Week 3: Financial Statement Analysis

Using Financial Statement Information: Financial analysts use various techniques when examining financial reports.

Ratio analysis: relationship among various account balances

- Removes the "size" effect to allow comparisons of firms of difference sizes or firms over time
- Allows one to investigate the relationships between financial figures- often there is more information in the relationship between figures than in an individual figure

GAAP Limitations of Ratio analysis

- Non-capitalized costs. Related to the concept of measurability is the expensing of costs relating to "assets" that cannot be identified with enough precision to warrant capitalization. Examples are brand equity costs from advertising and other promotional activities, and research and development costs relating to future products.
- Historical costs. Assets and liabilities are usually recorded at original acquisition or issuance costs. Subsequent increases in value are not recorded until realized, and declines in value are only recognized if deemed permanent.

Profitability Ratios: How much earnings does the company generate from operations?

Return on Assets (ROA): Measures the return generated by a company's assets.

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Average Total Assets}} \qquad \text{ROA} = \frac{\text{NI}}{\text{Ave Assets}}$$

Profit Margin (PM): Measures how much profit the company earns from each sales dollar.

$$\text{Profit Margin} = \frac{\text{Net Income}}{\text{Sales Revenue}} \qquad \text{PM} = \frac{\text{NI}}{\text{Sales}}$$

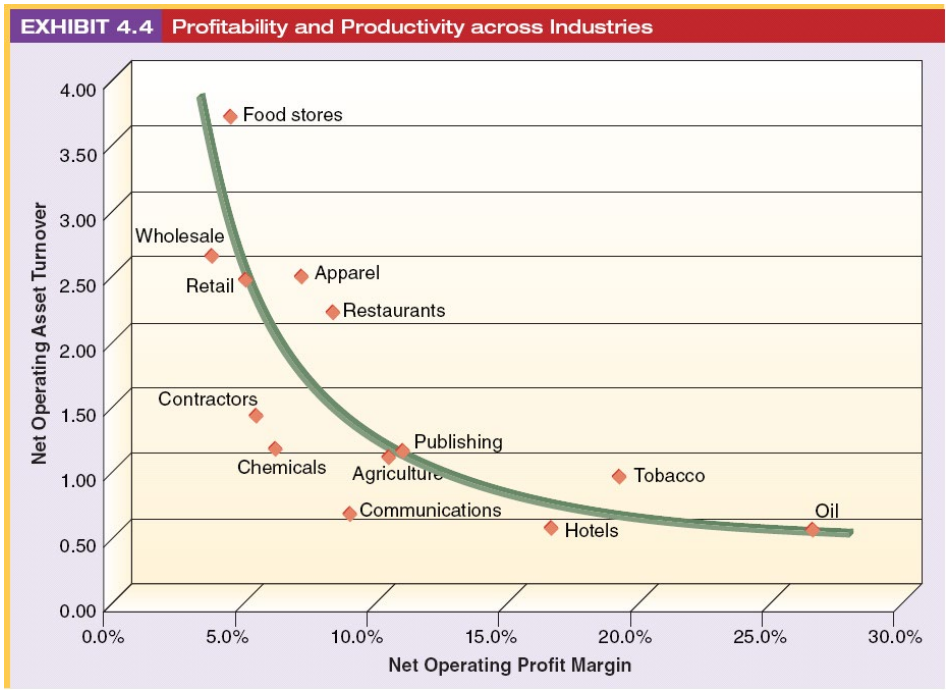
Asset Turnover (AT): Measures the productivity of the company's assets.

$$\text{Asset Turnover} = \frac{\text{Sales Revenue}}{\text{Average Total Assets}} \qquad \text{AT} = \frac{\text{Sales}}{\text{Ave Assets}}$$

$$\text{ROA} = \frac{\text{Net Income}}{\text{Average Total Assets}} = \frac{\text{Net Income}}{\text{Sales Revenue}} * \frac{\text{Sales Revenue}}{\text{Average Total Assets}}$$

Return on Assets = Profit Margin * Assets Turnover

Profit Margin vs. Asset Turnover



Return on Equity (ROE): Measures the profit generated from the resources that owners provide.

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Average Shareholders' Equity}} \qquad \text{ROE} = \frac{\text{NI}}{\text{Ave SE}}$$

$$\text{ROE} = \frac{\text{Net Income}}{\text{Average Shareholders' Equity}}$$

$$\text{ROE} = \frac{\text{Net Income}}{\text{Sales Revenue}} * \frac{\text{Sales Revenue}}{\text{Average Total Assets}} * \frac{\text{Average Total Assets}}{\text{Average Equity}}$$

Return on Equity = Profit Margin * Assets Turnover * Equity Multiplier

Liquidity Ratios: What is the ability of the company to meet its short-term obligations?

- Liquidity refers to cash: how much we have, how much is expected, and how much can be raised on short notice.
- Current assets are those assets that a company expects to convert into cash within the next year.
- Current liabilities are those liabilities that come due within the next year.
- An excess of current assets over current liabilities (Current assets - Current liabilities), is known as net working capital or simply working capital.

Working Capital = Current Assets - Current Liabilities

$$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Quick ratio} = \frac{\text{Cash + Marketable Securities + A/R}}{\text{Current Liabilities}}$$

Solvency/Leverage Ratios: What is the ability of the company to pay its long-term obligations?

- Solvency refers to a company's ability to meet its debt obligations.
- Leverage describes how a company is financed.

$$\text{Debt-to-Equity} = \frac{\text{Total Liabilities}}{\text{Shareholders' Equity}}$$

Receivables Turnover Rate and Days Sales in Receivables: How efficient is the company in managing its receivables?

- The accounts receivable turnover rate reveals how many times receivables have turned (been collected) during the period.
- The average collection period reveals how many days on average it takes the company to collect their A/R.

$$\text{Receivables Turnover} = \frac{\text{Sales Revenue}}{\text{Average Accounts Receivable}}$$

$$\text{Average Collection Period} = \frac{365}{\text{Receivables Turnover}}$$

Inventory turnover: How efficient is the company in managing their inventory?

- The inventory turnover ratio reveals how many times inventory turned (was sold) during the period.
- The average days in inventory held reveals how many days on average it takes the company to sell inventory.

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

$$\text{Average Days Inventory Held} = \frac{365}{\text{Inventory Turnover}}$$

Payables Ratios: How long is the company waiting to pay their payables?

- The payables turnover ratio reveals how many times payables turned (were paid) during the period.
- The average days payable reveals how many days on average the firm waited to pay their receivables.

$$\text{Payables Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Accounts Payable}}$$

$$\text{Average Days Payables} = \frac{365}{\text{Payables Turnover}}$$

Days in Financing: What are the financing costs of the firm's operations?

Days in Financing = Days in Inventory + Days in A/R – Days in Payables

Common-size Statements and Trend Statements

Common-size financial statements (Vertical analysis): express each item as a percentage of a total amount (typically, total assets for balance sheet items and sales for income statement items) within the same year.

Trend statements (Horizontal analysis): express each item as a percentage of the same item in another year (base year).

MICRO CORPORATION			
Income Statements			
(In millions, except earnings per share)			
Year Ended June 30,	**2018**	**2017**	**2016**
Revenue	60,420	51,122	44,282
Operating expenses:			
Cost of revenue	11,598	10,693	7,650
Research and development	8,164	7,121	6,584
Sales and marketing	13,039	11,455	9,818
General and administrative	5,127	3,329	3,758
Total operating expenses	37,928	32,598	27,810
Operating income	22,492	18,524	16,472
Investment income and other	1,322	1,577	1,790
Income before income taxes	23,814	20,101	18,262
Provision for income taxes	6,133	6,036	5,663
Net income	17,681	14,065	12,599
Earnings per share:			
Basic	1.9	1.44	1.21
Diluted	1.87	1.42	1.2
Weighted average shares outstanding:			
Basic	9,328	9,742	10,438
Diluted	9,470	9,886	10,531
Cash dividends declared per common share	0.44	0.4	0.35

Common Size Income Statement

MICRO CORPORATION			
Income Statements			
Common Size			
Year Ended June 30,	**2018**	**2017**	**2016**
Revenue	100%	100%	100%
Operating expenses:			
Cost of revenue	19%	21%	17%
Research and development	14%	14%	15%
Sales and marketing	22%	22%	22%
General and administrative	8%	7%	8%
Total operating expenses	63%	64%	63%
Operating income	37%	36%	37%
Investment income and other	2%	3%	4%
Income before income taxes	39%	39%	41%
Provision for income taxes	10%	12%	13%
Net income	29%	28%	28%

Trend Income Statement:

MICRO CORPORATION		
Income Statements		
(In millions, except earnings per share)		
Year Ended June 30,	**2018**	**2017**
Revenue	118%	115%
Operating expenses:		
Cost of revenue	108%	140%
Research and development	115%	108%
Sales and marketing	114%	117%
General and administrative	154%	89%
Total operating expenses	116%	117%
Operating income	121%	112%
Investment income and other	84%	88%
Income before income taxes	118%	110%
Provision for income taxes	102%	107%
Net income	126%	112%

Practice: Ratio Analysis

Required: Use ratio analysis to identify similarities and differences in the efficiency, liquidity, solvency, and profitability of the two companies.

	Wal Mart	**Costco**
Return on Assets		
Profit Margin		
Asset Turnover		
Return on Equity		
Equity Multiplier		
Current Ratio		
Debt to Equity Ratio		
Average Collection Period		
Average Days in Inventory		
Average Days Payables		
Days in Financing		