

Is air transportation financially sustainable?

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Measuring Financial Health (1)

There are three common methods to measure the financial health (or bankruptcy risk) of a firm

Managerial Performance Models

- Subjective model based on analyst's judgment of the overall managerial, financial and trading position of the firm
- Best known model is the Argenti "A" score model
 - Analysts assign scores under 3 major headings
 - ¤ Defect
 - ¤ Major mistakes
 - Symptoms
 - Scores based on a point system



Measuring Financial Health (2)

Univariate Financial Ratio Analysis

- Analyzes firms' financial ratios both on a cross-sectional basis and on a time-series basis
- □ Ratios commonly used include:
 - Profitability ratios
 - Leverage ratios
 - Activity ratios
 - Investment ratios
- □ Analyst examines each ratio separately
 - Ratios could be contradictory
 - Relies on analyst's interpretation of the ratios



Measuring Financial Health (3)

Multiple Discriminant Analysis (MDA)

- Altman developed MDA in response to shortcomings of the univariate financial ratio analysis
 - Based on objective statistical data rather than on the subjective interpretation of a financial analyst
 - Researchers have developed industry-specific MDA models
- □ MDA models developed in the following steps:
 - Establish two mutually exclusive groups, namely those firms which have failed and those which are still continuing to trade successfully
 - Collect financial ratios for both of these groups
 - Identify the financial ratios which best discriminate between groups
 - Establish z-score based on these ratios
- □ Sensitive to changes in accounting practices



The most commonly used MDA model to predict bankruptcy is the Altman Z-score model

- Gritta (1982) applied Altman's model to the airline industry and correctly predicted Braniff's bankruptcy
- Chow, Gritta, and Leung (1991) developed the first industry specific bankruptcy prediction model for the airline industry, called the AIRSCORE model (based on Altman's Z-score model)
- Authors indicate that these models are good for predicting bankruptcies two years into the future, but are not good for longer term predictions
 - This is partly due to the static nature of the model, not taking into account cycles in demand



The AIRSCORE model by Chow, et.al. is:

- z-score = a * (interest expenses/total liabilities) +
 - b * (operating revenues/miles flown) +
 - c * (shareholder's equity/total liabilities)

The coefficients they estimated were:

a = -0.34140 b = 0.00003 c = 0.36134

Z-score boundaries:

- □ Carriers above 0.03 are healthy
- □ Carriers below -0.095 are in trouble



AIRSCORE for Failed Airlines





AIRSCORE: 1978-2003 (1)





AIRSCORE: 1978-2003 (2)





AIRSCORE: 1998-2003 (1)





AIRSCORE: 1998-2003 (2)





Alaska

□ Safely in the healthy range

America West

- Got into trouble during the recession in the early 90s
- Restructured and emerged from bankruptcy in the mid-90s (as seen by the significant improvement in their z-score) and continues to be healthy

American

Currently below the healthy level for the first time since deregulation



AIRSCORE: Observations (2)

Continental

Low z-scores (and 2 bankruptcies) in the 80s and early 90s

□ Z-score improving since 1995 (arrival of Gordon Bethune)

Delta

Currently below the healthy level for the first time since deregulation

Northwest

□ In the healthy range but consistently declining

Southwest

Very healthy and consistently has the highest score



AIRSCORE: Observations (3)

TWA

- Did not improve their z-score to the healthy range when they emerged from their first bankruptcy
- Forced to file for a second bankruptcy shortly thereafter and is now dead

United

Currently well below the healthy level

US Airways

□ Still below the "safe" line even after recent bankruptcy



Key Questions

What are the factors that drive the economics and viability of airlines?

- Crew costs
- □ Fuel costs

What could happen to the these factors?

- Crew costs in regional carriers could become aligned with the crew costs of mainline carriers
- □ Fuel costs could vary significantly given volatility in fuel prices

What would the impact of these changes be?



Crew Cost (Mainline v. Regional)





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Fuel Burn





Impact of Fuel Cost on DOC





Sensitivity of Earnings Per Share (EPS) to Fuel Price

Source: Merrill Lynch

Airline	2004 EPS	Sensitivity to 10% fuel price increase	% of 2004 fuel that was hedged
AirTran	\$0.75	\$0.15	28%
AMR	\$0.30	\$1.85	5%
Continental	- \$0.50	\$1.05	10%
JetBlue	\$0.90	\$0.08	40%
LanChile	\$1.60	\$0.25	40%
Southwest	\$0.60	\$0.07	80%





Long-term average: \$0.71/gallon Speed of reversion: 0.17/year Volatility: \$0.0591/year



Airline	2004 EPS	Lower Limit	Upper Limit
AirTran	\$0.75	\$0.53	\$0.97
AMR	\$0.30	- \$2.54	\$3.14
Continental	- \$0.50	- \$2.10	\$1.10
JetBlue	\$0.90	\$0.78	\$1.02
LanChile	\$1.60	\$1.22	\$1.98
Southwest	\$0.60	\$0.50	\$0.70



Conclusions

Most airlines are in bad shape

- United is in very poor shape but have not yet emerged from bankruptcy so the future is unclear
- US Airways is not in the healthy range even after bankruptcy
- Significant potential impact on airline direct operating cost and on measures of airline financial performance
 - □ Future of economic drivers uncertain
 - □ Impact of changes could be significant