

Chapter 3

Working With Financial Statements

Chapter Organization

- 3.1 Cash Flow and Financial Statements: A Closer Look
- 3.2 Standardized Financial Statements
- 3.3 Ratio Analysis
- 3.4 The Du Pont Identity
- 3.5 Using Financial Statement Information
- 3.6 Summary and Conclusions

T3.2 Hermetic, Inc. Balance Sheet

Hermetic, Inc. Balance Sheet as of December 31 (\$ in thousands)

<u>Assets</u>	<u>1999</u>	<u>2000</u>
<u>Current Assets</u>		
Cash	\$ 45	\$ 50
Accounts receivable	260	310
Inventory	320	385
Total	<u>\$ 625</u>	<u>\$ 745</u>
 Fixed assets		
Net plant and equipment	<u>985</u>	<u>1100</u>
 Total assets	<u><u>\$1610</u></u>	<u><u>\$1845</u></u>

T3.2 Hermetic, Inc. Balance Sheet (concluded)

<u>Liabilities and equity</u>	1999	2000
<u>Current liabilities</u>		
Accounts payable	\$ 210	\$ 260
Notes payable	110	175
Total	<u>\$ 320</u>	<u>\$ 435</u>
Long-term debt	205	225
<u>Stockholders' equity</u>		
Common stock and paid-in surplus	290	290
Retained earnings	795	895
Total	<u>1085</u>	<u>1185</u>
Total liabilities and equity	<u>\$1610</u>	<u>\$1845</u>

T3.3 Hermetic, Inc., Income Statement

(\$ in thousands)

Net sales	\$710.00
Cost of goods sold	480.00
Depreciation	<u>30.00</u>
Earnings before interest and taxes	\$200.00
Interest	<u>20.00</u>
Taxable income	180.00
Taxes	<u>53.45</u>
Net income	<u><u>\$126.55</u></u>
Dividends	\$ 26.55
Addition to retained earnings	100.00

T3.4 Statement of Cash Flows

■ Operating activities

- ◆ + Net income
- ◆ + Depreciation
- ◆ + Any decrease in current assets (except cash)
- ◆ + Increase in accounts payable
- ◆ – Any increase in current assets (except cash)
- ◆ – Decrease in accounts payable

■ Investment activities

- ◆ + Ending fixed assets
- ◆ – Beginning fixed assets
- ◆ + Depreciation

T3.4 Statement of Cash Flows (concluded)

■ Financing activities

- ◆ – Decrease in notes payable
- ◆ + Increase in notes payable
- ◆ – Decrease in long-term debt
- ◆ + Increase in long-term debt
- ◆ + Increase in common stock
- ◆ – Dividends paid

T3.5 Hermetic, Inc. Statement of Cash Flows

■ Operating activities

◆ + Net income	+ \$ 126.55
◆ + Depreciation	+ 30.00
◆ + Increase in payables	+ 50.00
◆ – Increase in receivables	– 50.00
◆ – Increase in inventory	– 65.00
	<u> </u>
	\$ 91.55

■ Investment activities

◆ + Ending fixed assets	+\$1,100.00
◆ – Beginning fixed assets	– 985.00
◆ + Depreciation	+ 30.00
	<u> </u>
	(\$ 145.00)

T3.5 Hermetic, Inc. Statement of Cash Flows (concluded)

■ Financing activities

◆ + Increase in notes payable	+ \$ 65.00
◆ + Increase in long-term debt	+ 20.00
◆ – Dividends	<u>– 26.55</u>
	\$ 58.45

Putting it all together, the net addition to cash for the period is:

$$\$91.55 - 145.00 + 58.45 = \$5.00$$

T3.6 Hermetic, Inc. Common-Size Balance Sheet

<u>Assets</u>	1999	2000
<u>Current Assets</u>		
Cash	2.8%	2.7%
Accounts receivable	16.1	16.8
Inventory	19.9	20.9
Total	<u>38.8%</u>	<u>40.4%</u>
 Fixed assets		
Net plant and equipment	<u>61.2%</u>	<u>59.6%</u>
 Total assets	<u><u>100%</u></u>	<u><u>100%</u></u>

T3.6 Hermetic, Inc., Common-Size Balance Sheet (continued)

<u>Liabilities and equity</u>	1999	2000
<u>Current liabilities</u>		
Accounts payable	13.0%	14.1%
Notes payable	6.8	9.5
Total	19.9%	23.6%
Long-term debt	12.7%	12.2%
<u>Stockholders' equity</u>		
Common stock and paid-in surplus	18.0%	15.7%
Retained earnings	49.4	48.5
Total	67.4	64.2
Total liabilities and equity	100%	
100%		

T3.6 Hermetic, Inc., Common-Size Balance Sheet

More on Standardized Statements

Suppose we ask: “What happened to Hermetic’s net plant and equipment (NP&E) over the period?”

1. Based on the 1999 and 2000 B/S, NP&E rose from \$985 to \$1100, so NP&E rose by \$115 (a *use* of cash).
2. If we standardized the 2000 numbers by dividing each by the 1999 number, we get a *common base year* statement. In this case, $\$1100/\$985 = 1.117$, so NP&E rose by 11.7% over this period.

T3.6 Hermetic, Inc., Common-Size Balance Sheet (concluded)

More on Standardized Statements

3. Did the firm's NP&E go up or down? Obviously, it went up, but so did *total* assets. In fact, looking at the standardized statements, NP&E went from 61.2% of total assets to 59.6% of total assets.

4. If we standardized the 2000 common size numbers by dividing each by the 1999 common size number, we get a combined *common size, common base year* statement. In this case, $59.6\%/61.2\% = 97.4\%$, so NP&E *fell* by 2.6% as a percentage of assets.

(. *.) In absolute terms, NP&E is up by \$115, or 11.7%, but relative to total assets, NP&E **fell** by 2.6%.

Which is more relevant?

T3.7 Hermetic, Inc. Common-Size Income Statement

Net sales	100.0 %
Cost of goods sold	67.6
Depreciation	<u>4.2</u>
Earnings before interest and taxes	28.2
Interest	<u>2.8</u>
Taxable income	25.4
Taxes	<u>7.5</u>
Net income	<u><u>17.8 %</u></u>
Dividends	3.7 %
Addition to retained earnings	14.1 %

T3.8 Things to Consider When Using Financial Ratios

- What aspect of the firm or its operations are we attempting to analyze?
 - ◆ Firm performance can be measured along “dimensions”
- What goes into a particular ratio?
 - ◆ Historical cost? Market values? Accounting conventions?
- What is the unit of measurement?
 - ◆ Dollars? Days? Turns?
- What would a desirable ratio value be? What is the benchmark?
 - ◆ Time-series analysis? Cross-sectional analysis?

T3.9 Categories of Financial Ratios

- Short-Term Solvency, or Liquidity
 - ◆ Ability to pay bills in the short-run
- Long-Term Solvency, or Financial Leverage
 - ◆ Ability to meet long-term obligations
- Asset Management, or Turnover
 - ◆ Intensity and efficiency of asset use
- Profitability
 - ◆ The ability to control expenses
- Market Value
 - ◆ Going beyond financial statements

T3.10 Common Financial Ratios (Table 3.8)

I. Short-Term Solvency, or Liquidity, Ratios

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

$$\text{Quick ratio} = (\text{Current assets} - \text{inventory}) / \text{Current liabilities}$$

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

$$\text{Interval measure} = \frac{\text{Current assets}}{\text{Average daily operating costs}}$$

T3.10 Common Financial Ratios (Table 3.8) (continued)

II. Long-Term Solvency, or Financial Leverage Ratios

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

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

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

$$\text{Long-term debt ratio} = \frac{\text{Long-term debt}}{\text{Long-term debt} + \text{Total equity}}$$

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

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

T3.10 Common Financial Ratios (Table 3.8) (continued)

III. Asset Utilization, or Turnover, Ratios

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

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

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

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

$$\text{NWC turnover} = \frac{\text{Sales}}{\text{NWC}}$$

$$\text{Fixed asset turnover} = \frac{\text{Sales}}{\text{Net fixed assets}}$$

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

T3.10 Common Financial Ratios (Table 3.8) (continued)

IV. Profitability Ratios

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

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

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

T3.10 Common Financial Ratios (Table 3.8) (concluded)

V. Market Value Ratios

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

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

T3.11 The Du Pont Identity

1. Return on equity (ROE) can be decomposed as follows:

$$\begin{aligned}\text{ROE} &= \text{Net income/Total equity} \\ &= \text{Net income/Total equity} \times \text{Total assets/Total assets} \\ &= \text{Net income/Total assets} \times \text{Total assets/Total equity} \\ &= \underline{\hspace{2cm}} \times \text{Equity multiplier}\end{aligned}$$

2. Return on assets (ROA) can be decomposed as follows:

$$\begin{aligned}\text{ROA} &= \text{Net income/Total assets} \times \text{Sales/Sales} \\ &= \text{Net income/Sales} \times \text{Sales/Total assets} \\ &= \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}\end{aligned}$$

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2. Return on assets (ROA) can be decomposed as follows:

$$\begin{aligned}\text{ROA} &= \text{Net income/Total assets} \times \text{Sales/Sales} \\ &= \text{Net income/Sales} \times \text{Sales/Total assets} \\ &= \underline{\text{Profit margin}} \times \underline{\text{Total asset turnover}}\end{aligned}$$

T3.11 The Du Pont Identity

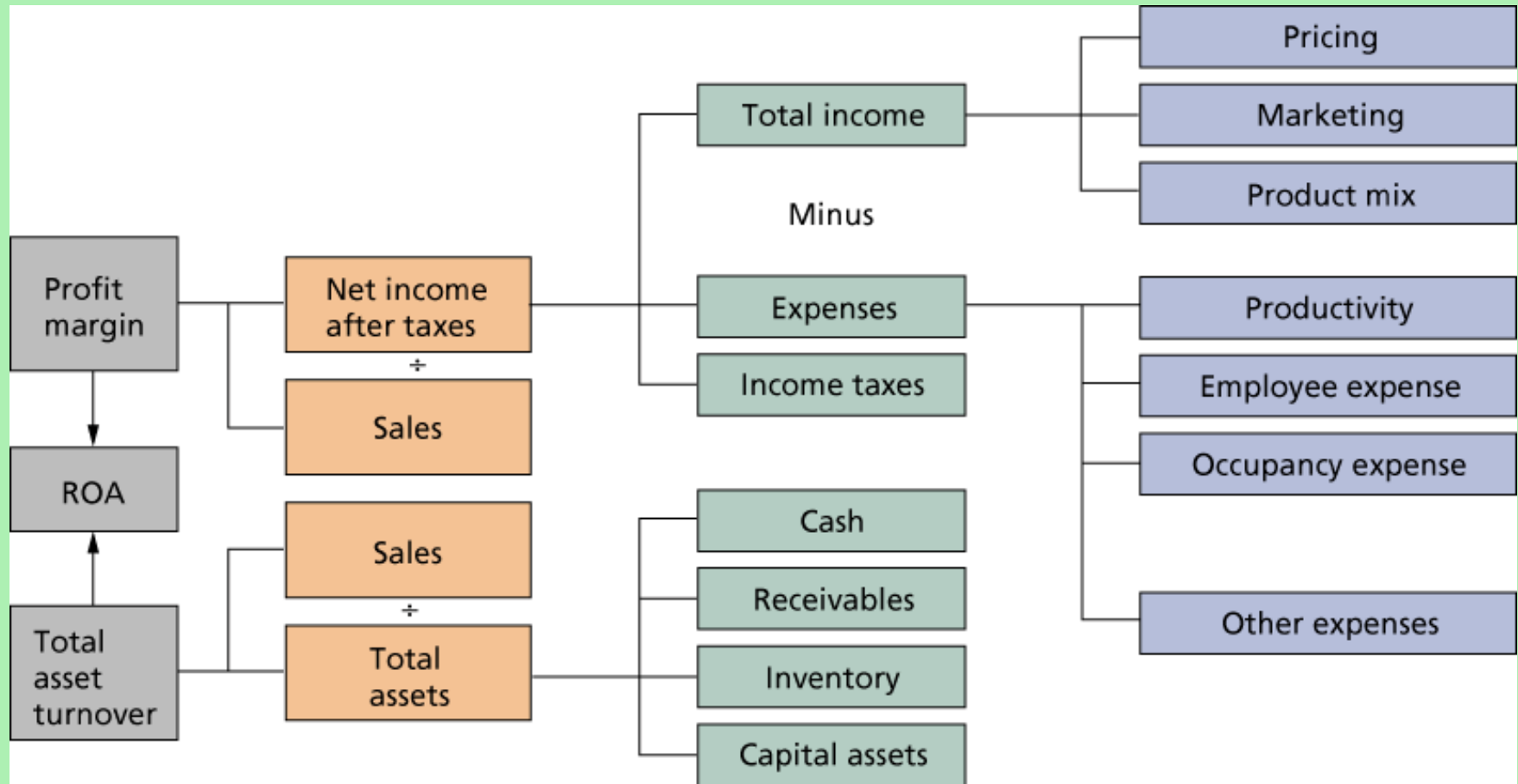
3. Putting it all together gives the Du Pont identity:

$$\begin{aligned}\text{ROE} &= \text{ROA} \times \text{Equity multiplier} \\ &= \textit{Profit margin} \times \textit{Total asset turnover} \times \textit{Equity multiplier}\end{aligned}$$

4. Profitability (or the lack thereof!) thus has three parts:

- ◆ Operating efficiency
- ◆ Asset use efficiency
- ◆ Financial leverage

T3.11 The Du Pont Identity (concluded)



T3.12 Using Financial Statement Information

Why evaluate Financial Statements?

- Internal Uses
 - ◆ Allocate capital by division
 - ◆ Measure and reward performance
- External Uses
 - ◆ Extend trade credit to customers
 - ◆ Investor Community Ratio Analysis
 - ◆ Banks requiring loan covenants
 - ◆ Competitor Analysis
 - ◆ Valuing a target in an acquisition
- Benchmarks
 - ◆ Year on year
 - ◆ Peer group

T3.12 Using Financial Statement Information

Problems with Financial Statement Analysis

- The need for theory
 - ◆ There is no compelling rationale for use of financial statement to make judgements about value and risk.
 - ◆ Which ratios matter most?
 - ◆ What is the “right” value for the ratio
- Conglomerates
 - ◆ Not identified in a single industry or sector
 - ◆ Hard to find comparables
- Global reach
 - ◆ Comparability of financial statements between countries

T3.13 Ratio comparison across retail firms

Company	Year Ended	Sales(\$B)	Sales Growth	Sales/Emp
Sears Canada	01-Jan-00	6.131	11.86%	147,447
Hudson's Bay Co.	31-Jan-00	7.295	-5.32%	104,214
Jean Contu Group	31-May-00	2.577	12.58%	160,291
Gendis Inc.	29-Jan-00	0.401	-1.87%	80,200

Company	P/E	Price/Book	Price/Sales	52 Wk Price
Sears Canada	20.5	10.89	6.30	-47%
Hudson's Bay Co.	9.3	3.46	2.03	13%
Jean Contu Group	36.6	29.07	11.64	-31%
Gendis Inc.	16.3	15.91	10.60	4%

T3.13 Ratio comparison across retail firms

Company	Year	EBIT	Profit/Loss (\$m)	ROCE
Sears Canada	2000	416.9	199.6	15.9%
Hudson's Bay Co.	2000	271.5	96.0	4.5%
Jean Contu Group	2000	148.4	86.2	15.7%
Gendis Inc.	2000	6.9	4.3	2.6%

T3.14 A Brief Case History of Hermetic, Inc.

- Hermetic, Inc. is a wholesale firm with a January 1 to December 31 fiscal year. Several competitors use a July 1 to June 30 fiscal year. Most of Hermetic's sales are to small retailers on credit terms. Some competitors are cash only businesses. About 50% of Hermetic's annual sales occur in the last quarter, October to December.
- Hermetic generally uses trade credit from manufacturers to finance its inventories. At the end of the year, however, Hermetic often takes advantage of production over-run sales to stock up, financing the purchases with bank loans.
- While Hermetic uses first-in-first-out inventory accounting, many of its competitors use last-in-first-out. Furthermore, Hermetic owns its warehouses and equipment while some competitors lease theirs.

T3.15 Chapter 3 Quick Quiz

Hudson's Bay Co, Sears Canada, and Jean Contu Group represent sales of \$16 B in this country. The following data are from annual financial statements

$$ROE_{\text{HBC}} = (.013)(1.707)(1.999) = 0.045$$

Current share price = \$ 16.70 52 price return = 13%

$$ROE_{\text{SearsCanada}} = (.033)(1.729)(2.825) = 0.159$$

Current share price = \$20.50 52 week return = -47%

$$ROE_{\text{Contu}} = (.033)(2.497)(1.880) =$$

Current share price = \$ 22.55 52 week return = -31%

Which firm is the market leader? Do you think its ROE is the *cause* or the *result* of its leadership position?

The two secondary firms have not performed as well as the leader. In what area(s) have they done particularly poorly?

T3.16 Solution to Problem 3.2

Cape Breton Moss Co. has sales of \$26 million, total assets of \$36 million, and total debt of \$7 million. If the profit margin is 6%, what is net income? What is ROA? What is ROE?

$$\begin{aligned} \blacksquare \text{ Profit margin} &= \text{Net income} / \text{Sales} \\ .06 &= \text{Net income} / \$26 \text{ million} \\ \text{Net income} &= \underline{\hspace{2cm}} \end{aligned}$$

$$\begin{aligned} \blacksquare \text{ ROE} &= \text{Net income} / \text{Stockholders' equity} \\ \text{Total assets} &= \text{Total debt} + \text{Stockholders' equity} \\ \text{Stockholders' equity} &= \text{Total assets} - \text{Total debt} \\ \text{Stockholders' equity} &= \underline{\hspace{2cm}} \\ \text{ROE} &= \$1,560,000 / \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

$$\begin{aligned} \blacksquare \text{ ROA} &= \text{Net income} / \text{Total assets} \\ &= \$1,560,000 / \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

T3.16 Solution to Problem 3.2

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$$\begin{aligned} \blacksquare \text{ Profit margin} &= \text{Net income} / \text{Sales} \\ .06 &= \text{Net income} / \$26 \text{ million} \\ \text{Net income} &= \underline{\$1,560,000} \end{aligned}$$

$$\begin{aligned} \blacksquare \text{ ROE} &= \text{Net income} / \text{Stockholders' equity} \\ \text{Total assets} &= \text{Total debt} + \text{Stockholders' equity} \\ \text{Stockholders' equity} &= \text{Total assets} - \text{Total debt} \\ \text{Stockholders' equity} &= \underline{\$29,000,000} \\ \text{ROE} &= \$1,560,000 / \underline{\$29,000,000} \\ &= \underline{5.38\%} \end{aligned}$$

$$\begin{aligned} \blacksquare \text{ ROA} &= \text{Net income} / \text{Total assets} \\ &= \$1,560,000 / \underline{\$36,000,000} \\ &= \underline{4.33\%} \end{aligned}$$

T3.17 Solution to Problem 3.9

- Based only on the following information for Asset Liquidation Corp., did cash go up or go down? By how much? Classify each event as a *source* or *use* of cash.

◆ Decrease in inventory	\$400
◆ Decrease in accounts payable	260
◆ Decrease in notes payable	750
◆ Increase in accounts receivable	900

T3.17 Solution to Problem 3.9

		<u>S or U</u>
◆ Decrease in inventory	\$400	_____
◆ Decrease in accounts payable	260	_____
◆ Decrease in notes payable	750	_____
◆ Increase in accounts receivable	900	_____

$$\begin{aligned}\text{Change in cash} &= \text{Sources} - \text{Uses} \\ &= \$_____ - (\$_____ + ______ + ______) \\ &= \$_____\end{aligned}$$

T3.17 Solution to Problem 3.9 (concluded)

		<u>S or U</u>
◆ Decrease in inventory	\$400	<u>S</u>
◆ Decrease in accounts payable	260	<u>U</u>
◆ Decrease in notes payable	750	<u>U</u>
◆ Increase in accounts receivable	900	<u>U</u>

$$\begin{aligned}\text{Change in cash} &= \text{Sources} - \text{Uses} \\ &= \$400 - (\$260 + 750 + 900) \\ &= -\$1510\end{aligned}$$