Discount Rate Myth 1: If you don't like betas, you cannot do a DCF

Don't throw the baby out with the bathwater…

Discount Rates in a DCF

At its core, DCF value is captured in one equation:

$$Value\ of\ an\ asset = \frac{E(CF_1)}{(1+r)} + \frac{E(CF_2)}{(1+r)^2} + \frac{E(CF_3)}{(1+r)^3} \ldots + \frac{E(CF_n)}{(1+r)^n}$$

Put differently, it ties the value of an asset to expected cash flows, the growth in these cashflows and the risk (in the discount rate)

Discount Rate: Cost of equity vs capital

A Financial Balance Sheet

In firm valuation, you value the operating business, by discounting expected cash flows to all claimholders (to the firm) at at weighted average of the costs of both equity and debt (cost of capital).

Assets		Liabilities	
Expected Value of investments already made	Assets in Place	Debt	Borrowed money
Expected Value Added (or Destroyed) by future investments	Growth Assets	Equity	Owner's funds

In **equity valuation**, you discount expected cash flows to equity investors at a rate of return reflecting equity risk (cost of equity)

The Building Blocks for the MPT view of discount rates

1. <u>Marginal investor focus</u>: The risk in an investment should be measured from the perspective of the marginal investor, i.e., the investor who at the margin prices the stock (not your eyes or mine). The risk in a stock can be very different for one who owns just that stock versus one who is diversified.

2. <u>A menu of investment choices</u>: The marginal investor can not only decide what stocks to invest in but has to choose between risky and risk free investments.

3. <u>A trust in markets</u>: Markets, in general, do a good job of assessing value. Variations in prices therefore reflect variations in value.
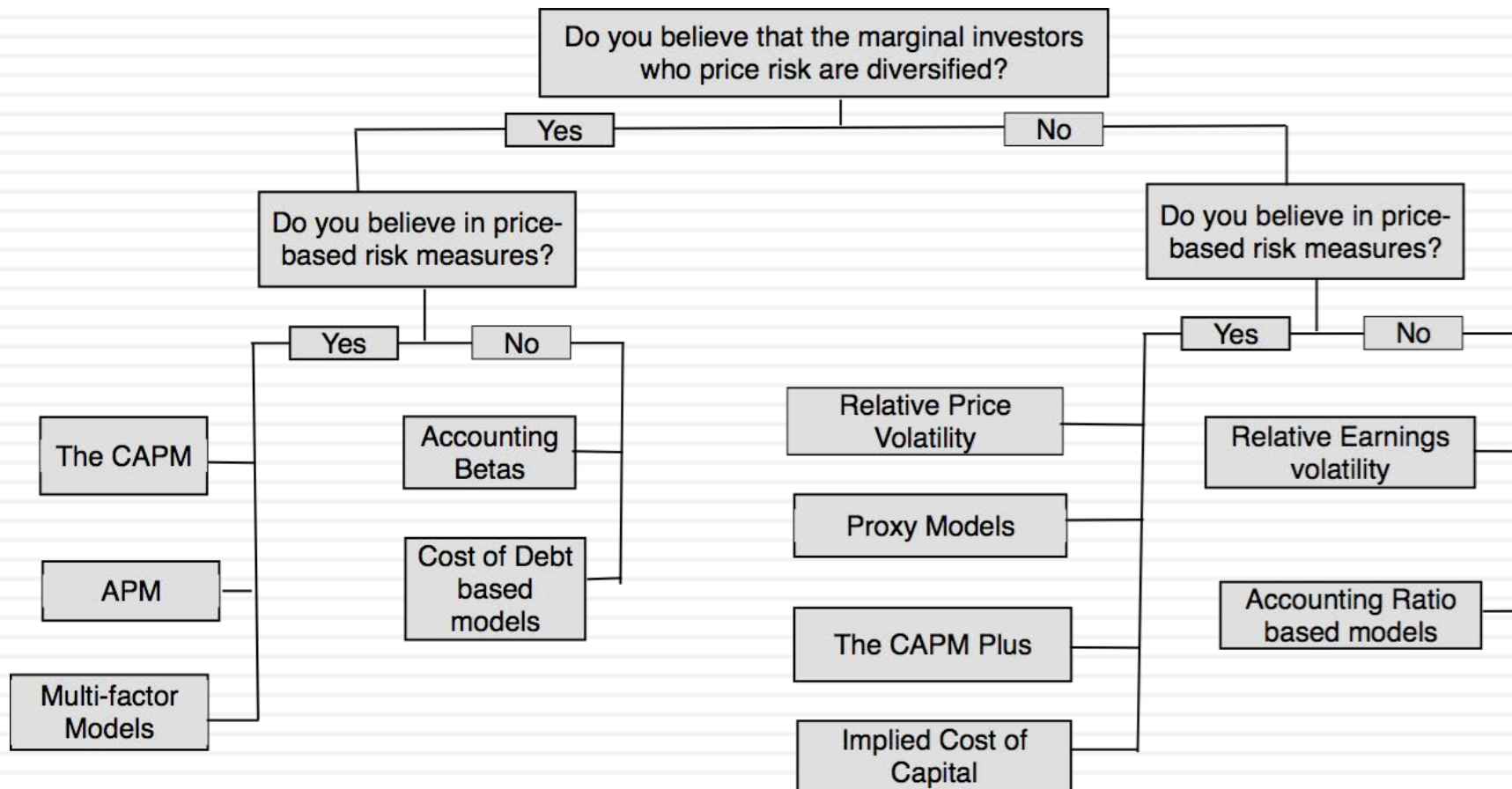
Risk and Return Models: Modern Portfolio Theory

Model	Assumptions	Risk Measure
The CAPM	(1) There are no transactions costs & (2) There is no private information.	The marginal investors will be fully diversified and hold a portfolio of every traded asset in the market. The risk of an individual asset will be captured by the risk added to this market portfolio, and <u>measured with a single beta</u>, measured against the market.
The APM	The market prices of stocks are the best indicators of market and firm-specific risks, with market risks affecting all or many stocks and firm-specific risks not.	Historical stock returns can be analyzed to identify the number of market risk factors and the exposure of each stock to that market risk. Since this is a statistical model, the factors will be unnamed. The risk in a stock will be captured with <u>betas, measured against these unnamed factors</u>.
The Multifactor Model	Market risk factors have to be macroeconomic, to affect many stocks at the same time. Looking at how a stock behaves, relative to different macroeconomic variables, should yield clues to its market risk exposure.	The risk in a stock will be captured with <u>betas, measured against specified macroeconomic factors</u>.

You may not like the use of beta and betas.. And here are the two big reasons

☐ <u>The focus on the diversified marginal investor</u>: You may either not believe that the marginal investors in companies are diversified or that investors tend to ignore risk that is firm specific.

☐ <u>The use of market prices to get a risk measure in an intrinsic valuation</u>: After all, the reason that you do intrinsic valuation is because you believe that markets make mistakes, and if so, using those markets to get your intrinsic risk measures seems inconsistent.

Alternative Risk and Return Modelss


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                    Do you believe that the marginal investors
                         who price risk are diversified?

           Yes                                        No

Do you believe in price-                    Do you believe in price-
 based risk measures?                        based risk measures?

   Yes        No                                  Yes        No

           Accounting        Relative Price         Relative Earnings
             Betas             Volatility               volatility
The CAPM
                              Proxy Models
           Cost of Debt
  APM        based                                  Accounting Ratio
            models          The CAPM Plus            based models

Multi-factor               Implied Cost of
  Models                      Capital
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The Bottom Line

- The DCF model is agnostic about what model or assumptions that you use to arrive at a discount rate. Hence, you can use the CAPM, accounting ratio based risk models or subjective approaches to estimate discount rates.

- If you don't like modern portfolio theory, don't use its models to estimate risk. Use an alternate model and move on. The real work in DCF is yet to come.