11.3 The cost of equity

LEARNING OBJECTIVE 11.3 Calculate the cost of ordinary shares and the cost of preference shares for a company.

The cost of equity for a company is a weighted average of the costs of the different types of shares that the company has outstanding at a particular point in time. We saw in an earlier chapter that some companies have both preference shares and ordinary shares outstanding. In order to calculate the cost of equity for these companies, we have to know how to calculate the cost of both ordinary shares and preference shares. In this section, we discuss how financial analysts can estimate the costs associated with these two different share types.

Ordinary shares

Just as information about market rates of return is used to estimate the cost of debt, market information is also used to estimate the cost of equity. There are several ways to do this. The particular approach a financial analyst chooses will depend on what information is available and how reliable the analyst believes it is. Next we discuss three alternative methods for estimating the cost of ordinary shares. It is important to remember throughout this discussion that the 'cost' we are referring to is the rate of return that investors require for investing in these shares at a particular point in time, given their systematic risk.

Method 1: Using the Capital Asset Pricing Model (CAPM)

The first method for estimating the cost of ordinary equity is one that we discussed earlier in the text. This method uses equation 5.12:

$$E(R_i) = R_{rf} + \beta_i \, [E(R_m) - R_{rf}]$$

In this equation, the expected return on an asset is a linear function of the systematic risk associated with that asset.

If we recognise that $E(R_i)$ in equation 5.12 is the cost of the ordinary share capital used by the company (k_{os}) when we are calculating the cost of equity and that $[E(R_m) - R_{rf}]$ is the market risk premium, we can rewrite equation 5.12 as follows:

$$k_{os} = R_{rf} + (\beta_{os} \times \text{Market risk premium}) \qquad \textbf{11.4}$$

Equation 11.4 is just another way of writing equation 5.12. It tells us that the cost of ordinary shares equals the risk-free rate of return plus compensation for the systematic risk associated with the ordinary shares. You already saw some examples of how to use this equation to calculate the cost of equity in the discussion of the Capital Asset Pricing Model (CAPM). In those examples you were given the current risk-free rate, the beta for the shares and the market risk premium, and were asked to calculate k_{os} using the equation. Now we turn our attention to some practical considerations that you must be concerned with when choosing the appropriate risk-free rate, beta and market risk premium for this calculation.

The risk-free rate

First, let's consider the risk-free rate. The current effective annual yield on a risk-free asset should always be used in equation 11.4. This is because the risk-free rate at a particular point in time reflects the rate of inflation that the market expects in the future. Since the expected rate of inflation changes over time, an old risk-free rate might not reflect current inflation expectations.

When analysts select a risk-free rate, they must choose between using a short-term rate, such as that for Treasury notes, or a longer-term rate, such as those for Treasury bonds. Which of these choices is most appropriate? This question has been hotly debated by finance professionals for many years. We

recommend that you use the risk-free rate on a long-term Treasury security when you estimate the cost of equity capital because the equity claim is a long-term claim on the company's cash flows. As you saw previously, the shareholders have a claim on the cash flows of the company in perpetuity. By using a long-term Treasury security, you are matching a long-term risk-free rate with a long-term claim. A long-term risk-free rate better reflects long-term inflation expectations and the cost of getting investors to part with their money for a long period of time than a short-term rate.

The beta

If the ordinary shares of a company are publicly traded, then you can estimate the beta for these shares using a regression analysis similar to that illustrated in figure 5.10. However, identifying the appropriate beta is much more complicated if the ordinary shares are not publicly traded. Since most companies in Australia are privately owned and do not have publicly traded shares, this is a problem that arises quite often when someone wants to estimate the cost of ordinary shares for a company.

Financial analysts often overcome this problem by identifying a 'comparable' company with publicly traded shares that is in the same business and that has a similar amount of debt. For example, suppose you are trying to estimate the beta for your pizza business. The company has now grown to include more than 2000 restaurants throughout the world. The frozen-foods business, however, was never successful and had to be shut down. You know that Domino's Pizza Enterprises Ltd, one of your major competitors, has publicly traded equity and that the proportion of debt to equity for Domino's is similar to the proportion for your company. Since Domino's has a business similar to yours, in that it is only in the pizza business and competes in similar geographic areas, it would be reasonable to consider Domino's a comparable company.

The systematic risk associated with the shares of a comparable company is likely to be similar to the systematic risk for the private company because systematic risk is determined by the nature of the company's business and the amount of debt that it uses. If you are able to identify a good comparable company, such as Domino's, you can use its beta in equation 11.4 to estimate the cost of equity capital for your company. Even when a good comparable company cannot be identified, it is sometimes possible to use an average of the betas for the public companies in the same industry.

The market risk premium

It is not possible to directly observe the market risk premium. We just do not know what rate of return investors expect for the market portfolio — $E(R_m)$ — at a particular point in time. Therefore, we cannot simply calculate the market risk premium as the difference between the expected return on the market and the risk-free rate — $[E(R_m) - R_{rf}]$. For this reason, financial analysts generally use a measure of the average risk premium investors have actually earned in the past as an indication of the risk premium they might require today.

For example, from 1974 to July 2015 actual returns on the Australian equity market exceeded actual returns on long-term Australian government bonds by an average of 4 (4.03) per cent per year. If, on average, investors earned the risk premium that they expected, this figure reflects the average market risk premium over the period from 1974 to 2015. If a financial analyst believes that the market risk premium in the past is a reasonable estimate of the risk premium today, then he or she might use 4 per cent as the market risk premium in equation 11.4.

With this background, let's work an example to illustrate how equation 11.4 is used in practice to estimate the cost of ordinary shares for a company. Suppose that it is 1 July 2015, and we want to estimate the cost of ordinary shares for the oil company Woodside Petroleum Ltd. Using yields reported by the Reserve Bank of Australia (RBA) for that day, we determine that 30-day Treasury notes have an effective yield of 2 (2.06) per cent and that 10-year Treasury bonds have an effective yield of 3 (3.01) per cent. From Reuters web site (www.reuters.com), we find that the beta for Woodside Petroleum is 1.22. We know that the market risk premium averaged 4 (4.03) per cent from 1974 to 2015. What is the expected rate of return on Woodside Petroleum?

Since we are estimating the expected rate of return on ordinary shares, and ordinary shares are a long-term asset from the perspective of the market, we use the long-term Treasury bond yield of

3 per cent in the calculation. Notice that the Treasury note and the Treasury bond rates differed by 0.95 per cent (3.01 − 2.06 = 0.95) on 1 July 2015. These interest rates often differ by this amount and more, dependent on the market expectation of future inflation and the RBA's monetary policy stance, so the choice of which risk-free rate to use can make quite a difference in the estimated cost of equity.

Once we have selected the appropriate risk-free rate, we can plug it, along with the beta and market risk premium values, into equation 11.4 to calculate the cost of ordinary shares for Woodside Petroleum:

$$\begin{aligned} k_{os} &= R_{rf} + (\beta_{os} \times \text{Market risk premium}) \\ &= 0.03 + (1.22 \times 0.04) = 0.0788, \text{ or } 7.88\% \end{aligned}$$

This example illustrates how equation 11.4 is used to estimate the cost of ordinary shares for a company. How would the analysis differ for a private company? The only difference is that we would not be able to estimate the beta directly. We would have to estimate the beta from betas for similar public companies.

DEMONSTRATION PROBLEM 11.3

Calculating the cost of equity using a share's beta

Problem

You have decided to estimate the cost of the ordinary shares of your pizza business on 18 January 2012. As noted previously, the risk-free rate and the market risk premium on that day were 5.5 per cent and 3.5 per cent, respectively. Since you have already decided that Domino's Pizza Enterprises Ltd is a reasonably comparable company, you obtain Domino's Pizza's beta from the Yahoo! Finance web site. This beta is 0.86. What do you estimate the cost of ordinary shares of your pizza business to be?

Approach

Method 1 for calculating the cost of equity is to use the Capital Asset Pricing Model (CAPM). Therefore, in this example, we will use equation 11.4.

Solution

$$\begin{aligned} k_{os} &= R_{rf} + (\beta_{os} \times \text{Market risk premium}) \\ &= 0.055 + (0.86 \times 0.035) = 0.0851, \text{ or } 8.51\% \end{aligned}$$