# *Week 2*

# Financial Statements and Analysis

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# Learning Objectives

1. Review the contents of the stockholders' report and financial statements.
2. Understand the financial ratios and use ratios to analyze a firm's liquidity and activity.
3. Discuss the relationship between debt and financial leverage and the ratios used to analyze a firm's debt.
4. Use ratios to analyze a firm's profitability and market value.
5. Use a summary of financial ratios and the DuPont system of analysis to perform a complete ratio analysis.

# Introduction

- In the previous chapter, a manager's primary goal is to maximize shareholders' wealth – the value of the firm's stock.
- Values is based on the firm's future cash flows.
- To estimate future cash flows and decide which actions are most likely to increase the flows -> Study of the "**Financial Statements**" that firms must publicly announce.

**อ่านงบอย่างไรให้ได้ประโยชน์**

http://www.tsi-thailand.org/content/swf_account_tracking/presentation.html

# The Financial Statements' Report

- In general, the guidelines used to prepare and maintain financial records and reports are known as **generally accepted accounting principles (GAAP)**.
- GAAP is authorized by the **Financial Accounting Standards Board (FASB)**.
- Today, the **International Financial Reporting System (IFRS)**, developed to eliminate the many disclosure and conflict of interest problems of corporations, replaced the former **International Accounting System (IAS).**
- The **Accounting Act, B.E. 2543 (2000)** "**พระราชบัญญัติ การบัญชี พ.ศ. ๒๕๔๓**" is currently applied to all companies operating in Thailand.

- Accounting Standards in Thailand are issued by the **Federation of Accounting Professions (FAP**) which was established in 2004.
- Prior to the establishment of the FAP, accounting standards were issued by **Institute of Certified Accountants and Auditors of Thailand (ICAAT).**
- The FAP has announced a plan to fully adopt IFRS as the Thai GAAP for the SET-50 **in 2011**.
- The rest of the listed companies and the companies listed in the Market Alternative Investment (MAI) have to fully adopt IFRSs in 2015.
- The IASs and IFRSs that will be fully applied to all listed companies as mentioned are those published in the first bound volume 2009 (IFRS 2008).

# The Four Key Financial Statements: (1) The Income Statement

- The income statement provides a financial summary of a company's operating results during a specified period.
- Although they are prepared annually for reporting purposes, they are generally computed monthly by management and quarterly for tax purposes.

# Example: Income Statements

**Table 2.1** Bartlett Company Income Statements ($000)

| | For the years ended December 31 | |
|---|---|---|
| | 2009 | 2008 |
| Sales revenue | $3,074 | $2,567 |
| Less: Cost of goods sold | 2,088 | 1,711 |
| Gross profits | $ 986 | $ 856 |
| Less: Operating expenses | | |
| Selling expense | $ 100 | $ 108 |
| General and administrative expenses | 194 | 187 |
| Lease expense[a] | 35 | 35 |
| Depreciation expense | 239 | 223 |
| Total operating expense | $ 568 | $ 553 |
| Operating profits - Earning s before interest and taxes (EBIT) | $ 418 | $ 303 |
| Less: Interest expense | 93 | 91 |
| Net profits before taxes - Earning s before taxes (EBT) | $ 325 | $ 212 |
| Less: Taxes (rate = 29%)[b] | 94 | 64 |
| Net profits after taxes | $ 231 | $ 148 |
| Less: Preferred stock dividends | 10 | 10 |
| Earnings available for common stockholders - Net profits | $ 221 | $ 138 |
| Earnings per share (EPS)[c] | $2.90 | $1.81 |
| Dividend per share (DPS)[d] | $1.29 | $0.75 |

[a]Lease expense is shown here as a separate item rather than being included as part of interest expense, as specified by the FASB for financial reporting purposes. The approach used here is consistent with tax reporting rather than financial reporting procedures.

[b]The 29% tax rate for 2009 results because the firm has certain special tax write-offs that do not show up directly on its income statement.

[c]Calculated by dividing the earnings available for common stockholders by the number of shares of common stock outstanding—76,262 in 2009 and 76,244 in 2008. Earnings per share in 2009: $221,000 ÷ 76,262 = $2.90; in 2008: $138,000 ÷ 76,244 = $1.81.

[d]Calculated by dividing the dollar amount of dividends paid to common stockholders by the number of shares of common stock outstanding. Dividends per share in 2009: $98,000 ÷ 76,262 = $1.29; in 2008: $57,183 ÷ 76,244 = $0.75.

งบกำไรขาดทุน (หน่วย : ล้านบาท)

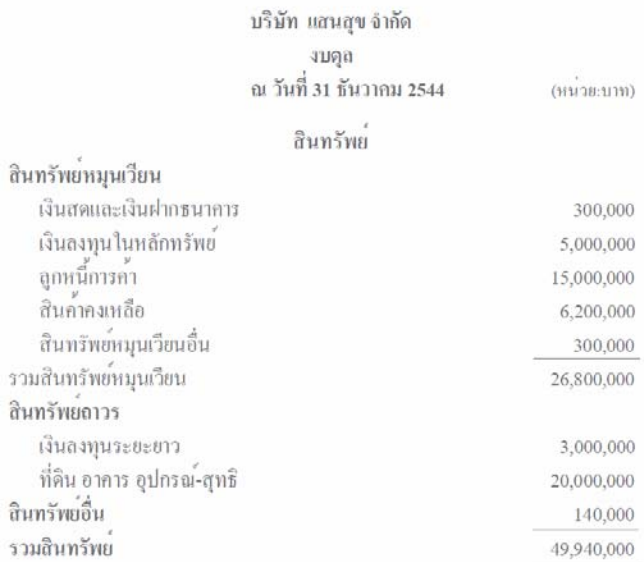
| | 2543 | 2544 |
|---|---|---|
| รายได้จากการขาย | 10,700 | 12,000 |
| ต้นทุนขาย | 6,600 | 7,300 |
| กำไรขั้นต้น | 4,100 | 4,700 |
| ค่าใช้จ่ายในการขายและบริหาร | 2,000 | 2,200 |
| กำไรจากการดำเนินงาน | 2,100 | 2,500 |
| รายได้อื่น | 1,000 | 100 |
| กำไรก่อนดอกเบี้ยและภาษี (EBIT) | 3,100 | 2,600 |
| ดอกเบี้ยจ่าย | 380 | 410 |
| กำไรก่อนรายการพิเศษ | 2,720 | 2,190 |
| ขาดทุนจากอัตราแลกเปลี่ยน | 2,000 | 0 |
| กำไรก่อนภาษี | 720 | 2,190 |
| ภาษี | 240 | 720 |
| กำไรสุทธิ | 480 | 1,470 |
| กำไรต่อหุ้น | 1.37 | 4.20 |

# The Four Key Financial Statements: (2) The Balance Sheet

- The balance sheet presents a summary of a firm's financial position at a given point in time.
- Assets indicate what the firm owns, equity represents the owners' investment, and liabilities indicate what the firm has borrowed.

# Example: Balance Sheets

**Table 2.2a** Bartlett Company Balance Sheets ($000)



บริษัท แสนสุข จำกัด
งบดุล
ณ วันที่ 31 ธันวาคม 2544 (หน่วย:บาท)

สินทรัพย์

| | |
|---|---|
| สินทรัพย์หมุนเวียน | |
| เงินสดและเงินฝากธนาคาร | 300,000 |
| เงินลงทุนในหลักทรัพย์ | 5,000,000 |
| ลูกหนี้การค้า | 15,000,000 |
| สินค้าคงเหลือ | 6,200,000 |
| สินทรัพย์หมุนเวียนอื่น | 300,000 |
| รวมสินทรัพย์หมุนเวียน | 26,800,000 |
| สินทรัพย์ถาวร | |
| เงินลงทุนระยะยาว | 3,000,000 |
| ที่ดิน อาคาร อุปกรณ์-สุทธิ | 20,000,000 |
| สินทรัพย์อื่น | 140,000 |
| รวมสินทรัพย์ | 49,940,000 |

| Assets | December 31 2009 | 2008 |
|---|---|---|
| Current assets | | |
| Cash | $ 363 | $ 288 |
| Marketable securities | 68 | 51 |
| Accounts receivable | 503 | 365 |
| Inventories | 289 | 300 |
| Total current assets | $1,223 | $1,004 |
| Gross fixed assets (at cost)[a] | | |
| Land and buildings | $2,072 | $1,903 |
| Machinery and equipment | 1,866 | 1,693 |
| Furniture and fixtures | 358 | 316 |
| Vehicles | 275 | 314 |
| Other (includes financial leases) | 98 | 96 |
| Total gross fixed assets (at cost) | $4,669 | $4,322 |
| Less: Accumulated depreciation | 2,295 | 2,056 |
| Net fixed assets | $2,374 | $2,266 |
| Total assets | $3,597 | $3,270 |

# **Table 2.2b (cont.)** Bartlett Company Balance Sheets ($000)

หนี้สินและส่วนของเจ้าของ

| | |
|---|---|
| **หนี้สินหมุนเวียน** | |
| เงินเบิกเกินบัญชี | 1,200,000 |
| เจ้าหนี้การค้าและตั๋วเงินจ่าย | 11,980,000 |
| ส่วนของหนี้ระยะยาวที่ครบกำหนดชำระในหนึ่งปี | 2,000,000 |
| เงินปันผลค้างจ่าย | 800,000 |
| หนี้สินหมุนเวียนอื่น | 500,000 |
| รวมหนี้สินหมุนเวียน | 16,480,000 |
| **หนี้สินระยะยาว** | 14,000,000 |
| **รวมหนี้สิน** | 30,480,000 |
| **ส่วนของผู้ถือหุ้น** | |
| **ทุนจดทะเบียน** | |
| หุ้นบุริมสิทธิ 30,000 หุ้น มูลค่าหุ้นละ 100 บาท | 3,000,000 |
| หุ้นสามัญ 100,000 หุ้น มูลค่าหุ้นละ 100 บาท | 10,000,000 |
| รวมมูลค่าหุ้นจดทะเบียน | 13,000,000 |
| **ทุนจดทะเบียนชำระแล้ว** | |
| หุ้นบุริมสิทธิ 30,000 หุ้น มูลค่าหุ้นละ 100 บาท | 3,000,000 |
| หุ้นสามัญ 100,000 หุ้น มูลค่าหุ้นละ 100 บาท | 10,000,000 |
| รวมมูลค่าหุ้นจดทะเบียนที่ชำระแล้ว | 13,000,000 |
| **ส่วนเกินมูลค่าหุ้น** | 2,500,000 |
| **กำไรสะสม** | |
| จัดสรรแล้ว | |
| สำรองตามกฎหมาย | 360,000 |
| สำรองอื่น | 0 |
| ยังไม่ได้จัดสรร | 3,600,000 |
| **รวมส่วนของผู้ถือหุ้น** | 19,460,000 |
| **รวมหนี้สินและส่วนของผู้ถือหุ้น** | 49,940,000 |

| **Liabilities and Stockholders' Equity** | | |
|---|---|---|
| Current liabilities | | |
| Accounts payable | $ 382 | $ 270 |
| Notes payable | 79 | 99 |
| Accruals | 159 | 114 |
| Total current liabilities | $ 620 | $ 483 |
| Long-term debt (includes financial leases)[b] | $1,023 | $ 967 |
| Total liabilities | $1,643 | $1,450 |
| Stockholders' equity | | |
| Preferred stock—cumulative 5%, $100 par, 2,000 shares authorized and issued[c] | $ 200 | $ 200 |
| Common stock—$2.50 par, 100,000 shares authorized, shares issued and outstanding in 2009: 76,262; in 2008: 76,244 | 191 | 190 |
| Paid-in capital in excess of par on common stock | 428 | 418 |
| Retained earnings | 1,135 | 1,012 |
| Total stockholders' equity | $1,954 | $1,820 |
| Total liabilities and stockholders' equity | $3,597 | $3,270 |

[a] In 2009, the firm has a 6-year financial lease requiring annual beginning-of-year payments of $35,000. Four years of the lease have yet to run.

[b] Annual principal repayments on a portion of the firm's total outstanding debt amount to $71,000.

[c] The annual preferred stock dividend would be $5 per share (5% × $100 par), or a total of $10,000 annually ($5 per share × 2,000 shares).

# The Four Key Financial Statements: (3) Statement of Retained Earnings

- The statement of retained earnings reconciles the net income earned and dividends paid during the year, with the change in retained earnings.

# *Example: Statement of Retained Earnings*

**Table 2.3** Bartlett Company Statement of Retained Earnings ($000) for the Year Ended December 31, 2009

| | | |
|---|---|---|
| Retained earnings balance (January 1, 2009) | | $1,012 |
| Plus: Net profits after taxes (for 2009) | | 231 |
| Less: Cash dividends (paid during 2009) | | |
| Preferred stock | $10 | |
| Common stock | 98 | |
| Total dividends paid | | 108 |
| Retained earnings balance (December 31, 2009) | | $1,135 |

**งบกำไรสะสม**

**สำหรับปี สิ้นสุดวันที่ 31 ธันวาคม 2544** (ล้านบาท)

| กรณีบริษัทมีกำไรสุทธิ | | กรณีบริษัทมีขาดทุนสุทธิ | |
|---|---|---|---|
| กำไรสะสมต้นงวด (งบดุล) | 10,000 | กำไรสะสมต้นงวด (งบดุล) | 10,000 |
| บวก กำไรสุทธิ (งบกำไรขาดทุน) | 7,000 | หัก ขาดทุนสุทธิ (งบกำไรขาดทุน) | 2,000 |
| หัก เงินปันผลจ่าย | 3,000 | หัก เงินปันผลจ่าย * | 3,000 |
| กำไรสะสมปลายงวด (งบดุล) | 14,000 | กำไรสะสมปลายงวด (งบดุล) | 5,000 |

* กรณีขาดทุนสุทธิ กิจการอาจประกาศงดจ่ายปันผล อย่างไรก็ตาม การขาดทุนสุทธิก็ยังทำให้กำไรสะสมในงบดุลลดลงเช่นเดียวกันและทำให้สินทรัพย์ของกิจการลดลงด้วย ตามสมการ สินทรัพย์ = หนี้สิน + ทุน

# The Four Key Financial Statements: (4) Statement of Cash Flows

- The **statement of cash flows** provides a summary of the cash flows over the period of concern, typically the year just ended.
- This statement not only provides insight into a company's investment, financing and operating activities, but also ties together the income statement and previous and current balance sheets.

# *Example: Statement of Cash Flows*

**Table 2.4** Bartlett Company Statement of Cash Flows ($000) for the Year Ended December 31, 2009

| | | |
|---|---|---|
| **Cash Flow from Operating Activities** | | |
| Net profits after taxes | $231 | |
| Depreciation | 239 | |
| Increase in accounts receivable | ( 138)[a] | |
| Decrease in inventories | 11 | |
| Increase in accounts payable | 112 | |
| Increase in accruals | 45 | |
| Cash provided by operating activities | | $500 |
| **Cash Flow from Investment Activities** | | |
| Increase in gross fixed assets | ($347) | |
| Change in equity investments in other firms | 0 | |
| Cash provided by investment activities | | ( 347) |
| **Cash Flow from Financing Activities** | | |
| Decrease in notes payable | ($ 20) | |
| Increase in long-term debts | 56 | |
| Changes in stockholders' equity[b] | 11 | |
| Dividends paid | ( 108) | |
| Cash provided by financing activities | | ( 61) |
| Net increase in cash and marketable securities | | $ 92 |

[a]As is customary, parentheses are used to denote a negative number, which in this case is a cash outflow.

[b]Retained earnings are excluded here, because their change is actually reflected in the combination of the "net profits after taxes" and "dividends paid" entries.

งบกระแสเงินสด

สำหรับปี สิ้นสุดวันที่ 31 ธันวาคม

| | บริษัท A |
|---|---|
| กระแสเงินสดสุทธิจากการดำเนินงาน | 500,000 |
| กระแสเงินสดสุทธิจากการลงทุน | 0 |
| กระแสเงินสดสุทธิจากการกู้ยืม | 0 |
| กระแสเงินสดสุทธิเพิ่มขึ้น(ลดลง) | 500,000 |

# Using Financial Ratios

- **Ratio analysis** involves methods of calculating and interpreting financial ratios to assess a firm's financial condition and performance.
- It is of interest to shareholders, creditors, and the firm's own management.

# Using Financial Ratios: Types of Ratio Comparisons

- **Common-size analysis**
  - Used to compare financial statements of different-size companies, or of the same company over different periods.
  - By expressing the items in proportion to some size-related measure, standardized financial statements can be created, revealing trends and providing insight into how the different companies compare.

# *Example: Common-size Analysis*

**Common Size Income Statement**

| | Income Statement | Common-Size Income Statement |
|---|---|---|
| Revenue | 70,134 | 100% |
| Cost of Goods Sold | 44,221 | 63.1% |
| Gross Profit | 25,913 | 36.9% |
| SG&A Expense | 13,531 | 19.3% |
| Operating Income | 12,382 | 17.7% |
| Interest Expense | 2,862 | 4.1% |
| Provision for Taxes | 3,766 | 5.4% |
| Net Income | 5,754 | 8.2% |

- ***The ratios often are expressed as percentages of the reference amount***
- ***Income statement items - expressed as a percentage of total revenue***

# Example: Common-size Analysis (cont.)

**Common Size Balance Sheet**

| | Balance Sheet | Common-Size Balance Sheet |
|---|---|---|
| ASSETS | | |
| Cash & Marketable Securities | 6,029 | 15.1% |
| Accounts Receivable | 14,378 | 36.0% |
| Inventory | 17,136 | 42.9% |
| Total Current Assets | 37,543 | 93.9% |
| Property, Plant, & Equipment | 2,442 | 6.1% |
| Total Assets | 39,985 | 100% |
| | | |
| LIABILITIES AND SHAREHOLDERS' EQUITY | | |
| Current Liabilities | 14,251 | 35.6% |
| Long-Term Debt | 12,624 | 31.6% |
| Total Liabilities | 26,875 | 67.2% |
| Shareholders' Equity | 13,110 | 32.8% |
| Total Liabilities & Equity | 39,985 | 100% |

***Balance sheet items - expressed as a percentage of total assets***

# Using Financial Ratios: Types of Ratio Comparisons

- Common-size analysis
- **Trend or growth or time-series analysis**
  - is the type of analysis in which the information for a single company is compared over time
  - Used to evaluate a firm's performance over time

# Using Financial Ratios: Types of Ratio Comparisons (cont.)

- Common-size analysis
- Trend or time-series analysis
- **Cross-sectional analysis**
  - Used to compare different firms at the same point in time

# Using Financial Ratios: Types of Ratio Comparisons (cont.)

- Common-size analysis
- Trend or time-series analysis
- Cross-sectional analysis
  - **Industry comparative analysis**
    - One specific type of cross sectional analysis. Used to compare one firm's financial performance to the industry's average performance

# Using Financial Ratios: Types of Ratio Comparisons (cont.)

- Common-size analysis
- Trend or time-series analysis
- Cross-sectional analysis
  - Benchmarking
    - A type of cross sectional analysis in which the firm's ratio values are compared to those of a key competitor or group of competitors that it wishes to emulate

# Using Financial Ratios:
# Types of Ratio Comparisons (cont.)

- Common-size analysis
- Trend or time-series analysis
- Cross-sectional analysis
- **Combined Analysis**
  - Combined analysis simply uses a combination of both time series analysis and cross-sectional analysis

# Using Financial Ratios: Types of Ratio Comparisons (cont.)

**Table 2.5** Industry Average Ratios for Selected Lines of Business[a]

| Line of business (number of concerns reporting)[b] | Current ratio (X) | Quick ratio (X) | Sales to inventory (X) | Collection period (days) | Total assets to sales (%) | Total liabilities to net worth (%) | Return on sales (%) | Return on total assets (%) | Return on net worth (%) |
|---|---|---|---|---|---|---|---|---|---|
| Department | 4.9 | 1.4 | 6.6 | 1.8 | 32.0 | 25.1 | 2.8 | 6.8 | 16.2 |
| stores | **2.6** | **0.6** | **4.6** | **6.1** | **43.8** | **76.6** | **1.0** | **2.3** | **4.5** |
| (143) | 1.6 | 0.2 | 3.5 | 21.2 | 64.9 | 176.9 | 0.1 | 0.1 | 0.2 |
| Electronic | 2.3 | 1.5 | 31.6 | 27.4 | 24.6 | 54.3 | 3.4 | 7.3 | 20.6 |
| computers | **1.6** | **0.9** | **11.3** | **40.9** | **58.9** | **114.3** | **0.5** | **1.3** | **4.6** |
| (76) | 1.2 | 0.7 | 6.8 | 68.5 | 104.1 | 238.3 | (9.7) | (10.4) | (20.6) |
| Grocery | 2.6 | 1.0 | 29.6 | 1.1 | 15.3 | 48.5 | 2.2 | 9.4 | 24.8 |
| stores | **1.6** | **0.5** | **19.6** | **2.9** | **21.3** | **105.2** | **1.0** | **4.4** | **10.0** |
| (455) | 1.1 | 0.2 | 13.9 | 6.9 | 31.2 | 277.3 | 0.3 | 1.4 | 3.5 |
| Motor | 2.9 | 1.1 | 11.4 | 16.1 | 27.8 | 56.4 | 4.2 | 10.3 | 26.9 |
| vehicles | **1.7** | **0.7** | **8.3** | **24.1** | **37.4** | **150.8** | **1.5** | **4.1** | **9.6** |
| (42) | 1.2 | 0.5 | 5.5 | 40.5 | 47.3 | 357.2 | 0.2 | 0.8 | 1.2 |

[a]These values are given for each ratio for each line of business. The center value is the median, and the values immediately above and below it are the upper and lower quartiles, respectively.

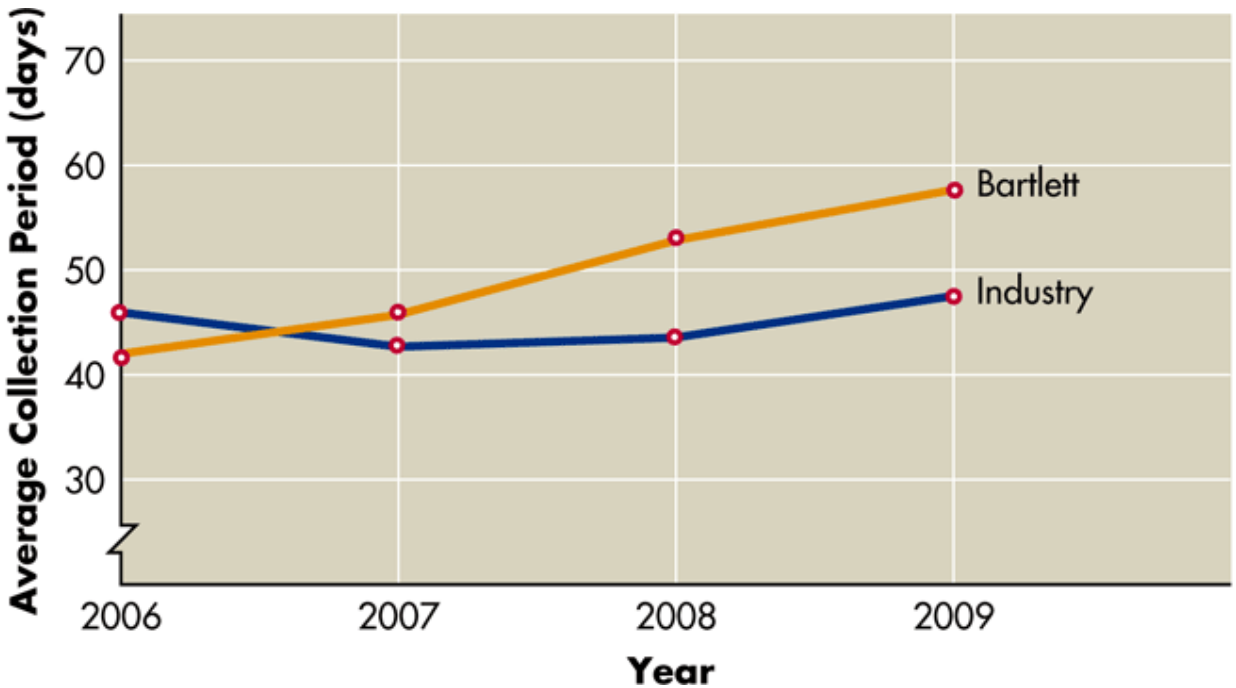
[b]Standard Industrial Classification (SIC) codes for the lines of business shown are, respectively: SIC #5311, SIC #3571, SIC #5411, SIC #3711.

*Source:* "Industry Norms and Key Business Ratios," Dun & Bradstreet, Inc. Reprinted with permission.

***Link:***

# Using Financial Ratios:
# Types of Ratio Comparisons (cont.)

**Figure 2.1** Combined Analysis



# Ratio Analysis Example

- We will illustrate the use of financial ratios for analyzing financial statements using the Bartlett Company Income Statements and Balance Sheets presented earlier in Tables 2.1 and 2.2.

# Ratio Analysis

- Liquidity Ratios
  - Current Ratio

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

$$\text{Current ratio} =$$

# Ratio Analysis (cont.)

- Liquidity Ratios
  - Current Ratio
  - Quick Ratio

$$\text{Quick ratio} = \frac{\text{Total Current Assets - Inventory}}{\text{total current liabilities}}$$

Quick ratio =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
  - Inventory Turnover

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Inventory}}$$

$$\text{Inventory Turnover} =$$

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
  - Average Age of Inventory

$$\text{Average Age of Inventory} = \frac{365}{\text{Inventory Turnover}}$$

Avg. Age of Inventory =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
  - Average Collection Period

$$\text{ACP} = \frac{\text{Accounts Receivable}}{\text{Net Sales}/365}$$

ACP =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
  - Average Payment Period

$$\text{APP} = \frac{\text{Accounts Payable}}{\text{Annual Purchases}/365}$$

APP =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
  - Total Asset Turnover

$$\text{Total Asset Turnover} = \frac{\text{Net Sales}}{\text{Total Assets}}$$

Total Asset Turnover =

# Ratio Analysis (cont.)

**Table 2.6** Financial Statements Associated with Patty's Alternatives

| | No-debt plan | | Debt plan |
|---|---|---|---|
| **Balance Sheets** | | | |
| Current assets | $20,000 | | $20,000 |
| Fixed assets | 30,000 | | 30,000 |
| Total assets | $50,000 | | $50,000 |
| Debt (12% interest) | $ 0 | | $25,000 |
| (1) Equity | 50,000 | | 25,000 |
| Total liabilities and equity | $50,000 | | $50,000 |
| **Income Statements** | | | |
| Sales | $30,000 | | $30,000 |
| Less: Costs and operating expenses | 18,000 | | 18,000 |
| Operating profits | $12,000 | | $12,000 |
| Less: Interest expense | 0 | $0.12 \times \$25,000 =$ | 3,000 |
| Net profits before taxes | $12,000 | | $ 9,000 |
| Less: Taxes (rate = 40%) | 4,800 | | 3,600 |
| (2) Net profits after taxes | $ 7,200 | | $ 5,400 |
| Return on equity [(2) ÷ (1)] | $\frac{\$7,200}{\$50,000} = 14.4\%$ | | $\frac{\$5,400}{\$25,000} = 21.6\%$ |

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Financial Leverage Ratios
  - Debt Ratio

Debt Ratio = Total Liabilities/Total Assets

Debt Ratio =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Times Interest Earned Ratio

Times Interest Earned = EBIT/Interest

Times Interest Earned =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
  - Fixed-Payment coverage Ratio (FPCR)

$$FPCR = \frac{EBIT + Lease\ Payments}{Interest + Lease\ Pymts + \{(Princ\ Pymts + PSD) \times [1/(1-t)]\}}$$

FPCR =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Profitability Ratios
  - Common-Size Income Statements

# Ratio Analysis (cont.)

**Table 2.7**
Bartlett Company Common-Size Income Statements

| | For the years ended December 31 | | Evaluation[a] |
|---|---|---|---|
| | 2009 | 2008 | 2008–2009 |
| Sales revenue | 100.0% | 100.0% | same |
| Less: Cost of goods sold | 67.9 | 66.7 | worse |
| (1) Gross profit margin | 32.1% | 33.3% | worse |
| Less: Operating expenses | | | |
| Selling expense | 3.3% | 4.2% | better |
| General and administrative expenses | 6.8 | 6.7 | better |
| Lease expense | 1.1 | 1.3 | better |
| Depreciation expense | 7.3 | 9.3 | better |
| Total operating expense | 18.5% | 21.5% | better |
| (2) Operating profit margin | 13.6% | 11.8% | better |
| Less: Interest expense | 3.0 | 3.5 | better |
| Net profits before taxes | 10.6% | 8.3% | better |
| Less: Taxes | 3.1 | 2.5 | worse[b] |
| Net profits after taxes | 7.5% | 5.8% | better |
| Less: Preferred stock dividends | 0.3 | 0.4 | better |
| (3) Net profit margin | 7.2% | 5.4% | better |

[a]Subjective assessments based on data provided.

[b]Taxes as a percentage of sales increased noticeably between 2008 and 2009 because of differing costs and expenses, whereas the average tax rates (taxes ÷ net profits before taxes) for 2008 and 2009 remained about the same—30% and 29%, respectively.

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Profitability Ratios
  - Gross Profit Margin

GPM = Gross Profit/Net Sales

GPM =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Profitability Ratios
  - Operating Profit Margin (OPM)

OPM = EBIT/Net Sales

OPM =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Profitability Ratios
  - Net Profit Margin (NPM)

$$\text{NPM} = \frac{\text{Earnings Available to Common Stockholders}}{\text{Sales}}$$

NPM =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Profitability Ratios
  - Earnings Per Share (EPS)

$$\text{EPS} = \frac{\text{Earnings Available to Common Stockholders}}{\text{Number of Shares Outstanding}}$$

EPS =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Profitability Ratios
  - Return on Total Assets (ROA)

$$\text{ROA} = \frac{\text{Earnings Available to Common Stockholders}}{\text{Total Assets}}$$

ROA =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Profitability Ratios
  - Return on Equity (ROE)

$$\text{ROE} = \frac{\text{Earnings Available to Common Stockholders}}{\text{Total Equity}}$$

$$\text{ROE} =$$

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Profitability Ratios
- Market Ratios
  - Price Earnings (P/E) Ratio

$$\text{P/E} = \frac{\text{Market Price Per Share of Common Stock}}{\text{Earnings Per Share}}$$

P/E =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Profitability Ratios
- Market Ratios
  - Market/Book (M/B) Ratio

$$\text{BV/Share} = \frac{\text{Common Stock Equity}}{\text{Number of Shares of Common Stock}}$$

BV/Share =

# Ratio Analysis (cont.)

- Liquidity Ratios
- Activity Ratios
- Leverage Ratios
- Profitability Ratios
- Market Ratios
  - Market/Book (M/B) Ratio

$$\text{M/B Ratio} = \frac{\text{Market Price/Share of Common Stock}}{\text{Book Value/Share of Common Stock}}$$

M/B Ratio =

# Summarizing All Ratios

**Table 2.8** Summary of Bartlett Company Ratios (2007–2009, Including 2009 Industry Averages)

| Ratio | Formula | Year 2007[a] | Year 2008[b] | Year 2009[b] | Industry average 2009[c] | Evaluation[d] Cross-sectional 2009 | Evaluation[d] Time-series 2007–2009 | Evaluation[d] Overall |
|---|---|---|---|---|---|---|---|---|
| **Liquidity** | | | | | | | | |
| Current ratio | $\frac{\text{Current assets}}{\text{Current liabilities}}$ | 2.04 | 2.08 | 1.97 | 2.05 | OK | OK | OK |
| Quick (acid-test) ratio | $\frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}$ | 1.32 | 1.46 | 1.51 | 1.43 | OK | good | good |
| **Activity** | | | | | | | | |
| Inventory turnover | $\frac{\text{Cost of goods sold}}{\text{Inventory}}$ | 5.1 | 5.7 | 7.2 | 6.6 | good | good | good |
| Average collection period | $\frac{\text{Accounts receivable}}{\text{Average sales per day}}$ | 43.9 days | 51.2 days | 59.7 days | 44.3 days | poor | poor | poor |
| Average payment period | $\frac{\text{Accounts payable}}{\text{Average purchases per day}}$ | 75.8 days | 81.2 days | 95.4 days | 66.5 days | poor | poor | poor |
| Total asset turnover | $\frac{\text{Sales}}{\text{Total assets}}$ | 0.94 | 0.79 | 0.85 | 0.75 | OK | OK | OK |
| **Debt** | | | | | | | | |
| Debt ratio | $\frac{\text{Total liabilities}}{\text{Total assets}}$ | 36.8% | 44.3% | 45.7% | 40.0% | OK | OK | OK |
| Times interest earned ratio | $\frac{\text{Earnings before interest and taxes}}{\text{Interest}}$ | 5.6 | 3.3 | 4.5 | 4.3 | good | OK | OK |
| Fixed-payment coverage ratio | $\frac{\text{Earnings before interest and taxes} + \text{Lease payments}}{\text{Int.} + \text{Lease pay.} + \{(\text{Prin.} + \text{Pref. div.}) \times [1/(1-T)]\}}$ | 2.4 | 1.4 | 1.9 | 1.5 | good | OK | good |

# Summarizing All Ratios (cont.)

**Table 2.8** Summary of Bartlett Company Ratios (2007–2009, Including 2009 Industry Averages)

| Ratio | Formula | Year | | | Industry average | Evaluation[d] | | |
|---|---|---|---|---|---|---|---|---|
| | | 2007[a] | 2008[b] | 2009[b] | 2009[c] | Cross-sectional 2009 | Time-series 2007–2009 | Overall |
| **Profitability** | | | | | | | | |
| Gross profit margin | $\frac{\text{Gross profits}}{\text{Sales}}$ | 31.4% | 33.3% | 32.1% | 30.0% | OK | OK | OK |
| Operating profit margin | $\frac{\text{Operating profits}}{\text{Sales}}$ | 14.6% | 11.8% | 13.6% | 11.0% | good | OK | good |
| Net profit margin | $\frac{\text{Earnings available for common stockholders}}{\text{Sales}}$ | 8.2% | 5.4% | 7.2% | 6.2% | good | OK | good |
| Earnings per share (EPS) | $\frac{\text{Earnings available for common stockholders}}{\text{Number of shares of common stock outstanding}}$ | $3.26 | $1.81 | $2.90 | $2.26 | good | OK | good |
| Return on total assets (ROA) | $\frac{\text{Earnings available for common stockholders}}{\text{Total assets}}$ | 7.8% | 4.2% | 6.1% | 4.6% | good | OK | good |
| Return on common equity (ROE) | $\frac{\text{Earnings available for common stockholders}}{\text{Common stock equity}}$ | 13.7% | 8.5% | 12.6% | 8.5% | good | OK | good |
| **Market** | | | | | | | | |
| Price/earnings (P/E) ratio | $\frac{\text{Market price per share of common stock}}{\text{Earnings per share}}$ | 10.5 | 10.0[e] | 11.1 | 12.5 | OK | OK | OK |
| Market/book (M/B) ratio | $\frac{\text{Market price per share of common stock}}{\text{Book value per share of common stock}}$ | 1.25 | 0.85[e] | 1.40 | 1.30 | OK | OK | OK |

[a]Calculated from data not included in the chapter.
[b]Calculated by using the financial statements presented in Tables 2.1 and 2.2.
[c]Obtained from sources not included in this chapter.
[d]Subjective assessments based on data provided.
[e]The market price per share at the end of 2008 was $18.06.

# DuPont System of Analysis

- **The DuPont system** of analysis is used to dissect the firm's financial statements and to assess its financial condition.
- It merges the income statement and balance sheet into two summary measures of profitability.
- The Modified DuPont Formula relates the firm's ROA to its ROE using the financial leverage multiplier (FLM), which is the ratio of total assets to common stock equity.
- ROA and ROE as shown in the series of equations on the following slide and in Figure 2.2 on the following slide.

# DuPont System of Analysis

$$\text{ROA} = \text{Net profit margin} \times \text{Total asset turnover}$$

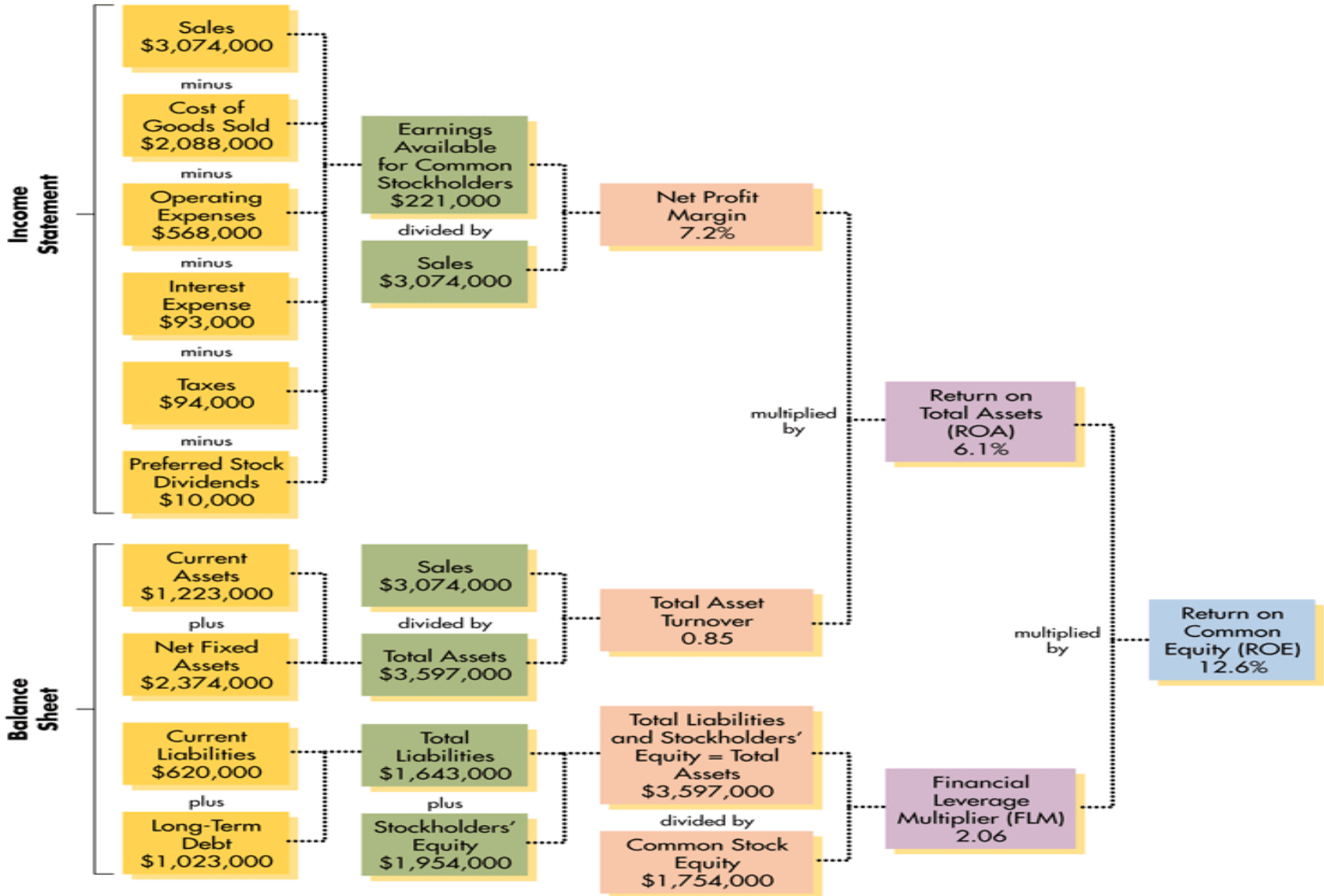
$$\text{ROA} = \frac{\text{Earnings available for common stockholders}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} = \frac{\text{Earnings available for common stockholders}}{\text{Total assets}}$$

$$\text{ROA} = 7.2\% \times 0.85 = 6.1\%$$

$$\text{ROE} = \text{ROA} \times \text{FLM}$$

$$\text{ROE} = \frac{\text{Earnings available for common stockholders}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Common stock equity}} = \frac{\text{Earnings available for common stockholders}}{\text{Common stock equity}}$$

# DuPont System of Analysis (cont.)



# Modified DuPont Formula (cont.)

- Use of the FLM to convert ROA into ROE reflects the impact of financial leverage on the owner's return.
- Substituting the values for Bartlett Company's ROA of 6.1 percent calculated earlier, and Bartlett's FLM of 2.06 ($3,597,000 total assets ÷ $1,754,000 common stock equity) into the Modified DuPont formula yields:

ROE = 6.1% X 2.06 = 12.6%

# Market Value Added - MVA

- Is the difference between the current market value of a firm and the capital contributed by investors.
- Calculated as:

**MVA = Market Value of Equity – Book Value of Equity**

- The higher the MVA, the better.
- A high MVA indicates the company has created substantial wealth for the shareholders.
- A negative MVA means that the value of management's actions and investments are less than the value of the capital contributed to the company by the capital market (or that wealth and value have been destroyed).

# Economic Value Added - EVA

- A measure of a company's financial performance based on the residual wealth calculated by deducting cost of capital from its operating profit (adjusted for taxes on a cash basis). (also referred to as "economic profit".)
- The formula for calculating EVA is as follows:

**EVA = Net Operating Profit After Taxes (NOPAT)**
**– (Invested Capital * Cost of Capital)**

**= EBIT – Tax – Cost of all financing .**

- This measure was devised by Stern Stewart & Co. Economic value added attempts to capture the true economic profit of a company.

# Example: MVA & EVA

| | | 2009 | 2008 |
|---|---|---|---|
| **MVA Calculation:** | | | |
| (1) | Market price per share | 32.25 | 18.06 |
| (2) | Number of shares | 76,262 | 76,244 |
| (3) | Market value of equity | 2,459,450 | 1,376,967 |
| (4) | Book value of equity | 1,754,000 | 1,620,000 |
| **MVA = Market value - Book value = (3) - (4)** | | **705,450** | **-243,033** |
| **EVA Calculation:** | | | |
| (5) | EBIT | 418,000 | 303,000 |
| (6) | Tax | 94,000 | 64,000 |
| (7) | Operating capital* | 3,056,000 | 2,886,000 |
| (8) | After-tax cost of capital (WACC) | 10% | 10% |
| (9) | Dollar cost of capital | 305,600 | 288,600 |
| **EVA = EBIT - Tax - Cost of all financing capital = (5)-(6)-(9)** | | **18,400** | **-49,600** |

** (Notes payable + L/T debts + Equity) or (Total liablities and equity - accounts payable - accruals)*

# Potential Problems and Limitations of Ratio Analysis

- Use audited financial statements when possible and read the auditor' opinions.
- Read Notes to financial statement to get additional information
- Ratios must be considered together; a single ratio by itself means relatively little.
- Financial statements that are being compared should be dated at the same point in time.
  - Different firms may use different accounting calendars, so the accounting periods may not be directly comparable.
- The financial data being compared should have been developed in the same way.
  - Different accounting policies may be used by different firms or within the same firm at different points in time.
  - Adjustments should be made for such differences.

# Potential Problems and Limitations of Ratio Analysis (cont.)

- Comparison with industry averages is difficult if the firm operates many different divisions.
- "Average" performance is not necessarily good.
- Inflation and seasonal factors can distort ratios.
- **Window dressing** techniques can make statements and ratios look better.
- Qualitative Factors:
  - Are the company's revenues tied to a single customer?
  - To what extent are the company's revenues tied to a single product?
  - To what extent does the company rely on a single supplier?

# Q & A