Module 2

Alternative Approaches to Valuation and Investment

WACC and Equity (Share the WACC-iness)

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Recap

$$WACC = k_d(1-t_c)\left(\frac{D}{V}\right) + k_e\left(\frac{E}{V}\right)$$

Where:

- k_d = Cost of debt capital
- t_c = Corporate tax rate
- k_e = Cost of equity capital
- D = Market value of debt
- E = Market value of equity
- V = Market value of assets
  = D+E

Listed company

For a listed company – estimating the cost of equity capital **and** the market value of equity is relatively straightforward:

- k_e is easily estimated using an asset pricing model such as the Capital Asset Pricing Model or a multi-factor model.
- So for Kellogg's we have:

$$k_e = R_f + \beta_i \left[E(R_M) - R_f \right]$$

$$k_e = 2\% + 0.773\left[7\%\right]$$

$$k_e = 7.41\%$$

- E = Number of shares x Share price
  = 358m x $65.48 = $23,442 m

Issues that might arise

1. What if my firm's equity is not listed?

- If your firm's equity is not listed – then you can't directly apply the CAPM to your own firm as you can't estimate beta for your own firm.
- An alternative is to utilize the cost of equity capital observed from another firm that operates in the same industry as your own firm.
- However – you will need to make adjustments for differences in beta invoked by – for example – differences in leverage.

De-levering and re-levering betas

- The greater a company's leverage – the higher the company's beta – this is the impact of **financial risk.**
- Recall that the beta of a portfolio is the weighted average beta of the assets in the portfolio.
  Similarly:
  $$\beta_{Assets} = \beta_{Debt}\left(\frac{D}{V}\right) + \beta_{Equity}\left(\frac{E}{V}\right)$$
- If debt is high-grade then often we assume that β_{Debt} is equal to zero.
- To de-lever beta we calculate $\beta_{Assets.}$
- To re-lever beta we simply recalculate $\beta_{Equity.}$ using our newly calculated β_{Assets} and our known leverage levels.

Unlisted company: Example

- You run an established business – Protecta Ltd that produces plastic shields for motorcycle helmets.
- Shares in your company are not yet listed – but you have identified another firm - Faceoff Ltd - that produces a similar product, in similar markets.
- Faceoff Ltd is listed on the NYSE – and you estimate it's equity beta as 1.30.
- Faceoff Ltd has a D/V ratio of 0.5.
- Protecta Ltd has a D/V ratio of 0.2.
- The issued debt of both Faceoff and Protecta is investment-grade – and it can be assumed they have a beta equal to zero.

What is your estimate of beta for Protecta Ltd?

Unlisted company: Example

$$\beta_{Assets} = \beta_{Debt}\left(\frac{D}{V}\right) + \beta_{Equity}\left(\frac{E}{V}\right)$$

$$\beta_{Assets} = 0\left(0.5\right) + (1.3 \times 0.5)$$

$$\beta_{Assets} = 0.65$$ This would be β_{Equity} for an all-equity firm!

Now – let's re-lever beta using Protecta's E/V ratio:

$$0.65 = 0(0.2) + \beta_{Equity}^{Protecta}(0.8)$$

$$\beta_{Equity}^{Protecta} = \frac{0.65}{0.8} = 0.8125$$

$$k_e^{Protecta} = 2\% + 0.8125\left[7\%\right] = 7.69\%$$

Summary

- Estimating the cost of equity capital and market value of equity is straightforward for listed firms.
- For firms that are unlisted – it is possible to use a proxy company that operates in the same industry.
- Need to ensure that appropriate adjustments are made for distinguishing factors such as leverage levels.
- We do this by de-levering and re-levering betas which involves the estimation of **asset betas.**

Source list

Slides 3 and 7:

Examples created by Sean Pinder using data downloaded from Yahoo Finance in June 2015 at https://au.finance.yahoo.com. © The University of Melbourne.