IV. Growth Patterns

Discounted Cashflow Valuation
Stable Growth and Terminal Value

- When a firm’s cash flows grow at a “constant” rate forever, the present value of those cash flows can be written as:
  \[ \text{Value} = \frac{\text{Expected Cash Flow Next Period}}{(r - g)} \]
  where,
  \[ r = \text{Discount rate (Cost of Equity or Cost of Capital)} \]
  \[ g = \text{Expected growth rate} \]
- This “constant” growth rate is called a stable growth rate and cannot be higher than the growth rate of the economy in which the firm operates.
- While companies can maintain high growth rates for extended periods, they will all approach “stable growth” at some point in time.
- When they do approach stable growth, the valuation formula above can be used to estimate the “terminal value” of all cash flows beyond.
Growth Patterns

A key assumption in all discounted cash flow models is the period of high growth, and the pattern of growth during that period. In general, we can make one of three assumptions:

- there is no high growth, in which case the firm is already in stable growth
- there will be high growth for a period, at the end of which the growth rate will drop to the stable growth rate (2-stage)
- there will be high growth for a period, at the end of which the growth rate will decline gradually to a stable growth rate (3-stage)
- Each year will have different margins and different growth rates (n stage)
Determinants of Growth Patterns

- Size of the firm
  - Success usually makes a firm larger. As firms become larger, it becomes much more difficult for them to maintain high growth rates.

- Current growth rate
  - While past growth is not always a reliable indicator of future growth, there is a correlation between current growth and future growth. Thus, a firm growing at 30% currently probably has higher growth and a longer expected growth period than one growing 10% a year now.

- Barriers to entry and differential advantages
  - Ultimately, high growth comes from high project returns, which, in turn, comes from barriers to entry and differential advantages.
  - The question of how long growth will last and how high it will be can therefore be framed as a question about what the barriers to entry are, how long they will stay up and how strong they will remain.
Stable Growth and Fundamentals

- The growth rate of a firm is driven by its fundamentals - how much it reinvests and how high project returns are. As growth rates approach “stability”, the firm should be given the characteristics of a stable growth firm.

<table>
<thead>
<tr>
<th>Model</th>
<th>High Growth Firms usually</th>
<th>Stable growth firms usually</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDM</td>
<td>1. Pay no or low dividends</td>
<td>1. Pay high dividends</td>
</tr>
<tr>
<td></td>
<td>2. Have high risk</td>
<td>2. Have average risk</td>
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<tr>
<td></td>
<td>3. Earn high ROC</td>
<td>3. Earn ROC closer to WACC</td>
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<tr>
<td>FCFE/</td>
<td>1. Have high net cap ex</td>
<td>1. Have lower net cap ex</td>
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<tr>
<td>FCFF</td>
<td>2. Have high risk</td>
<td>2. Have average risk</td>
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<tr>
<td></td>
<td>3. Earn high ROC</td>
<td>3. Earn ROC closer to WACC</td>
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<tr>
<td></td>
<td>4. Have low leverage</td>
<td>4. Have leverage closer to</td>
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<td></td>
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<td>industry average</td>
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Consider the example of ABN Amro. Based upon its current return on equity of 15.79% and its retention ratio of 53.88%, we estimated a growth in earnings per share of 8.51%.

Let us assume that ABN Amro will be in stable growth in 5 years. At that point, let us assume that its return on equity will be closer to the average for European banks of 15%, and that it will grow at a nominal rate of 5% (Real Growth + Inflation Rate in NV).

The expected payout ratio in stable growth can then be estimated as follows:

\[
\text{Stable Growth Payout Ratio} = 1 - \frac{g}{\text{ROE}} = 1 - \frac{0.05}{0.15} = 66.67\%
\]

\[ g = b \text{ (ROE)} \]
\[ b = \frac{g}{\text{ROE}} \]

Payout = 1 - b
The soundest way of estimating reinvestment rates in stable growth is to relate them to expected growth and returns on capital:

\[
\text{Reinvestment Rate} = \frac{\text{Growth in Operating Income}}{\text{ROC}}
\]

For instance, Cisco is expected to be in stable growth 13 years from now, growing at 5% a year and earning a return on capital of 16.52% (which is the industry average). The reinvestment rate in year 13 can be estimated as follows:

\[
\text{Reinvestment Rate} = \frac{5\%}{16.52\%} = 30.27\%
\]