Financial Statements and Cash Flow

Key Concepts and Skills

- Understand the information provided by financial statements
- Differentiate between book and market values
- Know the difference between average and marginal tax rates
- Know the difference between accounting income and cash flow
- Calculate a firm’s cash flow

Chapter Outline

2.1 The Balance Sheet

2.2 The Income Statement

2.3 Taxes

2.4 Net Working Capital

2.5 Financial Cash Flow

2.6 The Accounting Statement of Cash Flows

2.7 Cash Flow Management

Sources of Information

- Annual reports
- *Wall Street Journal*
- Internet
  - NYSE (www.nyse.com)
  - NASDAQ (www.nasdaq.com)
  - Textbook (www.mhhe.com)
- SEC
  - EDGAR
  - 10K & 10Q reports

2.1 The Balance Sheet

U.S. COMPOSITE CORPORATION
Balance Sheet
2012 and 2011
($ in millions)

incur

Assets	2012	2011	Liabilities (Debt) and Stockholders' Equity	2012	2011
Current assets:			Current liabilities:		
Cash and equivalents	$ 140	$ 107	Accounts payable	$ 213	$ 197
Accounts receivable	294	270	Notes payable	50	53
Inventory	269	280	Accrued expenses	223	205
Other	58	50	Total current liabilities	$ 486	$ 455
Total current assets	$ 761	$ 707	Long-term liabilities:		
Fixed assets:			Deferred taxes	$ 117	$ 104
Property, plant, and equipment	$1,423	$1,274	Long-term debt*	471	458
Less accumulated depreciation	550	460	Total long-term liabilities	$ 588	$ 562
Net property, plant, and equipment	873	814	Stockholders' equity:		
Intangible assets and others	245	221	Preferred stock	$ 39	$ 39
Total fixed assets	$1,118	$1,035	Common stock ($1 par value)	55	32
			Capital surplus	347	327
			Accumulated retained earnings	390	347
			Less treasury stock†	26	20
			Total equity	$ 805	$ 725
Total assets	$1,879	$1,742	Total liabilities and stockholders' equity‡	$1,879	$1,742

2.1 The Balance Sheet

- An accountant's snapshot of the firm's accounting value at a specific point in time
- The Balance Sheet Identity is:

  Assets ≡ Liabilities + Stockholder's Equity

U.S. Composite Corporation Balance Sheet

	2010	2009
Current assets:		
Cash and equivalents	$140	$107
Accounts receivable	294	270
Inventories	269	280
Other	58	50
Total current assets	$761	$707
Fixed assets:		
Property, plant, and equipment	$1,423	$1,274
Less accumulated depreciation	(550)	(460)
Net property, plant, and equipment	873	814
Intangible assets and other	245	221
Total fixed assets	$1,118	$1,035
Total assets	$1,879	$1,742

The assets are listed in order by the length of time it would normally take a firm with ongoing operations to convert them into cash. (liquidity)

Clearly, cash is much more liquid than property, plant, and equipment.

U.S. Composite Corporation Balance Sheet

The liabilities and the stockholders' equity are listed in the order in which they would typically be paid over time.

Management's choice of capital structure, as between debt and equity and between current debt and long-term debt.

	2010	2009
Current Liabilities:		
Accounts payable	$213	$197
Notes payable	50	53
Accrued expenses	223	205
Total current liabilities	$486	$455
Long-term liabilities:		
Deferred taxes	$117	$104
Long-term debt	471	458
Total long-term liabilities	$588	$562
Stockholder's equity:		
Preferred stock	$39	$39
Common stock ($1 par value)	55	32
Capital surplus	347	327
Accumulated retained earnings	390	347
Less treasury stock	(26)	(20)
Total equity	$805	$725
Total liabilities and stockholder's equity	$1,879	$1,742

Balance Sheet Analysis

- When analyzing a balance sheet, the Finance Manager should be aware of three concerns:
  1. Liquidity
  2. Debt versus equity
  3. Value versus cost

Liquidity

- Refers to the ease and quickness with which assets can be converted to cash—without a significant loss in value
- Current assets are the most liquid.
- Some fixed assets are intangible.
- The more liquid a firm’s assets, the less likely the firm is to experience problems meeting short-term obligations.
- Liquid assets frequently have lower rates of return than fixed assets.

Debt versus Equity

- Creditors generally receive the first claim on the firm's cash flow.
- Shareholder's equity is the residual difference between assets and liabilities.

- Resources = sources

Value versus Cost

- Under Generally Accepted Accounting Principles (GAAP), audited financial statements of firms in the U.S. carry assets at cost.
- Market value is the price at which the assets, liabilities, and equity could actually be bought or sold, which is a completely different concept from historical cost.

2.2 The Income Statement

- Measures financial performance over a specific period of time
- The accounting definition of income is:

  Revenue – Expenses ≡ Income

U.S.C.C. Income Statement

The operations section of the income statement reports the firm's revenues and expenses from principal operations.

Total operating revenues	$2,262
Cost of goods sold	1,655
Selling, general, and administrative expenses	327
Depreciation	90
Operating income	$190
Other income	29
Earnings before interest and taxes	$219
Interest expense	49
Pretax income	$170
Taxes	84
Current: $71	
Deferred: $13	
Net income	$86
Addition to retained earnings	$43
Dividends:	$43

U.S.C.C. Income Statement

The non-operating section of the income statement includes all financing costs, such as interest expense.

Total operating revenues	$2,262
Cost of goods sold	1,655
Selling, general, and administrative expenses	327
Depreciation	90
Operating income	$190
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Current: $71	
Deferred: $13	
Net income	$86
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U.S.C.C. Income Statement

Usually a separate section reports the amount of taxes levied on income.

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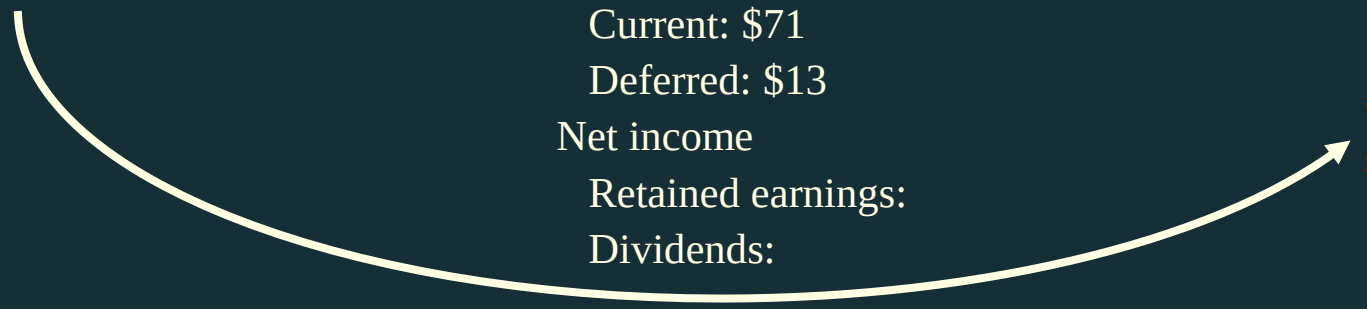
Net income is the "bottom line."



Income Statement Analysis

- There are three things to keep in mind when analyzing an income statement:
  1. Generally Accepted Accounting Principles (GAAP)
  2. Non-Cash Items
  3. Time and Costs

GAAP

- The matching principle of GAAP dictates that revenues be matched with expenses.
- Thus, income is reported when it is earned, even though no cash flow may have occurred.

Non-Cash Items

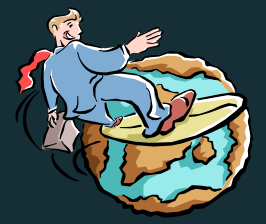
- Depreciation is the most apparent. No firm ever writes a check for “depreciation.”
- Another non-cash item is deferred taxes, which does not represent a cash flow.
- Thus, net income is not cash.

Time and Costs

- In the short-run, certain equipment, resources, and commitments of the firm are fixed, but the firm can vary such inputs as labor and raw materials.
- In the long-run, all inputs of production (and hence costs) are variable.
- Financial accountants do not distinguish between variable costs and fixed costs. Instead, accounting costs usually fit into a classification that distinguishes product costs from period costs.

2.3 Taxes

- The one thing we can rely on with taxes is that they are always changing
- Marginal vs. average tax rates
  - Marginal – the percentage paid on the next dollar earned
  - Average – the tax bill / taxable income
- Other taxes



Marginal versus Average Rates

- 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?

Marginal versus Average Rates

Table 2.3 Corporate Tax 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

2.4 Net Working Capital

- Net Working Capital ≡

  Current Assets – Current Liabilities

- NWC usually grows with the firm – the change in NWC

U.S.C.C. Balance Sheet

$252m = $707- $455

	2010	2009
Current assets:		
Cash and equivalents	$140	$107
Accounts receivable	294	270
Inventories	269	280
Other	58	50
Total current assets	$761	$707

	2010	2009
Current Liabilities:		
Accounts payable	$213	$197
Notes payable	50	53
Accrued expenses	223	205
Total current liabilities	$486	$455

$275m = $761m- $486m

Here we see NWC grow to $275 million in 2010 from $252 million in 2009.

$23 million

This increase of $23 million is an investment of the firm.

2.5 Financial Cash Flow

- In finance, the most important item that can be extracted from financial statements is the actual cash flow of the firm.
- Since there is no magic in finance, it must be the case that the cash flow received from the firm's assets must equal the cash flows to the firm's creditors and stockholders.

$$CF(A) \equiv CF(B) + CF(S)$$

U.S.C.C. Financial Cash Flow

Cash Flow of the Firm	
Operating cash flow (Earnings before interest and taxes plus depreciation minus taxes)	$238
Capital spending (Acquisitions of fixed assets minus sales of fixed assets)	-173
Additions to net working capital	-23
Total	$42
Cash Flow of Investors in the Firm	
Debt (Interest plus retirement of debt minus long-term debt financing)	$36
Equity (Dividends plus repurchase of equity minus new equity financing)	6
Total	$42

Operating Cash Flow (Cash earnings before interest):

EBIT	$219
Depreciation	$90
Current Taxes	-$71
OCF	$238

U.S.C.C. Financial Cash Flow

Cash Flow of the Firm	
Operating cash flow	$238
(Earnings before interest and taxes plus depreciation minus taxes)	
Capital spending	-173
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Equity	6
(Dividends plus repurchase of equity minus new equity financing)	
Total	$42

Capital Spending /Capital Expenditure (CapEX)

Purchase of fixed assets	-$198
Sales of fixed assets	$25
Capital Spending	-$173

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NWC grew from $275 million in 2010 from $252 million in 2009.

This increase of $23 million is the addition to NWC.

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Cash Flow to Creditors

Interest	$49
Retirement of debt	73
Debt service	122
Proceeds from new debt sales	-86
Total	$36

U.S.C.C. Financial Cash Flow

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Cash Flow of Investors in the Firm	
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Equity (Dividends plus repurchase of equity minus new equity financing)	6
Total	$42

Cash Flow to Stockholders	
Dividends	$43
Repurchase of stock	6
Cash to Stockholders	49
Proceeds from new stock issue	-43
Total	$6

U.S.C.C. Financial Cash Flow

Cash Flow of the Firm	
Operating cash flow	$238
(Earnings before interest and taxes plus depreciation minus taxes)	
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Total	$42
Cash Flow of Investors in the Firm	
Debt	$36
(Interest plus retirement of debt minus long-term debt financing)	
Equity	6
(Dividends plus repurchase of equity minus new equity financing)	
Total	$42

The cash flow received from the firm's assets must equal the cash flows to the firm's creditors and stockholders:

$$CF(A) \equiv CF(B) + CF(S)$$

2.5 The Statement of Cash Flows

- There is an official accounting statement called the statement of cash flows.
- This helps explain the change in accounting cash, which for U.S. Composite is $33 million in 2010.
- The three components of the statement of cash flows are:
  - Cash flow from operating activities
  - Cash flow from investing activities
  - Cash flow from financing activities

U.S.C.C. Cash Flow from Operations

To calculate cash flow from operations, start with net income, add back non-cash items like depreciation and adjust for changes in current assets and liabilities (other than cash).

Operations	
Net Income	$86
Depreciation	90
Deferred Taxes	13
Changes in Assets and Liabilities	
Accounts Receivable	-24
Inventories	11
Accounts Payable	16
Accrued Expenses	18
Other	-8
Total Cash Flow from Operations	$202

U.S.C.C. Cash Flow from Investing

Cash flow from investing activities involves changes in capital assets: acquisition of fixed assets and sales of fixed assets (*i.e.*, net capital expenditures).

Acquisition of fixed assets	-$198
Sales of fixed assets	25
Total Cash Flow from Investing Activities	-$173

U.S.C.C. Cash Flow from Financing

Cash flows to and from creditors and owners include changes in equity and debt.

Retirement of debt (includes notes)	-$73
Proceeds from long-term debt sales	86
Change in notes payable	-3
Dividends	-43
Repurchase of stock	-6
Proceeds from new stock issue	43
Total Cash Flow from Financing	$4

U.S.C.C. Statement of Cash Flows

The statement of cash flows is the addition of cash flows from operations, investing, and financing.

Operations	
Net Income	$86
Depreciation	90
Deferred Taxes	13
Changes in Assets and Liabilities	
Accounts Receivable	-24
Inventories	11
Accounts Payable	16
Accrued Expenses	18
Other	-8
Total Cash Flow from Operations	$202
Investing Activities	
Acquisition of fixed assets	-$198
Sales of fixed assets	25
Total Cash Flow from Investing Activities	-$173
Financing Activities	
Retirement of debt (includes notes)	-$73
Proceeds from long-term debt sales	86
Notes Payable	-3
Dividends	-43
Repurchase of stock	-6
Proceeds from new stock issue	43
Total Cash Flow from Financing	$4
Change in Cash (on the balance sheet)	$33

2.7 Cash Flow Management

- Earnings can be manipulated using subjective decisions required under GAAP
- Total cash flow is more objective, but the underlying components may also be “managed”
  - Moving cash flow from the investing section to the operating section may make the firm’s business appear more stable

Quick Quiz

- What is the difference between book value and market value? Which should we use for decision making purposes?
- What is the difference between accounting income and cash flow? Which do we need to use when making decisions?
- What is the difference between average and marginal tax rates? Which should we use when making financial decisions?
- How do we determine a firm's cash flows? What are the equations, and where do we find the information?

Financial Statements Analysis using ratios

Key Concepts and Skills

- Know how to standardize financial statements for comparison purposes
- Know how to compute and interpret important financial ratios
- Be able to develop a financial plan using the percentage of sales approach
- Understand how capital structure and dividend policies affect a firm’s ability to grow

Chapter Outline

3.1 Financial Statements Analysis

3.2 Ratio Analysis

3.3 The Du Pont Identity

3.4 Financial Models

3.5 External Financing and Growth

3.6 Some Caveats Regarding Financial Planning Models

3.1 Financial Statements Analysis

- 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.

PRUFROCK CORPORATION
Balance Sheets as of December 31, 2011 and 2012
($ in millions)

Assets	2011	2012
Current assets		
Cash	$ 84	$ 98
Accounts receivable	165	188
Inventory	393	422
Total	$ 642	$ 708
Fixed assets		
Net plant and equipment	$2,731	$2,880
Total assets	$3,373	$3,588
Liabilities and Owners' Equity		
Current liabilities		
Accounts payable	$ 312	$ 344
Notes payable	231	196
Total	$ 543	$ 540
Long-term debt	$ 531	$ 457
Owners' equity		
Common stock and paid-in surplus	$ 500	$ 550
Retained earnings	1,799	2,041
Total	$2,299	$2,591
Total liabilities and owners' equity	$3,373	$3,588

PRUFROCK CORPORATION
Common-Size Balance Sheets
December 31, 2011 and 2012

Assets	2011	2012	Change
Current assets			
Cash	2.5%	2.7%	+ .2%
Accounts receivable	4.9	5.2	+ .3
Inventory	11.7	11.8	+ .1
Total	19.1	19.7	+ .6
Fixed assets			
Net plant and equipment	80.9	80.3	− .6
Total assets	100.0%	100.0%	.0%
Liabilities and Owners' Equity			
Current liabilities			
Accounts payable	9.2%	9.6%	+ .4%
Notes payable	6.8	5.5	−1.3
Total	16.0	15.1	− .9
Long-term debt	15.7	12.7	−3.0
Owners' equity			
Common stock and paid-in surplus	14.8	15.3	+ .5
Retained earnings	53.3	56.9	+3.6
Total	68.1	72.2	+4.1
Total liabilities and owners' equity	100.0%	100.0%	.0%

PRUFROCK CORPORATION
2012 Income Statement
($ in millions)

Sales		$2,311
Cost of goods sold		1,344
Depreciation		276
Earnings before interest and taxes		$ 691
Interest paid		141
Taxable income		$ 550
Taxes (34%)		187
Net income		$ 363
Dividends	$121	
Addition to retained earnings	242	

PRUFROCK CORPORATION
Common-Size Income Statement 2012

Sales		100.0%
Cost of goods sold		58.2
Depreciation		11.9
Earnings before interest and taxes		29.9
Interest paid		6.1
Taxable income		23.8
Taxes (34%)		8.1
Net income		15.7%
Dividends	5.2%	
Addition to retained earnings	10.5	

3.2 Ratio Analysis

- Ratios also allow for better comparison through time or between companies.
- As we look at each ratio, ask yourself:
  - How is the ratio computed?
  - What is the ratio trying to measure and why?
  - What is the unit of measurement?
  - What does the value indicate?
  - How can we improve the company's ratio?

Categories of Financial Ratios

- Short-term solvency or liquidity ratios
- Long-term solvency or financial leverage ratios
- Asset management or turnover ratios
- Profitability ratios
- Market value ratios

Computing Liquidity Ratios

- Current Ratio = CA / CL
  - 708 / 540 = 1.31 times
- Quick Ratio = (CA – Inventory) / CL
  - (708 - 422) / 540 = .53 times
- Cash Ratio = Cash / CL
  - 98 / 540 = .18 times

The primary concern is the firm’s ability to pay its bills over the short run without undue stress

Computing Leverage Ratios

- Total Debt Ratio = (TA – TE) / TA = D/TA
  - (3588 - 2591) / 3588 = 28%
- Debt/Equity = TD / TE
  - (3588 – 2591) / 2591 = 38.5%
- Equity Multiplier = TA / TE = 1 + D/E
  - 1 + .385 = 1.385

Long-term solvency ratios are intended to address the firm's long-run ability to meet its obligations or, more generally, its financial leverage

Computing Coverage Ratios

- Times Interest Earned (interest coverage) = EBIT / Interest
  - 691 / 141 = 4.9 times
- Cash Coverage = (EBIT + Depreciation + Amortization) / Interest
  - (691 + 276) / 141 = 6.9 times

Asset management

- Inventory turnover
- Receivables turnover
- Total asset turnover

how efficiently, or intensively, a firm uses its assets to generate sales

Computing Inventory Ratios

- Inventory Turnover = Cost of Goods Sold / Inventory
  - 1344 / 422 = 3.2 times
- Days' Sales in Inventory = 365 / Inventory Turnover
  - 365 / 3.2 = 114 days

Computing Receivables Ratios

- Receivables Turnover = Sales / Accounts Receivable
  - 2311 / 188 = 12.3 times
  - We collected our outstanding credit accounts and lent the money again 12.3 times during the year
- Days' Sales in Receivables = 365 / Receivables Turnover
  - 365 / 12.3 = 30 days

Computing Receivables Ratios

- Days' Sales in Receivables = 365 / Receivables Turnover
  - 365 / 12.3 = 30 days
  - On average, we collect on our credit sales in 30 days

Computing Total Asset Turnover

- Total Asset Turnover = Sales / Total Assets
  - 2311 / 3588 = .64 times
  - For every dollar in assets, we generated $.64 in sales
  - It is not unusual for TAT < 1, especially if a firm has a large amount of fixed assets.

Computing Profitability Measures

- Profit Margin = Net Income / Sales
- Return on Assets (ROA) = Net Income / Total Assets
- Return on Equity (ROE) = Net Income / Total Equity
- EBITDA Margin = EBITDA / Sales

EBITDA: Earnings before interest, taxes, depreciation, and amortization.

How efficiently the firm uses its assets and how efficiently the firm manages its operations

Computing Profitability Measures

- Profit Margin = Net Income / Sales
  - 363 / 2311 = 15.7%
  - In an accounting sense, the company generates a little less than 16 cents in net income for every dollar in sales
- EBITDA Margin = EBITDA / Sales
  - 967 / 2311 = 41.8%

Computing Profitability Measures

- Return on Assets (ROA) = Net Income / Total Assets
  - 363 / 3588 = 10.1%
  - A measure of profit per dollar of assets
  - For every dollar in the total assets, the company generated 10 cents in profit.

- Return on Equity (ROE) = Net Income / Total Equity
  - 363 / 2591 = 14.0%
  - A measure of how the stockholders fared during the year
  - For every dollar in equity, the company generated 14 cents in profit.

Computing Market Value Measures

- Market Capitalization
- PE Ratio = Price per share / Earnings per share
- Market-to-book ratio = market value per share / book value per share
- Enterprise Value (EV) = Market capitalization + Market value of interest bearing debt – cash
- EV Multiple = EV / EBITDA

Computing Market Value Measures

- Market Capitalization = price per share x No. of shares outstanding

  $88 per share x 33 million shares = 2,904 million

- PE Ratio = Price per share / Earnings per share
- EPS (earnings per share) = Net Income / No. of shares outstanding
  - 88 / 11 = 8 times
  - How much investors are willing to pay per dollar of current earnings, Prufrock shares sell for eight times earnings
  - Prufrock shares have, or "carry," a PE multiple of 8
- Market-to-book ratio = market value per share / book value per share
  - 88 / (2591 / 33) = 1.12 times
  - It compares the market value of the firm's investments to their cost

Computing Market Value Measures

- EPS (earnings per share) = Net Income / No. of shares outstanding
  - 88 / 11 = 8 times
  - How much investors are willing to pay per dollar of current earnings, Prufrock shares sell for eight times earnings
  - Prufrock shares have, or "carry," a PE multiple of 8
- Market-to-book ratio = market value per share / book value per share

  Book value per share = Shareholders' equity / No. of shares outstanding
  - 88 / (2591 / 33) = 1.12 times
  - It compares the market value of the firm's investments to their cost

Computing Market Value Measures

- Enterprise Value (EV) = Market capitalization + Market value of interest bearing debt – cash
  - 2904 + (196 + 457) – 98 = 3465
  - How much it would take to buy all of the outstanding stock of a firm and also to pay off the debt
- EV Multiple = EV / EBITDA
  - 3465 / 967 = 3.6 times

I. Short-Term Solvency, or Liquidity, Ratios

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

$$\text{Quick ratio} = \frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}}$$

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

II. Long-Term Solvency, or Financial Leverage, Ratios

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

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

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

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

$$\text{Cash coverage ratio} = \frac{\text{EBITDA}}{\text{Interest}}$$

III. Asset Utilization, or Turnover, Ratios

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

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

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

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

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

$$\text{Capital intensity} = \frac{\text{Total assets}}{\text{Sales}}$$

IV. Profitability Ratios

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

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

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

$$\text{ROE} = \frac{\text{Net income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

V. Market Value Ratios

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

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

$$\text{EV multiple} = \frac{\text{Enterprise value}}{\text{EBITDA}}$$