

Provided by
ACCA Research Institute



ACCA F9

Financial Management (FM)

财务管理

ACCA Lecturer: Sinny Shao





Part E : Business Finance——Cost of Capital I

1

Introduction

2

Dividend growth model

3

CAPM



Introduction

The **cost of capital** is the rate of return that the enterprise must pay to satisfy the providers of funds, and it reflects the riskiness of providing funds.

2 aspects:

- cost of funds that a company raises and uses
- return that investors expect to be paid

可以理解为企业对投资的最低要求回报率

也可以视为是企业融资的机会成本



Introduction

Cost of capital and risk

Cost of capital = risk free rate+ premium for business risk+
premium for financial risk

Risk free rate——yield on government securities

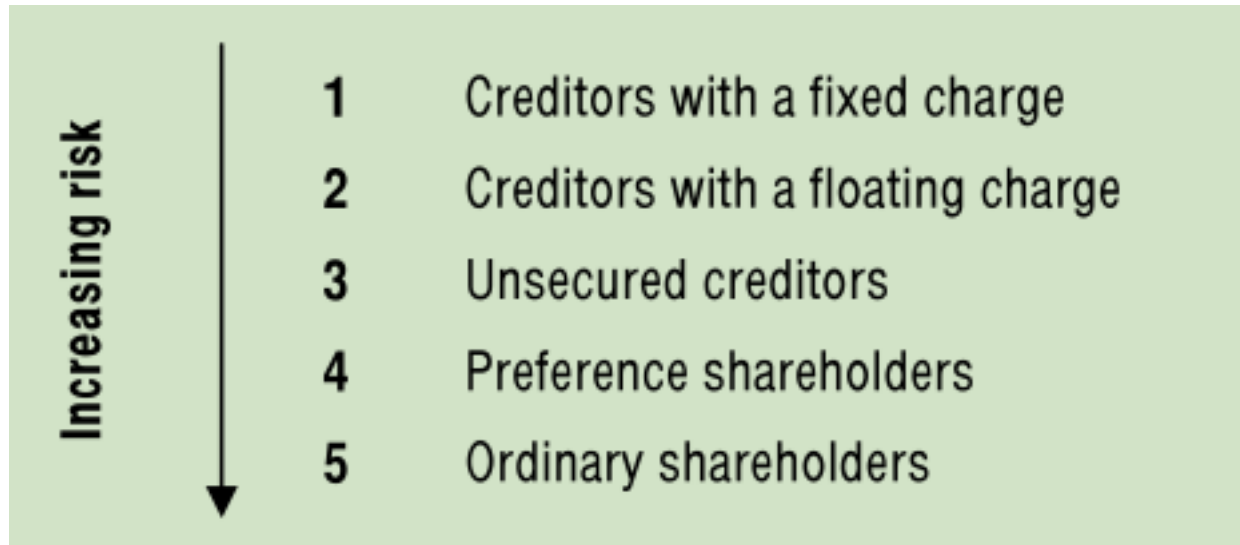
Premium for business risk——due to the existence of uncertainty about the future and about a firm's business prospects

Premium for financial risk——relate to the danger of high debt level.

Cost of capital也可视作企业cost of equity 以及cost of debt 的加权平均



The creditor (payables) hierarchy



This means that the cheapest type of finance is debt (especially if secured) and the most expensive type of finance is equity (ordinary shares)



Dividend Growth Model

估算cost of equity的方法有两种：

- Dividend growth model
- CAPM

Assumption of dividend growth model: the market value of share is directly related to the expected future dividends from the shares.

It is often convenient to assume a constant expected dividend growth rate in perpetuity, so the cost of equity can be calculated as:

$$k_e = \frac{d_0(1+g)}{P_0} + g \text{ or } k_e = \frac{d_1}{P_0} + g$$



Dividend Growth Model

使用Dividend growth model时需要注意以下几点：

1. 题目中给出的是什么时候的分红——D0 or D1
2. 股利分红的增长率是否是持续增长的

Example :

A share has a current market value of 96c, and the last dividend was 12c. If the expected annual growth rate of dividends is 4%, calculate the cost of equity capital.

$$\begin{aligned}\text{Cost of capital} &= \frac{12(1 + 0.04)}{96} + 0.04 \\ &= 0.13 + 0.04 \\ &= 0.17 \\ &= 17\%\end{aligned}$$



Dividend Growth Model

Estimation of g

the growth rate can be estimated using Gordon's growth approximation

$$g = br$$

Where g is the annual growth rate in dividends

b is the proportion of profits that are retained

r is the rate of return on new investments

the future growth rate can be predicted from an analysis of the growth in dividends over the past few years



Dividend Growth Model

Weaknesses of the dividend growth model

- The model does not explicitly incorporate risk.
- Dividends do not grow smoothly in reality, so g is only an approximation.
- The model fails to take capital gains into account, however it is argued that a change of share ownership does not affect the present value of the dividend stream.
- No allowance is made for the effects of taxation although the model can be modified to incorporate tax.
- It assumes there are no issue costs for new shares.
- It does not produce meaningful results where no dividend is paid



CAPM

The CAPM is based on a comparison of the systematic risk of individual investments with the risks of all shares in the market.

Portfolio theory

Portfolio theory suggests that investors can reduce the total risk on their investments by diversifying their portfolio of investments.

CAPM use market portfolio to estimates the cost of equity

Risk:

Systematic risk and Unsystematic risk

In return for accepting systematic risk, a risk-averse investor will expect to earn a return which is higher than the return on a risk-free investment.



CAPM

Common errors on this topic in exams include:

- Assuming risk-averse investors wish to eliminate risk. Risk-averse investors are prepared to accept risk, in exchange for higher returns
- Failing to link the risks of an investment with its returns
- Mixing up systematic and unsystematic risk



The implications of systematic risk and unsystematic risk:

- If an investor wants to avoid risk altogether, he must invest entirely in risk-free securities .
- If an investor holds shares in just a few companies , there will be some unsystematic risk as well as systematic risk in his portfolio
- If an investor holds a balanced portfolio of all the stocks and shares on the stock market, he will incur systematic risk which is exactly equal to the average systematic risk in the stock market as a whole.
- Shares in individual companies will have different systematic risk characteristics to this market average.



The CAPM model uses a beta factor to measure a share's volatility in terms of systematic risk

Beta factors

0	This is the systematic risk for risk-free investments. Returns on risk-free investments are unaffected by market risk and variations in market returns
1	This is the measurement of systematic risk for the stock market as a whole
Less than 1	Systematic risk is lower than for the market on average
More than 1	Systematic risk is higher than for the market on average



CAPM

- Step 1: Estimate the risk-free rate. The short-term Treasury bill (T-bill) rate is usually used, but some analysts feel the long-term Treasury rate should be used
- Step 2: Estimate the stock's beta, the stock's risk measure
- Step 3: Estimate the expected rate of return on the market
- Step 4: Use the CAPM equation to estimate the required rate of return

$$E(r_i) = R_f + \beta_i(E(r_m) - R_f)$$

Where $E(r_i)$ is the cost of equity capital

R_f is the risk-free rate of return

$E(r_m)$ is the return from the market as a whole

β_i is the beta factor of the individual security



CAPM

Investors have an expected rate of return of 8% from ordinary shares in Algol, which have a beta of 1.2. The expected returns to the market are 7%. What will be the expected rate of return from ordinary shares in Rigel, which have a beta of 1.8

$$\text{Algol: } E(r_i) = R_f + \beta_i(E(r_m) - R_f)$$

$$8 = R_f + 1.2(7 - R_f)$$

$$8 = R_f + 8.4 - 1.2 R_f$$

$$0.2 R_f = 0.4$$

$$R_f = 2\%$$

$$\text{Rigel: } E(r_i) = 2 + (7 - 2) 1.8$$

$$= 11\%$$



Problems with applying the CAPM in practice:

- The need to determine the excess return ($E(r_m) - R_f$).
- The need to determine the risk-free rate. A risk-free investment might be a government security. However, interest rates vary with the term of the lending.
- Errors in the statistical analysis used to calculate values.
- Betas may also change over time and changes may not be identified quickly through historical statistical analysis.
- The CAPM is also unable to forecast accurately returns for companies with low price/earnings ratios



Thank You!

