

Finance for the Safety Professional

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Education & Research
Austin, Texas



Learning Objectives

1. Understand why financial statements are important to the safety professional
2. Understand key income statement concepts
3. Understand the key balance sheet concepts
4. Know the components of weighted average cost of capital (WACC)
5. Understand financial ratios & compare ratios using time series analysis & cross section analysis

I. Who uses financial information?

- A. Creditors
- B. Investors/stockholders
- C. Management
- D. Auditors

I. Who uses financial information?

- E. Regulatory bodies (SEC, IRS, state agencies, etc.)
- F. Risk managers/safety professionals
 1. Find sources of funds for retentions
 2. Identify exposures
 3. Determine cost of risk
 4. Allocate cost of risk
 5. Compliance

II. What sort of information do these folks have?

- A. CPAs
- B. ChFCs
- C. Financial advisors
- D. Brokers
- E. Agents

III. Do all entities have current & past financial statements?

- A. Are they confident in the accuracy of the information contained in those reports?
- B. Do they understand what their own reports indicate about their firms?

Learning Objective #1

Understand Why Financial Statements Are Important To The Safety Professional

IV. The Importance of Financial Statement Analysis

A. Asset valuation

- Inventory
- Accounts receivable (A/R)
- Plant & equipment (P&E, PP&E)

IV. The Importance of Financial Statement Analysis

B. Net income loss potential

1. What is **profit**? How much?
2. What are **continuing expenses**?
3. What are the **sources** of income?
4. Sources of expenses?
5. Where can a loss occur?
6. Which are **controllable**?
7. If a loss occurs & business is interrupted, which expenses will continue?

IV. The Importance of Financial Statement Analysis

- C. Hidden assets/liabilities
- D. Expansion plans

IV. The Importance of Financial Statement Analysis

- E. Liquidity
- F. Management's tolerance for risk
- G. Risk assumed by contract
 - Leases
 - Hold harmless agreements

IV. The Importance of Financial Statement Analysis

- H. Ability to qualify financially for a bond
- I. Outstanding/previous litigation
- J. Financial projections (pro-formas)

IV. The Importance of Financial Statement Analysis

Accounting statements are based on

- Accrual accounting
- Historical cost minus accumulated depreciation (book value)
- GAAP, FASB – generally accepted accounting principles are established by
 - The financial accounting standards board (FASB) of the financial accounting foundation, an independent entity created in 1973
 - Formerly the AICPA issued statements of accepted accounting practices
 - Since 1973 FASB has issued six statements of financial accounting concepts providing a uniform framework for financial accounting practices



V. Risk Management Loss Exposures

- A. Property
 - Items listed on balance sheet, with accounting estimates of value
- B. Income
 - Business interruption, profit & continuing expenses, come from **income statement**
 1. Net sales
 2. Cost of goods sold
 3. Gross profit
 4. Operating expenses (SGA, depreciation expense)
 5. Operating income
 6. Interest expense
 7. Income taxes
 8. Net income
 9. Earnings per share

$$EPS = \frac{\text{Net income}}{\text{Number of shares outstanding}}$$

V. Risk Management Loss Exposures

- C. Personnel
 - Salaries from income statements
- D. Liabilities
- E. Employee benefits
 - Health care
 - Retirement
 - Life insurance
 - Accidental death & dismemberment

VI. Accounting versus Finance

- A. Accounting – a process to help quantify an organization’s assets, liabilities, owners equity & cash flow at a point in time
1. Accrual based system - match, often arbitrarily, revenues with expenses
 2. Historical cost adjusted for depreciation vs. replacement values

VI. Accounting versus Finance

- A. Accounting (continued)
3. Multiple sets of books (for legitimate reasons)
 - a. GAAP – Generally Accepted Accounting Principles
 - b. RAP – Regulatory Accounting Principles
 4. Key financial statements to identify exposures: balance sheet & income statement
- B. Finance
- Managing an organization’s assets & cash flow to maximize shareholder wealth

Income Statement
(in thousands of dollars)

	12/31/X1	12/31/X2
Net sales	\$ 910	\$ 960
Costs and expenses		
Cost of goods sold	<u>407</u>	<u>446</u>
Gross profit	503	514
Operating expenses	330	345
Depreciation	<u>18</u>	<u>19</u>
Total operating costs	<u>\$ 755</u>	<u>\$ 810</u>
Net operating income, or earnings before interest and taxes (EBIT)	\$ 155	\$ 150
Less interest expense	<u>32</u>	<u>30</u>
Earnings before taxes	\$ 123	\$ 120
Income taxes (at 40%)	<u>49.2</u>	<u>48</u>
Net income	<u>\$ 73.8</u>	<u>\$ 72</u>
Disposition of net income		
Dividends paid to common stockholders	\$ 35	\$ 37
Addition to retained earnings	\$ 38.8	\$ 35
Market and per-share data		
Shares outstanding (December 31)	48,000	48,000
Earnings per share	\$ 1.54	\$ 1.50
Dividends per share	\$.729	\$.77
Market price (close December 31)	\$ 15.00	\$ 13.50

Learning Objective #2

Understand Key Income Statement Concepts

VII. Income Statement Notes

A. Sales

1. Nominal vs. Real
 - a. What constitutes sales?
 - b. When is an item sold?
2. Sales = number of units × price per unit
 - a. Allowances for bad debts & returns
 - b. Difference results in net sales

VII. Income Statement Notes

A. Sales (continued)

3. Credit or recognize revenue when it is
 - a. Captured
 - b. Measurable
 - c. Earned
4. Risk exposure may not have left the shipper even though sale is complete

VII. Income Statement Notes

A. Sales (continued)

- 5. Sales for service companies appear as rental or service revenues. Accepted methods for recording sales:
 - a. Delivery or performance of service (most common)
 - b. Percentage of completion (only for long-term construction projects)
 - c. Completion of production
 - d. Installment

VII. Income Statement Notes

B. Cost of Goods Sold (COGS)

- 1. Labor, material & overhead – Inventory shrinkage also included (obsolescence, errors, theft)
- 2. Calculated using either of two different methods
 - a. Periodic – an accounting of goods sold & their corresponding expenses is performed at specified points during the accounting period or it could be
 - b. Perpetual – record is made of every sale, continuous record of cost of each item sold is transferred from inventory asset to the cost of goods sold expense on an ongoing basis

VII. Income Statement Notes

B. COGS (continued)

- 3. Inventory cost flow assumption
 - a. First in, first out (FIFO) – accounts for the cost associated with items in the inventory earliest in the accounting period
 - 1) Effect is to transfer to the accounting of the costs associated with the oldest items in the inventory to the income statement
 - 2) The first cost is the cost of items on hand at the beginning of the accounting period

VII. Income Statement Notes

B. COGS (continued)

- 3. Inventory cost flow assumption (continued)
 - a. FIFO (continued)
 - 3) During periods of rising costs, lower COGS & increased profits will be shown
 - 4) During periods of declining costs, higher COGS & decreased profits will be shown

VII. Income Statement Notes

B. COGS (continued)

- 3. Inventory cost flow assumption (continued)
 - b. Last in, first out (LIFO) – accounts for costs associated with items most recently added to inventory
 - 1) Items still in inventory at the end of the accounting period are charged at the costs of items in inventory at the beginning of the period
 - 2) During periods of rising costs, lower profits will be shown
 - 3) During periods of decreasing costs, increased profits will be shown

VII. Income Statement Notes

B. COGS (continued)

- 4. Weighted average
 - Applies the costs of individual items as items are sold throughout the accounting period
- 5. Specifically identified

Calculation of Cost of Goods Sold (CGS)

Comparison of LIFO and FIFO valuation methods

$10 \times \$42 = \420
 $10 \times \$44 = \440
 $10 \times \$45 = \450
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(difference in cost of goods sold depends on whether ending inventory is valued at \$40 or \$45 per unit)

GROSS PROFIT (\$ - CGS)		
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Notes: Insurance Value of Inventory?

Calculation of Cost of Goods Sold (CGS)

Comparison of LIFO and FIFO valuation methods

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GROSS PROFIT (\$ - CGS)	340	390
Less TAXES (50%)	* 170	* 195
NET PROFIT	* 170	* 195
END INVENTORY	* 400	* 450

Notes: Insurance Value of Inventory?

VII. Income Statement Notes

C. Wages & Pensions

- 1. Defined benefit vs. defined contribution
- 2. Accounting charge: minimum & maximum
- 3. Funding: over funded vs. under funded plans
- 4. Assumed rate of return

VII. Income Statement Notes

D. Depreciation, Depletion & Amortization

- 1. Depreciation
 - a. Straight line depreciation (used by > 70% of corporations for financial reporting)
Annual Depreciation = Cost less Estimated Salvage Value divided by years of estimated useful life
 - b. Units of Production
Depreciation charged per unit of production = Cost less estimated salvage value divided by number of units to be produced

VII. Income Statement Notes

D. Depreciation, Depletion & Amortization (continued)

- 1. Depreciation (continued)
 - c. Declining balance depreciation
Annual Depreciation = double the straight line depreciation rate times the non-current assets net book value at the beginning of each accounting period
— Benefit is that the depreciation expense is charged more quickly
 - c. Accelerated Cost Recovery System (ACRS) (now Modified Accelerated Cost Recovery System (MACRS) since Tax Reform Act of 1986)

VII. Income Statement Notes

- D. Depreciation, Depletion & Amortization (continued)
 - 2. Depletion
 - 3. Amortization
 - a. Expensing (short term) or capitalizing (long term) of intermediate term costs (development costs)
 - b. Examples
 - 1) Unsuccessful drilling efforts
 - 2) New product marketing costs
 - 3) Interest during construction phase
 - 4) Developing new complex software programs
 - 5) Goodwill...assets with a defined life

VII. Income Statement Notes

- E. Interest Expense
 - 1. Maturity structure
 - 2. Variable vs. fixed
- F. Taxes
 - 1. Effective rate
 - 2. Deferred taxes
 - 3. Investment Tax Credits (ITC), carry backs & forwards

Income Statement
(in thousands of dollars)

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VII. Income Statement Notes

- G. Profit Margins: Time series & cross sectional analysis
1. Gross profit = Sales revenue less cost of goods sold
 - a. Gross profit margin = gross profit/sales
 2. Operating income = Gross profit less operating expenses
 - a. Operating income margin as a percentage of sales = operating income/sales
 3. Net income = Operating income less interest expense & taxes
 - a. Net income margin as a percentage of sales = net income/sales

Income Statement (in thousands of dollars)	
Net sales	
Costs and expenses	
Cost of goods sold	
Gross profit	
Operating expenses	
Depreciation	
Total operating costs	
Net operating income, or earnings before interest and taxes (EBIT)	
Less interest expense	
Earnings before taxes	
Income taxes (at 40%)	
Net income	

Balance Sheet (In Thousands of Dollars)		
	12/31/X1	12/31/X2
Cash	\$ 28	\$ 97
Marketable securities	42	10
Receivables	93	120
Inventories	65	85
Total current assets	\$ 228	\$ 312
Net fixed assets	621	735
Total assets	\$ 849	\$ 1,047
Accounts payable	\$ 64	\$ 95
Notes payable	20	87
Other current liabilities	95	75
Total current liabilities	\$ 179	\$ 257
Long-term debt	257	310
Total liabilities	436	567
Common stock	248	280
Retained earnings	165	200
Total Stockholder's Equity	413	480
Total Liabilities and SH Equity	\$ 849	\$ 1,047

Learning Objective #3

Understand Key Balance Sheet Concepts

VIII. Balance Sheet Notes

A. Current assets

1. Cash
2. Marketable securities
 - Short term highly liquid securities that have a low but positive yield
3. Accounts receivable (A/R)
 - a. Pay late & collect early
 - b. Net 30 vs. 2/10 net 30
 - c. Aging of A/R

VIII. Balance Sheet Notes

A. Current assets (continued)

4. Inventory
 - a. Raw materials (RM), work-in-progress (WIP), & finished goods (FG)
 - b. Advantages & disadvantages of inventory levels
 1. Just in time inventories
 2. Synchronous production with suppliers
 3. Dangers for business interruption

VIII. Balance Sheet Notes

A. Current assets (continued)

4. Inventory (continued)

- a. Prime area to look for hidden asset values. What is the value of RM & WIP & FG awaiting shipment?
- b. Cost of carrying inventory vs. sales increases or lower purchase/production costs

VIII. Balance Sheet Notes

B. Fixed Assets (Long-term)

- 1. Plant & Equipment (net of depreciation)
- 2. Investments
 - Consolidated & unconsolidated
- 3. Intangibles
 - Patents & goodwill
- 4. Off balance sheet liabilities
 - a. Non-capitalized leases
 - b. Over/under funded pensions & non-pension retirement benefits (FASB 106)

Balance Sheet
(In Thousands of Dollars)

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VIII. Balance Sheet Notes

C. Current Liabilities

- 1. Accounts payable, a.k.a., trade credit
- 2. Accruals
- 3. Notes payable

VIII. Balance Sheet Notes

D. Long term debt

- 1. Mortgages vs. debentures
- 2. Fixed vs. variable cost
- 3. Callable or convertible

VIII. Balance Sheet Notes

E. Stockholders' equity

- 1. Preferred Stock
 - Features of debt & equity
- 2. Common Stock
 - Residual equity
- 3. PIE
 - Paid in Excess of Par Value
- 4. Retained earnings

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Learning Objective #4

Know The Components Of
Weighted Average Cost Of Capital
(WACC)

IX. Weighted Average
Cost of Capital (WACC)

—The after-tax cost to the organization of an average dollar of capital or long term funds

—Required to evaluate the cost & return on projects

IX. WACC

A. Capital consists of:

1. Long-Term Debt (LTD)
2. Preferred Stock (PS)
3. Common Stock (New CS)
 - Externally generated
4. Retained Earnings (Old CS)
 - Internally generated

IX. WACC

B. We are assuming that WACC is the appropriate discount rate for capital budgeting for risk management (safety) projects

C. Long-term debt

- Usually the least expensive source of external funds
 - Normally represents the least risky alternative
 - Tax break on interest expense

IX. WACC

D. To calculate WACC

- Take the amount outstanding in each category (total book value) times the interest rate times the percent it bears to the total of all outstanding monies
- Interest rate on long-term debt should take into account the company's tax rate
- The sum of these percentages will result in the WACC

Example of WACC calculation

Ajax has the following amounts and costs for their capital structure. The firm has a 40% tax rate.

Amount Outstanding	Type of Capital	Pre-tax Cost	After Tax Cost	Percent of Total Capital	Weighted Average Cost
\$20 million	RE	8%	8%	-----	-----
\$30 million	CS	11%	11%	-----	-----
\$10 million	PS	7%	7%	-----	-----
\$40 million	LTD	10%	6%	-----	-----
Total \$100 million				100%	-----

Calculate the firm's weighted average cost of capital.

Questions:

1. If Ajax Company has an investment opportunity that earns 9%, should they accept it?
2. If Ajax Company issues a bond paying 10% interest to bondholders, would the cost of the bond interest be similar to the interest paid on the commercial bank loans from the perspective of the financial impact on Ajax?
3. If the firm is reviewing a proposal to spend \$1,000,000 today and expects to receive benefits of \$300,000 a year for the next five years, what interest rate should the firm use to calculate the present value of those benefits?

Example of WACC calculation

Ajax has the following amounts and costs for their capital structure. The firm has a 40% tax rate.

Amount Outstanding	Type of Capital	Pre-tax Cost	After Tax Cost	Percent of Total Capital	Weighted Average Cost
\$20 million	RE	8%	8%	20%=0.20	-----
\$30 million	CS	11%	11%	30%=0.30	-----
\$10 million	PS	7%	7%	10%=0.10	-----
\$40 million	LTD	10%	6%	40%=0.40	-----
Total \$100 million				100%	-----

Calculate the firm's weighted average cost of capital.

\$20/\$100 = 20% or 0.20

\$30/\$100 = 30% or 0.30

\$10/\$100 = 10% or 0.10

\$40/\$100 = 40% or 0.40

Example of WACC calculation

Ajax has the following amounts and costs for their capital structure. The firm has a 40% tax rate.

Amount Outstanding	Type of Capital	Pre-tax Cost	After Tax Cost	Percent of Total Capital	Weighted Average Cost
\$20 million	RE	8%	8%	0.20	1.6%
\$30 million	CS	11%	11%	0.30	3.3%
\$10 million	PS	7%	7%	0.10	0.7%
\$40 million	LTD	10%	6%	0.40	2.4%
Total \$100 million				100%	8.0%

Calculate the firm's weighted average cost of capital.

8% x 0.20 = 1.6%

11% x 0.30 = 3.3%

7% x 0.10 = 0.7%

6% x 0.40 = 2.4%

Learning Objective #5

Understand Financial Ratios &
Compare Ratios Using Time
Series Analysis & Cross
Section Analysis

X. Ratios

A. Types of analysis

1. Cross section – compare to the industry
2. Time series – to identify trends over time

B. Who uses ratios & why

1. Creditors
2. Investors
3. Management

X. Ratios

C. Ratios by purpose (liquidity, debt,
coverage, profitability, market)

1. Liquidity – ability of entity to pay bills over
the short term
 - a. Current ratio = $\frac{\text{current assets}}{\text{current liabilities}}$
 - b. Quick ratio = $\frac{\text{current assets} - \text{inventory}}{\text{current liabilities}}$
 - c. Net working capital =
 $\text{current assets} - \text{current liabilities}$

X. Ratios

2. Debt ratios – Organization's ability to repay its creditors over the long term. Assesses the organization's financial leverage

a. Debt ratio = $\frac{\text{total debt}}{\text{total assets}}$

b. Debt-to-equity ratio = $\frac{\text{long-term debt}}{\text{stockholders' equity}}$

X. Ratios

3. Coverage (for interest obligations)

a. **Times interest earned (TIE)** = $\frac{\text{earnings before interest \& taxes (EBIT)}}{\text{total interest paid during the accounting period}}$

X. Ratios

4. Profitability

a. Net profit margin = $\frac{\text{net income}}{\text{sales}}$

b. Return on assets (ROA) = $\frac{\text{net income}}{\text{total assets}}$

c. Return on equity (ROE) = $\frac{\text{net income}}{\text{stockholders' equity}}$

X. Ratios

5. Market

a. Price/earnings (P/E) = $\frac{\text{price per share}}{\text{earnings per share}}$

b. Market/book (M/B) = $\frac{\text{market price}}{\text{book value per share}}$

X. Ratios

• Ratio Analysis – Industry Comparison

	Organization Value		Industry Average
Liquidity			
Current (CA ÷ CL)	1.21	Good	1.00
Quick (CA – Inv ÷ CL)	0.88	Good	0.70
Debt Management			
Debt Ratio (TD ÷ TA)	54%	Bad	50%
Coverage			
Times Interest Earned (EBIT ÷ Int)	5.00x	Bad	8.15x
Profitability			
Net Profit Margin (NI ÷ S)	7.50%	Bad	8.50%
ROA (NI ÷ TA)	6.88%	Bad	10.0%
ROE [common equity] (NI ÷ SE)	15.0%	Bad	20.0%

X. Ratios

• Ratio Analysis – Time Series & Industry Comparison

	'X2 Value	'X1 Value	Industry Average
Liquidity			
Current (CA ÷ CL)	1.21	1.27	1.00
Quick [(CA – Inv) ÷ CL]	0.88	0.91	0.70
Debt Management			
Debt Ratio (TD ÷ TA)	54%	51.45	50%
Coverage			
Times Interest Earned (EBIT ÷ Int)	5.00x	4.84x	8.15x
Profitability			
Net Profit Margin (NI ÷ S)	7.50%	8.11%	8.50%
ROA (NI ÷ TA)	6.88%	8.69%	10.0%
ROE [common equity] (NI ÷ SE)	15.0%	17.86%	20.0%
Market			
Price/earning (Price/share ÷ EPS)	9.0	9.74	12.5
Market/book (Mkt Price ÷ BV/share)	1.25	1.74	2.5

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X. Ratios

- Ratio Analysis – Time Series Comparison

	'X2 Value		'X1 Value
Liquidity			
Current (CA + CL)	1.21	Bad	1.27
Quick [(CA – Inv) + CL]	0.88	Bad	0.91
Debt Management			
Debt Ratio (TD + TA)	54%	Bad	51.45
Coverage			
Times Interest Earned (EBIT + Int)	5.00x	Good	4.84x
Profitability			
Net Profit Margin (NI + S)	7.50%	Bad	8.11%
ROA (NI + TA)	6.88%	Bad	8.69%
ROE [common equity] (NI + SE)	15.0%	Bad	17.86%
Market			
Price/earning (Price/share + EPS)	9.0	Bad	9.74
Market/book (Mkt Price + BV/share)	1.25	Bad	1.74

X. Ratios

Key Financial Ratios

Liquidity

Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$ Benchmark-Standard = 1.50 & up

Quick Ratio (acid test) = $\frac{(\text{CA} - \text{Inventory})}{\text{Current Liabilities}}$ Benchmark-Standard = 1.00 & up

Debt

Debt Ratio = $\frac{\text{Total Debt}}{\text{Total Assets}}$ Benchmark-Standard = .50 & down

Debt to Equity Ratio = $\frac{\text{Long-term Debt}}{\text{Stockholders' Equity}}$ Benchmark-Standard = 1.00 & down

X. Ratios

Key Financial Ratios

Coverage			
Times Interest Earned	= $\frac{\text{EBIT}}{\text{Interest Charges}}$		Benchmark-Standard = 4 to 7 and up
Profitability			
Return on Equity (ROE)	= $\frac{\text{Net Income}}{\text{Equity}}$		Benchmark-Standard = 15%
Return on Assets (ROA)	= $\frac{\text{Net Income}}{\text{Total Assets}}$		Benchmark-Standard varies by industry
Net Profit Margin	= $\frac{\text{Net Income}}{\text{Sales}}$		Benchmark Standard varies by industry
<small>Other profit margins can be found on page 17.</small>			

XI. Methods of Financing Losses

- A. Regular cost of operations, no special provisions
- B. Build contingency reserves
 - Can build up over time
 - Does not mean cash will be available
- C. Establish a contingency fund: maintain & allocate extra working capital
 - Return on assets less discount rate is reasonable cost of maintaining a fund
 - Also, lose tax benefit of insurance because cash "held" is not tax deductible until paid out
 - The advantage is the retention is highly visible as top management "sees" the money is set aside

Review Learning Objectives

1. Understand why financial statements are important to the risk manager
2. Understand key income statement concepts
3. Understand key balance sheet concepts
4. Know the components of weighted average cost of capital (WACC)
5. Understand financial ratios & compare ratios using time series analysis & cross section analysis

Answer Key for Example

Ajax has the following amounts & costs for their capital structure. The firm has a 40% tax rate.

Amount Outstanding	Type of Capital	Pre-tax Cost	After Tax Cost	Percent of Total Debt	Weighted Average Interest
\$20 million	RE	8%	8%	20%	.016
\$30 million	CS	11%	11%	30%	.033
\$10 million	PS	7%	7%	10%	.007
\$40 million	LTD	10%	6%	40%	.024
Total \$100 million				100%	.080

Answer Key for Example

Questions:

1. If Ajax Company has an investment opportunity that earns 9%, should they accept it?

Yes, the return of 9% is greater than the cost of money.

2. If Ajax Company issues a bond paying 10% interest to bondholders, would the cost of the bond interest be similar to the interest paid on the commercial bank loans from the perspective of the financial impact on Ajax?

Yes, interest on bonds is tax deductible the same as interest on a bank loan.

3. If the firm is reviewing a proposal to spend \$1,000,000 today & expects to receive benefits of \$300,000 a year for the next five years, what interest rate should the firm use to calculate the present value of those benefits?

Eight percent (8%), the firm's cost of money.

Thank you!

Financial Concepts for
Safety Professionals


