TURKISH AVIATION ACADEMY

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Aviation Economics & Finance

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M.Sc. Program

Module 4 : 23 November 2015

OUTLINE

- Module 4 (1.5 hours) – Financial Analysis
  - Airline financial statements
  - Airline financial statement analysis and financial ratios
  - Airline valuation
  - Ratio Analysis – to assess liquidity, profitability and solvency

A. Airline financial statements

What do Financial Statements Do?

- Income statement – what is happening with revenue and expenses?
- Balance sheet – what is happening with assets, debt and liabilities?
- Cash flow – what is happening now with operating investing and financing activities?

Financial statements are important sources of information for internal and external use.

Balance Sheet

- Takes a snapshot of the firm (airline) at a point in time (a given day)
- Essentially tells the reader what the airline owns and how the assets are financed
- Two halves:
  - assets – what airline owns
  - liabilities – what airline has borrowed
  - stockholders equity – investment put into the business
- Organization: from most to least liquid

BALANCE SHEET

ASSETS=LIABILITIES + SHAREHOLDERS EQUITY

Assets

- Current assets (liquid)
  - Cash
  - Marketable securities
  - Accounts receivable
  - Inventory
- Fixed (non current) assets (less liquid)
  - Property, plant and equipment
  - Land
  - Intangible assets

Liabilities

- Current liabilities
  - Accounts payable
  - Notes payable
  - Current proportion of long term debt
  - Unearned revenue
  - Taxes payable
  - Wages & benfits payable
- Long term (non-current liabilities
  - Long-term debt
- Owners equity
- Preferred stock
- Common stock
  - Additional paid in capital

BALANCE SHEET NOTES

- Current assets-relatively liquid
  - Marketable securities – short term notes to make money work for airline (e.g. prepaid tickets)
  - Accounts receivable – adjust for non-payments
  - Inventory values at book value =historical price +depreciation
  - Use book not market value since market value introduces swings (volatility) and may overvalue tangible assets.
  - Fuel derivative contracts – if +, place on assets, if go bad place on liabilities
  - Expenses are listed when they are incurred not when they are paid
- Fixed assets-relatively illiquid
  - Buildings, aircraft, property, station investments
  - Airlines are highly capital intensive
  - Intangible fixed assets – landing right or slot at airport (e.g. LHR)
- Depreciation – simply allocation of the cost of an asset over its useful life.
  - Shows up on the *Income Statement* as operating expense
  - Include value at end of useful life - residual value
  - Book value=original price-accumulated depreciation

TÜRK HAVA YOLLARI ANONİM ORTAKLIĞI VE BAĞLI ORTAKLIKLARI

Consolidated Balance Sheet
as at 31 December 2014

(All amounts are expressed in Turkish Lira (TL) unless otherwise stated.)

ASSETS	Notes	Audited 31 December 2014	Audited 31 December 2013
Current Assets			
Cash and Cash Equivalents	6	1.473.508.453	1.338.983.835
Financial Investments	7	200.932.718	42.774.034
Trade Receivables			
-Trade Receivables From Related Parties	10	628.622	382.750
-Trade Receivables From Non-Related Parties	11	1.056.706.451	1.147.707.413
Other Receivables			
-Other Receivables from Related Parties	10	7.505.738	4.087.847
-Other Receivables from Non-Related Parties	13	2.772.633.154	1.376.697.906
Derivative Financial Instruments	44	353.543.745	64.279.662
Inventories	14	452.228.491	342.324.371
Prepaid Expenses	16	138.866.880	89.366.115
Current Income Tax Assets	41	18.570.204	16.507.184
Other Current Assets	31	89.723.728	112.423.952
TOTAL CURRENT ASSETS		**6.564.848.184**	**4.535.535.069**
Non-Current Assets			
Financial Investments	7	2.664.861	2.452.721
Other Receivables			
-Other Receivables from Non-Related Parties	13	2.454.780.090	2.680.608.826
Equity Accounted Investees	4	525.582.579	389.674.199
Investment Property	17	82.560.000	76.320.000
Property and Equipment	18	21.335.501.851	17.165.656.116
Intangible Assets			
- Other Intangible Assets	19	165.458.929	113.081.412
- Goodwill	20	28.799.966	26.507.294
Prepaid Expenses	16	715.410.602	412.242.181
TOTAL NON-CURRENT ASSETS		**25.310.758.878**	**20.866.542.749**
TOTAL ASSETS		**31.875.607.062**	**25.402.077.818**

TÜRK HAVA YOLLARI ANONİM ORTAKLIĞI VE BAĞLI ORTAKLIKLARI

Consolidated Balance Sheet
as at 31 December 2014

(All amounts are expressed in Turkish Lira (TL) unless otherwise stated.)

LIABILITIES	Notes	Audited 31 December 2014	Audited 31 December 2013
Current Liabilities			
Short-Term Portion of Long-Term Borrowings	8-21	1.421.172.095	1.188.220.823
Other Financial Liabilities	9	44.261.101	33.808.413
Trade Payables			
-Trade Payables to Related Parties	10	343.039.672	374.606.410
-Trade Payables to Non-Related Parties	11	1.195.561.375	1.076.575.170
Payables Related to Employee Benefits	12	296.516.690	307.983.476
Other Payables			
-Other Payables to Non-Related Parties	13	165.560.060	114.181.687
Derivative Financial Instruments	44	990.806.416	233.949.090
Deferred Income	16	22.095.569	46.629.988
Passenger Flight Liabilites	30	3.242.625.728	2.562.506.267
Current Tax Provision	41	1.860.231	-
Short-term Provisions			
-Provisions for Employee Benefits	26	133.462.891	64.731.115
-Other Provisions	26	36.593.232	29.819.212
Other Current Liabilities	31	611.789.688	619.744.180
TOTAL CURRENT LIABILITIES		**8.505.344.748**	**6.652.755.831**
Non- Current Liabilities			
Long-Term Borrowings	8-21	12.333.917.978	10.364.269.509
Trade Payables			
- Trade Payables to Non- Related Parties		3.472.514	3.549.001
Other Payables			
-Other Payables to Non-Related Parties	13	33.177.620	30.917.704
Deferred Income	16	32.930.871	31.157.986
Long-term Provisions			
-Provisions for Employee Benefits	28	294.422.303	249.604.088
Deferred Tax Liability	41	1.517.937.898	1.107.333.343
TOTAL NON- CURRENT LIABILITIES		**14.215.859.184**	**11.786.831.631**
Equity Attributable to Equity Holders of the Parent			
Share Capital	32	1.380.000.000	1.380.000.000
Inflation Adjustment on Share Capital	32	1.123.808.032	1.123.808.032
Items Those Will Never Be Reclassified to Profit or Loss			
-Actuarial Losses from Defined Pension Plans	32	(20.415.807)	(12.436.923)
Items Those Are or May Be Reclassified to Profit or Loss			
-Foreign currency translation differences	32	2.367.369.791	1.659.392.608
-Losses from Hedging	32	(428.551.847)	(101.206.786)
Restricted Profit Reserves	32	59.372.762	59.372.762
Retained Earnings	32	2.853.560.663	2.170.853.236
Net Profit for the Period	32	1.819.259.536	682.707.427
TOTAL EQUITY		**9.154.403.130**	**6.962.490.356**
TOTAL LIABILITIES AND EQUITY		**31.875.607.062**	**25.402.077.818**

DEPRECIATION-METHODS/APPROACHES

- Airlines can choose useful life and residual value
  - Southwest; 23-25 years, residual=15% acquisition cost
  - Emirates; 15 years, residual=10% acquisition cost
- Straight line depreciation (SLD)-depreciation same each year
  - D =(acquisition cost-residual value)/useful life
  - Do the math for a new Boeing 777!
- Double declining balance method (DDBM)-dep. varies each year
  - t_0: SLD = x% annually
  - t_1: D_1 = book value x SLD x 2
  - t_2: D_2 = book value in t_1 x SLD x 2

DEPRECIATION-METHODS/APPROACHES

- Modified Accelerated Cost recovery System (MACRS)
  - Required by U.S. IRS which sets depreciation rate and period for each asset, ignores residual value
  - Firms prepare 2 sets of books (one for IRS, one for internal/external use)

Year	Depreciation Rate in % for Recovery Period					
	3-year	5-year	7-year	10-year	15-year	20-year
1	33.33	20.00	14.29	10.00	5.00	3.750
2	44.45	32.00	24.49	18.00	9.50	7.219
3	14.81	19.20	17.49	14.40	8.55	6.677
4	7.41	11.52	12.49	11.52	7.70	6.177
5		11.52	8.93	9.22	6.93	5.713
6		5.76	8.92	7.37	6.23	5.285
7			8.93	6.55	5.90	4.888
8			4.46	6.55	5.90	4.522
9				6.56	5.91	4.462
10				6.55	5.90	4.461
11				3.28	5.91	4.462
12					5.90	4.461
13					5.91	4.462
14					5.90	4.461
15					5.91	4.462
16					2.95	4.461
17						4.462
18						4.461
19						4.462
20						4.461
21						2.231

Depreciation Methods - Sum-of-Years Digits

- Useful for assets that depreciate quickly (e.g. IT equipment)
- If depreciate from price (V), with salvage value (S) in n years

$$D_1 = \frac{n}{\sum_{i=1}^{n} Year_i}(V - S)$$

$$D_2 = \frac{n-1}{\sum_{i=1}^{n} Year_i}(V - S)$$

$$D_{n-1} = \frac{(n - n - 2))}{\sum_{i=1}^{n} Year_i}(V - S) = \frac{2}{\sum_{i=1}^{n} Year_i}(V - S)$$

$$D_n = \frac{(n - n - 1))}{\sum_{i=1}^{n} Year_i}(V - S) = \frac{1}{\sum_{i=1}^{n} Year_i}(V - S)$$

LIABILITIES - NOTES

- Short term financial obligations
  - Accounts payable – essentially unpaid bills
  - Accrued liabilities- monies owned for services rendered
  - Unearned revenue is prepaid *revenue*. In essence, the customer pays in advance for services that have not yet been performed by the recipient of the payment (e.g. passengers prepaying tickets)
- Long Term Debt
  - Bonds, notes debentures issued by airlines coming due in the future
- Stockholders equity – contributed capital + retained earnings
  - Par value of stock on books not stock market value
  - Difference between par value and amount obtained when stock is issued (e.g. IPO) use '*capital in excess of par value account*'
  - Retained earnings = net income –dividend payments

INCOME OR PROFIT & LOSS STATEMENT

- Summary of airlines operating results – its performance
- Can vary length of time considered (3 month, 6 month, 1 year)
- Purpose to establish net income; revenue-expenses-taxes-interest
- Operating income is revenue from airline's primary activities
- Cost of goods sold not in airline income statement since seats cannot be inventoried, normally it is the costs of the product of the firm

TÜRK HAVA YOLLARI ANONİM ORTAKLIĞI VE BAĞLI ORTAKLIKLARI

Consolidated Statement of Profit or Loss and Other Comprehensive Income for the Year Ended 31 December 2014

(All amounts are expressed in Turkish Lira (TL) unless otherwise stated.)

PROFIT OR LOSS	Notes	Audited 1 January- 31 December 2014	Audited 1 January- 31 December 2013
Sales Revenue	33	24.157.801.405	18.776.784.325
Cost of Sales (-)	34	(19.812.624.371)	(15.304.655.417)
GROSS PROFIT		**4.345.177.034**	**3.472.128.908**
General Administrative Expenses (-)	35	(598.748.595)	(434.976.154)
Marketing and Sales Expenses (-)	35	(2.462.255.861)	(1.947.304.294)
Other Operating Income	36	178.577.444	218.962.448
Other Operating Expenses (-)	36	(104.192.122)	(82.685.160)
OPERATING PROFIT		**1.358.557.900**	**1.226.125.748**
Income from Investment Activities	37	210.887.363	145.511.240
Expenses from Investment Activities (-)	37	(52.200.322)	(2.105.578)
Share of Investments' Profit / Loss Accounted By Using The Equity Method	4	160.773.731	108.973.512
OPERATING PROFIT BEFORE FINANCIAL INCOME/EXPENSE		**1.678.018.672**	**1.478.504.922**
Financial Income	39	980.209.225	50.145.542
Financial Expenses (-)	39	(397.081.094)	(563.406.209)
PROFIT BEFORE TAX FROM CONTINUING OPERATIONS			**965.244.255**
Tax Expense of Continuing Operations		**(441.887.267)**	**(282.536.828)**
Current Tax Expense	41	(9.875.007)	-
Deferred Tax Expense	41	(432.012.260)	(282.536.828)
PROFIT FOR THE PERIOD FROM CONTINUING OPERATIONS		**1.819.259.536**	**682.707.427**
OTHER COMPREHENSIVE INCOME			
To Be Reclassified To Profit or Loss		**380.632.122**	**1.033.459.675**
Currency Translation Adjustment		707.977.183	1.089.281.590
Gains/ (Losses) of Cash Flow Hedge Reserves		(417.647.105)	(65.561.681)
Actuarial Gains/(Losses) from Cash Flow Hedge Reserves of Investment Accounted by Using the Equity Method		8.465.779	(4.215.713)
Tax (Expense)/Income of Other Comprehensive Income		81.836.265	13.955.479
Not To Be Reclassified To Profit or Loss		**(7.978.884)**	**14.560.628**
Actuarial Gains/(Losses) from Defined Pension Plans		(10.492.174)	18.814.466
Actuarial Gains/(Losses) from Defined Pension Plans of Investments Accounted by Using the Equity Method		518.569	(613.681)
Tax Expense/(Income) of Other Comprehensive Income		1.994.721	(3.640.157)
OTHER COMPREHENSIVE INCOME		**372.653.238**	**1.048.020.303**
TOTAL COMPREHENSIVE INCOME		**2.191.912.774**	**1.730.727.730**
Earning Per Share (Kr)	42	1,32	0,49

STATEMENT OF RETAINED EARNINGS

TÜRK HAVA YOLLARI ANONİM ORTAKLIĞI VE BAĞLI ORTAKLIKLARI
Consolidated Statement of Changes in Equity
for the Year Ended 31 December 2014
(All amounts are expressed in Turkish Lira (TL) unless otherwise stated.)

			Accumulated Items Those Will Never Be Reclassified To Profit or Loss	Accumulated Items Those Are or May Be Reclassified To Profit or Loss			Accumulated Profit		
	Paid-in Share Capital	Inflation Adjustment on Share Capital	Actuarial Losses from Defined Pension Plans	Currency Translation Differences	Gains/ (Losses) of Hedging	Restricted Profit Reserves	Retained Earnings	Net Profit for The Period	Total Equity
As of 1 January 2014	1.380.000.000	1.123.808.032	(12.436.923)	1.659.392.608	(101.206.786)	59.372.762	2.170.853.236	682.707.427	6.962.490.356
Transfers	-	-	-	-	-	-	682.707.427	(682.707.427)	-
Total Comprehensive Income	-	-	(7.978.884)	707.977.183	(327.345.061)	-	-	1.819.259.536	2.191.912.774
As of 31 December 2014	1.380.000.000	1.123.808.032	(20.415.807)	2.367.369.791	(428.551.847)	59.372.762	2.853.560.663	1.819.259.536	9.154.403.130

- Explains changes to stockholder's equity over the period
- Flow from income statement to balance sheet:

  Net income from Income Statement

  ⇩ Retained earnings from Statement of retained Earnings

  ⇩ Balance Sheet

Cash Flow Statement

- No other statement provides detailed account of cash inflows and outflows
- It is a departure from typical accounting principles
- It provides insights whether airline can meet its short term financial obligations
- Important in airlines since cash inflows are generated in different periods than cash outflows
  - E.g. cash in for flight 1-60 day in advance of flight, cash outflow 15-90 days after flight (depends on accounts payable policy)
- Cash flow divided into 3 categories
  - Operating activities – principal revenue producing activities
  - Investing activities – any changes to fixed assets or investments, can affect cost structure
  - Financing activities-reflects long term goals since if seeking growth will have + cash flow from financing activities

TÜRK HAVA YOLLARI ANONİM ORTAKLIĞI VE BAĞLI ORTAKLIKLARI

Consolidated Statement of Cash Flows
for the Year Ended 31 December 2014

(All amounts are expressed in Turkish Lira (TL) unless otherwise stated.)

	Notes	Audited 1 January- 31 December 2014	Audited 1 January- 31 December 2013
Net Profit		**1.819.259.536**	**682.707.427**
Adjustments to reconcile cash flow generated from operating activities:			
Adjustments for Depreciation and Amortization	18-19	1.625.997.651	1.240.527.159
Adjustments for Provision for Employee Benefits	28	71.764.855	41.220.674
Adjustments for Provisions, Net	15-26	75.018.425	18.890.248
Adjustments for Interest Income	37-39	(76.188.692)	(79.271.750)
Gain on Sales of Fixed Assets	37	1.581.607	(1.658.418)
Share of Investments' (Profit) / Loss Accounted by Using The Equity Method	4	(160.773.731)	(108.973.512)
Adjustments for Interest Expense	39	360.960.866	261.649.506
Change in Manufacturers' Credit	16	(6.015.242)	(648.585)
Unrealized Foreign Exchange Translation Differences		(892.320.013)	210.292.593
Change in Provision for Doubtful Receivables	46	8.857.705	37.442.673
Increase in Fair Value of Investment Property	37	(6.240.000)	(18.835.000)
Tax Expense	41	441.887.267	282.536.828
Change in Fair Value of Derivative Instruments	39	(53.168.614)	31.058.964
Operating profit before working capital changes		**3.210.621.620**	**2.596.938.807**
Adjustments for Change in Trade Receivables		179.204.340	(193.366.224)
Adjustments for Change in Other Short and Long Term Receivables		(691.558.532)	(2.872.430)
Adjustments for Change in Inventories		(75.711.210)	(28.524.263)
Adjustments for Change in Other Receivables Related to Operations		32.036.733	(640.438)
Adjustments for Change in Short and Long Term Prepaid Expenses		(291.625.158)	(113.633.417)
Adjustments for Change in Trade Payables		(36.282.626)	272.248.976
Adjustments for Change in Short and Long Term Payables Related to Operations		2.813.091	79.175.438
Adjustments for Change in Other Short and Long Term Liabilities Related to Operations and Deferred Income		(85.848.594)	28.648.858
Adjustments for Change in Passenger Flight Liabilities		432.305.456	503.722.973
Cash Flows Generated From Operating Activities		**2.675.955.120**	**3.141.698.280**
Payment of Retirement Pay Liabilities	28	(32.067.388)	(28.139.267)
Net Cash Generated From Operating Activities		**2.643.887.732**	**3.113.559.013**
CASH FLOWS FROM INVESTING ACTIVITIES			
Proceeds From Sale of Property and Equipment, Intangible Assets and Investment Property		414.185.090	38.199.601
Interest Received		88.224.455	36.432.249
Purchase of Property and Equipment and Intangible Assets (*)	18-19	(1.074.213.563)	(1.092.367.554)
Prepayments For The Purchase of Aircrafts		(285.045.336)	(1.128.522.317)
Change in Financial Investments		(157.887.972)	513.555.407
Cash Outflow Arising From Capital Increase in Investments		(300.000)	(1.721.250)
Dividends Received		32.470.899	21.500.000
Cash Outflow Arising from Acquisition of Subsidiaries		-	(45.929.808)
Net Cash Used In Investing Activities		**(982.566.427)**	**(1.658.853.672)**
CASH FLOW FROM FINANCING ACTIVITIES			
Repayment of Financial Lease Liabilities		(1.196.700.032)	(1.022.387.330)
Change in Other Financial Liabilities and Derivative Instruments		7.098.680	(3.018.238)
Interest Paid		(337.195.335)	(272.577.511)
Dividends Paid		-	(173.280.963)
Net Cash Used In Financing Activities		**(1.526.796.687)**	**(1.471.264.042)**
NET INCREASE IN CASH AND CASH EQUIVALENTS		**134.524.618**	**(16.558.701)**
CASH AND CASH EQUIVALENTS AT THE BEGINNING OF THE PERIOD		**1.338.983.835**	**1.355.542.536**
CASH AND CASH EQUIVALENTS AT THE END OF THE PERIOD		**1.473.508.453**	**1.338.983.835**

RATIO ANALYSIS – TO ASSESS LIQUIDITY, PROFITABILITY AND SOLVENCY

FINANCIAL STATEMENT ANALYSIS

- Once you have all the financial statements, a detailed analysis is needed.
- Financial ratios assess different portions of the airline
  - Internal & external use: ROI, Profit margin, D/E, P/E
  - Industry specific – CASM, RASM
- Financial Ratio:
  - profitability - describe efficiency or success of business (1 or more dimensions)
  - liquidity – ability to meet short term obligations
  - long-term risk- analyze capital structure
  - stock market ratios – describe airline's position in equity market
- Airline specific financial ratios
- Airline industry benchmarking
- Insolvency models

PROFITABILITY RATIOS

- Operating Profit margin [EBIT]: operating profit/total revenue
  - Indicates profit per $ of revenue, allows close look at airline's operations, excludes interest expense and taxes so no influence from capital structure
- Profit Margin Ratio [PM]: net income/total revenue
  - Looks at net income per $ of revenue, Includes influence of financial structure of firm
- Return on Assets (ROA): net income/total assets
  - Measures net income after taxes against fixed assets, shows investment return the assets have provided, differences in capital intensity affect this ratio, how well the airline turns assets into income, varies across industries but less so within industries
- Return on Equity [ROE]: net income/total stockholders equity
  - Measures how well the airline turns equity into income, may vary from firm to firm in an industry but less between industries, influenced by capital structure of airline

PROFITABILITY RATIOS-CONT'D

- Asset Turnover Ratio [ATO]: total revenues/total assets
  - Measures how much revenue per $ of assets
  - Note: ROA = PM x ATO
- Du Pont Equation:
  - ROE = (net income/sales) x (sales/total assets) x (total assets/equity)
  - ROE = ROA x equity multiplier
- EBITDAR stands for Earnings Before Interest, Taxation, Depreciation, Amortization and Rent.
  - EBITDAR is used over EBITDA when the firm in question has extremely high rental expenditure (airlines, shipping companies, generally anything which rents large amounts of capital).
  - The reason is that for the kind of companies in question, EBITDA alone will miss out a massive cost and thereby over-inflate earnings. For airline and shipping companies (or any other which rents most of its capital), rent is likely to be one of if not the highest costs.

LIQUIDITY RATIOS

- Analyze an airline from a short term perspective and focuses on how well an airline can meet current obligations
- *Working capital* = current assets – current liabilities
  - It is the excess of short term assets available for use
- Current Ratio [CR]: current assets/current liabilities
  - Tells how much of current liabilities are being met by current assets
  - If < 1 have a short term liquidity problem
  - Helps determine whether airline can meet current obligations
  - WK varies by firm size, CR does not, so compare across industries
- Quick Ratio (Acid test Ratio) [QR]: quick assets/current liabilities
  - = (current assets- inventory)/ current liabilities)
  - Quick assets – cash, cash equivalents, marketable securities, accounts receivable
  - QR < CR
  - How much liquidity an airline needs depends on *operating cycle* (time between when cash is spent for goods & services to time investment generates cash)

LIQUIDITY RATIOS CONT'D

- Accounts Receivable Turnover Ratio [ARTR]:
  - Net credit sales/average accounts receivable
  - Measure of how many times accounts receivable are collected over a particular period of time but difficult to interpret
  - Higher values indicate money is being collected quickly, so less long term credit is being offered
- Days of Accounts Receivables [DAR]: number of days in period/ACTR
  - converts ACTR into the average time for accounts receivable.
  - Measured in days, so measures number of days it takes to collect revenue generated
  - A value of 7.6, indicates it takes 7-8days to collect revenue generated by the airline.
- Accounts Payable Turnover Ratio [APTR]: period purchases/average accounts payable
  - Measures number of times accounts payable turns over in a given period
  - Compare this to days of accounts receivable to estimate days of working capital
  - *Days of Accounts Payable* = # of days in period/APTR

LIQUIDITY RATIOS CONT'D

- Inventory Turnover Ratio [ITR]: cost of goods sold/average inventory
  - Important for manufacturing firms less important for airlines, but maintenance does have inventories of parts, THEREFORE replace 'costs of goods sold' (since not on airline income statement) and replace with specific category – e.g. maintenance materials and repairs
  - Days of inventory = # of days in period/ITR
  - E.g. ITR = 3.55, Days of Inventory = 365/3.55 = 102.7, have 103 days of inventory sitting idle – is this good or bad? Is this good or bad for an airline?

Long-Term Risk Ratios

- Also know as solvency ratios, as they analyze a firm's ability to stay in business
- Provides a macro perspective of a company
- Debt/Equity Ratio [D/E]: total liabilities/total stockholders equity
  - Classic long term risk ratio
  - Can indicate variability of future earnings-more debt financed companies will have greater swings in profitability due to increased interest expense
  - Cost of capital affected by D/E ratio
- Debt Ratio [DR]: = total liabilities/total assets
  - proportion of debt that is financing the assets of the company
  - Look at ratio over time to see how airline is positioning itself; e.g. is ratio stable?
- Times Interest Earned Ratio [TIER]: EBIT/Interest expense
  - Indicates airlines ability to meet interest payments, therefore is a metric of risk to bond holders
  - Higher values will lower cost of debt, since implies low risk of default

STOCK MARKET RATIOS

- Use to assess an airline in relation to its equity position
- Important in assessing the fiscal health of an airline

- Earnings per Share: [EPS]: net income/average # shares outstanding
  - Measure of net income earned for each shareholder
- Price Earnings Ratio [P/E]: current market price/earnings per share
  - Compares performance of the company according to income statement and the stock market
  - Indicates whether stock is over or under valued
  - Ratio influenced by industry being analyzed, state of overall stock market, and performance of the firm.
  - Is forward looking

STOCK MARKET RATIOS CONT'D

- Dividend Payout Ratio [DPR]: dividends distributed per share/earnings per share
  - Dividends used to attract equity, reflected in the share price
  - Measures the financial stability of the firm and of earnings.
  - Low dividends may reflect being strapped for cash or desire to reinvest earnings to increase payouts in the future.
- Dividend Yield Ratio [DYR]: dividends distributed/share/current market price
  - Indicates the percentage of the stock price that has been influenced by the dividend payouts.
  - Airline industry has low dividend yield, due to volatility of the industry.

AIRLINE SPECIFIC RATIOS

- Load factor: RPM/ASM
- RASM: Total passenger revenue/Total ASM
- CASM: total costs/Total ASM
- CASM (Operating): total operating expenses/Total ASM
- Total profit per ASM = RASM-CASM
- Revenue per Revenue Passenger Km (Yield) RRPK: total passenger revenue/Total RPM
- Break Even Load Factor: CASM/RRPK

PREDICTING INSOLVENCY – THREE THEORIES

- *Altman's Z-Score Model*
  - Financial status is multidimensional core Model
  - Model based on discriminate function analysis
  - $Z=6.56A + 3.2B + 6.72C + 1.05D$
  - A = working capital / total assets
  - B = retained earnings / total assets
  - C = EBIT / total assets
  - D = market value of equity / book value of total debt
  - Healthy: $z > 2.6$
  - Uncertain: $1.1 < z < 2.59$
  - Unhealthy: $z < 1.1$

PREDICTING INSOLVENCY – THREE THEORIES

- Springate's Z- Score Model
  - Also used discriminate function analysis to select financial ratios that best predicted the solvency of a firm
  - Z = 1.03A + 3.07B + 0.66C + 0.4D
  - A = working capital / total assets
  - B = net profit before taxes / total assets
  - C = EBIT / total assets
  - D = sales / total assets

  - Z < .862 consider candiate for failing

PREDICTING INSOLVENCY – THREE THEORIES

- Fulmer's H-Value Model
  - Evaluated 40 financial ratios to predict failure, uses discriminate function models
  - $H = -6.075 + 5.528V_1 + 0.212V_2 + 0.073V_3 + 1.27V_4 + -0.12V_5 + 2.335V_6 + 0.575V_7 + 1.083V_8 + 0.894V_9$
  - V_1 = retained earnings / total assets
  - V_2 = sales / total assets
  - V_3 = EBIT / total equity
  - V_4 = cash flow / total debt
  - V_5 = Debt / equity
  - V_6 = current liabilities / total assets
  - V_7 = log (tangible total assets)
  - V_8 = working capital / total debt
  - V_9 = log (EBIT) / interest expense

If $H < 0$, likely will fail

BUY OR LEASE

UNDERSTANDING OPERATIONAL COSTS

- *B737*

737-300					Manufacturer: Boeing								Class: Narrowbody
Average Block Hour Operating Cost	**Crew Cost**	**Fuel/ Oil**	**Aircraft Cost**	**Insur.**	**Taxes**	**Maintenance Direct**	**Maintenance Burden**	**Other**	**Total BH Cost**	**Monthly Aircraft Ownership Cost**	**Rentals**	**Deprec.**	**Amort. Of Cap. Lease**	**A/C Total /Month**
737-300	**$742**	**$2,305**	**$424**	**$13**	**$76**	**$520**	**$85**	**$0**	**$4,165**		**$57,691**	**$56,010**	**--**	**$113,701**
Southwest	$684	$2,308	$420	$14	$78	$441	$84	$0	$4,030		$55,050	$58,702	--	$113,752
US Airways	$1,419	$2,278	$474	$1	$46	$1,439	$101	--	$5,758		$84,569	$28,618	--	$113,187

Aircraft Operational Statistics	**Aircraft In Fleet**	**Stage Length**	**Seats/ Dept.**	**Gal. Of Fuel/HR**	**Average Aircraft Operations Per Day: Depts.**	**Block Hrs.**	**RPMs**	**ASMs**	**Load Factor**	**Aircraft Operating Cost/ASM (cents)**	**Crew**	**Aircraft Cost**	**Maintenance**	**A/C Total Per ASM**
737-300	**183**	**533**	**137**	**748**	**5.6**	**9.0**	**317,930**	**410,778**	**77.4%**		**1.6**	**0.9**	**1.3**	**9.1**
Southwest	167	528	137	747	5.8	9.1	323,165	418,691	77.2%		1.5	0.9	1.1	8.7
US Airways	16	595	131	757	4.2	7.9	264,648	330,238	80.1%		3.4	1.1	3.7	13.7

BUY VERSUS LEASE CONSIDERATIONS

Key parameters to consider include

- Buy prices,
  the best purchasing rate obtained from the seller.
  - For example an aircraft listed as 200 million could be reduced to 80 million depending on supply and demand for different aircraft
- Dry Lease rate –
  the best dry lease rate that can be obtained from the industry.
  - Market demand for particular aircraft type and financial strength of the leasing company becomes important in determination

BUY VERSUS LEASE CONSIDERATIONS

- Operational costs – these include additional operational costs of a dry leased aircraft such as cockpit and cabin crew.
- Borrowing rate – if the airline is borrowing to purchase aircraft this must be the best rate that is obtained from the bank of lending institutions
- Comparative analysis enables airline's to determine the most beneficial fulfilment option. An example is provided below
- Best prices can be obtained thru running aircraft acquisition process.

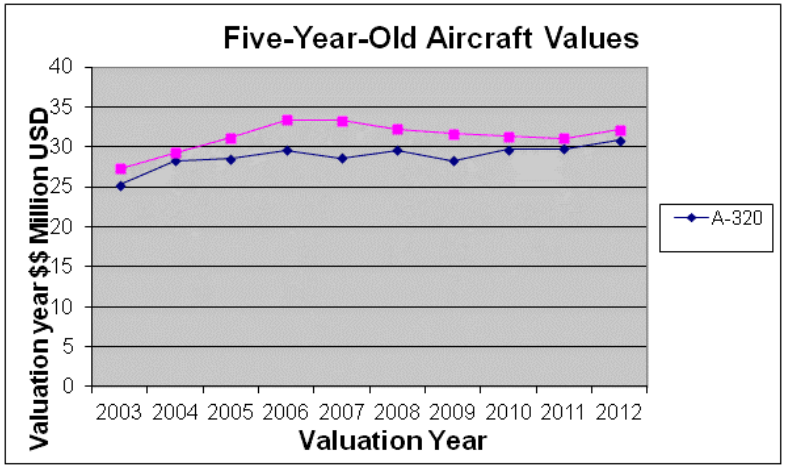
EXAMPLE BUY VERSUS LEASE COMPARISON

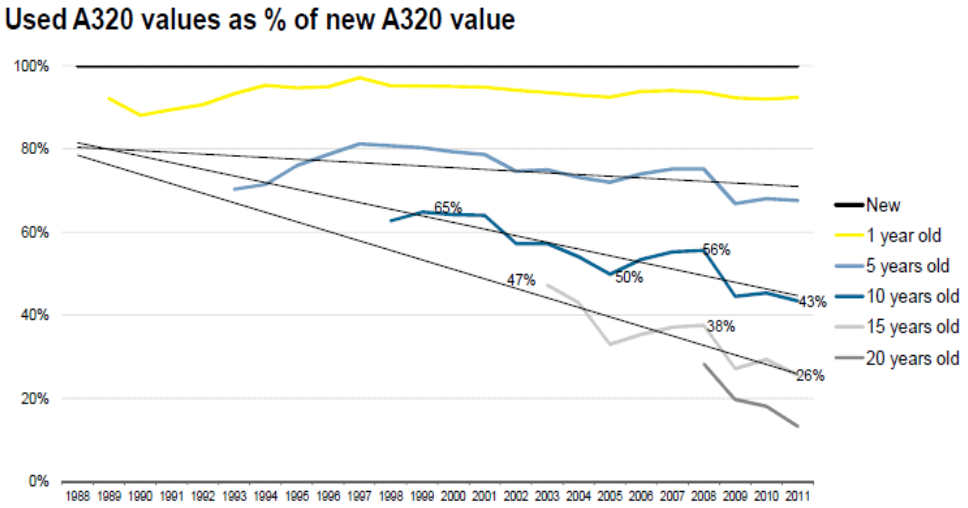
		Beginning of Year	End of Year 1	End of Year 2		Year 20
Option 1: Buy 2 Freighters @ $80mn each						
Principal: $160 million	Principal Remaining	$ 160,000,000	$ 152,000,000	$144,000,000		$ -
Interest: 5%	Interest Paid		-$ 8,000,000	-$ 7,600,000		-$ 400,000
Principal payback: Straight Line, 20 years	Principal Paid		-$ 8,000,000	-$ 8,000,000		-$ 8,000,000
Maintenance / Crew: Extra	Insurance Costs		-$ 266,667	-$ 266,667		-$ 266,667
Insurance: Extra	Mace Costs		-$ 6,083,515	-$ 6,083,515		-$ 6,083,515
	Crew Costs		-$ 5,069,596	-$ 5,069,596		-$ 5,069,596
	Cash Outflow / Residual Value		-$ 27,419,777	-$ 27,019,777		-$ 19,819,777
	NPV of Cash Outflow (Day 1, Year 1)	-$357,217,586				
Option 2: Dry Lease @ $900,000/mo per Freighter		Beginning of Year	End of Year			
			Year 1	Year 2		Year 20
Monthly Lease Payment: $1.8M	Lease Payment		-$ 21,600,000	-$ 21,600,000		-$ 21,600,000
Maintenance / Crew: Extra	Insurance		$ -	$ -		$ -
Insurance: Included	Mtce Costs		-$ 6,083,515	-$ 6,083,515		-$ 6,083,515
	Crew Costs		-$ 5,069,596	-$ 5,069,596		-$ 5,069,596
	Cash Outflow	$ -	-$ 32,753,110	-$ 32,753,110		-$ 32,753,110
	NPV of Cash Outflow (Day 1, Year 1)	-$473,090,852				
Option 3: Wet Lease @ $900,000/mo per Freighter		Beginning of Year	End of Year			
			Year 1	Year 2		Year 20
Monthly Lease Payment: $1.8M	Lease Payment		-$ 21,600,000	-$ 21,600,000		-$ 21,600,000
Maintenance / Crew: Included	Insurance		$ -	$ -		$ -
Insurance: Included	Mtce Costs		$ -	$ -		$ -
	Crew Costs		$ -	$ -		$ -
	Cash Outflow	$ -	-$ 21,600,000	-$ 21,600,000		-$ 21,600,000
	NPV of Cash Outflow (Day 1, Year 1)	-$311,993,648				

USED AIRCRAFT LEASE RATES

Lease rates are influenced by many factors

- **Interest rates/ economic environment**
- **Lease Terms**
- **Lessor supply**
- **Lessee quality**





Jet Lease Rates

RJ LEASE RATES (US$000s)

		years old					years old		
	NEW	5	10	20		NEW	5	10	20
CRJ 900	223	180			Emb 175	222	179	132	
CRJ 1000	245	207			Emb195	273	228		
CRJ300-ER	290								
					S100-95	183	162		

NARROWBODY LEASE RATES (US$000s)

		years old					years old		
	NEW	5	10	20		NEW	5	10	20
A318		152	103		717-200			93	
A319 (HGW)		200	160		737-300 (LGW)				45
A320-200 (IGW)		240	212	121	737-400 (LGW)				30
A320NEO	400				737-500 (LGW)				27
A321-200 (LGW,Sharklets)	423				737-600 (LGW)			77	
A321NEO	498				737-700 (LGW,Winglets)	303	200	162	
					737-700 (HGW,Winglets)	311	215	177	
					737-800 (LGW,Winglets)	352	264	218	
					737-800(HGW,Winglets)	362	273	226	
					737-900ER	390	282		
					757-300 (LGW)			134	
					MD-88				39

WIDEBODY LEASE RATES (US$000s)

		years old					years old		
	NEW	5	10	20		NEW	5	10	20
A300B4-600 (IGW)				82	747-400 (PW 4000)			244	159
A310-300 (IGW)				89	747-800	1,458	1,213		
A330-300 (IGW)			367	173	767-300ER(HGW, Winglets)		368	359	258
A340-300 ER			315		777-200ER		672	553	
A350-900	1,128				777-300ER	1,600	1,312	1,020	
A350-1000	1,693				787-800	881			
A380-800 (LGW)	1,726	1,363			787-900	1,050			
A380-800 (HGW)	1,824				MD-11P				118

Source AVAC. Notes: As assessed at end-October 2014, mid-range values for all types

END OF MODULE 4