SESSION 8: ESTIMATING GROWTH
Growth in Earnings

- Look at the past
  - The historical growth in earnings per share is usually a good starting point for growth estimation
- Look at what others are estimating
  - Analysts estimate growth in earnings per share for many firms. It is useful to know what their estimates are.
- Look at fundamentals
  - Ultimately, all growth in earnings can be traced to two fundamentals - how much the firm is investing in new projects, and what returns these projects are making for the firm.

Aswath Damodaran
I. Historical Growth in EPS

- The historical growth rate in earnings for a company may seem like a fact but it is an estimate. In fact, it is sensitive to
  - How it is computed: The growth rates in earnings will be different, depending upon how you compute the average. An simple (arithmetic) average growth rate will tend to be higher than a compounded (geometric) average growth rate.
  - Estimation period: The starting point for the computation can make a big difference. Using a bad year as the base year will generate much higher growth rates.

- In using historical growth rates, recognize the following:
  - Growth rates become meaningless when earnings go from negative values to positive values
  - Growth rates will go down as companies get larger

- Worst of all, there is evidence that historical growth rates in earnings are not very good predictors of future earnings...

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II. Management/Analyst Forecasts

- When valuing companies, we often fall back on management forecasts for the future (after all, they know the company better than we do) or forecasts of other analysts.

- Management forecasts may reflect their “superior” knowledge, but they have a fatal flaw. They are biased.

- Analyst forecasts may seem like a simple way to avoid the problem, but not only are they also biased but using them represents an abandonment of a basic requirement in valuation: that you make your own best judgment of growth.
III. Fundamental Growth

- Growth has to be earned by a company. You and I do not have the power to endow a company with growth.

- In terms of basic fundamentals, for a company to grow its earnings, it has to
  - Add to its asset or capital base and generate returns on that added capital (new investment growth)
  - Manage its existing assets more efficiently, generating higher margins and higher returns on existing assets (efficiency growth)
a. New Investment Growth

- The growth in earnings for a firm from new investments is a function of two decisions:
  - How much to reinvest back into the business for long term growth
    - Equity earnings: Portion of net income put back into the business (retention)
    - Operating earnings: Portion of after-tax operating income invested in the business.
  - How well it reinvests its money, defined again
    - With equity earnings, the return on equity
    - With operating earnings, the return on invested capital

### Formulas

**Expected Growth**

\[
\text{Expected Growth} = \text{Net Income} \times \text{Return on Equity} = \text{Net Income/Book Value of Equity}
\]

\[
\text{Operating Income} \times \text{Return on Capital} = \frac{(\text{Net Cap Ex} + \text{Chg in WC})}{\text{EBIT}(1-t)} \times \frac{\text{EBIT}(1-t)}{\text{Book Value of Capital}}
\]

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The Key Number: Return on Capital (Equity)

ROC = \( \frac{EBIT \times (1 - \text{tax rate})}{\text{Book Value of Equity} + \text{Book value of debt} - \text{Cash}} \)

Adjust EBIT for:
- Extraordinary or one-time expenses or income
- Operating leases and R&D
- Cyclicality in earnings (Normalize)
- Acquisition Debris (Goodwill amortization etc.)

Use a marginal tax rate to be safe. A high ROC created by paying low effective taxes is not sustainable.

Adjust book equity for:
- Capitalized R&D
- Acquisition Debris (Goodwill)

Adjust book value of debt for:
- Capitalized operating leases

Use end of prior year numbers or average over the year but be consistent in your application.
b. Efficiency Growth

- When the return on equity or capital is changing, there will be a second component to growth, positive if the return is increasing and negative if the return is decreasing. If \( \text{ROC}_t \) is the return on capital in period \( t \) and \( \text{ROC}_{t+1} \) is the return on capital in period \( t+1 \), the growth rate in operating income will be:

\[
\text{Expected Growth Rate} = \text{ROCP} + \frac{\text{ROC}_{t+1} - \text{ROC}_t}{\text{ROC}_t}
\]

- For example, assume that you have a firm that is generating a return on capital of 8% on its existing assets and expects to increase this return to 10% next year. The efficiency growth for this firm is:

\[
\text{Efficiency growth} = \frac{(10\% - 8\%)}{8\%} = 25\%
\]

- Thus, if this firm has a reinvestment rate of 50% and makes a 10% return on capital on its new investments as well, its total growth next year will be 30%:

\[
\text{Growth rate} = 0.50 \times 10\% + 25\% = 30\%
\]

- The key difference is that growth from new investments is sustainable whereas returns from efficiency are short term (or transitory).
Revenue Growth and Operating Margins

- All of the fundamental growth equations assume that the firm has a return on equity or return on capital it can sustain in the long term.

- When operating income is negative or margins are expected to change over time:
  - Estimate growth rates in revenues over time
    - Use historical revenue growth to get estimates of revenue growth in the near future
    - Decrease the growth rate as the firm becomes larger
    - Keep track of absolute revenues to make sure that the growth is feasible
  - Estimate expected operating margins each year
    - Set a target margin that the firm will move towards
    - Adjust the current margin towards the target margin
  - Estimate the capital that needs to be invested to generate revenue growth and expected margins
    - Estimate a sales to capital ratio that you will use to generate reinvestment needs each year.
Sirius Radio: Revenues and Revenue Growth - June 2006

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue Growth</th>
<th>Revenue</th>
<th>Operating Margin</th>
<th>Operating Income</th>
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<td>Current</td>
<td></td>
<td>$187</td>
<td>-419.92%</td>
<td>-$787</td>
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<tr>
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<td>$2,025</td>
<td>-34.99%</td>
<td>-$708</td>
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<td>$3,239</td>
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<td>-$243</td>
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<td>19.57%</td>
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</table>

Target margin based upon Clear Channel

Aswath Damodaran
## Sirius: Reinvestment Needs

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenues</th>
<th>Change in revenue</th>
<th>Sales/Capital Ratio</th>
<th>Reinvestment</th>
<th>Capital Invested</th>
<th>Operating Income (Loss)</th>
<th>Imputed ROC</th>
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<tr>
<td>Current</td>
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<td>$287</td>
<td>$7,556</td>
<td>$1,768</td>
<td>15.81%</td>
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Industry average Sales/Cap Ratio

Capital invested in year \( t+1 \) = Capital invested in year \( t \) + Reinvestment in year \( t+1 \)