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# Aircraft Leasing and Its Effect on Air Carriers Debt Burdens: A Comparison Over the Past Several Decades

by Richard Gritta and Ellen Lippman

*Leasing has always been an important source of finance to carriers in the U.S. airline industry. In the 1960-1970s, many carriers employed a type of lease called a financial lease as an alternative source of funds to acquire aircraft. It had a major advantage over purchasing the aircraft. It was "off-the-balance sheet financing," as the obligations under this type of lease appeared only in the footnotes to carrier balance sheets. Little use was made of short-term lease agreements during this period. The situation has changed radically over the past three decades. In 1976, the Financial Accounting Standards Board issued SFAS No. 13 defining specific criteria for capital leases that required the reporting of these "off-the-balance sheet financing" as both a leasehold asset and a long-term liability recorded under the long-term debt section of the balance sheet. In response, the air carriers substantially altered the way they finance airplanes. Carriers began to lease more and more of their aircraft, but they did so by structuring leases as shorter-term operating leases, which are not reported on companies' balance sheets. By strategically violating the criteria for capital leases, the air carriers once again pushed the leases off the balance sheet. The purpose of this research is to demonstrate the switch in the characteristics of aircraft leasing and to quantify the effects of such leases on air carrier debt burdens. In the process it will be argued that "debt is debt" no matter how it is structured. The paper updates two research studies by the authors to 2008.*

## INTRODUCTION

Increasingly, airlines are experiencing financial difficulties. Prior to 1978, few airlines declared bankruptcy due to the regulated nature of the airline industry; however, since then, over 155 air carriers have declared bankruptcy and reorganized or ceased operations, and this rate has increased in recent years. Just since the year 2000, more than 50 airlines have declared bankruptcy.<sup>1</sup> The airlines include both small air carriers and some of the larger airlines including United, Delta, and, recently, Japan Airlines. Some airlines have responded to their financial troubles by merging; for instance, Delta and Northwest Airlines merged as did America West and USAir. Air carriers also have responded by attempting to strengthen their operations and financial statements. One mechanism to strengthen a financial statement is through the increased usage of operating leases for aircraft purchases. Prior studies (Gritta 1974; Gritta, Lippman, and Chow 1994) have discussed the increased usage of leases over purchases of aircraft. This study updates that data, specifically identifying changes in leasing activity from the 1990s to 2008, to determine how leasing behavior has changed over time and the effect of such changes on the financial statement. Additionally, proposed changes in the reporting of lease accounting, as offered jointly by the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB), are discussed and the potential effect of these proposals on the airline industry is considered.

## PRIOR RESEARCH

Gritta (1974) reviewed aircraft lease accounting by US domestic airlines. The carriers he studied included American, Eastern, TWA, United, Braniff, Continental, Delta, National, Northeast, Northwest, and Western Air Lines. He found that these airlines leased 317 aircraft, representing

19.2% of their entire fleet. The actual incidence of leases ranged from zero planes leased for Northwest, Delta, and Continental, to 83% leased by Northeast. Accounting standards in effect then did not require capitalization of lease payments. Thus, airlines could structure purchases of aircraft as leases to avoid recording the asset and related liability associated with the purchase. To determine the effect of structuring purchases as leases, Gritta (1974) capitalized the lease payments using a present value of future cash flows methodology. Gritta (1974) capitalized only those long-term leases characterized as financial leases per Vancil's definition of a finance lease.<sup>2</sup> These included leases with rentals that exceeded the purchase price of the equivalent asset, or a contract lease term equal to the useful life of the plane. Operating lease payments were not capitalized.

Table 1 lists two debt ratios from the 1974 study that compared the ratios before and after lease capitalization. The ratios include total debt to equity and long-term debt to total capital (defined as long-term debt and equity).

**Table 1: Ratios Before and After Lease Capitalization**

	Total Debt/Equity				Long-Term Debt/Total Capital (%)		
	Before	After	% Change		Before	After	% Change
American	2.73	3.31	21.2		53.9	60.3	11.9
Eastern	3.67	4.45	21.3		73.2	77.2	5.5
TWA	3.07	3.53	15.0		63.0	66.8	6.0
United	2.28	2.71	18.9		52.7	58.0	10.1
Braniff	3.41	3.86	13.2		65.8	68.1	3.5
Continental	3.06	3.06	Unchanged		62.0	62.0	Unchanged
Delta	1.89	1.89	Unchanged		38.7	38.7	Unchanged
National	1.60	1.66	3.8		25.7	27.4	6.6
Northwest	0.80	0.80	Unchanged		17.2	17.2	Unchanged
Western	3.70	3.99	7.8		63.2	65.5	3.6

Source: Gritta (1974)

As is evident from Table 1, the ratios for many of the airlines were significantly, and negatively, affected by the capitalization of finance leases.

Subsequent to the Gritta (1974) study, the FASB issued Statement of Financial Accounting Standard (SFAS) No. 13 (1976) that established criteria to classify leases as either capital or operating. For lessees, SFAS No. 13 defines leases as capital leases if they meet one of these four criteria: lease term at least 75% of the useful life of the asset, present value of the lease payments at least 90% of the fair value of the asset at the date of lease inception, a bargain purchase, or a transfer of ownership at the end of the lease. Capital leases are, in substance, a purchase of an asset, and SFAS No. 13 mandates that the asset and related lease obligation be recorded on the balance sheet of the lessee at an amount equal to the present value of the minimum lease payments.<sup>3</sup> Payments for leases classified as operating leases continue to be expensed annually. Thus, as Gritta (1974) advocated, finance leases are now capitalized on the financial statements. However, operating leases are not capitalized, so opportunities for manipulation of the financials continue to exist if firms manage lease terms to characterize leases as operating.

Gritta capitalized lease payments only for those leases he characterized as finance leases. Had current accounting rules been used in the original study, Gritta (1974) would have classified more leases as capital leases than those capitalized in the 1974 study. However, the percentage of non-finance leases in the original study was not significant. Leased aircraft amounted to only 19.2% of the total fleet of 1,651 (317 leased/1,651 total aircraft). Of those 317 leased aircraft, only 41 (13%) were not classified as finance leases, just 2.5% of the total fleet (Gritta 1974, p. 48).

Gritta, Lippman, and Chow (1994) conducted a follow-up study on airline leasing by the major airlines to determine whether the usage of leases had changed post SFAS No. 13 and to calculate the impact, if any, on the financials from airlines' usage of operating leases. Since the 1974 study, several airlines included in the original study had ceased operations (Eastern and Braniff) and several others (National, Western, and Northwest) had merged with other airlines. The follow-up study included the remaining airlines from the 1974 study (American, TWA, United, Continental, and Delta) as well as new major airlines (Alaska Airlines, Southwest, USAir, and America West).

Gritta et. al. (1994) found two important results. One, air carriers had increased their usage of leasing to 56.5% of all aircraft, and the carriers now structured a significant number of their leases as operating leases, something new from the 1974 study. These results are detailed in Table 2.

**Table 2: Leases of Planes**

<b>Carrier</b>	<b>Percentage of Planes Leased</b>	<b>Percent of Leases Operating</b>
American	61.4	79.1
TWA	65.2	60.9
UAL	45.5	85.1
Southwest	N/A	N/A
Continental	68.6	84.3
Delta	44.2	90.1
Alaska	79.0	N/A
USAir	47.3	80.1
America West	81.2	100.0

Source: Gritta et al. (1994)

Additionally, when operating leases were capitalized, the effects on computed financial ratios were dramatic. As evident in Table 3, typical financing ratios worsened with capitalization. And the decline was more pronounced than in the 1974 study. For instance, in the 1974 study UAL's total debt to equity changed 18.9% with lease capitalization; in the Gritta et al. (1994) study, UAL's ratio changed 103.3%.

**Table 3: Ratios Before and After Lease Capitalization**

	Total Debt/Equity			Long-Term Debt/Total Capital (%)		
	Before	After	% Change	Before	After	% Change
American	3.27	5.66	73.1	67	82	22.4
TWA	NMF	NMF	NMF	NMF	NMF	NMF
UAL	5.19	10.55	103.3	61	87	42.6
Southwest	1.92	2.96	54.2	60	71	18.3
Continental	-2.56	-4.31	68.4	NMF	NMF	NMF
Delta	2.36	5.12	116.9	60	81	35.0
Alaska	3.26	5.03	54.3	70	81	15.7
USAir	3.90	8.39	115.1	71	87	22.5
America West	-7.67	-13.59	77.2	1.2	1.09	-9.2

Source: Gritta et al. (1994)

NMF – not meaningful figure

**CURRENT DATA**

The present study identified the major U.S. carriers and reviewed their lease usage in 2008 to determine changes since the prior studies in 1974 and 1995. The mix of airlines used in this study differs from past studies due to bankruptcies and mergers, suggesting continual upheaval in the airline industry. Table 4 documents the changes in air carriers in the current and previous studies.

For the 1974 study, data on leasing were available from Schedule B14 previously filed with the Civil Aeronautics Board (CAB). In 1980, this information was no longer collected by the CAB. Now, some leasing information is available in the 10-K where the airlines identify aircraft as owned or leased, and then classify the leases as either capital or operating. Table 5 provides a summary of leasing information and compares it with the information disclosed in the Gritta et al. study (1994).

**Table 4: Airlines in Studies**

	<b>Gritta 1974</b>	<b>Gritta et al. 1994</b>	<b>Present Study</b>
American	X	X	X
Eastern	X	c/o	
TWA	X	X	merged
United	X	X	X
Braniff	X	c/o	
Continental	X	X	X
Delta	X	X	X
National	X	merged	
Northeast	X	merged	
Northwest	X	merged	
Western	X	merged	
Alaska		X	X
Southwest		X	X
USAir		X	X
America West		X	merged
AirTran		X	X
JetBlue		X	X

c/o - ceased operations

**Table 5: Owned and Leased Aircraft**

<b>Carrier</b>	<b>Total Fleet</b>	<b>Operating Leases</b>	<b>Capital Leases</b>	<b>Planes Leased</b>	<b>Leased Current Study</b>	<b>Leased 1994 Study</b>
AirTran	136	N/A	N/A	100	73.5%	n/a
Alaska	110	35	0	35	31.8%	79.0%
American	665	220	76	296	44.5%	61.6%
Continental	632	466	0	466	73.7%	68.6%
Jet Blue	142	55	4	59	41.5%	n/a
Delta	1,023	258	81	339	33.1%	44.2%
Southwest	537	82	9	91	16.9%	n/a
UAL	689	411	69	480	69.7%	45.5%
US Airways*	413	343	0	343	83.1%	52.5%

\*Prior study data adjusted to reflect merger with America West

N/A: not available

Source: Data from carrier annual reports on www.sec.gov Website

Overall, the usage of leasing has declined since the 1994 study from 55.2% in 1994 to 50.8%. But this decline is somewhat misleading. First, for the three air carriers not included in the 1994 study, two of the three air carriers (Southwest and Jet Blue) had lower lease rates. Historically, Southwest conservatively finances its business, using less traditional debt and fewer leases, while Jet Blue has carried high traditional debt burdens since it was founded and relies more on traditional sources apart from leasing. Second, some airlines from the 1994 study (Continental, UAL, US Airways) increased the percentage of planes leased, while other airlines (Alaska, American, Delta) significantly decreased the percentage of leased aircraft. In the case of American and Delta, some leases were cancelled and aircraft returned to the lessors during the reorganizations of these airlines as the airlines sought to cut capacity.

While Table 5 focuses on all leasing activities, Table 6 focuses specifically on operating leasing. The incidence of operating leases is a better indicator of structuring leases to avoid capitalization than is the incidence of all lease activities.

**Table 6: Operating Lease Usage**

Carrier	Percentage of Leases Operating		Percentage of Fleet Operating	
	Current Study	1994 Study	Current Study	1994 Study
Alaska	100.0	N/A	31.8	N/A
American	74.3	78.8	33.1	48.5
AirTran	N/A	N/A	N/A	N/A
Continental	100.0	84.3	73.7	57.8
Delta	76.1	90.0	25.2	39.8
JetBlue	93.2	N/A	38.7	N/A
Southwest	90.1	N/A	15.3	N/A
UAL	85.6	85.1	59.7	38.7
USAir	100.0	84.8	83.1	44.5

Source: Gritta et al. (1994) and computed from data on [www.sec.gov](http://www.sec.gov) Website

The percentage of leases identified as operating is significant. Alaska, Continental, and USAir structure all of their leases as operating leases. This is an increase from the 1994 study. Two other air carriers, Jet Blue and Southwest, structure over 90% of their leases as operating leases. While neither firm was in the 1994 study, such a high percentage of operating leases is significant. However, consistent with what was described in Table 5, Delta and American show a reduction in operating leases as a percentage of total leases, although the decline is not significant for American. For air carriers in the 1994 study, all but Delta and American increased usage of operating leases as a percentage of the total fleet. Continental, UAL, and USAir have significantly increased their usage of operating leases for their fleet. USAir's percentage of fleet structured as operating leases is a high 100.0%.

To determine the effect of lease capitalization upon the financials, 2008 financial data on the air carriers were accumulated. Table 7 details the financial data on the airlines. The liabilities and equity amounts are those recorded on the company's balance sheet, while the capitalized lease amount was computed as a present value of operating lease payments as reported in the company's 10-K. To be consistent with the two prior studies, a simple present value calculation was performed, using the discount rate of 10% to be consistent with the rate used in both the 1974 and 1994 studies. (In actuality, a lower discount rate may be appropriate currently. This would increase the capitalized lease amount, thereby showing a greater decline in financial health.)



**Table 7: Total Capital, Including Aircraft Leases (in thousands)**

<b>Carrier</b>	<b>Current Liabilities</b>	<b>Long Term Liabilities</b>	<b>Capitalized Leases</b>	<b>Equity</b>
AirTran	712	1,105	1,797	246
Alaska	1,392	2,441	577	595
American	11,071	16,352	5,318	(4,905)
Continental	4,474	8,107	8,756	105
Delta	11,022	33,118	7,883	874
JetBlue	1,081	3,681	1,167	1,261
Southwest	2,806	6,549	1,375	4,953
UAL	7,281	14,645	3,708	(2,465)
USAir	3,966	3,209	4,849	(221)

Source: Carrier 10Ks

The figures for current and long term liabilities were taken directly from carrier 10K balance sheets. The capital leases equivalents were calculated in the same manner as the 1994 study.<sup>4</sup>

It is apparent that the airlines are in trouble. American, UAL, and US Airways have negative equity positions as of December 31, 2008. Delta's positive equity is due to the adoption of fresh-start accounting when prior accumulated losses were removed after emerging from bankruptcy protection in 2007. Southwest, a low cost provider, is the financially healthiest air carrier.

Using the financial information from Table 7, financial ratios were calculated to determine the impact of lease capitalization on debt ratios in Table 8. Total Capital is defined as the sum of long term debt, capitalized leases (where appropriate), and equity (the company's stockholders equity). Stockholder's equity was not adjusted for changes in classification from operating to capital leases. While operating lease expense will disappear with lease capitalization, depreciation and interest expense would increase. Over the life of the lease, these amounts will approximate one another.

**Table 8: Change in Ratios with Lease Capitalization**

	<b>Long-Term Debt/Total Capital (%)</b>			<b>Total Debt/Net Worth</b>		
	<b>Before</b>	<b>After</b>	<b>% Change</b>	<b>Before</b>	<b>After</b>	<b>% Change</b>
AirTran	81.8	92.2	12.7	7.39	14.69	98.8
Alaska	80.4	83.5	3.9	6.44	7.41	15.1
American	142.8	129.3	-8.06	-5.59nm	-6.67nm	19.3
Continental	98.7	99.4	0.7	119.82	203.21	69.6
Delta	97.4	97.9	0.5	50.50	59.52	17.9
JetBlue	74.5	79.4	6.6	3.78	4.7	24.3
Southwest	56.9	61.5	8.1	1.89	2.17	14.8
UAL	120.2	115.5	-3.9	-8.89nm	-10.40nm	17.0
US Airways	107.4	102.8	4.3	-32.47nm	-54.41nm	67.6

Source: Computed from Table 7

nm = no meaningful figure

For nearly all of the ratios, the airlines appear more risky when operating leases are capitalized. Yet, do these changes necessarily affect the evaluation of the riskiness of the airlines? Table 9 displays the ranking of the airlines’ debt ratios before and after lease capitalization. The riskiest ratio is labeled one, second riskiest two, and so on.

**Table 9: Ranking of Risk Associated with Air Carriers Before and After Lease Capitalization**

Carrier	LTD/Total			Debt/Equity	
	Before	After		Before	After
Air Tran	6	6		3	3
Alaska	7	7		4	4
American	1	1		nm	nm
Continental	4	4		1	1
Delta	5	5		2	2
Jet Blue	8	8		5	5
Southwest	9	9		6	6
UAL	2	2		nm	nm
US Airways	3	3		nm	nm

nm = not meaningful

While the ratios changed, the riskiness of the firms relative to one another remained unchanged with or without the capitalization of the operating leases. Thus, the capitalization of operating leases may not provide significantly useful information, at least when comparing one airline with another. While firms seem to have gone to great lengths to structure more aircraft purchases as leases, and more of these as operating, when comparing one air carrier with another, the capitalization of leases does not affect their relative riskiness as seen through the rankings.

**PROPOSAL FOR CHANGES TO LEASES AND THE EFFECTS ON THE AIRLINE INDUSTRY**

In the United States, SFAS No. 13, and now ASC 840, has been vilified as one of the worst accounting pronouncements in part due to the “bright lines,” the set percentages that must be met in order to warrant capitalized lease recognition. Likewise, the international leasing standard IAS 17 does not have strong support. In response, in March 2009 the International Accounting Standards Board and the FASB issued a discussion paper on leases, “Leases: Preliminary Views” (FASB 2009). In this paper, the boards jointly recommended new lease accounting standards and requested comments about the proposal. The boards continue to work together to craft a new lease accounting standard acceptable to both groups.

The boards believe that a lease represents a right by the lessee to use an asset. “A lease is a contract in which a right to use a specific asset is conveyed for a period of time, in exchange for consideration” (FASB 2010). The boards also believe that a lease includes an obligation to pay for the right to use the asset. The discussion memorandum proposes that all leases, capital or otherwise, should be recorded as assets and liabilities on the lessee’s balance sheet. While there exist some differences between the suggested lease accounting by the IASB and the FASB, the IASB and FASB agree on the necessity to record all leases on the lessee’s balance sheet. In effect, it has been argued

that “debt is debt” no matter how it is structured.

Previously, some leases were in fact purchases of assets and thus were classified as finance leases, where the lease and the related obligation were recorded as an asset and corresponding liability. Other leases were executory contracts, and these were classified as operating leases, with the lease payments recorded as lease expenses. If the proposal is accepted, capitalization of all lease payments for property, plant, and equipment, regardless of prior classification, will occur such that the present value of all lease payments will increase assets and liabilities. Thus, the lease capitalization suggested in this paper will no longer be necessary. Yet, while lease capitalization does impact the reported assets and liabilities, and computed ratios thereof, interestingly, the rankings of these ratios among the airlines were unaffected, suggesting that the public, with or without the aid of lease capitalization, has other financial markers to determine the riskiness of air carriers.

## Endnotes

1. Prior to deregulation, the CAB did allow the merger of a weak carrier into a stronger one. The merger of Northeast Airlines, then classified as a major, into Delta in the early 1970s is an example. This was a way around a bankruptcy filing and thus explains the low rate prior to the 1980s. There is also no question that the financial upheaval caused by the events of 9/11 helps to explain the sudden spike in filings under the bankruptcy code since 2001.
2. Vancil defined a financial lease as a contract with non-cancelable payments that, in total, are greater than the cost of the item leased (Vancil and Anthony 1963).
3. In July 2009, all SFAS were combined into the Accounting Standards Codification that became the single source of authoritative accounting principles. Lease accounting is now referenced in ASC 840, but the leasing requirements remain the same as SFAS 13.
4. As noted, operating leases are not directly reflected on the balance sheets of the airlines, but the yearly future obligations of these leases are disclosed in the footnotes to the financial statements. The operating lease disclosures reported in the footnotes include the yearly obligation for each of the next five years ( $LP_t$ ), and then a total of the remaining obligations (TLP) under those leases beyond the five years. Just as in the 1994 (Gritta et al.) study, the fifth year lease payment (per the carriers' footnotes) was estimated to continue, such that the remaining life of the leases per air carrier differed dependent upon the remaining balance of lease payments and year five's lease payment. It should be noted that prior to the sunset of the CAB, lease forms called B-14s required the exact lease payments for each year of the lease, and there was no aggregating the payments in the future. This makes the current analysis a little less precise than was the case in the 1974 study. The impact of the obligations on the balance sheet was estimated by determining the present value of these non-cancellable operating lease payments in a manner consistent with the 1994 study. The discount rate used (10%) was the same used in both the 1974 and 1994 studies for comparative purposes. The following formula shows the approach used to estimate  $L_o$ , the net present value of the operating leases for each carrier:

$$\sum_{t=1}^{n=5} \frac{LP_t}{(1+k)^t} + \sum_{t=n+1}^a \frac{RLP}{(1+k)^t} = L_o$$

$LP_t$  are the payments for each of the first five years presented in the carriers' reports,  $k$  is the discount rate of 10%, and  $RLP$  represents an estimate of the yearly remaining lease payment assumed to be the same as in year five, except for the last year when it is adjusted so that total lease payments since year five equal the total remaining lease payments as reported in the

footnote. The remaining years of the lease, a, is computed by dividing the total lease payment after year five (TLP) by year five's lease payments. The present values of the lease obligations were then included with the recorded long-term debt to compute the adjusted long term debt obligations for each airline.

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