

## Cost of Equity

### CAPM:

$$r_e = r_f + \beta(r_m - r_f)$$

#### Components:

- *Risk-free rate*: 10-year government bonds → minimal default risk
- *Beta*:

$$\text{Beta } (\beta) = \frac{\text{Covariance}(r_i, r_m)}{\text{Variance}(r_m)}$$

(1) Consensus Estimates, e.g. Bloomberg – be mindful that Bloomberg weights beta 1/3 to 1.

(2) Linear regression → Make sure to use a total return index (includes dividends)

(3) Comparables Beta:

- I. Step 1: To neutralise the effects of different capital structures, i.e. remove the influence of leverage and operating risk, it is necessary to unlever the beta for each comparable company utilising each of their respective tax rates and their D/E ratio:

$$\beta_{unlevered} = \frac{\beta_{levered}}{1 + (1 - T) \times \frac{D}{E}}$$

- II. Step 2: Re-lever the beta at the company's (being valued) tax rate and D/E ratio using:

$$\beta_{levered} = \beta_{unlevered} \times \left(1 + (1 - T) \times \frac{D}{E}\right)$$

- III. Step 3: Compute the median beta for the comparables.

### Fama-French 3 Factor Model:

$$r_e = r_f + \beta(MRP) + \gamma(SMB) + \delta(HML)$$

#### Where:

- SMB is the return on small cap portfolio minus return on large cap portfolio
- HML is the risk premium related to the value of the firm relative to its book value

## Cost of Debt – Methods of Calculation

### 1) *Market Implied Cost of Debt*

- Use this method if the company has publically traded debt
- Calculate the weighted average yield/interest rate on the company's outstanding bonds/loans

### 2) *S&P/Moody's Method*

- a. Obtain the company's S&P/Moody's credit rating
- b. Obtain the spot rate for the Bank bill swap rate (BBSW) if Australian firm, or LIBOR if a US firm
- c. Obtain the premium to account for default risk:
  - Look at the company's weighted average time to maturity and match this with the appropriate Credit Default Spread (CDS) spot rate, e.g. US 5 year B+ bonds.

$$d. \text{ Cost of Debt} = \text{BBSW} + \text{CDS spot rate}$$

### 3) *Comparable Issuances Method*

- Consider the yields of outstanding bond issuances made by other firms with comparable credit profiles and comparable tenors.

### 4) *Altman Z-Score*

#### Limitations:

- The Z-Score was designed for manufacturing businesses and its application beyond that industry has been disputed

- The Z-Score is designed as an indicator of bankruptcy, so its application to companies with good credit is disputable

#### Terminal WACC Differences

- Utilise a target D/E ratio
- Use LIBOR/BBSW forward rates instead of spot rates
- Use longer term averages for risk free rate and beta inputs

#### Relative Valuation

- *Enterprise Value Multiples*: Relate the total value of all sources of a company's capital to a measure of fundamental value for the entire company, e.g. EV/EBITDA, EV/Sales, EV/FCFF
- *Price Multiples*: ratios of a stock's market price to some measure of fundamental value per share, e.g. P/E, P/Book
- Always use **median** of comparables set

#### Selection of Comparable Universe

Operational Profile	Financial Profile
<ul style="list-style-type: none"> <li>• <i>Sector</i> → a company's sector conveys a great deal about its key drivers, risks, opportunities and threats, e.g. oil and gas companies have dramatically different earnings volatility than consumer staples. Additionally, cyclical or highly fragmented sectors may present growth opportunities that are unavailable to companies in consolidated sectors.</li> <li>• <i>Products and Services</i></li> <li>• <i>Customers</i> → companies with a similar customer base tend to share similar opportunities and threats. Some companies serve a broad customer base whilst some target a specialised/niche market.</li> <li>• <i>End Markets</i> → Company performance is tied to the way by which macroeconomic factors affect these markets, e.g. wholesalers or retailers?</li> <li>• <i>Distribution Channels</i> → key driver of strategy, and key indicator of organisational and cost structures</li> <li>• <i>Geography</i> → The companies' that sell to different regions of the world often face differing macroeconomic environments, competitive forces, regulatory/political risks, and taxation systems.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Size (Market Cap)</i> → Companies of similar size are likely to be analogous in terms of economies of scale, purchasing power, pricing leverage, customers, growth prospects, and trading liquidity.</li> <li>• <i>Profitability</i> → Measure the companies' ability to convert sales into profit.</li> <li>• <i>Growth Profile</i> → growth in sales and profit margins; equity investors reward higher growth companies with higher trading multiples than slower growing peers</li> <li>• <i>Return on Investment</i> → measures a company's ability to provide earnings to its capital providers</li> <li>• <i>Credit Profile</i> → reflects key company and sector-specific benefits and risks</li> <li>• <i>Capital Structure</i></li> </ul>