

# Lease Capitalization and the Effect on the Debt Ratios of the Major U.S. Airlines

Richard D. Gritta\*  
Ellen Lippman\*\*  
Garland Chow\*\*\*

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## I. INTRODUCTION

Leasing has been an important and growing source of financing to the U.S. airline industry over the past several decades, and it continues to be in 1992. In 1969, the Air Transport Association (ATA) reported that thirty-seven airlines (with a combined fleet of 2403 aircraft) leased 324 planes, or 13.5% of their total.<sup>1</sup> By 1991, United alone was leasing 221 aircraft (or 45.5% of its fleet).<sup>2</sup> Leasing, however, is not a magical

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\* Richard D. Gritta is Professor of Finance, University of Portland, Portland, Oregon. BBA, University of Notre Dame; MBA, Indiana University; Ph.D., University of Maryland.

\*\* Ellen Lippman is Assistant Professor of Accounting, University of Portland, Portland, Oregon. BA, Colorado College; MA, University of Wisconsin; Ph.D., University of Oregon. CPA, State of Oregon.

\*\*\* Garland Chow is Associate Professor of Transportation and Logistics, University of British Columbia, Vancouver, B.C. BBA and MBA, University of Maryland; DBA, Indiana University.

1. Robert Parrish, *Aircraft Leasing*, AIRLINE MANAGEMENT AND MARKETING, June 1970, at 50.

2. Computed from data contained in UNITED AIR LINES' ANNUAL REPORT, 14 (1991).

source of funds. It is simply debt financing.<sup>3</sup> Leasing thus increases financial leverage and the risk that it entails.<sup>4</sup>

Research by one of the authors in 1973 and 1974 examined both the extent of airline lease finance and its effects on the financial structure of the airline industry in the 1960s.<sup>5</sup> That research argued that certain types of leases (then called financial leases) should be capitalized and reflected in the calculation of carrier debt ratios.<sup>6</sup> The purpose of this paper is to update that research and to compare and contrast the situation in the early 1990s with that of the late 1960s and early 1970s. It will be argued that data important for understanding the financial condition of the industry are still not disclosed. This is a highly significant finding in an industry already plagued by severe financial distress.<sup>7</sup>

The discussion will be broken down into three sections. In Part II of the paper, conditions in the 1960s and early 1970s will be outlined. In the process, a critical distinction will be made between operating and financial lease contracts. In Part III, the current situation will be documented and compared to the early 1970s. A switch by carriers to the use of non-cancelable operating leases and a subtle change in the definition of the capital leases will be shown to cause difficulties in the analysis of carrier financial structures. Finally, Part IV, the Conclusion, will argue for changes in data reporting requirements.

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3. Any financial management textbook will discuss leasing as debt finance. See, e.g., CHARLES R. MOYER, ET AL. CONTEMPORARY FINANCIAL MANAGEMENT, ch. 18 (5th ed. 1992).

4. Financial leverage can be defined as the use of debt finance to enhance rates of return to common stockholders. Leverage, however, can work in reverse, hurting stockholder returns. In any case, leverage increases the variability in rates of return on equity and is therefore directly correlated with an increased risk of bankruptcy. For various studies of risk (financial leverage) and return in air transportation, see RICHARD D. GRITTA, THE EFFECT OF LEVERAGE ON AIR CARRIER EARNINGS: A BREAK-EVEN ANALYSIS, 1979; Richard D. Gritta, *Debt Finance and Volatility in Rates of Return in Air Transport*, 6 TRANSP. L. J. 73 (1975); Richard D. Gritta et al., *Airline Financial Policies in a Deregulated Environment*, 27 TRANSP. J. 37 (1988). For a complete treatment of debt finance and the effect on carrier solvency, see Richard D. Gritta et al., *A New Approach to Forecasting Financial Distress in Air Transportation: The AIRSCORE Model*, 31 J. TRANSP. RES. F. 371 (1991) [hereinafter *New Approach*]; and Richard D. Gritta, *Bankruptcy Risks Facing the Major U.S. Airlines*, 47 J. AIR L. COM. 41 (1982).

5. Richard D. Gritta & Peter M. Lynagh, *Aircraft Leasing-Panacea or Problem?* 56 ACCT. 37 (1974); and Richard D. Gritta, *The Impact of the Capitalization of Leases on Financial Analysis*, 30 FIN. ANALYSTS' J. 41 (1974) [hereinafter *Impact*].

6. By capitalized it is meant that the "present value" or discounted value of the lease payments should be computed for such lease agreements and those values should then be included in the total long-term debt burden of the carrier (and in any debt ratio computed from the airline's balance sheet). This paper will follow this approach.

7. For a complete treatment of the current financial state of the airline industry, see *New Approach*, *supra* note 4, at 371.

## II. AIRCRAFT LEASING IN THE 1960s

Table I presents data on major airline fleets and total leased (both short-term and long-term) aircraft for the year 1969, the key year in a prior study.<sup>8</sup> Included on the table are the carriers classed as the major carriers or "trunklines" in that year, the so-called "Big Four" and "Other Seven" as they were referred to by the Civil Aeronautics Board (CAB) at that time.<sup>9</sup> Two interesting points are evident from the table. First, the vast majority of the leases were long-term. Of the total 317 leased aircraft, 87.1% (276/317) were financed using long-term lease agreements. It is the type of lease that is most important, as will become evident. Second, there was a tendency for the more profitable carriers to lease few, if any, aircraft. While carriers on average leased 19.2% of their planes (317 of the total fleet of 1651), Delta and Northwest, the two most profitable carriers of the 1960s, did not lease a single aircraft. Additionally, other than financially strong carriers, such as Western and Continental, had low rates of leasing (8% and 2%, respectively). In contrast, Eastern, Northeast, and TWA, three of the most financially troubled carriers of that era, leased significant portions of their fleets. Eastern leased 33% of its fleet, while Northeast leased 83% of its planes. While the correlation is not perfect (American, for example, leased 22% of its aircraft), it is still significant.

TABLE I. LEASED AIRCRAFT  
(AS OF DEC. 31, 1969)

	Fleet	S-Term	L-Term	Total Leased	%
Eastern	250	21	61	82	33%
American	247	0	54	54	22%
TWA	226	5	38	43	19%
UAL	388	0	75	75	19%
Northwest	117	0	0	0	0%
Delta	130	0	0	0	0%
Braniff	72	12	8	20	28%
Northeast	35	0	29	29	83%
Continental	55	0	1	1	2%
Western	78	0	6	6	8%
National	53	3	4	7	13%
<b>TOTAL</b>	<b>1651</b>	<b>41</b>	<b>276</b>	<b>317</b>	<b>19% average</b>

Source: CAB Form 41, Schedule B-14.

Leases are often classified as operating or finance leases. A financial lease has been defined as: "A noncancelable agreement that obli-

8. *Impact*, *supra* note 5.

9. Equivalent to the "majors" now.

gates the lessee to make payments to the lessor for a predetermined period of time. These payments usually are sufficient to amortize the full cost of the asset plus provide the lessor a reasonable rate of return on the investment in the asset."<sup>10</sup> It has been argued by most financial analysts and accountants that non-cancelable, long-term financial leases are really long-term debt finance and should be presented as such on a firm's balance sheet.<sup>11</sup> Cancelable operating leases, being short-term, do not have the same impact, and disclosure in the footnotes to the financial statements may be sufficient for these leases. However, during the time of this study, nearly all lease agreements were relegated to footnotes in the carriers' financial statements.<sup>12</sup> Thus, as "off-balance sheet" financing, their impact on debt ratios was not directly visible. Fortunately, data summarizing key terms of these agreements were available from the CAB Form 41 Schedule B14.<sup>13</sup> From financial statements, users could, with some difficulty, construct the debt equivalents of these lease agreements.<sup>14</sup>

The debt equivalents of the finance leases were computed for those air carriers listed in Table I.<sup>15</sup> For the purposes of the author's 1973 study, leases were categorized as financial leases if the following conditions existed: if the lease term was approximately equal to the depreciable life of the airframe; if there were options to purchase and or renew at the end of the initial term; if the aggregate rentals under the lease's initial term exceeded the then new purchase price of the aircraft; and if the leases were net leases.<sup>16</sup> In fact, the vast majority of the 1969 agreements, (all of those identified as long-term), were clearly financial in nature. The few short term leases met none of the criteria. There was thus little ambiguity in the classification of the leases. For instance, American (AAL) leased twenty-two B727 jets and sixty-six engines from Banker's Trust Company of New York. The initial term of the lease was eighteen years, the rental per aircraft was \$430,034 per year, and the aggregate

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10. MOYER, *supra* note 3, at 623.

11. *Id.*

12. The then relevant accounting pronouncement, APB No. 5, required lease capitalization of financial type leases according to specific criteria. REPORTING FOR LEASES IN FINANCIAL STATEMENTS OF THE LESSEE, APB Opinion No. 5, § 14-14 (Am. Inst. of Certified Pub. Accountants). However, the criteria were ambiguous and, in practice, little capitalization of leases occurred.

13. Schedule B14 (for balance sheet form 14) was a part of the CAB Form 41, which all carriers were required to file with the CAB. In fact, actual lease covenants were available at the CAB. The same was not true for other non-regulated industries at that time and is not true today for the airlines.

14. This will be contrasted to the present situation shortly.

15. See *Impact*, *supra* note 5, for a detailed analysis of the methodology.

16. That is, the lessee paid the taxes, maintenance, and insurance, etc. These were the criteria suggested by Vancil and Anthony as those that readily identified the financial lease. See RICHARD F. VANCIL & ROBERT N. ANTHONY, LEASING OF INDUSTRIAL EQUIPMENT, 1963.

total rental for each jet was \$7,740,610. The latter exceeded the new purchase price of the B727 of \$5.6 million in that year. Finally, there was a purchase option, the lease was a net lease, and the lease was non-cancellable by either party during the initial term.<sup>17</sup>

The debt equivalents of these leases were computed using a standard present value approach.<sup>18</sup> Table II shows a summary of the approach for one carrier, American. The remaining payments on the lease (except for the current year's obligation—a short-term liability) were discounted at a appropriate interest rate (10% in the study).<sup>19</sup> The resulting debt equivalent was then added to total long-term debt. As a consequence, American's "perceived" debt increased by \$205.1 million, an addition of over 30% to its reported debt burden of \$681.2 million. The impact on the airline's financial structure is, therefore, quite significant. The overall impact on several generally used financial ratios can also be calculated. AAL's debt/equity ratio (defined as long-term debt divided by net worth) increases significantly from 2.73 to 3.31, and the carrier's

TABLE II. AMERICAN AIRLINES-CAPITALIZATION OF AIRCRAFT LEASES  
(AS OF DEC. 31, 1969)

Leased Aircraft	Date of Lease	Years Remaining (End of 1969)	Total Yearly Rental (All Aircraft)-1969	Present Value at 10%
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	15	\$7.41	\$ 49.62
54 on long-term leases			Total \$30.70 million	Total \$205.07 million
			<u>Total Capital:</u>	
			Long-Term Debt	\$681.2 million
			Capital. Leases Aircraft	\$205.1
			Common Equity	\$403.3

1. Years Remaining rounded to the nearest year.
2. The present value of the annual rentals each year for the term of the lease, excluding the current year's rental (a current liability).

Source: Basic data from American's Form 41, Schedule B-14.

17. See *Impact*, *supra* note 5.

18. Any standard financial management textbook covers the basic methodology. See MOYER, *supra* note 3.

19. For a justification of the discount rate used, see *Impact*, *supra* note 5. In fact, the exact specification of the discount rate is not all that critical. The author tried to err on the high side, which would, of course, decrease the significance of the lease agreements. If a lower rate were used, the net effect of the capitalized leases would be much greater. Since the purpose of the paper was to show the importance of lease capitalization, the use of a higher rate made the estimates more conservative (and therefore more easily defensible).

long-term debt-to-total capital ratio<sup>20</sup> increases to 60.3% from 53.9%.<sup>21</sup> Tables III and IV summarize the results of the same approach applied to all the carriers on Table I. The ratios for some carriers, such as Eastern and Braniff, increase significantly, in stark contrast to the ratios of Delta, Northwest, and Braniff, which remain unchanged.<sup>22</sup>

Two important observations can be made based on Tables III and IV. First, the impact of leasing on debt ratios is significant enough to merit the attention of any financial user, especially when making comparisons between carriers. Second, although difficult to obtain and process, the data *were* available (and in great detail). The discussion now turns to the situation in the 1990s, as a contrast to the conditions just described.

### III. AIRCRAFT LEASING IN THE 1990s

Currently, much of the information about the true nature of aircraft leases is unavailable. This is a result of several events. First, accounting regulations were changed in 1976 when the Financial Accounting Standards Board (FASB) issued SFAS No. 13.<sup>23</sup> This pronouncement established new criteria for the capitalization (and therefore the inclusion on the balance sheet) of all new financial type leases.<sup>24</sup> While on the surface this change is positive, as it required capitalization of lease obligations, in reality many firms structured their lease agreements to strategically violate the requirements for capitalization of many noncancelable

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20. Total capital here is computed as the sum of long term debt, including deferred taxes, and preferred and common equity.

21. The calculation of these ratios requires some information not disclosed on the tables, including deferred tax credits (which are part of total debt), long-term debt, and total capital and the current portion of the obligations (a current liability) which affects the debt/equity ratio. Data concerning these items are found in the original article by GRITTA, *supra* note 4, at n.17. As they are not critical to the arguments made herein, the interested reader is referred to the source.

22. The results would be affected by the capitalization of ground leases. However, at the time of the original studies, data on ground leases were very sketchy at best. To quantify the effect of these leases, the author resorted to a primitive "discounting into perpetuity" technique. The inclusion of ground leases increases capitalization of aircraft leases (see Table IV) to 63.4%, Eastern's from 77.2% to 79.2%, TWA's from 66.8% to 69.4%, United's from 58.0% to 59.5%, Braniff's from 69.1% to 73.1%, Delta's from 38.7% to 41.4%, National's from 27.4% to 35.3%, Northwest's from 17.2% to 20.6%, and Western's from 65.5% to 67.0%. Data on Continental were not available. The ratios of debt/equity were also affected. For American, that ratio increased from 3.31 (after aircraft leases were considered) to 3.62. Because of the limitations of the "discounting into perpetuity" technique, these results are somewhat subjective and are therefore reported only in this footnote. See GRITTA, *supra* note 4, at n.5, 19.

23. ACCOUNTING FOR LEASES, Statement of the Financial Accounting Standards Board No. 13, (Fin. Accounting Standards Bd., 1976).

24. *Id.* Unfortunately, all leases prior to 1977 were not covered until 1981, when the requirements were then to apply retroactively to all financing leases.

TABLE III. TOTAL CAPITAL, INCLUDING AIRCRAFT LEASES  
U.S. DOMESTIC AIRLINES  
(as of Dec. 31, 1969)

<b>EASTERN:</b>			<b>CONTINENTAL:</b>		
Long-Term Debt	\$626.2	million	Long-Term Debt	\$199.8	million
Capital. Aircraft Leases	150.1		Capital Aircraft Leases	1.8	
Common Equity	224.9		Common Equity	96.3	
<b>TWA:</b>			<b>NATIONAL:</b>		
Long-Term Debt	\$757.2	million	Long-Term Debt	\$66.2	million
Capital. Aircraft Leases	142.9		Capital Aircraft Leases	6.2	
Common Equity	362.7		Common Equity	130.5	
<b>UNITED:</b>			<b>NORTHWEST:</b>		
Long-Term Debt	\$872.2	million	Long-Term Debt	\$112.0	million
Capital. Aircraft Leases	208.9		Capital Aircraft Leases	0	
Common Equity	587.3		Common Equity	420	
<b>BRANIFF:</b>			<b>NORTHEAST:</b>		
Long-Term Debt	\$200.8	million	Long-Term Debt	\$4.4	million
Capital. Aircraft Leases	33.2		Capital Aircraft Leases	102.2	
Common Equity	87.6		Common Equity	-22	
<b>DELTA:</b>			<b>WESTERN:</b>		
Long-Term Debt	\$233.8	million	Long-Term Debt	\$197.2	million
Capital. Aircraft Leases	0		Capital Aircraft Leases	20.1	
Common Equity	241.4		Common Equity	79.3	

Source: Basic data from CAB Form 41, Schedule B-14.

leases.<sup>25</sup> Secondly, several years later, in October of 1980, the CAB dropped Schedule B14 from its Form 41 requirements.<sup>26</sup> These events make determining the true nature of lease agreements more difficult, as sufficient lease information is not included in either the balance sheet<sup>27</sup> or CAB filings.<sup>28</sup>

Table V presents data on the major carriers for the year end 1991 (except where noted). The striking differences between this table and

25. Imhoff and Thomas found that, after issuance of SFAS No. 13, firms systematically decreased their usage of capital leases, substituting operating leases or other non-lease sources for financing. Eugene Imhoff & Jacob Thomas, *Economic Consequence of Accounting Standards: The Lease Disclosure Rule Change*, J. ACCT. & ECON., Dec. 1988, at 277.

26. U.S. CIVIL AERONAUTICS BOARD, CAB FINANCIAL AND STATISTICAL REPORTING FORMS AND REQUIREMENTS, FINANCIAL SECTION: DATA SYSTEMS MANAGEMENT DIVISION, 63 (1980).

27. The minimum future cash payments for all leases are disclosed in aggregate in the footnotes to the financial statements.

28. A third event should also be mentioned at this point. Data reported on Schedule B43 (The Inventory of Airframes and Aircraft Engines), which did at least list the number and type of equipment held under both "capitalized" and "operating" leases, was made confidential for those carriers requesting it. As will be noted shortly, this further adds to the problem of trying to derive the impact of operating leases on the financial structure of a carrier.

TABLE IV. CAPITALIZATION AND RATIO ANALYSIS  
(DEC. 31, 1969)

	Long-Term Debt /Total Capital		Total Debt/Net Worth	
	Before	After	Before	After
American	53.9%	60.3%	2.73	3.31
Eastern	73.2%	77.2%	3.67	4.45
TWA	63.0%	66.8%	3.07	3.53
United	52.7%	58.0%	2.28	2.71
Braniff	65.8%	69.1%	3.41	3.86
Continental	62.0%	unchanged	3.06	unchanged
Delta	38.7%	unchanged	1.89	unchanged
National	25.7%	27.4%	1.6	1.66
Northwest	17.2%	unchanged	0.8	unchanged
Western	63.2%	65.5%	3.70	3.99

Source: Calculated from data in Table III and Moody's Transportation Manual, 1971 edition.

Table I are immediately apparent. Eastern and Braniff, as well as Continental, have failed. Several former major carriers (Western, Northeast, and National), have disappeared, the result of mergers stemming from the severe financial distress in the industry.<sup>29</sup> Several new carriers have appeared to take their places. More important, however, is the tremendous increase in leasing. The group of major carriers now are leasing on average 56.6% of their fleets. This contrasts sharply with the overall figure of only 19.2% in 1969. American, for example, was leasing 61.4% of its fleet by the end of 1991 (up from only 22% in 1969). And no longer is leasing used primarily by the weak carriers, as was the case in 1969. Delta and United, relatively strong carriers, leased 44.2% and 45.8%, respectively, of their planes in 1991.

While the original study separated leases into short-term and long-term classes (which approximated operating and finance type leases), the classification of leases is not as clear cut today. Presently, accounting regulations govern whether leases are classed as operating or capital leases. SFAS No. 13 provides for capitalization of leases when one of the following conditions is met: the lease transfers ownership of the property to the lessee by the end of the lease term, the lease contains a bargain purchase option, the lease term is equal to 75% or more of the estimated economic life of the leased asset, or the present value at the beginning of the lease term of the minimum lease payments equals or exceeds 90% of the excess of the fair value of the lease property.<sup>30</sup> When these conditions are not met, the leases are classed as operating.

29. Gritta, *supra* note 4.

30. SFAS No. 13, ORIGINAL PRONOUNCEMENTS, ACCOUNTING STANDARDS, Standard of Financial Accounting Standards No. 1, (Fin. Accounting Standards Bd. 1991).



TABLE V. LEASED AIRCRAFT BY CARRIER

Carrier	Total Planes Owned or Leased	Planes Leased	Percentage Leased
Eastern	ceased operations		
American	849	521	61.4%
TWA	207	135	65.2%
UAL	486	221	45.5%
Braniff	ceased operations		
Continental	417	286	68.6%
Delta	475	210	44.2%
National	merged with PanAm		
Northwest	not available-privately held		
Western	merged with Delta		
Alaska	119	94	79.0%
USAir	550	260	47.3%
America West	101	82	81.2%
Southwestern	124	unavailable	

Note: All figures are as of December 31, 1991, except for Delta which is June 30, 1991 and TWA which is December 31, 1990.

Table VI classifies leases as operating or capital leases.<sup>31</sup> In comparison to Table I, it is immediately evident that while firms lease more, the type of lease used has also changed. There has been a massive increase in the use of the operating lease. In 1969, for example, all of American's leases were classic financing leases (none had a term less than 10 years and none were cancelable). By 1991, however, American

31. Determination of this schedule was hampered by the availability of data, which has not been uniformly available since 1989. In July of 1991, UAL filed a motion with DOT to make the filings under Schedules B7 (Airframe and Engine Acquisition and Retirements) and B43 confidential, as of October 1989. The Director of the Research and Special Programs Administration's (RSPA) Office of Airline Statistics at first denied the request. United then indicated that it would submit a petition for rulemaking requesting confidential treatments of both of these schedules. Pending action on that request, the Director reversed his earlier ruling and permitted any other major carrier to submit its schedules in confidence. See Confidential Treatment of Form 41 - Schedules B7 and B43. Some firms (Southwestern, United, American), chose to disclose this information in their annual reports; others did not. The reports of the latter three are now listed as confidential and available only to the Congressional and DOT staff. They are not available to the general public. Therefore, the latest available figures, either from the 1991 annual report or the 1989 DOT filing, were used to estimate the number of planes leased under operating and capital agreements. If anything, use of 1989 percentages results in a conservative estimate of the number of operating leases, as the percentage of operating leases to total leases has increased over time. For example, the carriers which disclosed 1991 percentages have increased their usage of operating leases since 1989. The authors wish to express their thanks to Mr. Clay Moritz, Systems Accountant, Office of Airline Statistics, and to Mrs. Doris Corbett, Research Assistant, Public Reference Room, for their assistance in ascertaining the status of airline filings under Schedule B43-Form 41 and for providing certain data on the table.

TABLE VI. CLASSIFICATION OF LEASES AS OPERATING OR CAPITAL LEASES

Name	Total Leased	Capital	Operating	% Operating
American	521	111	412	79.1%
TWA	135	53	82	60.9
UAL	221	33	188	85.1
Southwestern	N/A	N/A	46	N/A
Continental	286	45	241	84.3
Delta	210	21	189	90.1
Alaska	94	N/A	N/A	N/A
USAir	260	52	208	80.1
America West	82	0	82	100

Note: All figures are as of December 31, 1991, except for Delta which is June 30, 1991 and TWA which is December 31, 1990.

leased 412 of its 521 planes (79.1%) under *operating* lease agreements.<sup>32</sup>

In general, firms have intentionally reduced the use of capital leases. With the increase in competition in the industry, in part fostered by deregulation of the airlines, airlines are concerned about the appearance of their balance sheet. Many carriers, already burdened with high debt, simply could not take on the appearance of more long-term debt. Also, there is a willingness and ability of the lessors to provide "custom-made" lease agreements. Therefore, many finance leases are structured to be classed as operating leases.<sup>33</sup> This avoids capitalization of these leases on the balance sheet. Because of the increased usage of operating leases, non-capitalization of operating data distorts the financial condition of the firms, particularly their debt burden, since the vast majority of leases classified as operating leases are really long term debt.<sup>34</sup>

Determining the net effect of these operating leases on the "perceived" debt burden of the airlines is made more difficult now than in the early 1970s since the comprehensive data that was available on Schedule B14 is no longer required. However, as in the original study, an estimate of the debt equivalent of the leases can be made. The amount of

32. It should be remembered that in 1969, the classification of leases was governed by the classic definition of finance leases, while today, accounting regulations govern lease classification.

33. For example, when the lease term is equal to 74% of the economic life of the property, capitalization of the lease is *not* required, provided, of course, that none of the other lease criteria is met.

34. Under the set of criteria used by Gritta in both the 1973 and 1974 studies, these leases would now be capitalized.

the off-balance sheet debt from noncancelable operating leases is estimated by discounting the carrier's future minimum operating lease payments (disclosed in the footnotes to its financial statements) using estimates of the discount rate and the remaining life of the lease.<sup>35</sup> Table VII shows a summary of the approach for American. As required by the FASB, American disclosed the minimum operating lease payments for each of the next five years, and then as a lump sum for all future years. For the lease payments made beyond five years, an estimate about the remaining life of the leases must be made. For the purposes of this illustration, the remaining lease term is assumed to be 15 years. The future lease payments are then discounted back to the present using an 8% discount rate.<sup>36</sup> The discounted value of the leases was calculated as \$9,049,814,000. This figure represents an estimate of the off-balance sheet debt represented by American's non-cancelable, operating leases.<sup>37</sup> Capitalization of this debt increases the perceived long term debt burden by more than 100% from the previously recorded debt of \$7,672,000,000. Using this capitalization approach, capital lease amounts are calculated for other carriers (Table VIII), and the key ratios utilized earlier in this study are also determined. Table IX summarizes these ratios.

Increases in the debt burden ratios are dramatic, even greater than the increases noted in the first study. American's long-term debt/total capital ratio increases from 67% to 82%, while its ratio of debt/equity jumps sharply from 3.27 to 5.66.<sup>38</sup> United's ratios jump even more

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35. The lease payments disclosed on the financial statements include leases for aircraft as well as ground leases and other equipment leases. The majority of air carriers do not separate out the leases payments by type of asset.

36. An analysis was performed to determine the sensitivity of the assumptions on the calculation of lease debt. While changes in assumptions changed the computed lease obligation, the capitalized lease liability remained a significant amount in relation to the recorded debt of the company. Regardless of assumptions used, capitalization of lease payments would have a material effect upon the financial statements.

37. Imhoff, Lipe, and Wright suggest a more theoretically correct method to determine the effect of leases on the balance sheet. Besides determining the lease obligation, they also compute the corresponding leased asset. Eugene A. Imhoff et al., *Operating Leases: Impact of Constructive Capitalization*, ACCOUNTING HORIZONS, Mar. 1991, at 51. This was ignored here so that the data would be comparable to the 1973 study. However, such computations were performed by these authors and are available from them.

38. These ratios can be directly compared to those in n.22. Remember, however, that the ratios in that footnote were somewhat subjective because of the lack of detailed data on ground leases. The original Gritta studies capitalized aircraft leases only, and, therefore, debt ratios listed on Table IV of this paper only include this type of lease. The reader is referred to n.22 for the impact of capitalizing all leases, including ground leases, on the long-term debt/total capital ratio. It is also important to remember that the additional debt burden from capitalizing leases includes capitalization of operating leases. Those aircraft leased under financing leases are already capitalized on the balance sheet and, therefore, contained in the long-term debt burden of the carrier.

TABLE VII. CAPITALIZATION OF FUTURE MINIMUM LEASE PAYMENTS FOR AMERICAN AIRLINES AS OF DECEMBER 31, 1991

Year	Minimum Lease Payments	Present Value
1991	\$ 797,000,000	\$ 737,963,000
1993	824,000,000	706,448,000
1994	813,000,000	645,386,000
1995	784,000,000	576,263,000
1996	765,000,000	520,646,000
Thereafter	15,097,000,000	5,863,108,000
	TOTAL	\$9,049,814,000

Note: A discount rate of 8% was used to determine present value.

TABLE VIII. TOTAL CAPITAL, INCLUDING AIRCRAFT LEASES (IN THOUSANDS)

Carrier	Long-Term Debt	Capitalized Leases	Equity
American	7,672,000	9,049,814	3,794,000
TWA			
UAL	2,32,287	8,569,463	1,596,788
Continental	3,805,451	3,616,052	-2,066,068
Delta	3,749,082	6,929,541	2,506,116
Alaska	676,912	504,042	284,447
America West	1,018,067	985,238	-166,510
USAir	3,192,634	5,928,253	1,318,162
Southwestern	948,876	649,562	628,521

Note: Amounts are as of December 31, 1991, except for Delta which is June 30, 1992.

sharply. That carrier's long-term debt/total capital ratio increases from 61% to 87%, while its ratio of debt/equity doubles (from 5.19 to 10.55). The ratios of troubled Continental and America West are also very revealing, especially the negative debt/equity ratios for both. Clearly, capitalization of operating lease obligations would materially affect the financial statements.

#### IV. CONCLUSION

The purpose of this paper is twofold. First, it updates prior research on the topic of aircraft leasing. Second, it contrasts the findings of that earlier research to the present situation in the airline industry. The following are the major conclusions and observations from this study.

First, in 1970, it was the weaker carriers that, by and large, tended to lease the higher percentage of their fleets, and the average carrier leased only 19.2% of its aircraft. By 1991, however, all the major carriers

TABLE IX. CAPITALIZATION AND RATIO ANALYSIS

Carrier	Long Term Debt/Total Capital		Total Debt/Net Worth	
	Before	After	Before	After
American	67%	82%	3.27	5.66
TWA				
UAL	61	87	5.19	10.55
Continental	NMF	NMF	-2.56	-4.31
Delta	60	81	2.36	5.12
Alaska	70	81	3.26	5.03
USAir	71	87	3.90	8.39
America West	1.20	1.09	-7.67	-13.59
Southwestern	60	71	1.92	2.96

leased a significant percentage of their aircraft and average rate of leasing rose sharply to 56.5%. Second, in 1970, leases were clear and unambiguous in nature. The vast majority of aircraft leases were long-term, classic financial leases (according to the textbook definition of the term). In contrast, by 1991, most aircraft leases were operating leases, perhaps structured strategically to violate the lease capitalization requirements of SFAS No. 13.<sup>39</sup> Third, in 1970, detailed data on aircraft leases were available from Schedule B14, which provided significant information on each leased aircraft. The motivated analyst could, therefore, derive the debt equivalent of these leases with a high degree of accuracy. Today the situation is more confused. Schedule B14 is no longer a required filing. Data availability is sporadic, and data which exist are often difficult for users to process. Estimates of debt equivalents are therefore far more subjective. Finally, the effect on carrier balance sheets, and on debt ratios, resulting from the capitalizing of leases was significant in 1970. The net effect is even more dramatic in 1992.

This research demonstrates the need for disclosure of additional air carrier lease data. As demonstrated, the data necessary to fully understand the financial situation of the U.S. airline industry are not currently available. In the 1973 paper, it was argued that the capitalization of the financial type lease could significantly alter the perceived level of financial risk facing a carrier.<sup>40</sup> That argument is truer today than it was then. When operating leases are, in substance, "off-balance sheet" financing, the leases should be capitalized and included in the airline's debt burden. Shareholders and creditors should join together in demanding sufficient information to determine this off-balance sheet risk. In the interest

39. This was in spite of the fact that some of these so-called operating leases had initial terms of up to 26 years, in some cases. All that is necessary is that *one* of the provisions necessary for capitalization be violated.

40. *Impact, supra* note 5.

of monitoring the airline industry, and in assessing its ongoing financial status, the DOT must act to restore crucial information, no matter how uncomfortable this might be to the carriers themselves.<sup>41</sup>

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41. The authors favor a return to the requirement that the carriers file a Schedule B14 (Summary of Property Obtained under Long-Term Leases).