Financial Analysis (con.)

Financial Ratios

- Liquidity ratios.
- Asset management (Activity ratios).
- Debt ratios.
- Profitability ratios.

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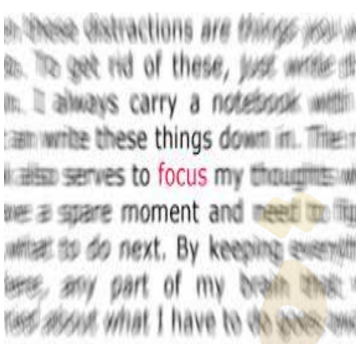
Lecture
Code of ethics



Financial ratios

- Ratio Analysis
- DuPont System
- Effects of Improving Ratios
- Limitations of Ratio Analysis
- Qualitative Factors

Balance Sheet: Assets

	2024E	2023
Cash	85,632	7,282
A/R	878,000	632,160
Inventories	1,716,480	1,287,360
Total CA	2,680,112	1,926,802
Gross FA	1,197,160	1,202,950
Less: Deprec.	380,120	263,160
Net FA	817,040	939,790
Total Assets	3,497,152	2,866,592

Balance Sheet: Liabilities and Equity

	2024E	2023
Accts payable	436,800	524,160
Notes payable	300,000	636,808
Accruals	408,000	489,600
Total CL	1,144,800	1,650,568
Long-term debt	400,000	723,432
Common stock	1,721,176	460,000
Retained earnings	231,176	32,592
Total Equity	1,952,352	492,592
Total L & E	3,497,152	2,866,592

Income Statement

	2024E	2023
Sales	7,035,600	6,034,000
COGS	5,875,992	5,528,000
Other expenses	550,000	519,988
EBITDA	609,608	(13,988)
Deprec. & amort.	116,960	116,960
EBIT	492,648	(130,948)
Interest exp.	70,008	136,012
EBT	422,640	(266,960)
Taxes	169,056	(106,784)
Net income	253,584	(160,176)

Other Data

	2024E	2023
No. of shares	250,000	100,000
EPS	$1.014	-$1.602
DPS	$0.220	$0.110
Stock price	$12.17	$2.25
Lease pmts	$40,000	$40,000

Why are ratios useful?

- Ratios standardize numbers and facilitate comparisons.
- Ratios are used to highlight weaknesses and strengths.
- Ratio comparisons should be made through time and with competitors.
  - Trend analysis.
  - Peer (or industry) analysis.

Five Major Categories of Ratios and the Questions They Answer

- Liquidity: Can we make required payments?
- Asset management: right amount of assets vs. sales?
- Debt management: Right mix of debt and equity?
- Profitability: Do sales prices exceed unit costs, and are sales high enough as reflected in PM, ROE, and ROA?
- Market value: Do investors like what they see as reflected in P/E and M/B ratios?

D'Leon's Forecasted Current Ratio and Quick Ratio for 2024

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

$$= \frac{\$2{,}680}{\$1{,}145}$$

$$= 2.34\times$$

$$\text{Quick ratio} = \frac{(\text{Current assets} - \text{Inventories})}{\text{Current liabilities}}$$

$$= \frac{(\$2{,}680 - \$1{,}716)}{\$1{,}145}$$

$$= 0.84\times$$

Comments on Liquidity Ratios

	2024E	2023	2022	Ind.
Current ratio	2.34x	1.20x	2.30x	2.70x
Quick ratio	0.84x	0.39x	0.85x	1.00x

- Expected to improve but still below the industry average.
- Liquidity position is weak.

D'Leon's Inventory Turnover vs. the Industry Average

Inv. turnover = Sales/Inventories
= $7,036/$1,716
= 4.10x

	2024E	2023	2022	Ind.
Inventory turnover	4.1x	4.70x	4.8x	6.1x

Comments on Inventory Turnover

- Inventory turnover is below industry average.
- D'Leon might have old inventory, or its control might be poor.
- No improvement is currently forecasted.

DSO: Average Number of Days after Making a Sale before Receiving Cash

DSO = Receivables/Avg. sales per day

= Receivables/(Annual sales/365)

= $878/($7,036/365)

= 45.6 days

Appraisal of DSO

	2024E	2023	2022	Ind.
DSO	45.6	38.2	37.4	32.0

- D'Leon collects on sales too slowly, and is getting worse.
- D'Leon has a poor credit policy.

Fixed Assets and Total Assets Turnover Ratios vs. the Industry Average

FA turnover = Sales/Net fixed assets

= $7,036/$817 = 8.61x

TA turnover = Sales/Total assets

= $7,036/$3,497 = 2.01x

Evaluating the FA Turnover and TA Turnover Ratios

	2024E	2023	2022	Ind.
FA TO	8.6x	6.4x	10.0x	7.0x
TA TO	2.0x	2.1x	2.3x	2.6x

- FA turnover projected to exceed the industry average.
- TA turnover below the industry average. Caused by excessive currents assets (A/R and Inv).

Calculate the Debt Ratio and Times-Interest-Earned Ratio

Debt ratio = Total debt/Total assets

= ($1,145 + $400)/$3,497

= 44.2%

TIE = EBIT/Interest expense

= $492.6/$70 = 7.0x

D'Leon's Debt Management Ratios vs. the Industry Averages

	2024E	2023	2022	Ind.
D/A	44.2%	82.8%	54.8%	50.0%
TIE	7.0x	-1.0x	4.3x	6.2x

- D/A and TIE are better than the industry average.

Profitability Ratios: Operating Margin, Profit Margin, and Basic Earning Power

Operating margin = EBIT/Sales
= $492.6/$7,036 = 7.0%

Profit margin = Net income/Sales
= $253.6/$7,036 = 3.6%

Basic earning power = EBIT/Total assets
= $492.6/$3,497 = 14.1%

Appraising Profitability with Operating Margin, Profit Margin, and Basic Earning Power

	2024E	2023	2022	Ind.
Operating margin	7.0%	-2.2%	5.6%	7.3%
Profit margin	3.6%	-2.7%	2.6%	3.5%
Basic earning power	14.1%	-4.6%	13.0%	19.1%

Appraising Profitability with Operating Margin, Profit Margin, and Basic Earning Power

- Operating margin was very bad in 2023. It is projected to improve in 2024, but it is still projected to remain below the industry average.
- Profit margin was very bad in 2023 but is projected to exceed the industry average in 2024. Looking good.
- BEP removes the effects of taxes and financial leverage, and is useful for comparison.
- BEP projected to improve, yet still below the industry average. There is definitely room for improvement.

Profitability Ratios: Return on Assets and Return on Equity

ROA = Net income/Total assets

= \$253.6/\$3,497 = 7.3%

ROE = Net income/Total common equity

= \$253.6/\$1,952 = 13.0%

Appraising Profitability with ROA and ROE

	2024E	2023	2022	Ind.
ROA	7.3%	-5.6%	6.0%	9.1%
ROE	13.0%	-32.5%	13.3%	18.2%

- Both ratios rebounded from the previous year, but are still below the industry average. More improvement is needed.
- Wide variations in ROE illustrate the effect that leverage can have on profitability.

Effects of Debt on ROA and ROE

- ROA is lowered by debt — interest lowers NI, which also lowers ROA = NI/Assets.
- But use of debt also lowers equity, hence debt could raise ROE = NI/Equity.

Problems with ROE

- ROE and shareholder wealth are correlated, but problems can arise when ROE is the sole measure of performance.
  - ROE does not consider risk.
  - ROE does not consider the amount of capital invested.
  - Might encourage managers to make investment decisions that do not benefit shareholders.
- ROE focuses only on return and a better measure would consider risk *and* return.

Table 3-1 Financial statement for ratio analysis

SAXTON COMPANY
Income Statement
For the Year Ended December 31, 2018

Sales (all on credit)	$4,000,000
Cost of goods sold	3,000,000
Gross profit	$1,000,000
Selling and administrative expense*	450,000
Operating profit	$ 550,000
Interest expense	50,000
Other income (expense), net	(225,000)
Net income before taxes	$ 275,000
Taxes	75,000
Net income	$ 200,000

*Includes $50,000 in lease payments.

Balance Sheet
As of December 31, 2018

Assets	
Cash	$ 30,000
Marketable securities	50,000
Accounts receivable	350,000
Inventory	370,000
Total current assets	$ 800,000
Net plant and equipment	800,000
Net assets	$1,600,000
Liabilities and Stockholders' Equity	
Accounts payable	$ 50,000
Notes payable	250,000
Total current liabilities	$ 300,000
Long-term liabilities	300,000
Total liabilities	$ 600,000
Common stock	400,000
Retained earnings	600,000
Total liabilities and stockholders' equity	$1,600,000

	Saxton Company	Industry Average
9. **Current ratio** = $\frac{\text{Current assets}}{\text{Current liabilities}}$	$\frac{\$800{,}000}{\$300{,}000} = 2.67$	2.1 times
10. **Quick ratio** = $\frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}$	$\frac{\$430{,}000}{\$300{,}000} = 1.43$	1.0 times

	Saxton Company	Industry Average
4. **Receivables turnover** = $\frac{\text{Sales (credit)}}{\text{Receivables}}$	$\frac{\$4,000,000}{\$350,000} = 11.4$	10 times
5. **Average collection period** = $\frac{\text{Accounts receivable}}{\text{Average daily credit sales}}$	$\frac{\$350,000}{\$11,111} = 32$	36 days
6. **Inventory turnover** = $\frac{\text{Sales}}{\text{Inventory}}$	$\frac{\$4,000,000}{\$370,000} = 10.8$	7 times
7. **Fixed asset turnover** = $\frac{\text{Sales}}{\text{Fixed assets}}$	$\frac{\$4,000,000}{\$800,000} = 5$	5.4 times
8. **Total asset turnover** = $\frac{\text{Sales}}{\text{Total assets}}$	$\frac{\$4,000,000}{\$1,600,000} = 2.5$	1.5 times

	Saxton Company	Industry Average
1. **Profit margin** = $\frac{\text{Net income}}{\text{Sales}}$	$\frac{\$200{,}000}{\$4{,}000{,}000} = 5\%$	6.7%
2. **Return on assets** (investment) =		
a. $\frac{\text{Net income}}{\text{Total assets}}$	$\frac{\$200{,}000}{\$1{,}600{,}000} = 12.5\%$	10%
b. $\frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}}$	$5\% \times 2.5 = 12.5\%$	$6.7\% \times 1.5 = 10\%$
3. **Return on equity** =		
a. $\frac{\text{Net income}}{\text{Stockholders' equity}}$	$\frac{\$200{,}000}{\$1{,}000{,}000} = 20\%$	15%
b. $\frac{\text{Return on assets (investment)}}{(1 - \text{Debt/Assets})}$	$\frac{0.125}{1 - 0.375} = 20\%$	$\frac{0.10}{1 - 0.33} = 15\%$

	Saxton Company	Industry Average
11. **Debt to total assets** = $\frac{\text{Total debt}}{\text{Total assets}}$	$\frac{\$600{,}000}{\$1{,}600{,}000} = 37.5\%$	33%
12. **Times interest earned** = $\frac{\text{Income before interest and taxes}}{\text{Interest}}$	$\frac{\$550{,}000}{\$50{,}000} = 11$	7 times
13. **Fixed charge coverage** = $\frac{\text{Income before fixed charges and taxes}}{\text{Fixed charges}}$	$\frac{\$600{,}000}{\$100{,}000} = 6$	5.5 times

Table 3-3 Ratio analysis

	Saxton Company	Industry Average	Conclusion
A. Profitability			
1. Profit margin	5.0%	6.7%	Below average
2. Return on assets	12.5%	10.0%	Above average due to high turnover
3. Return on equity	20.0%	15.0%	Good, due to Ratios 2 and 11
B. Asset Utilization			
4. Receivables turnover	11.4	10.0	Good
5. Average collection period	32.0	36.0	Good
6. Inventory turnover	10.8	7.0	Good
7. Fixed asset turnover	5.0	5.4	Below average
8. Total asset turnover	2.5	1.5	Good
C. Liquidity			
9. Current ratio	2.67	2.1	Good
10. Quick ratio	1.43	1.0	Good
D. Debt Utilization			
11. Debt to total assets	37.5%	33.0%	Slightly more debt
12. Times interest earned	11.0	7.0	Good
13. Fixed charge coverage	6.0	5.5	Good

Calculate the Price/Earnings and Market/Book Ratios

P/E = Price/Earnings per share
= $12.17/$1.014 = 12.0x

M/B = Market price/Book value per share
= $12.17/($1,952/250) = 1.56x

	2024E	2023	2022	Ind.
P/E	12.0x	-1.4x	9.7x	14.2x
M/B	1.56x	0.5x	1.3x	2.4x

Analyzing the Market Value Ratios

- P/E: How much investors are willing to pay for $1 of earnings.
- M/B: How much investors are willing to pay for $1 of book value equity.
- For each ratio, the higher the number, the better.
- P/E and M/B are high if ROE is high and risk is low.

The DuPont System

$$\text{ROE} = \begin{matrix}\text{Profit}\\ \text{margin}\end{matrix} \times \begin{matrix}\text{Total assets}\\ \text{turnover}\end{matrix} \times \begin{matrix}\text{Equity}\\ \text{multiplier}\end{matrix}$$

$$\text{ROE} = (\text{NI/Sales}) \times (\text{Sales/TA}) \times (\text{TA/Equity})$$

- Focuses on expense control (PM), asset utilization (TA TO), and debt utilization (equity multiplier).

DuPont Equation: Breaking Down Return on Equity

ROE = (NI/Sales) x (Sales/TA) x (TA/Equity)

= 3.6% x 2 x 1.8

= 13.0%

	PM	TA TO	EM	**ROE**
2022	2.6%	2.3	2.2	**13.3%**
2023	-2.7%	2.1	5.8	**-32.5%**
2024E	3.6%	2.0	1.8	**13.0%**
Ind.	3.5%	2.6	2.0	**18.2%**

An Example: The Effects of Improving Ratios

A/R	$ 878	Debt	$1,545
Other CA	1,802	Equity	1,952
Net FA	817		
TA	$3,497	Total L&E	$3,497

Sales/Day = $7,035,600/365 = $19,275.62

How would reducing the firm's DSO to 32 days affect the company?

Reducing Accounts Receivable and the Days Sales Outstanding

- Reducing A/R will have no effect on sales

Old A/R	= $19,275.62 × 45.6	=	$878,000
New A/R	= $19,275.62 × 32.0	=	$616,820
	Cash freed up:		$261,180

- **Initially shows up as addition to cash.**

Effect of Reducing Receivables on Balance Sheet and Stock Price

Added cash	$ 261	Debt	$1,545
A/R	617	Equity	1,952
Other CA	1,802		
Net FA	817		
Total Assets	$3,497	Total L&E	$3,497

What could be done with the new cash?

How might stock price and risk be affected?

Potential Uses of Freed up Cash

- Repurchase stock
- Expand business
- Reduce debt
- All these actions would likely improve the stock price.

Potential Problems and Limitations of Financial Ratio Analysis

- Comparison with industry averages is difficult for a conglomerate firm that operates in many different divisions.
- "Average" performance is not necessarily good, perhaps the firm should aim higher.
- Seasonal factors can distort ratios.
- "Window dressing" techniques can make statements and ratios look better.

More Issues Regarding Ratios

- Different operating and accounting practices can distort comparisons.
- Sometimes it is hard to tell if a ratio is “good” or “bad.”
- Difficult to tell whether a company is, on balance, in strong or weak position.

Consider Qualitative Factors When Evaluating a Company's Future Financial Performance

- Are the firm's revenues tied to one key customer, product, or supplier?
- What percentage of the firm's business is generated overseas?
- The firm's competitive environment
- Future prospects
- Legal and regulatory environment


Thank You!