Part4
Financial Statement Analysis

Woraphon Wattanatorn, Ph.D.

Class Introduction

Activity	Score
Final Examination	50%
Assignment / Presentation	30%
Quiz and Participation	20%
Total	100%

Group Assignment and Presentation

- A group of SIX students
- Analyst the 5 largest company in each sector
- www.settrade.com
- Two tentative presentation
  - 6 Oct 2016
  - 15 Dec 2016

Group Assignment and Presentation

- www.settrade.com

Sector	#Company	Group ID
Property Development	55	1
Energy & Utilities	39	2
Food & Beverage	39	3
Finance & Securities	31	4
Information & Communication Technology	30	5
Agribusiness	12	6
Health Care Services	18	7
Fashion	23	8
Commerce	21	9
Automotive	19	10
Construction Materials	19	11
Transportation & Logistics	19	12

Financial Statements, Taxes, and Cash flow

Woraphon Wattanatorn, Ph.D.

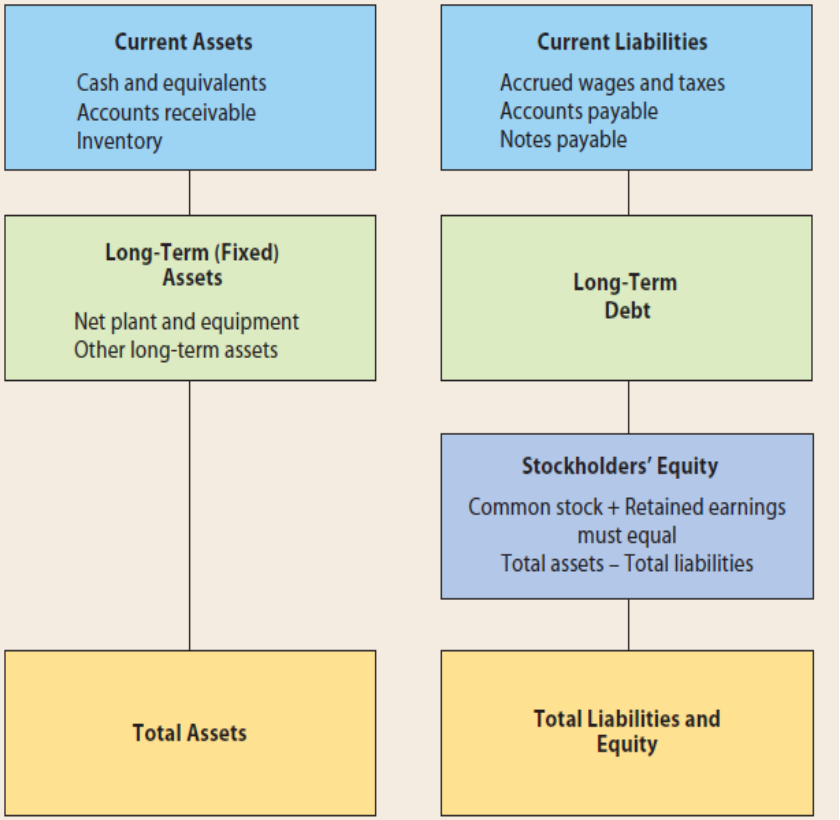
Key Concepts and Skills

- Know the difference between book value and market value
- Know the difference between accounting income and cash flow
- Know the difference between average and marginal tax rates
- Know how to determine a firm's cash flow from its financial statements

Chapter Outline

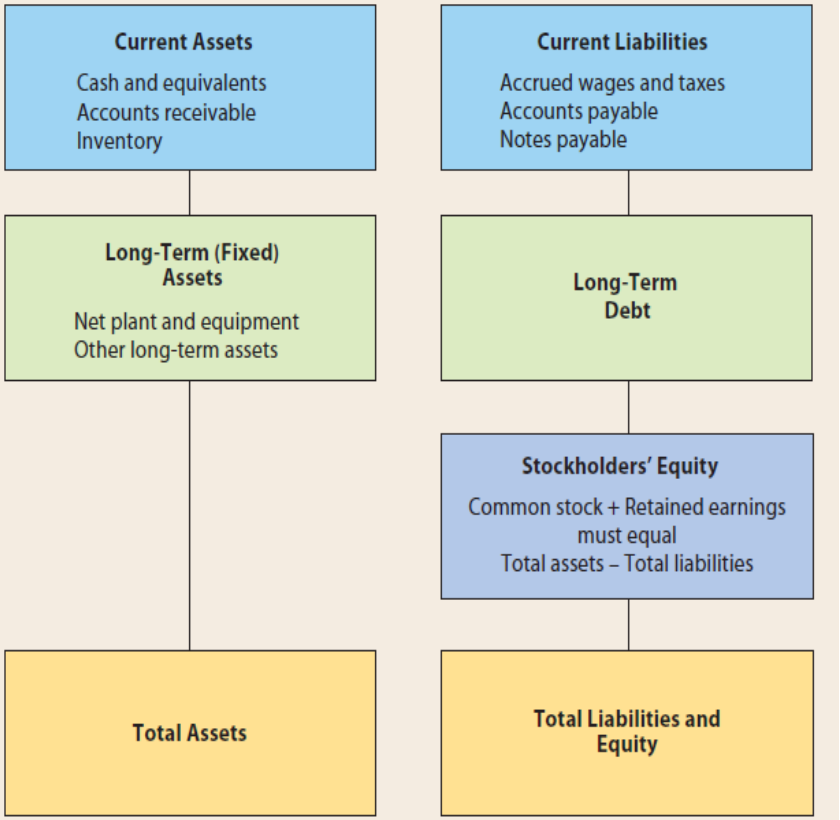
- The Balance Sheet
- The Income Statement
- Taxes
- Cash Flow Statement

Balance Sheet



- The balance sheet is a "snapshot" of a firm's position at a **specific point in time**.
- **LHS** shows the assets that the company owns
- **RHS** shows the firm's liabilities and equity value
  - Which are claims against the firm's assets.
- **Assets** are classified into two major categories:
  - **Current assets** consist of assets that should be converted to cash within one year; and they include cash and cash equivalents, accounts receivable, and inventory
  - **Long-term assets** are assets expected to be used for more than one year; they include plant , equipment, intellectual property such as patents and copyrights.
  - Plant and equipment is generally reported net of accumulated depreciation.

Balance Sheet

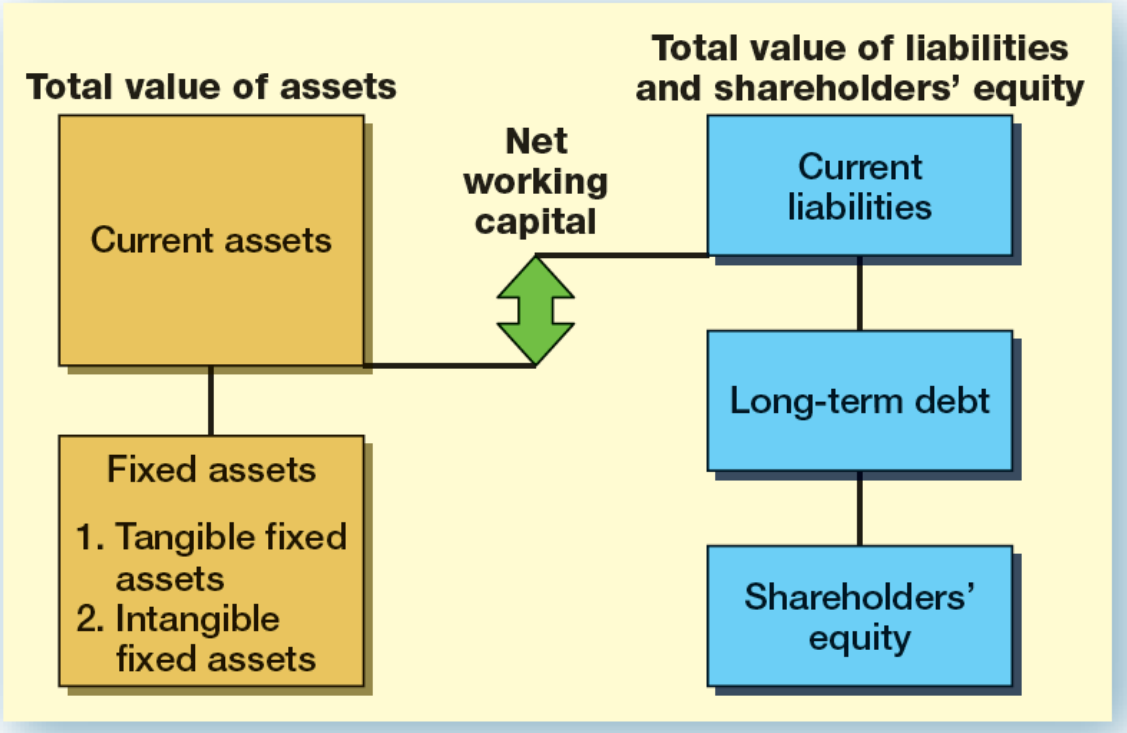


- **Liabilities** include two type of claims;
  - **Current liability** is the claim that that must be paid off within one year, including accounts payable, accruals (total of accrued wages and accrued taxes), and notes payable to banks that are due within one year.
  - **Long-term debt** includes bonds that mature in more than a year.
- **Stockholders' equity** can be thought of in two ways.
  - First, it is the amount that stockholders paid to the company when they raise capital,
  - Second, it is the the earnings the company has retained cumulatively
  - They are the cumulative total of all of the earnings the company has earned during its life

The Balance Sheet Figure 2.1

FIGURE 2.1

The Balance Sheet. Left Side: Total Value of Assets. Right Side: Total Value of Liabilities and Shareholders' Equity.



Debt Versus Equity

- ***Liabilities*** are obligations of the firm that require a payout of cash within a specific period.
  - Liabilities are debts
  - Repay a specific amount of principle and interest over a specific period called debt service.
  - if the firms cannot pay these debt service, it will put the firm in default of a contract.
- Equity is the stockholders' share in the firm
  - Equity holder claim against the firm's residual cash flow
  - When the firm borrows, it gives the bondholders claim on the firm's cash flow first
  - The accounting value of stockholders' equity increases when retained earnings are added.
  - This occurs when the firm retains part of its earnings instead of paying them out as dividends

Net Working Capital and Liquidity

- **Net Working Capital**
  - Net Working Capital = Current Assets – Current Liabilities
  - Positive when the cash that will be received over the next 12 months exceeds the cash that will be paid out
  - Usually positive in a healthy firm
- **Liquidity**
  - Ability to convert to cash quickly without a significant loss in value
  - Liquid firms are less likely to experience financial distress
  - But liquid assets typically earn a lower return
  - Trade-off to find balance between liquid and illiquid assets

Balance sheets

Allied Food Products: December 31 Balance Sheets (Millions of Dollars)

	2008	2007
Assets		
Current assets:		
Cash and equivalents	$ 10	$ 80
Accounts receivable	375	315
Inventories	615	415
Total current assets	$1,000	$ 810
Net fixed assets:		
Net plant and equipment (cost minus depreciation)	1,000	870
Other assets expected to last more than a year	0	0
Total assets	$2,000	$1,680
Liabilities and Equity		
Current liabilities:		
Accounts payable	$ 60	$ 30
Accruals	140	130
Notes payable	110	60
Total current liabilities	$ 310	$ 220
Long-term bonds	750	580
Total debt	$1,060	$ 800
Common equity:		
Common stock (50,000,000 shares)	$ 130	$ 130
Retained earnings	810	750
Total common equity	$ 940	$ 880
Total liabilities and equity	$2,000	$1,680

For year 2008

- What is the current asset?
- What is the current liability?

Total Debt VS Total liability

- What is total Debt?
- What is total liability?

Market Value vs. Book Value

- The balance sheet provides the book value of the assets, liabilities, and equity.
- Market value is the price at which the assets, liabilities, or equity can actually be bought or sold.
- Market value and book value are often very different.
- **Why? Which** is more important to the decision-making process?

Example 2.2: Kl Corporation

KL CORPORATION
Balance Sheets
Market Value versus Book Value

Assets			Liabilities and Shareholders' Equity		
	Book	Market		Book	Market
Net working capital	$ 400	$ 600	Long-term debt	$ 500	$ 500
Net fixed assets	700	1,000	Shareholders' equity	600	1,100
	$1,100	$1,600		$1,100	$1,600

Concept check !!

- It is possible for a company‘s liabilities to exceed its assets.
- When this occurs, the owners‘ equity is negative
- Can this happen with market values? Why or why not?

Income Statement

- The income statement is more like a video of the firm's operations for a specified period of time.
- You generally report revenues first and then deduct any expenses for the period
- Matching principle – GAAP says to show revenue when it accrues and match the expenses required to generate the revenue

ASIA-PACIFIC Corporation Income Statement

ASIA-PACIFIC CORPORATION 2015 Income Statement ($ in millions)		
Net sales		$1,509
Cost of goods sold		750
Depreciation		65
Earnings before interest and taxes		$ 694
Interest paid		70
Taxable income		$ 624
Taxes (34%)		212
Net income		$ 412
Dividends	$103	
Addition to retained earnings	309	

Income Statement

	2008	2007
Net sales	$3,000.0	$2,850.0
Operating costs except depreciation and amortization	2,616.2	2,497.0
Depreciation and amortization	100.0	90.0
Total operating costs	$2,716.2	$2,587.0
Operating income, or earnings before interest and taxes (EBIT)	283.8	263.0
Less interest	88.0	60.0
Earnings before taxes (EBT)	$ 195.8	$ 203.0
Taxes (40%)	78.3	81.2
Net income	$ 117.5	$ 121.8
Here are some related items:		
Total dividends	$ 57.5	$ 53.0
Addition to retained earnings = Net income – Total dividends	$ 60.0	$ 68.8
Per-share data:		
Common stock price	$ 23.06	$ 26.00
Earnings per share (EPS)[a]	$ 2.35	$ 2.44
Dividends per share (DPS)[a]	$ 1.15	$ 1.06
Book value per share (BVPS)	$ 18.80	$ 17.60

[a]Allied has 50 million shares of common stock outstanding. Note that EPS is based on net income available to common stockholders. Calculations of EPS and DPS for 2008 are as follows:

$$\text{Earnings per share} = \text{EPS} = \frac{\text{Net income}}{\text{Common shares outstanding}} = \frac{\$117{,}500{,}000}{50{,}000{,}000} = \$2.35$$

$$\text{Dividends per share} = \text{DPS} = \frac{\text{Dividends paid to common stockholders}}{\text{Common shares outstanding}} = \frac{\$57{,}500{,}000}{50{,}000{,}000} = \$1.15$$

When a firm has options or convertibles outstanding or it recently issued new common stock, a more comprehensive EPS, "diluted EPS," must be calculated. Its calculation is a bit more complicated, but you may refer to any financial accounting text for a discussion.

Practice Question1

- Building a Balance Sheet Culligan, Inc., has current assets of $5,300, net fixed assets of $26,000, current liabilities of $3,900, and long-term debt of $14,200.
- What is the value of the shareholders‘ equity account for this firm?
- How much is net working capital?

Concept Check !!

What is the purpose of a balance sheet and income statement?

Practice Question2

- **Market Values and Book Values** Klingon Cruisers, Inc., purchased new cloaking machinery three years ago for $9.5 million.
- The machinery can be sold to the Romulans today for $6.3 million.
- Klingon‘s current balance sheet shows net fixed assets of $5 million, current liabilities of $2.1 million, and net working capital of $800,000.
- If all the current assets were liquidated today, the company would receive $2.8 million cash.
- **What is the book value of Klingon‘s assets today?**
- **What is the market value?**

Taxes

Taxable Income	Tax Rate
$ 0 – 50,000	15%
50,001 – 75,000	25
75,001 – 100,000	34
100,001 – 335,000	39
335,001 – 10,000,000	34
10,000,001 – 15,000,000	35
15,000,001 – 18,333,333	38
18,333,334 +	35

- The one thing we can rely on with taxes is that they are ***always changing***
- Marginal vs. average tax rates
  - Marginal tax rate – the percentage paid on the next dollar earned
  - Average tax rate – the tax bill / taxable income
  - Average tax rates vary widely across different companies and industries
- Other taxes

Taxes

Industry	Number of Companies	Average Tax Rate
Electric utilities (Eastern U.S.)	24	33.8%
Trucking	33	32.7
Railroad	15	27.4
Securities brokerage	30	20.5
Banking	481	17.5
Medical supplies	264	11.2
Internet	239	5.9
Pharmaceutical	337	5.6
Biotechnology	121	4.5

- The tax code is much more complex, with various tax deductions that allowed for certain industries, as well as the taxation of multinational companies.
- Recent evidence shows that the average tax rate can be far from 35 percent for many companies.
- The average tax rate ranges from 33.8 percent for electric utilities to 4.5 percent for biotechnology firms.

Example: Marginal vs. Average Rates

Taxable Income	Tax Rate
$ 0– 50,000	15%
50,001– 75,000	25
75,001– 100,000	34
100,001– 335,000	39
335,001–10,000,000	34
10,000,001–15,000,000	35
15,000,001–18,333,333	38
18,333,334+	35

- Suppose your firm earns $4 million in taxable income.
  - What is the firm's tax liability?
  - What is the average tax rate?
  - What is the marginal tax rate?
- If you are considering a project that will increase the firm's taxable income by $1 million, what tax rate should you use in your analysis?

Practice Question3

Taxable Income	Tax Rate
$ 0– 50,000	15%
50,001– 75,000	25
75,001– 100,000	34
100,001– 335,000	39
335,001–10,000,000	34
10,000,001–15,000,000	35
15,000,001–18,333,333	38
18,333,334+	35

- **Calculating Taxes** The Herrera Co. had $246,000 in taxable income.
- What is the average tax rate?
- What is the marginal tax rate?

Practice Question4

Income	Tax rate (%)
X < 300.000	Exempt
300,000 < X < 3,000,000	15
3,000,000 < X	20

- Calculating Taxes, The Herrera Co. had $2,460,000 in taxable income.
- What is the average tax rate?
- What is the marginal tax rate?

The Concept of Cash Flow

- Cash flow is one of the most important pieces of information that a financial manager can derive from financial statements
- The **statement of cash flows** does not provide us with the same information that we are looking at here
- We will look at **how cash is generated** from utilizing assets and how it is paid to those that finance the purchase of the assets

Cash Flow From Assets

- Cash Flow From Assets (CFFA) =
  Cash Flow to Creditors
  + Cash Flow to Stockholders
- Cash Flow From Assets =
  Operating Cash Flow
  – Net Capital Spending
  – Changes in NWC

ASIA-PACIFIC Corporation Balance Sheet

ASIA-PACIFIC CORPORATION
2014 and 2015 Balance Sheets
($ in millions)

Assets	2014	2015	Liabilities and Owners' Equity	2014	2015
Current assets			Current liabilities		
Cash	$ 104	$ 160	Accounts payable	$ 232	$ 266
Accounts receivable	455	688	Notes payable	196	123
Inventory	553	555	Total	$ 428	$ 389
Total	$1,112	$1,403			
Fixed assets					
Net plant and equipment	$1,644	$1,709	Long-term debt	$ 408	$ 454
			Owners' equity		
			Common stock and paid-in surplus	600	640
			Retained earnings	1,320	1,629
			Total	$1,920	$2,269
Total assets	$2,756	$3,112	Total liabilities and owners' equity	$2,756	$3,112

ASIA-PACIFIC Corporation Income Statement

ASIA-PACIFIC CORPORATION 2015 Income Statement ($ in millions)		
Net sales		$1,509
Cost of goods sold		750
Depreciation		65
Earnings before interest and taxes		$ 694
Interest paid		70
Taxable income		$ 624
Taxes (34%)		212
Net income		$ 412
Dividends	$103	
Addition to retained earnings	309	

Example: ASIA-PACIFIC Corporation

- OCF (I/S) = EBIT + depreciation – taxes = $547
- NCS (B/S and I/S) = Ending net fixed assets
  – beginning net fixed assets
  + depreciation
  = $130
- Changes in NWC (B/S) = ending NWC – beginning NWC
  = $330
- CFFA = OCF – NCS – NWC
  547 – 130 – 330
  = $87

Example: ASIA-PACIFIC Corporation

- CF to Creditors (B/S and I/S) = interest paid
  – net new borrowing
  = $24
- CF to Stockholders (B/S and I/S) = dividends paid
  – net new equity raised
  = $63
- CFFA = 24 + 63 = $87

Cash Flow Summary

I. The cash flow identity

Cash flow from assets = Cash flow to creditors (bondholders)
+ Cash flow to stockholders (owners)

II. Cash flow from assets

Cash flow from assets = Operating cash flow
− Net capital spending
− Change in net working capital (NWC)

where:

Operating cash flow = Earnings before interest and taxes (EBIT)
+ Depreciation − Taxes

Net capital spending = Ending net fixed assets − Beginning net fixed assets
+ Depreciation

Change in NWC = Ending NWC − Beginning NWC

III. Cash flow to creditors (bondholders)

Cash flow to creditors = Interest paid − Net new borrowing

IV. Cash flow to stockholders (owners)

Cash flow to stockholders = Dividends paid − Net new equity raised

Example: Balance Sheet and Income Statement Info

- Current Accounts
  - 2015: CA = 3625; CL = 1787
  - 2014: CA = 3596; CL = 2140
- Fixed Assets and Depreciation
  - 2015: NFA = 2194; 2014: NFA = 2261
  - Depreciation Expense = 500
- Long-term Debt and Equity
  - 2015: LTD = 538; Common stock & APIC = 462
  - 2014: LTD = 581; Common stock & APIC = 372
- Income Statement
  - EBIT = 1014; Taxes = 368
  - Interest Expense = 93; Dividends = 285

Example: Cash Flows

- OCF = 1,014 + 500 – 368 = 1,146
- NCS = 2,194 – 2,261 + 500 = 433
- Changes in NWC = (3,625 – 1,787) – (3,596 – 2,140) = 382
- **CFFA = 1,146 – 433 – 382 = 331**
- CF to Creditors = 93 – (538 – 581) = 136
- CF to Stockholders = 285 – (462 – 372) = 195
- **CFFA = 136 + 195 = 331**
- **The CF identity holds.**

Comprehensive Problem

- Current Accounts
  - 2015: CA = 4,400; CL = 1,500
  - 2014: CA = 3,500; CL = 1,200
- Fixed Assets and Depreciation
  - 2015: NFA = 3,400; 2014: NFA = 3,100
  - Depreciation Expense = 400
- Long-term Debt and Equity (R.E. not given)
  - 2015: LTD = 4,000; Common stock & APIC = 400
  - 2014: LTD = 3,950; Common stock & APIC = 400
- Income Statement
  - EBIT = 2,000; Taxes = 300
  - Interest Expense = 350; Dividends = 500
- **Compute the CFFA**

Ethics Issues

- Why is manipulation of financial statements not only unethical and illegal, but also bad for stockholders?

End of chapter

Chapter 3

Working with Financial Statements

Key Concepts and Skills

- Understand sources and uses of cash and the Statement of Cash Flows
- Know how to standardize financial statements for comparison purposes
- Know how to compute and interpret important financial ratios
- Be able to compute and interpret the DuPont Identity
- Understand the problems and pitfalls in financial statement analysis

Chapter Outline

- Cash Flow and Financial Statements: A Closer Look
- Standardized Financial Statements
- Ratio Analysis
- The Du Pont Identity
- Using Financial Statement Information

Cash Flow and Financial Statements: A Closer Look

- Recall from previous chapter;
  - Cash flow from assets =

    Cash flow to creditors + Cash flow to owners
  - Three type of financial statement
    - Balance sheet
    - Income statement
    - Cash flow statement

ASSETS[2]	MARCH 31 20X2	20X1
Cash	$ 178	$ 175
Accounts receivable[3]	678	740
Inventories, at lower of cost or market[4]	1,329	1,235
Prepaid expenses[5]	21	17
Accumulated tax prepayments	35	29
Current assets[6]	$2,241	$2,196
Fixed assets at cost[7]	1,596	1,538
Less: Accumulated depreciation[8]	(857)	(791)
Net fixed assets	$ 739	$ 747
Investment, long term	65	—
Other assets, long term	205	205
Total assets[9]	$3,250	$3,148

LIABILITIES AND SHAREHOLDERS' EQUITY[10,11]	MARCH 31 20X2	20X1
Bank loans and notes payable	$ 448	$ 356
Accounts payable[12]	148	136
Accrued taxes[13]	36	127
Other accrued liabilities[14]	191	164
Current liabilities[15]	$ 823	$ 783
Long-term debt[16]	631	627
Shareholders' equity		
Common stock, $1 par value[17]	421	421
Additional paid-in capital	361	361
Retained earnings[18]	1,014	956
Total shareholders' equity	$1,796	$1,738
Total liabilities and shareholders' equity[19]	$3,250	$3,148

EXPLANATIONS

1. Shows how company stands at close of business on a given date.
2. What Aldine owned.
3. Amounts owed to company by customers.
4. Raw materials, work-in-process, and finished goods.
5. Future expense items (e.g., insurance premiums) that have already been paid.
6. Cash and items likely convertible to cash within 1 year.
7. Original amount paid for land, buildings, and equipment.
8. Accumulated deductions for wear and tear on fixed assets.
9. Assets = liabilities + shareholders' equity.
10. What Aldine owed.
11. Ownership interest of shareholders.
12. Due to suppliers for goods and services.
13. "Accrued" refers to an obligation incurred but payment not yet made.
14. Unpaid wages, salaries, etc.
15. Debts payable within 1 year.
16. Debt that need not be paid until after 1 year (e.g., bonds).
17. Amount originally invested in the business by the shareholders.
18. Earnings retained (i.e., re-invested) in the business.
19. Liabilities + shareholders' equity = assets.

	YEARS ENDED MARCH 31 20X2	20X1	EXPLANATIONS
Net sales[2]	$3,992	$3,721	1. Measures profitability over a period of time.
Cost of goods sold[3]	2,680	2,500	
Gross profit	$1,312	$1,221	2. Amount received, or receivable, from customers.
Selling, general, and administrative expenses[4]	912	841	3. Directly related to operating levels: wages, raw materials, supplies, and manufacturing overhead.
Earnings before interest and taxes[5]	$ 400	$ 380	
Interest expense[6]	85	70	4. Salesmen's commissions, advertising, officers' salaries, etc.
Earnings before taxes[7]	$ 315	$ 310	
Income taxes (federal and state)	114	112	5. Operating income.
Earnings after taxes[8]	$ 201	$ 198	6. Cost of borrowed funds.
Cash dividends	143	130	7. Taxable income.
Increase in retained earnings	$ 58	$ 68	8. Amount earned for stockholders.

Balance Sheet & Income Statement

	2015	2014		2015	2014
Cash	696	58	A/P	307	303
A/R	956	992	N/P	26	119
Inventory	301	361	Other CL	1,662	1,353
Other CA	303	264	**Total CL**	1,995	1,775
Total CA	2,256	1,675	**LT Debt**	843	1,091
Net FA	3,138	3,358	**C/S**	2,556	2,167
Total Assets	5,394	5,033	Total Liab. & Equity	5,394	5,033

Revenues		5,000
Cost of Goods Sold		(2,006)
Expenses		(1,740)
Depreciation		(116)
EBIT		1,138
Interest Expense		(7)
Taxable Income		1,131
Taxes		(442)
Net Income		689
EPS	3.61	
Dividends per share	1.08	

- Numbers in millions of dollars, except EPS & DPS

Sources and Uses of Cash

- **Sources of cash**: A firm's activities that generate cash
  - Cash inflow – occurs when we "sell" something
  - Decrease in asset account (Sample B/S)
    - Accounts receivable, inventory, and net fixed assets
  - Increase in liability or equity account
    - Accounts payable, other current liabilities, and common stock

Uses of cash: A firm's activities in which cash is spent

- Cash outflow – occurs when we "buy" something
- Increase in asset account
  - Cash and other current assets
- Decrease in liability or equity account
  - Notes payable and long-term debt

Statement of Cash Flows

- Statement that summarizes the sources and uses of cash
- Changes divided into three major categories
  - **Operating Activity (CFO)**– includes net income and changes in most current accounts
  - **Investment Activity (CFI)**– includes changes in fixed assets
  - **Financing Activity (CFF)**– includes changes in notes payable, long-term debt, and equity accounts, as well as dividends

Sample Statement of Cash Flows

Cash, beginning of year	58	**Financing Activity**	
Operating Activity		Decrease in Notes Payable	-93
Net Income	689	Decrease in LT Debt	-248
Plus: Depreciation	116	Decrease in C/S (minus RE)	-94
Decrease in A/R	36	Dividends Paid	-206
Decrease in Inventory	60	Net Cash from Financing	-641
Increase in A/P	4		
Increase in Other CL	309	Net Increase in Cash	638
Less: Increase in other CA	-39		
Net Cash from Operations	1,175	Cash End of Year	696
Investment Activity			
Sale of Fixed Assets	104		
Net Cash from Investments	104		

Numbers in millions of dollars

Standardized Financial Statements

- Common-Size Balance Sheets
  - Compute all accounts as a percent of total assets
- Common-Size Income Statements
  - Compute all line items as a percent of sales
- Standardized statements make it easier to compare financial information, particularly as the company grows
- They are also useful for comparing companies of different sizes, particularly within the same industry

Standardized Financial Statements

	2015	2014		2015	2014
Cash	696	58	A/P	307	303
A/R	956	992	N/P	26	119
Inventory	301	361	Other CL	1,662	1,353
Other CA	303	264	Total CL	1,995	1,775
Total CA	2,256	1,675	LT Debt	843	1,091
Net FA	3,138	3,358	**C/S**	2,556	2,167
Total Assets	5,394	5,033	Total Liab. & Equity	5,394	5,033

	2015	2014		2015	2014
Cash	12.90%	1.15%	A/P	5.69%	6.02%
A/R	17.72%	19.71%	N/P	0.48%	2.36%
Inventory	5.58%	7.17%	Other CL	30.81%	26.88%
Other CA	5.62%	5.25%	Total CL	36.99%	35.27%
Total CA	41.82%	33.28%	LT Debt	15.63%	21.68%
Net FA	58.18%	66.72%	**C/S**	47.39%	43.06%
Total Assets	100.00%	100.00%	Total Liab. & Equity	100.00%	100.00%

- Common-Size Balance Sheets
  - Compute all accounts as a percent of total assets

Standardized Financial Statements

Revenues	5,000
Cost of Goods Sold	(2,006)
Expenses	(1,740)
Depreciation	(116)
EBIT	1,138
Interest Expense	(7)
Taxable Income	1,131
Taxes	(442)
Net Income	689

Revenues	100.0%
Cost of Goods Sold	-40.1%
Expenses	-34.8%
Depreciation	-2.3%
EBIT	22.8%
Interest Expense	-0.1%
Taxable Income	22.6%
Taxes	-8.8%
Net Income	13.8%

- Common-Size Income Statement Sheets
  - Compute all accounts as a percent of total assets

Standardized Financial Statements

- **COMMON–BASE YEAR FINANCIAL STATEMENTS: TREND ANALYSIS**
- Imagine we were given balance sheets for the last 10 years for some company and we were trying to investigate trends in the firm's pattern of operations
  - Does the firm use more or less debt?
  - Has the firm grown more or less liquid?
- A useful way of standardizing financial statements is to express each item relative to the base amount.
- We will call the resulting statements **common–base year statements**

Standardized Financial Statements

	2015	2014	2015	2014
Cash	696	58	12	1
A/R	956	992	0.964	1
Inventory	301	361	0.834	1
Other CA	303	264	1.148	1
Total CA	2,256	1,675	1.35	1
Net FA	3,138	3,358	0.93	1
Total Assets	5,394	5,033	1.07	1

- **Cash increase 12 times**
- **A/R remains unchanged**
- **Inventory decreases by 16.6%**
- **C/A slightly improves by 14.8%**
- **Net FA slightly decreases by 7%**

	2015	2014	2015	2014
A/P	307	303	1.01	1
N/P	26	119	0.22	1
Other CL	1,662	1,353	1.23	1
Total CL	1,995	1,775	1.12	1
LT Debt	843	1,091	0.77	1
C/S	2,556	2,167	1.18	1
Total Liab. & Equity	5,394	5,033	1.07	1

- **A/P remains unchange**
- **N/P remains unchanged**
- **LT-Debt decreases by 23%**
- **C/S increases by 14.8%**
- **Net FA slightly decreases by 7%**

Question1

- Common-Size Financials One tool of financial analysis is common-size financial statements.
  - Why do you think common-size income statements and balance sheets are useful?
- Note that the accounting statement of cash flows is not converted into a common-size statement.
  - Why do you think this is?

Practice1

Tic-Tac Homes has had the following balance sheet statements the past four years (in thousands):

	20X1	20X2	20X3	20X4
Cash	$ 214	$ 93	$ 42	$ 38
Receivables	1,213	1,569	1,846	2,562
Inventories	2,102	2,893	3,678	4,261
Net fixed assets	2,219	2,346	2,388	2,692
Total assets	$5,748	$6,901	$7,954	$9,553
Accounts payable	$1,131	$1,578	$1,848	$2,968
Notes payable	500	650	750	750
Accruals	656	861	1,289	1,743
Long-term debt	500	800	800	800
Common stock	200	200	200	200
Retained earnings	2,761	2,812	3,067	3,092
Total liabilities and shareholders' equity	$5,748	$6,901	$7,954	$9,553

- What are the major problems in the company's financial condition?

Ratio Analysis

- What is ratio?
- Ratios allow for better comparison through time or between companies
- As we look at each ratio, ask yourself
  - What the ratio is trying to measure and
  - Why that information is important
- Ratios are used both internally and externally

Ratio Analysis

- For each of the ratios we consider several questions:
  1. How is it computed?
  2. What is it intended to measure, and why might we be interested?
  3. What is the unit of measurement?
  4. What might a high or low value tell us? How might such values be misleading?
  5. How could this measure be improved?

Ratio Analysis

- Financial ratios are traditionally grouped into the following categories:
  1. Short-term solvency, or liquidity, ratios.
  2. Long-term solvency, or financial leverage, ratios.
  3. Asset management, or turnover, ratios.
  4. Profitability ratios.
  5. Market value ratios.

Ratio Analysis: Liquidity Measure

- Short-term solvency ratios are intended to provide information about a firm's liquidity, and these ratios are sometimes called liquidity measures.
- The primary concern is the firm's ability to pay its bills over the short run without undue stress
- These ratios focus on **current assets** and **current liabilities**.
  - liquidity ratios are particularly interesting to short-term creditors.

Ratio Analysis: Liquidity Measure

- One advantage of looking at current assets and liabilities is that their book values and market values are likely to be similar.
- Often these assets and liabilities **just don't live long enough** for the two to get seriously out of step.
- On the other hand, current assets and liabilities can and do change fairly rapidly, so today's amounts may not be a reliable guide to the future

Ratio Analysis: Liquidity Measure

	2015	2014	2015	2014
Cash	696	58	12	1
A/R	956	992	0.964	1
Inventory	301	361	0.834	1
Other CA	303	264	1.148	1
Total CA	2,256	1,675	1.35	1
Net FA	3,138	3,358	0.93	1
Total Assets	5,394	5,033	1.07	1

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- **Current Ratio**
  - One of most widely used liquidity ratios is the *current ratio*
- Current Ratio = CA / CL
  - 2,256 / 1,995 = 1.13 times
- The current ratio is affected by various types of transactions
- For example, suppose the firm borrows over the long term to raise money

- The short-run effect would be an increase in cash from the issue proceeds and an increase in long-

Ratio Analysis: Liquidity Measure

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- **Quick (or Acid-Test) Ratio**
- Inventory is often the least liquid current asset
- Quick Ratio = (CA – Inventory) / CL
  - (2,256 – 301) / 1,995 = .98 times
- Relatively large inventories are often a sign of short-term trouble.
- The firm may have overestimated sales and overbought or overproduced as a result.
- In this case, the firm may have a substantial portion of its liquidity tied up in slow-moving inventory

Computing Liquidity Ratios

- Current Ratio = CA / CL
  - 2,256 / 1,995 = 1.13 times
- Quick Ratio = (CA – Inventory) / CL
  - (2,256 – 301) / 1,995 = .98 times
- Cash Ratio = Cash / CL
  - 696 / 1,995 = .35 times
- NWC to Total Assets = NWC / TA
  - (2,256 – 1,995) / 5,394 = .05
- Interval Measure = CA / average daily operating costs
  - 2,256 / ((2,006 + 1,740)/365) = 219.8 days

B/S

I/S

Computing Long-term Solvency Ratios

- Total Debt Ratio = (TA – TE) / TA
  - (5,394 – 2,556) / 5,394 = 52.61%

B/S

I/S

- Debt/Equity = TD / TE
  - (5,394 – 2,556) / 2,556 = 1.11 times
- Equity Multiplier = TA / TE = 1 + D/E
  - 1 + 1.11 = 2.11
- Long-term debt ratio = LTD / (LTD + TE)
  - 843 / (843 + 2,556) = 24.80%

Computing Coverage Ratios

- Times Interest Earned = EBIT / Interest B/S I/S
  - 1,138 / 7 = 162.57 times

- Cash Coverage = (EBIT + Depreciation) / Interest
  - (1,138 + 116) / 7 = 179.14 times

Computing Inventory Ratios

- Inventory Turnover = Cost of Goods Sold / Inventory
  - 2,006 / 301 = 6.66 times

B/S

I/S

- Days' Sales in Inventory = 365 / Inventory Turnover
  - 365 / 6.66 = 55 days

Computing Receivables Ratios

- Receivables Turnover = Sales / Accounts Receivable
  = 5,000 / 956 B/S
  = 5.23 times I/S

- Days' Sales in Receivables = 365 / Receivables Turnover
  = 365 / 5.23 = 70 days

Computing Total Asset Turnover

- Total Asset Turnover = Sales / Total Assets
  = 5,000 / 5,394
  = .93

B/S
I/S

  - It is not unusual for TAT < 1, especially if a firm has a large amount of fixed assets

- NWC Turnover = Sales / NWC
  = 5,000 / (2,256 – 1,995)
  = 19.16 times

- Fixed Asset Turnover = Sales / NFA
  = 5,000 / 3,138
  = 1.59 times

Computing Profitability Measures

- Profit Margin = Net Income / Sales
  - 689 / 5,000 = 13.78%

B/S

I/S

- Return on Assets (ROA) = Net Income / Total Assets
  - 689 / 5,394 = 12.77%
- Return on Equity (ROE) = Net Income / Total Equity
  - 689 / 2,556 = 26.96%

Computing Market Value Measures

- Market Price =$87.65 per share
- Shares outstanding =190.9 million
- PE Ratio =Price per share / Earnings per share
  =87.65 / 3.61
  = 24.28 times
- MTB =Market value per share / Book value per share
  =87.65 / (2,556 / 190.9)
  = 6.55 times

Computing Market Value Measures

- Enterprise value = market value of stock
  + book value of liabilities
  – cash
  =16,732 + 2,838 – 696
  = $18,874

- EBITDA ratio = Enterprise value / EBITDA
  = 18,874 / 1,138
  = 16.6 times

Group Presentation

- Due: 13 Oct 2016
- A total of 10 Group (10 minutes per group)
  - Group 9 name list
- Analyze the financial performance of each industry
  - Short-term liquidity ratio
  - Long-term liquidity ratio
  - Turnover Ratio
  - Profitability Ratio
  - Market ratio
- Any technique can be used (ie. Standarization, trend analysis, etc.)
- As security analyst, your group should provide opinions about each firm

Deriving the DuPont Identity

- ROE = NI / TE
- Multiply by 1 (TA/TA) and then rearrange
  - ROE = (NI / TE) (TA / TA)
  - ROE = (NI / TA) (TA / TE) = ROA * EM
- Multiply by 1 (Sales/Sales) again and then rearrange
  - ROE = (NI / TA) (TA / TE) (Sales / Sales)
  - ROE = (NI / Sales) (Sales / TA) (TA / TE)
  - ROE = PM * TAT * EM

Using the DuPont Identity

- ROE = PM * TAT * EM
  - Profit margin is a measure of the firm's operating efficiency – how well it controls costs
  - Total asset turnover is a measure of the firm's asset use efficiency – how well does it manage its assets
  - Equity multiplier is a measure of the firm's financial leverage

Comprehensive Problem

- XYZ Corporation has the following financial information for the previous year:

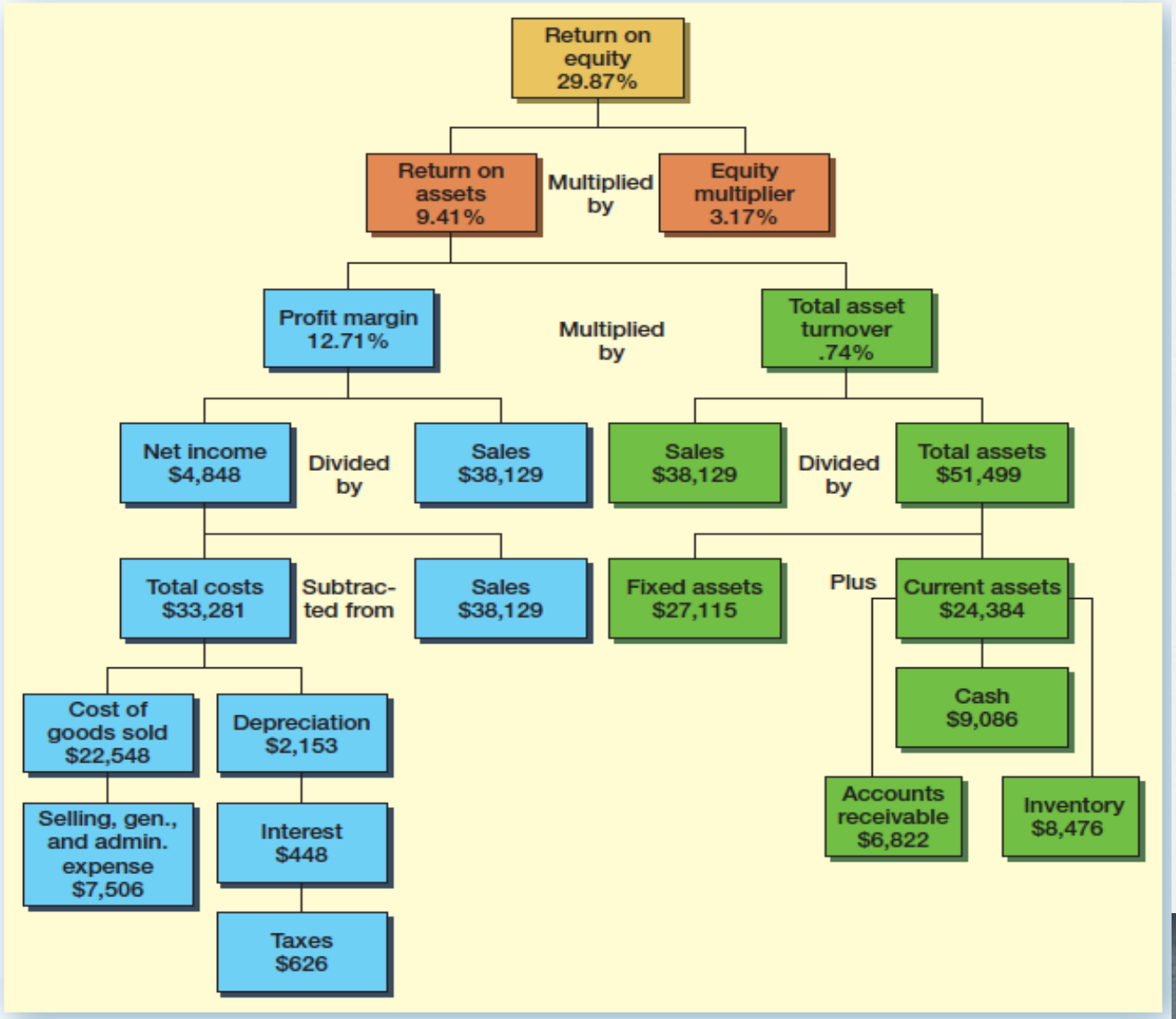
- Sales: $8M, PM = 8%, CA = $2M, FA = $6M, NWC = $1M, LTD = $3M

- Compute the ROE using the DuPont Analysis.

Expanded DuPont Analysis – DuPont Data

	ROE	=	Profit Margin	×	Total Asset Turnover	×	Equity Multiplier
			Yahoo!				
2013	10.5%	=	29.2%	×	0.279	×	1.29
2012	8.0%	=	23.4%	×	0.292	×	1.17
2011	8.4%	=	21.0%	×	0.337	×	1.18
			Google				
2013	14.8%	=	21.6%	×	0.539	×	1.27
2012	15.0%	=	21.4%	×	0.535	×	1.31
2011	16.7%	=	25.7%	×	0.522	×	1.25

Extended DuPont Chart



Why Evaluate Financial Statements?

- Internal uses
  - Performance evaluation – compensation and comparison between divisions
  - Planning for the future – guide in estimating future cash flows
- External uses
  - Creditors
  - Suppliers
  - Customers
  - Stockholders

Benchmarking

- Ratios are not very helpful by themselves; they need to be compared to something
- Time-Trend Analysis
  - Used to see how the firm's performance is changing through time
  - Internal and external uses
- Peer Group Analysis
  - Compare to similar companies or within industries
  - SIC and NAICS codes
  - TSIC

Potential Problems

- There is no underlying theory, so there is no way to know which ratios are most relevant
- Benchmarking is difficult for diversified firms
- Globalization and international competition makes comparison more difficult because of differences in accounting regulations
- Varying accounting procedures, i.e. FIFO vs. LIFO
- Different fiscal years
- Extraordinary events

Homework

- What is the Statement of Cash Flows and how do you determine sources and uses of cash?
- How do you standardize balance sheets and income statements and why is standardization useful?
- What are the major categories of ratios and how do you compute specific ratios within each category?
- What are some of the problems associated with financial statement analysis?

Ethics Issues

- Should financial analysts be held liable for their opinions regarding the financial health of firms?
- How closely should ratings agencies work with the firms they are reviewing? I.e., what level of independence is appropriate?

Practice Question

- Thorpe Mfg., Inc., is currently operating at only 85 percent of fixed asset capacity. Current sales are $630,000. How much can sales increase before any new fixed assets are needed?
- For the company in the previous problem, suppose fixed assets are $580,000 and sales are projected to grow to $790,000. How much in new fixed assets are required to support this growth in sales?

Home Work

Practice Question

P/E AND STOCK PRICE Fontaine Inc. recently reported net income of $2 million. It has 500,000 shares of common stock, which currently trades at $40 a share. Fontaine continues to expand and anticipates that 1 year from now, its net income will be $3.25 million. Over the next year, it also anticipates issuing an additional 150,000 shares of stock so that 1 year from now it will have 650,000 shares of common stock. Assuming Fontaine's price/earnings ratio remains at its current level, what will be its stock price 1 year from now?

DuPONT ANALYSIS A firm has been experiencing low profitability in recent years. Perform an analysis of the firm's financial position using the DuPont equation. The firm has no lease payments but has a $2 million sinking fund payment on its debt. The most recent industry average ratios and the firm's financial statements are as follows:

Industry Average Ratios

Current ratio	2×	Fixed assets turnover	6×
Total debt/Total assets	30%	Total assets turnover	3×
Times interest earned	7×	Profit margin	3%
EBITDA coverage	9×	Return on total assets	9%
Inventory turnover	10×	Return on common equity	12.86%
Days sales outstanding[a]	24 days		

[a]Calculation is based on a 365-day year.

Balance Sheet as of December 31, 2012 (Millions of Dollars)

Cash and equivalents	$ 78	Accounts payable	$ 45
Net receivables	66	Notes payable	45
Inventories	159	Other current liabilities	21
Total current assets	$303	Total current liabilities	$111
		Long-term debt	24
		Total liabilities	$135
Gross fixed assets	225	Common stock	114
Less depreciation	78	Retained earnings	201
Net fixed assets	$147	Total stockholders' equity	$315

Net sales	$795.0
Cost of goods sold	660.0
Gross profit	$135.0
Selling expenses	73.5
EBITDA	$ 61.5
Depreciation expense	12.0
Earnings before interest and taxes (EBIT)	$ 49.5
Interest expense	4.5
Earnings before taxes (EBT)	$ 45.0
Taxes (40%)	18.0
Net income	$ 27.0

a. Calculate those ratios that you think would be useful in this analysis.
b. Construct a DuPont equation and compare the company's ratios to the industry average ratios.
c. Do the balance sheet accounts or the income statement figures seem to be primarily responsible for the low profits?
d. Which specific accounts seem to be most out of line relative to other firms in the industry?
e. If the firm had a pronounced seasonal sales pattern or if it grew rapidly during the year, how might that affect the validity of your ratio analysis? How might you correct for such potential problems?

a.

					Firm	Industry Average
Current ratio	=	$\frac{\text{Current assets}}{\text{Current liabilities}}$	=	$\frac{\$303}{\$111}$	= 2.73×	2×
Total debt to total assets	=	$\frac{\text{Total debt}}{\text{Total assets}}$	=	$\frac{\$135}{\$450}$	= 30.00%	30.00%
Times interest earned	=	$\frac{\text{EBIT}}{\text{Interest}}$	=	$\frac{\$49.5}{\$4.5}$	= 11×	7×
EBITDA coverage	=	$\frac{\text{EBITDA + Lease pymts}}{\text{INT} + \frac{\text{Princ. pymts}}{1-T} + \text{Lease pymts}}$	=	$\frac{\$61.5}{\$6.5}$	= 9.46×	9×
Inventory turnover	=	$\frac{\text{Sales}}{\text{Inventories}}$	=	$\frac{\$795}{\$159}$	= 5×	10×
DSO	=	$\frac{\text{Accounts receivable}}{\text{Sales/ 365}}$	=	$\frac{\$66}{\$795/365}$	= 30.3 days	24 days
F. A. turnover	=	$\frac{\text{Sales}}{\text{Net fixed assets}}$	=	$\frac{\$795}{\$147}$	= 5.41×	6×
T. A. turnover	=	$\frac{\text{Sales}}{\text{Total assets}}$	=	$\frac{\$795}{\$450}$	= 1.77×	3×
Profit margin	=	$\frac{\text{Net income}}{\text{Sales}}$	=	$\frac{\$27}{\$795}$	= 3.40%	3.00%
Return on total assets	=	$\frac{\text{Net income}}{\text{Total assets}}$	=	$\frac{\$27}{\$450}$	= 6.00%	9.00%
Return on common equity	=	ROA × EM	=	6% × 1.4286	= 8.57%	12.86%

Alternatively, ROE = $\frac{\text{Net income}}{\text{Equity}} = \frac{\$27}{\$315} = 8.57\% \approx 8.6\%$.

b. ROE = Profit margin × Total assets turnover × Equity multiplier

$$= \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Common equity}}$$

$$= \frac{\$27}{\$795} \times \frac{\$795}{\$450} \times \frac{\$450}{\$315} = 3.4\% \times 1.77 \times 1.4286 = 8.6\%.$$

	Firm	Industry	Comment
Profit margin	3.4%	3.0%	Good
Total assets turnover	1.77×	3.0×	Poor
Equity multiplier	1.4286	1.4286*	O.K.

* $1 - \frac{D}{TA} = \frac{E}{TA}$

$1 - 0.30 = 0.7$

$$EM = \frac{TA}{E} = \frac{1}{0.7} = 1.4286 \approx 1.43.$$

Alternatively, EM = ROE/ROA = 12.86%/9% = 1.4289 ≈ 1.43.

c. Analysis of the DuPont equation and the set of ratios shows that the turnover ratio of sales to assets is quite low. Either sales should be higher given the present level of assets, or the firm is carrying more assets than it needs to support its sales.

d. The comparison of inventory turnover ratios shows that other firms in the industry seem to be getting along with about half as much inventory per unit of sales as the firm. If the company's inventory could be reduced, this would generate funds that could be used to retire debt, thus reducing interest charges and improving profits, and strengthening the debt position. There might also be some excess investment in fixed assets, perhaps indicative of excess capacity, as shown by a slightly lower-than-average fixed assets turnover ratio. However, this is not nearly as clear-cut as the overinvestment in inventory.

e. If the firm had a sharp seasonal sales pattern, or if it grew rapidly during the year, many ratios might be distorted. Ratios involving cash, receivables, inventories, and current liabilities, as well as those based on sales, profits, and common equity, could be biased. It is possible to correct for such problems by using average rather than end-of-period figures.

End of chapter