TO INFINITY AND BEYOND: THE TERMINAL VALUE IMPLODES (MYTH 5.2)

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The Mathematical Trap

The perpetual growth model is borrowed from mathematics and reflects the sum of an infinite series.

$$Terminal \ Value_n = \frac{Expected \ Free \ Cash \ Flow_{n+1}}{(Discount \ Rate - Expected \ Growth \ Rate)}$$

As g moves towards r, the terminal value will approach infinity.

If g>r, the terminal value will become negative.

The Growth Cap

- If you want to draw on the perpetual growth equation, either because you believe your business will last forever or for convenience, the growth rate that you can use in it is constrained to be less than equal to the growth rate of the economy in which you operate.
- This is not a debatable assumption, since it is mathematical, not one that owes its presence to economic theory.

The Sub Questions

- Domestic versus Global: Depends on your company's operating reach and ambitions. Even emerging markets that are currently in high growth, though, will converge on global growth.
- Real versus Nominal: If your valuation is in real terms, the cap on your growth rate will be the real growth rate in the economy, and if in nominal terms, it will be the nominal growth rate.
- <u>Currency</u>: If you are valuing your company in a high-inflation currency, your nominal growth rate forever can be much higher than if you value it in a low-inflation currency.

My Simple Proxy: The Risk free Rate

- I use a <u>simpler and more easily observable number</u>
 as a cap on stable growth: the risk free rate that I have used in the valuation.
- This take into account the currency automatically (since higher inflation currencies have higher risk free rates) and it is not unreasonable to argue that it is a good proxy for the nominal growth rate in the economy.

Reason 1: The Data is supportive

Risk free rate = Expected Inflation + Expected real interest rate

Nominal economic growth = Expected Inflation + Expected real growth rate

				Nominal GDP growth	
Period	10-Year T.Bond Rate	Inflation Rate	Real GDP Growth	rate	Nominal GDP - T.Bond Rate
1954-					
2015	5.93%	3.61%	3.06%	6.67%	0.74%
1954-					
1980	5.83%	4.49%	3.50%	7.98%	2.15%
1981-					
2008	6.88%	3.26%	3.04%	6.30%	-0.58%

Reason 2: It preserves consistency

- When you use a riskfree rate in a valuation, you are implicitly making assumptions about economic growth and inflation in the future and you should make similar assumptions in estimating your cash flows.
- If you believe, the risk free rate today is too low or even negative (because the central banks have kept it so), you have to keep your growth rate in perpetuity very low or negative to keep your valuation from imploding.
- If you use growth rates that reflect the past (where inflation might have been higher) with today's low risk free rates, your valuation is inconsistent.

Reason 3: Self Control (or Lack of it)

- I know that I fight my preconceptions and the urges I feel to tweak the numbers to deliver the result that I want to see.
- There is no number that can have more consequence for value than the growth rate in the terminal value and having a cap on that number will not only make me look elsewhere but also make me more aware of my biases.

The Bottom Line

- The growth rate in terminal value comes with constraints, since it has to last forever.
- If you don't obey these constraints, your valuations will be unbounded and useless.