Exploratory Note 8
Financial Statement Analysis

INTRODUCTION

Financial statements are utilized not only by those who operate firms on a day-to-day basis, but by many other stakeholders with an interest in a given firm's activities including shareholders, commercial lenders, and vendors. This second exploratory note of the evening is designed to introduce the basics of financial statement analysis with a particular emphasis on ratio analysis.

RATIO ANALYSIS

By themselves, individual income statements, balance sheets, and statements of cash flow can only tell us so much; however, given either a time-series and/or a benchmark, they can tell us a tremendous amount—especially if we know how to calculate a few critical ratios:

TABLE 3.5 Common financial ratios

I. Short-term solvency, or liquidity, ratios

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{Quick ratio} = \frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}$$

$$\text{Cash ratio} = \frac{\text{Cash}}{\text{Current liabilities}}$$

II. Long-term solvency, or financial leverage, ratios

$$\text{Total debt ratio} = \frac{\text{Total assets} - \text{Total equity}}{\text{Total assets}}$$

$$\text{Debt-equity ratio} = \text{Total debt} / \text{Total equity}$$

$$\text{Equity multiplier} = \text{Total assets} / \text{Total equity}$$

$$\text{Times interest earned ratio} = \frac{\text{EBIT}}{\text{Interest}}$$

$$\text{Cash coverage ratio} = \frac{\text{EBIT} + \text{Depreciation}}{\text{Interest}}$$

III. Asset utilization, or turnover, ratios

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Inventory}}$$

$$\text{Days' sales in inventory} = \frac{365 \text{ days}}{\text{Inventory turnover}}$$

$$\text{Receivables turnover} = \frac{\text{Sales}}{\text{Accounts receivable}}$$

$$\text{Days' sales in receivables} = \frac{365 \text{ days}}{\text{Receivables turnover}}$$

$$\text{Total asset turnover} = \frac{\text{Sales}}{\text{Total assets}}$$

$$\text{Capital intensity} = \frac{\text{Total assets}}{\text{Sales}}$$

IV. Profitability ratios

$$\text{Profit margin} = \frac{\text{Net Income}}{\text{Sales}}$$

$$\text{Return on assets (ROA)} = \frac{\text{Net income}}{\text{Total assets}}$$

$$\text{Return on equity (ROE)} = \frac{\text{Net income}}{\text{Total equity}}$$

$$\text{ROE} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

V. Market value ratios

$$\text{Price-earnings ratio} = \frac{\text{Price per share}}{\text{Earnings per share}}$$

$$\text{Price-sales ratio} = \frac{\text{Price per share}}{\text{Sales per share}}$$

$$\text{Market-to-book ratio} = \frac{\text{Market value per share}}{\text{Book value per share}}$$

Liquidity Ratios

What is liquidity all about again?

What does the current ratio tell us?

Why does the quick ratio have value? Why the adjustment for inventory?

Why does the cash ratio have value?

Is high liquidity always a good thing? Why might excessive liquidity be a problem?

Leverage Ratios

The debt-to-equity and total debt ratios give us a good idea as to debt level. What is the tradeoff associated with debt?

When it comes to servicing debt, we have the times interest earned and cash coverage ratios. Why are these ratios important?

Asset Utilization Ratios

What is inventory turnover all about? Is a higher turnover ratio better or worse? Is it always better or worse?

How about days that sales are in receivables? Is a lower or higher number better? Are there exceptions?

How about days COGS are in payables? Is a lower or higher number better? Are there exceptions?

Profitability Ratios

What is net profit margin? For an entrepreneur, is this necessarily the key profitability metric? Why might net profit margin underestimate the short-term profitability of an entrepreneurial firm?

Why are ROA and ROE important? The higher the better?

Market Value Ratios

What is the price-earnings (PE) ratio? How can it be used for back of the envelope valuation purposes?

What is the price-sales ratio? How can it be used for back of the envelope valuation purposes?

A CASE FOR FINANCIAL STATEMENT ANALYSIS

The best way to understand financial ratios is to utilize them in a case setting. Consider the following: XYZ Real Estate Management Company is in the business of buying and leasing properties and providing facilities management services. Its financial statements from 2008 and 2009 are as follows (all numbers are in millions):

BALANCE SHEET

	2008	2009
Assets		
Current Assets		
Cash	300	120
A/R	900	670
Inventory	0	0
Total	1200	790
Fixed Assets		
Net Plant and Equipment	3000	2300
Total Assets	**4200**	**3090**
Liabilities and Equity		
Current Liabilities		
A/P	450	665
Notes Payable	750	1125
Total	1200	1790
Long-Term Debt	4000	4000
Equity		
Common Stock and Paid-In	1000	1000
Retained Earnings	-2000	-3700
Total	-1000	-2700
Total Liabilities and Equity	**4200**	**3090**

INCOME STATEMENT

	2008	2009
Revenues	6000	4000
Costs	5000	5000
Depreciation	300	300
EBIT	700	-1300
Interest Paid	400	400
Taxable Income	300	-1700
Taxes (40%)	120	0
Net Income	**180**	**-1700**

How much leverage is the firm using? Did its use of leverage increase or decrease between 2008 and 2009?

Is the firm in a position from which to successfully service its long-term debt (make interest payments which are due)? Has this position strengthened or weakened between 2008 and 2009?

Is the firm in a position from which to successfully service its short-term creditors?

Is the firm profitable? What do its earnings look like?

What should the firm do to improve its prospects in the short-, medium-, and long-run?

ANOTHER EXAMPLE CASE

ABC Box Company is in the business of forming and selling specialized corrugated boxes for the agricultural industry. Its financial statements from 2008 and 2009 are as follows (all numbers are in thousands):

BALANCE SHEET

	2008	2009
Assets		
Current Assets		
Cash	200	400
A/R	500	300
Inventory	1000	900
Total	1700	1600
Fixed Assets		
Net Plant and Equipment	750	680
Total Assets	**2450**	**2280**
Liabilities and Equity		
Current Liabilities		
A/P	750	500
Notes Payable	50	50
Total	800	550
Long-Term Debt	100	100
Equity		
Common Stock and Paid-In	100	100
Retained Earnings	1450	1530
Total	1550	1630
Total Liabilities and Equity	**2450**	**2280**

INCOME STATEMENT

	2008	2009
Revenues	2000	1460
Costs	1600	1300
Depreciation	70	70
EBIT	330	90
Interest Paid	10	10
Taxable Income	320	80
Taxes (40%)	128	0
Net Income	**192**	**80**

Is ABC liquid? How has its liquidity changed over time?

Does ABC use a significant amount of debt?

Does the firm appear to be behaving in a conservative or an aggressive fashion?

What can we say about the firm's revenues over time?

Is the firm profitable?

Are the firm's prospects for the future good?

CONCLUSIONS

Financial statement analysis is widely used, but it is by no means perfect. What are some of the critical issues which financial statement analysis does not address? Why does this matter? Are there other reasons to be concerned about it?