Financial Statement Analysis: Lecture Outline

- Review of Financial Statements
- Ratios
  - Types of Ratios
  - Examples
- The DuPont Method
- Ratios and Growth
- Summary
  - Strengths
  - Weaknesses
  - Ratios and Forecasting

Financial Statement Analysis

- Assessment of the firm's past, present and future financial conditions
- Done to find firm's financial strengths and weaknesses
- Primary Tools:
  - Financial Statements
  - Comparison of financial ratios to past, industry, sector and all firms

Users of Financial Statements

- CREDITORS
- SUPPLIERS OF LONG TERM DEBT
- INVESTORS
- MANAGEMENT OF THE FIRM

Nature of Ratio Analysis

- Relationship between two accounting figures, expressed mathematically, is known as financial ratio.
- It helps to summarize large quantities of financial data and to make qualitative judgement about the firm's investment.
- Ratio reflecting a quantitative relationships helps to form a qualitative judgement.

The Use of Financial Ratios

- Financial Ratio are used as a relative measure that facilitates the evaluation of efficiency or condition of a particular aspect of a firm's operations and status
- Ratio Analysis involves methods of calculating and interpreting financial ratios in order to assess a firm's performance and status

Rationale Behind Ratio Analysis

- A firm has resources
- It converts resources into profits through
  - production of goods and services
  - sales of goods and services
- Ratios
  - Measure relationships between resources and financial flows
  - Show ways in which firm's situation deviates from
    - Its own past
    - Other firms
    - The industry
    - All firms-

Sources of Data

- Annual reports
  - Via mail, SEC or company websites
- Published collections of data
  - e.g., Dun and Bradstreet or Robert Morris
- Investment sites on the web
  - Few Examples
    - http://moneycontrol.com
    - http://www.marketguide.com

Standards of Comparison

- Time Series Analysis
  - Past Ratios
- Cross Sectional Analysis
  - Competitors Ratios
- Industry Ratios
  - Same Industry analysis
- Projected Ratios
  - On the basis of Proforma Financial Statements

Objectives of Ratio Analysis

- Standardize financial information for comparisons
- Evaluate current operations
- Compare performance with past performance
- Compare performance against other firms or industry standards
- Study the efficiency of operations
- Study the risk of operations

Words of Caution Regarding Ratio Analysis

- A single ratio rarely tells enough to make a sound judgment.
- Financial statements used in ratio analysis must be from similar points in time.
- Audited financial statements are more reliable than unaudited statements.
- The financial data used to compute ratios must be developed in the same manner.
- Inflation can distort comparisons

Words of Caution Regarding Ratio Analysis

- A firm's industry category is often difficult to identify
- Published industry averages are only guidelines
- Accounting practices differ across firms
- Sometimes difficult to interpret deviations in ratios
- Industry ratios may not be desirable targets
- Seasonality affects ratios

Types of Ratios

- Financial Ratios:
  - Liquidity Ratios
    - Assess ability to cover current obligations
  - Leverage Ratios
    - Assess ability to cover long term debt obligations
- Operational Ratios:
  - Activity (Turnover) Ratios
    - Assess amount of activity relative to amount of resources used
  - Profitability Ratios
    - Assess profits relative to amount of resources used
- Valuation Ratios:
    - Assess market price relative to assets or earnings

What questions Ratios answer?

- Liquidity: Can we make required payments as they fall due?
- Asset management: Do we have the right amount of assets for the level of sales?
- Debt management: Do we have the right mix of debt and equity?
- Profitability: Do sales prices exceed unit costs, and are sales high enough as reflected in PM, ROE, and ROA?
- Market value: Do investors like what they see as reflected in P/E and M/B ratios?

Review: Major Balance Sheet Items

Assets

- Current assets:
  - Cash & securities
  - Receivables
  - Inventories
- Fixed assets:
  - Tangible assets
  - Intangible assets

Liabilities and Equity

- Current liabilities:
  - Payables
  - Short-term debt
- Long-term liabilities
- Shareholders' equity

Review: Major Income Statement Items

- Gross Profit = Sales - Costs of Goods Sold
- EBITDA = Gross Profit - Cash Operating Expenses
- EBIT = EBDIT - Depreciation - Amortization
- EBT = EBIT - Interest
- NI or EAT = EBT- Taxes
- Net Income is a primary determinant of the firm's cash flows and, thus, the value of the firm's shares

Analyzing Liquidity

- Liquidity refers to the solvency of the firm's overall financial position, i.e. a "liquid firm" is one that can easily meet its short-term obligations as they come due.
- A second meaning includes the concept of converting an asset into cash with little or no loss in value.

Important Liquidity Measures

Net Working Capital (NWC)

$$NWC = Current\ Assets - Current\ Liabilities$$

Current Ratio (CR)

$$CR = \frac{Current\ Assets}{Current\ Liabilities}$$

Quick (Acid-Test) Ratio (QR)

$$QR = \frac{Current\ Assets - Inventory}{Current\ Liabilities}$$

Cash Ratio (CR)

$$CR = \frac{Cash + Marketable\ Securities}{Current\ Liabilities}$$

Analyzing Debt

- Debt is a true "double-edged" sword as it allows for the generation of profits with the use of other people's (creditors) money, but creates claims on earnings with a higher priority than those of the firm's owners.
- Financial Leverage is a term used to describe the magnification of risk and return resulting from the use of fixed-cost financing such as debt and preferred stock.

Measures of Debt

- There are Two General Types of Debt Measures
  - –Degree of Indebtedness
  - –Ability to Service Debts

Four Important Debt Measures

Debt Ratio (DR)

$$DR = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

Debt-Equity Ratio (DER)

$$DER = \frac{\text{Long-Term Debt}}{\text{Stockholders' Equity}}$$

Times Interest Earned Ratio (TIE) or Interest Coverage Ratio

$$TIE = \frac{\text{Earnings Before Interest \& Taxes (EBIT)}}{\text{Interest}}$$

Fixed Payment Coverage Ratio (FPC)

$$FPC = \frac{\text{Earnings Before Interest \& Taxes} + \text{Depreciation}}{\text{Interest} + \text{Payments} + \{(\text{Principal Payments} + \text{Preferred Stock Dividends}) \times [1 / (1 - T)]\}}$$

Analyzing Activity

- Activity is a more sophisticated analysis of a firm's liquidity, evaluating the speed with which certain accounts are converted into sales or cash; also measures a firm's efficiency

Five Important Activity Measures

Inventory Turnover (IT)

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

Average Collection Period (ACP)

$$ACP = \frac{\text{Accounts Receivable}}{\text{Annual Sales}/360}$$

Average Payment Period (APP)

$$APP = \frac{\text{Accounts Payable}}{\text{Annual Purchases}/360}$$

Fixed Asset Turnover (FAT)

$$FAT = \frac{\text{Sales}}{\text{Net Fixed Assets}}$$

Total Asset Turnover (TAT)

$$TAT = \frac{\text{Sales}}{\text{Total Assets}}$$

Analyzing Profitability

- Profitability Measures assess the firm's ability to operate efficiently and are of concern to owners, creditors, and management
- A Common-Size Income Statement, which expresses each income statement item as a percentage of sales, allows for easy evaluation of the firm’s profitability relative to sales

Five Basic Profitability Measures

Gross Profit Margin (GPM)

$$GPM = \frac{\text{Gross Profits}}{\text{Sales}}$$

Operating Profit Margin (OPM)

$$OPM = \frac{\text{Operating Profits (EBIT)}}{\text{Sales}}$$

Net Profit Margin (NPM)

$$NPM = \frac{\text{Net Profit After Taxes}}{\text{Sales}}$$

Return on Total Assets (ROA)

$$ROA = \frac{\text{Net Profit After Taxes}}{\text{Total Assets}}$$

Return On Equity (ROE)

$$ROE = \frac{\text{Net Profit After Taxes}}{\text{Stockholders' Equity}}$$

Two Valuation Ratios

Earnings Per Share (EPS)

$$EPS = \frac{\text{Earnings Available for Common Stockholder's}}{\text{Number of Shares of Common Stock}}$$

Price/Earnings (P/E) Ratio

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

A Complete Ratio Analysis

- DuPont System of Analysis
  - DuPont System of Analysis is an *integrative* approach used to *dissect* a firm's financial statements and assess its financial condition
  - It ties together the income statement and balance sheet to determine two summary measures of profitability, namely ROA and ROE

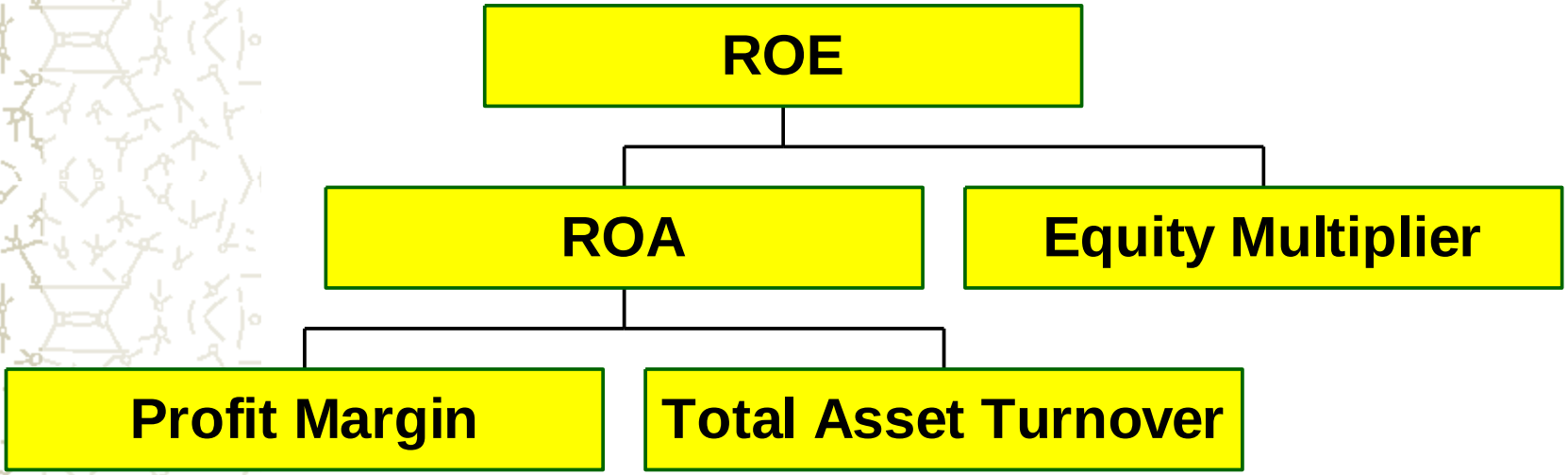
DuPont System of Analysis

- The firm's return is broken into three components:
  - A profitability measure *(net profit margin)*
  - An efficiency measure*(total asset turnover)*
  - A leverage measure *(financial leverage multiplier)*

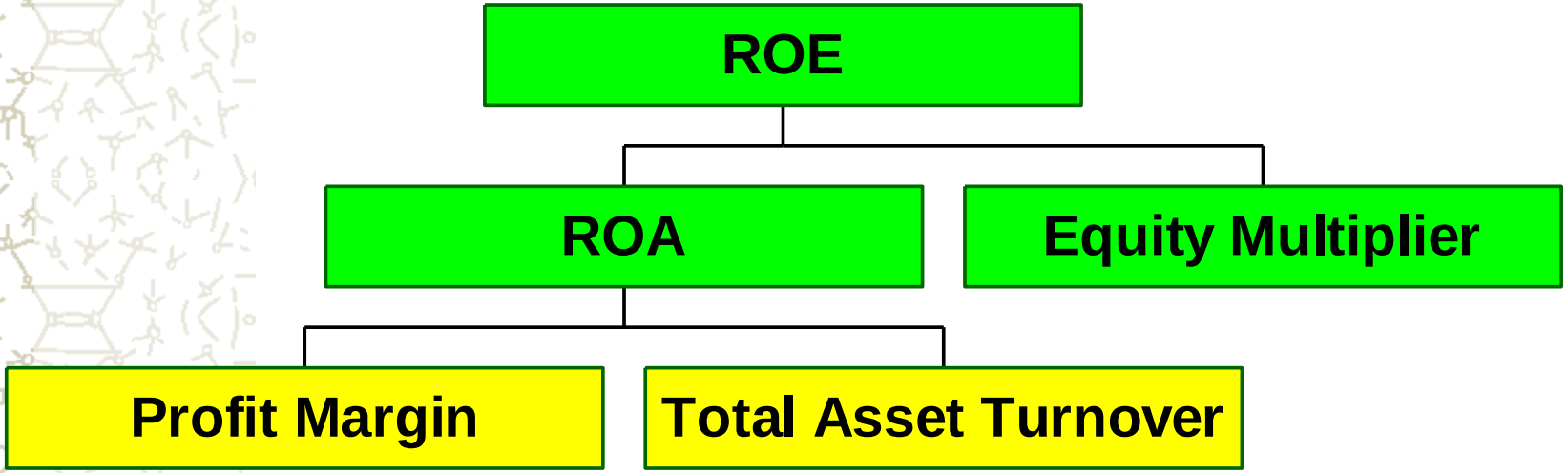
DuPont System of Analysis

- Method to breakdown ROE into:
  - ROA and Equity Multiplier
- ROA is further broken down as:
  - Profit Margin and Asset Turnover
- Helps to identify sources of strength and weakness in current performance
- Helps to focus attention on value drivers

The DuPont System



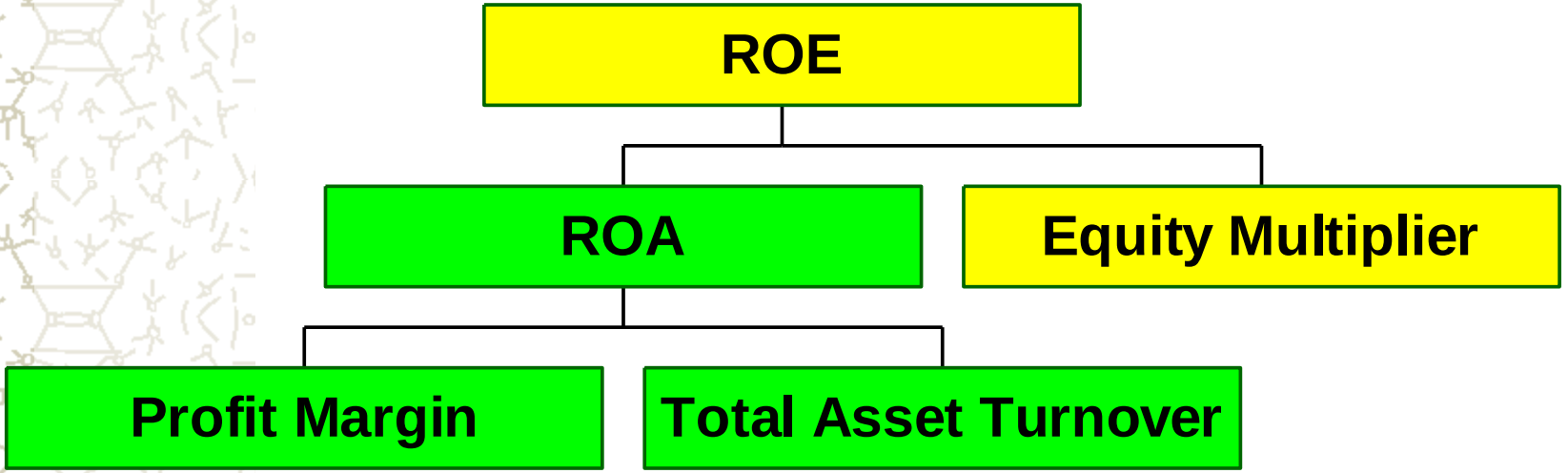
The DuPont System



$$\text{ROE} = \text{ROA} \times \text{Equity Multiplier}$$

$$= \frac{\text{Net Income}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Common Equity}}$$

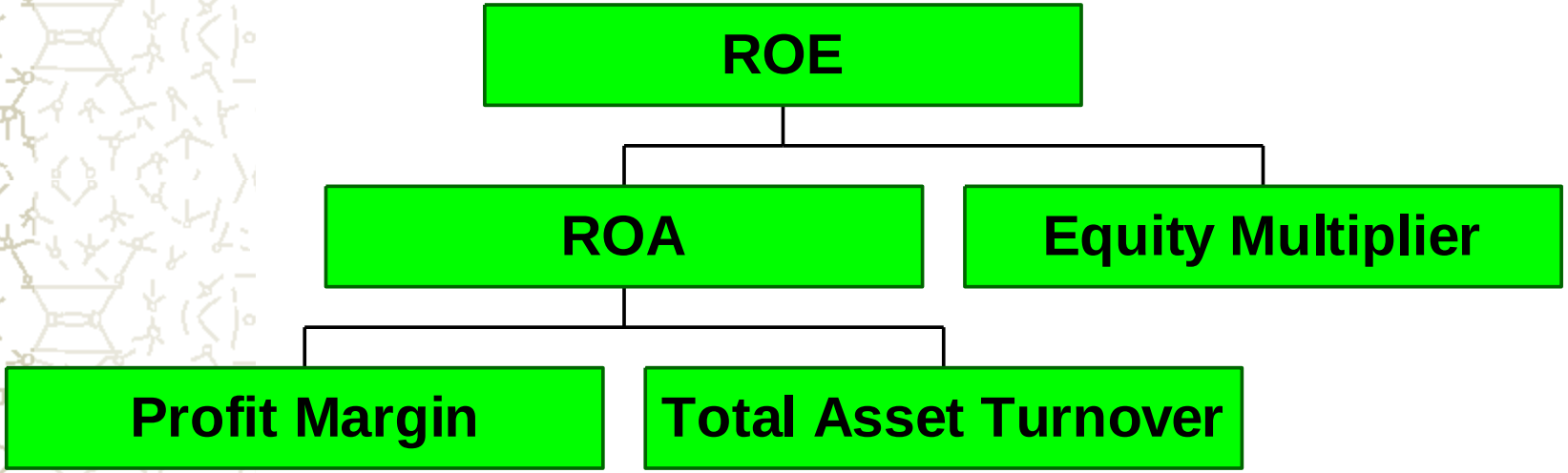
The DuPont System



$$\text{ROA} = \text{Profit Margin} \times \text{Total Asset Turnover}$$

$$= \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}}$$

The DuPont System



$$\text{ROE} = \text{Profit Margin} \times \text{Total Asset Turnover} \times \text{Equity Multiplier}$$

$$= \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Common Equity}}$$

Assessing Corporate Excellence

- The Economic Times – Harvard Business School of India (ET – HBSAI) considers 5 financial indicators to assess corporate excellence.
- These are kind of multivariate models
- The ratio indicators are:

Gross Surplus Ratio	$\frac{\text{Gross Profit Before Depreciation, Interest and Taxes}}{\text{Total Assets}}$
Sustainable Growth Rate	$\frac{\text{Profit after tax}}{\text{Net worth}} \times (1 - \text{payout Ratio})$
Total assets return on net worth	$\frac{\text{Profit after tax}}{\text{Net worth}}$
Cash Flow	Profit after Tax + Depreciation – Non cash expenditures
Creation of Values	Average Annual compound Growth rate in the market value/ net worth of equity capital, over the previous five years.

Assessing Corporate excellence: Peters and Waterman

- Compound Asset growth
- Compound Equity growth
- Market value to book value ratio
- Return on total capital
- Return on equity
- Return on sales.

Assessing Corporate excellence: Industrial Development Bank of India

- Growth rate of sales
- Growth rate of assets
- Profit before tax to capital employed
- Working capital to gross sales
- Dividend coverage
- Debt-Equity Ratio.

A CREDIT SCORING MODEL

				POINTS
Character				
Average Past payment	on time	Upto 30 days late	Up to 60 days late	
Capacity				
Profit Margin	0-5%	6-10%	>10%	
Quick Ratio	< .75	.75-1.25	>1.25	
Cash Flow	Low	Average	High	
Capital				
Current Ratio	<1	1-1.15	>1.5	
Debt - Equity Ratio	<1	1-2.	>2	
Interest Earned	<2x	2x-3x	>3x	
Collateral				
Net Worth	Low	Average	High	
Percent assets Free	Low	Average	High	
Market value to net worth	Low	Average	High	
Conditions	Recession	Average	Prosperity	
			TOTAL	