CHAPTER3

Lecture 04

Financial Statements Analysis and Financial Model

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Using Financial Statements

- 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
- Peer Group Analysis
  - Compare to similar companies or within industries
  - SIC and NAICS codes

The Du Pont Identity

- Return on Equity = Net Income / Total Equity
- Multiply by 1 and then rearrange:
  - ROE = (Net Income / Total Equity) (Total Assets / Total Assets)
  - ROE = (Net Income / Total Assets) (Total Assets / Total Equity)

    = ROA * Equity Multiplier = ROA * (1 + Debt – Equity Ratio)
- Multiply by 1 again and then rearrange:
  - ROE = (NI / TA) (TA / TE) (Sales / Sales)
  - ROE = (NI / Sales) (Sales / TA) (TA / TE)
  - ROE = Profit Margin * Total Asset Turnover * Equity Multiplier

Using the Du Pont 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 it manages its assets.
  - Equity multiplier is a measure of the firm's financial leverage.

Calculating the Du Pont Identity

- ROA = 10.1% and EM = 1.39
  - ROE = 10.1% * 1.385 = 14.0%
- PM = 15.7% and TAT = 0.64
  - ROE = 15.7% * 0.64 * 1.385 = 14.0%

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.
- Firms use varying accounting procedures.
- Firms have different fiscal years.
- Extraordinary, or one-time, events

Financial Models

- Investment in new assets – determined by capital budgeting decisions
- Degree of financial leverage – determined by capital structure decisions
- Cash paid to shareholders – determined by dividend policy decisions
- Liquidity requirements – determined by net working capital decisions

Financial Planning Ingredients

- Sales Forecast – many cash flows depend directly on the level of sales (often estimate sales growth rate)
- Pro Forma Statements – setting up the plan as projected (pro forma) financial statements allows for consistency and ease of interpretation
- Asset Requirements – the additional assets that will be required to meet sales projections
- Financial Requirements – the amount of financing needed to pay for the required assets
- Plug Variable – determined by management decisions about what type of financing will be used (makes the balance sheet balance)
- Economic Assumptions – explicit assumptions about the coming economic environment

Percent of Sales Approach

- Some items vary directly with sales, others do not.
- Income Statement
  - Costs may vary directly with sales - if this is the case, then the profit margin is constant
  - Depreciation and interest expense may not vary directly with sales – if this is the case, then the profit margin is not constant
  - Dividends are a management decision and generally do not vary directly with sales – this affects additions to retained earnings

Percent of Sales Approach

- Balance Sheet
  - Initially assume all assets, including fixed, vary directly with sales.
  - Accounts payable also normally vary directly with sales.
  - Notes payable, long-term debt, and equity generally do not vary with sales because they depend on management decisions about capital structure.
  - The change in the retained earnings portion of equity will come from the dividend decision.
- External Financing Needed (EFN)
  - The difference between the forecasted increase in assets and the forecasted increase in liabilities and equity.

Percent of Sales and EFN

- External Financing Needed (EFN) can also be calculated as:

$$\left(\frac{\text{Assets}}{\text{Sales}}\right) \times \Delta\text{Sales} - \frac{\text{Spon Liab}}{\text{Sales}} \times \Delta\text{Sales} - (PM \times \text{Projected Sales}) \times (1 - d)$$

$$= (3 \times 250) - (0.3 \times 250) - (0.13 \times 1250 \times 0.667)$$

$$= \$565$$

External Financing and Growth

- At low growth levels, internal financing (retained earnings) may exceed the required investment in assets.
- As the growth rate increases, the internal financing will not be enough, and the firm will have to go to the capital markets for financing.
- Examining the relationship between growth and external financing required is a useful tool in financial planning.

The Internal Growth Rate

- The internal growth rate tells us how much the firm can grow assets using retained earnings as the only source of financing.
- Using the information from the Hoffman Co.
  - ROA = 66 / 500 = .132
  - b = 44/ 66 = .667

$$\text{Internal Growth Rate} = \frac{\text{ROA} \times \text{b}}{1 - \text{ROA} \times \text{b}}$$

$$= \frac{.132 \times .667}{1 - .132 \times .667} = .0965$$

$$= 9.65\%$$

The Sustainable Growth Rate

- The sustainable growth rate tells us how much the firm can grow by using internally generated funds and issuing debt to maintain a constant debt ratio.
- Using the Hoffman Co.
  - ROE = 66 / 250 = .264
  - b = .667

$$\text{Sustainable Growth Rate} = \frac{\text{ROE} \times b}{1 - \text{ROE} \times b}$$

$$= \frac{.264 \times .667}{1 - .264 \times .667} = .214$$

$$= 21.4\%$$

Determinants of Growth

- Profit margin – operating efficiency
- Total asset turnover – asset use efficiency
- Financial leverage – choice of optimal debt ratio
- Dividend policy – choice of how much to pay to shareholders versus reinvesting in the firm

Some Caveats

- Financial planning models do not indicate which financial polices are the best.
- Models are simplifications of reality, and the world can change in unexpected ways.
- Without some sort of plan, the firm may find itself adrift in a sea of change without a rudder for guidance.

Quick Review

- How do you standardize balance sheets and income statements?
- Why is standardization useful?
- What are the major categories of financial ratios?
- How do you compute the ratios within each category?
- What are some of the problems associated with financial statement analysis?

Quick Review

- What is the purpose of financial planning?
- What are the major decision areas involved in developing a plan?
- What is the percentage of sales approach?
- What is the internal growth rate?
- What is the sustainable growth rate?
- What are the major determinants of growth?