Airways
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's
747	32	15.3 years	–	–
707-300B/C	73	19.2	73	36.8%
727-100	13	19.0	–	–
Total	118	18.1	73	36.8%

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-PA
Pan American World Airways
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	14.86	26.61	
Sched. ASM's	31.38	47.51	16.13
Sched. load factor	47.4%	56.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 6% annual growth)	3.54	6.34	2.80
Total ASM Expansion Requirement			18.93
Less: ASM Expansion from Existing Fleet:			
Seating density [1]			1.25
Hours/day utilization[2]			5.06
Total Expansion from Existing Fleet			6.31
Net ASM Expansion Requirement			12.62

1) See Table 2, footnote 3.
2) Assumes 9.49 hours/day versus a prior peak of 9.04 hours/day and 8.29 hours/day in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-PA
Pan American World Airways
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement [1]	14.14
Fleet Expansion [2]	12.62
Total Requirement	26.76

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-PA) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-PA).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

8/15/76

Type	12/31/75 Operating Fleet		1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
747	32	33	–	26	58
747SP	–	5	–	20	20
707-300B/C	73	65	73	–	–
727-100	13	13	–	–	13
Total	118		73	46	91

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft [3]	$1944
Plus: Spares	97
Less: Residual Value of Retired Aircraft	(130)
Net Capital Expenditures on New Aircraft	$1911

3) See Table 3, footnote 5.

Source: Civil Aeronautics Board; DLJ estimates.

Table 4-PA
Pan American World Airways
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	Case II	Case III
	$ .50	$ .85	$1.20
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment[1]	$1911	$1911	$1911
Capital expenditures - other[2]	300	300	300
Debt retirement	343	343	343
Dividend maintenance	—	—	—
Total	$2554	$2554	$2554
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	—	—	—
Depreciation & amortization[3]	$1128	$1128	$1128
Net income	211	359	506
Total	$1339	$1487	$1634
12/31/85 Cash Surplus (Shortfall)	$(1215)	$(1067)	$(920)
Balance Sheet Analysis:			
Capital Structure as of 12/31/75:			
Long-term debt	$ 877	$ 877	$ 877
Capitalized lease obligations	437	437	437
Total debt	$1314	$1314	$1314
Stockholders' equity	$ 298	$ 298	$ 298
Debt/Equity Ratio	81:19	81:19	81:19
1976-85 External Financing Requirement:			
Debt financing	$1112	$1022	$ 890
Equity financing	103	45	30
Total	$1215	$1067	$ 920
% of 12/31/75 total equity	407%	358%	308%
Capital Structure as of 12/31/85:			
Long-term debt	$1645	$1555	$1423
Capitalized lease obligations[4]	190	190	190
Total debt	$1835	$1745	$1613
Stockholders' equity	$ 612	$ 702	$ 834
Debt/Equity Ratio	75:25	71:29	66:34

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$(1.22)	$(.72)	$(.54)	$(2.08)	$(1.11)	$(1.13)

1) Net of residual value of retired aircraft (see Table 3-PA).
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

TRANS WORLD AIRLINES

TWA's very heavy 1976-85 capital-raising burden is a function both of the Company's fleet replacement requirements and of its extremely high current debt/equity ratio.

The average age of TWA's fleet is among the highest in the industry, and this aging problem may be aggravated by Federal noise standards, which could force the full phase-out of TWA's 707's in advance of the expiration of their full useful lives. Although we have accelerated the phase-out rate of 707's in light of prospective noise standards, we have assumed that TWA will be able to continue to operate 20 of its 707's beyond 1985 even though noise standards could conceivably force the full phase-out of these aircraft by 1985. To soften the impact of 707 retirements we have assumed 727-100 retirements to take place at a slower rate than would be desirable.

Table 4-TW reveals that TWA's 1976-85 external financing needs should exceed $2 billion and its debt/equity ratio should remain extremely high under almost any reasonable earnings assumption. The forced full phase-out of 707's by 1985 would add approximately $521 million to the Company's 1976-85 capital expenditure requirements. In view of TWA's erratic profit performance in recent years, the magnitude of prospective financing requirements, and the weakness of the Company's balance sheet, the need for TWA to restore and sustain at least its 1972-73 level of profitability should be evident. TWA's financing burden is relatively heavier than the already heavy burdens of its principal competitors (American and United), and TWA's competitive position could (but will not necessarily) be in jeopardy if capital constraints force extremely high load factor operations or further retardation of 727-100 retirements.

In our judgment, the size of TWA's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company in the industry's third tier.

Table 1-TW
Trans World Airlines
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's
747	10	15.4 years	–	–
L-1011	30	12.0	–	–
707-300B/C	50	19.2	32*	10.7%
707-100B	40	21.0	38*	14.7
707-300	10	25.5	10	4.1
727-200	39	16.1	–	–
727-100	35	19.9	21	4.9
DC-9-10	18	19.1	18	1.9
Total	232	18.3	119	36.3%

*Federal noise standards may require full phase-out of these aircraft types by 1985, rather than only partial phase-out as indicated.

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-TW
Trans World Airlines
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975[1]	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	20.66	36.98	
Sched. ASM's	39.25	60.62	21.37
Sched. load factor	52.6%	61.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 6% annual growth)	1.73	3.09	1.36
Total ASM Expansion Requirement			22.73
Less: ASM Expansion from Existing Fleet:			
Seating density[2]			3.02
Hours/day utilization[3]			6.39
Total Expansion from Existing Fleet			9.41
Net ASM Expansion Requirement			13.32

1) 1975 data are adjusted for United Airlines strike.
2) See Table 2, footnote 3.
3) Assumes 8.20 hours/day versus a prior peak of 7.81 hours/day and 7.09 hours/day in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-TW
Trans World Airlines
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement[1]	16.35
Fleet Expansion[2]	13.32
Total Requirement	29.67

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-TW) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-TW).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
747	10	–	8	18
L-1011	30	–	30	60
707-300B/C	50	32	–	18
707-100B	40	38	–	2
707-300	10	10	–	–
727-200	39	–	31[3]	70
727-100	35	21	–	14
DC-9-10	18	18	–	–
Model X[4]	–	–	30	30
Total	232	119	99	212

3) See Table 3, footnote 3.
4) See Table 3, footnote 4.

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft[5]	$2629
Plus: Spares	164
Less: Residual Value of Retired Aircraft	(119)
Net Capital Expenditures on New Aircraft[6]	$2674

5) See Table 3, footnote 5.
6) Plus an additional $521 million if Federal noise standards require full phase-out of 707 aircraft by 1985.

Source: Civil Aeronautics Board; DLJ estimates.

Table 4-TW
Trans World Airlines
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	**Case II**	**Case III**
	$1.50	**$2.75**	**$4.00**
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment [1]	$2674	$2674	$2674
Capital expenditures - other [2]	400	400	400
Debt retirement	744	744	744
Dividend maintenance	—	—	—
Total	$3818	$3818	$3818
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	$ 75	$ 75	$ 75
Depreciation & amortization [3]	1105	1105	1105
Net income	204	374	544
Total	$1384	$1554	$1724
12/31/85 Cash Surplus (Shortfall)	$(2434)	$(2264)	$(2094)
Balance Sheet Analysis:			
Capital Structure as of 12/31/75:			
Long-term debt	$1068	$1068	$1068
Capitalized lease obligations	834	834	834
Total debt	$1902	$1902	$1902
Stockholders' equity	$ 335	$ 335	$ 335
Debt/Equity Ratio	85:15	85:15	85:15
1976-85 External Financing Requirement:			
Debt financing	$2041	$2041	$2041
Equity financing	393	223	53
Total	$2434	$2264	$2094
% of 12/31/75 total equity	726%	675%	625%
Capital Structure as of 12/31/85:			
Long-term debt	$2365	$2365	$2365
Capitalized lease obligations [4]	430	430	430
Total debt	$2795	$2795	$2795
Stockholders' equity	$ 932	$ 932	$ 932
Debt/Equity Ratio	75:25	75:25	75:25

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$ .11	$3.01	$3.25	$(2.01)	$(6.68)	$(.46)

1) Net of residual value of retired aircraft (see Table 3-TW); additional $521 million will be required if Federal noise standards force full phase-out of 707 aircraft by 1985.
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

UAL

United's heavy 1976-85 external financing burden is very much a result of the Company's fleet replacement requirements. The average age of United's fleet is among the highest in the industry, and this aging problem may be aggravated by Federal noise standards, which could force the phase-out of JT3D-powered aircraft, including United's DC-8-61/62's in advance of their full useful lives.

Although we have accelerated the phase-out rate of DC-8's in light of prospective noise standards, we have assumed that United will be able to continue to operate 20 of its DC-8-61/62's beyond 1985 even though noise standards could conceivably force the full phase-out of these aircraft by 1985. To soften the impact of the DC-8 retirements, we have assumed 727-100 retirements to take place at a slower rate than would be desirable, and we have assumed no 737 retirements.

Table 4-UA reveals that UAL's 1976-85 external financing needs will exceed $2 billion even if the Company's earnings per share average $3.25 annually, although its debt/equity ratio would decline to a manageable level at that earnings rate. The forced phase-out of all DC-8's by 1985 would add approximately $530 million to the Company's 1976-85 capital expenditure requirements. Despite UAL's current and temporarily growing cash surplus, attributable in large part to fleet aging and capital expenditure deferral, UAL's total 1976-85 financing burden will be very heavy, and the need for the Company to restore and sustain at least its 1973-74 prior peak level of profitability should be evident. It would appear, however, that United's principal competitors (American and TWA) are faced with relatively heavier burdens, and that United's competitive position will not necessarily weaken if capital constraints force extremely high load factor operations or further retardation of 727-100 retirements.

In our judgment, the size of UAL's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company in the industry's second tier.

Table 1-UA
United Airlines
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's [1]
747	18	14.4 years	–	–
DC-10	37	12.6	–	–
DC-8-61/62	39	17.3	19[2]	8.5%
DC-8-20/50	60	23.2	60	11.4
727-200	28	17.1	–	–
727-100	122	19.8	87	15.4
737	59	17.0	–	–
Total	363	18.4	166	35.3%

1) After strike adjustment.
2) Federal noise standards may require full phase-out of this aircraft type by 1985, rather than only partial phase-out as indicated.

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-UA
United Airlines
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975[1]	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	27.60	49.40	
Sched. ASM's	48.20	78.42	30.22
Sched. load factor	57.3%	63.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 6% annual growth)	2.94	5.27	2.33
Total ASM Expansion Requirement			32.55
Less: ASM Expansion from Existing Fleet:			
Seating density [2]			4.64
Hours/day utilization[3]			7.93
Total Expansion from Existing Fleet			12.57
Net ASM Expansion Requirement			19.98

1) 1975 data are strike-adjusted.
2) See Table 2, footnote 3.
3) Assumes 7.22 hours/day versus a prior peak of 6.88 hours/day and 6.25 hours/day (strike-adjusted) in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-UA
United Airlines
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement [1]	19.86
Fleet Expansion [2]	19.98
Total Requirement	39.84

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-UA) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-UA).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
747	18	–	–	18
DC-10	37	–	53	90
DC-8-61/62	39	19	–	20
DC-8-20/50	60	60	–	–
727-200	28	–	42[3]	70[3]
727-100	122	87	–	35
737	59	–	–	59
Model X [4]	–	–	50	50
Total	363	166	145	342

3) See Table 3, footnote 3.
4) See Table 3, footnote 4.

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft[5]	$3782
Plus: Spares	215
Less: Residual Value of Retired Aircraft	(139)
Net Capital Expenditures on New Aircraft [6]	$3858

5) See Table 3, footnote 5.
6) Plus an additional $530 million if Federal noise standards require full phase-out of DC-8 aircraft by 1985.

Source: Civil Aeronautics Board; DLJ estimates.

Table 4-UA
UAL
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	**Case II**	**Case III**
	$2.00	**$3.25**	**$4.50**
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment [1]	$3858	$3858	$3858
Capital expenditures - other [2]	600	600	600
Debt retirement	515	515	515
Dividend maintenance	149	149	149
Total	$5122	$5122	$5122
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	$ 300	$ 300	$ 300
Depreciation & amortization [3]	1881	1881	1881
Net income	498	809	1121
Total	$2679	$2990	$3302
12/31/85 Cash Surplus (Shortfall)	$(2443)	$(2132)	$(1820)
Balance Sheet Analysis:			
Capital Structure as of 12/31/75:			
Long-term debt	$1032	$1032	$1032
Capitalized lease obligations	834	834	834
Total debt	$1866	$1866	$1866
Stockholders' equity	$ 777	$ 777	$ 777
Debt/Equity Ratio	71:29	71:29	71:29
1976-85 External Financing Requirement:			
Debt financing	$2326	$2054	$1742
Equity financing	117	78	78
Total	$2443	$2132	$1820
% of 12/31/75 total equity	314%	274%	234%
Capital Structure as of 12/31/85:			
Long-term debt	$2843	$2571	$2259
Capitalized lease obligations [4]	468	468	468
Total debt	$3311	$3039	$2727
Stockholders' equity	$1243	$1515	$1827
Debt/Equity Ratio	73:27	67:33	60:40

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$(.36)	$.80	$2.03	$4.04	$(.24)	$1.25

1) Net of residual value of retired aircraft (see Table 3-UA); additional $530 million will be required if Federal noise standards force full phase-out of DC-8 aircraft by 1985.
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

WESTERN AIRLINES

Western's heavy 1976-85 external financing burden results primarily from the Company's high current scheduled load factor and high debt/equity ratio.

Western's fleet replacement requirements are about average as a percentage of 1975 capacity. The average age of Western's fleet is slightly below the industry average, but prospective noise standards will affect the Company's five 707's, which we have assumed to be fully phased out by yearend 1985.

Western's fleet expansion requirements are above-average because of the Company's high current load factor in scheduled service (60.5% in 1975). While the nature of some of Western's U.S. Mainland - Hawaii markets should permit above-average load factor operation without market share impairment, we imposed a 65% ceiling in making our load factor projection for Western (see Table 2-WA). Thus, we were forced to assume less load factor improvement by which to moderate 1976-85 fleet expansion needs than for any other carrier.

Table 4-WA reveals that Western's 1976-85 external financing needs will be large in relation to current stockholders' equity (a reflection of a currently weak balance sheet), and would approximate $450 million if the Company's earnings per share were to attain a $1.50 annual average, up from $.88 during 1971-75. Provided that Western can restore and sustain at least its 1973-74 level of profitability, its debt/equity ratio should be satisfactory. Thus, the Company's financing task would appear to be somewhat greater in respect to the dollar amount to be raised than in respect to the balance sheet impact of needed debt financing.

In our judgment, the size of Western's external financing requirements in relation to its stockholders' equity and prospective debt/equity ratio places the Company in the industry's second tier.

Table 1-WA
Western Airlines
1976-85 Fleet Replacement Requirements

Type	12/31/75 Operating Fleet Number	Avg. Age on 12/31/85	Aircraft Requiring Replacement by 1985 Number	Percent of 1975 ASM's
DC-10	6	12.4 years	–	–
707-300C	5	17.4	5	7.8%
720B	18	21.1	18	23.1
727-200	21	13.2	–	–
737	25	17.1	–	–
Total	75	16.6	23	30.9%

Source: Civil Aeronautics Board; DLJ estimates.

Table 2-WA
Western Airlines
1976-85 Fleet Expansion Requirements
(ASM's and RPM's in billions)

	1975	1985E	Increase
Required ASM's - Scheduled Service:			
Sched. RPM's (@ 6% annual growth)	7.00	12.53	
Sched. ASM's	11.57	19.27	7.70
Sched. load factor	60.5%	65.0%	
Required ASM's - Charter Service:			
Charter ASM's (@ 15% annual growth)	.12	.50	.38
Total ASM Expansion Requirement			8.08
Less: ASM Expansion from Existing Fleet:			
Seating density [1]			.88
Hours/day utilization[2]			1.73
Total Expansion from Existing Fleet			2.61
Net ASM Expansion Requirement			5.47

1) See Table 2, footnote 3.
2) Assumes 8.36 hours/day versus a prior peak of 7.96 hours/day and 7.28 hours/day in 1975.

Source: Civil Aeronautics Board; DLJ estimates.

Table 3-WA
Western Airlines
1976-85 Total Fleet Acquisition Requirements

A. New Capacity Required during the 1976-85 Period

	ASM's (billions)
Fleet Replacement [1]	3.97
Fleet Expansion [2]	5.47
Total Requirement	9.44

1) Based upon 1975 ASM's generated by replaced aircraft (see Table 1-WA) plus 10% utilization adjustment to reflect underutilization (i.e., with respect to seating density, hours/day) during 1975.
2) Based upon net ASM expansion requirement, after adjustment to increase seating density and hours/day utilization of existing fleet (see Table 2-WA).

B. Fleet Additions to Meet 1976-85 Total ASM Requirement

Type	12/31/75 Operating Fleet	1976-85 Changes Retirements	Additions	12/31/85 Operating Fleet
DC-10	6	–	14	20
707-300C	5	5	–	–
720B	18	18	–	–
727-200	21	–	19	40
737	25	–	–	25
Total	75	23	33	85

C. 1976-85 Capital Expenditures ($ millions) on New Aircraft

Gross Capital Cost of New Aircraft[3]	$711
Plus: Spares	36
Less: Residual Value of Retired Aircraft	(28)
Net Capital Expenditures on New Aircraft	$719

3) See Table 3, footnote 5.

Source: Civil Aeronautics Board, DLJ estimates.

Table 4-WA
Western Airlines
1976-85 Capital Requirements
($ millions)

	Annual Average Earnings Per Share		
	Case I	**Case II**	**Case III**
	$1.00	**$1.50**	**$2.00**
Cash Flow Analysis:			
1976-85 Cash Requirements:			
Capital expenditures - flight equipment [1]	$ 719	$ 719	$ 719
Capital expenditures - other [2]	120	120	120
Debt retirement	133	133	133
Dividend maintenance	51	51	51
Total	$1023	$1023	$1023
1976-85 Internal Cash Sources:			
12/31/75 cash surplus	–	–	–
Depreciation & amortization [3]	$ 376	$ 376	$ 376
Net income	127	191	254
Total	$ 503	$ 567	$ 630
12/31/85 Cash Surplus (Shortfall)	$(520)	$(456)	$(393)
Balance Sheet Analysis:			
Capital Structure as of 12/31/75: [4]			
Long-term debt	$ 155	$ 155	$ 155
Capitalized lease obligations	104	104	104
Total debt	$ 259	$ 259	$ 259
Stockholders' equity	$ 107	$ 107	$ 107
Debt/Equity Ratio	71:29	71:29	71:29
1976-85 External Financing Requirement:			
Debt financing	$ 504	$ 445	$ 382
Equity financing	16	11	11
Total	$ 520	$ 456	$ 393
% of 12/31/75 total equity	487%	427%	368%
Capital Structure as of 12/31/85:			
Long-term debt	$ 526	$ 467	$ 404
Capitalized lease obligations [5]	58	58	58
Total debt	$584	$525	$462
Stockholders' equity	$199	$258	$321
Debt/Equity Ratio	75:25	67:33	59:41

Memo:	**1971**	**1972**	**1973**	**1974**	**1975**	**1971-75 Avg.**
Earnings Per Share History	$.39	$.75	$1.35	$1.59	$.34	$.88

1) Net of residual value of retired aircraft (see Table 3-WA).
2) Includes some provision for aircraft modifications, but none for noise retrofit.
3) Based upon annualized 1975 yearend rate.
4) Pro forma, after adjustment for 2.5 million share stock repurchase transaction (from Kirk Kerkorian).
5) Assumes continuous renewal of airport and facilities leases, and non-renewal of aircraft leases.

Source: Civil Aeronautics Board; Company annual reports; DLJ estimates.

APPENDIX

Summary of Methodology and Assumptions

I. Table I: Fleet Replacement Requirements

The selection of aircraft to be replaced by 1985 has been reasonably straightforward, as follows:

Type	Assumptions and Remarks
L-188	Full phase-out due to economical obsolescence/aging.
707-300	Full phase-out due to economical obsolescence/aging.
720B	Full phase-out due to economical obsolescence/aging.
DC-8-20/50	Full phase-out due to economical obsolescence/aging.
DC-9-10	Full phase-out due to economical obsolescence/aging.
707-100B	Full phase-out due to aging and to noise standards, unless financially infeasible.
707-300B/C	Full phase-out due to aging and to noise standards, unless financially infeasible.
DC-8-61/62	Phase-out due to noise standards; degree of phase-out varies with financial capability.
727-100	Phase-out due to economical obsolescence/aging; degree of phase-out varies with financial capability.
747	Phase-out only where already decided upon or indicated by a carrier for fleet simplification.

It is extremely important to note that we have assumed Federal noise standards (currently still in the process of being developed) *not* to force the full phase-out of JT3D-powered aircraft (i.e., 707's and DC-8's) by 1985, although mandatory full phase-out is distinctly possible. If full phase-out were required by 1985 rather than partial phase-out as we have assumed, then our replacement assumptions would have to be increased for American, Braniff, TWA, and United.

II. Table 2: Fleet Expansion Requirements

In this section of our analysis, we have employed conservative assumptions with the intent of minimizing the airlines' 1976-85 fleet expansion requirements. The most critical of these assumptions are as follows:

A. *Scheduled RPM growth* - We have assumed deceleration in the domestic trunks' scheduled RPM growth rate from 8.7% during the 1966-75 period to 6.0% during the 1976-85 period to reflect primarily a mature business air travel market as well as a less dynamic personal air travel market due to moderation in the rate of growth in real disposable personal income. We have simplistically assumed a uniform 6% RPM growth rate for all carriers, although growth rate differentials will most likely arise due to: (1) differing route structures; and (2) the adverse effect of capacity constraints (i.e., the necessity of operating at very high load factors) on some carriers' relative traffic growth performance, and the resultant favorable effect on the relative performance of their competitors.

B. *Scheduled load factor* - We have assumed a substantial increase in the industry's year-round average scheduled load factor from 54.2% (strike-adjusted) in 1975 to 62.0% by 1985 in domestic operations, and from 50.0% (strike-adjusted) in 1975 to 57.0% by 1985 in international operations. In order for these assumed load factor levels to be attained on a year-round average basis, flights during peak periods (of the day, of the week, and of the year) would be crowded and generally sold out. The international load factor has been assumed to remain below the domestic load factor due to the extreme seasonality of international air travel and, hence, the difficulty of maintaining as high a year-round average load factor in international as in domestic operations. Load factors have been assumed to differ by carrier as a function of: (1) route structure (e.g., domestic versus international, long-haul versus short-haul, etc.); and (2) financial strength (i.e., capital constraints requiring high load factor operations or capital surpluses enabling a carrier to maintain low load factor operations).

C. *Charter ASM's* - We have assumed 8% annual growth during the 1976-85 period. Carriers already having a large charter operation in place have been assumed to experience 6.0% annual growth in charter ASM's, while carriers not having a significant charter operation in place have been assumed to require higher growth rates from a small negligible 1975 base.

D. *Increase in utilization of the existing fleet* - As explained in the footnotes to Table 2, we have assumed significant upgrading in carriers' utilization of their existing fleets. For wide-bodied aircraft seating density has been assumed to increase to the CAB "standard" (384 seats in the 747, 276 seats in the DC-10 and L-1011) except in the case of Continental, which has a special cargo-oriented seating configuration, and for narrow-bodied aircraft seating density has been assumed to increase simply by 5%. Hours/day utilization has been assumed to increase to a level 5% in excess of each carrier's prior peak, which was in most cases attained in 1973. These utilization adjustments would serve to reduce the industry's overall 1976-85 fleet acquisition requirements (for replacement and expansion) by 20.8%, as they would presume an additional 56.7 billion ASM increment, equivalent to 19.1% of the industry's actual 1975 capacity production, to be generated by the existing fleet.

E. *Net ASM expansion requirement* - The net ASM expansion requirement is derived by subtracting the total utilization adjustment from the gross ASM expansion requirement.

III. **Table 3: Fleet Acquisition Requirements**

A. *New capacity required during the 1976-85 period* - The ASM requirement for fleet replacement has been taken from Table 1, after application of a 10% utilization adjustment to compensate for the inclusion of replaced aircraft in the utilization adjustment in Table 2. The ASM requirement for fleet expansion has been taken directly from Table 2.

B. *Fleet additions* - In arriving at the specific fleet addition assumptions for each carrier, we have considered the following:

1. Utilization adjustment — The annual ASM production of each new aircraft has been assumed to reflect the upgraded seating density and hours/day utilization indicated in Table 2.

2. New generation aircraft - We have assumed a new generation aircraft, which we have designated "Model X", to be available by 1982-83 in the 185-200 passenger size and medium range category. We have used the 727-200 as a proxy for a possible new generation aircraft in the 140 passenger size category.

3. Fleet mix - The mix of smaller, medium-sized, and larger new aircraft assumed to be added to each carrier's fleet has been determined in light of the carrier's following needs: (1) frequency of service; (2) range; (3) fleet sizing; and (4) balance of overall mix. In addition, we have considered the carrier's 1986-90 fleet replacement requirements and some carriers' desire for fleet simplification.

C. *1976-85 capital expenditures on new aircraft* - Because our analysis of fleet replacement needs and fleet expansion needs have made use of conservative assumptions, our estimate of net capital expenditures on new aircraft most likely represents an understatement of the industry's true capital expenditure requirements. We have found our capital expenditures estimates not to be particularly sensitive to changes in fleet mix assumptions except under unreasonably extreme conditions (e.g., purchases assumed to be limited only to the 727-200, which has a relatively low acquisition cost per seat; or purchases assumed to be limited only to the "Model X", which should have a relatively high acquisition cost per seat). Additional assumptions affecting our net capital expenditure estimates are as follows:

1. Price inflation - We have applied a 5% annual rate of price inflation to current prices for 747, DC-10, L-1011, and 727 aircraft.

2. New generation aircraft - We have assumed an acquisition cost of $150,000 per seat for the "Model X" in 1983 dollars, representing a 9% premium over the acquisition cost per seat of the DC-10-10 and L-1011-1 in that year. (It should be noted, however, that the "median" DC-10 and L-1011 acquisition has been assumed to involve a transaction in 1981 dollars.) The use of the 727-200 as a proxy for a possible new generation 140 passenger aircraft type results in an additional understatement of capital expenditure requirements, due to the likelihood that the new generation aircraft would have a significantly higher acquisition cost per seat than the 727-200.

3. Noise standards - As already noted, we have not assumed Federal noise standards to force full phase-out of 707 and DC-8 aircraft by 1985. If full phase-out were required, then our capital expenditure estimates would have to be increased significantly for American, Braniff, TWA, and United, as noted in Table 3 for each of these carriers. Furthermore, we have made no provision for noise retrofit expenditures on any aircraft, even though some retrofit may eventually be required.

4. Spares - Capital expenditures on spare engines and parts have been assumed to range from 3% to 15% of capital expenditures on each aircraft type, depending upon the total number of the aircraft type already owned by the carrier.

5. Aircraft retirements - The residual value of retired aircraft has been estimated generally to be at a modest premium to book value at the time of assumed sale.

IV. Table 4: Capital Requirements

The objective of this table is to present three "cases" for each carrier's 10-year financial prospects. It is not our intention, however, to predict which, if any, of the three cases is the "most likely" for a given carrier. Rather, we have attempted to enable the reader to examine the effect of three different earnings assumptions on each carrier's cash flow, external financing needs, and balance sheet outlook.

The methodology and sources of the following items deserve some elaboration:

A. *Capital expenditures* - Estimated capital expenditures on flight equipment, net of residual value of retired aircraft, have been taken from Table 3. "Other" capital expenditures, principally on ground property and equipment and on some aircraft modifications (but none for noise retrofit), have been estimated based upon management indications and upon the book value of ground property and equipment as of December 31, 1975.

B. *Debt retirement* - Debt retirement scheduled for the 1976-85 period has been obtained from airline annual reports and from managements. Adjustments have not been made for revision of debt repayment schedules made subsequent to December 31, 1975, except in the cases of Pan Am (which recently completed a convertible security exchange offer) and Western (which repurchased shares from Kirk Kerkorian partly through the issue of a $23 million note).

C. *Dividend maintenance* - We have included the cash outlays required by carriers to maintain current dividends over the 1976-85 period. No provision has been made to anticipate changes in current dividend policies, even though it is likely that at least Delta and Northwest will increase their dividend rates during the 1976-85 period.

D. *12/31/75 cash surplus* - We have estimated the amount, if any, of excess cash held by each carrier as of December 31, 1975, based upon the carrier balance sheets as of that date, and have treated this surplus as a source of cash during the 1976-85 period.

E. *Depreciation & amortization* - Our estimate of depreciation amortization is based upon the 1975 yearend rate. We have not attempted to estimate each carrier's precise depreciation and amortization expense during the 1976-85 period on the basis that a change in "book" depreciation does not really have a direct effect on cash flow. That is, a decrease in "book" depreciation due to fleet aging and the expiration of book lives does not really detract from cash flow, but rather is offset by increased earnings (all other things being equal). Conversely, an increase in "book" depreciation does not really increase cash flow directly (again, all other things being equal). Thus, our three earnings "cases" should be interpreted in light of our use of 1975 yearend depreciation and amortization rates.

F. *Net income* - As previously mentioned, this table is not intended to indicate a prediction of carriers' 1976-85 cumulative net incomes, but rather to examine the effect of various earnings assumptions on cash flows, external financing needs, and balance sheets. The cumulative net income figure shown for each case is consistent with the annual average earnings per share assumption underlying each case, based upon capitalizations as of December 31, 1975 (except for Western, whose capitalization has been restated pro forma

to reflect the Kerkorian stock repurchase transaction). The range of annual average earnings per share selected for each carrier's three cases has been determined judgmentally and somewhat arbitrarily in light of: (1) the consideration that, on an industry basis, Case I represents a 7% average rate of return on regulatory investment, Case II a 9% ROI, and Case III an 11% ROI; (2) the historical (1971-75) absolute and relative earnings per share performance of each carrier (see "Memo" item); and (3) subjective consideration of changes in relative earnings potential since the 1971-75 period. It should be noted that in order to increase the force of our conclusions in respect to the magnitude of the industry's capital requirements, we have not only endeavored to understate capital expenditure requirements as previously described, but we have also used what are clearly optimistic cases for 1976-85 cumulative net income, particularly for the financially weaker carriers.

G. *External financing mix* - Given the 12/31/85 cash shortfall requiring external financing, as indicated in the "cash flow analysis" section of Table 4, we have arrived at an arbitrary breakdown between "debt" financing and "equity" financing by use of the following mechanical guidelines:

Indicated 12/31/85 Debt/Equity Ratio	Guideline
Less than 45:55	No equity financing required.
Between 70:30 and 45:55	Equity financing amounting to 10% of 12/31/75 stockholders' equity.
Between 75:25 and 70:30	Equity financing amounting to 15% of 12/31/75 stockholders' equity.
Greater than 75:25	Whatever equity financing would be necessary to prevent debt/equity ratio from exceeding 75:25.

Except in the case of the 75:25 debt/equity ratio, these guidelines have been designed pragmatically to contain the airlines' very real problems in raising equity capital. A more "ideal" set of guidelines would shift the balance far more toward equity financings in order to strengthen the presently and, in many cases, prospectively very weak balance sheets, but such a shift would lack practicality and/or severely dilute the interests of equity holders.

In any case, the principal analytical consideration should be the size of each carrier's total (debt plus equity) external financing requirement under the various earnings assumptions in relation to the carrier's size and financial strength.

H. *12/31/85 debt* - Long-term debt as of 12/31/85 equals 12/31/75 long-term debt minus 1976-85 debt retirement plus 1976-85 external debt financing. Capitalized lease obligations as of 12/31/85 assume continuous renewal of current airport and facilities leases (but no increases) and non-renewal of current aircraft leases.

I. *12/31/85 stockholders' equity* - Stockholders' equity as of 12/31/85 equals 12/31/75 equity plus 1976-85 net income minus 1976-85 dividends plus 1976-85 external equity financing.

J. *Debt/Equity ratio* - As already described, in some cases we have projected a very large amount of equity financing in order to prevent carriers' 12/31/85 debt/equity ratios from exceeding 75:25. The 75:25 maximum has been set arbitrarily, but reflects our concern

over the difficulty that even carriers with 65:35 or 70:30 debt/equity ratios will have in obtaining adequate financing. Thus, while lenders may well be willing to provide carriers with debt financing that would raise debt/equity ratios above 75:25 (as is currently the case for four carriers), our use of the 75:25 maximum is an expression of our doubts about such a prospect.

Ted Shen

Additional information is available upon request.