



# Chapter 4

## Analysis of Financial Statements

# Overview

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

# Balance Sheet: Assets

	<u>2022E</u>	<u>2021</u>
Cash	85,632	7,282
A/R	878,000	632,160
Inventories	<u>1,716,480</u>	<u>1,287,360</u>
Total CA	2,680,112	1,926,802
Gross FA	1,197,160	1,202,950
Less: Deprec.	<u>380,120</u>	<u>263,160</u>
Net FA	<u>817,040</u>	<u>939,790</u>
Total Assets	<u>3,497,152</u>	<u>2,866,592</u>

# Balance Sheet: Liabilities and Equity

	<u>2022E</u>	<u>2021</u>
Accts payable	436,800	524,160
Accruals	408,000	489,600
Notes payable	<u>300,000</u>	<u>636,808</u>
Total CL	1,144,800	1,650,568
Long-term debt	400,000	723,432
Common stock	1,718,986	460,000
Retained earnings	<u>233,366</u>	<u>32,592</u>
Total Equity	<u>1,952,352</u>	<u>492,592</u>
Total L & E	<u>3,497,152</u>	<u>2,866,592</u>

# Income Statement

	<u>2022E</u>	<u>2021</u>
Sales	6,900,600	6,126,796
COGS	5,875,992	5,528,000
Other expenses	<u>550,000</u>	<u>519,988</u>
EBITDA	474,608	78,808
Deprec. & amort.	116,960	116,960
EBIT	357,648	( 38,152)
Interest exp.	<u>70,008</u>	<u>122,024</u>
EBT	287,640	(160,176)
Taxes	<u>31,866</u>	<u>0</u>
Net income	<u>255,774</u>	<u>(160,176)</u>

# Other Data

	2022E	2021
No. of shares	250,000	100,000
EPS	\$1.023	-\$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.
  - Industry analysis
  - Benchmark (peer) analysis
  - Trend 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 2022

- Current ratio = Current assets/Current liabilities  
= \$2,680/\$1,145  
= 2.34x
- Quick ratio = (Current assets – Inventories) / Current liabilities  
= (\$2,680 – \$1,716)/\$1,145  
= 0.84x

# Comments on Liquidity Ratios

	2022E	2021	2020	Ind.
Current ratio	2.34x	1.17x	2.33x	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 = COGS/Inventories

= \$5,876/\$1,716

= 3.42x

	2022E	2021	2020	Ind.
Inventory turnover	3.42x	4.29x	4.00x	5.50x

# 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

$$\begin{aligned}\text{DSO} &= \text{Receivables}/\text{Avg. sales per day} \\ &= \text{Receivables}/(\text{Annual sales}/365) \\ &= \$878/(\$6,901/365) \\ &= 46.44 \text{ days}\end{aligned}$$

# Appraisal of DSO

	2022E	2021	2020	Ind.
DSO	46.44	37.66	37.35	32.00

- 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

$$= \$6,901/\$817 = 8.45x$$

- TA turnover = Sales/Total assets

$$= \$6,901/\$3,497 = 1.97x$$

# Evaluating the FA Turnover (S/Net FA) and TA Turnover (S/TA) Ratios

	2022E	2021	2020	Ind.
FA TO	8.45x	6.52x	9.95x	7.00x
TA TO	1.97x	2.14x	2.34x	2.60x

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



# Calculate the Debt-to-Capital Ratio and Times-Interest-Earned Ratio

Debt-to-capital ratio = Total debt / Total invested capital

$$= (\$300 + \$400) / (\$300 + \$400 + \$1,952.4) = 26.39\%$$

TIE = EBIT/Interest

$$= \$357.6/\$70 = 5.11x$$

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

	2022E	2021	2020	Ind.
Debt/Total Inv. Capital	26.39%	73.41%	44.09%	40.00%
TIE	5.11x	-0.31x	4.34x	6.20x

- Debt/Total invested capital is better than the industry average.
- TIE ratio greatly improved but still below the industry average.

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

Operating margin	= EBIT/Sales = \$357.6/\$6,901 = 5.18%
Profit margin	= Net income/Sales = \$255.8/\$6,901 = 3.71%
Basic earning power	= EBIT/Total assets = \$357.6/\$3,497 = 10.23%

# Appraising Profitability with Operating Margin, Profit Margin, and Basic Earning Power (1 of 2)

	2022E	2021	2020	Ind.
Operating margin	5.18%	-0.62%	5.55%	7.30%
Profit margin	3.71%	-2.61%	3.20%	4.30%
Basic earning power	10.23%	-1.33%	12.96%	19.10%

# Appraising Profitability with Operating Margin, Profit Margin, and Basic Earning Power (2 of 2)



Operating margin was very bad in 2021. It is projected to improve in 2022, but it is still projected to remain below the industry average.



Profit margin was very bad in 2021. It is projected to improve in 2022, but it is still projected to remain below the industry average.



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  
=  $\$255.8/\$3,497 = 7.31\%$
- ROE = Net income/Total common equity  
=  $\$255.8/\$1,952 = 13.10\%$

# Appraising Profitability with ROA and ROE

	2022E	2021	2020	Ind.
ROA	7.31%	-5.59%	7.49%	11.2%
ROE	13.10%	-32.52%	16.56%	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

Holding assets constant, if debt increases:



Equity declines.



Interest expense increases – which leads to a reduction in net income.

ROA declines (due to the reduction in net income).

ROE may increase or decrease (since both net income and equity decline).



# 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.



Given these problems, reliance on ROE may encourage managers to make investments that do not benefit shareholders. As a result, analysts have looked to develop other performance measures, such as EVA.

# Calculate the Price/Earnings and Market/Book Ratios

- P/E = Price/Earnings per share  
=  $\$12.17/\$1.0231 = 11.90x$
- M/B = Market price/Book value per share  
=  $\$12.17/(\$1,952/250) = 1.56x$

	2022E	2021	2020	Ind.
P/E	11.90x	-1.40x	7.73x	14.20x
M/B	1.56x	0.46x	1.28x	2.40x

# 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 expected growth is high and risk is low.

# EV/EBITDA Calculations for Chapter 4 Case

- Enterprise Value =  $MV_E + MV_D + MV_{\text{Claims}} - (\text{Cash and Equivalents})$
- For D'Leon, EV/EBITDA calculations are as follows (assume bonds are at par value):
- 2022E:  $[(\$12.17 \times 250,000) + (\$300,000 + \$400,000) - \$85,632] / \$474,608 = 7.7050$ , or approximately 7.7
- 2021:  $[(\$2.25 \times 100,000) + (\$636,808 + \$723,432) - \$7,282] / \$78,808 = 20.02$ , or approximately 20
- 2020:  $[(\$8.50 \times 100,000) + (\$200,000 + \$323,432) - \$57,600] / \$209,328 = 6.2860$ , or approximately 6.3

# The DuPont Equation

The DuPont Equation					
ROE =	Profit Margin	×	Total assets turnover	×	Equity multiplier
ROE =	(NI/Sales)	×	(Sales/TA)	×	(TA/Equity)

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

# DuPont Equation: Breaking Down Return on Equity

$$\begin{aligned}\text{ROE} &= (\text{NI/Sales}) \times (\text{Sales/TA}) \times (\text{TA/Equity}) \\ &= 3.71\% \times 1.97 \times 1.7913 \\ &= 13.1\%\end{aligned}$$

	PM	TATO	EM	ROE
2020	3.2%	2.34	2.21	<b>16.6%</b>
2021	-2.6%	2.14	5.82	<b>-32.5%</b>
2022E	3.7%	1.97	1.79	<b>13.1%</b>
Ind.	4.3%	2.6	1.63	<b>18.2%</b>

# An Example: The Effects of Improving Ratios

Accounts receivable	\$ 878	Current liabilities	\$ 845
Other current assets	1,802	Debt	700
Net fixed assets	<u>817</u>	Equity	<u>1,952</u>
Total assets	<u>\$3,497</u>	Total liabilities & equity	<u>\$3,497</u>

- $\text{Sales/Day} = \$6,900,600/365 = \$18,905.75$
- 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

$$\text{Old A/R} = \$18,905.75 \times 46.4 = \$878,000$$

$$\text{New A/R} = \$18,905.75 \times 32.0 = \underline{\$604,984}$$

$$\text{Cash freed up:} \quad \underline{\underline{\$273,016}}$$

- Initially shows up as addition to cash.



# Effect of Reducing Receivables on Balance Sheet and Stock Price

Added cash	\$ 273	Current liabilities	\$ 845
Accounts receivable	605		
Other current assets	1,802	Debt	700
Net fixed assets	<u>817</u>	Equity	<u>1,952</u>
Total assets	<u>\$3,497</u>	Total liabilities & equity	<u>\$3,497</u>

- 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.
- 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 a strong or weak position.

# More Issues Regarding Ratios

- “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 than they actually are.
- Inflation has distorted many firms’ balance sheets, so analyses must be interpreted with judgment.