
IV. Closure in Valuation

Discounted Cashflow Valuation

Getting Closure in Valuation

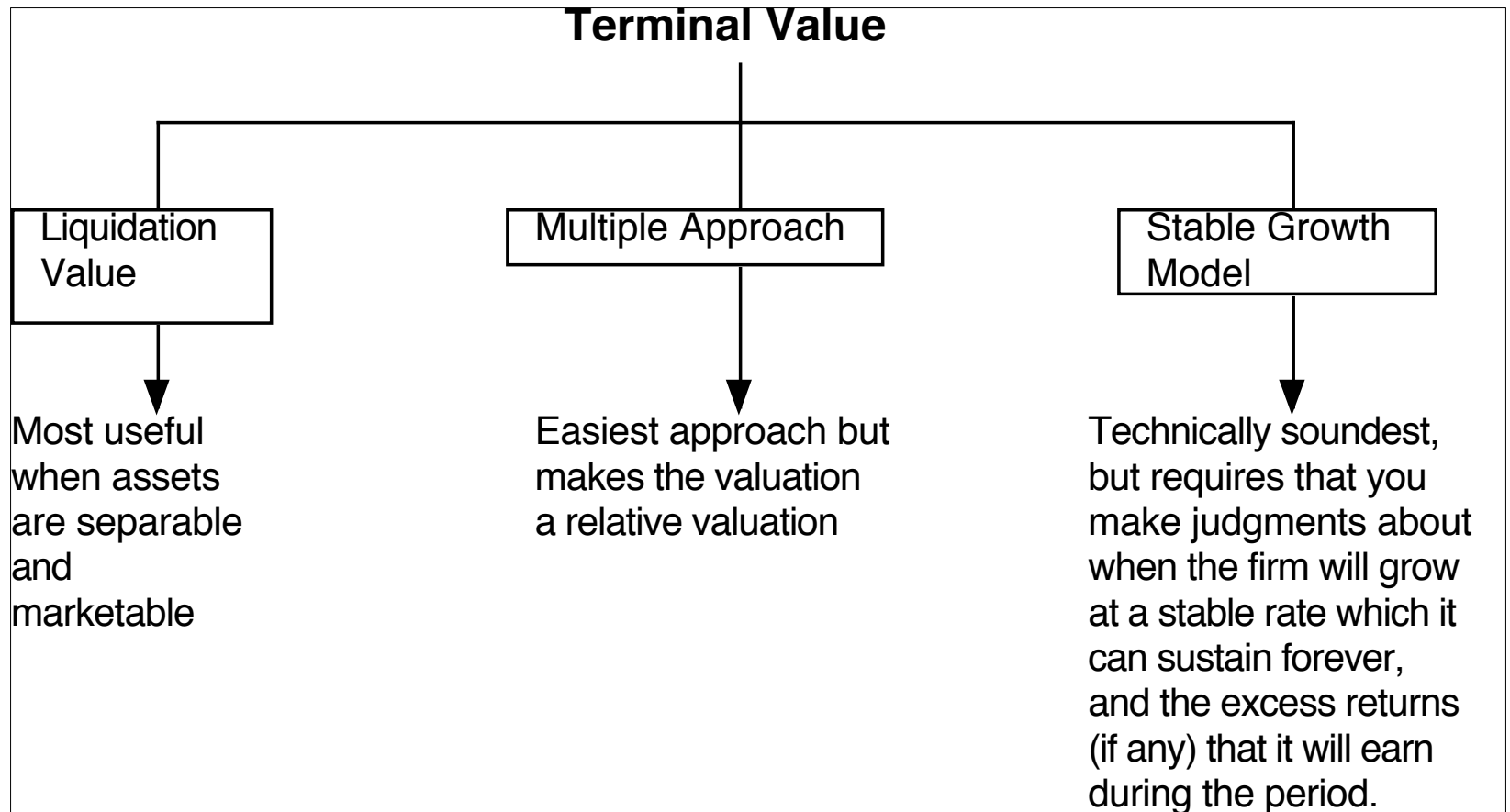
- A publicly traded firm potentially has an infinite life. The value is therefore the present value of cash flows forever.

$$\text{Value} = \sum_{t=1}^{t=\infty} \frac{CF_t}{(1+r)^t}$$

- Since we cannot estimate cash flows forever, we estimate cash flows for a “growth period” and then estimate a terminal value, to capture the value at the end of the period:

$$\text{Value} = \sum_{t=1}^{t=N} \frac{CF_t}{(1+r)^t} + \frac{\text{Terminal Value}}{(1+r)^N}$$

Ways of Estimating Terminal Value



Getting Terminal Value Right

1. Obey the growth cap

- When a firm's cash flows grow at a “constant” rate forever, the present value of those cash flows can be written as:
Value = Expected Cash Flow Next Period / (r - g)
where,
r = Discount rate (Cost of Equity or Cost of Capital)
g = Expected growth rate
- The stable growth rate cannot exceed the growth rate of the economy but it can be set lower.
 - If you assume that the economy is composed of high growth and stable growth firms, the growth rate of the latter will probably be lower than the growth rate of the economy.
 - The stable growth rate can be negative. The terminal value will be lower and you are assuming that your firm will disappear over time.
 - If you use nominal cashflows and discount rates, the growth rate should be nominal in the currency in which the valuation is denominated.
- One simple proxy for the nominal growth rate of the economy is the riskfree rate.

Getting Terminal Value Right

2. Don't wait too long...

Assume that you are valuing a young, high growth firm with great potential, just after its initial public offering. How long would you set your high growth period?

- < 5 years
- 5 years
- 10 years
- >10 years

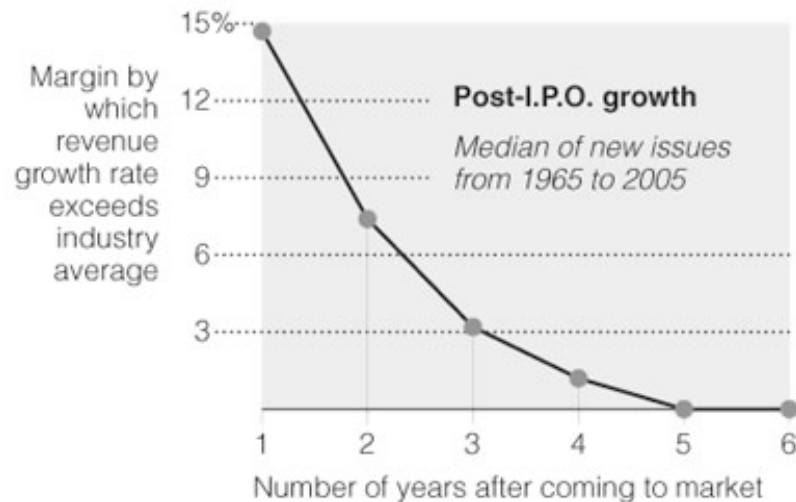
What high growth period would you use for a larger firm with a proven track record of delivering growth in the past?

- 5 years
- 10 years
- 15 years
- Longer

Some evidence on growth at small firms...

- While analysts routinely assume very long high growth periods (with substantial excess returns during the periods), the evidence suggests that they are much too optimistic. A study of revenue growth at firms that make IPOs in the years after the IPO shows the following:

Typically, the revenue growth rate of a newly public company outpaces its industry average for only about five years.



Source: Andrew Metrick

The New York Times

Don't forget that growth has to be earned..

3. Think about what your firm will earn as returns forever..

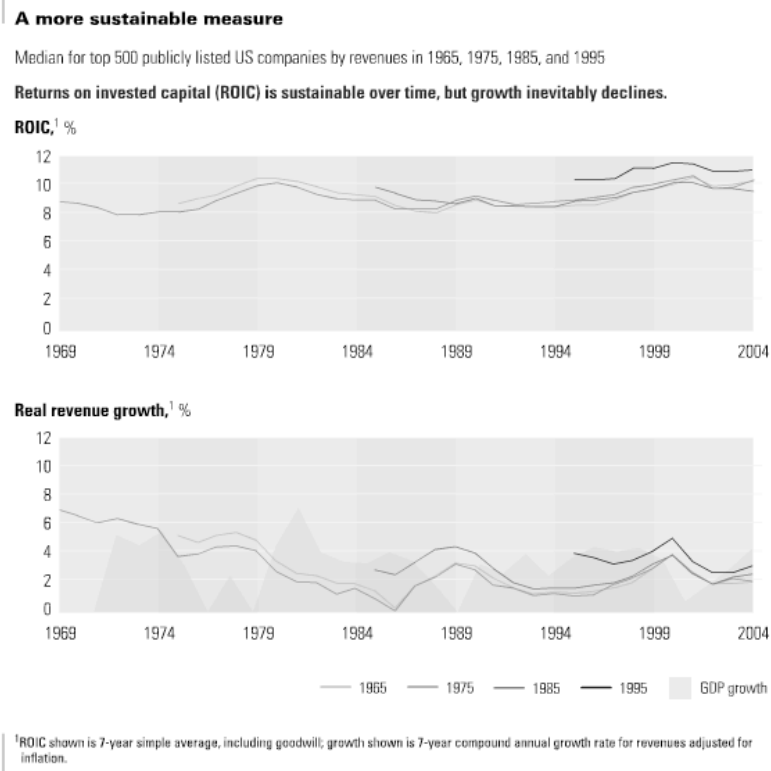
- In the section on expected growth, we laid out the fundamental equation for growth:

$$\begin{aligned} \text{Growth rate} &= \text{Reinvestment Rate} * \text{Return on invested capital} \\ &+ \text{Growth rate from improved efficiency} \end{aligned}$$

- In stable growth, you cannot count on efficiency delivering growth (why?) and you have to reinvest to deliver the growth rate that you have forecast. Consequently, your reinvestment rate in stable growth will be a function of your stable growth rate and what you believe the firm will earn as a return on capital in perpetuity:
 - $\text{Reinvestment Rate} = \text{Stable growth rate} / \text{Stable period Return on capital}$
- A key issue in valuation is whether it okay to assume that firms can earn more than their cost of capital in perpetuity. There are some (McKinsey, for instance) who argue that the return on capital = cost of capital in stable growth...

There are some firms that earn excess returns.....

- While growth rates seem to fade quickly as firms become larger, well managed firms seem to do much better at sustaining excess returns for longer periods



And don't fall for sleight of hand...

- A typical assumption in many DCF valuations, when it comes to stable growth, is that capital expenditures offset depreciation and there are no working capital needs. Stable growth firms, we are told, just have to make maintenance cap ex (replacing existing assets) to deliver growth. If you make this assumption, what expected growth rate can you use in your terminal value computation?
- What if the stable growth rate = inflation rate? Is it okay to make this assumption then?

Getting Terminal Value Right

4. Be internally consistent..

- Risk and costs of equity and capital: Stable growth firms tend to
 - Have betas closer to one
 - Have debt ratios closer to industry averages (or mature company averages)
 - Country risk premiums (especially in emerging markets should evolve over time)
- The excess returns at stable growth firms should approach (or become) zero. ROC \rightarrow Cost of capital and ROE \rightarrow Cost of equity
- The reinvestment needs and dividend payout ratios should reflect the lower growth and excess returns:
 - Stable period payout ratio = $1 - g / \text{ROE}$
 - Stable period reinvestment rate = g / ROC