THE UNIVERSITY OF MELBOURNE

Module 2

# Alternative Approaches to Valuation and Investment

## Multi-factor Models and Evidence from the Field
## (Risk factors – the more the merrier!)

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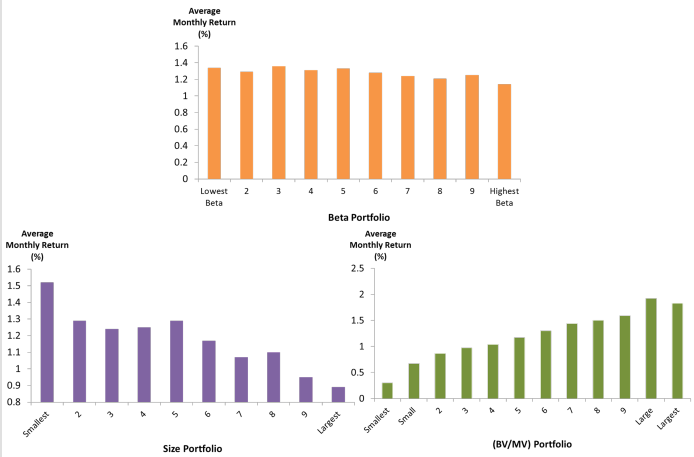
BNY MELLON

## Quick recap

The Capital Asset Pricing Model (CAPM) is an intuitively appealing model that some evidence suggests… doesn't work…



## Multi-factor models

The Fama-French 3-factor models suggests…

$$E(R_i) - R_f = \beta_i^{Mkt}{}_i \left[E(R_M) - R_f\right] + \beta_i^{SMB}\left[E(R_{SMB})\right] + \beta_i^{HML}\left[E(R_{HML})\right]$$

E(R) from a portfolio of Small *minus* Large stocks

E(R) from a portfolio of High *minus* Low B:M value stocks

Sensitivity to this factor

Sensitivity to this factor

## A fourth factor … or maybe more …?

Other researchers have identified other factors that have been found to explain returns including:

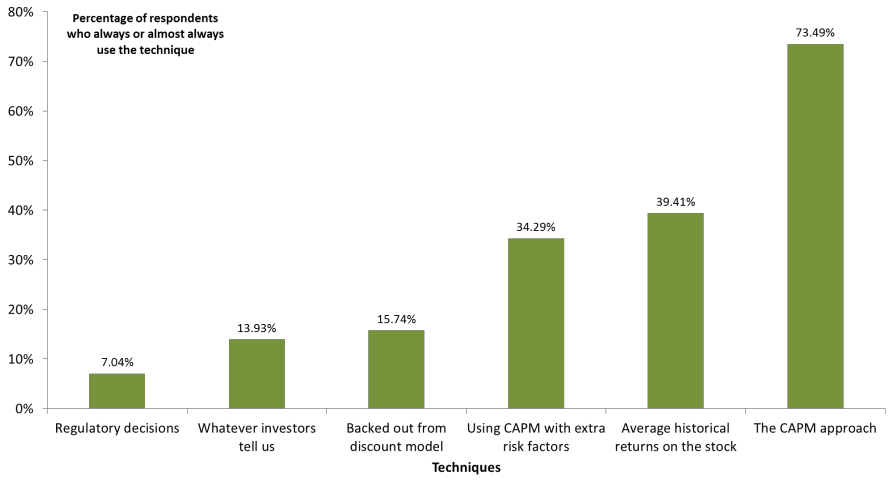
- **Momentum** – recent performance helps to explain short-to-medium term future performance
- **Liquidity** – higher variability in trading volumes associated with higher expected return – consistent with liquidity risk being important

And then more recently, **Investment** and **Profitability.**

*But what do managers actually do?*

## Empirical evidence

John Graham and Campbell Harvey surveyed 392 CFOs from Fortune 500 companies in the U.S. and asked them …. *How do you determine your firm's cost of equity capital?*




## Not exactly the same though is it ….

You would use a cost of equity capital to value a stock in a company…

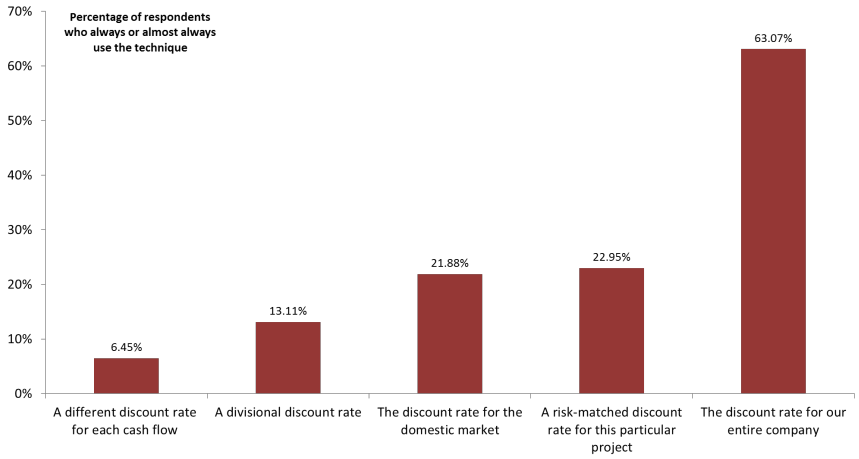
$$PV = \frac{Dividend_1}{(1+k_e)^1} + \frac{Dividend_2}{(1+k_e)^2} + \ldots + \frac{Dividend_n}{(1+k_e)^n}$$

From a firm's point of view – we would be interested in what discount rate we use to value an individual **project.**

$$PV = \frac{Cash\ Flow_1}{(1+r)^1} + \frac{Cash\ Flow_2}{(1+r)^2} + \ldots + \frac{Cash\ Flow_n}{(1+r)^n}$$

## Empirical evidence

Coleman, Maheswaran and Pinder surveyed senior financial managers in Australia in 2010 and asked…*How frequently would your company use the following discount rates when evaluating a new project..?*




## What the …?

But, but, but...what about risk?
The CAPM is such a beautiful model – even when it doesn't explain much – and then what about all the other fancy multifactor models? Are managers really that DUMB! Why doesn't anyone listen to me? Didn't they read my textbook? I should have followed my dream and became a professional break-dancer…

…but then I remembered the Weighted Average Cost of Capital
The *WACC*…

## Summary

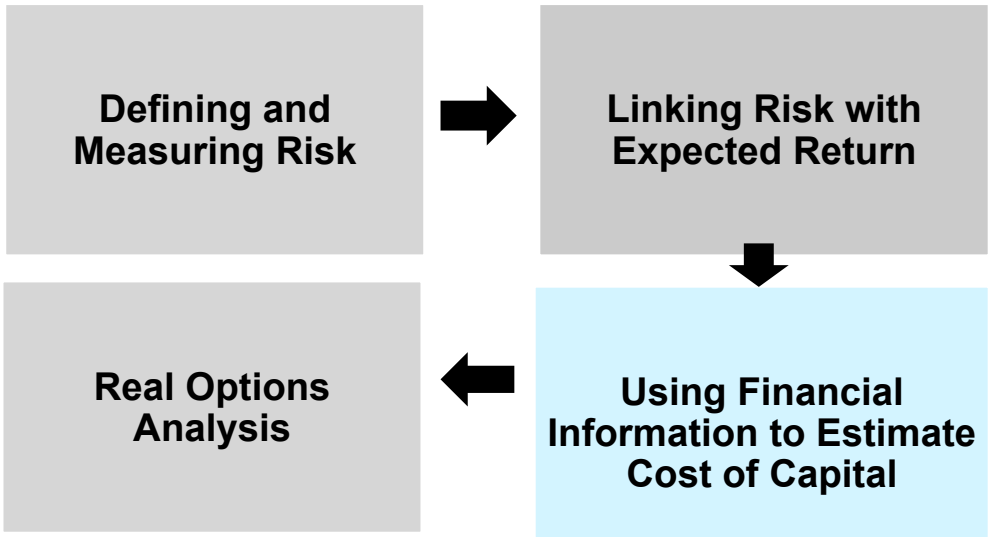
In this session we:

- Described one of the first – and most widely known and used – multi-factor pricing models
- Explained how this had been extended to account for other risks priced by the market
- Detailed key empirical evidence on what it is that financial managers actually use when estimating both a cost of equity capital **and** a project-specific cost of capital.

## Module summary

1. Unsystematic vs systematic risk
2. Capital Asset Pricing Model
3. Empirical evidence of the CAPM
4. Multifactor models and evidence from the field

## Key issues in valuation and investment

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