

AIRCRAFT LEASING—PANACEA OR PROBLEM?

BY RICHARD GRITTA AND PETER LYNAGH

Introduction

Railroad cars have long borne the stenciled markings "This car is The Property of The City Bank of X-Land." It is bizarre, however, to board a beautiful new DC-10 and see a small placard stating that some trust company is the owner of the plane and not the friendly airline. More and more, the airlines are turning to the lease as a means of securing aircraft.

The leasing of flight equipment by the 11 trunklines has grown tremendously over the last decade. In the decade of the sixties, over \$1.5 billion dollars worth of aircraft were leased by the trunks.¹ The Air Transport Association reported that by December 1969, 37 airlines, accounting for 2403 aircraft, were leasing 324 airplanes.²

While leasing is a popular form of securing aircraft, not all airlines rely on lease financing. Those airlines who have experienced financial difficulties depend more on this method of finance. 83% of Northeast's fleet was leased; 34% of Eastern's fleet was leased; 22% of American's; and 19% of TWA's and United's fleets were leased. Profitable airlines, such as Northwest, Delta and Continental, had no leases and National, another profitable carrier leased only 13% of its fleet.³ The advent of jumbo jets, and mounting financial problems in the seventies, indicate that leasing will continue to be a popular form of financing aircraft.

This paper will look at the characteristics of the financial lease, the types of leases used by the airlines, and the reasons airlines have turned to leasing as a source of funds. A discussion will follow on the accounting implications of leasing and the capitalization effect of leasing. Finally, conclusions will be presented with respect to leasing and the future financial stability of the airlines.⁴

* Richard Gritta, Ass't. Prof. of Finance, Bowling Green State Univ. D.B.A. in Finance, Univ. of Md.

Peter Lynagh, Ass't. Prof. of Transportation, Univ. of Md. Ph.D. Michigan State Univ., 1970. M.B.A. Univ. of Oklahoma.

1. Altschul, Selig, "Liquidity," *Airline Management and Marketing*, July 1970, p. 37.

2. Parrish, Robert, "Aircraft Leasing," *Airline Management and Marketing*, June 1970, p. 50.

3. Calculated from data in the CAB: Form 41.

4. Emphasis in the paper is on the "Big Four" Trunks—American, Eastern, TWA and United—as they account for over 83% of all leases by the 11 Domestic Trunklines.

Nature of The Airline Leases

Lease Types: Lease contracts can be divided into two basic categories by purpose: The financial lease and the operating or service lease.⁵ Each type of lease is defined below: *Financial Lease*—“Defined as a contract under which a lessee agrees to make a series of payments to a lessor, which, in total, exceeds the purchase price of the equipment acquired. Typically, payments under such a lease are spread over a time period equal to the useful life of the equipment. The contract is non-cancellable by either party during the initial period. The lessee is thus irrevocably committed to continue leasing the equipment.”

Operating Lease—“Defined as all other lease contracts, they typically are cancellable by the lessee upon notice of cancellation to the lessor. Operating leases, therefore, do not involve any fixed commitment by the lessee and in this respect are similar to most types of business expenses.”⁶

Thomas A. Nelson has identified several major traits of the financial lease which aid in its identification:⁷

1. The decision to lease is based primarily on financial considerations rather than on strictly operational factors. Leasing is thus considered as an alternative source of capital by management.
2. The lease is normally noncancellable, or cancellable only under severe penalty, during the initial term of the lease.
3. Rentals payable are designed to return to the lessor the total cost of the asset plus a return on the invested funds.
4. The lessor, the legal owner of the assets, retains title at the expiration of the initial lease term. Options to renew or purchase are often included.
5. Financial leases normally employ the “net” lease principle which requires the lessee to pay all the maintenance costs, repairs, insurance premiums, taxes, and all other costs normally associated with ownership.
6. The primary security behind a financial lease is normally considered to be the general credit of the lessee rather than the value of the leased property.

Comparisons of actual leases on file with the C.A.B. and the character-

5. Myers, John H., Reporting of Leases in Financial Statements” *Accounting Research Study No. 4* (New York, N.Y., American Institute of Certified Public Accountants, 1962), Chapter 2.

6. Vancil, Richard F., and Anthony, Robert N., *Leasing of Industrial Equipment* (New York, N.Y.: McGraw-Hill Book Company, Inc., 1963), p. 8.

7. Nelson, Thomas A., *The Import of Leases on Financial Analysis*, Occasional paper no. 10 (East Lansing, Michigan; Bureau of Business and Economic Research, Michigan State University, 1963), p. 6.

istics listed above were made to see if the airline leases were financial leases.

Common Provisions found in the leases reviewed are listed below:⁸

1. These leases were alternatives to purchases of aircraft financed via the sale of long-term debt or common stock. The financial condition of many of the carriers, and the conditions existing in the capital markets, contraindicated the use of such sources of funds (see below). There was no evidence that operational considerations were a significant factor in the decision to lease the aircraft.

2. Leases were non-cancellable by either party. In case of default or voluntary termination, the entire obligation under the lease agreement was considered due. That obligation was generally defined as the present value of the annuity stream of remaining payments, discounted at the prime rate of interest at the time of default.

3. Aggregate rentals for the initial term of the leases exceeded the then current purchase price of the aircraft, thus providing a return on the lessor's funds. Normally, the length of the initial term of the lease was greater than the economic life of the plane. In an Eastern Airline's lease for a Boeing 727, the cost for the plane to the lessor was \$6.03 million. Aggregate rentals over the 15 year lease totaled \$8.75 million. Eastern's depreciable base on such an aircraft is 14 years.⁹

4. Title was retained by the lessor at the expiration of the initial lease period. Options to renew or repurchase were present in every long term lease agreement.

5. Lease covenants stated clearly that the leases were net. All expenses were assumed by the lessee. All risks of ownership rested with the lessee, not with the lessor.

The evidence indicates that the majority of the leases employed by the trunkline carriers are financial.

Airline Need For Leasing—One of the major reasons the airline industry has turned to leasing is the severe drop in airline profits over the past several years. Low or negative profits negated the use of internal equity (retained earnings) as a source of funds. In addition, volatile and depressed stock prices made external equity finance difficult and expensive. With wide savings in prices, the proper timing of stock issues was virtually impossible and thus acted as a strong deterrent to stock sales.

8. For details on each lease covenant and its major provisions, see: Gritta, Richard D., *Profitability and Risk in the U.S. Domestic Trunkline Industry: A Case Study of Eastern Airlines, 1959-69*, University of Maryland, (unpublished doctoral dissertation), 1971, Ch. IV, Tables I-IV, especially.

9. Eastern Airlines Lease Agreement, LP530, filed pursuant to section 299 of CAB Regulations, Civil Aeronautics Board, Washington, D.C. *Ibid.*, Parish, p. 50.

Depressed prices meant a prohibitively higher cost of equity capital. With market prices often selling below reported book values, further sales could have diluted existing book values.

Capital structures of The Trunkline Carriers were already overburdened with debt finance, and any additional use of debt was prohibitive. Convertible debt was also inadvisable. Many airlines had floated large amounts of convertible securities, and with the ensuing decline in airline stock price the issues were "hung", thereby constituting a possible large dilution in earnings to common stock.

Another related factor which encourages the increased use of aircraft leasing is the fact that commercial banks have become very interested in aircraft leases. In a typical 747 leasing deal, the bank will put up \$5 million of the \$20 million total and borrow the remaining \$15 million at 10% from outside sources. The airlines pay the bank \$2 million per year for 15 years. Out of this \$2 million, the bank pays interest to its creditors and retires the principal over the life of the loan. That leaves a cash flow of \$170,000.

In addition, the bank, as owner, is entitled to the 7% investment tax credit of \$1.4 million. Most airlines have not maintained profits at a level sufficient enough to allow them the benefits of the investment tax credits.¹⁰ The bank is also entitled to accelerated depreciation. Cash flow, investment tax credit and depreciation amount to a 56% return on the banks own investment in the first year. After ten years the return drops to 20%. Leasing, then, is a very profitable business for the banks.¹¹

Leasing and Financial Risk

Leasing is a key and growing source of funds to the airline industry. A source is defined as any increase in a liability or owners equity item, or as a decrease in an asset. A use of funds would consist of an increase in an asset, or a decrease in a liability or owners equity item.¹² As lease obligations do not normally appear directly on a firm's balance sheet, however, their significance as a source of funds is not detected by traditional ratio analysis. To the extent that leases possess the characteristics of long-term debt finance, such analysis will understate the degree of "financial risk" actually faced by the airlines.

"Financial Risk" broadly defined encompasses both the risk of possi-

11. The Jet-Propelled Bankers," *Forbes*, August 15, 1970, p. 19.

12. Helfert, Eric A., *Techniques of Financial Analysis*, (Homewood, Ill.: Richard D. Irwin, Inc. 1963), Chap. 1.

ble insolvency and the variability in earnings available to common stock.¹³ The cause of "financial risk" is the use of fixed income securities, such as long term bonds, which results in the obligation to pay interest or other legal obligations. Some methods used to measure "financial risk" are: "The debt ratio" (percent long-term-debt to total capitalization); total debt to assets ratio; total debt to net worth; the interest coverage ratio and the current ratio.

Many accountants and financial analysts view the use of lease agreements as essentially long term debt financing. Two committees of the Accounting Principles Board of The American Institute of Certified Public Accountants (A.I.C.P.A.) are presently studying accounting changes for leased equipment. These changes would make the capitalization of leases the standard accounting principle.¹⁴ This change would have no legal force; however, auditors would not certify financial statements which do not follow accounting principles.

One method of taking into account the long-term debt incurred by leasing is the capitalization technique. This capitalization technique was employed to measure the effect of long-term leasing of aircraft on the "financial" risk of the "Big Four". Ratio Analysis was performed for the "Big Four" before leasing was taken into account and recomputed after leasing was taken into account.

Methodology—The capitalization process requires the selection of an appropriate discount rate. Three possible approaches to the estimation of the rate that will yield a result with a small margin of error are: adjust the current "prime rate" for a firm's credit worthiness; add ½ to 1 percentage points to the rate of interest paid by the firm on its latest debt offering; add ½ to 1 percentage points to the price on the bond market of similar credit.¹⁵

As no airline floated straight debt during the 1967-69 period, the third approach, the summation method, was used. During 1969, Moody's Baa Corporate bond rate vacillated between 8-8 ½. Most airline bonds were Ba rated, so ½⁸ was added to the Baa rating to reflect the slightly lower

13. The total risk complexion of a firm is of importance to both airline management and the financial analyst. "Financial risk" is one component of total risk. The other is "business risk", the risk associated with the operation of the firm. The latter risk arises largely from the nature of the particular industry and thus lies almost completely outside managerial control. See Van Horne, James C., *Financial Management and Policy*, second edition, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1968), p. 18. The airline industry, because of its cost structure and the volatility of revenues, is high in "business risk."

14. "Airlines Wary of Accounting Change For Leased Equipment," *Aviation Week*, October 25, 1971, p. 25.

15. Myers, *Accounting Research Study No. 4*, p. 46.

credit rating of the airlines securities.¹⁶ A 1% differential was added to adjust for the lease transaction, and a 10% rate determined:

8 ½ %	Baa
½ %	Risk Differential
1 %	Lease Transaction
<hr/>	
10 %	

Using this 10% discount rate, the financial lease obligations of The Big Four were capitalized in two stages. First, the present value of the aircraft lease rental was determined by discounting at 10% the remaining yearly rentals (an annuity) under each lease. The current years payments were excluded as current liabilities. The sum of these values for each airline thus represents the capitalized value of that airline's leases; that is, its debt equivalent. Second, the annual rental payments under longterm real property leases (all were financial in character) were discounted at 10% to obtain their debt-equivalent. The capitalized values of both the aircraft and the ground leases were then summed to obtain the total imputed debt. Tables I-V show the calculations and the results.

16. *Moody's Transportation Manual*, 1970.

TABLE I
 EASTERN AIRLINES — CAPITALIZATION OF
 FINANCIAL LEASES (Dec. 1969)

LEASED AIRCRAFT	DATE OF LEASE	YEARS REMAINING (END OF 1969) ¹	TOTAL YEARLY RENTAL (ALL AIRCRAFT)—1969	PRESENT VALUE AT 10%
5 — B727	6/64	6	\$2.42 million	\$ 8.34 million
15 — DC9	7/66	8	\$1.91	\$ 8.45
3 — B727	10/68	14	\$1.61	\$10.40
6 — DC9	10/68	14	\$2.15	\$13.88
7 — DC9	9/68	14	\$2.39	\$15.43
8 — DC9	8/68	14	\$2.73	\$17.63
5 — DC8	12/68	14	\$4.08	\$26.35
1 — DC8	2/69	14	\$1.04	\$ 6.72
11 — B727	12/69	15	\$6.41	\$42.93
61 on long-term leases			Total	Total
			\$24.47 million	\$150.13 million
			<u>Total Capitalization:</u>	
			Long-term debt	\$626.2 million
			Capitalized leases	150.1
			aircraft	201.0
			ground, etc. ²	224.9
			Common equity	

¹Rounded to the nearest year

²Excluding the current portion of the obligation

³EAL's 1969 minimum total annual rentals on real property (\$20.1 mil.) discounted at 10%.

Source: Basic data obtained from EAL's CAB, Form 41.

TABLE II
TRANS WORLD AIRLINES — CAPITALIZATION OF
FINANCIAL LEASES (Dec. 1969)

LEASED AIRCRAFT	DATE OF LEASE	YEARS REMAINING (END OF 1969) ¹	TOTAL YEARLY RENTAL (ALL AIRCRAFT)—1969 million	PRESENT VALUE AT 10% ²
13 — B707	7/68	14	\$ 6.57	\$ 42.40 million
2 — B707	6/68	14	\$ 1.37	\$ 8.83
2 — B707	4/68	13	\$ 1.25	\$ 7.74
4 — B707	4/68	13	\$ 2.73	\$ 16.92
2 — B727	2/68	13	\$ 1.07	\$ 6.62
9 — B707	3/69	14	\$ 4.92	\$ 31.79
6 — B707	3/69	14	\$ 4.43	\$ 28.60
38 on long-term leases			Total	Total
			\$22.34 million	\$142.90 million
Total Capitalization:				
Long-term debt				\$757.2 million
Capitalized leases aircraft				142.9
ground, etc. ³				220.0
Common equity				362.7

¹Rounded to the nearest year

²Excluding the current portion of the obligation

³TWA's 1969 minimum total annual rentals on real property (\$22.0 mil.) discounted at 10%
Source: Basic data obtained from TWA's CAB Form 41.

TABLE III
 AMERICAN AIRLINES — CAPITALIZATION OF
 FINANCIAL LEASES (Dec. 1969)

LEASED AIRCRAFT	DATE OF LEASE	YEARS REMAINING (END OF 1969) ¹	TOTAL YEARLY RENTAL (ALL AIRCRAFT)—1969	PRESENT VALUE AT 10% ²
22 — B727	12/68	17	\$ 9.46 million	\$ 67.29 million
5 — B727	1/69	17	\$ 2.15	\$ 15.29
4 — B727	9/69	15	\$ 2.34	\$ 15.67
3 — B707	3/69	9	\$ 2.55	\$ 13.35
10 — B707	6/68	14	\$ 6.79	\$ 43.85
10 — B707	6/69	14	\$ 7.41	\$ 49.62
<u>54 on long-term leases</u>			<u>Total</u> \$30.70 million	<u>Total</u> \$205.07 million
Total Capitalization:				
			Long-term debt	\$681.2 million
			Capitalized leases aircraft	205.1
			ground, etc. ³	243.0
			Common equity	403.3

¹Rounded to the nearest year

²Excluding the current portion of the obligations

³American's 1969 minimum annual total rentals on real property (\$24.3 mil.) discounted at 10%
 Source: Basic data obtained from AAL's CAB Form 41.

TABLE IV
UNITED AIRLINES — CAPITALIZATION OF
FINANCIAL LEASES (Dec. 1969)

LEASED AIRCRAFT	DATE OF LEASE	YEARS REMAINING (END OF 1969) ¹	TOTAL YEARLY RENTAL (ALL AIRCRAFT)—1969 million	PRESENT VALUE AT 10% ² million
6 — DC8	7/65	6	4.41	\$ 15.20
6 — DC8	6/69	15	\$ 4.34	\$ 29.05
5 — DC8	6/69	15	\$ 3.80	\$ 25.42
23 — B727	12/65	9	\$ 9.27	\$ 48.53
10 — B727	6/69	12	\$ 4.32	\$ 25.51
7 — B727	12/67	13	\$ 1.73	\$ 10.71
15 — B727	12/69	12	\$ 7.22	\$ 42.60
3 — B727	6/69	15	\$ 1.77	\$ 11.87
<u>75</u> on long-term lease			<u>\$36.86</u> million	<u>\$208.89</u> million
Total			Total	
Total Capitalization:				
Long-term debt				\$872.2 million
Capitalized leases				
aircraft				208.9
ground, etc. ³				135.0
Common equity				587.3

¹Rounded to the nearest year

²Excluding the current portion of the obligations

³UAL's 1969 minimum annual total rentals on real property (\$13.5 mil.) discounted at 10%

Source: Basic data obtained from UAL's CAB Form 41.

TABLE V
 RATIO ANALYSIS-BEFORE AND AFTER CAPITALIZATION
 OF AIRCRAFT & GROUND LEASES (1969)

Current Ratio	Before ¹	After (aircraft)	% Change	After (ground)	(air. +)	% Change
EAL	1.12 (1)*	1.00 (1)	-10.7%	0.91 (1)		-18.8% (1)
TWA	1.44 (4)	1.34 (4)	-6.9%	1.25 (4)		-13.2% (4)
AMR	1.29 (3)	1.14 (3)	-11.1%	1.05 (3)		-18.0% (2)
UAL	1.15 (2)	1.02 (2)	-11.3%	0.98 (2)		-15.5% (3)
Long-Term Debt/ Total Capital	Before ¹	After (aircraft)	Spread ²	After (ground)	(air. +)	Spread ²
EAL	73.2%(1)	77.0%(1)	+3.8%	81.4%(1)		+8.2% (3)
TWA	63.0%(2)	66.8%(2)	+3.8%	71.5%(2)		+8.5% (2)
AMR	53.9%(3)	60.0%(3)	+6.1%	65.8%(3)		+11.9% (1)
UAL	52.7%(4)	56.2%(4)	+3.5%	60.9%(4)		+8.2% (3)
Interest Coverage	Before ¹	After (aircraft)	% Change	After (ground)	(air. +)	% Change
EAL	0.90x(1)	0.66x(1)	-26.7%	0.54x(1)		-40.0% (1)
TWA	4.49x(4)	3.54x(4)	-21.1%	3.10x(4)		-30.9% (4)
AMR	2.81x(2)	2.16x(2)	-23.1%	1.90x(2)		-32.3% (3)
UAL	3.78x(3)	2.75(3)	-27.2%	2.55x(3)		-32.5% (2)
Total Debt/ Net Worth	Before ¹	After (aircraft)	% Change	After (ground)	(air. +)	% Change
EAL	3.79 (1)	4.46 (1)	+20.9%	5.35 (1)		+45.5% (1)
TWA	3.07 (2)	3.53 (2)	+14.9%	4.14 (2)		+34.9% (3)
AMR	2.73 (3)	3.31 (3)	+21.2%	3.94 (3)		+43.0% (2)
UAL	2.28 (4)	2.71 (4)	+18.9%	2.94 (4)		+29.1% (4)

¹Computed from data in the Handbook of Airline Statistics, Washington, D.C., Civil Aeronautics Board, 1969.

²Because the limit is 100%, spreads before and after are more meaningful than percent changes.

*Ranks in parenthesis: 1 = poorest or highest in risk.

The net result of the capitalization is to add an additional \$1505.9 million in imputed long-term debt. \$448 million was added to American's existing debt for a total of \$1129.00 million, 65% of total capitalization. \$351.1 million was added to Eastern's existing debt for a total of \$977.3, over 81.1% of total capitalization. \$362.9 million was added to TWA's existing debt for a total of \$1120.1 million or 71.5% of total capitalization. \$349.9 million was added to United's existing debt for a total of \$1215.9 million or 60.9% of total capitalization.

Ratio Analysis—Ratio measures of "financial" risk were computed before leasing was taken into account and recomputed to consider the effects of financial leasing on risk. Ratios recomputed were:

Current Ratio (current assets to current liabilities) The current year's rentals were treated as current liabilities of the firm. Current assets remain unchanged.

Debt to Equity Ratio (total debt to net worth): The present value of the lease rentals were added in as short-term debt. Net worth remained the same.

Long-term Debt Ratio (long-term debt to total capitalization): present value of lease rentals were included in both long-term debt and total capital.

Interest Coverage Ratio (earnings before interest and taxes to interest): $\frac{1}{2}$ of the annual 1969 rental payments were treated as interest and added to both EBIT and interest.¹⁷

The current ratio and interest coverage ratio are measures of the narrow definition of "financial" risk; that is, they measure the danger of insolvency and of the short run ability of the firm to meet its obligations as they come due. The debt to equity ratio and the long term debt ratio measure risk in a broader sense, as the potential fluctuations introduced in earnings available to stockholders arising from the use of long-term debt finance.

Table V presents the results of both stages of capitalization. Each ratio for each airline has deteriorated significantly. Each of the four airlines is thus measurably higher in financial risk when financial leasing is considered.

Within the four, any increase in the differential spread in risk is somewhat more difficult to detect. Relative rankings in risk remain unchanged by the capitalization in every case. However, Eastern's current and interest coverage ratios have experienced a slightly greater deterioration after capitalization than those of the other three.

17. This treatment is suggested by several analysts. See, Cohn, Jerome B., and Zinbarg, Edward D., *Investment Analysis and Portfolio Management*, (Homewood, Ill.: Richard D. Irwin, Inc., 1967), p. 376.

Conclusions

Presently everyone is happy with the leasing of aircraft. Airline Companies get to purchase new aircraft, which they would have great difficulty doing under the present stringent profit picture. Commercial banks, the lessors, made a handsome return on their investment. Institutions lending the lessors 75% of the purchase price make their 10% interest. Finally, the aircraft manufacturer gets to sell more planes.

In reality, the airlines appear to be damaging their financial structure at a point in time when damage can be ill-afforded. The airline industry, which suffers from a high degree of business risk, is already too deep in financial risk. Present accounting techniques allow the airlines to hide the long-term obligations of leasing arrangements. Future A.I.C.P.A. actions may bring a mandatory close to this procedure.

Leasing of aircraft for the airline industry is by no means a panacea. It is a "Deus-ex-Machina" appearing at a point in time when airlines profits are down, but at a point when the airlines must reequip. Leasing may be the solution today, but it also may be tomorrow's problem.

