

**ABC Company****29 minutes**

ABC Company is considering investing in a machine that costs \$800,000. The incremental pre-tax financial impacts are summarised below:

Year	0	1	2	3	4	5
Investment	-800,000					
Sales		800,000	840,000	882,000	926,100	972,405
COGS		480,000	504,000	529,200	555,660	583,443
Expenses		80,000	84,000	88,200	92,610	97,241
Depreciation		160,000	160,000	160,000	160,000	160,000
EBIT		80,000	92,000	104,600	117,830	131,721
Interest		0	1,000	1,000	1,000	1,000

Life of project: 5 years

The machine is expected to reduce working capital requirements by \$100,000 as soon as the machine is installed and starts operating.

The machine is expected to be sold at the end of 5 years at an estimated salvage value of \$100,000 before tax. At that time, the machine is expected to have fully depreciated for tax purposes. The tax jurisdiction levies a profits tax and capital gains tax of 25%.

*Required*

- Based on NPV and using an after tax cost of capital of 10%, should the company invest in this initiative? **(10 marks)**
- IRR is another popular capital budgeting tool and usually gives the same result as NPV. Describe two circumstances in which IRR will give a conflicting result compared to NPV. **(4 marks)**
- What is capital rationing? Describe why the profitability index method can help a company to rank investment projects in a capital rationing situation. **(2 marks)**

**(Total = 16 marks)**

**HKICPA December 2012**



## chapter 13

# Cost of capital

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### Learning focus

In this chapter we examine the concept of the **cost of capital**, which can be used as a **discount rate** in evaluating the investments of an organisation.

First, we base **cost of equity** calculations on the **dividend valuation model**. We then look at a way of establishing the cost of equity that takes risk into account: the **capital asset pricing model**. With both these models it is important to be aware of the problems with the methods of calculation and the limitations of the assumptions used.

We then calculate the cost of capital for a range of debt instruments and then estimate the **cost of capital**.

This chapter also considers the impact of **capital structure** on the cost of capital.

**Learning outcomes**

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Strategic management</b>		
Analyse and advise upon an organisation's strategy		
<b>1.02</b>	<b>Project appraisal techniques and process</b>	2
1.02.04	Justify the selection of an appropriate discount rate in discounted cash flow analysis for investment appraisal purposes	
<b>Long term financial management</b>		
Identify and evaluate the long term financial management position of a business and advise on the relevant sources of finance and funding methods		
<b>6.02</b>	<b>Cost of capital</b>	3
6.02.01	Explain the term "cost of capital" and its importance in investment decision making	
6.02.02	Calculate the cost of equity using the dividend valuation model (DVM) and capital asset pricing model (CAPM)	
6.02.03	Calculate the cost of capital of a range of debt capital instruments, including irredeemable and redeemable debt, convertible debt, preference shares, bank debt (before and after tax)	
6.02.04	Calculate and interpret the overall weighted average cost of capital (WACC) of a company	
<b>6.05</b>	<b>Corporate debt securities</b>	2
6.05.02	Calculate the value of debt securities	

# 1 The cost of capital



## Topic highlights

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.

### 1.1 Aspects of the cost of capital

The cost of capital has two aspects to it.

- (a) The cost of funds that a company raises and uses, and the return that investors expect to be paid for putting funds into the company.
- (b) It is therefore the minimum return that a company should make on its own investments, to earn the cash flows out of which investors can be paid their return.

The cost of capital can therefore be measured by studying the returns required by investors, and then used to derive a discount rate for DCF analysis and investment appraisal.

### 1.2 The cost of capital as an opportunity cost of finance

The cost of capital is an opportunity cost of finance, because it is the minimum return that investors require. If they do not get this return, they will transfer some or all of their investment somewhere else. Here are two examples:

- (a) If a bank offers to lend money to a company, the interest rate it charges is the yield that the bank wants to receive from investing in the company, because it can get just as good a return from lending the money to someone else. In other words, the interest rate is the opportunity cost of lending for the bank.
- (b) When shareholders invest in a company, the returns that they can expect must be sufficient to persuade them not to sell some or all of their shares and invest the money somewhere else. The yield on the shares is therefore the opportunity cost to the shareholders of not investing somewhere else.

### 1.3 The cost of capital and risk

The cost of capital has three elements.

$$\begin{array}{r}
 \text{Risk-free rate of return} \\
 + \\
 \text{Premium for business risk} \\
 + \\
 \text{Premium for financial risk} \\
 = \\
 \text{COST OF CAPITAL}
 \end{array}$$

- (a) **Risk-free rate of return:** This is the return which would be required from an investment if it were completely free from risk. Typically, a risk-free yield would be the yield on government securities.
- (b) **Premium for business risk:** This is an increase in the required rate of return due to the existence of uncertainty about the future and about a firm's business prospects. The actual returns from an investment may not be as high as they are expected to be. Business risk will be higher for some firms than for others, and some types of project undertaken by a firm may be more risky than other types of project that it undertakes.

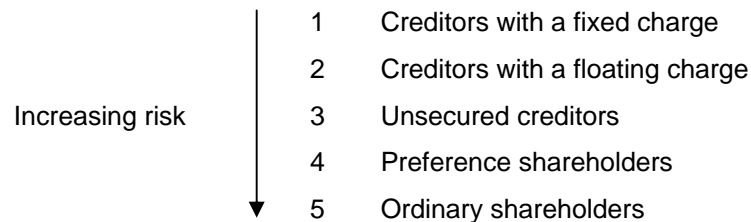
- (c) **Premium for financial risk:** This relates to the danger of high debt levels (high gearing). The higher the gearing of a company's capital structure, the greater will be the financial risk to ordinary shareholders, and this should be reflected in a higher risk premium and therefore a higher cost of capital.

Because different companies are in different types of business (varying business risk) and have different capital structures (varying financial risk) the cost of capital applied to one company may differ radically from the cost of capital of another.

## 1.4 The relative costs of sources of finance

The cost of debt is likely to be lower than the cost of equity, because debt is less risky from the debt holders' viewpoint. In the event of liquidation, the creditor hierarchy dictates the priority of claims and debt finance is paid off before equity. This makes debt a safer investment than equity and hence debt investors demand a lower rate of return than equity investors. Debt interest is also corporation tax deductible (unlike equity dividends) making it even cheaper to a tax paying company. Arrangement costs are usually lower on debt finance than on equity share issues and once again, unlike equity arrangement costs, they are also tax deductible.

### The creditor 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).

## 2 The dividend valuation model (DVM)



### Topic highlights

The **DVM** can be used to estimate a cost of equity, on the assumption that the market value of a share is directly related to the expected future dividends from that share.

### 2.1 The cost of ordinary share capital

New funds from equity shareholders are obtained either from new issues of shares or from retained earnings. Both of these sources of funds have a cost.

- (a) Shareholders will not be prepared to provide funds for a new issue of shares unless the return on their investment is sufficiently attractive.
- (b) Retained earnings also have a cost. This is an opportunity cost, the dividend forgone by shareholders.

## 2.2 The dividend valuation model

If we begin by ignoring share issue costs, the cost of equity, both for new issues and retained earnings, could be estimated by means of a dividend valuation model (DVM).

The DVM is based on the theory that the realistic market price of a share can be derived from a valuation of estimated future dividends. The value of a share will be the discounted present value of all future expected dividends on the shares, discounted at the shareholders' cost of capital.



### Formula to learn

If the future dividend per share is expected to be constant in amount, in perpetuity, then the ex-dividend share price will be calculated by the formula:

$$P_0 = \frac{d}{(1+k_e)} + \frac{d}{(1+k_e)^2} + \frac{d}{(1+k_e)^3} + \dots = \frac{d}{k_e}$$

$$\text{So } k_e = \frac{d}{P_0}$$

Where:  $k_e$  = the cost of equity capital

$d$  = the annual dividend per share, starting at year 1 and then continuing annually in perpetuity

$P_0$  = the ex-dividend share price (the price of a share where the share's new owner is **not** entitled to the dividend that is soon to be paid)

If the fundamental analysis theory of share values is correct, the price of any share will be **predictable**, provided that all investors have the same information about a company's expected future profits and dividends, and a known cost of capital.



### Example: Dividend valuation model

Cygnus has a dividend cover ratio of 4.0 times and expects zero growth in dividends. The company has 1 million \$10 ordinary shares in issue and the market capitalisation (value) of the company is \$500 million. After-tax profits for next year are expected to be \$200 million.

What is the cost of equity capital?

#### Solution

$$\text{Total dividends} = \frac{\$200\text{m}}{4} = \$50 \text{ million}$$

$$k_e = \frac{\$50\text{m}}{\$500\text{m}} = 10\%$$

## 2.3 The dividend growth model

Shareholders will normally expect dividends to increase year by year and not to remain constant in perpetuity. The fundamental theory of share values states that the market price of a share is the present value of the discounted future cash flows of revenues from the share, so the market value given an expected constant annual growth in dividends would be:

$$P_0 = \frac{d_0(1+g)}{(1+k_e)} + \frac{d_0(1+g)^2}{(1+k_e)^2} + \dots$$

Where:  $P_0$  is the current market price (ex div)  
 $d_0$  is the current net dividend  
 $k_e$  is the cost of equity capital  
 $g$  is the expected annual growth in dividend payments

and both  $k_e$  and  $g$  are expressed as percentages.

It is often convenient to assume a constant expected dividend growth rate in perpetuity.

The formula above then simplifies to:

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

Re-arranging this, we get a formula for the ordinary shareholders' cost of capital. Cost of ordinary (equity) share capital, having a current ex-div price,  $P_0$ , having just paid a dividend,  $d_0$ , with the dividend growing in perpetuity by a constant  $g\%$  per annum:



### Formula to learn

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



### Example: Cost of equity capital

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.

#### Solution

$$\begin{aligned} \text{Cost of capital } k_e &= \frac{d_0(1+g)}{P_0} + g \\ &= \frac{12(1+0.04)}{96} + 0.04 \\ &= 0.13 + 0.04 \\ &= 0.17 \text{ (i.e. 17\%)} \end{aligned}$$

## 2.4 Estimating the growth rate

The future growth rate can be predicted:

- (a) from past dividend growth
- (b) using Gordon's growth model

### 2.4.1 Past dividend growth

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



### Example: Past dividend growth

Data for Madjek Ltd is as follows:

Year	Dividends	Earnings
	\$m	\$m
20X1	15	40
20X2	19	51
20X3	21	55
20X4	24	65
20X5	26	70

Calculate the average growth rate,  $g$ .

### Solution

Dividends have risen from \$15 million in 20X1 to \$26 million in 20X5. The increase represents four years' growth. The average growth rate,  $g$ , may be calculated as follows:

Dividend in 20X1  $\times (1 + g)^4 =$  Dividend in 20X5

$$\begin{aligned} (1 + g)^4 &= \frac{\text{Dividend 20X5}}{\text{Dividend 20X1}} \\ &= \frac{\$26}{\$15} \\ &= 1.733 \end{aligned}$$

$$1 + g = \sqrt[4]{1.733} = 1.1474$$

$$g = 0.1474, \text{ i.e. } 14.74\%$$

The growth rate over the last four years is assumed to be expected by the shareholders of Madjek Ltd to continue into the indefinite future. If the company is financed entirely by equity and there are 100,000,000 shares in issue, each with a market value of \$3.35 ex div, the cost of equity,  $K_e$ , is:

$$\frac{d_0(1+g)}{P_0} + g = \frac{0.26(1+0.1474)}{3.35} + 0.1474 = 23.64\%$$

## 2.4.2 Gordon growth model

Alternatively, the growth rate can be estimated using Gordon's growth approximation. The rate of growth in dividends is sometimes expressed, theoretically, as:

$$g = br$$

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

So, if a company retains 71% of its earnings for capital investment projects it has identified and these projects are expected to have an average return of 5%, growth can be estimated as:

$$g = br = 71\% \times 5\% = 3.55\%$$



## 2.5 Assumptions of dividend models

The dividend models are underpinned by a number of assumptions:

- (a) Investors act rationally and homogeneously. The model fails to take into account the different expectations of shareholders, nor how much they are motivated by dividends versus future capital appreciation on their shares.
- (b) The  $d_0$  figure used does not vary significantly from the trend of dividends. If  $d_0$  does appear to be a rogue figure, it may be better to use an adjusted trend figure, calculated on the basis of the past few years' dividends.
- (c) The estimates of future dividends and prices used, and also the cost of capital are reasonable. As with other methods, it may be difficult to make a confident estimate of the cost of capital. Dividend estimates may be made from historical trends that may not be a good guide for a future, or derived from uncertain forecasts about future earnings.
- (d) Investors' attitudes to receiving different cash flows at different times can be modelled using discounted cash flow arithmetic.
- (e) Directors use dividends to signal the strength of the company's position (however, companies that pay zero dividends do not have zero share values).
- (f) Dividends either show no growth or constant growth. If the growth rate is calculated using  $g=bR$ , then the model assumes that  $b$  and  $R$  are constant.
- (g) Other influences on share prices are ignored.
- (h) The company's earnings will increase sufficiently to maintain dividend growth levels.
- (i) The discount rate used exceeds the dividend growth rate.

## 2.6 Weaknesses of the DVM approach

- (a) The model does not incorporate risk.
- (b) Dividends do not grow smoothly in reality, so  $g$  is only an approximation.
- (c) 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.
- (d) No allowance is made for the effects of taxation, although the model can be modified to incorporate tax.
- (e) It assumes there are no issue costs for new shares.

# 3 The capital asset pricing model (CAPM)



### Topic highlights

The **CAPM** can be used to calculate a cost of equity and incorporates **risk**.

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

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## 3.1 Systematic risk and unsystematic risk



### Topic highlights

The **risk** involved in holding securities (shares) divides into **risk specific** to the company (unsystematic) and risk due to **variations in market activity** (systematic).

**Unsystematic (business) risk** can be diversified away, while **systematic (market) risk** cannot. Investors may mix a diversified market portfolio with risk-free assets to achieve a preferred mix of risk and return.

Whenever an investor invests in some shares, or a company invests in a new project, there will be some risk involved. The actual return on the investment might be better or worse than that hoped for. To some extent, risk is unavoidable (unless the investor settles for risk-free securities such as gilts).

Provided that the investor diversifies his investments in a suitably wide portfolio, the investments which perform well and those which perform badly should tend to cancel each other out, and much risk can be diversified away. In the same way, a company which invests in a number of projects will find that some do well and some do badly, but taking the whole portfolio of investments, average returns should turn out much as expected. **Risks that can be diversified away** are referred to as **unsystematic risk**.

But there is another sort of risk too. Returns from investments are affected by environmental factors, such as changes in the state of the economy. These external factors have the effect of causing the size of returns in general to go up or go down. This has nothing to do with chance variations up or down in actual returns compared with what an investor should expect. This inherent risk – the **systematic risk or market risk** – **cannot be diversified away**.

In summary, market or systematic risk is risk that cannot be diversified away. Non-systematic or unsystematic risk applies to a single investment or class of investments, and can be reduced or eliminated by diversification.

Systematic risk differs between investments. Some investments are by their very nature more risky than others. So when returns for the market as a whole go up or down, the returns from a particular investment may go up or down by a larger or smaller amount than the market average. In other words, systematic risk varies between different investments. 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. In compensation for investing in an investment with systematic risk that is greater than the market average, an investor should expect a higher return. Similarly, when investing in an investment with low systematic risk (compared with the market average) the investor should expect a lower return.

### 3.2 Systematic risk and unsystematic risk: implications for investments

The implications of systematic risk and unsystematic risk are as follows:

- (a) If an investor wants to avoid risk altogether, he must invest entirely in risk-free securities.
- (b) If an investor holds shares in just a few companies, there will be some unsystematic risk as well as systematic risk in his portfolio, because he will not have spread his risk enough to diversify away the unsystematic risk. To eliminate unsystematic risk, he must build up a well diversified portfolio of investments.
- (c) 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.
- (d) Shares in individual companies will have different systematic risk characteristics to this market average. Some shares will be less risky and some will be more risky than the stock market average. Similarly, some investments will be more risky and some will be less risky than a company's "average" investments.

### 3.3 Systematic risk and the CAPM



#### Topic highlights

The **beta factor** measures a share's volatility in terms of market risk.

The capital asset pricing model is mainly concerned with how systematic risk is measured, and how systematic risk affects required returns and share prices. Systematic risk in investments is measured using beta factors.

A beta factor is the measure of the systematic risk of a security relative to the market average ("market portfolio"). If a share price were to rise or fall at double the market rate, it would have a beta factor of 2.0. Conversely, if the share price moved up or down at half the rate for the market as a whole, the beta factor would be 0.5.

The beta factor for the market as a whole is 1.0.

CAPM theory includes the following propositions:

- (a) Investors in shares require a return in excess of the risk-free rate, to compensate them for systematic risk.
- (b) Investors should not require a premium for unsystematic risk, because this can be diversified away by holding a wide portfolio of investments.
- (c) Because systematic risk varies between companies, investors will require a higher return from shares in those companies where the systematic risk, and therefore the relevant beta factor, is bigger.

The same propositions can be applied to capital investments by companies:

- (a) Companies will want a return on a project to exceed the risk-free rate, to compensate them for systematic risk.
- (b) Unsystematic risk can be diversified away, and so a premium for unsystematic risk should not be required.
- (c) Companies should want a bigger return on projects where systematic risk is greater.

### 3.4 Market risk and returns



#### Key term

**Market risk** (systematic risk) is the average risk of the market as a whole.

Taking all the shares on a stock market together, the total expected returns from the market will vary because of systematic risk. The market as a whole might do well or it might do badly.

### 3.5 Risk and returns from an individual security

In the same way, an individual security may offer prospects of a return of  $x\%$ , but with some risk (business risk and financial risk) attached. The return (the  $x\%$ ) that investors will require from the individual security will be higher or lower than the market return, depending on whether the security's systematic risk is greater or less than the market average. A major assumption in CAPM is that there is a linear relationship between the return obtained from an individual security and the average return from all securities in the market.



### Example: CAPM (1)

The following information is available about the performance of an individual company's shares and the stock market as a whole:

	<i>Individual company</i>	<i>Stock market as a whole</i>
Price at start of period	105.00	480.00
Price at end of period	110.00	490.00
Dividend during period	7.60	39.20

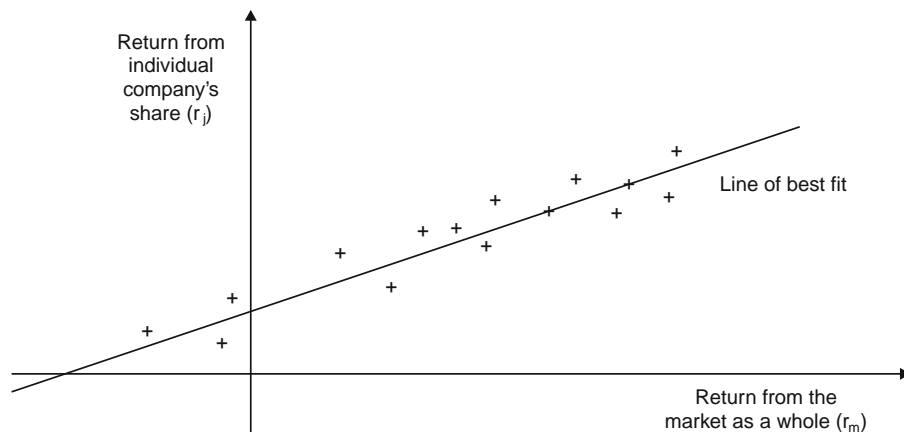
The expected return on the company's shares  $R_j$  and the expected return on the "market portfolio" of shares  $E(r_m)$  may be calculated as:

$$\frac{\text{Capital gain (or loss) + dividend}}{\text{Price at start of period}}$$

$$R_j = \frac{P_1 - P_0 + D}{P_0} = \frac{(110 - 105) + 7.6}{105} = 12\%$$

$$E(R_m) = \frac{P_1 - P_0 + D}{P_0} = \frac{(490 - 480) + 39.2}{480} = 10.25\%$$

A statistical analysis of "historical" returns from a security and from the "average" market may suggest that a linear relationship can be assumed to exist between them. A series of comparative figures could be prepared of the return from a company's shares and the average return of the market as a whole. The results could be drawn on a scatter graph and a "line of best fit" drawn (using linear regression techniques) as shown below.



This analysis reveals the following:

- The return from the security and the return from the market as a whole will tend to rise or fall together.
- The return from the security may be higher or lower than the market return. This is because the systematic risk of the individual security differs from that of the market as a whole.
- The scatter graph may not give a good line of best fit, unless a large number of data items are plotted, because actual returns are affected by unsystematic risk as well as by systematic risk.

Note that returns can be negative. A share price fall represents a capital loss, which is a negative return.

The conclusion from this analysis is that individual securities will be either more or less risky than the market average in a fairly predictable way. The measure of this relationship between market returns and an individual security's returns, reflecting differences in systematic risk characteristics, can be developed into a beta factor for the individual security.

### 3.6 The equity risk premium



#### Key term

**Market risk premium** or equity risk premium is the difference between the expected rate of return on a market portfolio and the risk-free rate of return over the same period.

The equity risk premium ( $E(R_m - R_f)$ ) represents the excess of market returns over those associated with investing in risk-free assets.

The CAPM makes use of the principle that returns on shares in the market as a whole are expected to be higher than the returns on risk-free investments. The difference between market returns and risk-free returns is called an excess return. For example, if the return on a government stock is 9% and market returns are 13%, the excess return on the market's shares as a whole is 4%.

The difference between the risk-free return and the expected return on an individual security can be measured as the excess return for the market as a whole multiplied by the security's beta factor.

### 3.7 The CAPM formula



#### Key term

The **capital asset pricing model** is a statement of the principles explained above. It can be stated as follows:

$$E(R_i) = R_f + \beta_i (E(R_m) - R_f)$$

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

$\beta_i$  is the beta factor of the individual security



#### Example: CAPM (2)

Shares in Doe Ltd have a beta of 0.9. The expected returns to the market are 10% and the risk-free rate of return is 4%. What is the cost of equity capital for Doe Ltd?

#### Solution

$$\begin{aligned} E(R_i) &= R_f + \beta_i (E(R_m) - R_f) \\ &= 4 + 0.9 (10 - 4) \\ &= 9.4\% \end{aligned}$$



#### Example: CAPM (3)

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?

**Solution**

$$\begin{aligned}
 \text{Algol } E(R_i) &= 8\% = R_f + \beta_i (E(R_m) - R_f) \\
 &= 8\% = R_f + 1.2 (7\% - R_f) \\
 &= 8\% = R_f + 8.4\% - 1.2R_f \\
 &= 0.2R_f = 0.4\%
 \end{aligned}$$

$$R_f = 2\%$$

$$\begin{aligned}
 \text{Rigel } E(R_i) &= R_f + \beta_i (E(R_m) - R_f) \\
 &= 2\% + 1.8 (7\% - 2\%) \\
 &= 11\%
 \end{aligned}$$

**Example: CAPM (4)**

The risk-free rate of return is 7%. Equity shares in Loss Ltd have a beta factor of 1.1. The current average market return is 11%.

- What will be the return currently expected from investing in the shares of Loss Ltd?
- What would be the expected return if the market return fell by 2% and the risk-free rate fell by 1.5%?

**Solution**

- $7\% + 1.1 (11\% - 7\%) = 11.4\%$
- $5.5\% + 1.1 (9\% - 5.5\%) = 9.35\%$

**3.8 Beta factors**

What does beta measure, and what do betas of 0.5, 1 and 1.5 mean?

- Beta measures the systematic risk of a risky investment such as a share in a company. The total risk of the share can be sub-divided into two parts, known as systematic (or market) risk and unsystematic (or unique) risk. The systematic risk depends on the sensitivity of the return of the share to general economic and market factors such as periods of boom and recession. The capital asset pricing model shows how the return which investors expect from shares should depend only on systematic risk, not on unsystematic risk, which can be eliminated by holding a well-diversified portfolio.
- Beta is calibrated such that the average risk of stock market investments has a beta of 1. Therefore shares with betas of 0.5 or 1.5 would have half or 1½ times the average sensitivity to market variations respectively.
- This is reflected by higher volatility of share prices for shares with a beta of 1.5 than for those with a beta of 0.5. For example, a 10% increase in general stock market prices would be expected to be reflected as a 5% increase for a share with a beta of 0.5 and a 15% increase for a share with a beta of 1.5, with a similar effect for price reductions.

What factors determine the level of beta which a company may have?

- The beta of a company will be the weighted average of the beta of its shares and the beta of its debt. The beta of debt is very low, but not zero, because corporate debt bears default risk, which in turn is dependent on the volatility of the company's cash flows.

- (b) Factors determining the beta of a company's equity shares include:
- (i) Sensitivity of the company's cash flows to economic factors, as stated above. For example, sales of new cars are more sensitive than sales of basic foods and necessities.
  - (ii) The company's operating gearing. A high level of fixed costs in the company's cost structure will cause high variations in operating profit compared with variations in sales.
  - (iii) The company's financial gearing. High borrowing and interest costs will cause high variations in equity earnings compared with variations in operating profit, increasing the equity beta as equity returns become more variable in relation to the market as a whole. This effect will be countered by the low beta of debt when computing the weighted average beta of the whole company.

### 3.9 Problems with applying the CAPM in practice



#### Topic highlights

Problems of CAPM include **unrealistic assumptions** and the **required estimates being difficult to make**.

- (a) The need to determine the excess return ( $E(R_m - R_f)$ ). Expected, rather than historical, returns should be used, although historical returns are often used in practice.
- (b) 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.
- (c) Errors in the statistical analysis used to calculate  $\beta$  values. Betas may also change over time.
- (d) The CAPM is also unable to forecast accurately returns for companies with low price/earnings ratios and to take account of seasonal "month-of-the-year" effects and "day-of-the-week" effects that appear to influence returns on shares.



#### Example: Comparing DVM and CAPM

The two models will not necessarily give the same cost of equity and the cost of equity may have to be calculated using either, or both, models.

The following data relates to the ordinary shares of Stilton:

Current market price	\$2.50
Dividend per share: 20X9	3c
Expected growth rate in dividends and earnings	10% pa
Average market return	8%
Risk-free rate of return	5%
Beta factor of Stilton equity shares	1.40

- (a) What is the estimated cost of equity using the dividend valuation model?
- (b) What is the estimated cost of equity using the capital asset pricing model?

**Solution**

$$\begin{aligned}
 \text{(a)} \quad k_e &= \frac{d_0(1+g)}{P_0} + g \\
 &= \frac{3(1+0.10)}{250} + 0.10 \\
 &= 0.1132 \text{ or } 11.32\% \\
 \text{(b)} \quad k_e &= 5\% + 1.40(8\% - 5\%) \\
 &= 9.2\%
 \end{aligned}$$


---

## 4 The cost of debt

**Topic highlights**

The **cost of debt** is the return an enterprise must pay to its lenders.

- For **irredeemable debt**, this is the (post-tax) interest as a percentage of the ex-interest market value of the bonds (or preferred shares).
  - For **redeemable debt**, the cost is given by the internal rate of return of the cash flows involved.
- 

### 4.1 The basics

Debt is often quoted in \$1,000 nominal units, or blocks.

Debt can be quoted as a percentage or as a value (i.e. 97% or \$970). Both mean that \$1,000 nominal value of debt is worth \$970 market value.

Interest on debt is stated as a percentage of nominal value. This is known as the coupon rate. It is not the same as the redemption yield on debt or the cost of debt.

Interest yield is defined as coupon/market price.

Ex-interest prices should be used in any calculations of value.

### 4.2 The cost of debt capital

The cost of debt capital represents:

- the cost of continuing to use the finance rather than redeem the securities at their current market price.
- the cost of raising additional fixed interest capital if we assume that the cost of the additional capital would be equal to the cost of that already issued. If a company has not already issued any fixed interest capital, it may estimate the cost of doing so by making a similar calculation for another company which is judged to be similar as regards risk.

Different types of debt have different costs. The cost of a bond will not be the same as the cost of a bank loan.



### 4.3 Irredeemable debt capital



#### Formula to learn

The cost of irredeemable debt capital, paying interest in perpetuity, and having a current ex-interest price  $P_0$  is given by the formula:

$$k_d = \frac{i}{P_0}$$


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#### Example: Cost of debt capital (1)

Lepus has issued bonds of \$1,000 nominal value with annual interest of 9% per year, based on the nominal value. The current market price of the bonds is \$900. What is the cost of the bonds?

#### Solution

$$k_d = \frac{i}{P_0}$$

$$k_d = \frac{90}{900} = 10\%$$


---



#### Example: Cost of debt capital (2)

A company has issued 12% irredeemable bonds in issue with a nominal value of \$1,000. The market price is \$950 ex interest. Calculate the cost of capital if interest is paid half-yearly.

#### Solution

If interest is 12% annually, therefore 6% is payable half-yearly:

$$\text{Cost of loan capital} = \left(1 + \frac{60}{950}\right)^2 - 1 = 13.0\%$$


---

### 4.4 Redeemable debt capital



#### Formula to learn

If the **debt** is redeemable then in the year of redemption the interest payment will be received by the holder as well as the amount payable on redemption, so:

$$P_0 = \frac{i}{(1+k_d)} + \frac{i}{(1+k_d)^2} + \dots + \frac{i+p_n}{(1+k_d)^n}$$

Where  $p_n$  = the amount payable on redemption in year  $n$

The above equation cannot be simplified, so “ $k_d$ ” will have to be calculated by trial and error, as an internal rate of return (IRR).

**IRR: formula for calculation**

Where: L = lower cost of capital, for which the NPV is positive

H = higher cost of capital, for which the NPV is negative

$NPV_L$  = NPV for the lower cost of capital

$NPV_H$  = NPV for the higher cost of capital

$$\text{Approximate IRR} = L + \left[ \frac{NPV_L}{(NPV_L + NPV_H)} \times (H - L) \right]$$

The best “trial and error” estimate for the cost of capital to start with in calculating the cost of redeemable debt is to take the cost of debt capital as if it were irredeemable and then add the annualised capital profit that will be made from the present time to the time of redemption.

**Example: Cost of debt capital (3)**

Owen Ltd has in issue 10% bonds of a nominal value of \$1,000. The market price is \$900 ex interest. Ignoring taxation, calculate the cost of this capital if the bond is:

- irredeemable
- redeemable at par after 10 years

**Solution**

(a) The cost of irredeemable debt capital:  $k_d = \frac{i}{P_0} = \frac{100}{900} = 11.1\%$

(b) The cost of redeemable debt capital

The capital profit that will be made from now to the date of redemption is \$100 (\$1,000 – \$900). This profit will be made over a period of 10 years which gives an annualised profit of \$10 which is about 1% of current market value. The best trial and error figure to try first is therefore 12%.

Year		Cash flow \$	Discount factor @ 12%	Present value \$	Discount factor @ 11%	Present value \$
0	Market value	(90)	1.000	(90.00)	1.000	(90.00)
1–10	Interest	10	5.650	56.50	5.889	58.89
10	Capital repayment	100	0.322	32.20	0.352	35.20
				<u>(1.30)</u>		<u>4.09</u>

The approximate cost of redeemable debt capital is, therefore:

$$\left( 11\% + \frac{4.09}{(4.09 + 1.30)} \times 1\% \right) = 11.76\%$$

**4.5 Debt capital and taxation**

The interest on debt capital is likely to be an allowable deduction for purposes of taxation and so the cost of debt capital and the cost of share capital are not properly comparable costs. The tax relief on interest which makes debt capital cheaper ought to be recognised in computations.



### Key term

The **after-tax cost of irredeemable debt capital** is:

$$k_{dnet} = \frac{i(1-t)}{P_0}$$

Where:  $k_{dnet}$  is the cost of debt capital to the company (net of tax relief)

$i$  is the annual interest payment

$P_0$  is the current market price of the debt capital ex interest (i.e. after payment of current interest)

$t$  is the rate of corporation tax

Therefore, if a company pays \$0.1 million a year interest on irredeemable bonds with a nominal value of \$1 million and a market price of \$0.8 million, and the rate of tax is 16.5%, the cost of the debt would be:

$$k_{dnet} = \frac{i(1-t)}{P_0} = \frac{0.1m(1-0.165)}{0.8m} = 10.44\%$$

The higher the rate of tax is, the greater the tax benefits in having debt finance will be compared with equity finance. In the example above, if the rate of tax had been, say 50%, the cost of debt would have been, after tax:

$$k_{dnet} = \frac{i(1-t)}{P_0} = \frac{0.1m(1-0.50)}{0.8m} = 6.25\%$$

Debt attracts tax relief in most jurisdictions.

In the case of **redeemable debt**, the capital repayment is not allowable for tax. To calculate the cost of the debt capital to include in the weighted average cost of capital, it is necessary to calculate an internal rate of return which takes account of tax relief on the interest.

The after-tax cost of redeemable debt capital,  $k_{dnet}$ , is found by calculating the IRR of the following cash flows:

Year		Cash flow
		\$
0	Market value	(MV)
1–n	Interest net of tax	$i(1-t)$
n	Capital repayment	C



### Example: Cost of debt capital (4)

- A company has outstanding \$6.6 million of 8% bonds (nominal value \$1,000) on which the interest is payable annually on 31 December. The debt is due for redemption at par on 31 December 20X5. The market price of the bonds now (at 28 December 20X1) is \$950 excluding the interest payable in three days' time. Ignoring any question of personal taxation, what do you estimate to be the current cost of debt?
- If a new expectation emerged that the cost of debt would rise to 12% during 20X2 and 20X3 what effect might this have in theory on the cum interest market price at 28 December 20X1?
- If the effective rate of tax was 16.5% what would be the after-tax cost of debt of the bonds in part (a) above? Tax is paid each 31 December on profits earned in that year.

## Solution

- (a) The current cost of debt is found by calculating the pre-tax internal rate of return of the cash flows shown in the table below. A discount rate of 10% is chosen for a trial-and-error start to the calculation.

<i>Item and date</i>	<i>Year</i>	<i>Cash flow</i> \$	<i>Discount factor @ 10%</i>	<i>Present value</i> \$
Market value	28.12.X1	0	1.000	(950)
Interest	31.12.X2	1	0.909	73
Interest	31.12.X3	2	0.826	66
Interest	31.12.X4	3	0.751	60
Redemption	01.01.X5	3	0.751	<u>751</u>
NPV				<u><u>0</u></u>

By coincidence, the cost of debt is 10% since the NPV of the cash flows above is zero.

- (b) If the cost of debt is expected to rise in 20X2 and 20X3 it is probable that the market price in December 20X1 will fall to reflect the new rates obtainable. The probable market price would be the discounted value of all future cash flows up to 20X5, at a discount rate of 12%.

The cum interest price would include the interest that is about to be paid for X1.

<i>Item and date</i>	<i>Year</i>	<i>Cash flow</i> \$	<i>Discount factor @ 12%</i>	<i>Present value</i> \$
Interest	28.12.X1	0	1.000	80
Interest	31.12.X2	1	0.893	71
Interest	31.12.X3	2	0.797	66
Interest	31.12.X4	3	0.712	57
Redemption	01.01.X5	3	0.712	<u>712</u>
NPV				<u><u>984</u></u>

The estimated market price per \$1,000 nominal would be \$984 cum int, or \$904 ex int.

- (c) Same as for part (a) but with tax:

<i>Item and date</i>	<i>Year</i>	<i>Cash flow</i> \$	<i>Present value @ 5%</i> \$	<i>Present value</i> \$
Market value	28.12.X1	0	(950.0)	(950)
Interest (*)	31.12.X2	1	66.8	61
Interest	31.12.X3	2	66.8	55
Interest	31.12.X4	3	66.8	50
Redemption	01.01.X5	3	1,000.0	<u>864</u>
NPV				<u><u>97</u></u> (33)

(\*) Interest net of tax = \$80,000 (1 – 0.165) = \$67,200

The estimated after-tax cost of debt is:  $5\% + \left( \frac{97}{97 + 33} \times 5\% \right) = 8.73\%$

## 4.6 The cost of floating rate debt

If a firm has variable or “floating rate” debt, then the cost of an equivalent fixed interest debt should be substituted. “Equivalent” usually means fixed interest debt with a similar term to maturity in a firm of similar standing, although if the cost of capital is to be used for project appraisal purposes, there is an argument for using debt of the same duration as the project under consideration.

## 4.7 The cost of bank debt

The cost of short-term funds such as bank loans and overdrafts is the current interest being charged on such funds. Alternatively, the cost of debt of ordinary or straight bonds could be used as an approximation.

## 4.8 The cost of convertible debt

The cost of capital of convertible debt is harder to determine. The calculation will depend on whether or not conversion is likely to happen.

- If conversion is not expected, the conversion value is ignored and the bond is treated as redeemable debt, using the IRR method described earlier.
- If conversion is expected, the IRR method for calculating the cost of redeemable debt is used, but the number of years to redemption is replaced by the number of years to conversion and the redemption value is replaced by the conversion value i.e. the market value of the shares into which the debt is to be converted.



### Key term

$$\text{Conversion value} = P_0(1+g)^n R$$

Where:  $P_0$  is the current ex-dividend ordinary share price  
 $g$  is the expected annual growth of the ordinary share price  
 $n$  is the number of years to conversion  
 $R$  is the number of shares received on conversion



### Example: Cost of convertible debt

A company has issued 8% convertible bonds which are due to be redeemed in five years' time. They are currently quoted at \$820 per \$1,000 nominal. The bonds can be converted into 25 shares in five years' time. The share price is currently \$35 and is expected to grow at a rate of 3% pa. Assume a 16.5% rate of tax.

Calculate the cost of the convertible debt.

### Solution

$$\begin{aligned} \text{Conversion value} &= P_0(1+g)^n R \\ &= 35(1+0.03)^5 \times 25 \\ &= \$1,014 \end{aligned}$$

As the redemption value is above \$1,000, investors would choose to convert the bonds so the conversion value is used in the IRR calculation.

Item and date	Year	Cash flow	Present	Present
			value @ 8%	value @ 12%
		\$	\$	\$
Market value	0	(820)	(820)	(820)
Interest (*)	1–5	67	267	241
Conversion	5	1,014	691	575
NPV			<u>233</u>	<u>(4)</u>

(\*) Interest net of tax = \$80,000 (1 – 0.165) = \$66,800

The estimated after-tax cost of debt is:  $8\% + \left( \frac{233}{(233 + 4)} \times (12\% - 8\%) \right) = 11.93\%$

## 4.9 The cost of preference shares

For preference shares the future cash flows are the dividend payments in perpetuity so that:

$$P_0 = \frac{d}{(1+k_{\text{pref}})} + \frac{d}{(1+k_{\text{pref}})^2} + \frac{d}{(1+k_{\text{pref}})^3} + \dots$$

Where:  $P_0$  is the current market price of preference share capital after payment of the current dividend

$d$  is the dividend received

$k_{\text{pref}}$  is the cost of preference share capital

$$\frac{d}{(1+k_{\text{pref}})} + \frac{d}{(1+k_{\text{pref}})^2} + \frac{d}{(1+k_{\text{pref}})^3} \dots$$

simplifies to  $\frac{d}{k_{\text{pref}}}$



### Key term

The **cost of preference shares** can be calculated as  $k_{\text{pref}} = \frac{d}{P_0}$

Tax relief is not given for preference share dividends. When calculating the weighted average cost of capital (see below), the cost of preference shares is a separate component and should not be combined with the cost of debt or the cost of equity.

## 5 The weighted average cost of capital (WACC)



### Topic highlights

The **WACC** is calculated by weighting the costs of the individual sources of finance according to their **relative** importance as sources of finance.

### 5.1 Computing a discount rate

We have looked at the costs of individual sources of capital for a company. But how does this help us to work out the cost of capital as a whole, or the discount rate to apply in DCF investment appraisals?

In many cases it will be difficult to associate a particular project with a particular form of finance. A company's funds may be viewed as a pool of resources. Money is withdrawn from this pool of funds to invest in new projects and added to the pool as new finance is raised or profits are retained. Under these circumstances it might seem appropriate to use an average cost of capital as the discount rate.

The correct cost of capital to use in investment appraisal is the marginal cost of the funds raised (or earnings retained) to finance the investment. The WACC might be considered the most reliable guide to the marginal cost of capital, but only on the assumption that the company continues to invest in the future, in projects of a standard level of business risk, by raising funds in the same proportions as its existing capital structure.

Weighted average cost of capital is the average cost of the company's finance (equity, bonds, bank loans) weighted according to the proportion each element bears to the total pool of capital.

## 5.2 General formula for the WACC

A general formula for the WACC  $k_0$  is as follows:



### Formula to learn

$$\text{WACC} = k_e \frac{V_e}{V_e + V_d} + k_d(1 - t) \frac{V_d}{V_e + V_d}$$

Where:  $k_e$  is the cost of equity  
 $k_d$  is the cost of debt  
 $V_e$  is the market value of equity in the firm  
 $V_d$  is the market value of debt in the firm  
 $t$  is the rate of corporate tax



### Example: WACC

A company has the following information in its statement of financial position.

	\$m
Ordinary shares of \$5	250
12% unsecured bonds	100

The ordinary shares are currently quoted at \$13 each and the bonds are trading at \$720 per \$1,000 nominal. The ordinary dividend of \$1.50 has just been paid with an expected growth rate of 10%. Assume corporation tax is currently 16.5%.

Calculate the WACC for this company.

### Solution

Market values:

	\$m
Equity ( $V_e$ ): $\frac{\$250\text{m}}{\$5} \times \$13$	650
Bonds ( $V_d$ ): $\$100\text{m} \times 0.72$	<u>72</u>
	<u>722</u>

Cost of equity:

$$K_e = \frac{d_0(1+g)}{P_0} + g = \frac{1.50(1+0.1)}{13} + 0.1 = 0.2269 = 22.69\%$$

Cost of debt:

$$k_d \text{ (before tax)} = \frac{i}{P_0} = \frac{0.12}{0.72} = 0.1667 = 16.67\%$$

$$k_d \text{ (after tax)} = 16.67\% \times (1 - 0.165) = 13.92\%$$

Weighted average cost of capital:

<i>Capital</i>	<i>Cost</i>	<i>Market value</i> (\$m)	<i>Market value × cost</i>
Equity	0.2269	650	147.485
Debt	0.1392	72	10.022
		<u>722</u>	<u>157.507</u>

$$\text{WACC} = 157.507/722 = 0.2182 = 21.82\%.$$

### 5.3 Weighting

Two methods of valuation weighting could be used for capital: market value or book value.

**Market values** should always be used for equity and debt if data is available. Although **book values** are often easier to obtain, they are based on historical costs and their use will seriously underestimate the impact of the cost of equity finance on the average cost of capital. If the WACC is underestimated, unprofitable projects will be accepted.

### 5.4 Marginal cost of capital approach

The marginal cost of capital approach involves calculating a marginal cut-off rate for acceptable investment projects by:

- establishing rates of return for each component of capital structure, except retained earnings, based on its value if it were to be raised under current market conditions.
- relating dividends or interest to these values to obtain a marginal cost for each component.
- applying the marginal cost to each component depending on its proportionate weight within the capital structure and adding the resultant costs to give a weighted average.

It can be argued that the current weighted average cost of capital should be used to evaluate projects. Where a company's capital structure changes only very slowly over time, the marginal cost of new capital should be roughly equal to the weighted average cost of current capital.

Where gearing levels fluctuate significantly, or the finance for new project carries a significantly different level of risks to that of the existing company, there is good reason to seek an alternative marginal cost of capital.



#### Example: Marginal cost of capital

A company has the following capital structure:

<i>Finance source</i>	<i>After tax cost</i> %	<i>Market value</i> \$m	<i>After tax cost × market value</i>
Equity	12.00	10	1.20
Preference	10.00	2	0.20
Bonds	7.50	8	0.60
		<u>20</u>	<u>2.00</u>

$$\text{Weighted average cost of capital} = \frac{2 \times 100\%}{20} = 10\%$$



The directors have decided to embark on major capital expenditure, which will be financed by a major issue of funds. The estimated project cost is \$3 million, one-third of which will be financed by equity, two-thirds of which will be financed by bonds. As a result of undertaking the project, the cost of equity (existing and new shares) will rise from 12% to 14%. The cost of preference shares and the cost of existing bonds will remain the same, while the after tax cost of the new bonds will be 9%.

Calculate the company's new weighted average cost of capital, and its marginal cost of capital.

### Solution

New weighted average cost of capital:

<i>Finance source</i>	<i>After tax cost %</i>	<i>New market value \$m</i>	<i>After tax cost × market value</i>
Equity	14.00	11	1.54
Preference	10.00	2	0.20
Existing bonds	7.50	8	0.60
New bonds	9.00	2	0.18
		<u>23</u>	<u>2.52</u>
Weighted average cost of capital	$= \frac{2.52 \times 100\%}{23}$		= 10.96%
Marginal cost of capital	$= \frac{(2.52 - 2.00) \times 100\%}{(23 - 20)}$		= 17.33%

## 5.5 Using CAPM in investment appraisal

The CAPM produces a required return based on the expected return of the market  $E(R_m)$ , the risk-free interest rate ( $R_f$ ) and the variability of project returns relative to the market returns ( $\beta$ ). Its main advantage when used for investment appraisal is that it produces a discount rate which is based on the systematic risk of the individual investment. It can be used to compare projects of all different risk classes and is therefore superior to an NPV approach which uses only one discount rate for all projects, regardless of their risk.

The model was developed with respect to securities; by applying it to an investment within the firm, the company is assuming that the shareholder wishes investments to be evaluated as if they were securities in the capital market and therefore assumes that all shareholders will hold diversified portfolios and will not look to the company to achieve diversification for them.



### Example: Required return

Panda is all-equity financed. It wishes to invest in a project with an estimated beta of 1.5. The project has significantly different business risk characteristics from Panda's current operations. The project requires an outlay of \$10,000 and will generate expected returns of \$12,000. The market rate of return is 12% and the risk-free rate of return is 6%. Estimate the minimum return that Panda will require from the project and assess whether the project is worthwhile, based on the figures you are given.

### Solution

We do not need to know Panda's current weighted average cost of capital, as the new project has different business characteristics from its current operations. Instead we use the capital asset pricing model so that:

$$\text{Required return: } E(R_i) = R_f + \beta_i (E(R_m) - R_f)$$

$$= 6 + 1.5(12 - 6)$$

$$= 15\%$$

$$\text{Expected return} = \frac{12,000 - 10,000}{10,000} = 20\%$$

Therefore the project is worthwhile, as expected return exceeds required return.

## 5.6 Limitations of using CAPM in investment decisions

The greatest practical problems with the use of the CAPM in capital investment decisions are as follows:

- (a) It is hard to estimate returns on projects under different economic environments, market returns under different economic environments and the probabilities of the various environments.
- (b) The CAPM is really just a single period model. Few investment projects last for one year only and to extend the use of the return estimated from the model to more than one time period would require both project performance relative to the market and the economic environment to be reasonably stable. In theory, it should be possible to apply the CAPM for each time period, therefore arriving at successive discount rates, one for each year of the project's life. In practice, this would exacerbate the estimation problems mentioned above and also make the discounting process much more cumbersome.
- (c) It may be hard to determine the risk-free rate of return. Government securities are usually taken to be risk-free, but the return on these securities varies according to their term to maturity.
- (d) Some experts have argued that betas calculated using complicated statistical techniques often overestimate high betas, and underestimate low betas, particularly for small companies.



### Self-test question 1

The following financial information is available about a private company:

- In the statement of financial position, total assets are \$462m. These consist of \$387m of non-current assets and \$75m of current assets. Total liabilities are \$165m: the proportion of long-term liabilities (interest bearing) and current liabilities (non-interest bearing) are 80:20. Equity amounts to \$297m.
- Companies of a similar business nature and financial position have to pay 8.5% to raise long-term financing and have an equity a beta of 1.18.
- The corporate tax rate is 16%.
- The yield on a 10-year government bond is 5.5%
- The equity risk premium is 8%.

*Required*

Based on the above information, calculate the WACC of this company.

**(The answer is at the end of the chapter)**

## 5.7 CAPM and Modigliani Miller combined: Geared betas



### Topic highlights

When an investment has differing business and finance risks from the existing business, **geared betas** may be used to obtain an appropriate required return.

Geared betas are calculated by:

- Ungearing industry betas
- Converting ungeared betas back into a geared beta that reflects the company's own gearing ratio. **Inflation** is a feature of all economies, and it must be accommodated in financial planning.

### 5.7.1 Beta values and the effect of gearing

The gearing of a company will affect the risk of its equity. If a company is geared and its financial risk is therefore higher than the risk of an all-equity company, then the beta value of the geared company's equity will be higher than the  $\beta$  value of a similar ungeared company's equity.

The CAPM is consistent with the propositions of Modigliani and Miller (which are discussed in more detail in Chapter 10). MM argue that as gearing rises, the cost of equity rises to compensate shareholders for the extra financial risk of investing in a geared company. This financial risk is an aspect of systematic risk, and ought to be reflected in a company's beta factor.

### 5.7.2 Geared betas and ungeared betas

The connection between MM theory and the CAPM means that it is possible to establish a mathematical relationship between the  $\beta$  value of an ungeared company and the beta value of a similar, but geared, company. The  $\beta$  value of a geared company will be higher than the beta value of a company identical in every respect except that it is all-equity financed. This is because of the extra financial risk.



### Formula to learn

The mathematical relationship between the “ungeared” (or asset) and “geared” betas is as follows:

$$\beta_a = \left[ \frac{V_e}{(V_e + V_d(1 - T))} \beta_e \right] + \left[ \frac{V_d(1 - T)}{(V_e + V_d(1 - T))} \beta_d \right]$$

This is the asset beta formula.

Where:  $\beta_a$  is the asset or ungeared beta

$\beta_e$  is the equity or geared beta

$\beta_d$  is the beta factor of debt in the geared company

$V_d$  is the market value of the debt capital in the geared company

$V_e$  is the market value of the equity capital in the geared company

$T$  is the rate of corporate tax

Debt is often assumed to be risk-free and its beta ( $\beta_d$ ) is then taken as zero, in which case the formula above reduces to the following form:



### Formula to learn

$$\beta_a = \beta_e \times \frac{V_e}{V_e + V_d(1-T)} \text{ or, without tax, } \beta_a = \beta_e \times \frac{V_e}{V_e + V_d}$$



### Example: CAPM and geared betas

Two companies are identical in every respect except for their capital structure. Their market values are in equilibrium, as follows:

	<i>Geared</i> \$'000	<i>Ungeared</i> \$'000
Annual profit before interest and tax	1,000	1,000
Less interest (4,000 × 8%)	(320)	0
	680	1,000
Less tax at 30%	(204)	300
Profit after tax = dividends	476	700
Market value of equity	3,900	6,600
Market value of debt	4,180	0
Total market value of company	8,080	6,600

The total value of Geared is higher than the total value of Ungeared, which is consistent with MM.

All profits after tax are paid out as dividends, and so there is no dividend growth. The beta value of Ungeared has been calculated as 1.0. The debt capital of Geared can be regarded as risk-free.

Calculate the:

- cost of equity in Geared
- market return  $r_m$
- beta value of Geared

### Solution

- Since its market value (MV) is in equilibrium, the cost of equity in Geared can be calculated as:

$$\frac{d}{MV} = \frac{476}{3,900} = 12.20\%$$

- The beta value of Ungeared is 1.0, which means that the expected returns from Ungeared are exactly the same as the market returns, and  $r_m = 700/6,600 = 10.6\%$ .

$$\begin{aligned} \text{(c) } \beta_e &= \beta_a \times \frac{V_e + V_d(1-T)}{V_e} \\ &= 1.0 \times \frac{3,900 + (4,180 \times 0.70)}{3,900} = 1.75 \end{aligned}$$

The beta of Geared, as we should expect, is higher than the beta of Ungeared.

### 5.7.3 Using the geared and ungeared beta formula to estimate a beta factor

Another way of estimating a beta factor for a company's equity is to use data about the returns of other listed companies which have similar operating characteristics: that is, to use the beta values of other companies' equity to estimate a beta value for the company under consideration. The beta values estimated for the firm under consideration must be adjusted to allow for differences in gearing from the firms whose equity beta values are known. The formula for geared and ungeared beta values can be applied.

If a company plans to invest in a project which involves diversification into a new business, the investment will involve a different level of systematic risk from that applying to the company's existing business. A discount rate should be calculated which is specific to the project, and which takes account of both the project's systematic risk and the company's gearing level. The discount rate can be found using the CAPM.

#### Step 1

Get an estimate of the systematic risk characteristics of the project's operating cash flows by obtaining published beta values for companies in the industry into which the company is planning to diversify.

#### Step 2

Adjust these beta values to allow for the company's capital gearing level. This adjustment is done in two stages.

- (1) Convert the beta values of other companies in the industry to ungeared betas, using the formula:

$$\beta_a = \beta_e \left( \frac{V_e}{V_e + V_d(1-T)} \right)$$

- (2) Having obtained an ungeared beta value  $\beta_a$ , convert it back to a geared beta  $\beta_e$ , which reflects the company's own gearing ratio, using the formula:

$$(3) \quad \beta_e = \beta_a \left( \frac{V_e + V_d(1-T)}{V_e} \right)$$

#### Step 3

Having estimated a project-specific geared beta, use the CAPM to estimate a project-specific cost of equity.



#### Example: Gearing and ungearing betas (1)

A company's debt : equity ratio, by market values, is 2:5. The corporate debt, which is assumed to be risk-free, yields 11% before tax. The beta value of the company's equity is currently 1.1. The average returns on stock market equity are 16%.

The company is now proposing to invest in a project which would involve diversification into a new industry, and the following information is available about this industry.

- Average beta coefficient of equity capital = 1.59
- Average debt: equity ratio in the industry = 1:2 (by market value)

The rate of corporation tax is 30%. What would be a suitable cost of capital to apply to the project?

**Solution****Step 1**

The beta value for the industry is 1.59.

**Step 2**

- (1) Convert the geared beta value for the industry to an ungeared beta for the industry.

$$\beta_a = 1.59 \left( \frac{2}{2 + (1(1 - 0.30))} \right) = 1.18$$

- (2) Convert this ungeared industry beta back into a geared beta, which reflects the company's own gearing level of 2:5.

$$\beta_e = 1.18 \left( \frac{5 + (2(1 - 0.30))}{5} \right) = 1.51$$

**Step 3**

- (1) This is a project-specific beta for the firm's equity capital, and so using the CAPM, we can estimate the project-specific cost of equity as:

$$k_{eg} = 11\% + (16\% - 11\%) 1.51 = 18.55\%$$

- (2) The project will presumably be financed in a gearing ratio of 2:5 debt to equity, and so the project-specific cost of capital ought to be:

$$\left( \frac{5}{7} \times 18.55\% \right) + \left( \frac{2}{7} \times 70\% \times 11\% \right) = 15.45\%$$

**Example: Gearing and ungearing betas (2)**

Two companies are identical in every respect except for their capital structure. XY has a debt : equity ratio of 1:3, and its equity has a beta value of 1.20. PQ has a debt: equity ratio of 2:3. Corporation tax is at 30%. Estimate a beta value for PQ's equity.

**Solution**

- (1) Estimate an ungeared beta from XY data.

$$\beta_a = 1.20 \frac{3}{3 + (1(1 - 0.30))} = 0.973$$

- (2) Estimate a geared beta for PQ using this ungeared beta.

$$\beta_e = 0.973 \frac{3 + (2(1 - 0.30))}{3} = 1.427$$

**5.7.4 Weaknesses in the formula**

The problems with using the geared and ungeared beta formula for calculating a firm's equity beta from data about other firms are as follows:

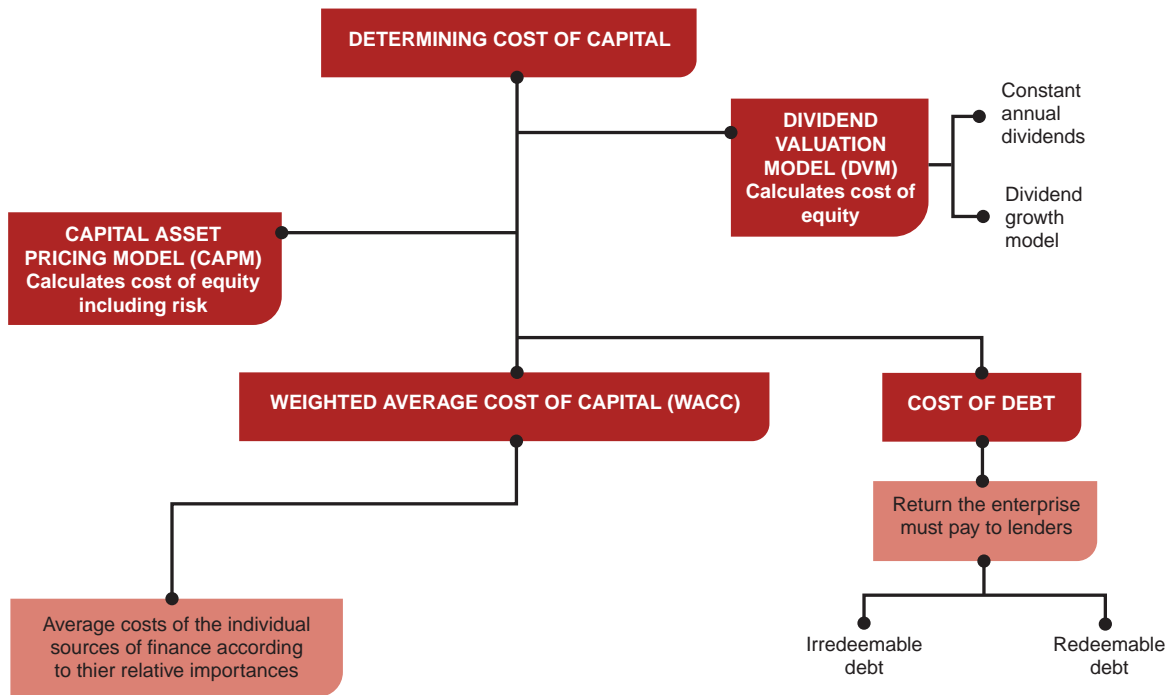
- It is difficult to identify other firms with identical operating characteristics.
- Estimates of beta values from share price information are not wholly accurate. They are based on statistical analysis of historical data, and as the previous example shows, estimates using one firm's data will differ from estimates using another firm's data.

- (c) There may be differences in beta values between firms caused by:
  - (i) different cost structures (for example, the ratio of fixed costs to variable costs)
  - (ii) size differences between firms
  - (iii) debt capital not being risk-free
- (d) If the firm for which an equity beta is being estimated has opportunities for growth that are recognised by investors, and which will affect its equity beta, estimates of the equity beta based on other firms' data will be inaccurate, because the opportunities for growth will not be allowed for.

Perhaps the most significant simplifying assumption is that to link MM theory to the CAPM, it must be assumed that the cost of debt is a risk-free rate of return. This could obviously be unrealistic. Companies may default on interest payments or capital repayments on their loans. It has been estimated that corporate debt has a beta value of 0.2 or 0.3 (whereas if it were risk free it would have a beta of 0).

The consequence of making the assumption that debt is risk-free is that the formulae tend to overstate the financial risk in a geared company and to understate the business risk in geared and ungeared companies by a compensating amount.

# Topic recap





## Answer to self-test question

### Answer 1

#### Cost of equity

Using the CAPM:

$$K_e = 5.5\% + (1.18 \times 8\%) = \mathbf{14.94\%}$$

Cost of debt (after tax)

$$K_d (1 - t) = 8.5\% \times (1 - 0.16) = \mathbf{7.14\%}$$

#### WACC, based on book values

Book value of interest-bearing debt = \$165m  $\times$  0.80 = \$132m.

Capital	Cost	Book value (\$m)	Book value $\times$ Cost
Equity	0.1494	297	44.372
Debt	0.0714	132	9.425
		<u>429</u>	<u>53.797</u>

$$\text{WACC} = 53.797/429 = 0.1254 = 12.54\%$$

## Exam practice



## Weighted average

**18 minutes**

XYZ, established 10 years ago, is a listed medium size real estate development company in Hong Kong. Its capital structure is made up of the following components:

- 10,000 bonds face value of \$1,000;
- 2 million shares of 7% preference stocks with face value \$100; and
- 5 million shares of common stocks.

Yield to maturity of bonds with similar characteristics is 7%.

The preference shares are selling for \$60 a share. The common stock has a beta of 1.5 and sells for \$50 a share.

Risk free rate is 3% and market return is 15%.

Tax rate is 16.5%.

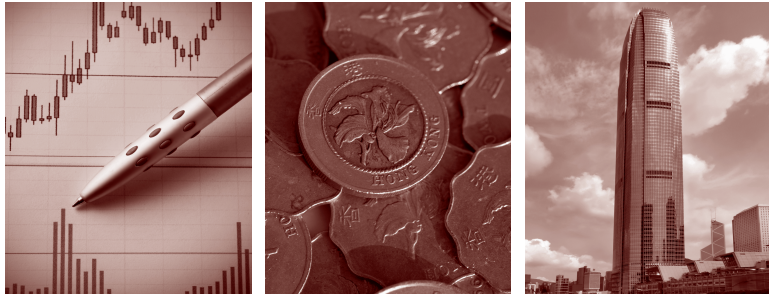
*Required*

- (a) What is XYZ's weighted average cost of capital? **(5 marks)**
- (b) XYZ is considering diversifying into the media business in mainland China and is considering a major investment proposal. The Board requires NPV as the quantitative evaluation tool and one of the Board members indicates that the firm's WACC can be used to discount the project cash flow to arrive at the NPV. Write a memo to the Board, in your capacity as the Finance Director of XYZ, to explain the appropriateness of this suggestion. State reasons to justify your answers. **(5 marks)**

**(Total = 10 marks)**

**HKICPA December 2011**





## chapter 14

# Capital structure

### Topic list

#### 1 Gearing

- 1.1 Financial risk
- 1.2 Gearing ratios
- 1.3 Interest cover ratio
- 1.4 The debt ratio
- 1.5 Company circumstances
- 1.6 Cost and flexibility
- 1.7 Optimal capital structure

#### 2 Effect on shareholder wealth

- 2.1 Earnings per share
- 2.2 Price-earnings ratio
- 2.3 Dividend cover
- 2.4 Dividend yield

#### 3 Capital structure decisions

- 3.1 The traditional view
- 3.2 The net operating income or “Modigliani-Miller” (MM) no tax view
- 3.3 Modigliani-Miller with tax
- 3.4 Market imperfections
- 3.5 Pecking order theory

#### 4 The FRICT framework

#### 5 Summary

### Learning focus

This chapter looks now at the effect of sources of finance on the financial position and financial risk of a company. A central question here is: What are the implications of using different proportions of equity and debt finance?

The answer to this has to take account the attitudes of investors to the **financial risk** associated with increasing levels of debt finance, and the **trade-off** between risk and return.

We also look at various **gearing ratios**, which give us a measure of the extent to which a company is financed by debt.

Capital structure is a significant issue for any business and it is important that you are conversant with the implications of different financing decisions on investment opportunities and the company's continued health. This chapter sets out the key theories on capital structure (Traditional and Modigliani-Miller (MM)) and the practical factors that a firm is likely to consider when faced with a range of finance alternatives.

**Learning outcomes**

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Long term financial management</b>		
Identify and evaluate the long term financial management position of a business and advise on the relevant sources of finance and funding methods		
<b>6.01</b>	<b>Capital structure</b>	3
6.01.01	Explain the relevance of gearing and discuss the problem of high level of gearing	
6.01.02	Describe the traditional view of capital structure and discuss its assumptions	
6.01.03	Describe the views of Miller and Modigliani (MM) on capital structure, both without and with corporate taxation, and discuss their assumptions	
6.01.04	Compare the traditional and MM views of capital structure	
6.01.05	Discuss the practical considerations in determining capital structure	
<b>6.04</b>	<b>Raising finance</b>	2
6.04.03	Explain the relevance of pecking order theory and FRICT framework to the selection of sources of finance	
6.04.04	Assess the suitability of different financing options and their implications for capital structure, gearing and reserves	
6.04.05	Evaluate the impact of sources of finance on financial position and financial risk using appropriate measures of gearing, interest cover and shareholder wealth	

# 1 Gearing

Gearing is the amount of debt finance a company uses relative to its equity finance. Some of the ratios used to measure gearing were introduced in Chapter 5, Performance Measurement Systems.

## 1.1 Financial risk



### Topic highlights

Debt finance tends to be relatively low risk for the debt holder as it is interest-bearing and can be secured. The cost of debt to the company is therefore relatively low.

The greater the level of debt, the more **financial risk** (of reduced dividends after the payment of debt interest) to the shareholder of the company, so the higher is their required return.

The assets of a business must be financed somehow, and when a business is growing, the additional assets must be financed by additional capital.

However, a high level of debt creates financial risk. **Financial risk** can be seen from different points of view.

(a) **The company as a whole**

If a company builds up debts that it cannot pay when they fall due, it will become insolvent and may be forced into liquidation.

(b) **Lenders/creditors**

If a company cannot pay its debts, the company will owe creditors money that they are unlikely to recover in full. Lenders will therefore want a **higher interest yield** to compensate them for lending to companies where there is higher financial risk and gearing.

(c) **Ordinary shareholders**

A company will not make any distributable profits unless it is able to earn enough profit before interest and tax to pay all its interest charges, and then tax. The lower the profits or the higher the interest-bearing debts, the less there will be, if there is anything at all, for shareholders. Ordinary shareholders will probably want a **bigger expected return** from their shares to compensate them for a **higher financial risk**. The market value of shares may therefore depend on gearing, because of this premium for financial risk that shareholders will want to earn.

## 1.2 Gearing ratios



### Topic highlights

The **financial risk** of a company's capital structure can be measured by a **gearing ratio**, a **debt ratio** or **debt/equity ratio** and by the **interest coverage**.



### Key terms

**Financial gearing** measures the relationship between **shareholders' funds** and **prior charge capital**.

**Operational gearing** measures the relationship between **contribution** and **profit before interest and tax**.

### 1.2.1 Financial gearing

**Financial gearing** (also called financial leverage) measures the relationship between shareholders' capital plus reserves, and either prior charge capital or borrowings or both.

Commonly used measures of financial gearing are based on **values** of the fixed interest and equity capital in the **statement of financial position**.

They include:

$$\begin{aligned} \text{Financial gearing} &= \frac{\text{Prior charge capital}}{\text{Equity capital (including reserves)}}, \text{ or} \\ &= \frac{\text{Prior charge capital}}{\text{Total capital employed}^*} \end{aligned}$$

\* Either including or excluding non-controlling interests, deferred tax and deferred income.

**Prior charge capital** is capital which has a right to the receipt of interest or of preferred dividends in precedence to any claim on distributable earnings on the part of the ordinary shareholders. On winding up, the claims of holders of prior charge also rank before those of ordinary shareholders.

With the first definition above, a company is low geared if the gearing ratio is less than 100%, highly geared if the ratio is over 100% and neutrally geared if it is exactly 100%.

With the second definition, a company is neutrally geared if the ratio is 50%, low geared below that, and highly geared above that.



#### Self-test question 1

From the following statement of financial position, compute the company's financial gearing ratio.

	\$'000
Non-current assets	12,400
Current assets	1,000
	<u>13,400</u>
<i>Financing</i>	
Debentures	4,700
Bank loans	500
Provisions for liabilities and charges: deferred taxation	300
Deferred income	250
Equity share capital	3,460
Preference shares	500
Retained profit	<u>2,810</u>
	12,520
<i>Current liabilities</i>	
Loans	120
Bank overdraft	260
Trade payables	430
Bills of exchange	<u>70</u>
	<u>13,400</u>

(The answer is at the end of the chapter)

## 1.2.2 Financial gearing ratios based on market values



### Key term

An alternative method of calculating a gearing ratio is one based on **market values** rather than balance sheet values:

$$\text{Financial gearing} = \frac{\text{Market value of prior charge capital}}{\text{Market value of equity} + \text{Market value of debt}}$$

The advantage of this method is that potential investors in a company are able to judge the further debt capacity of the company more clearly by reference to **market values** than they could by looking at statement of financial position values.

The disadvantage of a gearing ratio based on market values is that it **disregards** the **value** of the company's **assets**, which might be used to secure further loans. A gearing ratio based on statement of financial position values arguably gives a better indication of the security for lenders of fixed interest capital.

## 1.2.3 Changing financial gearing

Financial gearing is an attempt to quantify the **degree of risk** involved in holding equity shares in a company, both in terms of the company's ability to remain in business and in terms of expected ordinary dividends from the company.

The more geared the company is, the **greater the risk** that little (if anything) will be available to distribute by way of dividend to the ordinary shareholders. The more geared the company, the greater the percentage change in profit available for ordinary shareholders for any given percentage change in profit before interest and tax.

This means that there will be greater **volatility** of amounts available for ordinary shareholders, and presumably therefore greater volatility in dividends paid to those shareholders, where a company is highly geared. That is the risk. You may do extremely well or extremely badly without a particularly large movement in the profit from operations of the company.

Gearing ultimately measures the company's ability to **remain in business**. A highly geared company has a large amount of interest to pay annually. If those borrowings are "secured" in any way (and bonds in particular are secured), then the holders of the debt are perfectly entitled to force the company to realise assets to pay their interest if funds are not available from other sources. Clearly, the more highly geared a company, the more likely this is to occur when and if profits fall.

## 1.2.4 Operational gearing

Financial risk, as we have seen, can be measured by financial gearing. **Business risk** refers to the risk of making only low profits, or even losses, due to the nature of the business that the company is involved in. One way of measuring business risk is by calculating a company's **operational gearing**.

Operational gearing considers the proportion of a company's cost base that is fixed rather than variable. It considers the effect of fixed costs on the relationship between sales and operating profits. If a company has no fixed costs, then operating profit would rise at the same percentage rate as sales growth. If a company's costs are 100% fixed, any increase in sales would result in an equal amount of increase in profit before tax, and operational gearing would therefore be very high.





### Key term

**Operational gearing** considers the proportion of a company's cost base that is fixed rather than variable. It can be measured in different ways:

$$\text{Operational gearing} = \frac{\text{Fixed costs}}{\text{Total costs}}$$

The higher the proportion of fixed costs, the higher the operational gearing.

Another way of looking at operational gearing is to consider the relationship between contribution and operating profit in order to measure how sensitive profits are to changes in sales volumes:



### Key term

$$\text{Operational gearing} = \frac{\text{Contribution}}{\text{Operating profit}}$$

Operating profit is contribution minus fixed costs.

- (a) **If contribution is high but operating profit is low**, fixed costs must be high, and only just covered by contribution. Business risk, as measured by operational gearing, will be high.
- (b) **If contribution is not much bigger than operating profit**, fixed costs must be low, and fairly easily covered. Business risk, as measured by operational gearing, will be low.

The **significance of operational gearing** is as follows:

Companies with high operational gearing tend to have volatile operating profits. This is because fixed costs remain the same, regardless of sales volumes. As a result, if sales increase, operating profit increases by a larger percentage. But if sales volume falls, operating profit falls by a larger percentage.

Generally, it is a high-risk policy to combine high financial gearing with high operating gearing.

The profits of firms with high operating gearing, such as car manufacturers, are very sensitive to changes in the sales level. They have high breakeven points but once this level is achieved a large proportion of any additional sales revenue turns into profit because of the relatively low variable costs. High operational gearing is also common in many service industries where many operating costs are fixed.

## 1.3 Interest cover ratio



### Key term

The **interest cover ratio** is a measure of financial risk, which is designed to show the risks in terms of whether there is likely to be sufficient profit to service debt, rather than in terms of capital values.

$$\text{Interest cover ratio} = \frac{\text{Operating profit}}{\text{Interest}}$$

The reciprocal of this, the interest to profit ratio, is also sometimes used. As a general guide, an interest cover ratio of **less than three times** is considered low, indicating that profitability is too low given the gearing of the company. An interest cover ratio of more than seven is usually seen as safe.

## 1.4 The debt ratio



### Key term

Another measure of financial risk is the **debt ratio**. There are a number of definitions used, of which one possibility is:

**Debt ratio** = Total debts : Total capital employed

Debt does not include long-term provisions and liabilities such as deferred taxation.

There is no firm rule on the maximum safe debt ratio, but as a general guide, you might regard 50% as a safe limit to debt.



### Self-test question 2

Tim Co. is planning to invest in new machinery costing \$10 million. The revenues and costs arising from the investment are as follows:

	\$'000
Sales	2,500
Variable cost of sales	1,100
Other variable operating expenses	200
Other fixed operating expenses including tax allowable depreciation	120

The purchase of the machinery will be financed solely by an issue of 7% bonds, repayable in 20X6.

Tim Co.'s budgeted income statement for the year ended, and statement of financial position at, 31 December 20X1 before taking into account the effects of the new investment are set out below:

#### INCOME STATEMENT

	20X1 \$'000
Revenue	16,000
Cost of sales (100% variable)	<u>9,600</u>
Gross profit	6,400
Other operating expenses (50% variable)	<u>2,800</u>
Profit before interest and tax	3,600
Interest	<u>800</u>
Profit before tax	2,800
Tax (30%)	<u>840</u>
Profit after tax	1,960
Dividends (Dividend cover is constant 2:1)	<u>980</u>
Retained earnings	<u><u>980</u></u>

#### STATEMENT OF FINANCIAL POSITION

	\$'000	\$'000
Non-current assets		25,000
Current assets	10,000	
Current liabilities	<u>3,000</u>	
		7,000
10% Bonds 20X5		<u>(8,000)</u>
		<u><u>24,000</u></u>
Equity share capital and reserves		<u><u>24,000</u></u>

*Required*

Demonstrate the effects of the new investment on:

- (a) Operational gearing
- (b) Interest cover
- (c) Financial gearing =  $\frac{\text{Prior charge capital}}{\text{Total capital employed}}$

(The answer is at the end of the chapter)

---

## 1.5 Company circumstances

One determinant of the suitability of the gearing mix is the **stability** of the company. It may seem obvious, but it is worth stressing that debt financing will be more appropriate in the following circumstances:

- (a) The company is in a healthy competitive position.
- (b) Cash flows and earnings are stable.
- (c) Profit margins are reasonable.
- (d) Operational gearing is low (i.e. the fixed costs that have to be covered by profits from trading activities are low).
- (e) The bulk of the company's assets are tangible.
- (f) The liquidity and cash flow position is strong.
- (g) The debt-equity ratio is low.
- (h) Share prices are low.

## 1.6 Cost and flexibility

The **cost of debt** is likely to be lower than the cost of equity, because debt is **less risky** from the debt holders' viewpoint. As we have seen, interest has to be paid no matter what the level of profits, and debt capital can be secured by **fixed** and **floating charges**.

**Interest rates** on longer-term debt may be higher than interest rates on shorter-term debt, because many lenders believe longer-term lending to be riskier. However, **issue costs** or **arrangement fees** will be **higher** for shorter-term debt as it has to be renewed more frequently.

A business may also find itself locked into **longer-term debt**, with adverse interest rates and large penalties if it repays the debt early. Both **inflation** and **uncertainty** about future interest rate changes are reasons why companies are unwilling to borrow long-term at high rates of interest and investors are unwilling to lend long-term when they think that interest yields might go even higher.

## 1.7 Optimal capital structure

When we consider the capital structure decision, the question arises of whether there is an optimal mix of capital and debt which a company should try to achieve. This is discussed in section 3 of this chapter.

## 2 Effect on shareholder wealth



### Topic highlights

If a company can generate returns on capital in excess of the interest payable on debt, financial gearing will raise the EPS. Gearing will, however, also increase **the variability of returns** for shareholders and increase the chance of corporate **failure**.

A company will only be able to raise finance if investors think the returns they can expect are satisfactory in view of the risks they are taking.

### 2.1 Earnings per share

Remember the definition of earnings per share.

Basic earnings per share should be calculated by dividing the net profit or loss for the period attributable to ordinary shareholders by the weighted average number of ordinary shares outstanding during the period.

One measure of gearing uses earnings per share.

$$\text{Financial gearing at a given level of sales} = \frac{\% \text{ change in earnings per share}}{\% \text{ change in profits before interest and tax}}$$

The relationship between these two figures can be used to evaluate alternative financing plans by examining their effect on earnings per share over a range of operating profit levels. Its objective is to determine the operating profit indifference points amongst the various alternative financing plans. The indifference points between any two methods of financing can be determined by solving for operating profit the following equation:

$$\frac{(\text{Operating profit} - I)(1 - T)}{S_1} = \frac{(\text{Operating profit} - I)(1 - T)}{S_2}$$

Where: T = tax rate

I = interest payable

S1 and S2 = number of shares after financing for plans 1 and 2



### Example: Operating profit (OP) and EPS

A company has 10,000 million shares in issue and wants to raise \$5,000m to fund an investment by either:

- (a) issuing and selling 2,500m shares at \$2 each or
- (b) issuing \$5,000m 10% loan stock at par

The income tax rate is 40%.

In order to calculate the indifference point between issuing equity shares and issuing debt, we use the above equation.

$$\frac{(OP - 0)(1 - 0.4)}{12,500} = \frac{(OP - 500)(1 - 0.4)}{10,000}$$

$$10,000 \times 0.6 \times OP = 12,500 \times 0.6 \times (OP - 500)$$

$$6,000 OP = 7,500 \text{ PBIT } OP - 3,750,000$$

$$1,500 OP = 3,750,000$$

$$OP = 2,500$$

We can prove this calculation as follows:

	<i>Issues equity</i>	<i>Issues debt</i>
	\$m	\$m
Operating profit	2,500	2,500
Interest		(500)
Profit before tax	2,500	2,000
Tax	(1,000)	(800)
Earnings after tax	<u>1,500</u>	<u>1,200</u>
Number of shares	12,500	10,000
Earnings per share	\$0.12	\$0.12

At a level of operating profit above \$2,500 million, it will be better to issue debt, as every \$ extra of earnings will be distributed between fewer shareholders. At a level of operating profit below \$2,500 million, it will be better to issue equity, as the loss of each \$ will be by more shareholders.

The company's attitude will depend on what levels of earnings it expects and also the **variability of possible earnings** limits. Variations from what is expected will have a greater impact on earnings per share if the company chooses debt finance.

## 2.2 Price-earnings ratio



### Key term

The **price-earnings ratio** is calculated in the following way:

$$\text{Price earnings (P/E) ratio} = \frac{\text{Market price per share}}{\text{Earnings per share}}$$

And that the **value of the P/E ratio** reflects the market's appraisal of the share's future prospects. If earnings per share falls because of an increased burden arising from increased gearing, an increased P/E ratio will mean that the share price has not fallen as much as earnings, indicating the market views positively the projects that the increased gearing will fund.

## 2.3 Dividend cover



### Key term

The **dividend cover** is the number of times the actual dividend could be paid out of current profits.

$$\text{Dividend cover} = \frac{\text{Earnings per share}}{\text{Dividend per share}}$$

To judge the effect of increased gearing on dividend cover, you should consider changes in the dividend levels and changes in dividend cover. If earnings decrease because of an increased burden of interest payments, then:

- The directors may decide to make **corresponding reductions in dividend** to maintain levels of dividend cover.
- Alternatively, the directors may choose to maintain dividend levels, in which case **dividend cover will fall**. This will indicate to shareholders an **increased risk** that the company will not be able to maintain the same dividend payments in future years, should earnings fall.

## 2.4 Dividend yield



### Key term

The **dividend yield** is calculated as follows:

$$\text{Dividend yield} = \frac{\text{Gross dividend per share}}{\text{Market price per share}} \times 100\%$$

The gross dividend is the dividend paid plus the appropriate tax credit. The (net) dividend yield (using the dividend per share net of taxes deducted at source) can also be used.

We have discussed how increased gearing might affect dividends and dividend cover. However with dividend yield, we are also looking at the effect on the **market price of shares**. If the additional debt finance is expected to be used to generate good returns in the long-term, it is possible that the dividend yield might fall significantly in the short-term because of a fall in short-term dividends, but also an increase in the market price reflecting market expectations of enhanced long-term returns. How shareholders view this movement will depend on their preference between short-term and long-term returns.



### Example: Gearing

A summarised statement of financial position of Rufus is as follows:

	\$m
Assets less current liabilities	150
Debt capital	(70)
	<u>80</u>
Share capital (10 million shares)	20
Reserves	60
	<u>80</u>

The company's profits in the year just ended are as follows:

	\$m
Profit from operations	21.00
Interest	6.00
Profit before tax	<u>15.00</u>
Taxation at 16.5%	4.50
Profit after tax (earnings)	<u>10.50</u>
Dividends	6.50
Retained profits	<u>4.00</u>

The company is now considering an investment of \$25 million. This will add \$5 million each year to profits before interest and tax.

- There are two ways of financing this investment. One would be to borrow \$25 million at a cost of 8% per annum in interest. The other would be to raise the money by means of a 1-for-4 rights issue.
- Whichever financing method is used, the company will increase dividends per share next year from 65c to 70c.
- The company does not intend to allow its gearing level, measured as debt finance as a proportion of equity capital plus debt finance, to exceed 55% as at the end of any financial year. In addition, the company will not accept any dilution in earnings per share.

Assume that the rate of taxation will remain at 16.5% and that debt interest costs will be \$6 million plus the interest cost of any new debt capital.

*Required*

- (a) Produce a profit forecast for next year, assuming that the new project is undertaken and is financed (i) by debt capital or (ii) by a rights issue.
- (b) Calculate the earnings per share next year, with each financing method.
- (c) Calculate the effect on gearing as at the end of next year, with each financing method.
- (d) Explain whether either or both methods of funding would be acceptable.

**Solution**

Current earnings per share are  $\frac{\$10.5 \text{ million}}{10 \text{ million shares}} = \$1.05$

If the project is financed by \$25 million of debt at 8%, interest charges will rise by \$2 million. If the project is financed by a 1-for-4 rights issue, there will be 12.5 million shares in issue.

	<i>Finance with debt</i>	<i>Finance with rights issue</i>
	\$m	\$m
Profit before interest and tax (+ 5.0)	26.00	26.00
Interest	8.00	6.00
	<u>18.00</u>	<u>20.00</u>
Taxation (16.5%)	5.40	6.00
Profit after tax	<u>12.60</u>	<u>14.00</u>
Dividends (70c per share)	7.00	8.75
Retained profits	<u>5.60</u>	<u>5.25</u>
Earnings (profits after tax)	\$12.6m	\$14.0m
Number of shares	10 million	12.5 million
Earnings per share	\$1.26	\$1.12

The projected statement of financial position as at the end of the year will be:

	<i>Finance with debt</i>	<i>Finance with rights issue</i>
	\$m	\$m
Assets less current liabilities (150 + new capital 25 + retained profits)	180.60	180.25
Debt capital	<u>(95.00)</u>	<u>(70.00)</u>
	<u>85.60</u>	<u>110.25</u>
Share capital	20.00	45.00
Reserves	<u>65.60</u>	<u>65.25</u>
	<u>85.60</u>	<u>110.25</u>

	<i>Finance with debt</i>	<i>Finance with rights issue</i>
Debt capital	95.0	70.0
Debt capital plus equity finance	(95.0 + 85.6)	(70.0 + 110.25)
Gearing	53%	39%

Either financing method would be acceptable, since the company's requirements for no dilution in EPS would be met with a rights issue as well as by borrowing, and the company's requirement for the gearing level to remain below 55% is (just) met even if the company were to borrow the money.

## 3 Capital structure decisions



### Topic highlights

Some commentators believe that an **optimal mix of finance** exists at which the company's **cost of capital** will be minimised.

The key question when considering the capital structure decision is whether there is an optimal mix of equity capital and debt capital that a company should try to achieve. Under the “traditional view” there is an optimal capital mix at which the weighted average cost of capital (WACC) is minimised.

The alternative view (of Modigliani-Miller, assuming no corporation tax) is that the firm's overall weighted average cost of capital is not influenced by changes in its capital structure.

### 3.1 The traditional view



### Topic highlights

Under the **traditional theory of cost of capital**, the cost declines initially and then rises as gearing increases. The **optimal capital structure** will be the point at which WACC is lowest.

The traditional view of capital structure is that there is an optimal capital structure and a company which is not at the optimal point, can increase its total value by an appropriate use of debt finance in its capital structure. The optimal capital structure will be the point at which WACC is lowest.

There are various assumptions on which this theory is based:

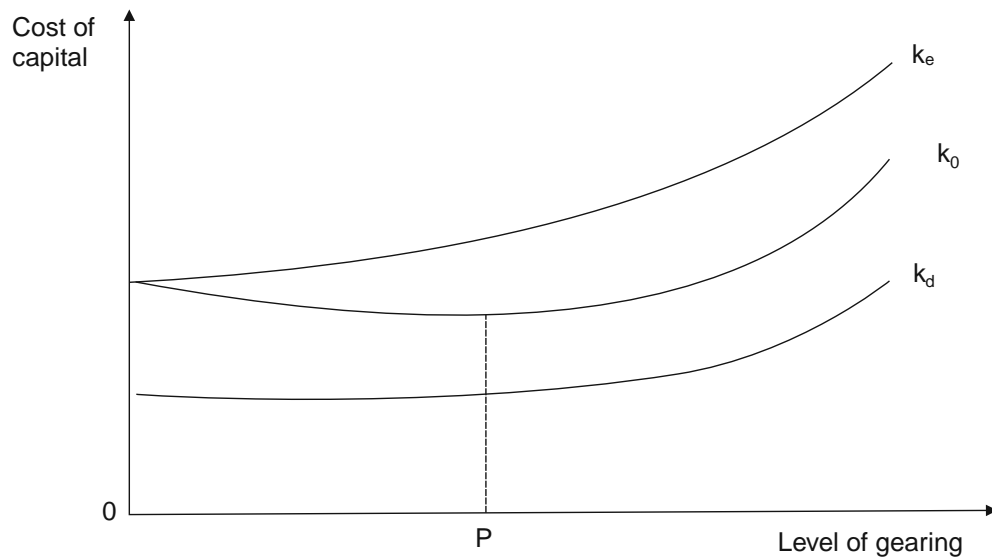
- (a) All earnings are paid out in the form of dividends.
- (b) Gearing can be changed immediately by issuing debt to repurchase shares or by issuing shares to repurchase debt.
- (c) There are no transaction costs for issues of new finance.
- (d) Earnings are expected to remain constant in perpetuity and all investors share the same expectations about these future earnings.
- (e) Business risk is constant irrespective of how the company invests its funds.
- (f) Taxation is ignored.

The traditional view is:

- (a) As the level of gearing increases the cost of debt remains unchanged up to a certain level of gearing but beyond this level the cost of debt will increase (due to increased risk to lenders e.g. bankruptcy risk).
- (b) The cost of equity rises as the level of gearing increases and financial risk increases (a non-linear relationship).
- (c) The WACC does not remain constant but falls initially as the proportion of cheaper debt capital increases and then begins to increase as the rising cost of equity (and debt) becomes more significant.
- (d) The optimum level of gearing is where the company's WACC is minimised.



This can be illustrated as follows:



Where:  $k_e$  is the cost of equity in the geared company  
 $k_d$  is the cost of debt  
 $k_0$  is the weighted average cost of capital

It shows that the weighted average cost of capital will be minimised at a particular level of gearing, P.

## 3.2 The net operating income or “Modigliani-Miller” (MM) no tax view



### Topic highlights

Modigliani-Miller stated that, in the absence of tax, a company's **capital structure** would have **no impact** upon its WACC.

Modigliani-Miller (MM) stated that, in the absence of tax, a company's capital structure would have no impact upon its WACC. MM proposed that the total market value of a company, in the absence of tax, will be determined by just two factors, the total earnings of the company and the level of operating (business) risk attached to those earnings.

The total market value would be computed by discounting the total earnings at a rate that is appropriate to the level of operating risk. This rate would represent the WACC of the company. Therefore MM concluded that the capital structure of a company would have no effect on its overall value or WACC.

The assumptions on which this theory is based are as follows:

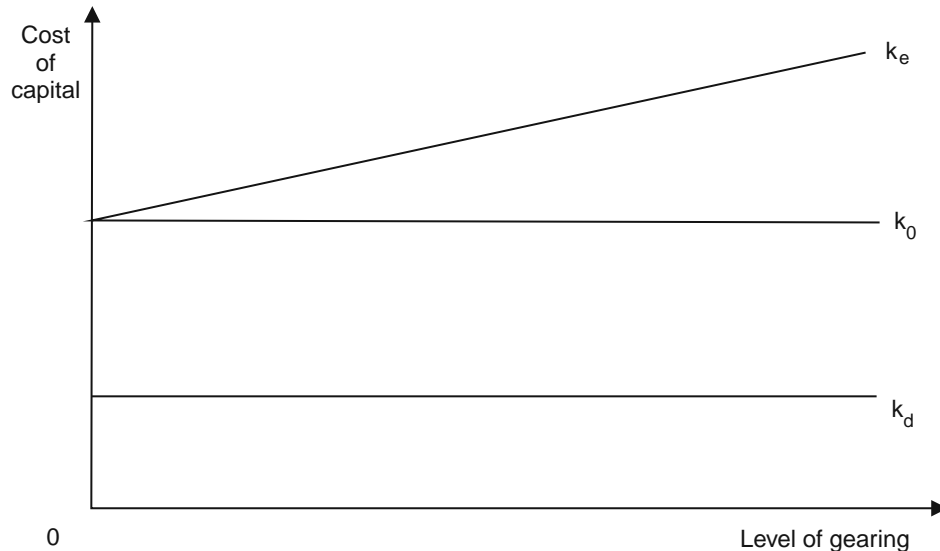
- (a) There is a perfect capital market in which investors:
  - (i) have the same information
  - (ii) upon which they act rationally
  - (iii) arrive at the same expectations about future earnings and risks
- (b) There are no tax or transaction costs.
- (c) Debt is risk-free and freely available at the same cost to investors and companies alike.

MM justified their approach by the use of arbitrage. Arbitrage is a process when a purchase and sale of a security takes place simultaneously in different markets with the aim of making a risk-free

profit through the exploitation of any price difference between the markets. Arbitrage can be used to show that once all opportunities for profit have been exploited, the market values of two companies with the same earnings in equivalent business risk classes will have moved to an equal value.

If the MM theory holds, it implies that the cost of debt remains unchanged as the level of gearing increases and the cost of equity rises in such a way as to keep the weighted average cost of capital constant.

This can be illustrated as follows:



Where:  $k_e$  is the cost of equity in the geared company  
 $k_d$  is the cost of debt  
 $k_0$  is the weighted average cost of capital



### Illustration: MM no tax (net operating income approach)

A company has \$5 million of debt at 10% interest, and earns \$5 million a year before interest is paid. There are 225,000 issued shares, and the weighted average cost of capital of the company is 20%.

The market value of the company should be as follows:

Earnings	\$5m
Weighted average cost of capital	0.20
	\$m
Market value of the company ( $\$5m \div 0.2$ )	25
Less market value of debt	<u>(5)</u>
Market value of equity	<u>20</u>

The cost of equity is therefore  $\frac{\$5m - \$0.5m}{\$20m} = 22.5\%$

and the market value per share is  $\frac{\$4.5m / 225,000 \text{ shares}}{0.225} = \$88.89$

Suppose that the level of gearing is increased by issuing \$5 million more of debt at 10% interest to repurchase 56,250 shares (at a market value of \$88.89 per share) leaving 168,750 shares in issue.

The weighted average cost of capital will, according to the net operating income approach, remain unchanged at 20%. The market value of the company should still therefore be \$25 million.

Earnings	\$5m
Weighted average cost of capital	0.20
	\$m
Market value of the company	25
Less market value of debt	(10)
Market value of equity	<u>15</u>

Annual dividends will now be \$5m – \$1m interest = \$4 million

The cost of equity has risen to  $\frac{\$4m}{\$15m} = 26.667\%$  and the market value per share is still:

$$\frac{\$4m / 168,750 \text{ shares}}{0.26667} = \$88.89$$

The conclusion of the net operating income approach (MM no tax) is that the level of gearing is a matter of indifference to an investor, because it does not affect the market value of the company, nor of an individual share. This is because as the level of gearing rises, so does the cost of equity in such a way as to keep both the weighted average cost of capital and the market value of the shares constant. Although, in our example, the dividend per share rises from \$20 to \$23.70, the increase in the cost of equity is such that the market value per share remains at \$88.89.

### 3.3 Modigliani-Miller with tax

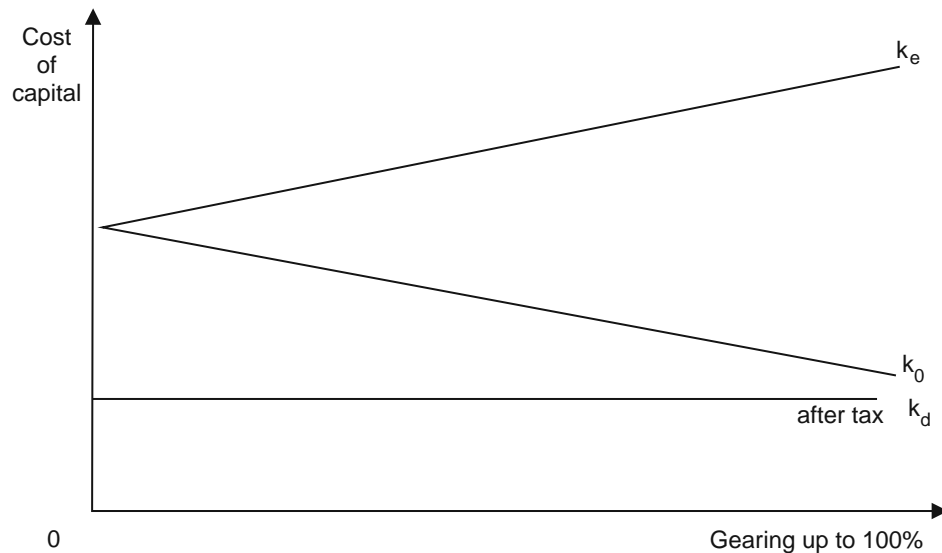


#### Topic highlights

The tax relief on interest payments (the tax shield) lowers the cost of debt and hence the weighted average cost of capital. As a result MM claimed that as debt finance is increased the WACC would continue to fall, up to gearing of 100%.

The lower a company's WACC, the higher the NPV of its future cash flows and the higher its market value.

Modigliani-Miller modified their theory to admit that tax relief on interest payments does lower the weighted average cost of capital. The savings arising from tax relief on debt interest are the tax shield. The benefit of the tax shield outweighs the increased cost of equity due to gearing risk and as a result they claimed that the WACC would continue to fall, up to gearing of 100%.



This suggests that companies should have a capital structure made up entirely of debt. This does not happen in practice due to the existence of other market imperfections that undermine the tax advantages of debt finance.

### 3.4 Market imperfections



#### Topic highlights

In practice, the existence of other market imperfections (bankruptcy risk, agency costs and tax exhaustion) prevent the levels of debt advocated by MM.

#### 3.4.1 Bankruptcy costs

MM's theory assumes perfect capital markets so a company would always be able to raise finance and avoid bankruptcy. In reality however, at higher levels of gearing there is an increasing risk of the company being unable to meet its interest payments and being declared bankrupt. At these higher levels of gearing, the bankruptcy risk means that shareholders will require a higher rate of return as compensation.

#### 3.4.2 Agency costs

At higher levels of gearing there are also agency costs as a result of action taken by concerned debt holders. Providers of debt finance are likely to impose **restrictive covenants** such as restriction of future dividends or the imposition of minimum levels of liquidity in order to protect their investment. They may also increase their level of monitoring and require more financial information.

#### 3.4.3 Tax exhaustion

As companies increase their gearing they may reach a point where there are not enough profits from which to obtain all available tax benefits. They will still be subject to increased bankruptcy and agency costs but will not be able to benefit from the increased tax shield.

## 3.5 Pecking order theory



### Topic highlights

**Pecking order theory** states that companies will prefer retained earnings to any other source of finance, and then will choose debt, and last of all equity.



### Key term

**Pecking order theory** has been developed as an alternative to traditional theory. It states that, in practice, companies will prefer retained earnings to any other source of finance, and then will choose debt, and last of all equity. The order of preference will be:

- retained earnings
- straight debt
- convertible debt
- preference shares
- equity shares

These are the reasons for following pecking order:

- (a) It is easier to use retained earnings than go to the trouble of obtaining external finance and have to live up to the demands of external finance providers.
- (b) There are no issue costs if retained earnings are used, and the issue costs of debt are lower than those of equity.
- (c) Investors prefer safer securities, (i.e. debt with its guaranteed income and priority on liquidation).
- (d) Some managers believe that debt issues have a better signalling effect than equity issues because the market believes that managers are better informed about shares' true worth than the market itself. Their view is the market will interpret debt issues as a sign of confidence, that businesses are confident of making sufficient profits to fulfil their obligations on debt and that they believe that the shares are undervalued.

By contrast the market will interpret equity issues as a measure of last resort, that managers believe that equity is currently overvalued and hence are trying to achieve high proceeds while they can.

However an issue of debt may imply a similar lack of confidence to an issue of equity; managers may issue debt when they believe that the cost of debt is low due to the market underestimating the risk of default and hence undervaluing the risk premium in the cost of debt. If the market recognises this lack of confidence, it is likely to respond by raising the cost of debt.

### 3.5.1 Consequences of pecking order theory

Businesses will try to match investment opportunities with internal finance provided this does not mean excessive changes in dividend payout ratios.

If it is not possible to match investment opportunities with internal finance, surplus internal funds will be invested; if there is a deficiency of internal funds, external finance will be issued in the pecking order, starting with straight debt.

Establishing an ideal debt-equity mix will be problematic, since internal equity funds will be the first source of finance that businesses choose, and external equity funds the last.

### 3.5.2 Limitations of pecking order theory

It fails to take into account taxation, financial distress, agency costs or how the investment opportunities that are available may influence the choice of finance.

Pecking order theory is an explanation of what businesses actually do, rather than what they should do.

Studies suggest that the businesses that are most likely to follow pecking order theory are those that are operating profitably in markets where growth prospects are poor. There will therefore be limited opportunities to invest funds, and these businesses will be content to rely on retained earnings for the limited resources that they need.

## 4 The FRICT framework



### Topic highlights

The FRICT framework, (Flexibility, Risk, Income, Control and Timing) is a useful tool for analysing capital structure issues that arise when a firm raises long-term finance and is faced with several alternatives. (See also Chapter 9 – Types and Sources of Finance.)

The FRICT framework is often used to examine the potential of each financing alternative and to set strategy for making financing decisions over several years. The acronym FRICT stands for flexibility, risk, income, control and timing. Kelly and Kelly (1986) describe how this framework can be used in case studies examining capital structure decisions. In summary, a company is encouraged to consider a range of questions under each heading.

#### Flexibility

- (a) How many financing options does the firm have?
- (b) Is the bond market a viable alternative given the firm's credit rating?
- (c) Is the equity market available?
- (d) Should equity finance be raised first so that a second round of financing can be undertaken with debt?
- (e) Does one source make more sense than another given transaction costs, the amount of finance required, the timeframe within which the finance is required and the firm's financial condition?
- (f) In choosing one source over another, how is the firm's financial flexibility affected in comparison with competitors?

#### Risk

How much additional financial risk can the firm afford given its business risk, financial leverage, bond rating, quality of earnings and assets, liquidity position and predictions for interest rates?

#### Income

- (a) What impact will each financing alternative have on earnings per share (EPS) and cash flow after interest and dividends?
- (b) How will each financing alternative affect the price/earnings (P/E) ratio and the share price in relation to that of competitors?
- (c) Can obligations be met as they fall due?

### Control

- (a) If debt finance were raised, would the covenants imposed be too restrictive?
- (b) Would default be likely under existing covenants and force the loss of control to creditors?
- (c) If equity finance is used, to what extent will current ownership be diluted?
- (d) How will shareholders react to each of the financing alternatives?

### Timing

- (a) Which of the financing alternatives would bring the actual capital structure more into line with the optimal capital structure?
- (b) Given current economic and capital market conditions, is one source of finance more attractive than others?
- (c) Do future expectations for interest rates make one vehicle more attractive than others?
- (d) Are there any particular financing sources in vogue, as were high-yield debt instruments (junk bonds) in the late 1980s?
- (e) How much more will the banks charge to allow less restrictive covenants?
- (f) Will one alternative that is available today be less accessible in the future?

## 5 Summary

Target capital structure describes the percentage of debt, preference shares, and ordinary shares that will minimise the company's WACC and therefore maximise the price of the company's shares.

Borrowing introduces financial risk to the company through fixed costs (interest) associated with the addition of debt into the capital structure. Changes in price, demand for products and resource costs will have more impact on companies that use debt (or financial leverage) than on companies that do not. The company's total risk is increased as it uses more financial leverage. Therefore, there is a distinction between the risk of the company's operations and the extra risk associated with its financing policies.

There is also the problem of agency risk in the use of debt. A company's managers act as agents for its shareholders, and management's goal should be to maximise shareholder value. Management may take actions that will benefit the shareholder at the expense of debt providers, so debt providers will protect themselves by introducing (or adding) covenants that restrict such management actions. These restrictions may cause the company to be less efficient, thereby adding an agency cost to the overall management cost of the company.

The use of debt in a particular company will change over time. As existing long-term debt is repaid, the capital structure of the company will change, unless new debt of a similar type is added. The acceptable target debt levels may change over time as the perceptions of debt by financial markets changes. During times of high growth, use of large amounts of debt may be more acceptable than during slow growth periods.

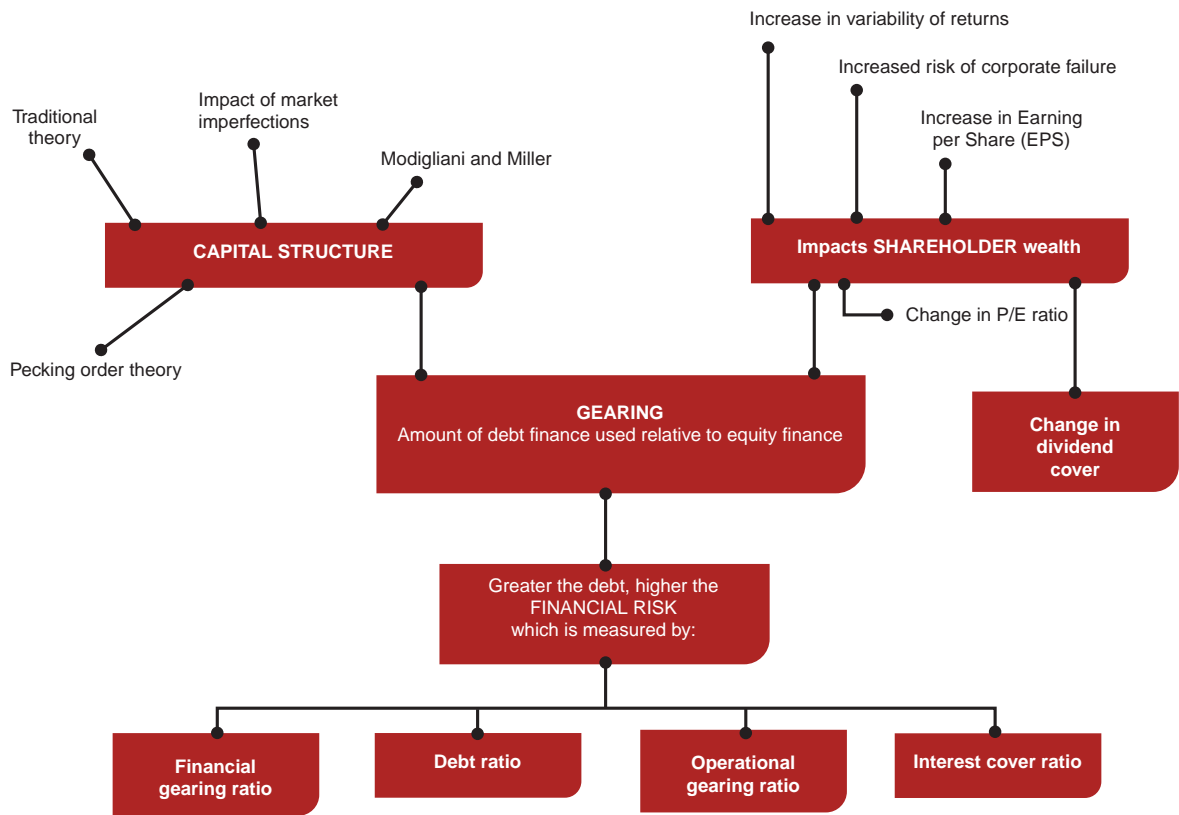
Most managers prefer to use internal sources of funds rather than external sources of funds. In practice, this means that during periods of high earnings, managers will tend to finance the company's growth with retained earnings rather than by borrowing funds. As earnings slow, managers prefer to borrow rather than issue new equity. Over the long term, therefore, a company's capital structure may stem more from its earnings history than from any conscious effort on the part of management to maintain a predetermined target debt level.

Other capital structure considerations include:

- understanding the advantages and disadvantages of share issues as a source of funds
- long run viability of the company
- managerial conservatism
- lending and rating agency attitudes
- borrowing capacity/availability
- maintenance of control of the company by management, rather than by lenders
- asset structure of the company
- growth rate of the company
- profitability of the company
- taxation costs.



# Topic recap



## Answers to self-test questions

### Answer 1

	\$'000
<i>Prior charge capital</i>	
Preference shares	500
Debentures	4,700
Long-term bank loans	500
Prior charge capital, ignoring short-term debt	<u>5,700</u>
Short-term loans	120
Overdraft	<u>260</u>
Prior charge capital, including short-term interest bearing debt	<u>6,080</u>

Either figure, \$6,080,000 or \$5,700,000, could be used. If gearing is calculated with capital employed in the denominator, and capital employed is net non-current assets plus **net** current assets, it would seem more reasonable to exclude short-term interest bearing debt from prior charge capital. This is because short-term debt is set off against current assets in arriving at the figure for net current assets.

Equity (in \$000) = 3,460 + 2,810 = 6,270

The financial gearing ratio can be calculated in any of the following ways:

- (a)  $\frac{\text{Prior charge capital}}{\text{Equity}} \times 100\% = \frac{6,080}{6,270} \times 100\% = 97\%$
- (b)  $\frac{\text{Prior charge capital}}{\text{Equity plus prior charge capital}} \times 100\% = \frac{6,080}{(6,080 + 6,270)} \times 100\% = 49.2\%$
- (c)  $\frac{\text{Prior charge capital}}{\text{Total capital employed}} \times 100\% = \frac{5,700}{12,520} \times 100\% = 45.5\%$

## Answer 2

The best approach is first to calculate the impact on the budgeted income statement and the finance section of the statement of financial position. Dividends and retained earnings are shown since they affect the statement of financial position.

### INCOME STATEMENT

	20X1 \$'000
Sales (16,000 + 2,500)	18,500
Cost of sales (9,600 + 1,100)	<u>10,700</u>
Gross profit	7,800
Other variable operating expenses (50% × 2,800) + 200	1,600
Other fixed operating expenses (50% × 2,800) + 120	<u>1,520</u>
Profit before interest and tax	4,680
Interest (800 + (7% × 10,000))	<u>1,500</u>
Profit before tax	3,180
Tax (840 + (30% × (2,500 – 1,100 – 200 – 120 – 700)))	<u>954</u>
Profit after tax	<u>2,226</u>
Dividends (50% × 2,226)	<u>1,113</u>
Retained earnings	<u>1,113</u>

### STATEMENT OF FINANCIAL POSITION

	\$'000
7% Bonds 20X6	10,000
10% Bonds 20X5	<u>8,000</u>
	18,000
Equity share capital and reserves (24,000 + (1,113 – 980))	<u>24,133</u>

$$(a) \quad \text{Operational gearing} = \frac{\text{Contribution}}{\text{Operating profit}}$$

*Before the investment*

$$\text{Operational gearing} = \frac{16,000 - 9,600 - (50\% \times 2,800)}{3,600} = 1.39$$

*After the investment*

$$\text{Operational gearing} = \frac{18,500 - 10,700 - 1,600}{4,680} = 1.32$$

$$(b) \quad \text{Interest cover} = \frac{\text{Operating profit}}{\text{Interest}}$$

*Before the investment*

$$\text{Interest cover} = \frac{3,600}{800} = 4.5$$

*After the investment*

$$\text{Interest cover} = \frac{4,680}{1,500} = 3.12$$

(c) **Financial gearing** =  $\frac{\text{Prior charge capital}}{\text{Total capital employed}}$

*Before the investment*

$$\text{Financial gearing} = \frac{8,000}{8,000 + 24,000} = 25\%$$

*After the investment*

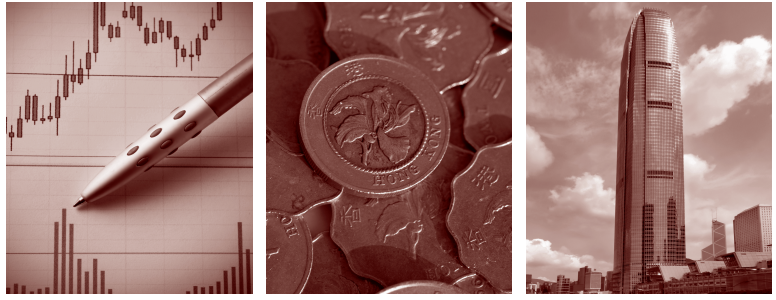
$$\text{Financial gearing} = \frac{8,000 + 10,000}{8,000 + 10,000 + 24,133} = 42.7\%$$

## Exam practice

**Investment proposal****22 minutes**

- (a) The CFO of your company has received an investment proposal for a new hotel in Shanghai. When considering the financial resources available for the project, he believes that debt financing is the most appropriate because the company's leverage ratio is only at 12% compared with the industry average of 33%. The CFO stated that one of the problems of being underleveraged is the possibility of becoming a target for takeover. Is his concern reasonable? **(3 marks)**
- (b) Also, he intends to take advantage of the low-interest-rate environment to raise the leverage of the company. He is contacting several local banks to arrange bank loans to finance the entire project which offers an expected return of 9%. Considering that the borrowing rate for your company is only 5.5%, he believes that the investment is justifiable. Do you agree? **(4 marks)**
- (c) In comparison of a company with its business solely in Hong Kong and another in the same industry but with more diversified business in terms of location and product, which company is more likely to have a lower WACC? State your reasons. **(5 marks)**

**(Total = 12 marks)****HKICPA February 2007**



## chapter 15

# Regulatory environment

### Topic list

- 1 Legal and regulatory structure and code of conduct affecting corporate finance**
  - 1.1 The regulatory structure
  - 1.2 Role of the Securities and Futures Commission (SFC)
  - 1.3 The divisions of the SFC
  - 1.4 Role of the Hong Kong Monetary Authority
  - 1.5 Role of Hong Kong Exchanges and Clearing Ltd (HKEx)
  - 1.6 Companies Ordinance and the Registrar of Companies
  - 1.7 Relationships between legislation, regulations, rules and codes
- 2 HKEx regulation and reporting requirements**
  - 2.1 Accountants' report and pro forma financial information
  - 2.2 Continuing obligations to provide reports of interest to investors
- 3 Corporate governance**
  - 3.1 Elements of corporate governance
  - 3.2 Corporate governance in Hong Kong
- 4 Insider dealing**
  - 4.1 What is insider dealing?
  - 4.2 The Model Code ("the Code")
- 5 Corporate Finance Adviser (CFA) Code of Conduct**
  - 5.1 Aims of the Corporate Finance Adviser Code
  - 5.2 Content
- 6 Listing on the HKEx main board and the GEM**
  - 6.1 Reasons for listing shares
  - 6.2 The Listing Rules
  - 6.3 Applications for listing
  - 6.4 The HKEx website

### Learning focus

This chapter focuses on the key aspects of the regulatory environment within which businesses in Hong Kong are required to operate and the impact that the regulatory environment may have on a business's strategy and management.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Performance control</b> Design, implement and review performance measurement and control systems in organisations		
<b>2.05</b>	<b>Behavioural and ethical aspects of control systems</b>	3
2.05.06	Understand the code of conducts under Securities and Futures Ordinance (SFO)	
<b>Regulatory environment</b> Discuss the regulatory environment and where appropriate apply ethical standards and professional and industry guidance		
<b>10.01</b>	<b>General</b>	2
10.01.01	Understand the roles and responsibilities and the relationship among regulatory authorities, e.g. HKICPA, HKEX, SFC, FRC, HKMA, OCI (Office of the Commissioner of Insurance), HKSI (Hong Kong Securities and Investment Institute), Companies Ordinance and SFO and other participants	
<b>10.03</b>	<b>Industry codes of conduct</b>	2
10.03.01	Recognise situations where it is appropriate to apply ethical standards and industry guidance	
10.03.02	Demonstrate an understanding of the Corporate Finance Adviser Code of Conduct	
<b>10.04</b>	<b>Stock Exchange regulation and reporting requirements</b>	2
10.04.01	Understand the Listing Rules and Stock Exchange regulation on reporting requirements of listed companies, including listing on the HKEx Main Board and the GEM	
10.04.03	Understand the regulation on issuance of convertible bonds, rights issues and share options	
10.04.04	Discuss the nature, role and scope of Corporate Governance Code and Report	
10.04.05	Identify the requirements that must be met by an organisation in respect of its corporate governance	

# 1 Legal and regulatory structure and code of conduct affecting corporate finance



## Topic highlights

Corporate finance activities in Hong Kong are covered primarily by Securities and Futures Ordinance, Companies Ordinance, Listing Rules and the Takeovers and Mergers Code.

## 1.1 The regulatory structure

Corporate finance activities in Hong Kong are covered primarily by the following:

- Securities and Futures Ordinance (SFO)
- Companies Ordinance (CO)
- Listing Rules governing the listing of securities on The Stock Exchange of Hong Kong Ltd (SEHK): these include the Corporate Governance Code
- Listing Rules governing the listing of securities on the Growth Enterprise Market (GEM) of SEHK
- The SFO Takeovers and Mergers Code (the Takeovers Code – covered in Chapter 18)
- The SFO Share Repurchase Code (covered in Chapter 18)



### Key term

The **Securities and Futures Ordinance (SFO)** lays down the overall parameters which govern corporate finance activities.

The SFO is the main body of law relating to the securities and futures industry and markets. The powers and authority of the Securities and Futures Commission (SFC) are derived from the SFO, which allows the SFC to make rules with respect to participants in the markets, including rules regarding applications for listing.



### Key term

The **Securities and Futures Commission (SFC)** is the statutory regulator for the securities and futures market in Hong Kong.

It administers the SFO and parts of the Companies Ordinance. Its functions and responsibilities are also set out in these Ordinances.

## 1.2 Role of the SFC



## Topic highlights

The SFC maintains and promotes the fairness, efficiency, competitiveness, transparency and orderliness of the securities industry.



The SFC is the:

- regulator of market intermediaries and their conduct
- supervisor of the exchanges and clearing houses in all aspects of their operation
- statutory enforcer

The SFC is the main regulator of the securities and futures markets in Hong Kong, including the stock exchange. It is an independent non-government statutory body, which is funded by levies on transactions conducted on the Stock Exchange of Hong Kong (SEHK) and the Hong Kong Futures Exchange (HKFE), and by fees charged to market participants.

The SFC was created in 1989 in response to the stock market crash of October 1987. Its powers are now derived from the SFO which was implemented in 2003.

Its objectives are to:

- set and enforce market regulations for the securities and futures markets
- license and supervising market participants such as brokers and investment advisers and to supervise them after licensing
- supervise market operators such as exchanges, automated trading systems and clearing houses
- authorise offer documents for securities and other investment products to be offered to the public (including prospectuses for new share issues in collaboration with the Listing Division of the stock exchange)
- supervise the activities of listed companies under the Codes on Takeovers and Mergers and Share Repurchases
- educate investors about markets, investment products and their risks.

### 1.2.1 Supervision of mergers and takeovers

The SFC has responsibility for supervision of merger and takeover activity involving listed companies.

Its Takeovers and Mergers Executive deals with any matters referred to it concerning a takeover or merger, or repurchase of shares by a company, and makes rulings on the matter in accordance with the Codes on Takeovers and Mergers and Share Repurchases (“the Codes”). Under the provisions of the SFO, the SFC established the Takeovers and Mergers Panel (the Panel) and appoints its members.

The functions of the Panel include:

- hearing matters referred to it by the Takeovers and Mergers Executive, in connection with the Codes or possible breaches of the Codes, which the Executive considers are to be too difficult or important for the Executive to resolve itself
- reviewing rulings that have been made by the Executive, on application by any party that is not satisfied with the ruling
- hearing disciplinary matters in connection with breaches of the Codes.

These Codes are explained in more detail in Chapter 18.

## 1.3 The divisions of the SFC

These are:

- (a) **Corporate Finance Division**, which is the major division that regulates corporate finance activities
- (b) **Enforcement Division**, which conducts market surveillance to identify improper or illegal activities for further investigation

- (c) **Intermediaries and Investment Products Division** comprising the **Licensing Department** (which regulates all those required under the law to be licensed), the **Intermediaries Supervision Department** (which supervises licensed corporations and individual licensees on an ongoing basis) and the **Investment Products Department** (self-explanatory)

The SFC has established regulatory committees to which it has delegated some of its functions. In addition, there are tribunals and panels which are also part of the regulatory mechanism. The key ones are:

- **Market Misconduct Tribunal** (deals with market misconduct, including insider dealing, market rigging, etc.)
- **Takeovers and Mergers Panel** (reviews takeover rulings)
- **Takeovers Appeals Committee** (reviews disciplinary rulings of the Takeovers and Mergers Panel)

## 1.4 Role of the Hong Kong Monetary Authority



### Topic highlights

The **Hong Kong Monetary Authority (HKMA)** is responsible for regulating the banking industry.

Since many banks will also undertake corporate finance business, they will be regulated by both the HKMA and the SFC. A fuller discussion of the HKMA is in Chapter 16.

## 1.5 Role of Hong Kong Exchanges and Clearing Ltd (HKEx)



### Topic highlights

The HKEx and its subsidiary bodies, is responsible for the listing of securities both on the main board and GEM. It sets out the requirements and procedures for listing, including pre-listing requirements and post-listing requirements.

Hong Kong Exchanges and Clearing Limited (HKEx) operates a securities market and a derivatives market in Hong Kong and the clearing houses for these markets. The clearing houses are Hong Kong Securities Clearing Company Limited (HKSCC), HKFE Clearing Corporation Limited (HKCC) and The SEHK Options Clearing House Limited (SEOCH).

HKEx was established in 2000 as a holding company for the merger of the SEHK, HKFE and Hong Kong Securities Clearing Company Limited (HKSCC). It is a recognised exchange controller under the Securities and Futures Ordinance. HKEx is a listed company on the Stock Exchange of Hong Kong.

### 1.5.1 The Stock Exchange of Hong Kong Limited (SEHK)

The SEHK, a wholly-owned subsidiary of HKEx, is a recognised exchange company under the SFO. It operates the stock market in Hong Kong and is the primary regulator of stock exchange participants on trading matters and of companies whose securities are listed on the Main Board and Growth Enterprise Market (GEM) of the Stock Exchange. Companies wishing to become listed companies must apply to the Listing Division of the Stock Exchange and must comply with the Listing Rules of the Exchange.

### 1.5.2 Hong Kong Futures Exchange Limited (HKFE)

The HKFE, a wholly-owned subsidiary of HKEx, is also a recognised exchange company under the SFO. It operates a futures market in Hong Kong and is the primary regulator of futures exchange participants with regard to trading matters.

### 1.5.3 The Rules Governing the Listing of Securities on the Stock Exchange of Hong Kong Limited (the “Listing Rules”)

The Listing Rules are the responsibility of SEHK (and HKEx). Companies wishing to obtain a listing on the Main Board of the Exchange or GEM must comply with the rules on applications for listing. After obtaining a listing, listed companies must then comply with the continuing obligations in the Listing Rules.

The SEHK monitors compliance with the Listing Rules.

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## 1.6 Companies Ordinance and the Registrar of Companies



### Key terms

The **Companies Ordinance** forms the core of the regulation of companies in Hong Kong. It sets out the rules and regulations governing Hong Kong companies and the conduct of their affairs.

The **Companies Registry** maintains and makes available for public inspection the financial and other returns made by companies.

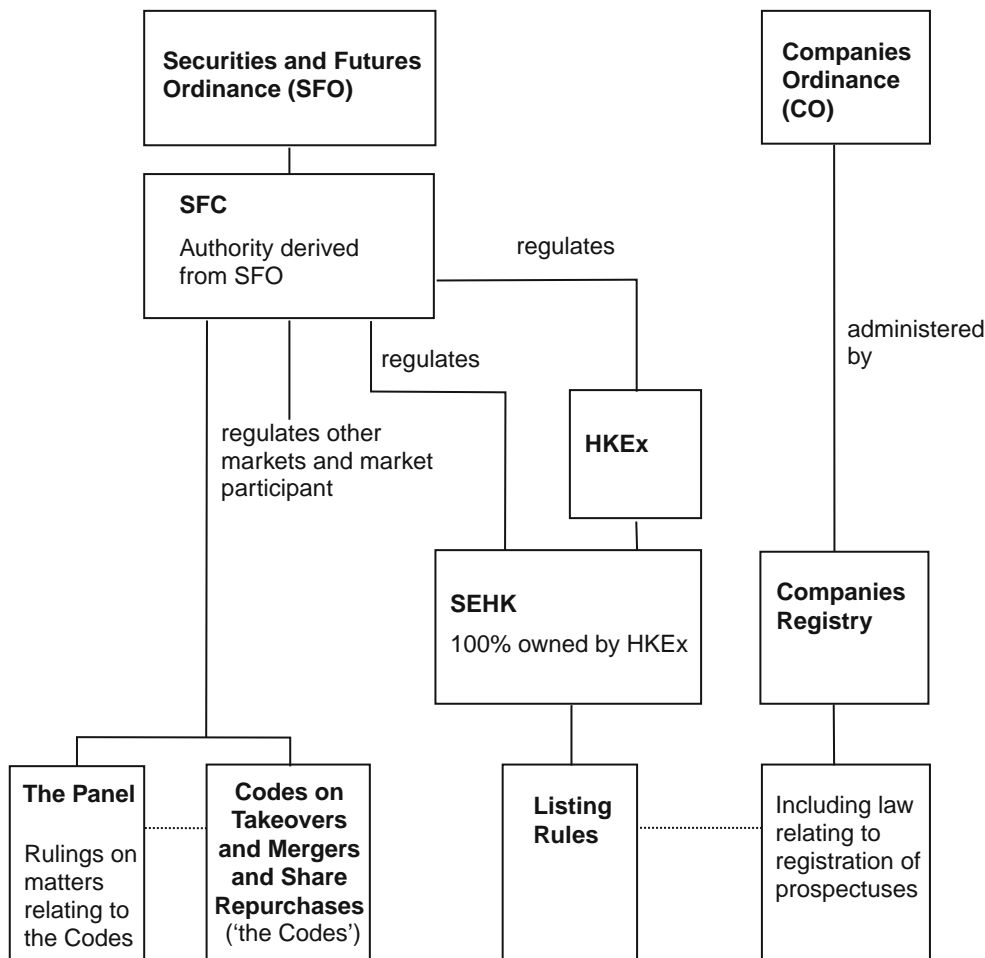
The Companies Ordinance applies to all companies formed and registered under that ordinance. It is not limited just to listed public companies, but applies also to unlisted public and private companies. Certain of its provisions apply to overseas companies with a place of business in Hong Kong and registered as such under Part XI of the Ordinance.) The Hong Kong Companies Ordinance, which is the main law that applies to companies registered in Hong Kong, is one of the largest and most complex pieces of legislation in Hong Kong. Apparently, its origins may be traced to the 19<sup>th</sup> century. It was revised substantially in 2012 and the provisions of the new Ordinance apply from 2014.

The Companies Registry enforces the Hong Kong Companies Ordinance (CO). The responsibilities of the Companies Registry include registering documentation provided by companies under the requirements of the CO. This includes the registering of prospectuses by companies that are accepted for listing by the SEHK and which will be issuing shares for sale when trading in the shares begins on the SEHK.

One of the requirements of the CO is that companies that intend to offer shares for sale to the public must produce a prospectus. Companies that apply for a listing for these shares must submit their prospectus to the Listing Division of the Stock Exchange, and the Listing Committee of the Exchange approves the prospectus for registration with the Companies Registry.

The Companies Registry files the statutory returns of entities and may strike companies from the Register of Companies for failure to make returns and for not carrying on business.

### Summary of relationships



## 1.7 Relationships between legislation, regulations, rules and codes



### Key term

The **legislation** (SFO, Companies Ordinance, etc.) lays down the basic framework in which markets should operate.

As the market has evolved over time and new products are created, Codes, in addition to more regulation, have been introduced. Codes can be more easily amended to take into account changing circumstances compared to amendments to legislation, which can take years to implement.

Legislation can be enforced through the courts, codes cannot because they are not laws. Codes are dealt with through industry bodies such as the Takeovers and Mergers Panel in respect of the Takeovers Code.

Since the Listing Rules and GEM Listing Rules are not laws, they do not have the force of law. This means that the Exchange cannot enforce a breach of its rules through the courts. They do, however, have the advantage over laws in that they can be applied less rigidly to a set of circumstances and can be changed more easily than a law.

## 2 HKEx regulation and reporting requirements

The principal regulator of Hong Kong's securities and futures markets is the SFC. HKEx is a recognised exchange controller under the SFO. It owns and operates the only stock exchange and futures exchange in Hong Kong and their related clearing houses, namely Hong Kong Securities Clearing Company Limited (HKSCC), HKFE Clearing Corporation Limited (HKCC) and The SEHK Options Clearing House Limited (SEOCH).

The SEHK, a wholly-owned subsidiary of HKEx, is a recognised exchange company under the SFO. It operates and maintains a stock market in Hong Kong and is the primary regulator of Stock Exchange Participants with respect to trading matters and of companies listed on the Main Board and Growth Enterprise Market (GEM) of the Stock Exchange.

There are a large number of reporting requirements in respect of listing on the HKEx. There are two major areas that affect CPAs; the accountants' report and pro forma financial information required in relation to listing, and the continuing obligations to provide reports of interest to investors.

### 2.1 Accountants' report and pro forma financial information

Chapter 4 of the Main Board Listing Rules sets out the detailed requirements for accountants' reports on the profits and losses, assets and liabilities of, and other financial information on, an issuer of securities. These requirements include the following:

- All accountants' reports must be prepared by certified public accountants, who are qualified under the Professional Accountants Ordinance for appointment as auditors of a company. Such qualified persons include members of the Hong Kong Institute of CPAs (HKICPA). The accountants must also be independent of the issuer or any other connected company, in a manner acceptable to the HKICPA and the HKEx.
- A three-year history of the following must be provided.
  - Financial results i.e. income statements
  - Statements of financial position
  - Statements of cash flows
  - Statements of changes in equity
  - Details of earnings per share
  - Movements to and from any reserves
  - A statement of indebtedness showing bank loans, overdrafts and other indebtedness separately
  - Details of the principal accounting policies employed
  - A statement of any important subsequent events
  - Any other relevant matters
- There are a number of detailed requirements in respect of pro forma financial information. The major ones are these:
  - The information must state the purpose for which it has been prepared; that it is prepared for illustrative purposes only; and that because of its nature, it may not give a true picture of the issuer's financial position or results.
  - The information must be presented in columnar format showing separately the unadjusted financial information, the pro forma adjustments and the pro forma financial information.

- The pro forma financial information must be current.
- The pro forma financial information must be reported on by the auditors or approved reporting accountants.

## 2.2 Continuing obligations to provide reports of interest to investors

Chapter 13 of the Main Board listing rules outlines in considerable detail a set of requirements in relation to the obligation of listed companies to provide reports of interest to investors. A summary of the major ones follows:

- The company must inform the SEHK and shareholders as soon as reasonably practical of any matter which:
  - is necessary to appraise the position of the company / group; or
  - is necessary to avoid the establishment of a false market in its securities; or
  - might reasonably be expected materially to affect market activity and the price of its securities.
- An issuer must respond promptly to enquiries made by the SEHK concerning unusual movements in the price or trading volume of its listed securities, and issue an announcement where appropriate.
- By not later than 30 minutes before the opening of SEHK trading, an issuer must advise the Exchange of any changes in share capital, e.g. bonus issues, rights issues, etc.
- The issuer must submit a monthly return to the SEHK containing such prescribed information as movements in equity securities and debt securities.
- Immediately after board meetings the issuer must provide the SEHK with information on:
  - any decision to declare, recommend or pay any dividend or other distribution;
  - any decision not to declare, recommend or pay any dividend or other distribution;
  - any preliminary announcement of profits or losses for any year, half year, or other period;
  - any proposed changes in its capital structure; and
  - any decision to change the general character or nature of the business.
- The issuer must provide an annual report containing prescribed information and according to a prescribed timetable.
- The listed issuer must provide an interim report for the first six months of the financial year. This report must comply with certain provisions and be issued no later than three months after the end of the interim six months.
- The issuer must publish its preliminary annual results as soon as possible after the end of the financial year, and no later than three months after the end of the financial year.
- The issuer must publish its preliminary interim results as soon as possible after the end of the six-month period, and no later than two months after the end of that period.

## 3 Corporate governance



### Topic highlights

Corporate governance refers to the rules, systems and processes by which a company is directed and controlled. Some rules on corporate governance, such as the duties of directors, apply to all companies and are contained in the Companies Ordinance. Other principles and guidelines are contained in the Corporate Governance Code which is an appendix to the main board Listing Rules.

The **Corporate Governance Code** formerly called the Code on Corporate Governance Practices ("the Code") is promulgated by the Hong Kong Stock Exchange. It sets out the Exchange's views on the principles of good corporate governance and provides two levels of recommendations: Code Provisions and Recommended Best Practices.

The Code applies to main board companies ('issuers'). Issuers are expected to comply with the Code provisions but may deviate from them if there is a reason for doing so. The issuer must explain any non-compliance with Code provisions in its annual report.

The Recommended Best Practices are for guidance only.

### 3.1 Elements of corporate governance

Corporate governance refers to the rules, systems and processes by which a company is directed and controlled. It influences the way in which a company deals with its stakeholders – shareholders, customers, employees and society at large. In the wake of financial scandals such as Enron, WorldCom, and the Asian financial crisis in the late 1990s, more emphasis has been placed on making sure that there are controls in place to monitor the way businesses operate and to prevent those in authority, such as the directors, from abusing their power.

Every company has governance, but governance may be 'good' or 'bad'. The main aspects of corporate governance are as follows:

- How the board of directors should act in the interests of the company's stakeholders, particularly its equity shareholders
- The structure and composition of the board of directors: how large should the board be and who should be its directors?
- How to deal with directors' conflicts of interests, for example with regard to directors' remuneration
- The rights of shareholders to influence decisions or make decisions for the company
- The accountability of the board of directors to shareholders, and the audit of financial statements (as an important factor in accountability)
- How risk management policies are decided by the board of directors, to prevent excessive risk-taking by the company in its operations
- The relations between the board of directors and the shareholders

### 3.2 Corporate governance in Hong Kong

The current framework of corporate governance in Hong Kong consists of both statutory requirements and non-statutory requirements.

Hong Kong's corporate governance standards are based on principles, as is also largely the case in other countries such as the UK and Canada. Directors have more discretion than under the rule-

based approach adopted in the US which specifies expected behaviour (Sarbanes-Oxley Act). Statutory requirements cover matters such as fundamental shareholder rights, set out in the Companies Ordinance; and the disclosure of interests and insider trading (an illegal offence) in the Securities and Futures Ordinance.

Non-statutory requirements are those specified under the Listing Rules of the Hong Kong Stock Exchange, including the Corporate Governance Code. These cover areas where corporate governance practices by listed companies can be more discretionary, such as the number of independent non-executive directors, disclosures of connected transactions, and disclosures of the different components of directors' remuneration. However, listed companies that do not comply with the provisions of the Corporate Governance Code must explain their non-compliance in their annual report.

### 3.2.1 The Listing Rules and Corporate Governance Code

In 2004, the SEHK issued the Code on Corporate Governance Practices which sets out the principles of good corporate governance for listed companies. The Code was revised in 2012 and renamed the Corporate Governance Code, which is an appendix to the SEHK Listing Rules.

#### The Listing Rules and Corporate Governance Code

Corporate governance requirements for listed companies in Hong Kong are applied within the Listing Rules at three levels: Listing Rules, Code Provisions and recommended best practices.

Some corporate governance requirements are imposed by the Listing Rules themselves. All listed companies must comply with these Rules. The Rules include a requirement for companies to include a Corporate Governance Report in their annual report.

The Corporate Governance Code is an Appendix to the Listing Rules. The Listing Rules require companies to apply the Corporate Governance Code.

The Corporate Governance Code contains some general principles but also:

- Code Provisions, and
- recommended best practices

Listed companies are normally expected to comply with the **Code Provisions (CP)**, but compliance is not a regulatory requirement. However, if a listed company fails to comply with any code provision, it must explain the reason for non-compliance in its Corporate Governance Report. This requirement to apply Code Provisions or explain non-compliance is called “comply or explain”.

**Recommended best practices (RBP)** are practices that listed companies are encouraged to apply, but compliance with RPBs is not a regulatory requirement, and companies are not required (although they are encouraged) to explain any non-compliance in their Corporate Governance Report.

#### Comply or explain

The requirement for “comply or explain” is set out in the Listing Rules (Rule 13.89) as follows:

“The Corporate Governance Code sets out the principles of good corporate governance and two levels of recommendations: (a) Code Provisions; and (b) recommended best practices. Issuers are expected to comply with, but may choose to deviate from, the Code Provisions. The recommended best practices are for guidance only.

Issuers must state whether they have complied with the Code Provisions set out in the Corporate Governance Code for the relevant accounting period in their interim reports and annual reports. Where the issuer deviates from the Code Provisions, it must give considered reasons: for annual reports, in the Corporate Governance Report.

For recommended best practices, issuers are encouraged, but are not required, to state whether they have complied with them and give considered reasons for any deviation.”



### 3.2.2 Corporate governance issues

The provisions of the Corporate Governance Code cover the following areas:

- A Directors
- B Remuneration of directors and senior management
- C Accountability and Audit
- D Delegation by the Board
- E Communication with shareholders
- F Company secretary

In each section, the Code sets out the Code Provisions and/or Recommended Best Practices, together with the underlying principles of the relevant provisions to assist listed issuers in developing their own code of board practices.

Key provisions include:

- (a) **Separation of chairman and CEO** – The roles of chairman and chief executive should be separate and should not be performed by the same individual. The division of responsibilities between the chairman and chief executive should be clearly established and set out in writing.
- (b) **Board composition** – The board should include a balanced composition of executive and non-executive directors (including independent non-executive directors) so that there is a strong independent element on the board, which can effectively exercise independent judgment. Non-executive directors should be of sufficient calibre and number for their views to carry weight.
- (c) **Remuneration** – An issuer should disclose directors' remuneration policy and other remuneration related matters. The procedure for setting policy on executive directors' remuneration and all directors' remuneration packages should be formal and transparent. Remuneration levels should be sufficient to attract and retain directors to run the company successfully, without paying more than necessary. No director should be involved in deciding his own remuneration.
- (d) **Internal controls** – The board should ensure that the issuer maintains sound and effective internal controls to safeguard shareholders' investment and the issuer's assets.

### 3.2.3 The board of directors

The board of directors is accountable to its shareholders. It has the duty to present a true account of the company's financial performance through the periodic reporting system and to ensure effective internal control systems are put in place in the company. The board of a listed company typically comprises a chairman, executive directors, non-executive directors and independent non-executive directors (INEDs). The presence of INEDs in particular, provides shareholders and stakeholders with greater assurance that the business strategies adopted and the decisions made by the board are likely to have been premised on independent views.

The Stock Exchange of Hong Kong Limited's (Stock Exchange) Rules Governing the Listing of Securities (Listing Rules) requires companies listed on the Main Board to have at least three independent non-executive directors, of whom at least one must have appropriate professional qualifications or accounting or related financial management expertise. Listed companies must also establish an audit committee comprising non-executive directors only, with a minimum of three members, and at least one should hold a relevant qualification.

There is no legal distinction between executive directors and non-executive directors. They have a common undertaking to SEHK to procure the listed company's compliance with the Listing Rules. The non-executive directors' role can be seen as balancing that of the executive director as providing constructive contributions and objective opinions to the board and monitoring the conduct of the executive directors. The role of INEDs is distinct as they, "apart from directors' fees and shareholdings, are independent of the management and free from any business or other relationships which could materially interfere with the exercise of independent judgement" (Cadbury Report, UK 1992).

Therefore, there are these aspects to the non-executive director's role:

- (1) Participate in formulating strategy of the company;
- (2) Oversee the company's management and check the company has established a proper and effective internal monitoring system;
- (3) Take independent decisions, based on all available information, and not influenced by any private interests;
- (4) Protect the interests of all shareholders.

In Hong Kong INEDs are increasingly taking a more prominent role in corporate governance. The Listing Rules, while evolving to follow international trends, serve to make directors' pay and actions more transparent, and for connected transactions to be approved by disinterested/unconnected shareholders.

### 3.2.4 Directors' pay

Legally, the directors are the servants of the shareholders. However, in practice they have their hands on the company cheque book, and they can be accused of using it to their own advantage by awarding themselves large remuneration packages. One argument is that there is no right or wrong level of pay for a director. As long as the shareholders are made aware of the full amount of pay that directors receive, it is then up to the shareholders to decide whether they earn their pay, at the annual general meeting when the shareholders vote on the annual accounts where these sums are disclosed. In this situation, directors earn their pay by increasing the company's profits, dividends and share price.

The global recession increased the focus on executive pay as excessive remuneration policies and the misalignment of executive incentives were partly blamed for the global financial crisis. The argument is that excessive pay is unethical, even if it is legal. However, it is up to the Board as a whole and the shareholders to ensure a return to more reasonable levels of pay. One of the roles of non-executive directors is to monitor executive pay levels.



#### Case study: Executive pay and performance

How and to what extent pay packages should be structured is a touchy subject. Obermatt, a financial-research company, argues that remuneration should be based on company performance. Its boss, Hermann Stern, says the current system is flawed; he believes earnings growth and shareholder return should determine how much a CEO should be paid. Currently, of the largest companies in America (those in the S&P 100), CEO pay has no correlation with either performance or market capitalisation. By measuring performance against a peer group, Obermatt calculates the "excess pay" companies gave their bosses between 2008 and 2010. Occidental Petroleum, an energy firm, was by far the worst offender. Its boss, Ray Irani, who earned over \$200m in 2008 alone, was one of the highest-paid executives in the period, and received almost eight times his "deserved pay". After shareholder complaints, he took a pay cut and retired.

(Source: *The Economist online* Feb 7 2012)

### 3.2.5 Recent changes to the Listing Rules and Corporate Governance Code

Some changes to corporate governance requirements were introduced from 2012. These were a combination of:

- new Listing Rules and some amendments to existing Listing Rules
- new Code Provisions, some amendments to existing Code Provisions and some re-classification of recommended best practices as Code Provisions
- some new recommended best practices and amendments to existing RPBs.

These are described here, to give you an idea of the nature of the corporate governance requirements for listed companies.

### Changes in the Listing Rules

Some of the changes in the Listing Rules are as follows:

- (a) A Rule about the delegation of authority by directors is strengthened to clarify their responsibility. Directors are allowed to delegate authority, but they remain responsible and must satisfy the required levels of skill, care and diligence. Directors do not satisfy these requirements if they do nothing more than attend formal meetings. “At a minimum they must take an active interest in the issuer’s affairs and obtain a general understanding of its business. They must follow up anything untoward that comes to their attention”.
- (b) At least one third of the members of the board of directors of an issuer must be independent non-executive directors (from December 2012). (Previously this was only a RPB.)
- (c) An issuer must establish a remuneration committee consisting of a majority of independent non-executive directors and chaired by an independent non-executive director. (Previously the requirement for a remuneration committee was a Code Provision (CP) and therefore not compulsory.)
- (d) The term of office of an issuer’s auditor ends at the annual general meeting. The auditor cannot be removed from office before the end of this term without the approval of the shareholders in a general meeting.

### Changes in the Corporate Governance Code

The main changes in the Corporate Governance Code are as follows:

- (a) An addition to a general principle in the Code is that the board should regularly review the time required from a director to perform his or her responsibilities and whether each director is spending sufficient time performing them. However an addition to a Code provision states that a director may attend a meeting by electronic means (such as telephone or videoconferencing).
- (b) A new CP stating that management should provide all directors with monthly updates “giving a balanced and understandable assessment of the issuer’s performance, position and prospects in sufficient detail to enable the board as a whole and each director to discharge their duties”. This requirement is linked to the Listing Rules change that directors are required to take an active interest in the issuer’s affairs and obtain a general understanding of its business.
- (c) A note to the Code states that an issuer should have a corporate strategy and a long-term business model. A new CP requires the directors to include a statement in the annual report that contains a “discussion and analysis of the group’s performance, an explanation of the basis on which the issuer generates value over the longer term (the business model) and the strategy for delivering the issuer’s objectives.”
- (d) A further change has been introduced, effective from September 2013, regarding the composition of the board of directors. Previously, there was a principle that the board should have a balance of skills and experience appropriate to the requirements of the business. This is now amended to ‘the board should have a balance of skills, experience **and diversity of perspectives** appropriate to the requirements of the issuer’s business.’

A note to the amended Code states that board diversity will differ according to the circumstances of the company. ‘Diversity of board members can be achieved through consideration of a number of factors, including but not limited to gender, age, cultural and educational background, or professional experience. Each issuer should take into account its own business model and specific needs, and disclose the rationale for the factors it uses for this purpose.’

You can read the full text of the Corporate Governance Code and the required contents of a Corporate Governance Report. These are contained in Appendix 14 of the Listing Rules, which can be found at:

[www.hkex.com.hk/eng/rulesreg/listrules/mbrules/listrules.htm](http://www.hkex.com.hk/eng/rulesreg/listrules/mbrules/listrules.htm)

## 4 Insider dealing

Insider dealing is a category of “market misconduct” under the Securities and Futures Ordinance. The Ordinance has a dual regime for dealing with suspected cases of insider dealing that have been investigated by the Securities and Futures Commission – a civil regime and a criminal regime. The SFC may decide that a suspected case of insider dealing should be referred to:

- the Market Misconduct Tribunal, under the civil regime. The case is heard by the Tribunal, which has the power to:
  - prohibit the accused individual from taking part in the management of any listed company, and
  - require the individual to make a payment to the government for the profits obtained or losses avoided from insider dealing.
- the Secretary for Justice, under the criminal regime. Individuals found guilty of insider dealing may be imprisoned or required to pay a fine.

### 4.1 What is insider dealing?



#### Key term

**Insider dealing** occurs when an individual who is “connected” to a listed company has price-sensitive information about the company, and uses this information to deal in the company’s shares (or advise someone else to deal in the shares) in order to make a profit or avoid a loss.

A “connected person” includes directors of the company and professional advisers. “Price-sensitive information” is information that the public does not yet know, but when the information becomes public knowledge it is likely to have an impact on the share price (so that the share price is likely to go up or down by a substantial amount).

An example of price-sensitive information is information about a merger or acquisition that is not yet public knowledge. Another example is the profit or loss of a listed company for a reporting period, prior to its announcement to the stock market.

#### 4.1.1 Why is insider dealing criminal behaviour or market misconduct?

Insider dealing is prohibited for two main reasons:

- When an individual makes a profit or avoids a loss by dealing in shares when in possession of price-sensitive information, another shareholder or investor makes a loss. For example, if a listed company director buys shares in the company knowing that the share price will soon go up, his profits from share dealing are at the expense of the shareholder who sells him the shares.
- If investors believe that insider dealing is common practice on the stock market, they may become reluctant to invest in the market. The stock market as a whole would have a damaged reputation.

## 4.2 The Model Code ("the Code")

In addition to the rules against insider dealing in the SFO, dealing in shares by directors of listed companies is restricted by the Model Code. This Code is a part of the Listing Rules, and a listed company must apply the Code or have its own code that is no less strict. One of the objectives of the Code is to protect the stock market against suspicions of market misconduct by company directors.

A requirement of the Code is that a director of a listed company must not buy or sell shares in the company during particular periods of time. They must not deal in the company's shares

- in a period before the announcement of the financial results of the company for a reporting period (the annual results, half-year results and, if published, quarterly results,) or
- when they are in possession of any price-sensitive information about the company.

The insider dealing rules and Model Code rules are an example of how financial regulation may try to impose ethical behaviour on company management and stock market participants.

## 5 Corporate Finance Adviser (CFA) Code of Conduct



### Topic highlights

The SFC seeks to promote professional and ethical business conduct among corporate finance advisers in Hong Kong, via the CFA Code of Conduct. This sets out the recommended best practice and business conduct requirements for those providing corporate finance advice.

The SFC is charged with the responsibility of promoting and maintaining the integrity of registered persons in the securities and futures market.

Corporate finance advisers engaging in corporate finance advisory work under the Listing Rules, the Takeovers Code or the Share Repurchase Code are required to observe the specific requirements under the respective codes and rules as regards their conduct.

The CFA Code of Conduct issued by the SFC, is designed to be applied in conjunction with other legislation, regulations and guidelines. It is not statutory but members are required to consider the spirit as well as the letter of the Code. The SFC will use the Code of Conduct as a benchmark, together with other SFC Codes and Guidelines, to measure an adviser's fitness.

### 5.1 Aims of the Corporate Finance Adviser Code

As professionals providing corporate finance advice to listed issuers and market participants, corporate finance advisers play a key role in contributing to the success of a securities market. The provision of quality advice and the fitness and suitability of corporate finance advisers are of paramount importance to the market.

SFC seeks to ensure that the Code achieves the following:

- (a) It promotes professional and ethical business conduct among corporate finance advisers in Hong Kong.
- (b) It sets out the recommended best practice and business conduct requirements, without stipulating unnecessarily stringent or unachievable standards.
- (c) It is consistent with other legislation, regulations and guidelines affecting the current practices of corporate finance advisers.
- (d) It accords with the relevant international practices and standards, in particular, the Financial Services Authority (FSA) in the UK and the European Union (EU).

## 5.2 Content

The Code covers the following areas:

**Conduct of business** (paragraph 2) – a corporate finance adviser should ensure that he is fit and proper to conduct his business. This prescribes guidelines and the standard of conduct expected of an adviser in the discharge of his obligation.

**Competence** (paragraph 3) – a corporate finance adviser should act with competence. He should be honest, of good repute and character, and maintain a high standard of integrity and fair dealing in the conduct of his business, as well as being suitably licensed for the various types of businesses conducted.

**Conflicts of interest** (paragraph 4) – a corporate finance adviser should avoid engaging in work that is likely to involve conflicts of interest. He should also take all reasonable steps to avoid such situations. An adviser should not unfairly place its interests above those of its clients. Where a conflict of interest cannot be removed, an adviser should decline to act.

Specifically, where the matter concerned relates to the issue of independence of a financial adviser in a transaction involving the Listing Rules, the Takeovers Code or the Code on Share Repurchases, such matters should be dealt with in accordance with the respective codes or regulations.

**Standard of work** (paragraph 5) – a corporate finance adviser should aim to deliver a high standard of work at all times. The Code expects that a corporate finance adviser should act with integrity, due skill, care and diligence in the execution of its duties and responsibilities.

The Code sets out expectations regarding the role and conduct of sponsors in an initial public offering.

**Duties to the client** (paragraph 6) – a corporate finance adviser should ensure that it acts in the best interests of its client at all times.

**Communication with regulators** (paragraph 7) – a corporate finance adviser must deal with the regulators in an open and co-operative manner.

**Personal account dealings** (paragraph 8) – a corporate finance adviser should ensure that all personal account dealings are properly conducted. The Code emphasises that a corporate finance adviser should avoid conflicts of interest when dealing in securities on his own account while discharging his duties to his client.



### Case study: “Insider dealings” graft scheme

An executive director of a listed company, together with a fund manager, a director of an investment firm and another accomplice, orchestrated a graft scam to push up the company's share price through investment funds. Genuine investors suffered as a result.

The fund manager snapped up 15 million shares of the listed company. He allocated these stocks to various investment funds and held them for six months.

The company's stock appeared to be favoured by institutional investors. Its price shot up. The listed company's executive director placed another 3.8 million shares with the fund manager to glean more profits. From the sale proceeds, he took out HK\$1.8 million to reward the fund manager and other co-conspirators as promised in the deal.

The listed company's executive director and two other suspects were caught red-handed when the last payment of bribe money changed hands. The fund manager was arrested on the same day.

The executive director, the mastermind, was sentenced to three years in jail. The fund manager and the investment firm's director each got two years for taking the bribes. The court also ordered the forfeiture of the HK\$1.8 million bribe money.

The trial judge, in sentencing, reckoned that the “insider dealings” case presented investigators with immense difficulties. To preserve market integrity, the judge ruled that penalties of sufficient deterrence had to be meted out.

Source: ICAC Post, June 2007, Issue No.4 www.icac.org.hk

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## Example: Corporate Finance Adviser Code of Conduct

### Scenario

Lucky Dollar Planning Limited (LDP) has been operating for 10 years in the financial advising industry in Hong Kong. The company holds a Dealer's Licence and operates through a network of 100 Authorised Representatives. Martin Tay and Sally Yeung are two of these Representatives. Martin Tay is a good marketer and salesman whereas Sally Yeung, not being as outgoing as Martin, mainly concentrates on preparing financial plans for a number of the Authorised Representatives (including Martin) for presentation by them to their clients. Martin's income is derived solely from commissions and brokerage while Sally is a salaried employee.

Martin has asked Sally to prepare a financial plan for Mary Chen, a retired librarian, and one of Martin's clients. The information which Sally has received about Miss Chen indicates that her assets include a \$1,000,000 Insurance Bond purchased the previous year.

Martin has now told Sally that Miss Chen needs income and wishes to withdraw from the Insurance Bond to invest instead in an Immediate Annuity. Martin's briefing sets out plausible reasoning for this strategy. Sally does not believe that the Insurance Bond was an appropriate investment for someone like Miss Chen due to her age and small income.

She suspects that Martin is giving inappropriate investment advice and is recommending clients restructure their portfolios unnecessarily. Sally knows of at least six other cases where similar recommendations were made.

Sally takes her suspicions to the General Manager Operations and is told "Martin was our biggest writer of business last year. He generated brokerage and fees of over \$3,000,000. We want to encourage him". He says he is happy to transfer Sally if she doesn't like working with Martin.

Sally Yeung is concerned that her suspicions are correct and that she may be regarded as a party to Martin's actions. Furthermore, should these practices be encouraged by LDP, Sally is worried that LDP could lose its Dealer's Licence.

### Required

- (a) Discuss this scenario with specific reference to the Corporate Finance Adviser Code of Conduct.
- (b) Outline the options available to Sally Yeung and indicate which option you favour.

### Solution

- (a) It appears that Martin Tay is not conforming to the Corporate Finance Adviser Code of Conduct. Specifically, he is required to "avoid engaging in work that is likely to involve conflicts of interest", including "not unfairly placing his interests above the interests of the client". The fact that he has swapped the client's investment from one form to another within one year, when he is remunerated on commission only, suggests that he has breached this part of the Code.

Also, Martin appears to have breached the Code provision that he "acts in the best interests of the client at all times". Miss Chen is a retired librarian and presumably would require a conservative investment strategy. This was not recommended originally by Martin Tay.

(b) The options available to Sally Yeung include:

#### **Sally prepares the plan**

The pros and cons of this are:

- She maintains loyalty to Martin and LDP
- She ensures her future career aspirations
- There is financial reward to Martin and LDP
- Depending on the revised plan this can be positive/detrimental to Mary's financial future.
- If detrimental, it may lead to litigation or loss of Dealer's Licence for LDP.

#### **Sally refuses to do plan**

The pros and cons of this are:

- She does not maintain loyalty to Martin and LDP
- She may be transferred within the company (effectively receiving a demotion)
- It may highlight a problem within the organisation and draw attention to Martin's other clients.

#### **Discuss the matter with other management**

The pros and cons of this are:

- It could cause problems for her General Manager
- It is likely to have an impact on Sally's career
- It could cause unjustified problems for Martin
- On the other hand, it could highlight a problem that exists for LDP and result in changes that protect clients and the company's future.

#### **Report concerns to the Regulators**

- This will cause problems for the General Manager
- It is likely to have an impact on Sally's career
- It could result in the loss of the Dealer's Licence for LDP.

#### **Sally can resign**

- This may be detrimental to the longer-term future of client and LDP
- But it preserves her professional integrity.

#### **Preferred option**

This is debateable, but as a first course of action, Sally could bring the matter to the attention of other senior management. If this is unsuccessful, she may have to resign.

## 6 Listing on the HKEx main board and the GEM



### **Topic highlights**

The **Listing Rules** set out the requirements for the listing of securities comprising requirements which have to be met before securities may be listed, and also continuing obligations with which an issuer must comply once listing has been granted.



## 6.1 Reasons for listing shares

Why do companies wish to list their shares? Companies list their shares for reasons that are unique to the particular circumstances of each company and its shareholders and management. A company may seek a listing because its shareholders would like to realise part of their investment; or because it lacks the funds to expand its business operations. Whatever a company's reasons for listing, a listing status could offer a company the following advantages:

- (a) Access to capital for growth with opportunities to raise funds both at the time of listing and at later stages.
- (b) Broader shareholder base could potentially lead to a more liquid market in the trading of the company's shares.
- (c) Employee incentive and commitment resulting from the grant of employee share options to tie in the company's key staff.
- (d) Higher profile and visibility in the market could generate reassurance among the company's customers and suppliers.
- (e) Increased corporate transparency could lead to the grant of credit lines on more competitive terms from the company's bankers.
- (f) Greater efficiency resulting from rigorous disclosure standards demanded of listed issuers will lead to an improvement in their control, management information and operating systems.

Whatever the reasons for listing, it is important that a company consider and discuss with its advisers all the factors which are specific to the company and the vision of its management.

## 6.2 The Listing Rules

The principal function of the SEHK is to provide a fair, orderly and efficient market for the trading of securities.

The SEHK has issued the Listing Rules setting out the requirements for the listing of securities on the SEHK, both those which have to be met before securities may be listed, and also continuing obligations with which an issuer must comply once listing has been granted.

The Listing Rules are designed to ensure that:

- (a) investors have and can maintain confidence in the marketplace
- (b) applicants are suitable for listing
- (c) the issue and marketing of securities is conducted in a fair and orderly manner
- (d) investors are given sufficient information to enable them to make a properly informed assessment of an issuer
- (e) investors are kept fully informed by listed issuers
- (f) immediate disclosure is made of any information that might reasonably be expected to have a material effect on market activity in, and the prices of, listed securities
- (g) all holders of securities are treated fairly and equally
- (h) directors of a listed issuer act in the interests of its shareholders as a whole, particularly where the public represents only a minority of the shareholders
- (i) all new issues of equity securities by a listed issuer are first offered to the existing shareholders by way of rights unless they have agreed otherwise

The Listing Rules also contain corporate governance requirements for listed companies, partly within the Rules themselves and partly in the Corporate Governance Code, which is an appendix to the Listing Rules. Corporate governance for listed companies is explained in Chapter 1.

The Listing Rules may be amended by the Hong Kong Stock Exchange from time to time, subject to approval by the Securities and Futures Commission, under the terms of the Securities and Futures Ordinance.

### 6.3 Applications for listing

The SEHK has two boards, the Main Board and the GEM. The Main Board is for established companies that can meet certain minimum requirements for listing, and GEM is a market for smaller growth companies with lower entry requirements than for the Main Board. GEM is designed to accommodate high investment risk companies. Given the emerging nature of companies listed on GEM, securities traded on GEM may be more susceptible to market volatility compared to the Main Board. The greater risk profile and other characteristics of GEM make it more suited to risk-seeking investors. Appropriate warning and disclosure of this is required by all issuers in their listing documents.

A company whose shares are listed on GEM may subsequently apply for admission to listing on the Main Board, provided it meets the necessary entry requirements.

Applications for listing can be made by Hong Kong companies (which must not be a private company), companies incorporated in the PRC, companies incorporated in Bermuda and the Cayman Islands and other foreign companies (usually companies whose shares are already listed on a stock exchange in another country).

The requirements for listing are specified in the Rules Governing the Listing of Securities on the Stock Exchange of Hong Kong Limited (the Listing Rules).

The Listing Rules differ in some ways for:

- companies applying for a listing on the Main Board and for a listing on GEM
- new applicants that do not yet have any shares listed (“non-listed companies”), and existing listed companies that are applying for a listing for new shares
- companies incorporated in the PRC
- companies incorporated in Bermuda or the Cayman Islands
- other foreign companies.

However, the rules for all companies are broadly similar.

An application for listing is made by the company and its advisers to the Listing Committee of the SEHK. The company must prepare a listing document for submission to the Listing Committee, containing information specified by the Listing Rules.

When the company intends to offer the shares for sale, the listing document will also be a prospectus. A prospectus is a document that offers securities in a company for sale to investors. It must comply with the requirements of the Companies Ordinance, and:

- must contain information specified by the Ordinance
- must be available in both an English and Chinese language version.

The Listing Division of the SEHK checks that the listing document/prospectus complies with the requirements of both the Listing Rules and the Companies Ordinance. The application is considered by a meeting of the Listing Committee, and if the Committee is satisfied:

- it approves the listing of the company's shares and also
- authorises the registration of the prospectus by the Companies Registry.

Under the “dual-filing” system the SEHK also provides the SFC with a copy of the prospectus. The SFC may object to a listing application of the prospectus appears to contain false or misleading information, but any comments that it makes about the prospectus are communicated to the company through the Listing Authority of the Exchange.

After the approval of the listing application, the shares are admitted to listing, and trading in those shares begins.

### 6.3.1 Contents of a prospectus

A prospectus must contain information about the company that will enable investors to decide whether to subscribe for shares in the issue. It must therefore contain details about:

- the share issue and the company's capital
- the business activities of the company and its group
- financial information about the company, including a statement about trading and financial prospects for at least the current financial year; there may be a profit forecast
- an accountant's report, prepared by independent accountants
- details of how the company intends to use the money obtained from the share issue.

A new applicant for listing must make a statement in the prospectus that it will have **sufficient working capital** for at least 12 months from the date of publication of the prospectus. The sponsor must confirm that this working capital sufficiency statement has been made after due and careful enquiry by the company and that institutions (such as banks) providing finance for working capital have stated in writing that the relevant financing facilities have been agreed and will be available.

### 6.3.2 Minimum requirements for listing on the Main Board

New applicants for a Main Board listing must meet several requirements:

- (a) In the opinion of the SEHK, the applicant and its business must be suitable for listing. For example, the SEHK will not normally consider a new applicant suitable if it has recently changed the period of its financial year.
- (b) The company must (usually) have a trading record of not less than three financial years.
- (c) It must (usually) also be able to demonstrate continuity of management for at least the three preceding financial years and continuity of ownership and control for at least the most recent audited financial year.
- (d) The company must have a sufficient management presence in Hong Kong. Usually, this means that at least two executive directors of the company should be resident in Hong Kong.
- (e) At the time of the expected date for admission to listing, the expected market value of the securities of the company which are held by the public must be at least HK\$50,000,000. (At least 25% of the company's total issued share capital must be held by the public at all times. Not more than 50% of the shares held by the public at the time of listing can be beneficially owned by the three largest public shareholders.)
- (f) There must be an adequate spread of holders of the securities to be listed. The number will depend on the size and nature of the issue, but in all cases there must be at least 300 shareholders

A new applicant for listing to the Main Board must also pass one of three financial tests:

- a profits test
- a market capitalisation/revenue/cash flow test, or
- a market capitalisation/revenue test.

#### Profits test

To pass the profits test, the applicant (or its group) must have reported a profit of at least HK\$20,000,000 in its most recent financial year and total reported profits of at least HK\$30,000,000 in the two preceding years combined. These profits should exclude profits or losses that arise from activities outside the company's ordinary business.

**Market capitalisation/revenue/cash flow test**

To pass the market capitalisation/revenue/cash flow test, the company must have:

- market capitalisation of at least HK\$2,000,000,000 at the time of the listing
- revenue of at least HK\$500,000,000 from its main business operations for the most recent audited financial year, and
- positive cash flow from its operating activities of at least HK\$100,000,000 in total for the most recent three financial years combined.

**Market capitalisation/revenue test**

To pass the market capitalisation/revenue test, the company must have:

- market capitalisation of at least HK\$4,000,000,000 at the time of the listing
- revenue of at least HK\$500,000,000 from its main business operations for the most recent audited financial year

This market capitalisation/revenue test is most suitable for large companies that will attract substantial interest in its shares from investors.

**6.3.3 Professional advisers****Sponsors**

A company that applies for a listing for the first time must appoint one or more sponsors to help with its application. The sponsor must be licensed by the SFC to act as a sponsor. The sponsor acts as the channel of communication between the company and the Listing Division of the SEHK. It is closely involved in the preparation of the listing document/prospectus and on behalf of the company submits all the documentation for the application for listing. The sponsor is responsible for the accuracy and completeness of the information in the listing document/prospectus and for the compliance of the company's directors with the requirements of the Listing Rules.

**Compliance advisers**

A newly-listed company must appoint a compliance adviser for the period beginning on the date of the listing of its shares and ending on the publication of its results for the first full financial year that begins after listing. A compliance adviser must be licensed by the SFC to be a sponsor, but need not be the same firm that acted as the company's sponsor for the application for listing. Companies are required to consult with their compliance adviser during this period in four situations:

- Before publication of any regulatory announcement, circular or financial report
- Where a significant transaction is planned, such as a major acquisition or a major disposal
- Where the company intends to use the money raised from its share issue for a different purpose than specified in the prospectus or where its business development or financial results differ from any profit forecast or other information provided in the prospectus
- Where the SEHK makes an enquiry about unusual price movements or trading volumes in the company's shares.

Existing listed companies who are making an application for new shares to be listed (in a rights issue or placing) do not need a sponsor or compliance adviser. Instead they are assisted by their financial advisers or auditors.

**Underwriters**

New issues of shares must usually be fully underwritten. This means that there are investors who have formally agreed to buy any of the shares of the company that are not purchased by other investors. The reason for this rule is that if the share issue is fully underwritten, the company is able to plan on the basis that it will receive the amount of funds it is expecting (and will not raise insufficient money because investors decide not to buy the shares).

### 6.3.4 The process for admission to listing on the Main Board

The process for admission to listing to the Main Board for shares of a new applicant company is as follows.

- The company decides to make an application for listing. This will include an assessment of how much capital it wants to raise from the share issue and how many of its existing shares will be made available for sale to the public.
- The company appoints a sponsor (and reporting accountants and legal advisers).
- The prospectus is prepared and checked for accuracy and completeness. It includes an accountant's report and may also include a profit forecast. Several drafts of the prospectus are prepared until the final version is completed.
- Other documentation is prepared, including a formal application for listing.
- An underwriting agreement is prepared and underwriting is negotiated with underwriters.

All documentation and agreements are reviewed and approved by the company's board of directors.

- The application for listing is made to the Listing Committee of the Exchange (by the sponsor on behalf of the company).
- The Listing Committee approves the application and the admission of the shares to listing. It also approves the prospectus, and the company must then file a copy with the Companies Registry.
- The prospectus is published, together with application forms for investors to apply to buy shares in the issue.
- The applications from investors are processed and shares are allocated to the applicants.
- Dealing in the shares begins on the SEHK.

For a new applicant this process usually takes about six to twelve months.

### 6.3.5 Applications for a listing on GEM

The minimum requirements for listing on GEM are less than for a listing on the Main Board, but the requirements are similar in nature. The table below provides a comparison.

	Minimum requirements for listing	
	Main Board	GEM
<b>Type of company</b>	Large and well-established companies that meet the Main Board's requirements.	Companies who do not meet the requirements for a Main board listing but meet the requirements for a GEM listing.
<b>Minimum trading record</b>	At least three financial years.	At least two financial years.
<b>Financial requirement</b>	Must pass one of three tests Profits test: Profit of at least HK\$20 million in its most recent financial year and at least HK\$30 million in aggregate in the two preceding years.	Must pass a financial test <ul style="list-style-type: none"> <li>• No profit requirement</li> <li>• Market capitalisation of at least HK\$100 million at the time of listing.</li> <li>• Positive cash flow from operating activities of at least HK\$20 million in aggregate for the two preceding financial years.</li> </ul>

	Minimum requirements for listing	
	Main Board	GEM
	Market capitalisation/ revenue/cash flow test	
	<ul style="list-style-type: none"> <li>• Market capitalisation of at least HK\$2 billion</li> <li>• Revenue of at least HK\$500 million for the most recent audited financial year</li> <li>• Positive cash flow from its operating activities of at least HK\$100 million in total for the most recent three financial years.</li> </ul>	
	Market capitalisation/revenue test	
	<ul style="list-style-type: none"> <li>• Market capitalisation of at least HK\$4 billion</li> <li>• Revenue of at least HK\$500 million for the most recent audited financial year</li> </ul>	
<b>Minimum continuity of management</b>	At least the three preceding financial years.	At least the two preceding financial years.
<b>Minimum continuity of ownership</b>	For at least the most recent audited financial year.	For at least the preceding full financial year.
<b>Minimum market capitalisation for shares</b>	See financial requirements – at least HK\$200 million at the time of listing. At least HK\$50 million (25%) to be held by the public.	At least HK\$100 million at the time of listing. At least 25% (subject to a minimum of HK\$30 million) to be held by the public.
<b>Underwriting requirement</b>	Issue should be fully underwritten.	No underwriting requirement.
<b>Method of offering shares for a new listed company</b>	Company may not list by means of a placing only	Placing
<b>Minimum number of shareholders at time of listing who are regarded as the “public”</b>	300	100

### 6.3.6 Transfers from GEM to the Main Board

GEM companies may apply for a transfer of their shares from GEM to the Main Board, provided they have grown and now meet the requirements for a Main Board listing. The company should be assisted by its financial advisers or auditors in making the application, which is made to the Listing Committee. The documents submitted must include a working capital sufficiency statement for the next 12 months, supported by written confirmation from the financial advisers or auditors that the statement has been prepared by the company after due and careful consideration.

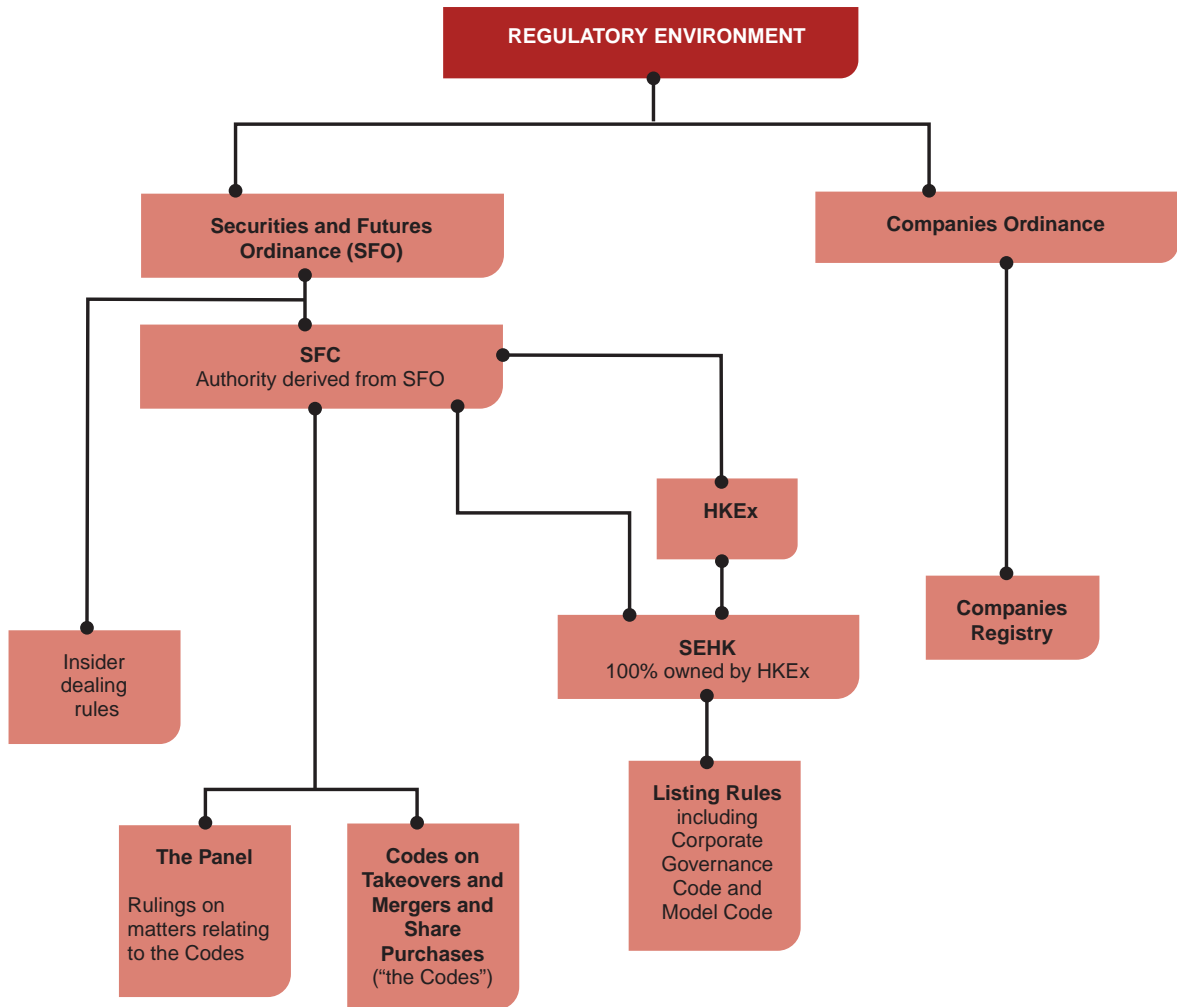
## 6.4 The HKEx website

More details of the listing requirements and procedures may be found on the Hong Kong Exchange website at [www.hkex.com.hk/eng/listing/listreq\\_pro/ListReq.htm](http://www.hkex.com.hk/eng/listing/listreq_pro/ListReq.htm). The topics to be found on this website are summarised below.

There is a lot of useful information about listing on the HKEx website:

- Considerations for companies contemplating listing on the exchange.
- General principles for listing.
- Listing methods, including offer for subscription, offer for sale, placements of shares, and transferring a listing from GEM.
- Basic listing requirements for equities, including such requirements as financial criteria, acceptable jurisdictions and accounting standards.
- Special listing requirements for equities including such topics as asset spin-offs, collective investment schemes, investment companies, companies involved in infrastructure projects, and mineral companies.
- Listing processes for the Main Board.
- Listing processes for GEM.
- Parties involved in a new listing (sponsors, reporting accountants, legal advisers, underwriters, valuers, and depositaries).
- Continuing obligations and fees for both the Main Board and GEM.

# Topic recap





## Exam practice



### Securities and Futures Commission

27 minutes

You are a CPA employed in a financial services firm. A potential new overseas client has approached your firm in relation to the regulation of the finance industry in Hong Kong. Specifically, they have requested information on the role of the Securities and Futures Commission (SFC). Your boss has given you the task of writing a brief response to this request.

*Required*

Write a brief explanatory note on the role of the SFC. Pay particular attention to:

- (a) licensed corporations carrying out activities in financial markets
- (b) listed companies
- (c) investment products offered to the public

**(15 marks)**



## chapter 16

# Financial markets

### Topic list

- 1 Financial markets**
  - 1.1 Introduction
  - 1.2 Financial intermediaries
  - 1.3 The benefits of financial intermediation
  - 1.4 Summary
- 2 Money markets and capital markets**
  - 2.1 Introduction
  - 2.2 The money markets
  - 2.3 The capital markets
  - 2.4 Institutional investors
  - 2.5 Capital market participants
  - 2.6 International money and capital markets
  - 2.7 Current capital market trends
- 3 The banking structure in Hong Kong**
  - 3.1 Outline of banking structure
- 4 Cash management in Hong Kong**
- 5 The mainland China banking environment**
- 6 International financial institutions**
  - 6.1 International Monetary Fund (IMF)
  - 6.2 World Bank
- 7 The efficient market hypothesis**
  - 7.1 The definition of efficiency
  - 7.2 Features of efficient markets
  - 7.3 Impact of efficiency on share prices
  - 7.4 Varying degrees of efficiency
  - 7.5 Implications of efficient market hypothesis for the corporate treasurer/financial manager
- 8 Financial markets in Hong Kong**
  - 8.1 Background
  - 8.2 The Hong Kong stock market
  - 8.3 The Hong Kong debt market
  - 8.4 Securities traded on Hong Kong's equity and debt markets
  - 8.5 The foreign exchange market
  - 8.6 Derivatives markets
  - 8.7 Hedge funds and their management
- 9 The financial environment and technology**
  - 9.1 Introduction
  - 9.2 Technology and the finance/treasury function
  - 9.3 The Internet
- 10 Other current capital market trends**
  - 10.1 Basel rules
  - 10.2 Dodd-Frank Act

### Learning focus

Having discussed the scope of financial management, business finance and risk management, we now introduce the framework of **markets** and **institutions** through which the financing of a business takes place and the external factors that are likely to impact on an organisation's financial strategy and ability to raise finance.

Increasing globalisation of business activity and evolving communication technology have dramatically changed the financial environment for most businesses. This, coupled with the global financial crisis, means financial management is more demanding and complex than ever.

**Learning outcomes**

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Short and medium term financial management</b>		
Identify and evaluate the short and medium term financial requirements of an organisation:		
<b>4.02</b>	<b>Financial markets</b>	2
4.02.01	Assess the impact of financial markets and other external factors on an organisation's financial strategy	
4.02.02	Explain the nature and role of financial intermediaries, money and capital markets, both nationally and internationally	
4.02.04	Comment on and interpret any current capital market trends (such as Basel Rules and Dodd-Frank Act) which may affect an organisation's ability to raise finance and to use OTC derivatives to manage risk	
4.02.05	Explain the concept of market efficiency and examine the implications of the Efficient Market Hypothesis for issuers and investors	

# 1 Financial markets



## Topic highlights

Financial markets provide the arena for an exchange of obligations between various economic entities.

## 1.1 Introduction

These markets facilitate the buying and selling of financial assets (i.e. debt and equity financial instruments) to allow participants to achieve their desired portfolio mix of risk and return.

- Sellers of securities expect to invest the funds obtained in investment projects that increase wealth.
- Buyers of debt and equity securities expect to increase wealth through the receipt of interest (debt) or dividends/capital growth (equity).

Funds transfers between two parties can be classified as:

- **Direct:** Lender and borrower know each other, the lender generally bearing the credit risk.
- **Indirect:** Lender and borrower are brought together through the use of a financial intermediary, the intermediary bearing the credit risk.

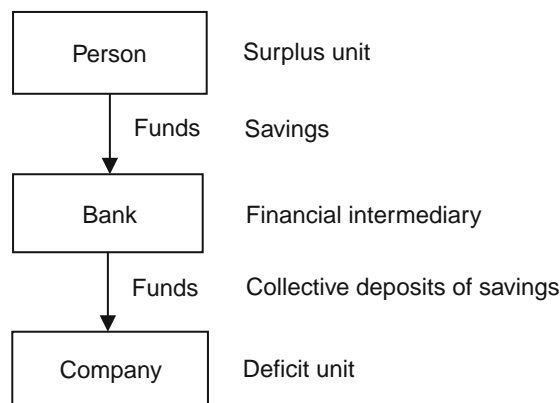
## 1.2 Financial intermediaries



## Topic highlights

A **financial intermediary** links those with surplus funds (for example, lenders) to those with funds deficits (for example, potential borrowers) therefore providing aggregation and economies of scale, risk pooling and maturity transformation.

It brings together providers and users of finance, either as broker or as principal. The financial intermediary (usually an institution) links lenders with borrowers, by obtaining deposits from lenders and then re-lending them to borrowers.



Not all intermediation takes place between savers and investors. Some institutions act mainly as intermediaries between other institutions. Financial intermediaries may also lend abroad or borrow from abroad.

Examples of financial intermediaries would include commercial banks, finance houses, building societies and institutional investors (for example, pension funds, unit trusts, investment trusts and so on).

### 1.3 The benefits of financial intermediation

Financial intermediaries perform the following general functions:

- (a) They provide obvious and convenient ways in which a lender can save money. Instead of having to find a suitable borrower for his money, the lender can deposit his money with a financial intermediary. All the lender has to do is decide for how long he might want to lend the money, and what sort of return he requires, and he can then choose a financial intermediary that offers a financial instrument to suit his requirements.
- (b) Financial intermediaries also provide a ready source of funds for borrowers. Even when money is in short supply, a borrower will usually find a financial intermediary prepared to lend some.
- (c) They can aggregate or “package” the amounts lent by savers and lend on to borrowers in different amounts.
- (d) Risk for individual lenders is reduced by pooling. Since financial intermediaries lend to a large number of individuals and organisations, any losses suffered through default by borrowers or capital losses are effectively pooled and borne as costs by the intermediary. Such losses are shared among lenders in general.
- (e) By pooling the funds of large numbers of people, some financial institutions are able to give investors access to diversified portfolios covering a varied range of different securities, such as unit trusts and investment trusts.
- (f) Financial intermediaries, most importantly, provide maturity transformation (i.e. they bridge the gap between the wish of most lenders for liquidity and the desire of most borrowers for loans over longer periods).

### 1.4 Summary

Financial intermediaries serve three important purposes in the working of the financial markets.

- (1) **Aggregation** (collect together small deposits and can lend large amounts)
- (2) **Maturity transformation** (collect short-term deposits and can lend long term)
- (3) **Risk reduction** (can reduce risk cheaply for small investors by investing in a portfolio of equity shares which they could not afford to own individually)

Financial markets play both primary and secondary roles. A primary issue of a security results in a direct flow of funds and securities between the borrower and lender. A secondary market then enables the securities to be traded.

## 2 Money markets and capital markets



### Topic highlights

**Capital markets** are markets for long-term capital.

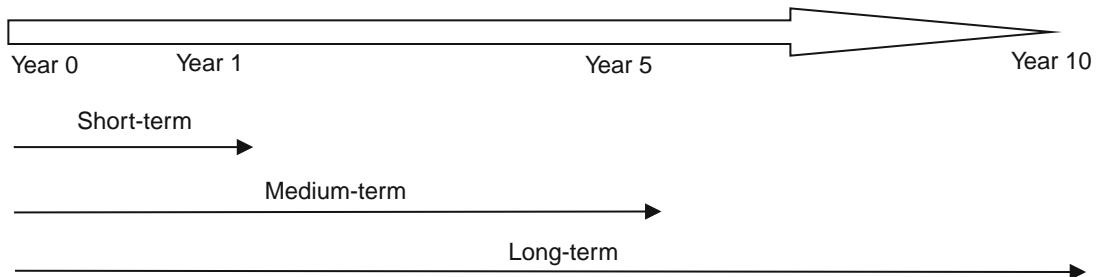
**Money markets** are markets for short-term capital.

**International money and capital markets** are available for larger companies wishing to raise larger amounts of finance.

## 2.1 Introduction

Capital markets are markets for long-term capital and money markets are markets for short-term capital.

Differences between terms:



## 2.2 The money markets

Money markets are markets for:

- trading short-term financial instruments
- short-term lending and borrowing

The banks and other financial institutions operate the money markets. Although the money markets largely involve borrowing and lending by banks, some large companies, as well as the government, are involved in money market operations.

The primary market is known as the official market, the other markets as the parallel or wholesale markets.

### Types of market

<b>Primary market</b>	Approved institutions deal in financial instruments with the Central Bank. The Central Bank uses trading to control short-term interest rates
<b>Interbank market</b>	Banks lend short-term funds (in large quantities) to each other
<b>Eurocurrency market</b>	Banks lend and borrow in foreign currencies
<b>Certificate of deposit market</b>	Market for trading in Certificates of Deposit (negotiable instruments acknowledging deposits)
<b>Commercial paper (CP)</b>	Market in which companies borrow repeatedly by issuing short-term debt within a longer-term programme. A bank acts on behalf of the company and will usually provide a guarantee to investors by providing a standby letter of credit (in case of default by the company)
<b>Finance house market</b>	Dealing in short-term loans raised from money markets by finance houses
<b>Inter-company market</b>	Direct short-term lending between treasury departments of large companies

## 2.3 The capital markets



### Topic highlights

The stock market (in Hong Kong the **main market** plus GEM) acts as a **primary market** for raising finance, and as a **secondary market** for the trading of existing securities (i.e. shares and bonds).



### Key term

**Capital markets** are markets for trading in long-term finance, in the form of long-term financial instruments such as equities and corporate bonds.

In Hong Kong, the principal capital markets are the “main market” (for companies with a full Stock Exchange listing) and the more loosely regulated “second tier” Growth Enterprise Market (GEM). The Stock Exchange is also the market for dealings in government securities.

Firms obtain long-term or medium-term capital in one of the following ways:

- (a) **They may raise share capital.** Most new issues of share capital are in the form of ordinary share capital. Firms that issue ordinary share capital are inviting investors to take an equity stake in the business, or to increase their existing equity stake.
- (b) **They may raise loan capital.** Long-term loan capital might be raised in the form of loan notes, corporate bonds, debentures, unsecured and convertible bonds.



### Key term

**Stock markets** serve two main purposes:

- (1) As primary markets they enable organisations to raise new finance, by issuing new shares or new bonds. In Hong Kong and the UK, a company must have public company status to be allowed to raise finance from the public on a capital market.
- (2) As secondary markets they enable existing investors to sell their investments, should they wish to do so. The marketability of securities is a very important feature of the capital markets, because investors are more willing to buy stocks and shares if they know that they could sell them easily, should they wish to.

These are the main functions of a stock market, but there are another couple of important ones:

- (a) When a company comes to the stock market for the first time, and “floats” its shares on the market, the owners of the company can realise some of the value of their shares in cash, because they will offer a proportion of their personally held shares for sale to new investors.
- (b) When one company wants to take over another, it is common to do so by issuing shares to finance the takeover. Takeovers by means of a share exchange are only feasible if the shares that are offered can be readily traded on a stock market, and so have an identifiable market value.

## 2.4 Institutional investors



### Key term

**Institutional investors** are institutions that have large amounts of funds that they want to invest, and they will invest in stocks and shares or any other assets that offer satisfactory returns and security or lend money to companies directly. The institutional investors are now the biggest investors on the stock market.

The major kinds of institutional investors are pension funds, insurance companies, investment trusts and unit trusts. Generally, of these, pension funds and insurance companies tend to have the largest amounts of funds to invest.

## 2.5 Capital market participants

The various participants in the capital markets are summarised in the diagram below.

Capital markets		
Demand comes from	Intermediaries	Suppliers of funds
Individuals (housing, consumer goods, finance)	← Banks	← Individuals (as savers and investors)
	← Finance companies	←
Firms (share capital and loans)	← Insurance companies	← Firms and individuals (with long-term funds to invest)
	← Pension funds	←
	← Unit trusts	←
	← Investment trust companies	←
	← Stock Exchange	←
Government (budget deficit)	← Private venture capital companies	← Government (budget surplus)

## 2.6 International money and capital markets



### Topic highlights

International money and capital markets are available for larger companies wishing to raise larger amounts of finance.

Larger companies are able to borrow funds on the Eurocurrency markets (which are international money markets) and on the markets for Eurobonds (international capital markets).

### 2.6.1 International capital markets

Large companies may arrange borrowing facilities from their bank, in the form of bank loans or bank overdrafts. Instead, however, they might prefer to borrow from private investors. In other words, instead of obtaining a \$500 million bank loan, a company might issue bonds, in order to borrow directly from investors, with:

- the bank merely arranging the transaction, finding investors who will take up the bonds that the borrowing company issues
- interest being payable to the investors themselves, not to a bank.

In recent years, a strong international market has built up which allows very large companies to borrow in this way, long-term or short-term. As well as Eurobonds, there is also a less highly developed market in international equity share issues (euro-equity).

Eurobonds are bonds denominated in a currency that often differs from that of the country of issue. They are long-term loans raised by international companies or other institutions and sold to investors in several countries at the same time. Such bonds can be sold by one holder to another. The term of a bond issue is typically five to 10 years.

Eurobonds may be the most suitable source of finance for a large organisation with an investment grade credit rating, such as a large successful multinational company, which requires:



- a long-term loan to finance a big capital expansion programme. The loan may be for at least five and up to 20 years
- borrowing which is not subject to the national exchange controls of any government

In addition, the government or central bank may regulate domestic capital issues, with an orderly queue for issues. In contrast, Eurobond issues can be made whenever market conditions seem favourable.

A borrower who is contemplating a Eurobond issue must consider the exchange risk of a long-term foreign currency loan. If the money is to be used to purchase assets that will earn revenue in a currency different to that of the bond issue, the borrower will run the risk of exchange losses.

If the money is to be used to purchase assets that will earn revenue in the same currency, the borrower can match these revenues with payments on the bond, and so remove or reduce the exchange risk.

An investor subscribing to a bond issue will be concerned about the following factors:

- **Security:** the borrower must be of high quality.
- **Marketability:** investors will wish to have a ready market in which bonds can be bought and sold. If the borrower is of high quality the bonds or notes will be readily negotiable.
- **Anonymity:** investors in Eurobonds tend to be attracted to the anonymity of this type of issue, as the bonds are generally issued to bearer.
- **The return on the investment.**

## 2.7 Current capital market trends

In 2010 the economic recession appeared to have abated, and the economic environment in Hong Kong and mainland China seemed to be improving very well. However, after expanding by nearly 5% in 2011, the Hong Kong economy grew by only 1.4% in 2012. Much of the reason was weak demand for exports of HK goods due to the continuing economic slowdown in much of the rest of the world.

The state of the economy has implications for capital markets. We will outline these implications under three headings: Hong Kong, mainland China, and International.

### 2.7.1 Hong Kong capital market

In presenting his Annual Budget for 2013/2014 to the Legislative Council, the Financial Secretary, John Tsang, reported that Hong Kong's economy was expected to expand between 1.5% and 3.5% in 2013 after growing 1.4% in 2012. Forecast inflation during 2013 was estimated to be 4.2% to 4.5%.

Hong Kong continues to encourage the development of offshore renminbi business, and consolidate its position as an attractive capital-raising centre for overseas companies. Up to 2012 there was significant growth in the Hong Kong stock market, and Hong Kong has become a major centre for initial public offerings (IPOs). During 2012, there was a large fall in the number of IPOs although the Hong Kong market recovered in the final quarter of the year.

In 2013, Hong Kong Exchanges and Clearing Ltd purchased the London Metal Exchange (LME) at a cost of US\$1 billion (HK\$7.75 billion). This is part of its plan to expand into commodities, and diversify from its slow-growing equities business. The acquisition of the LME may help Hong Kong Exchanges and Clearing Ltd in its negotiations with mainland China, which is the world's largest metals importer.

### 2.7.2 China capital market

Mainland China's economy grew by nearly 8% in 2012. Although there appears to be some slowdown in the rate of growth, the Chinese economy continues to grow in real terms at a very high

rate. There has been an increase in domestic consumption in mainland China, although the economy has been adversely affected by the global economic slow-down.

The two mainland China Stock Markets (Shenzhen and Shanghai) have performed well over recent years, although share prices have occasionally fallen substantially during some periods of time as well as risen in others.

The government continues its policies for the gradual internationalisation of the renminbi/yuan, and making its currency more freely-convertible. Hong Kong is an important offshore centre for trading in renminbi-denominated bonds.

### 2.7.3 International capital markets

The capital markets in the US and many countries of Europe were severely affected by the so-called global financial crisis from 2007. Excessive mortgage lending to high credit-risk borrowers led to widespread defaults by borrowers, and a resultant sharp fall in real estate prices throughout the US. Banks had sold on much of this debt in the form of securitised assets, particularly as Collateralised Debt Obligations (CDOs), and these securitised bonds lost most of their value when it was realised that many of them were backed by worthless sub-prime mortgages. Some major banks were at risk of insolvency until rescued by the US government or taken over by other banks.

During this time, banks became reluctant to lend. Companies also found it difficult to borrow, and trading in both the capital markets and money markets fell sharply.

Problems in the banking sector led to economic recession in many countries, which had an adverse impact on the global economy. This has affected developing economies as well as developed economies.

Since 2011, the main area of concern has been the European debt problem and the stability of the euro. The European economy has been affected by a combination of excessive government debts in some European countries (such as Greece) and a weak banking sector in others (such as , Ireland, Spain and Cyprus). The problems for Europe and the euro are continuing, creating enormous uncertainty about the future state of the global economy.

In some countries such as Malaysia and Indonesia, the Sharia'h banking (Islamic banking) "industry" continues to grow. Islamic bonds, or "Sukuk", are an unusual form of financial instrument, which have been growing significantly in recent years. Islamic banking and finance, in its contemporary form, began in the 1960s as a method of aligning personal and business investment practices with Islamic law (Sharia'h). The high international oil prices in the 1970s and the growing mountain of petrodollars in Islamic countries gave the movement considerable momentum. The Malaysia stock market appears to be one of the few that has grown successfully since the global economic slow-down.

## 3 The banking structure in Hong Kong

A fuller understanding of the banking structure and financial markets in Hong Kong, can be obtained by reference to the HKMA website: [www.info.gov.hk/hkma](http://www.info.gov.hk/hkma).

The Hong Kong Monetary Authority (HKMA) was established on 1 April 1993 by merging the Office of the Exchange Fund with the Office of the Commissioner of Banking. The functions and objectives of the HKMA are to:

- (a) maintain currency stability, within the framework of the linked exchange rate system, through sound management of the Exchange Fund, monetary policy operations and other means deemed necessary
- (b) promote the safety and stability of the banking system through the regulation of banking business and the business of taking deposits, and the supervision of authorised institutions
- (c) enhance the efficiency, integrity and development of the financial system, particularly payment and settlement arrangements.

### 3.1 Outline of banking structure

Hong Kong maintains a three-tier system of deposit-taking institutions, namely, licensed banks, restricted licence banks, deposit-taking companies. They are collectively known as authorised institutions.

Hong Kong has one of the highest concentrations of banking institutions in the world. Seventy of the largest 100 banks in the world have an operation in Hong Kong. At the end of April 2013, there were 154 licensed banks. For more information, see the latest HKMA Monthly Statistical Bulletin and Authorisation of Authorised Institutions.

#### 3.1.1 Licensed banks

In Hong Kong, only licensed banks may operate current and savings accounts, and accept deposits of any size and maturity from the public and pay or collect cheques drawn by or paid in by customers.

#### 3.1.2 Restricted licence banks

Restricted licence banks are principally engaged in investment banking and capital market activities. They may take deposits of any maturity of HK\$500,000 and above.

#### 3.1.3 Deposit-taking companies

Deposit-taking companies are mostly owned by, or otherwise associated with, banks. These companies engage in a range of specialised activities, including consumer finance and securities business. They may take deposits of HK\$100,000 or above with an original term of maturity of at least three months.

#### 3.1.4 Local representative offices

Apart from the above three categories of authorised institutions that are permitted to carry on the business of taking deposits in Hong Kong, overseas banks may establish local representative offices in Hong Kong. However, these offices are not allowed to engage in any banking business and their role is confined mainly to liaison work between the bank and its customers in Hong Kong.

## 4 Cash management in Hong Kong

Hong Kong's payment system entered a new era on 9 December 1996 with the launch of the **Real Time Gross Settlements System (RTGS)** by the HKMA and HKAB. The system is one of the HKMA's major initiatives to enhance the robustness of the financial infrastructure and competitiveness of Hong Kong as an international financial centre. It is one of the most advanced interbank payment systems in the Asia Pacific region.



#### Key term

In a **Real Time Gross Settlements (RTGS)** system, large-value interbank payments are settled on a continuous, deal-by-deal basis through the banks' settlement accounts with the settlement institution of the system. As these payments are settled one by one during the day, systemic settlement risks arising from end-of-day netting are eliminated.

Since the implementation of the RTGS system in 1996, the HKMA developed and implemented the Delivery versus Payment (DvP) facilities for share transactions in 1998, having built an interface between the RTGS system and the clearing and settlement system for shares operated by Hong Kong Clearing. The RTGS system has also provided the building block for Payment versus Payment (PvP) for US dollar exchange transactions launched in 2000.



### Key term

**Payment-versus-Payment (PvP)** is a mechanism for settling a foreign exchange transaction to ensure that payments in the two currencies involved are settled simultaneously.. The Hong Kong dollar, US dollar, euro and renminbi RTGS systems in Hong Kong are interlinked to enable banks to settle US dollar/Hong Kong dollar, US dollar/renminbi, euro/US dollar, euro/Hong Kong dollar, euro/renminbi and renminbi/Hong Kong dollar foreign exchange transactions on a PvP basis. PvP greatly improves settlement efficiency and eliminates settlement risk arising from time lags in transactions and from time-zone differences.

The RTGS and its subsequently developed DvP and PvP systems have enabled the finance people to manage their cash portfolios more effectively (for example, in the reduction of realisation risks). Before the implementation of RTGS and DvP, there was often a realisation or delayed settlement risk for treasurers to hold short-term funds in form of marketable securities and foreign currency. The existence of such realisation risk imposed certain restrictions to the treasurers in managing cash and short-terms funds, especially when the funds could be suddenly called upon for immediate use at any time. The RTGS alleviated these issues and treasurers can now be more comfortable in choosing various fund portfolios.

The RTGS link with China's National Automated Payment System (CNAPS), (while foreign exchange control is still exercised in the mainland China), means that Hong Kong can act as an "offshore" exchange centre for overseas corporations to handle business transactions with Chinese business organisations. The corporate treasurer could make use of this potential benefit to execute global fund management related to China businesses.

The RTGS may also be advantageous for companies "wired" to their banks, customers and suppliers. Records keeping and routine transactions are easy to automate, marginal costs of transactions will be lower and float is drastically reduced.

## 5 The mainland China banking environment

The China Banking Regulatory Commission (CBRC) regulates the banking industry. The main functions of CBRC include the following:

- (a) Formulation of supervisory rules and regulations governing the banking institutions.
- (b) Authorisation of establishment, changes, termination and business scope of the banking institutions.
- (c) Conduct of on-site examination and off-site surveillance of the banking institutions, and taking of enforcement actions against rule breaking behaviours.
- (d) Conduct of "fit and proper" tests on the senior managerial personnel of the banking institutions.
- (e) Compilation and publication of statistics and reports on the overall banking industry.
- (f) Provision of proposals on the resolution of problem deposit-taking industry in accordance with relevant regulations.
- (g) Responsibility for the administration of the supervisory boards of the major State-owned banking institutions, and other functions delegated by the State Council.

Unlike Hong Kong, the foreign currency policies and exchange is under the authority of the State Administration of Foreign Exchange (SAFE) instead of CBRC. The SAFE submits proposals to the Central Government for the settlement of foreign exchange rate of RMB as well as to regulate the foreign exchange policies and rules for RMB and other foreign country monetary units. In the Mainland, there are still tight foreign exchange controls, and both inward and outward remittance of foreign exchange is subject to severe regulations under different situations.

For example, corporate investors such as the Qualified Foreign Institutional Investors (QFII) are also subject to controls in remitting profits in securities investment back to their home-based countries. Therefore, the foreign exchange transactions of the banking industry in the Mainland will be subject to both the general regulations of the CBRC and the specific regulations of the SAFE.

The banking industry in mainland China is not yet fully open to overseas financial institutions. For example, foreign financial institutions are not allowed to operate RMB transactions in Mainland cities other than those “opened”. In accordance with its WTO commitment, the Mainland will open more and more cities to foreign financial institutions to operate RMB transactions.

## 6 International financial institutions

### 6.1 International Monetary Fund (IMF)

The IMF grew out of the Bretton Woods conference held in the USA in 1944, which planned international financial reconstruction after World War II. It was established in July 1946 with a goal to stabilise exchange rates and assist the reconstruction of the world's international payment system. It originally had 45 members, but now has 186.

The IMF tracks global economic trends and performance, alerts its member countries when it sees problems on the horizon, provides a forum for policy dialogue, and passes on know-how to governments on how to tackle economic difficulties.

The IMF provides policy advice and financing to members in economic difficulties and also works with developing nations to help them achieve macroeconomic stability and reduce poverty.

Marked by massive movements of capital and abrupt shifts in comparative advantage, globalisation affects countries' policy choices in many areas, including labour, trade, and tax policies. The IMF helps a country benefit from globalisation while avoiding potential downsides. The recent global economic crisis has highlighted just how interconnected countries have become in today's world economy.

The IMF supports its membership by providing:

- policy advice to governments and central banks based on analysis of economic trends and cross-country experiences;
- research, statistics, forecasts, and analysis based on tracking of global, regional, and individual economies and markets;
- loans to help countries overcome economic difficulties;
- concessional loans to help fight poverty in developing countries; and
- technical assistance and training to help countries improve the management of their economies.

The IMF currently has lending programmes to a number of different countries, such as Greece and Portugal in the Eurozone and a number of Caribbean states such as Jamaica.

### 6.2 World Bank

As with the IMF, the World Bank grew out of the 1944 Bretton Woods conference. Its activities were relatively low key for the first 20 years, but now it is a vital source of financial and technical assistance to developing countries around the world. According to its website, the World Bank's mission is to fight poverty with passion and professionalism for lasting results and to help people help themselves and their environment by providing resources, sharing knowledge, building capacity and forging partnerships in the public and private sectors.

It is not a bank in the usual sense; it is made up of two unique development institutions owned by the 186 member countries: the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA).

Each institution plays a different but collaborative role in advancing the vision of inclusive and sustainable globalisation. The IBRD aims to reduce poverty in middle-income and creditworthy poorer countries, while IDA focuses on the world's poorest countries.

Their work is complemented by that of the International Finance Corporation (IFC), Multilateral Investment Guarantee Agency (MIGA) and the International Centre for the Settlement of Investment Disputes (ICSID).

Together, they provide low-interest loans, interest-free credits and grants to developing countries for a wide array of purposes that include investments in education, health, public administration, infrastructure, financial and private sector development, agriculture and environmental and natural resource management.

## 7 The efficient market hypothesis

The theory behind share price movements can be explained by the three forms of the **efficient market hypothesis**.

- (1) **Weak form efficiency** implies that prices reflect all relevant information about past price movements and their implications.
- (2) **Semi-strong form efficiency** implies that prices reflect past price movements and publicly available knowledge.
- (3) **Strong form efficiency** implies that prices reflect past price movements, publicly available knowledge and inside knowledge.

The efficient market hypothesis is the hypothesis that the stock market reacts immediately to all the information that is available. Therefore, a long-term investor cannot obtain higher than average returns from a well-diversified share portfolio.

### 7.1 The definition of efficiency

Different types of efficiency can be distinguished in the context of the operation of financial markets:

- (a) **Allocative efficiency:** If financial markets allow funds to be directed towards firms which make the most productive use of them, then there is allocative efficiency in these markets.
- (b) **Operational efficiency:** Transaction costs are incurred by participants in financial markets, for example commissions on share transactions, margins between interest rates for lending and for borrowing, and loan arrangement fees. Financial markets have operational efficiency if transaction costs are kept as low as possible. Transaction costs are kept low where there is open competition between brokers and other market participants.
- (c) **Informational processing efficiency:** The information processing efficiency of a stock market means the ability of a stock market to price stocks and shares fairly and quickly. An efficient market in this sense is one in which the market prices of all securities reflect all the available information.

### 7.2 Features of efficient markets

It has been argued that the UK, Hong Kong and US stock markets are efficient capital markets, that is, markets in which:

- (a) the prices of securities bought and sold reflect all the relevant information which is available to the buyers and sellers: in other words, share prices change quickly to reflect all new information about future prospects
- (b) no individual dominates the market
- (c) transaction costs of buying and selling are not so high as to discourage trading significantly

- (d) investors are rational
- (e) there are low, or no, costs of acquiring information

### 7.3 Impact of efficiency on share prices

If the stock market is efficient, share prices should vary in a rational way:

- (a) If a company makes an investment with a positive net present value (NPV), shareholders will get to know about it and the market price of its shares will rise in anticipation of future dividend increases.
- (b) If a company makes a bad investment shareholders will find out and so the price of its shares will fall.
- (c) If interest rates rise, shareholders will want a higher return from their investments, so market prices will fall.

### 7.4 Varying degrees of efficiency

There are three degrees or “forms” of efficiency.

#### 7.4.1 Weak form efficiency

Under the weak form hypothesis of market efficiency, share prices reflect all available information about past changes in the share price.

Since new information arrives unexpectedly, changes in share prices should occur in a random fashion. If it is correct, then using technical analysis to study past share price movements will not give anyone an advantage, because the information they use to predict share prices is already reflected in the share price.

#### 7.4.2 Semi-strong form efficiency

If a stock market displays semi-strong efficiency, current share prices reflect both:

- all relevant information about past price movements and their implications
- all knowledge which is available publicly

This means that individuals cannot “beat the market” by reading the newspapers or annual reports, since the information contained in these will be reflected in the share price.

Tests to prove semi-strong efficiency have concentrated on the speed and accuracy of stock market response to information and on the ability of the market to anticipate share price changes before new information is formally announced. For example, if two companies plan a merger, share prices of the two companies will inevitably change once the merger plans are formally announced. The market would show semi-strong efficiency, however, if it were able to anticipate such an announcement, so that share prices of the companies concerned would change in advance of the merger plans being confirmed.

Research in some countries has suggested that market prices anticipate mergers several months before they are formally announced, and the conclusion drawn is that the stock markets in these countries do exhibit semi-strong efficiency.

#### 7.4.3 Strong form efficiency

If a stock market displays a strong form of efficiency, share prices reflect all information whether publicly available or not from:

- past price changes
- public knowledge or anticipation
- specialists' or experts' insider knowledge (for example, investment managers)

## 7.5 Implications of efficient market hypothesis for the corporate treasurer/financial manager

If the markets are quite strongly efficient, the main consequence for financial managers will be that they simply need to concentrate on maximising the net present value of the company's investments in order to maximise the wealth of shareholders. Managers need not worry, for example, about the effect on share prices of financial results in the published accounts because investors will make allowances for low profits or dividends in the current year if higher profits or dividends are expected in the future.

If the market is strongly efficient, there is little point in financial managers attempting strategies that will attempt to mislead the markets:

- (a) There is no point for example in trying to identify a correct date when shares should be issued, since share prices will always reflect the true worth of the company.
- (b) The market will identify any attempts to window dress the accounts and put an optimistic spin on the figures.
- (c) The market will decide what level of return it requires for the risk involved in making an investment in the company. It is pointless for the company to try to change the market's view by issuing different types of capital instruments.

Similarly, if the company is looking to expand, the directors will be wasting their time if they seek as takeover targets companies whose shares are undervalued, since the market will fairly value all companies' shares.

Only if the market is semi-strongly efficient, and the financial managers possess inside information that would significantly alter the price of the company's shares if released to the market, could they perhaps gain an advantage. However, attempts to take account of this inside information may breach insider dealing laws.

The different characteristics of a semi-strong form and a strong form efficient market thus affect the timing of share price movements, in cases where the relevant information becomes available to the market eventually. The difference between the two forms of market efficiency concerns when the share prices change, not by how much prices eventually change.

## 8 Financial markets in Hong Kong

### 8.1 Background

Hong Kong's geographic position provides:

- a bridge in the time gap between North America and Europe
- strong links to mainland China and other economies in South East Asia
- excellent communications with the rest of the world

These key attributes have helped Hong Kong to evolve into a key international financial centre. Hong Kong's capital markets are among the most sophisticated in Asia. Hong Kong has:

- the largest stock market in Asia, outside of Japan
- foreign exchange turnover amongst the highest in the world
- an emerging debt market
- a derivatives market

The market has recently reoriented from an equity focus to encompass a wide range of debt, equity linked and derivative instruments as financial market participants become more sophisticated and borrowers and investors demand more mature, diverse and flexible products. Hong Kong's unrestricted regulatory environment allows local, regional and global investors access to a broad range of currencies and instruments.



The Securities and Futures Commission (SFC) exercise surveillance of the financial market. It exercises supervision over the securities, financial investment and commodities futures industries. Its detailed regulatory framework brings Hong Kong into line with international standards of market regulation and practice.

## 8.2 The Hong Kong stock market

The Hong Kong equity market is one of the most actively traded in Asia. The broadest stock market measure is the Hang Seng Index (HSI) which is a market capitalisation weighted index. At 31 December 2012, the HSI included the 49 largest stocks as its constituents. The market is gaining liquidity in hybrid debt and equity products as borrowers are increasingly looking to reduce their cost of capital using these products.

Due to the HK dollar being pegged to the US dollar, historically the Hong Kong stock market has been highly sensitive to US interest rates and NY Stock Exchange fluctuations. However, it is now clear that the Hong Kong stock market is being increasingly affected by the economic development of mainland China and the stock market performance of Shanghai and Shenzhen. It has been observed numerous times that the Hong Kong stock market follows the trend of the mainland China market despite the US stock market turning the other way. Until recently it had often been seen that the price of A shares in the mainland China was twice that of the H shares in Hong Kong for some corporations listed both in Hong Kong (the H shares) and the mainland China (the A shares). Therefore financial managers have to take note of the movements of both mainland China and US markets now in judging the performance trend of the Hong Kong stock market.

It should be noted that with reference to the efficient market hypothesis and based on research done on other stock exchanges such as the NYSE, Hong Kong would best be regarded a semi-strong market if not a weakly efficient market. Thus the stock price movements of the shares listed on the Hong Kong Stock Exchange may be subject to many moderating factors and do not necessarily represent the economic performance and fundamental value of business corporations. When raising equity by issuing shares on the Hong Kong stock market, this consideration should be borne in mind.

## 8.3 The Hong Kong debt market

Hong Kong's fixed income (debt) market is only a fraction of the global debt market, mainly due to the absence of government debt. The Hong Kong Government in the past operated an enviable surplus and as such was no need for debt markets, as they exist in many Western economies. However, the Hong Kong Government now regularly launches debt and issues bonds to finance any budget deficits.

For Asian companies equity is still the most convenient and efficient option of financing business. One of the major problems in the development of the debt market is the lack of secondary trading, resulting in a lack of liquidity to attract substantial numbers of debt investors. Debt investors seek liquid markets in case they wish to liquidate their investment (with or without capital loss). Initiatives are being undertaken by the HKMA to develop liquidity in Hong Kong debt markets.

## 8.4 Securities traded on Hong Kong's equity and debt markets

Instrument	Primary market	Secondary market	Comments
<b>Money market</b>			
Commercial bills	Yes	No	Primary market activity is dominant
Promissory notes	Yes	Yes	Stable primary market: limited secondary trading
Exchange fund bills	Yes	Yes	Strong, active secondary market
<b>Bond markets</b>			
Government bonds	Yes	Yes	Active and developing market: maturities out to 10 years
Corporate bonds	Yes	Yes	Small, but developing market
Certificates of deposit	Yes	Yes	Low activity; maturities usually exceed one year
Non resident issues	Yes	No	Small; developing market; inaugural issues 1989
<b>Equity</b>			
Shares	Yes	Yes	Well-established active market, but with only a small market for listed foreign company shares
<b>Foreign currency Instruments</b>			
Dragon bonds	Yes	No	Emerging market
Corporate bonds	Yes	Yes	Small; market growing (especially convertibles)

Source: Hong Kong Stock Exchange

## 8.5 The foreign exchange market

The HK\$ has been pegged to the US\$ at the rate of HK\$7.80/US\$1 since 1983, although exchange rates may fluctuate slightly around this level. This exchange rate stability against the US dollar reduces the exchange rate factor as a variable in the territory's economic development and stability. Interest rates rise and fall in line with movements in interest rates in the US, to preserve the currency peg and the money demand and supply. The HKMA is responsible for exercising effective influence over liquidity and interest rates in the HK\$ market. As a foreign exchange centre, Hong Kong is increasingly geared towards serving the needs of Greater China, leaving Singapore to concentrate on South East Asia.

## 8.6 Derivatives markets

Hong Kong has an active exchange traded and over-the-counter equity derivatives market and a developing debt derivatives market. Equity and debt derivative products such as forwards and swaps, as well as exotic options are traded on the over-the-counter market. Contracts are made on a bilateral basis, with terms negotiated separately for each transaction.

Hong Kong has a well-developed market infrastructure. The political environment is relatively stable, and its macro-economy demonstrated general resilience from the Asian financial crisis of the late 1990s. As a Special Administrative Region of the People's Republic of China (PRC), Hong Kong is also linked closely with the increasing integration of the PRC in the global economy. Hong Kong's banking system is sophisticated and well supervised, and the Government rarely intervenes in the market or protects individual sectors.

Hong Kong derivative products are listed below:

Products	Active market	Comments
<b>Interest rate</b>		
<b>Forward rate agreements</b>	Yes	Reasonably active market; still developing
<b>Futures</b>	No	HIBOR futures contract not active
<b>Swaps</b>	Yes	Small developing market; maturity lengthening
<b>Options</b>	No	
<b>Caps/collars</b>	No	No effective market
<b>Equity</b>		
<b>Futures</b>	Yes	Active market
<b>Options/warrants</b>	Yes	Options on stock written by financial institutions and warrants issued by listed companies traded

## 8.7 Hedge funds and their management

A hedge fund is a type of investment fund, usually open to only a limited group of wealthy investors. They use a wider range of investment strategies than those normally undertaken by traditional "long only" funds. The funds usually pay management and performance fees to their managers.

They use a number of strategies to make money for investors. Perhaps the most notable is the long-short equity strategy. This allows the fund manager both to "go long" – the traditional approach of buying an asset in the hope that it will rise in value and to "go short". The latter is when the fund manager sells a borrowed asset in the hope of buying it back more cheaply later.

Fund managers may also invest in derivatives of various types, which may increase substantially the level of risk.

Another approach is arbitrage, where the fund manager takes advantage of anomalies in the pricing of assets. For example, when a company's shares are quoted in two different countries, arbitrageurs may see a slight advantage in buying the shares in one country rather than the other.

A fourth method of making profits is to take a significant stake in a company in the hope that a profitable takeover or management buyout will follow.

Hedge funds may have a significant effect on securities markets, due to the sheer size, volume and frequency of their trading.

### 8.7.1 Hedge funds in Hong Kong

Within the last decade the hedge fund industry has grown dramatically in Hong Kong. As a response to this, the Securities and Futures Commission (SFC) issued new regulations in 2004 in relation to the licensing of hedge fund managers. Once licensed, hedge fund managers are subject to on-going supervision by the SFC. In a press release, the SFC stated; "We would like to reiterate that licensing is a gate-keeping function established to ensure that only fit and proper intermediaries can carry out financial services in Hong Kong. While we will facilitate and expedite market players to enter into the industry as far as possible, the regulatory standards will not be compromised."

Since that time, hedge funds have been on somewhat of a roller-coaster ride, with some downswings during the recent recession and a difficult year in 2011. However, there is evidence that since 2012, hedge fund business has grown again in Hong Kong. There have been a number of new launches, with funds setting up in Hong Kong as a major centre for growth and many Chinese fund managers are using Hong Kong as their hedge fund base. The Securities and Futures Commission reported that there had been a 25% increase in the number of hedge funds in Hong Kong between September 2010 and September 2012.

## 9 The financial environment and technology

### 9.1 Introduction

Information exchanged between companies engaged in business includes requests for quotes, bids, purchase orders, order confirmations, shipping documents, invoices, remittance advices and payments. The corporate treasurer today requires a working knowledge of Electronic Commerce (ECOM), E-Trading (Internet) and Electronic Data Interchange (EDI).

From your knowledge about services provided in the Hong Kong financial markets, you can see that this is already an issue. The issue is even more problematic in the Mainland due to both the information filtering process and the exchange control mechanism operated by the Central Government.

ECOM impacts many aspects of a company, including, production, purchasing, transportation, marketing and finance. ECOM changes cash flow time lines and therefore the level of working capital. When companies implement electronic payment systems, cash management issues (for example, the problem of debt collection) change considerably bringing both costs and benefits.

### 9.2 Technology and the finance/treasury function

Technology has impacted greatly on the development of integrated packages that allow the finance function to interface both internally (for example, another function such as marketing) and externally (for example, with financial markets). In larger companies, integrated computer packages now allow a dealing room to interface with all functions within a company. Technology covers wide range areas of finance and accounting and has allowed the development of global business by bringing a vast array of functions together through the use of technology and communications. In today's financial and business environment, it is essential that the corporate treasurer is aware of all technological impacts on the business.

### 9.3 The Internet

The Internet is a source of an enormous range of data and information about financial markets and other aspects of corporate treasury. It provides real (or near real) time financial information including currency and interest rate movements, as well as a platform for discussion on important financial and treasury issues.

## 10 Other current capital market trends

### 10.1 The Basel rules

The Basel Commission on Banking Supervision is an international committee of the banking supervisors of a large number of countries. The Commission has issued guidelines for the **regulation of banks**, which have general international acceptance and which have been adopted by most countries in their national legislation. The purpose of the so-called 'Basel rules' is to reduce the risk of a failure in the global banking system, which could cause incalculable damage to the world's economy.

The Basel Commission has amended its guidelines since the first Basel Accord was issued in 1988. When the global financial crisis erupted in 2007, a second set of rules known as Basel II was in the process of implementation. Since then another set of rules known as Basel III has been issued, and is currently in the process of implementation around the world by banks and the national banking regulators.

The Basel rules (Basel II and Basel III together) have two main objectives.

- (a) To require banks to maintain a minimum amount of capital, mainly equity capital, in relation to the size and amount of their 'risky' assets. (Most bank assets have some element of risk. Only assets such as cash do not.)
- (b) To require banks to maintain a minimum amount of liquid assets to meet their potential need for liquidity. Minimum liquidity requirements for banks were introduced by Basel III.

Some countries such as the USA and UK have imposed additional capital requirements on their banks in addition to the requirements of the Basel rules.

### 10.1.1 Implications of the Basel rules

Since the global financial crisis in 2007 – 2008, interest rates worldwide have generally been very low. It might therefore be expected that the demand for funds to borrow and invest should be very high, and that this new investment should help the world economy to recover and grow faster. Unfortunately this has not yet happened. The Basel rules seem to be partly to blame for this.

- The rules require banks to increase their equity capital, which means that banks' return on equity is likely to fall. The liquidity requirements also mean that banks have to hold more short-term (and lower-yielding) liquid assets. Experts have therefore predicted a substantial fall in the profitability of banks.
- Many banks are also still trying to recover from the effects of the global recession, and may have many loans on their balance sheets which they will eventually need to write off as irrecoverable. This is another reason why banks are seeking to alter and strengthen their balance sheets.

As a consequence of both the Basel rules and the weak financial position of many banks, banks appear reluctant to lend. When they do lend, the interest rate is usually much higher than the low official short-term interest rates available to banks from their central bank.

The implications for companies, especially small and medium-sized business enterprises (SMEs) is that in the current economic situation, it may be very difficult to obtain bank loans for new investment. However, without new business investment the global economy may struggle to recover.

## 10.2 Dodd-Frank Act

The Dodd–Frank Wall Street Reform and Consumer Protection Act 2010 is a very large piece of legislation for the reform of banking and financial services in the USA. Among other things, it changes the oversight structure for financial institutions, adds new restrictions on products and introduces more stringent regulatory capital requirements. The stated aim of the legislation is to: 'promote the financial stability of the United States by improving accountability and transparency in the financial system, to end "too big to fail", to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes.'

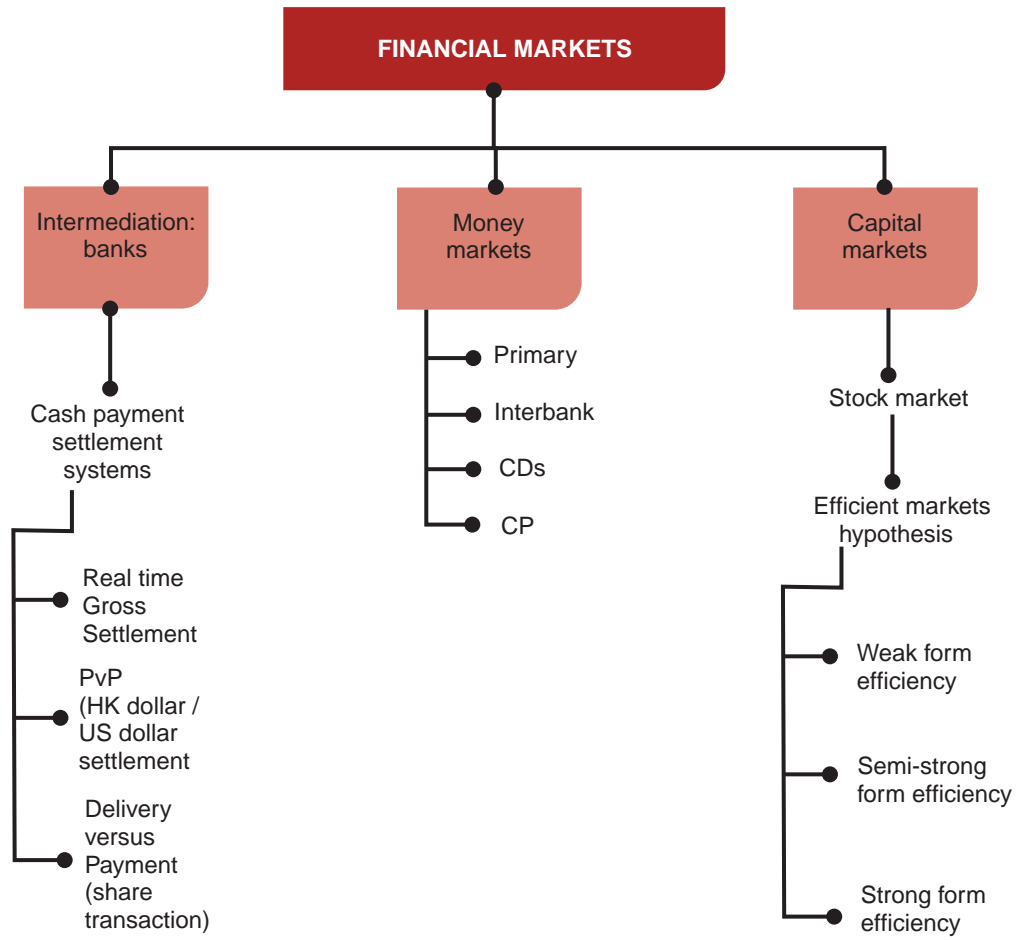
There are many different requirements in the Act, which is a long and complex piece of legislation.

However one requirement of the Act that may have extensive implications for global financial markets is a requirement for standard financial derivatives such as interest rate swaps and credit default swaps to be traded on a formal derivatives exchange rather than over-the-counter.

Trading derivatives on an exchange should reduce the risks in derivatives, because the derivatives exchange will guarantee settlement of contracts (in the same way that it already does for futures and exchange traded options).

It should still be possible to negotiate derivative deals over the counter with a bank, but the objective of the Dodd-Frank Act is to encourage greater standardisation of derivatives and more exchange-based trading in derivatives.

# Topic recap



## Exam practice



## Commercial papers

47 minutes

In early 2007, a few international financial institutions warned that the “subprime mortgage loan crisis” in the US might lead to substantial write-downs on their exposure to securities tied to sub-prime mortgages, in particular the Collateralised Debt Obligation (CDO) which is a type of asset-backed security and structured credit product. Not only has the situation not improved in the following months, the meltdown of the sub-prime market hit the headlines amid the bankruptcy of several mortgage companies in the US. The widespread impacts of the crisis and the uncertainty surrounding the financial position of the financial institutions caused lenders to become very cautious in extending credit to even high-credit borrowers. As a result, this shock, which is supposedly a problem in the US mortgage market, has spilled over to other sectors of the global financial market.

NB Steel is a steel manufacturing company which makes use of the commercial paper market to fund 80% of its debt requirements of about US\$5 billion. NB Steel's Commercial Paper (“CP”) Programme has obtained a “P2” rating from one of the major rating agencies. The company has also put in place a standby letter of credit facility from Lion Bank to back up the Programme. Since the establishment of the Programme, NB Steel has never encountered any problems in rolling over the CPs upon maturity. But Justin, the Treasurer of NB Steel, felt the pressure of the credit crunch when the dealer of the CP Programme notified him yesterday that the US\$20 million CPs maturing in the following week, about 50% of the outstanding CPs issued by the company, would not be able to roll over due to the lack of investors' interest in the papers.

NB Steel has invested in two fixed-income securities. Justin intends to sell the securities in the market in order to increase the available cash to maintain business operations. However, the turbulence in the credit market has seriously affected the pricing of bonds. Many institutional investors are hesitant to increase their exposure and therefore have refrained from buying fixed-income securities in the secondary market. As a result, Justin can only estimate the market value of the two securities in NB Steel's portfolio by making reference to the yield to maturity of bonds of similar credit.

Issuer	Bower	Amil
Credit Rating	BBB	A-
Par Value (US\$)	20M	48M
Coupon Rate p.a. (*)	5.0%	3.5%
Maturity (Years)	3	2
Yield to Maturity	12.80%	8.44%

(\*): Half-yearly payment

*Required*

- What are the major characteristics of commercial papers? **(4 marks)**
- Why is the stand-by letter of credit important to holders of commercial papers? **(3 marks)**
- What is the major financial risk faced by NB Steel if the commercial papers cannot be rolled over? In your opinion, how can this risk be mitigated through an appropriate financing strategy? **(6 marks)**
- Based on Justin's estimation, calculate the respective market values of the two bonds in NB Steel's fixed-income portfolio. **(5 marks)**
- Compute the yield of the fixed-income portfolio. (Hint: work out the interest rate that will make the present value of the total cash flows of the two bonds equal to the market value of the portfolio.) **(4 marks)**



**Corporate Financing**

- (f) If a fixed-income fund manager offers a yield to maturity of 9% to purchase the entire portfolio from NB Steel, is the price offered by the fund manager better than the values calculated in (d)? **(4 marks)**

**(Total = 26 marks)**

**HKICPA February 2009**



## chapter 17

# Business valuations

### Topic list

- 1 **Introduction to business valuations**
  - 1.1 Information requirements for valuation
- 2 **Asset based valuation method**
  - 2.1 Net assets basis
- 3 **Dividend based valuation method**
  - 3.1 The Dividend Valuation Model (DVM)
- 4 **Earnings based valuation method**
  - 4.1 P/E ratios
  - 4.2 Significance of high P/E ratio
  - 4.3 Problems with using P/E ratios
  - 4.4 Guidelines for a P/E ratio-based valuation
  - 4.5 Use of a bidder's P/E ratio
  - 4.6 Use of forecast earnings
  - 4.7 The earnings yield valuation method
- 5 **Discounted Cash Flow (DCF) based valuation method**
  - 5.1 The FCFF Model
  - 5.2 Applying the DCF approach
- 6 **The comparables method**
  - 6.1 The P/E method for comparables
  - 6.2 Enterprise value using EBIT and EBITDA
  - 6.3 Using the comparables approach
- 7 **The valuation of debt**
  - 7.1 Irredeemable debt
  - 7.2 Redeemable debt
  - 7.3 Convertible debt
  - 7.4 Preference shares
- 8 **Use of valuation methods in practice**

### Learning focus

Business valuations may be required in a variety of situations, including: for **any company**, where a shareholder wishes to dispose of his or her holding, for a **listed company** when there is a takeover bid and for private companies when the company is being sold or wishes to “go public”.

This chapter concentrates on how to value a business, the various methods used and the assumptions behind these. We shall cover the **reasons** why businesses are valued and the main **methods of valuation**.

You may have to apply different valuation methods to calculate a value (or more likely a range of possible values) for a company in a given scenario. You also need to be aware of the advantages and disadvantages of various valuation methods or outline the problems with the methods of valuation you have used.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Long term financial management</b>		
Identify and evaluate the long term financial management position of a business and advise on relevant sources of finance and funding methods		
<b>6.05</b>	<b>Corporate debt securities</b>	2
6.05.02	Calculate the value of debt securities	
<b>Business valuations</b>		
Perform calculations and provide advice relating to the valuation of businesses:		
<b>8.01</b>	<b>Company valuations, mergers and acquisitions and disposals</b>	2
8.01.01	Identify and discuss occasions and reasons for valuing businesses and financial assets including IPO, mergers and acquisitions and disposals	
8.01.02	Identify information requirements for valuation and discuss the limitations of different types of information	
8.01.03	Understand and apply models for the valuation of shares, including asset-based valuation models, earnings-based valuation models, cash flow-based valuation models and comparable methods	
8.01.04	Understand models for the valuation of debt and apply appropriately to irredeemable debt, redeemable debt, convertible debt and preference shares	
8.01.05	Discuss the theoretical and practical limitations of the various valuation models	
8.01.06	Recommend and justify an appropriate valuation/range of valuations for a given business scenario	

# 1 Introduction to business valuations



## Topic highlights

There are many different ways to place **a value on a business**, or on shares in an unlisted company. It makes sense to use **several methods** of valuation and compare the values they produce.



## Key term

**Market capitalisation** is the market value of a company's shares multiplied by the number of issued shares.

Given listed share prices on the Stock Exchange, why devise techniques for estimating the value of a share? A share valuation will be necessary in the following circumstances:

- (a) For **listed companies**, when there is a takeover bid and the offer price is an estimated “fair value” in excess of the current market price of the shares. A **takeover** is the acquisition by a company of a controlling interest in the voting share capital of another company, usually achieved by the purchase of a majority of the voting shares.
- (b) For unlisted companies, when:
  - (i) the company wishes to “go public” and must fix an issue price for its shares in the initial public offering (IPO)
  - (ii) there is a scheme of merger
  - (iii) shares are sold/exchanged
  - (iv) shares need to be valued for the purposes of taxation
  - (v) shares are pledged as collateral for a loan
- (c) For **subsidiary companies**, when the group's holding company is negotiating the sale of the subsidiary to a management buyout team or to an external buyer.
- (d) For **any company**, where a shareholder wishes to dispose of his or her holding. Some of the valuation methods we describe will be most appropriate if a large or controlling interest is being sold. However, even a small shareholding may be a significant disposal, if the purchasers can increase their holding to a controlling interest as a result of the acquisition.
- (e) For **any company**, when the company is being broken up in a liquidation situation or the company needs to obtain additional finance, or re-finance current debt.

## 1.1 Information requirements for valuation

There is a wide range of information that will be needed in order to value a business.

- Financial statements: Statements of financial position, income statements, statements of changes in financial position and statements of shareholders' equity for the past five years
- Summary of non-current assets list and depreciation schedule
- Intangible assets: brand holding; intellectual property rights; customer base; core staff / management; goodwill etc.
- Aged accounts receivable summary
- Aged accounts payable summary

- List of marketable securities
- Inventory summary
- Details of any existing contracts (for example, leases, supplier agreements)
- List of shareholders with number of shares owned by each
- Budgets or projections, for a minimum of five years
- Information about the company's industry and economic environment
- List of major customers by sales
- Organisation chart and management roles and responsibilities

This list is not exhaustive and there are **limitations** of some of the information. For example, statement of financial position values of assets may be out of date and unrealistic, projections may be unduly optimistic or pessimistic and much of the information used in business valuation is **subjective**.

There are several different methods of making a valuation of a company's shares, or a valuation of a business as a whole. Each method of valuation provides an indication of what a suitable value might be. It is unlikely that one method of share valuation would be used in isolation, and there is no "correct" valuation. Several valuations might be made, each using a different method or different assumptions. The valuations could then be compared, and a final price reached as a compromise between the different values. Remember that some methods may be more appropriate for valuing a small parcel of shares, others for valuing a whole company. Also, the only valuation that matters is the value that a buyer and seller agree to.

Where two parties are involved, for example when one business is attempting to purchase another, the final value agreed on will be the subject of negotiation between the parties concerned and may be influenced by factors such as:

- the motives of the buyer and seller
- their relative size
- their negotiating ability
- the information available to each party

## 2 Asset based valuation method

### 2.1 Net assets basis



#### Topic highlights

The **net assets valuation** method can be used as one of many valuation methods, or to provide a lower limit for the value of a company. By itself it is unlikely to produce the most realistic value.

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Using this method of valuation, the value of a share in a particular class is equal to the net tangible assets divided by the number of shares. Intangible assets (including goodwill) should be excluded, unless they have a market value (for example, patents and copyrights, which could be sold).

Goodwill, if shown in the accounts, is unlikely to be shown at a true figure for purposes of valuation, and the value of goodwill should be reflected in another method of valuation (for example, the earnings basis method). Development expenditure, if shown in the accounts, would also have a value that is related to future profits rather than to the worth of the company's physical assets.



### Illustration

The summary statement of financial position of Cactus Ltd is shown below:

	\$'000	\$'000	\$'000
<i>Non-current assets</i>			
Land and buildings			160,000
Plant and machinery			80,000
Motor vehicles			20,000
			<u>260,000</u>
Goodwill			20,000
<i>Current assets</i>			
Inventory		80,000	
Receivables		60,000	
Short-term investments		15,000	
Cash		5,000	
		<u>160,000</u>	
<i>Current liabilities</i>			
Payables	80,000		
Taxation	<u>20,000</u>		
		<u>(100,000)</u>	
			<u>60,000</u>
			340,000
Provisions for deferred taxation			(10,000)
12% bonds			(60,000)
4.9% preference shares			(50,000)
			<u>220,000</u>
			<u>\$,000</u>
Share capital (8 million shares)			75,000
Reserves			<u>145,000</u>
			<u>220,000</u>

If the figures given for asset values were not questioned, the valuation would be as follows:

	\$'000	\$'000
Total value of assets less current liabilities		340,000
Less intangible asset (goodwill)		<u>(20,000)</u>
Total value of assets less current liabilities		320,000
Less: preference shares	50,000	
bonds	60,000	
deferred taxation	<u>10,000</u>	
		<u>120,000</u>
Net asset value of equity		<u>200,000</u>

Net asset value per share:  $\$200,000,000/8$  million = \$25

**Note.** Alternatively, Net asset value of equity = Net assets \$220m less Goodwill \$20m = \$200 million

### 2.1.1 Choice of asset valuation basis

The difficulty in an asset valuation method is establishing the asset values to use. Values ought to be realistic. The figure attached to an individual asset may vary considerably depending on whether it is valued on a going concern or a break-up basis.

There are various possibilities:

- **Historical basis** – When assets are valued at historical cost (less depreciation), this is unlikely to give a realistic value as it is dependent upon the business's depreciation and amortisation policy.
- **Replacement basis** – This is the cost that would be required to replace the assets and continue using them to operate the business. This method of valuation may be appropriate if the assets are to be used on an on-going basis.
- **Realisable basis** – If the assets are to be sold, or the business as a whole broken up, it would be appropriate to value them at their net realisable value (= disposal value less costs of disposal). This won't be relevant if a minority shareholder is selling his stake, as the assets will not be disposed of and will continue to be used by the business.

The following are some of the factors that must be considered:

- (a) Do the assets need professional valuation? If so, how much will this cost?
- (b) Have the liabilities been accurately quantified, (for example, deferred taxation and tax in dispute)? Are there any contingent liabilities? Will any balancing tax charges arise on disposal?
- (c) How have the current assets been valued? Are all receivables collectable? Is all inventory realisable? Can all the assets be physically located and brought into a saleable condition? This may be difficult in certain circumstances where the assets are situated abroad.
- (d) Can any hidden liabilities be accurately assessed? Would there be redundancy payments and closure costs?
- (e) Is there an available market in which the assets can be realised (on a break-up basis)? If so, do the statement of financial position values truly reflect these break-up values?
- (f) Are there any prior charges on the assets?
- (g) Does the business have a regular revaluation and replacement policy? What are the bases of the valuation? As a broad rule, valuations will be more useful the better they estimate the future cash flows that are derived from the asset.
- (h) Are there factors that might indicate that the going concern valuation of the business as a whole is significantly higher than the valuation of the individual assets?
- (i) What shareholdings are being sold? If a minority interest is being disposed of, realisable value is of limited relevance, as the assets will not be sold.

### 2.1.2 Use of net asset basis

The net assets basis of valuation might be used in the following circumstances:

- (a) As a measure of the "security" in a share value. A share might be valued using an earnings basis. This valuation might be higher or lower than the net asset value per share. If the earnings basis is higher, then if the company went into liquidation, the investor could not expect to receive the full value of his shares when the underlying assets were realised. The asset backing for shares therefore provides a measure of the possible loss if the company fails to make the expected earnings or dividend payments. Valuable tangible assets may be a good reason for acquiring a company, especially freehold property that might be expected to increase in value over time.
- (b) As a measure of comparison in a scheme of merger: a merger is essentially a business combination of two or more companies, of which none obtains control over any other. For example, if company A, which has a low asset backing, is planning a merger with company B, which has a high asset backing, the shareholders of B might consider that their shares' value ought to reflect this. It might therefore be agreed that something should be added to the value of the company B shares to allow for this difference in asset backing.

- (c) As a “floor value” for a business that is up for sale – shareholders will be reluctant to sell for less than the net asset valuation. However, if the sale is essential for cash flow purposes or to realign with corporate strategy, even the asset value may not be realised.

For these reasons, it is always advisable to calculate the net assets per share.

### 3 Dividend based valuation method



#### Topic highlights

Cash flow based valuation models include the **dividend valuation model**, the **dividend growth model** and the **discounted cash flow basis**.

#### 3.1 The Dividend Valuation Model (DVM)

The DVM was discussed in Chapter 13, section 2. This is based on the theory that the realistic market price of a share can be derived from a valuation of the estimated future dividends that the owner of the share will receive in the future.



#### Example: Dividend based valuation

Stam Ltd paid a dividend of \$2.5 million this year. The current return to shareholders of companies in the same industry as Stam is 12%, although it is expected that an additional risk premium of 2% will be applicable to Stam, being a smaller and unlisted company. What is the expected valuation of Stam if:

- the current level of dividend is expected to continue into the foreseeable future, or
- the dividend is expected to grow at a rate of 4% pa into the foreseeable future,
- the dividend is expected to grow at a 3% annual rate for three years and 2% each year afterwards?

Cost of equity  $k_e = 12\% + 2\% = 14\%$  (0.14)

Current year dividend  $d_0 = \$2.5$  million

#### Solution

##### Scenario 1

$$P_0 = \frac{d_0}{k_e} = \frac{\$2.5\text{m}}{0.14} = \$17.857 \text{ million}$$

##### Scenario 2

$g = 4\%$  or 0.04

$$P_0 = \frac{d_0(1+g)}{(k_e - g)} = \frac{2.5(1+0.04)}{(0.14 - 0.04)} = \$26 \text{ million}$$

##### Scenario 3

$g = 3\%$  Time 0 to Time 3

$g = 2\%$  (0.02) from Time 3 to infinity



	<i>Time 1</i>	<i>Time 2</i>	<i>Time 3</i>	<i>Time 4 onwards</i>
Dividend (\$m)	2.580	2.660	2.740	2.790
Annuity to infinity $\frac{1}{(k_e - g)}$				8.333
Present value at year 3				23.25
Discount factor @ 14%	<u>0.877</u>	<u>0.769</u>	<u>0.675</u>	<u>0.675</u>
	<u>2.260</u>	<u>2.050</u>	<u>1.850</u>	<u>15.690</u>

Total = \$21.85 million

Make sure you are familiar with the assumptions and limitations of the DVM which are discussed in detail in Chapter 13.

## 4 Earnings based valuation method

### 4.1 P/E ratios



#### Topic highlights

P/E ratios are often used when a large block of shares, or a whole business, is being valued. This method can be problematic when the P/E ratios of listed companies are used to value unlisted companies.

The P/E ratio (earnings) method of valuation is a common method of valuing a controlling interest in a company, where the owner can decide on dividend and retentions policy. The P/E ratio relates earnings per share to a share's value.



#### Key terms

**P/E ratio** =  $\frac{\text{Market value}}{\text{EPS}}$ , therefore:

**Market value per share** = EPS × P/E ratio

**Note. Earnings per share (EPS)** =  $\frac{\text{Profit / loss attributable to ordinary shareholders}}{\text{Weighted average number of ordinary shares}}$

The P/E ratio produces an earnings based valuation of shares by deciding on a suitable P/E ratio and multiplying this by the EPS for the shares that are being valued.

Market valuation per share = P/E ratio × Earnings per share

Market capitalisation (i.e. total share value) = P/E ratio × Total earnings

The EPS could be a historical EPS or a prospective future EPS. For a given EPS figure, a higher P/E ratio will result in a higher price.

### 4.2 Significance of high P/E ratio

A high P/E ratio may indicate the following:

- (a) **Expectations that the EPS will grow rapidly:** A high price is being paid for future profit prospects. Many small but successful and fast-growing companies are valued on the stock market on a high P/E ratio. Some stocks (for example, those of some Internet companies in

the late 1990s) reach high valuations before making any profits at all, on the strength of expected future earnings.

- (b) **Security of earnings:** A well-established low-risk company would be valued on a higher P/E ratio than similar company whose earnings are subject to greater uncertainty.
- (c) **Status:** If a listed company (the bidder) made a share-for-share takeover bid for an unlisted company (the target), it would normally expect its own shares to be valued on a higher P/E ratio than the target company's shares. This is because a listed company ought to be a lower-risk company and it has shares that are listed on a stock market that can be readily sold. The P/E ratio of an unlisted company's shares might be around 50% to 60% of the P/E ratio of a similar public company with a full stock exchange listing.

### 4.3 Problems with using P/E ratios

However, using the P/E ratios of listed companies to value unlisted companies may be problematic:

- (a) Finding a listed company with a similar range of activities may be difficult. Listed companies are often diversified.
- (b) A single year's P/E ratio may not be a good basis, if earnings are volatile, or the listed company's share price is at an abnormal level, due for example, to the expectation of a takeover bid.
- (c) If a P/E ratio trend is used, then historical data will be being used to value how the unlisted company will do in the future.
- (d) The listed company may have a different capital structure to the unlisted company.

### 4.4 Guidelines for a P/E ratio-based valuation

When a company is thinking of acquiring an unlisted company in a takeover, the final offer price will be agreed by negotiation, but there are factors affecting the valuer's choice of P/E ratio:

- (a) General economic and financial conditions.
- (b) The type of industry and the prospects of that industry. Use of current P/E ratios may give an unrealistically low valuation if these ratios are affected by a lack of confidence throughout the industry.
- (c) The size of the undertaking and its status within its industry. If an unlisted company's earnings are growing annually and are currently around \$30 million, then it may get a listing in its own right on GEM, and a higher P/E ratio may therefore be used when valuing its shares.
- (d) Marketability. The market in shares, which do not have a stock exchange listing, is always a restricted one and a higher yield is therefore required.
- (e) The diversity of shareholdings and the financial status of any principal shareholders.
- (f) The reliability of profit estimates and the past profit record. Use of profits and P/E ratios over time may give a more reliable valuation, especially if compared with industry levels over that time
- (g) Asset backing and liquidity.
- (h) The nature of the assets, for example whether some of the non-current assets are of a highly specialised nature, and so have only a small break-up value.
- (i) Gearing. A relatively high gearing ratio will generally mean greater financial risk for ordinary shareholders and call for a higher rate of return on equity.
- (j) The extent to which the business is dependent on the technical skills of one or more individuals.
- (k) The bidder may need to be particularly careful when valuing an unlisted company of using a P/E ratio of a "similar" listed company. The bidder should obtain reasonable evidence that the listed company does have the same risk and growth characteristics, and has similar policies on significant areas such as directors' remuneration.

## 4.5 Use of a bidder's P/E ratio

A bidder company may sometimes use their higher P/E ratio to value a target company. This assumes that the bidder can improve the target's business, which may be a dangerous assumption to make. It may be better to use an adjusted industry P/E ratio, or some other method.

## 4.6 Use of forecast earnings

When one company is thinking about taking over another, it should look at the target company's forecast earnings, not just its historical results. Forecasts of earnings growth should only be used if:

- there are good reasons to believe that earnings growth will be achieved
- a reasonable estimate of growth can be made
- forecasts supplied by the target company's directors are made in good faith and using reasonable assumptions and fair accounting policies.



### Illustration: Valuation

Flycatcher Public Company wishes to make a takeover bid for the shares of an unlisted company, Mayfly Company. The earnings of Mayfly over the past five years have been:

	\$m
20X1	5.0
20X2	7.2
20X3	6.8
20X4	7.1
20X5	7.5

The average P/E ratio of listed companies in the industry in which Mayfly operates is 10. Listed companies which are similar in many respects to Mayfly are:

- Bumblebee Public Company, which has a P/E ratio of 15, but is a company with very good growth prospects
- Wasp Public Company, which has had a poor profit record for several years, and has a P/E ratio of 7

What would be a suitable range of valuations for the shares of Mayfly?

#### What earnings to use?

Average earnings over the last five years have been \$6.72 million, and over the last four years \$7.15 million. There might appear to be some growth prospects, but estimates of future earnings are uncertain.

A low estimate of earnings in 20X6 would be, perhaps, \$7.15 million.

A high estimate of earnings might be \$7.5 million or more. This solution will use the most recent earnings figure of \$7.5 million as the high estimate.

#### What P/E ratio to use?

A P/E ratio of 15 (Bumblebee's) would be much too high for Mayfly, because the growth of Mayfly's earnings is not as certain, and Mayfly is an unlisted company.

On the other hand, Mayfly's expectations of earnings are probably better than those of Wasp.

A suitable P/E ratio might be based on the industry's average (10) but since Mayfly is an unlisted company and therefore more risky, a lower P/E ratio might be more appropriate, perhaps 60% to 70% of 10 (i.e. 6 or 7) or conceivably even as low as 50% of 10 (i.e. 5).

The valuation of Mayfly's shares might therefore range between:

- high P/E ratio and high earnings:  $7 \times \$7.5\text{m} = \$52.5$  million
- low P/E ratio and low earnings:  $5 \times \$7.15\text{m} = \$35.75$  million

## 4.7 The earnings yield valuation method

Another income based valuation model is the earnings yield method.



### Key term

$$\text{Earnings yield (EY)} = \frac{\text{EPS}}{\text{Market price per share}} \times 100\%$$

This method is effectively a variation on the P/E method (the EY being the reciprocal of the P/E ratio), using an appropriate earnings yield effectively as a discount rate to value the earnings:



### Key term

$$\text{Market value} = \frac{\text{Earnings}}{\text{EY}}$$

Exactly the same guidelines apply to this method as for the P/E method. Note that where **high growth** is envisaged, **the EY will be low**, as current earnings will be low relative to a market price that has built in future earnings growth. A stable earnings yield may suggest a company with low risk characteristics.

We can incorporate earnings growth into this method in the same way as the dividend growth model:

$$\text{Market value} = \frac{\text{Earnings} \times (1+g)}{(K_e - g)}$$



### Example: Market value

A company has the following results:

	20X1	20X2	20X3	20X4
Profit after tax	\$m 6.0	\$m 6.2	\$m 6.3	\$m 6.3

The company's cost of capital is 12%.

$$\text{Market value} = \frac{\text{Earnings} \times (1+g)}{(K_e - g)}$$

Earnings = \$6.3 million

$K_e = 12\%$

$$g = \sqrt[3]{\frac{6.3}{6.0}} - 1 = 0.0164 \text{ or } 1.64\%$$

$$\text{Market value} = \frac{6.3 \times 1.0164}{0.12 - 0.0164} = \$61.81 \text{ million}$$

## 5 Discounted Cash Flow (DCF) based valuation method

### 5.1 The FCFF Model



#### Topic highlights

The **free cash flow to the firm** (FCFF) model values the total company (i.e. enterprise value) rather than just the equity stake. The value of the firm obtained is the present value of the expected future cash flows to all investors (or “claimants”) of the firm. Once the value of the firm is established, simply subtracting the value of net debt derives the value of equity.



#### Key terms

**Equity share value** = Value of firm – Net debt, where net debt is defined as interest-bearing debt less cash.

**FCFF** represents cash flow that is available to pay interest and principal to lenders and dividends to shareholders.

FCFF is **measured as follows**:

$EBIT(1 - t) + \text{Depreciation} + \text{Amortisation} - \text{Capital expenditure} +/\text{- Change in net working capital}$

**Note.** It is the corporate tax rate and net working capital which is defined as non-cash current assets less non-interest bearing current liabilities (an increase in net working capital is subtracted and a decrease in net working capital is added).

This equation shows that FCFF is closely related to EBITDA (EBIT plus depreciation and amortisation) but also takes into account the tax liability arising from earnings as well as capital expenditure and net working capital requirements of the firm.

The valuation of a business using the FCFF method is calculated as the present value of expected future annual free cash flows, discounted at an appropriate cost of capital.

#### 5.1.1 Using FCFF

Since FCFF represents cash flows to all investors (debt and equity) in the firm, the discount rate used to compute the present value of future expected FCFF must be the “average” required return of these investors. The appropriate discount rate is the weighted average cost of capital (WACC).

There are a number of scenarios with regard to what cash flows might do in the future, giving rise to a number of variants as follows:

Where:  $V_0$  is the present value of the firm  
 $FCFF_t$  is the free cash flow to the firm in year  $t$   
 WACC is the weighted average cost of capital  
 $g$  is the growth rate in  $FCFF_t$   
 $g^*$  is the long-run growth rate in  $FCFF_t$  in the two-stage growth model  
 $P_n$  is the present value of the price at which the share is expected to be sold at year  $n$

The basic formula is:

$$V_0 = \frac{FCFF_1}{(1+WACC)^1} + \frac{FCFF_2}{(1+WACC)^2} + \dots = \sum_{t=1}^{\infty} \frac{FCFF_t}{(1+WACC)^t}$$

If there is an assumption that cash flows grow at a constant rate ( $g$ ) forever, this yields the constant growth model.

Where cash flows demonstrate this constant growth, the formula is:

$$V_0 = \frac{\text{FCFF}_0 (1+g)}{\text{WACC} - g} = \frac{\text{FCFF}_1}{\text{WACC} - g}$$

When cash flows are assumed not to change over time (i.e.  $g = 0$ ) the constant growth model collapses to the zero growth or perpetuity model. Where cash flows demonstrate this zero growth, the formula is:

$$V_0 = \frac{\text{FCFF}_0}{\text{WACC}}$$

The two-stage growth model allows for staged growth in cash flows. When the expected cash flow is growing at a very high rate, two stages in growth are allowed for:

- (1) An initial period of very high growth, followed by
- (2) A period of much lower growth (at rate  $g$ )

It is unrealistic to assume that the very high initial growth rate will be maintained indefinitely as new entrants to the market will be attracted by the high returns available and the firm's growth will slow.

Where growth comes in two stages, the formula is:

$$V_0 = \sum_{t=1}^n \frac{\text{FCFF}_t}{(1+\text{WACC})^t} + \frac{P_n}{(1+\text{WACC})^n} \text{ and}$$

$$P_n = \frac{\text{FCFF}_{n+1}}{\text{WACC} - g^*}$$

The two-stage growth model is not as complex as it first appears. The value of the share is the sum of two components:

- (1) The present value of cash flows to shareholders paid in the high growth period that lasts until year  $n$
- (2) The present value of the price ( $P_n$ ) at which the share is expected to be sold at year  $n$  (usually called the "terminal value"). The constant growth model provides this terminal value, which is then discounted to a present value and added to the present value of the cash flows earned up to and including year  $n$ . Note that the shareholder does not need to sell the share at time  $n$ , simply that this would be the expected "fair value" of the share at this point in time based on the cash flow stream expected beyond that point.

## 5.2 Applying the DCF approach

The process of valuing the equity stake in a firm involves the following steps:

### Step 1

Prepare a forecast of cash flows over an appropriate time horizon, generally five to ten years.

### Step 2

Determine the appropriate discount rate. For valuing the firm, the weighted average cost of capital should be used.

### Step 3

Determine an appropriate terminal value using a constant growth model.

### Step 4

Compute the present value of the cash flows and the terminal value using the discount rate.

### Step 5

Where the firm has been valued, subtract the value of any debt and preference shares.

A rise in expected future cash flows (all other things being equal) will raise the theoretical value of a share while downward revisions to expected future cash flows would reduce the valuation.

### 5.2.1 Estimating cash flows

Estimating future cash flows is a critical part of the valuation process. As a general rule, annual cash flows should be forecast over a reasonable period of time, usually five to ten years. Preparing detailed forecasts beyond that point in time may not be worthwhile since the level of accuracy achieved by determining a precise figure for cash flow is outweighed by the uncertainty associated with a long-term forecast. Using a two-stage valuation model can mitigate the problems inherent in forecasting distant cash flows.

Forecasts are usually prepared in nominal terms rather than in real terms. Care must be taken when forecasting different inflation rates for inputs and outputs since such a course of action will give either an upward or downward bias to forecast cash flows and hence the valuation.

### 5.2.2 Estimating the growth rate of the firm

This has a crucial bearing on the valuation as the higher the growth rate, the higher the expected future cash flows and the higher the valuation. In section 5.1 it was noted that cash flows could grow at a high rate for only a finite period before reverting to a lower, long run level.

All assumptions on growth, whether constant or two-stage, should be assessed in detail for reasonableness. For example, with regard to the long-run stable growth rate, it is important to remember that in the long run a firm cannot grow at a rate significantly above the growth rate in the economy in which it operates.

In general, as a firm's growth rate declines towards its long-run level, its risk should approach the average and its reinvestment needs decline. This should increase the firm's free cash flow and allow it to pay higher dividends. For the long-run stable growth stage, it is usually assumed that net capital expenditure is zero, and the firm is spending enough on capital expenditure to maintain its non-current asset base.

### 5.2.3 Estimating the discount rate

The DCF model requires that equity or firm cash flows be discounted by an appropriate discount rate. For the FCFF model, the appropriate discount rate is the firm's WACC.



#### Illustration: Discounted future cash flows method of share valuation

Dee Company (Dee) wishes to make a bid for Tee Company (Tee). Tee currently has no debt. Dee believes that if further money is spent on additional investments, the FCFF of Tee (ignoring purchase consideration) could be as follows:

Year	Cash flow (net of tax) \$m
0	(1,000)
1	(800)
2	600
3	1,000
4	1,500
5	1,500

The after-tax cost of capital of Dee is 15% and the company expects all its investments to pay back, in discounted terms, within five years. What is the value of the equity in Tee (i.e. the maximum price that Dee should be willing to pay for the shares of Tee)?

Note that Tee has no debt so no deduction for debt is required after calculation of the value of the firm. The maximum price is one that would make the return from the total investment exactly 15% over five years, so that the PV at 15% would be 0.

Year	Cash flows ignoring purchase consideration \$m	Discount factor (from tables) @ 15%	Present value \$m
0	(1,000)	1.000	(1,000.00)
1	(800)	0.870	(696.00)
2	600	0.756	453.60
3	1,000	0.658	658.00
4	1,500	0.572	858.00
5	1,500	0.497	745.50
Maximum purchase price			<u>1,019.10</u>

In the above illustration, Dee used its own cost of capital to discount the cash flows of Tee. This may not be appropriate for the following reasons:

- The **business risk** of the new investment may not match that of the investing company. If Tee is in a completely different line of business from Dee, its cash flows are likely to be subject to differing degrees of risk, and this should be taken into account when valuing them.
- The **method of finance** of the new investment may not match the current debt/equity mix of the investing company, which may have an effect on the cost of capital to be used.



### Self-test question 1

A company's sales in the previous year (just ended) were HK\$150 million. It is expected that the growth rate in sales will be 16% per year for the next four years and from year 5 onwards, expected sales growth will be 5% per annum in perpetuity.

The pre-tax operating profit margin will be 25%. A one-off after tax cost of \$8 million will be required in year 1 for a special marketing programme. Depreciation will be 10% of EBIT. Annual capital expenditure will be 11% of sales each year. The weighted average cost of capital of the company is 11%. The tax rate is 17.5% of annual earnings.

The outstanding debt level is currently at \$20 million. Assume that there will be no increase in working capital in spite of the increase in sales.

*Required*

Assuming that it is now the end of year 0, calculate the equity value of the company using the discounted cash flow model. (Work in HK \$million, to 1 decimal place)

**(The answer is at the end of the chapter)**

## 6 The comparables method



### Key term

The **comparables method** examines data on comparable firms. In many industries there are well-recognised benchmarks that are used for valuation purposes such as the price/earnings (P/E) ratio and Enterprise Value/EBITDA ratio.



## 6.1 The P/E method for comparables

The P/E method introduced in section 4.1 is a popular comparables approach. This model estimates the share price of a firm as the product of a price/earnings per share ratio and the firm's earnings per share.

That is:

$$P_0 = \left( \frac{P}{\text{EPS}} \right)_{\text{Industry}} \times \text{EPS}_{\text{firm}}$$

A P/E ratio of 10 tells us that investors are prepared to pay 10 times earnings for a share. The P/E ratio to be used is typically determined by taking the average of the P/E ratios for similar companies within the same industry. A similar company is one that has comparable growth, risk, financial leverage and dividend payout. The P/E ratio and EPS can be measured on a “trailing” basis using current EPS or on a “forward” basis using expected (or next year's) EPS.

## 6.2 Enterprise value using EBIT and EBITDA

When valuing a firm, a popular approach is the enterprise value (EV) approach that is based on either the EV/EBIT or the EV/EBITDA ratio. Enterprise Value (EV) is the sum of the market value of equity plus the book value of interest-bearing debt less cash. The market value of equity is the share price times the number of shares on issue. The enterprise value of a firm can be estimated as the product of an EV/EBIT (or EV/EBITDA) ratio and the firm's EBIT (or EBITDA) as follows:

$$EV_0 = \left( \frac{\text{EV}}{\text{EBIT}} \right)_{\text{Industry}} \times \text{EBIT}_{\text{firm}}$$

$$EV_0 = \left( \frac{\text{EV}}{\text{EBITDA}} \right)_{\text{Industry}} \times \text{EBITDA}_{\text{firm}}$$

The EV/EBIT (or EV/EBITDA) ratio is typically determined by taking the average of the EV/EBIT (or EV/EBITDA) ratios of similar firms within the same industry.

The choice between the EV/EBIT and EV/EBITDA multiples is usually not critical, although the EV/EBITDA multiple is preferred if either depreciation or amortisation charges distort earnings or make comparisons difficult. Again EBIT or EBITDA can be measured on either a “trailing” or a “forward” basis.

## 6.3 Using the comparables approach



### Topic highlights

Where the total firm has been valued, rather than just the equity stake, it is necessary to subtract the value of other claims such as debt and preference shares.

The process for valuing the equity stake in a firm involves the following steps:

#### Step 1

Choose a set of comparable firms.

#### Step 2

Choose the most appropriate multiple for the firm.

#### Step 3

Compute the average multiple across the comparable firms.

**Step 4**

Estimate the base for the firm being valued. For example, if using the P/E ratio, we need to estimate EPS for the firm being valued.

**Step 5**

Where the total firm has been valued, rather than just the equity stake, subtract the value of other claims such as debt and preference shares.

## 7 The valuation of debt

Models such as the free cash flow to the firm (FCFF) and the DCF approach arrive at a value for the total company (i.e. enterprise value) rather than just the equity stake.

As discussed above, in order to arrive at the value of equity, the value of other claims such as debt and preference shares must be deducted.

The concepts used to value debt were introduced in Chapter 9, which considered the calculation of the cost of debt capital. The relevant formula for deriving the market value of different forms of debt are summarised here.

### 7.1 Irredeemable debt



#### Key terms

For **irredeemable bonds** where the company will go on paying interest every year in perpetuity, without ever having to redeem the loan:

$$P_0 = \frac{i}{K_d}$$

Where:  $P_0$  is the market price of the bond ex interest (excluding any interest payments that are due)  
 $i$  is the annual interest payment on the bond  
 $K_d$  is the return required by the bond investors

Note that the MV is determined by what investors are prepared to pay and is found by discounting the interest received by the investor at the investor's required return ( $K_d$ ).

An alternative approach is to apply the post tax cost of debt for the company ( $K_{dnet}$ ) to the post-tax interest:

With taxation, **irredeemable (undated) debt**, paying annual after tax interest  $I(1 - t)$  in perpetuity, where  $P_0$  is the ex-interest value:

$$P_0 = \frac{i(1-t)}{K_{dnet}}$$

Where:  $K_{dnet}$  is the **post-tax cost of debt** for the company.

## 7.2 Redeemable debt



### Key term

The valuation of **redeemable debt** depends on future expected receipts. The market value is the discounted present value of future interest receivable, up to the year of redemption, **plus** the discounted present value of the redemption payment.

$$P_0 = \frac{i}{(1+k_d)} + \frac{i}{(1+k_d)^2} + \dots + \frac{i+P_n}{(1+k_d)^n}$$

Value of debt = (Interest earnings × Annuity factor) + (Redemption value × Discounted cash flow factor)

$P_n$  = redemption value of the bond at maturity (often par value of the bond)



### Illustration: Redeemable debt

James Ltd has in issue 12% bonds with par value \$100 million and redemption value \$110 million, with interest payable quarterly. The approximate redemption yield on the bonds is 2% quarterly. The bonds are redeemable on 30 June 20X4 and it is now 31 December 20X1.

Calculation of the value of the bonds:

Using the redemption yield cost of debt as the discount rate, and an annuity factor for the interest, discount over 14 periods using the quarterly discount rate (2%):

<i>Period</i>		<i>Cash flow</i> \$m	<i>Discount factor @ 2%</i>	<i>Present value</i> \$m
1–14	Interest	3	12.110	36.33
14	Redemption	11	0.758	83.38
				<u>119.71</u>

Market value is \$119.71 million.

## 7.3 Convertible debt



### Key term

The current **market value** of a convertible bond where conversion is expected is the sum of the present values of the future interest payments and the present value of the bond's conversion value.

$$\text{Conversion value} = P_0 (1 + g)^n R$$

Where:  $P_0$  is the current ex-dividend ordinary share price  
 $g$  is the expected annual growth of the ordinary share price  
 $n$  is the number of years to conversion  
 $R$  is the number of shares received on conversion



### Example: Valuation of convertible debt

What is the value of a 9% convertible bond if it can be converted in five years' time into 35 ordinary shares or redeemed at par on the same date? An investor's required return is 10% and the current market price of the underlying share is \$25 which is expected to grow by 4% per annum.

### Solution

Conversion value =  $P_0 (1 + g)^{nR} = \$25 \times 1.04^5 \times 35 = \$1,064.57$

Present value of \$90 interest per annum for five years at 10% =  $\$90 \times 3.791 = \$341.19$

Present value of the conversion value =  $\$1,064.57 \times 0.621 = \$661.10$

Current market value of convertible bond =  $\$341.19 + \$661.10 = \$1,002.29$

## 7.4 Preference shares



### Key term

**Preference shares** pay a fixed rate dividend, which is not tax-deductible for the company. The current ex-dividend value  $P_0$ , paying a constant annual dividend  $d$  and having a cost of capital  $K_{\text{pref}}$ :

$$P_0 = \frac{d}{K_{\text{pref}}}$$

## 8 Use of valuation methods in practice

The following discussion and extracts highlight how the various valuation techniques discussed in this chapter are used in practice. It is based on a real valuation, but the names and numbers have been changed to preserve confidentiality.



### Illustration: Valuation methods in practice

On 31 October 2009 Big Property Portfolio Ltd (acquirer) announced its intention to acquire all the shares in Golden Properties Hong Kong Limited (target) at a price of \$7.10 per share. In accordance with the Hong Kong Takeovers Code, the Board of the target company commissioned and released to the shareholders of Golden Properties an independent valuation of their company on 9 November 2009. A “Big Four Firm” compiled the Independent Advisor's Report and used the FCFF and multiples approaches for estimating the fair market value of Golden Properties.

The Free Cash Flow Method was the principal method of valuation and the process for estimating future cash flows is outlined in the Independent Advisor's Report as follows:

*'The free cash flows adopted in the DCF valuation are based on Golden Properties' budget model which models each lease through to expiry. It models the internal property management costs and adjusts for the outgoings which are not recoverable from tenants. The model makes an assumption of the vacancy period at the end of each lease and deducts Golden expenditure likely to be incurred and the rental revenues that each property will generate.'*

The model generated an enterprise value of \$3,120 million to which the independent advisor added \$62 million for surplus untenanted land. After deducting \$1,249 million in interest bearing debt and dividing by the number of shares in issue the advisor arrived at a fair market value of \$8.00 per share.

Later in the Independent Advisor's Report, the following sensitivity analysis was presented based on various WACC, real revenue growth and terminal growth rate assumptions. The “boxed” share price range was used to assess the enterprise value of Golden Properties and lead the Big Four Firm to conclude that the fair market value per share for Golden Properties was between \$7.40 and \$8.65 with a midpoint value of \$8.00.

Real revenue growth	WACC	Terminal growth		
		2.75%	3.00%	3.25%
0.75%	7.4%	\$8.65	\$8.85	\$9.60
0.75%	7.6%	\$7.55	\$8.20	\$8.90
1.00%	7.6%	\$7.80	\$8.45	\$9.20
1.00%	7.8%	\$7.25	\$7.85	\$8.50
1.25%	7.8%	\$7.50	\$8.10	\$8.80
1.25%	8.0%	\$7.00	\$7.55	\$8.20
1.50%	8.0%	\$7.25	\$7.80	\$8.45
1.50%	8.2%	\$6.75	\$7.30	\$7.85

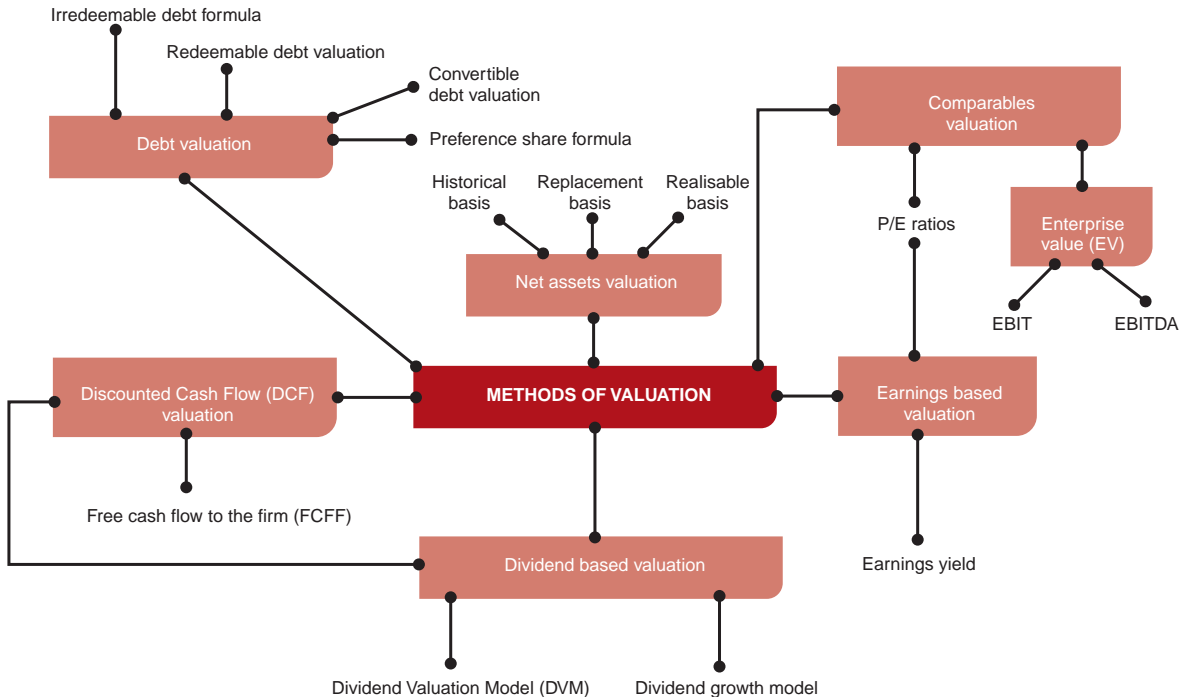
The Big Four Firm report then estimated the fair market value of Golden Properties using EBITDA market multiples for comparable companies. The table below highlights the wide range of multiples for comparable companies.

Comparable company multiples (names changed)	
Big Office Trust	14.0
DCL Investments	5.8
Callan Buildings	15.2
BING Property	20.5
Asian Income Property Trust	14.4
McKenzie Goodman	28.6
Silver Property Trust	16.5
Property for Commerce	14.6
South Asia Properties	12.4

The FCFF share price range of \$7.40 to \$8.65 was equivalent to an implied EBITDA multiple range of 15.8 to 17.4. As the implied EBITDA multiples range fell toward the middle of the comparable company range, the Big Four Firm argued that the FCFF method range was reasonable, especially as the multiples method did not reflect the value of gaining full control as reflected by their FCFF estimates.

Based on the independent advisor's valuations, the independent directors of Golden Properties unanimously advised in their 9 November 2009 target company statement that the shareholders should reject Big Property Portfolio's takeover offer.

# Topic recap



## Answer to self-test question

### Answer 1

Year	0	1	2	3	4	5
Sales growth		16.0%	16.0%	16.0%	16.0%	<i>onwards</i> 5.0%
Sales	150.0	174.0	201.8	234.1	271.6	285.2
<i>Cash flows:</i>		\$m	\$m	\$m	\$m	\$m
EBIT (Sales × 25%)		43.5	50.5	58.5	67.9	71.3
Less: tax (EBIT × 17.5%)		(7.6)	(8.8)	(10.2)	(11.9)	(12.5)
Less: One-off cost		(8.0)				
Add back depreciation (EBIT × 10%)		4.4	5.1	5.9	6.8	7.1
Capital expenditure (Sales × 11%)		<u>(19.1)</u>	<u>(22.2)</u>	<u>(25.8)</u>	<u>(29.9)</u>	<u>(31.4)</u>
Free Cash Flow		13.2	24.6	28.4	32.9	34.5
Year 4 value of cash flows from year 5 (see <b>Working</b> )					<u>575.0</u>	
Total		13.2	24.6	28.4	607.9	
Discount factor: 11%		<u>0.901</u>	<u>0.812</u>	<u>0.731</u>	<u>0.659</u>	
NPV		<u>11.9</u>	<u>20.0</u>	<u>20.8</u>	<u>400.6</u>	

**Total NPV = 453.3m**

	HK\$m
NPV of free cash flows	453
Less: debt	<u>(20)</u>
Value of equity	<u>433</u>

#### WORKING

Given that cash flows will increase by 5% each year in perpetuity from year 4 onwards, the PV of cash flows from year 5 in perpetuity can be calculated in terms of year 4 PV as follows:

$$PV = \frac{\text{Cash flow at T5}}{(\text{WACC} - g)} = \frac{\$34.50}{(0.11 - 0.05)} = \$575$$

## Exam practice



## Valuations

27 minutes

Company ABC has the following capital structure:

- 1,000,000 common stocks that have a dividend history of \$0.65, \$0.70, \$0.72, and \$0.75 per share over the last four years, respectively. The last dividend was \$0.75. The firm's cost of equity is 7.93%.
- 80,000 bonds outstanding with a face value of \$1,000 and coupon rate of 10% per year. Yield to maturity of this bond is 8% per year and pays interest semi-annually. This bond will be redeemed at 110 in four years.

*Required*

- Calculate the current stock price per share based on a simple arithmetic average of dividend growth rate for the past four years. **(2 marks)**
- Evaluate how much each \$1,000 bond is selling for now. **(3 marks)**
- Bond prices are very much affected by Yield- to- Maturity (YTM). What are the main determinants of a bond's YTM? **(5 marks)**
- Are preference shares (also known as preferred stocks) debt or equity? Base your answers on the characteristics of conversion, redemption, maturity date and voting rights. **(5 marks)**

**(Total = 15 marks)**

**HKICPA June 2012**



## Offer price

40 minutes

John is a young entrepreneur who owns two companies in Hong Kong. One of his companies is Glitters Company Ltd which manufactures high-end festival decorations. However, since the US and UK entered the economic downturn, Glitters has been facing an increasingly difficult business environment as these two markets account for about three quarters of its annual sales. Glitters' funding shortfall by the end of the year will be HK\$574 million.

To keep Glitters afloat, John has decided to sell his other company, Goldsteron. This company is a distributor of artificial jewellery products. Although Goldsteron is still making a decent profit, John believes that the competition will be keen in a few years' time when more competitors from Mainland China enter this market. Through the introduction of a banker, he has started discussions with Adam who is interested in buying the Goldsteron business. After conducting preliminary due diligence, Adam has obtained the following financial information:

- The current annual sales are HK\$1,386 million, and growth rates for the next four years are estimated to be 12%, 11%, 10% and 9%. In year 5 and thereafter, the growth rate will stabilise at 8%.
- The pre-tax profit margin is 13.5% and Adam expects that the margin can be maintained at this level in the future.
- Depreciation expenses are calculated as 11.5% of EBIT.
- The working capital requirements are about 20% of sales. At the end of June, the working capital stood at HK\$165 million.
- The additional capital expenditure requirements are estimated to be 10% of sales for year 1 and year 2, reducing to 6% in years 3 and 4 and thereafter.
- The tax rate is 17%.
- Goldsteron's total external borrowing amounted to \$133.5 million.

### Required

- Adam overheard from the market that John is in need of cash and thus Adam makes a conservative offer by applying a hurdle rate of 15.5% to calculate the enterprise value of Goldsteron. What is the price that Adam will offer if he is only prepared to pay only for the NPV of the equity value? **(15 marks)**
- John wishes to maintain a minimum cash level of HK\$500 million after selling Goldsteron by the end of the year. Can this be achieved if he accepts Adam's offer? **(2 marks)**
- If not, what is the hurdle rate that John should counter-offer Adam in order to achieve the minimum cash level of HK\$500 million? **(5 marks)**

**(Total = 22 marks)**

**HKICPA May 2010**



## chapter 18

# Mergers and acquisitions

### Topic list

- 1 Mergers and acquisitions as a method of corporate expansion**
  - 1.1 Advantages of mergers as an expansion strategy
  - 1.2 Disadvantages of mergers as an expansion strategy
  - 1.3 Types of merger
- 2 Evaluating the corporate and competitive nature of a given acquisition proposal**
  - 2.1 Synergy
  - 2.2 Market power
  - 2.3 Barriers to entry
  - 2.4 Supply chain security
  - 2.5 Economies of scale
  - 2.6 Economies of scope
  - 2.7 Financial synergy: tax and debt benefits
- 3 Due diligence**
  - 3.1 Guide to due diligence
  - 3.2 Due diligence and the SFC
- 4 Developing an acquisition strategy**
  - 4.1 Acquire undervalued firms
  - 4.2 Diversify to reduce risk
- 5 Criteria for choosing an appropriate target for acquisition**
- 6 Creating synergies**
  - 6.1 Revenue synergy
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- 7 Explaining high failure rate of acquisitions in enhancing shareholder value**
  - 7.1 Agency theory and acquisition strategies
  - 7.2 Errors in valuing a target firm (hubris hypothesis)
  - 7.3 Market irrationality
  - 7.4 Pre-emptive theory
  - 7.5 Window dressing
- 8 The global regulatory framework**
  - 8.1 Introduction
  - 8.2 Potential conflicts of interest
- 9 Key aspects of takeover regulation**
  - 9.1 The mandatory bid rule
  - 9.2 The principle of equal treatment
  - 9.3 Transparency of ownership and control
  - 9.4 The squeeze-out and sell-out rights
  - 9.5 The one share-one vote principle
  - 9.6 Board neutrality and anti-takeover measures
- 10 Hong Kong specific takeover regulation**
  - 10.1 The purpose of the Codes
  - 10.2 Status of the Codes
  - 10.3 The General Principles
  - 10.4 The Executive and Panel
  - 10.5 Rules of the Codes
- 11 Defensive tactics in a hostile takeover**
  - 11.1 Summary of defensive tactics
- 12 Methods of financing mergers**
  - 12.1 Methods of payment
  - 12.2 Cash purchases
  - 12.3 Funding cash offers
  - 12.4 Purchases by share exchange
  - 12.5 Use of convertible loan stock
  - 12.6 The choice between a cash offer and a paper offer
  - 12.7 Mezzanine finance and takeover bids
  - 12.8 Earn-out arrangements
- 13 Assessing a given offer**
  - 13.1 The market values of the companies' shares during a takeover bid
  - 13.2 EPS before and after a takeover
  - 13.3 Further points to consider: net assets per share and the quality of earnings
- 14 Effect of offer on financial position and performance**
  - 14.1 Effects on earnings
- 15 The role of the financial adviser in mergers and takeovers**

### Learning focus

In this chapter we discuss the advantages and disadvantages of mergers and acquisitions as forms of expanding the scale of operations of a firm. We look at the types of mergers and their purpose. We evaluate the merits of a given acquisition proposal and set out the criteria for choosing an appropriate target. The evaluation of synergy in the context of two real life examples is also considered.

In this chapter we also discuss the main factors that have influenced the development of the regulatory framework for mergers and acquisitions globally and outline the Hong Kong relevant regulation.

Finally, we discuss how a bidding firm can finance an acquisition and ways of estimating the possible impact of an offer on the performance and the financial position of the acquiring firm.

In practice, you might be asked to value a potential acquisition, evaluate any expected synergies or outline a suitable method of financing an acquisition or merger. In addition, you may be asked to assess the impact upon shareholders of a merger or acquisition.

### Learning outcomes

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Business combinations</b>		
Discuss possible reasons for business combinations and the perceived advantages and disadvantages		
<b>9.01</b>	<b>Regulation of takeovers and mergers</b>	2
9.01.01	Demonstrate an understanding of the principal factors influencing the development of the regulatory framework for mergers and acquisitions globally and in Hong Kong	
9.01.02	Be able to compare and contrast the shareholder versus the stakeholder models of regulation	
9.01.03	Identify the main regulatory issues which are likely to arise in the context of a given offer	
9.01.04	Understand the structure and status of the Takeovers Code in Hong Kong and explain its ten "General Principles"	
<b>9.02</b>	<b>Due diligence</b>	2
9.02.01	Define due diligence and recognise when it is relevant	
9.02.02	Explain the key features of a due diligence process	
9.02.03	Explain the role of due diligence in reducing the risk associated with business combinations	
9.02.04	Discuss the link between due diligence and business valuation	
<b>9.03</b>	<b>Context of takeover bid</b>	2
9.03.01	Discuss the arguments for and against the use of acquisitions and mergers as a method of corporate expansion	
9.03.02	Evaluate the corporate and competitive nature of a given acquisition proposal	
9.03.03	Compare the various sources of financing available for a proposed acquisition	

		Competency level
9.03.04	Evaluate a given acquisition proposal, assess its impact on the reported financial position and performance of the acquirer and recommend the most appropriate offer to be made	
9.03.05	Assess whether an offer is likely to be in the shareholders' best interests	
9.03.06	Advise the directors of a target company on the most appropriate defence if a specific offer is to be treated as hostile	
<b>9.04</b>	<b>Role of the professional adviser</b>	2
9.04.01	Explain the need for and identify the different professional advisers that may be involved in a business combination	
9.04.02	Discuss the role and impact of the professional adviser at different stages in the transaction	
<b>Regulatory environment</b>		
Discuss the regulatory environment and where appropriate apply ethical standards and professional and industry guidance		
<b>10.04</b>	<b>Stock Exchange regulation and reporting requirements</b>	2
10.04.02	Understand the regulation on takeovers and mergers and share repurchases	

# 1 Mergers and acquisitions as a method of corporate expansion



## Topic highlights

Although **growth strategy through acquisition** requires high premiums, it is widely used by corporations as an alternative to **internal organic growth**.



## Key terms

A **merger** describes a combination of two companies of roughly equal size.

An **acquisition** describes the purchase of a smaller company by a larger company.

However, in many respects mergers and acquisitions are similar.

Companies may decide to increase the scale of their operations through a strategy of **internal organic growth** by **investing money** to **purchase** or **create assets** and product lines **internally**.

Alternatively, companies may decide to grow by **buying** other **companies** in the market thus acquiring ready made tangible and intangible assets and product lines. Which is the right strategy? The decision is one of the most difficult the financial manager has to face.

The right answer is not easy to arrive at. **Organic growth** in areas where the company has been successful and has expertise may present **few risks** but it can be **slow**, **expensive** or sometimes **impossible**. On the other hand **acquisitions** require **high premiums** that make the **creation of value** difficult. Irrespective of the merits of a **growth strategy** by acquisition or not, the fact remains that this is used by corporations extensively.

The value of acquisitions globally has grown substantially since the early 1990s.

A 2010 report by the M&A database Zephyr estimated that the value of global M&A activity peaked in 2007, the year when the banking crisis in the US began, leading to economic recession in many countries. Estimated M&A values were:

2007: \$5.6 trillion

2008: \$4.2 billion

2009: \$3.6 billion.

M&A activity varies with economic conditions, and it is not a story of uninterrupted growth in volume each year. Mergers and acquisitions are more common when economic prospects are good, and businesses are optimistic about growth in profits. In contrast, the volume of merger and acquisition activity globally in the first quarter of 2012 was at its lowest level for two years, following economic recession or low growth in many countries in 2011. Recovery since then has been slow.

A **merger** describes a combination of two companies of roughly equal size. An **acquisition** describes the purchase of a smaller company by a larger company. However, in many respects mergers and acquisitions are similar.

When companies decide to expand their scale of operations by merging with or acquiring another company, there are many ways that this strategy can be implemented and many possible target companies.

In this section we will look at the each type of merger (or acquisition) that companies have used for growth and present the arguments for and against each particular case. As a general rule, expansion either by building new plants or by acquisition should not be undertaken unless the expansion results in increased profitability for the company and enhances shareholder wealth.

## 1.1 Advantages of mergers as an expansion strategy



### Topic highlights

As an **expansion strategy** mergers or acquisitions are thought to provide a quicker way of acquiring productive capacity and **intangible assets** and accessing **overseas markets**.

The four main advantages put forward are summarised below:

- (a) **Speed.** The acquisition of another company is a quicker way of implementing a business plan, as the company acquires another organisation that is already in operation. An acquisition also allows a company to reach a certain optimal level of production much quicker than through organic growth. Acquisition as a strategy for expansion is particularly suitable for management with rather short time horizons.
- (b) **Lower cost.** An acquisition may be a cheaper way of acquiring productive capacity than through organic growth. An acquisition can take place, for instance, through an exchange of shares which does not have an impact on the financial resources of the firm.
- (c) **Acquisition of intangible assets.** A firm through an acquisition will acquire not only tangible assets but also intangible assets, such as brand recognition, reputation, customer loyalty and intellectual property which are more difficult to achieve with organic growth.
- (d) **Access to overseas markets.** When a company wants to expand its operations in an overseas market, acquiring a local firm may be the only option of breaking into that market.

## 1.2 Disadvantages of mergers as an expansion strategy



### Topic highlights

An **expansion strategy** through acquisition is associated with exposure to a higher level of **business and financial risk**.

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There are a number of risks associated with expansion through acquisitions:

- (a) **Exposure to business risk.** Acquisitions normally represent large investments by the bidding company and account for a large proportion of their financial resources. If the acquired company does not perform as well as it was envisaged, then the effect on the acquiring firm may be catastrophic.
- (b) **Exposure to financial risk.** During the acquisition process, the acquiring firm may have less than complete information on the target company, and there may exist aspects that have been kept hidden from outsiders.
- (c) **Acquisition premium.** When a company acquires another company, it normally pays a premium over its present market value. This premium is normally justified by the management of the bidding company as necessary for the benefits that will accrue from the acquisition. However, too large a premium may render the acquisition unprofitable.
- (d) **Managerial competence.** When a firm is acquired, which is large relative to the acquiring firm, the management of the acquiring firm may not have the experience or ability to deal with operations on the new larger scale, even if the acquired company retains its own management.
- (e) **Integration problems.** Most acquisitions are beset with problems of integration, as each company has its own culture, history and ways of operation.

## 1.3 Types of merger



### Topic highlights

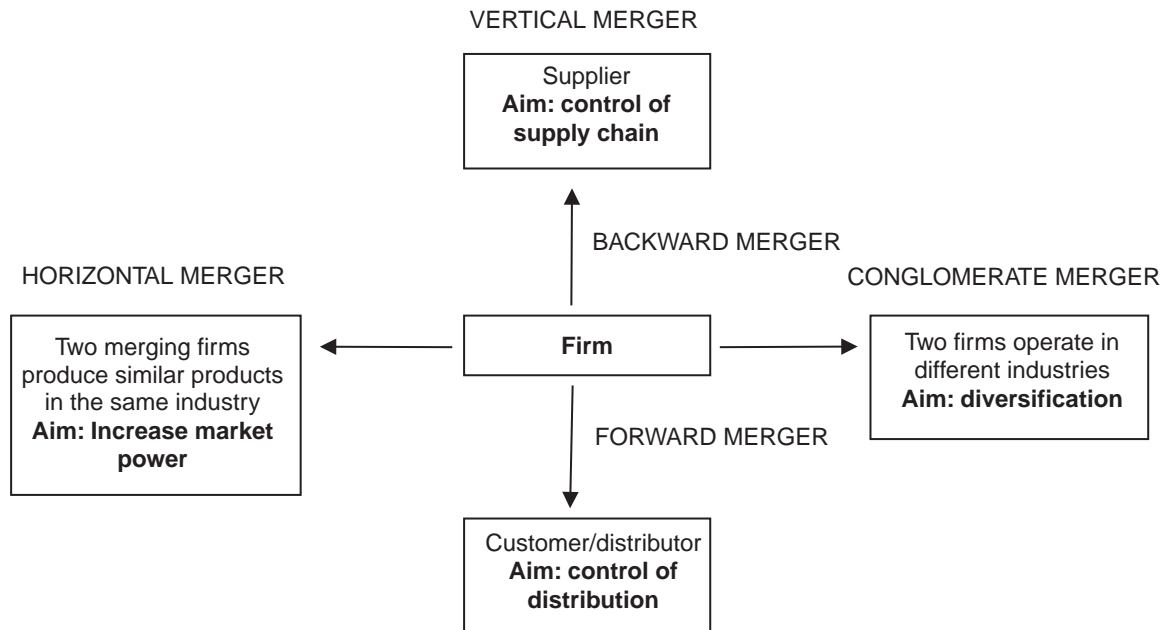
Mergers can be classified as **horizontal, vertical or conglomerate**, depending on the type of company that is acquired.

A merger generally involves two companies pooling their interests and having common ownership of the new company's assets.

An acquisition usually involves a stronger company (the “predator”) taking over the assets of a smaller company (the “target”) and assuming ownership of these assets.

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Mergers and acquisitions can be classified in terms of the company that is acquired or merged with, as **horizontal, vertical or conglomerate**. Each type of merger represents a **different way of expansion** with **different benefits** and **risks**.



**Key term**

A **horizontal merger** is one in which one company acquires another company in the same line of business.

A horizontal merger happens between firms which were formerly competitors and who produce products that are considered **substitutes** by their buyers. The main impact of a horizontal merger is therefore to **reduce competition** in the market in which both firms operate. These firms are also likely to purchase the same or substitute products in the input market. A **horizontal merger** is said to achieve **horizontal integration** although competition regulation may act to prevent this type of merger.



**Case studies**

Examples of horizontal mergers include the merger of Daimler-Benz and Chrysler, the merger of Exxon and Mobil, the merger of Ford and Volvo and the merger of China Netcom and China Unicom (2008).

In each of the above examples, the companies could have expanded their operations in their respective markets, but expansion through acquisition was considered a better option.



**Key term**

**Vertical mergers** are mergers between firms that operate at different stages of the same production chain, or between firms that produce complementary goods such as a newspaper acquiring a paper manufacturer. Vertical mergers are either backward when the firm merges with a supplier or forward when the firm merges with a customer.



**Case study**

An example of a vertical merger is the merger between **Time Warner Incorporated**, a major cable operation, and the **Turner Corporation**, which produces CNN, TBS, and other programmes. In this merger, the Federal Trade Commission (FTC) was alarmed by the fact that such a merger would

allow Time Warner to monopolise much of the programming on television. Ultimately, the FTC voted to allow the merger but stipulated that the merger could not act in the interests of anti-competitiveness to the point that public good was harmed.



### Key term

**Conglomerate mergers** are mergers which are neither vertical nor horizontal. In a conglomerate merger a company acquires another company in an unrelated line of business, for example a newspaper company acquiring an airline.



### Case studies

Examples of conglomerate mergers include the expansion of **Mercedes Benz** into the aerospace industry, and the acquisition of **Eagle Star**, an insurance company, by **BAT**, the tobacco industry giant. Conglomerate mergers were the primary type of mergers in the 1960s and 70s.

## 2 Evaluating the corporate and competitive nature of a given acquisition proposal



### Topic highlights

Expansion by **organic growth** or by acquisition should only be undertaken if it leads to an **increase** in the **wealth** of the **shareholders**.

We have discussed so far the reasons why a company may opt for growth by acquisition instead of organic growth and the three main types of mergers. We should not of course lose sight of the fact that expansion either by organic growth or by acquisitions is only undertaken if it leads to an increase in the wealth of the shareholders.

### 2.1 Synergy

An increase in shareholder wealth should be expected if an acquisition or merger creates synergy.



### Key term

**Synergy** is defined as the creation of additional value when two organisations are combined together. It can be described as a “2 + 2 = 5” effect.

- Synergy may **increase revenues** or **reduce costs**. For example, the number of employees in a combined organisation, in sales or administration, may be less than the total number of employees in the two separate companies before the merger or acquisition. If so, there will be a reduction in employee costs. A combined organisation may be able to use equipment capacity, warehouse space or office space more efficiently, so that costs can be saved.
- Management synergy occurs when the management of the acquiring company can manage the assets of the target company better than the incumbent management, so **creating additional** value for the new owners over and above the current market value of the company.



## 2.2 Market power

The impact on **market power** is one of the most important aspects of an acquisition. By acquiring another firm, in a horizontal merger, the competition in the industry is reduced and the company may be able to charge higher prices for its products. Competition regulation however may prevent this type of acquisition. To the extent that both companies purchase from the same suppliers, the merged company will have greater bargaining power when it deals with its suppliers.

## 2.3 Barriers to entry

A second aspect of an acquisition proposal and related to the previous one is the possibility of creating **barriers to entry** through **vertical acquisitions** of production inputs.



### Topic highlights

Aspects of a merger that will have an impact on the firm's **competitive position** include **increased market power**, the **creation of barriers to entry**, **supply chain security** and **economies of scope and scale**.

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### Case study

A classic example of barriers to entry is the nearly exclusive ownership, before the Second World War, of all known bauxite deposits by **ALCOA**, an aluminium refining company. If a firm wished to enter into aluminium refining in the USA it would have found it impossible.

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## 2.4 Supply chain security

A third aspect that has an impact on the competitive position of a firm is the acquisition of a firm which has an important role in the **supply chain**. Companies acquire suppliers to ensure that there is no disruption in the supply of the inputs that will threaten the ability of the company to produce, sell and retain its competitive position. Although the risk of disruption can be eliminated by long-term contracts, acquisition is still considered an important option.



### Case study

The classic example of a company acquiring a supplier in spite of the presence of a long-term supply contract is the acquisition of **Fisher Body**, the manufacturer of car bodies, by GM in 1926. This acquisition took place despite a 10-year contractual agreement between the companies that was signed in 1919.

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## 2.5 Economies of scale

The merged company will be bigger in size than the individual companies and it will have a larger scale of operations. The larger scale of operations may give rise to what is called economies of scale from a reduction in the cost per unit resulting from increased production, realised through operational efficiencies. **Economies of scale** can be accomplished because as production increases, the cost of producing each additional unit falls. (Economies of scale are a form of operating synergy.)

## 2.6 Economies of scope

**Scope economies**, or changes in product mix, are another potential way in which mergers might help improve the performance of the acquiring company. Economies of scope occur when it is more economical to produce two or more products jointly in a single production unit than to produce the products in separate specialising firms. Scope economies can arise from two sources:

- (a) The spreading of fixed costs over an expanded product mix
- (b) Cost complementarities in producing the different products

Economies of scope have been invoked as the main reason driving mergers in the financial sector. The fixed capital of a bank branch for example, or its computer systems are more fully utilised when they issue not just banking products such as deposits and loans, but also insurance products and investment services. These additional services allow the spread of fixed costs over a larger number of activities reducing the unit cost of each activity.

## 2.7 Financial synergy: tax and debt benefits

The final aspect in an acquisition proposal has to do with the existence of financial synergies which take the form of diversification, tax and debt benefit synergies.

# 3 Due diligence



### Topic highlights

Due diligence is the process of investigation into a potential investment, usually carried out by a professional firm on behalf of investors. The process usually involves an examination of operations and management and the verification of material facts. Due diligence may be carried out in a variety of commercial settings, including financing, initial public offerings (IPOs), banking, and divestitures. For the purposes of this chapter we will focus on the major type of due diligence – that relating to mergers and acquisitions.

In Hong Kong, the SFC requires that the management of a company performs the necessary due diligence, prior to any merger or acquisition. The purpose of this due diligence exercise is to determine that the information about the company to be acquired is correct, accurate, and properly disclosed. During this process, the parties need to determine that all critical issues have been identified and that key assumptions used in the investment proposal are accurate.

Due diligence is not just about checking the financials. While this is a vital part, it should not be the sole focus to the detriment of other areas. These other areas include the people, IT systems, the environment and intellectual property.

Due diligence has some of the attributes of an audit and is often administered by the audit department of large accounting firms. As with an audit, the scope of a due diligence project needs to be defined carefully in an engagement letter.

The process of due diligence is usually carried out by a team whose members have expertise in various relevant functional areas. These team members are usually employees of the professional firm carrying out the engagement unless a particular expertise is needed that cannot be found within the firm. The team will request documents from various departments within the company being assessed, which will assist in obtaining the desired information and reaching the desired goals.

### 3.1 Guide to due diligence

The areas to cover in a typical due diligence project include the following:

Commercial due diligence

- Top down analysis
- Understanding the stage of the organisation in its life cycle
- The link with strategy
- Strategic analysis, including SWOT and Porter's five forces
- The changing environment: environmental, social and political risks

Financial due diligence

- The statement of financial position
- Contingencies, capital commitments, leases, etc.
- Intangibles – measuring and managing IP, brands, goodwill, etc.
- Forecasts – identifying variables most at risk

Legal due diligence

- Getting the corporate legal structure right
- Understanding legal documents, such as Sale & Purchase agreements
- The legal environment: Takeovers Code, Employment Law, etc.
- Tax implications: Capital gains, assessed losses, etc.

Other areas: Corporate culture, IT, Intellectual Property and Environmental due diligence

- Understanding the people perspective
- Identifying environmental risks
- Quantifying the costs of meeting any continuing and/or future obligations.

There are available commercially a number of due diligence guides and checklists. See for example: [www.allbusiness.com/business-finance/equity-funding-private-equity-venture/81-1.html](http://www.allbusiness.com/business-finance/equity-funding-private-equity-venture/81-1.html)

### 3.2 Due diligence and the Securities and Futures Commission (SFC)

Due diligence processes in Hong Kong have come under increasing scrutiny in the last few years, with suspicions that due diligence was not always as rigorous as it should be. After several listed companies experienced high-profile financial difficulties, in 2012, the SFC published proposals for changes to the rules on due diligence, following a period of consultation. Among the SFC proposals is a recommendation that the law should be clarified so that sponsor firms have criminal as well as civil liability for defective prospectuses. Criminal liability should depend on whether a sponsor firm knowingly or recklessly approved a prospectus containing an untrue statement (including an omission) which was materially adverse from an investor's perspective.

The Chief Executive Officer of the SFC (Mr Ashley Alder) was reported as saying: "The changes, along with a streamlined regulatory process, will incentivise sponsors to raise standards, pick the right deals and manage them well which should in turn reduce risks for investors and all those involved in IPOs.... Although we are now experiencing lower IPO volumes, these reforms will underpin market confidence during all market cycles."

## 4 Developing an acquisition strategy



### Topic highlights

The main reasons behind a strategy for acquiring a target firm includes the target being undervalued or to diversify operations in order to reduce risk.

Not all firms considering the acquisition of a target firm have acquisition strategies, and even if they do, they do not always stick to them. We are going to look at a number of different motives for acquisition in this section. A coherent acquisition strategy should be based on one of these motives.

## 4.1 Acquire undervalued firms

This is one of the main reasons for firms becoming targets for acquisition. If a predator recognises that a firm has been **undervalued** by the market it can take advantage of this discrepancy by purchasing the firm at a **“bargain”** price. The difference between the real value of the target firm and the price paid can then be seen as a **“surplus”**.

For this strategy to work, the predator firm must be able to fulfil three requirements.

### 4.1.1 Find firms that are undervalued

This might seem to be an obvious point but in practice it is not easy to have such **superior knowledge** ahead of other predators. The predator would either have to have access to **better information** than that available to other market players, or have **superior analytical tools** to those used by competitors.

### 4.1.2 Access to necessary funds

It is one thing being able to identify firms that are undervalued – it is quite another **obtaining** the funds to acquire them. Traditionally, **larger firms** tend to have **better access** to capital markets and internal funds than smaller firms. A history of success in **identifying** and **acquiring** undervalued firms will also make funds more accessible and future acquisitions easier.

### 4.1.3 Skills in executing the acquisition

There are **no gains** to be made from driving the share price up in the process of acquiring an undervalued firm. For example, suppose the estimated value of a target firm is \$500 million and the current market price is \$400 million. In acquiring this firm, the predator will have to pay a **premium**. If this premium exceeds 25% of the current market price (the difference between estimated value and current market price divided by current market price) then the price paid will actually **exceed** the estimated value. **No value** would therefore be created by the predator.

## 4.2 Diversify to reduce risk

Firm-specific risk (**unsystematic risk**) can be reduced by holding a diversified portfolio. This is another potential acquisition strategy. Predator firms' managers believe that they may reduce earnings volatility and risk – and increase potential value – by acquiring firms in other industries.

### 4.2.1 Diversifying by acquisition versus diversifying across traded shares

Can diversification be achieved more efficiently at **company** level or at **individual investor** level? Obviously, **individual investors** can diversify much more **cheaply** than companies can. All they have to do is buy shares in companies in different industries, whereas companies have to go through long, complicated and expensive processes in order to acquire other companies.

There are **two exceptions** to this:

- (a) Owners of private firms with all or most of their wealth invested in the firm. The owner is exposed to all the risk, therefore there is a greater case for diversification.
- (b) Incumbent managers who have large amounts of their wealth invested in the firm. If these managers diversify through acquisition, they will reduce their exposure to total risk. This opens up other arguments as to whether these managers are acting in the best interests of the other shareholders, if the other shareholders do hold well diversified portfolios of other shares.

## 5 Criteria for choosing an appropriate target for acquisition



### Topic highlights

There are a number of different aspects to successful target identification. One important emerging need is to identify acquisitions in overseas markets. Acquirers must be able to assess the acquisition from the target's point of view, as well as from their own. But understanding the regulatory and competitive environment in another country can be complex and time-consuming.



### Case study

**Microsoft** uses the enormous resources of its extended enterprise to identify potential acquisitions. The business groups take the lead, looking within their own and related markets for opportunities. Ideas also come from venture capital relationships in both the United States and Europe, as well as through the company's alliance and partner community.

Acquirers must also be able to identify and capture new skills in the companies they buy.



### Case study

**Cisco Systems**, often known as the “acquirer of choice” by target companies, has been an outstanding example of success in this regard. The maker of Internet networking equipment emphasises that it acquires people and ideas, not just technologies. The leadership and talent of the acquired company must be committed to seeing the acquisition and the integration of the company work. It is not the first version of a product that becomes a billion-dollar market, Cisco argues, but the subsequent versions. Cisco needs the acquired company's talent to stay and build those next versions.

The criteria that should be used to assess whether a target is appropriate will depend on the motive for the acquisition. The main criteria that are consistent with the underlying motive are these:

- (a) **Benefit for acquiring undervalued company.** The target firm should trade at a price below the estimated value of the company when acquired. This is true of companies which have assets that are not exploited.
- (b) **Diversification.** The target firm should be in a business which is different from the acquiring firm's business and the correlation in earnings should be low to avoid increased exposure to the same markets and customers for the same products and/or services. If the correlation in earnings is high, there may be duplication of effort and potential competing between target and acquirer for the same earnings.
- (c) **Operating synergy.** The target firm should have the characteristics that create the operating synergy. Therefore, the target firm should be in the same business in order to create cost savings through economies of scale, or it should be able to create a higher growth rate through increased monopoly power.
- (d) **Tax savings.** The target company should have large claims to be set off against taxes and not sufficient profits. The acquisition of the target firm should provide a tax benefit to acquirer.
- (e) **Increase the debt capacity.** This happens when the target firm is unable to borrow money or is forced to pay high rates. The target firm should have capital structure such that its acquisition will reduce insolvency risk and will result in increasing its debt capacity.
- (f) **Disposal of cash slack.** This is where a cash rich company seeks a development target. The target company should have great projects but no funds. This happens when, for

example, the target company has some exclusive right to product or use of asset but no funds to start activities.

- (g) **Access to cash resources.** A company with a number of cash intensive projects or products in their pipeline, or heavy investment in R&D might seek a company that has significant cash resources or highly cash generative product lines to support their own needs.
- (h) **Control of the company.** In this case the objective is to find a target firm which is badly managed and whose stock has underperformed the market. The management of an existing company is not able to fully utilise the potential of the assets of the company and the bidding company feels that it has greater expertise or better management methods. The bidding company therefore believes that the assets of the target company will generate for them a greater return than for their current owners. The criterion in this case is a market valuation of the company which is lower than, for example, the value of its assets.
- (i) **Access to key technology.** Some companies do not invest significantly in R&D but acquire their enabling technologies by acquisition. Pharmaceutical companies who take over smaller biotechs in order to get hold of the technology are a good example of this type of strategy.

## 6 Creating synergies



### Topic highlights

The three main types of synergy to be gained from acquisitions or mergers are **revenue**, **cost** and **financial** synergies.

The existence of synergies has been presented as one of the two main explanations that may increase shareholder value in an acquisition. Indeed the identification, quantification and announcement of these synergies are an essential part of the process, as shareholders of the companies need to be persuaded to back the merger.

An example below shows how a takeover announcement presents its estimate of synergies.



### Case study

In April 2013, China's Ministry of Commerce approved the largest merger in mining history between Glencore and Xstrata and, along with approval from regulatory bodies in Europe and South Africa, the merger took place on 2<sup>nd</sup> May.

“Glencore Xstrata PLC told investors on Friday it would return excess cash, slash costs and might sell unwanted assets, raising expectations it would easily exceed planned synergies of \$500-million (U.S.) from the deal that created the new group.

Unveiling a management team packed with veteran Glencore executives, the group promised to “cut bureaucracy and duplication,” vowing it would reduce administrative staff, and cut divisional offices and underperforming projects to ensure success, even at a time of cooling commodity prices.

Mining mega-deals have had a mixed record of success over the past decade, but a day after Glencore sealed the acquisition of Xstrata, the biggest-ever takeover in the sector, its shares soared 6 per cent, helped by a jump in the price of copper. At current prices, the group is worth \$73-billion.

“If we can cut costs enough, get rid of these corporate head offices, we can cut a lot of fat out of the system. These synergies and overhead reductions – that figure can ensure this merger is a success,” chief executive officer Ivan Glasenberg said in an interview.”

Source: <http://m.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/newly-merged-glencore-xstrata-promises-aggressive-cuts/article11727789/?service=mobile>

In this section we consider ways, through a series of examples, of identifying revenue, cost and financial synergies when a target company is evaluated for acquisition.

## 6.1 Revenue synergy



### Key term

**Revenue synergy** exists when the acquisition of the target company will result in **higher revenues** for the acquiring company, **higher return on equity** or a **longer period of growth**.

Revenue synergies arise from:

- increased market power
- marketing synergies
- strategic synergies

Revenue synergies are more difficult to quantify relative to **financial** and **cost synergies**. When companies merge, cost synergies are relatively easy to assess pre-deal and to implement post-deal. But revenue synergies are more difficult. It is hard to be sure how customers will react to the new merged business (in financial services mergers, massive customer defection is quite common), whether customers will actually buy the new, expanded “total systems capabilities”, and how much of the company’s declared cost savings they will demand in price concessions (this is common in automotive supplier M&A where the customers have huge purchasing power over the suppliers). Nevertheless, revenue synergies must be identified and delivered. The stock markets will be content with cost synergies for the first year after the deal, but thereafter they will want to see growth. Customer Relationship Management and Product Technology Management are the two core business processes that will enable the delivery of revenue.

## 6.2 Cost synergy



### Key term

**Cost synergy** results primarily from the existence of **economies of scale**.

As the level of operation increases, the marginal cost falls and this will be manifested in greater operating margins for the combined entity. The resulting **costs** from **economies of scale** are normally estimated to be substantial.

## 6.3 Sources of financial synergy

### 6.3.1 Diversification

Acquiring another firm as a way of reducing risk cannot create wealth for two publicly traded firms, with diversified stockholders, but it could create wealth for private firms or closely held publicly traded firms. A takeover, motivated only by diversification considerations, has no effect on the combined value of the two firms involved in the takeover. The value of the combined firms will always be the sum of the values of the independent firms. In the case of private firms or closely held firms, where the owners may not be diversified personally, there might be a potential value gain from diversification.

### 6.3.2 Cash slack

When a firm with significant excess cash acquires a firm, with great projects but insufficient capital, the combination can create value. Managers may reject profitable investment opportunities if they have to raise new capital to finance them. It may, therefore, make sense for a company with excess cash and no investment opportunities to take over a cash-poor firm with good investment

opportunities, or *vice versa*. The additional value of combining these two firms lies in the present value of the projects that would not have been taken if they had stayed apart, but can now be taken because of the availability of cash.



### Illustration: Synergy

Assume that Softscape Inc., a hypothetical company, has a severe capital rationing problem, that results in approximately US\$500 million of investments, with a cumulative net present value of US\$100 million, being rejected. IBM has far more cash than promising projects, and has accumulated US\$4 billion in cash that it is trying to invest. It is under pressure to return the cash to the owners. If IBM takes over Softscape Inc., it can be argued that the value of the combined firm will increase by the synergy benefit of US\$100 million, which is the net present value of the projects possessed by the latter that can now be taken with the excess cash from the former.

### 6.3.3 Tax benefits

The tax paid by two firms combined together may be lower than the taxes paid by them as individual firms. If one of the firms has tax deductions that it cannot use because it is losing money, while the other firm has income on which it pays significant taxes, the combining of the two firms can lead to tax benefits that can be shared by the two firms. The value of this synergy is the present value of the tax savings that accrue because of this merger. The assets of the firm being taken over can be written up to reflect new market value, in some forms of mergers, leading to higher tax savings from depreciation in future years.

### 6.3.4 Debt capacity

By combining two firms, each of which has little or no capacity to carry debt, it is possible to create a firm that may have the capacity to borrow money and create value. Diversification will lead to an increase in debt capacity and an increase in the value of the firm. This has to be weighed against the immediate transfer of wealth that occurs to existing bondholders in both firms from the stockholders. When two firms in different businesses merge, the combined firm will have less variable earnings, and may be able to borrow more (have a higher debt ratio) than the individual firms.

## 7 Explaining high failure rate of acquisitions in enhancing shareholder value



### Topic highlights

A number of theories have been put forward to explain the **high failure rate of acquisitions in enhancing shareholder value**. These include **agency theory**, **errors in valuing a target firm**, **market irrationality** and the **pre-emptive theory**.

The purpose of this section is to assess the various explanations put forward for the high failure rate of acquisitions in enhancing shareholder value.

One of the most common empirical findings is that in an acquisition the shareholders of the **acquiring company** seldom enjoy any benefits, whereas the shareholders of the **target company** do. What is the reason for the failure to enhance shareholder value? We said earlier that there must be some evidence of synergies or concrete proof of managerial superiority in the acquiring firm to produce an acquisition that would enhance shareholder value. A number of alternative theories explain the phenomenon of failure by postulating that the main motive of the management



of a company when they bid for another company is not maximisation of the shareholder value but other motives which have been found to be consistent with empirical evidence.

## 7.1 Agency theory and acquisition strategies



### Key term

The **agency theory** suggests that takeovers are primarily motivated by the **self-interest** of the acquirer's management.

Reasons that have been advanced to explain the divergence in the interests of the management and the shareholder of a company include:

- diversification of management's own portfolio
- use of free cash flow to increase the size of the firm
- acquiring assets that increase the firm's dependence on management

The common idea of these explanations is that acquisitions is a process that results in value being transferred from the shareholder of the acquiring firm to the managers of the acquiring firm.

The implication of the agency theory is that because the target firm knows that a bid is in the interest of the management rather than the shareholders of the acquiring firm, it sees this bid as an opportunity to extract some of the value that would have gone to acquiring firm management. How much value the target firm can extract depends on the bargaining power they have.

## 7.2 Errors in valuing a target firm (hubris hypothesis)

Managers of the bidding firm may advise their company to bid too much as they do not know how to value an essentially recursive problem. A risk-changing acquisition cannot be valued without revaluing your own company on the presupposition that the acquisition has gone ahead. The value of an acquisition cannot be measured independently. As a result the merger fails as the subsequent performance cannot compensate for the high price paid.

## 7.3 Market irrationality

If a **rational manager** observes that his firm's stocks are overvalued in the short run, he has an incentive to exchange the overvalued stocks to real assets before the market corrects the overvaluation. A merger therefore occurs in order to take advantage of market irrationality and it is not related to either synergies or better management. The lack of the latter may in the end lead to a failing merger even though the acquired firm was bought cheaply through the exchange of over-valued shares.

## 7.4 Pre-emptive theory

This theory explains why acquiring firms pursue value-decreasing horizontal mergers even if managers are rational and are trying to maximise shareholder value. If large cost savings can be achieved through the merger by several potential acquiring firms, these firms will compete for the opportunity to merge with the target. The winning firm who acquires the target could become a lower cost producer, improve its product market position and gain market share from the rivals. Intuitively, if a firm fears that one of its rivals will gain large cost savings or synergies from taking over some other firm, then it can be rational for the first firm to pre-empt this merger with a takeover attempt of its own.

## 7.5 Window dressing

Another reason for the high failure rate is that companies are not acquired because of the synergies that they may create, but in order to present a better financial picture in the short term.

# 8 The global regulatory framework

## 8.1 Introduction



### Topic highlights

Takeover regulation is an important corporate governance device in protecting the interests of all stakeholders, as the agency problem can have a significant potential impact on mergers and acquisitions.

The **agency problem** and the issues arising from the separation of ownership and control have a significant potential impact on mergers and acquisitions.

In the 1980s there was both a merger boom and a succession of corporate scandals which made the need for adequate regulation both from the point of view of the shareholders and the wider group of stakeholders more pressing.

**Takeover regulation** is an important **corporate governance device** that seeks to protect the interests of **minority shareholders** and other types of **stakeholders** and ensure a **well-functioning market** for corporate control.

## 8.2 Potential conflicts of interest

Takeover regulation seeks to regulate the conflicts of interest between the management and shareholders of both the **target** and the **bidder**.

There are **two main agency problems** that emerge in the context of a takeover that regulation seeks to address:

- (a) The first is the **protection of minority shareholders**. In addition to existing minority shareholders, transfers of control may turn existing majority shareholders of the target into minority shareholders.
- (b) The second is the possibility that the management of the target company may implement **measures to prevent the takeover** even if these are **against stakeholder interests**.

# 9 Key aspects of takeover regulation

## 9.1 The mandatory bid rule

The aim of this rule is to protect minority shareholders by providing them with the opportunity to exit the company at a fair price once the bidder has accumulated a certain percentage of the shares.

National thresholds vary between countries but the trend has been for these to decrease over the years.

In the UK, for example, this threshold is specified by the City Code for Takeovers and Mergers and is at 30%, which is similar to the Hong Kong requirement.

The mandatory-bid rule is based on the grounds that once the bidder obtains control he may exploit his position at the expense of minority shareholders. This is why the mandatory-bid rule normally also specifies the price that is to be paid for the shares.

The bidder is normally required to offer to the remaining shareholders a price not lower than the highest price for the shares already acquired during a specified period prior to the bid.

## 9.2 The principle of equal treatment

In general terms, the principle of equal treatment requires the bidder to offer to minority shareholders the same terms as those offered to earlier shareholders from whom the controlling block was acquired.

## 9.3 Transparency of ownership and control

The disclosure of information about major shareholdings is an important element of investor protection and a well-functioning corporate market. The transparency enables the regulator to monitor large shareholders, minimise potential agency problems and investigate insider dealing. It also enables both minority shareholders and the market to monitor large shareholders who may be able to exercise undue influence or exact benefits at the expense of other shareholdings.

## 9.4 The squeeze-out and sell-out rights

Squeeze-out rights gives the bidder who has acquired a specific percentage of the equity (usually 90%) the right to force minority shareholders to sell their shares.

Sell-out rights enable minority shareholders to require the majority shareholder to purchase their shares.

## 9.5 The one share-one vote principle

Where the one share-one vote principle is upheld, arrangements restricting voting rights are forbidden.

Differentiated voting rights, such as non-voting shares and dual-clan shares with multiple voting rights, enable some shareholders to accumulate control at the expense of other shareholders and could provide a significant barrier to potential takeovers.

The effect of the break-through rule, where this is allowed by corporate law, is to enable a bidder with a specified proportion of the company's equity to break-through the company's multiple voting rights and exercise control, as if one share-one vote existed.

## 9.6 Board neutrality and anti-takeover measures

Seeking to address the agency issue where management may be tempted to act in their own interests at the expense of the interests of the shareholders, several regulatory devices propose board neutrality. For instance, the board would not be permitted to carry out post-bid aggressive defensive tactics (such as selling the company's main assets, known as crown jewels defence, or entering into special arrangements giving rights to existing shareholders to buy shares at a low price, known as poison pill defence), without the prior authority of the shareholders.

# 10 Hong Kong specific takeover regulation

The Codes on Takeovers and Mergers, and Share Repurchases (together "the Codes") have been issued by the SFC in consultation with the Takeovers and Mergers Panel (the Panel).

## 10.1 The purpose of the Codes

The purpose of the Codes is to protect shareholders from unfair treatment in a takeover or merger involving their company, or when a company repurchases some of its shares.

In a takeover, there could be a risk that some shareholders will not be informed about a bid for their company, so that they cannot make an informed decision about whether or not to accept the offer. There is also a risk that some shareholders might be treated more favourably than others, for example by receiving a better price for their shares than others. The Codes set out standards of conduct and behaviour for everyone involved in a takeover or merger, including the directors of the companies concerned, their professional advisers, and other participants in the financial markets.

The introduction to the Codes explains that their purpose is to ensure fair treatment for shareholders who are affected by a takeover, merger or share repurchase offer and:

- require equality of treatment for shareholders
- require disclosure of timely and adequate information to enable shareholders to make a decision as to the merit of an offer
- ensure that there is a fair and informed market in the shares of the companies affected.

Without a Takeovers Code, there would be many ways in which an offeror or some of the shareholders in an offeree company might benefit at the expense of many shareholders in the offeree company. Ethical issues and concerns about misconduct can arise, which is why the role of the Executive and Panel can be important.

The Codes do not have the force of law, but their general principles and rules are applied by the Executive and Takeover Panel when making rulings about a takeover or merger. The Stock Exchange Listing Rules expressly require compliance with the Codes. Anyone who breaches the Code risks having the facilities of the Hong Kong financial markets withheld from them.



### Topic highlights

The Codes are not concerned directly with the financial or other merits of any proposals (for example, whether a fair price is being offered in a takeover), as these are matters for the vendor, the target company and their shareholders.

## 10.2 Status of the Codes



### Topic highlights

The Codes do not have the force of law and they are framed in non-technical language and should not be interpreted as statutes.

The Codes are, in effect, the agreed standards of commercial conduct and behaviour considered acceptable for takeovers, mergers and share repurchases by those involved in Hong Kong's financial markets and the SFC.

The Codes apply to the directors of companies that are subject to the Codes, their professional advisers and market participants.

Companies subject to the Codes are public companies in Hong Kong and companies with a primary listing for their equity shares in Hong Kong. As a general rule, it is the nature of the company that is the target of a takeover bid (the "offeree company") that determines whether the Takeovers Code applies. This means that the Codes applies to a takeover bid for a public company in Hong Kong or a company with a primary listing in Hong Kong, but not to a takeover bid for non-public or non-listed companies.

Waivers are granted for companies with a primary listing outside Hong Kong provided that shareholders in Hong Kong are adequately protected.

The Takeovers Code is concerned with:

- offers for all relevant companies
- takeovers and mergers of, all relevant companies
- all transactions, including share repurchases by general offer

The Takeovers Code does not apply to offers for non-voting, non-equity capital unless under certain circumstances.

## 10.3 The General Principles

The Codes contain ten General Principles:

- (1) All shareholders are to be treated even-handedly and all shareholders of the same class are to be treated similarly.
- (2) If control of a company changes or is acquired or is consolidated, a general offer to all other shareholders is normally required. Where an acquisition is being considered as a result of which a person may incur an obligation, he must, before making the acquisition, ensure that he can and will continue to be able to implement such an offer.
- (3) During the course of an offer, or when an offer is in contemplation, neither an offeror, nor the offeree company, nor any of their respective advisers may furnish information to some shareholders which is not made available to all shareholders. This principle does not apply to the furnishing of information in confidence by the offeree company to a *bona fide* potential offeror, or *vice versa*.
- (4) An offeror should announce an offer only after careful and responsible consideration. The same applies to making acquisitions which may lead to an obligation to make a general offer. In either case the offeror and its financial advisers should be satisfied that it can and will continue to be able to implement the offer in full.
- (5) Shareholders should be given sufficient information, advice and time to reach an informed decision on an offer. No relevant information should be withheld. All documents must, as in the case with a prospectus, be prepared with the highest possible degree of care, responsibility and accuracy.
- (6) All persons concerned with offers should make full and prompt disclosure of all relevant information and take every precaution to avoid the creation or continuance of a false market. Parties involved in offers must take care that statements are not made which may mislead shareholders or the market.
- (7) Rights of control should be exercised in good faith and the oppression of minority or non-controlling shareholders is always unacceptable.
- (8) Directors of an offeror and the offeree company must always, in advising their shareholders, act only in their capacity as directors and not have regard to their personal or family shareholdings or to their personal relationships with the companies. They should only consider the shareholders' interests taken as a whole when they are giving advice to shareholders. Directors of the offeree company should give careful consideration before they enter into any commitment with an offeror (or anyone else) which would restrict their freedom to advise their shareholders. Such commitments may give rise to conflicts of interest or result in a breach of the directors' fiduciary duties.
- (9) At no time after a *bona fide* offer has been communicated to the board of the offeree company, or after the board of the offeree company has reason to believe that a *bona fide* offer might be imminent, may the board of the offeree company take any action in relation to the affairs of the company, without the approval of shareholders in general meeting, which could effectively result in any *bona fide* offer being frustrated or in the shareholders being denied an opportunity to decide on its merits.

- (10) All parties concerned with transactions subject to the Codes are required to co-operate to the fullest extent with the Executive, the Panel and the Takeovers and Mergers Appeal Committee, and to provide all relevant information.

The General Principles are essentially statements of good standards of conduct to be observed in takeovers, mergers or share repurchases. It is impracticable to devise rules in sufficient detail to cover all circumstances that arise. Therefore, the spirit, as well as the letter of the General Principles and rules, will apply in areas or circumstances not explicitly covered by any rule.

The Codes are non-statutory and although the Codes are not laws, the courts will look at the procedures to ensure that they operate fairly.

## 10.4 The Executive and Panel

The Takeovers Code also includes a set of rules that should be followed in a takeover or merger, and the Executive and Takeovers and Mergers Panel make rulings in specific cases by applying and interpreting these rules.

- The Codes are administered by the Executive. This is the Executive Director of the Finance Division of the SFC and his staff. The Executive monitors takeovers and mergers to which the Codes apply, and anyone involved in a takeover or merger can consult with the Executive about anything on which they need clarification or guidance. The Executive may also be asked to give rulings on matters to which the Takeovers Code applies.
- The Takeovers and Mergers Panel is a committee of the SFC. The Panel may be asked to review a ruling that has been made by the Executive in a particular case, or may be asked to give a ruling in cases that are referred to by the Executive. The Panel publishes its rulings and the reasons for them on the SFC website. The Panel also deals with disciplinary hearings in the first instance, in cases where someone is accused of breaching the Code. (Disciplinary hearings are different from rulings about compliance with the Code.)
- A Takeovers Appeal Committee, which is another committee of the SFC, deals with appeals against disciplinary judgments by the Panel.

## 10.5 Rules of the Codes

The Codes are a long and complex document, dealing with many different aspects of conduct during a takeover or merger. The main rules are explained below, but there are exceptions to the rules and the description here is not comprehensive.

A takeover or merger begins with an offer to the board of the offeree company (although it might also begin when there are rumours about the possibility of a takeover or merger offer). The offer should be made to the board of the offeree company (or its advisers) before it is announced to the public. The board of the offeree company has a right to satisfy itself that the bidder (offeror) will be in a position to implement its bid in full. It is then usually the responsibility of the offeree company to make the public announcement about the offer and its details.

On receiving the offer, the board of the offeree company is required, in the interests of the shareholders, to set up a committee of independent non-executive directors which should make a recommendation about whether the offer appears to be fair and reasonable and a recommendation about acceptance. The company should also appoint an independent financial adviser. The recommendation of the independent committee and the written advice of the financial adviser should be included in a circular that the board of the offeree company is required to send to shareholders about the bid.

After receiving a bid, the board of the offeree company must not take any measures that may frustrate the bid, such as issue more shares in the company or sell some of the company's assets.

During the course of the offer, information about the companies involved must be made equally available to all shareholders, as nearly as possible at the same time.

The offeror is required to post an offer document to the shareholders in the offeree company within 21 days of the announcement of the offer. Within the next 14 days, the directors of the offeree

company must send a circular to the shareholders, containing information to help them reach a decision (and containing the recommendations of the independent committee and the advice of the financial adviser). If the takeover is “friendly” the offeror’s offer document and the circular of the board of the offeree company should be combined into a single document. All documents must be in English or Chinese, with a translation into Chinese or English. Documents must also be filed with the Executive before they are released or published, and cannot be released or published until the Executive states that it has no further comments to make.

An offer is often conditional, which means that the offeror will only buy shares in the target company if certain conditions are met. A condition as to acceptances is that the offer will not proceed unless acceptances of the offer are received from holders of over 50% of the shares.

The offer must be kept open for 21 or 28 days, during which time shareholders in the offeree company can send in their acceptances. If the offer is then declared unconditional as to acceptances, it must then be kept open for a further 14 days to give the other shareholders time to submit acceptances.

Except with the consent of the Executive, the board of the offeree company cannot announce any material new information (such as trading results, a profit forecast or a proposal to make a dividend payment) after the 39<sup>th</sup> day following the posting of the offer document to the offeree company shareholders. This is called the 39-day rule.

Dealings in shares of the offeree company may take place during the offer period. Details of any shares purchased in the market by the offeror must be publicly disclosed. If the offeror buys shares in the offeree company after the public announcement of the offer at a price that is more favourable than the offer price, it must raise its offer price to not less than the highest price paid for any of the shares it has acquired. In addition, the offeror cannot buy shares in the offeree company from some shareholders on more favourable terms than it has offered to other shareholders. These rules are designed to prevent an offeror from offering a better deal to some shareholders than to others.

The offer period cannot last longer than 7:00 pm on the 60<sup>th</sup> day after the offer document was posted. The results of the bid are announced and if acceptances are sufficient, the offer is declared unconditional and the offeror buys the shares of the shareholders who have accepted the offer. If the offeror acquires at least 90% of the shares it is trying to acquire, it has a right of compulsory purchase of the remaining minority still held by other shareholders.

### 10.5.1 Mandatory offer

The mandatory offer rule in the Takeovers Code is a rule that applies when someone (an individual or a company) who acquires 30% or more of the shares in a company subject to the Code. The 30% may be acquired over a period of time, rather than in a single transaction. When this situation arises, the holder of the shares is required by the Code to make a bid for all the other equity shares in the company. This is because within the meaning of the Code, someone gains control of a company by acquiring 30% (rather than more than 50%) of the equity shares.

## 11 Defensive tactics in a hostile takeover



### Topic highlights

There are a number of defensive measures that can be taken where the management of the takeover target perceives the bid to be hostile. Takeover defences can be categorised into **pre-offer** and **post-offer** defences.

Most takeovers may be referred to as **friendly** and take place when the management of the two firms negotiate an agreement that is **beneficial** to both sides.

However, not all takeovers are negotiated in this way and some are perceived as hostile and resisted by the directors.

There are a number of **defensive** measures that can be taken where the management of the takeover target perceives the bid as **hostile**.

Takeover defences can be categorised into **pre-offer defences** and **post-offer defences**. Both types of defence have developed over the years, mainly in the US during the wave of takeover bids of the 1980s.

The more **aggressive tactics** often **risk shareholders' interests** in favour of those of management. The EU Takeover Directive seeks to override certain of the more aggressive tactics that may be taken by management to frustrate a bid and which may be at the expense of the shareholders.

Both **pre-offer** and **post-offer defences** are set out below, together with an explanation of what might be appropriately used.

- (a) **Pre-bid defences** normally include provisions in the company's articles of association whereby **differential share structures** are set up under which **minority shareholders** exercise **disproportionate voting rights**, therefore enabling the target to frustrate a takeover bid.
- (b) **Post-bid defences** include actions such as selling the major assets of the company (**crown jewels**) in an attempt to make the target less attractive and setting up schemes where existing shareholders can buy shares at very low prices (**poison pill**). In the UK for example, the "Takeover Directive" requires that the management of the company does not take any such defensive action unless this is authorised by the shareholders.

## 11.1 Summary of defensive tactics

Tactic	Explanation
<b>Golden parachute</b>	Large compensation payments made to the top management of the target firm if their positions are eliminated due to hostile takeover. This may include cash or bonus payments, stock options or a combination of these.
<b>Poison pill</b>	This is an attempt to make a company unattractive normally by giving the right to existing shareholders to buy shares at a very low price. Poison pills have many variants.
<b>White knights and white squires</b>	This would involve inviting a firm that would rescue the target from the unwanted bidder. The white knight would act as a friendly counter-bidder. A white squire is similar to a white knight but the former does not take control of the target firm.
<b>Crown jewels</b>	The firm's most valuable assets may be the main reason that the firm became a takeover target in the first place. By selling these or entering into arrangements such as sale and leaseback, the firm is making itself less attractive as a target.
<b>Pacman defence</b>	This defence is carried out by mounting a counter-bid for the attacker. The Pacman defence is an aggressive rather than defensive tactic and will only work where the original acquirer is a public company with diverse shareholdings. This tactic also appears to suggest that the company's management are in favour of the acquisition but they disagree about which company should be in control.
<b>Litigation or regulatory defence</b>	The target company can challenge the acquisition by inviting an investigation by the regulatory authorities or through the courts. The target may be able to sue for a temporary order to stop the predator from buying any more of its shares.



## 12 Methods of financing mergers



### Topic highlights

Payment can be in the form of **cash**, a **share exchange** or **convertible loan stock**. The choice will depend on available cash, desired levels of gearing, shareholders' taxation position and changes in control.

### 12.1 Methods of payment

The terms of a takeover will involve a purchase of the shares of the target company for **cash** or for "**paper**" (shares, or possibly loan stock). A purchase of a target company's shares with shares of the predator company is referred to as a **share exchange**.

### 12.2 Cash purchases

If the purchase consideration is in **cash**, the shareholders of the target company will simply be bought out.



#### Illustration: Cash purchase

For example, suppose that there are two companies:

	<i>Big Co.</i>	<i>Small Co.</i>
Net assets (book value)	\$1,500,000	\$200,000
Number of shares	100,000	10,000
Earnings	\$2,000,000	\$40,000

Big Co. negotiates a takeover of Small Co. for \$400,000 in cash.

As a result, Big Co. will end up with:

- Net assets (book value) of  
 $\$1,500,000 + \$200,000 - \$400,000 \text{ cash} = \$1,300,000$
- 100,000 shares (no change)
- Expected earnings of \$2,040,000, minus the loss of interest (net of tax) which would have been obtained from the investment of the \$400,000 in cash which was given up to acquire Small Co.

### 12.3 Funding cash offers

A cash offer can be financed in the following ways:

- The company's retained earnings.** This is a common way when the firm to be acquired is small compared to the acquiring firm, but not very common if the target firm is large relative to the acquiring firm. A company occasionally may divest some of its own assets to accumulate cash prior to bidding for another company.
- The proceeds of a debt issue.** The acquiring company may raise money by issuing bonds. This is not an approach that is normally taken, because the act of issuing bonds will alert the markets to the intentions of the company to bid for another company and it may lead investors to buy the shares of potential targets, raising their prices.

- (c) **A loan facility from a bank.** This can be done as a short-term funding strategy, until the bid is accepted and then the company is free to make a bond issue.
- (d) **Mezzanine finance.** (See section 12.7) This may be the only route for companies that do not have access to the bond markets in order to issue bonds.

## 12.4 Purchases by share exchange

One company can acquire another company by **issuing shares** to pay for the acquisition. The new shares might be issued:

- (a) **in exchange** for shares in the target company. Therefore, if A Inc. acquires B Co., A Inc. might issue shares which it gives to B Co.'s shareholders in exchange for their shares. The B Co shareholders therefore become new shareholders of A Inc. This is a takeover for a “paper” consideration. Paper offers will often be accompanied by a **cash alternative**.
- (b) **to raise cash** on the stock market, which will then be used to buy the target company's shares. To the target company shareholders, this is a cash bid.

Sometimes, a company might acquire another in a share exchange, but the shares are then **sold immediately** on a stock market to raise cash for the seller.

Whatever the detailed arrangements of a takeover with paper, the end result will be an **increase in the issued share capital of the predator company**.

## 12.5 Use of convertible loan stock

Alternative forms of paper consideration, including debentures, loan stock and preference shares, are not so commonly used, due to:

- **difficulties** in **establishing a rate of return** that will be attractive to target shareholders
- the **effects** on the **gearing levels** of the acquiring company
- the **change** in the **structure** of the target shareholders' portfolios
- the **securities** being potentially **less marketable**, and possibly lacking voting rights

Issuing **convertible loan stock** will overcome some of these drawbacks, by offering the target shareholders the option of partaking in the future profits of the company if they wish.

Convertible loan stock is a loan which gives the holder the right to convert to other securities, normally ordinary shares, at a predetermined price/rate and time.

## 12.6 The choice between a cash offer and a paper offer

The choice between cash and paper offers (or a combination of both) will depend on how the different methods are viewed by the company and its existing shareholders, and on the attitudes of the shareholders of the target company. Generally speaking, firms which believe that their stock is under valued will not use stock to do acquisitions. Conversely, firms which believe that their stock is over or correctly valued will use stock to do acquisitions. Not surprisingly, the premium paid is larger when an acquisition is financed with stock rather than cash. There might be an accounting rationale for using stock as opposed to cash. You are allowed to use pooling instead of purchase. There might also be a tax rationale for using stock. Cash acquisitions create tax liabilities to the selling firm's stockholders.

The use of stock to finance a merger may be a sign of an agency problem – that is, trying to exploit the information advantage the acquirer has over the target firm's shareholders. There is also the possibility that mergers may reflect agency problems between the acquiring firm's managers and its shareholders. There is evidence that mergers increase the private benefits of managers even when they do not benefit a firm's shareholders. A declining stock price may indicate that management is pursuing its own goals rather than solely attempting to maximise shareholder value.

The factors that the directors of the bidding company must consider include the following:

#### Company and existing shareholders

<b>Dilution of EPS</b>	Fall in EPS attributable to existing shareholders may occur if purchase consideration is in equity shares
<b>Cost to the company</b>	Use of loan stock to back cash offer will attract tax relief on interest and have lower cost than equity. Convertible loan stock can have lower coupon rate than ordinary stock
<b>Gearing</b>	Highly geared company may not be able to issue further loan stock to obtain cash for cash offer
<b>Control</b>	Control could change considerably if large number of new shares issued
<b>Authorised share capital increase</b>	May be required if consideration is in form of shares. This will involve calling a general meeting to pass the necessary resolution
<b>Borrowing limits increase</b>	General meeting resolution also required if borrowing limits have to change

#### Shareholders in target company

<b>Taxation</b>	If consideration is cash, many investors may suffer immediate liability to tax on capital gain
<b>Income</b>	If consideration is not cash, arrangement must mean existing income is maintained, or be compensated by suitable capital gain or reasonable growth expectations
<b>Future investments</b>	Shareholders who want to retain stake in target business may prefer shares
<b>Share price</b>	If consideration is shares, recipients will want to be sure that the shares retain their values

## 12.7 Mezzanine finance and takeover bids

When the purchase consideration in a takeover bid is cash, the cash must be obtained somehow by the bidding company, in order to pay for the shares that it buys. Occasionally, the company will have sufficient cash in hand to pay for the target company's shares. More frequently, the cash will have to be raised, possibly from existing shareholders, by means of a **rights issue** or, more probably, by **borrowing from banks** or other financial institutions.

When cash for a takeover is raised by borrowing, the loans would normally be **medium-term** and **secured**.

However, there have been many takeover bids, with a cash purchase option for the target company's shareholders, where the bidding company has arranged loans that:

- are short-to-medium term
- are unsecured (that is, "junior" debt, low in the priority list for repayment in the event of liquidation of the borrower)
- because they are unsecured, attract a much higher rate of interest than secured debt (typically 3% to 5% above HIBOR)
- often, give the lender the option to exchange the loan for shares after the takeover.

This type of borrowing is called **mezzanine finance** (because it lies between equity and debt financing) – a form of finance which is also often used in **management buyouts** (which are discussed in Chapter 19).

## 12.8 Earn-out arrangements

The purchase consideration may not all be paid at the time of acquisition. Part of it may be deferred, payable upon the target company reaching certain performance targets.

# 13 Assessing a given offer



### Topic highlights

Shareholders of both the companies involved in a merger will be sensitive to the effect of the merger on **share prices** and **earnings per share**.

## 13.1 The market values of the companies' shares during a takeover bid

**Market share prices** can be very important during a takeover bid. Suppose that Velvet Inc. decides to make a takeover bid for the shares of Noggin Inc.. Noggin Inc. shares are currently quoted on the market at \$2 each. Velvet shares are quoted at \$4.50 and Velvet offers one of its shares for every two shares in Noggin, thus making an offer at current market values worth \$2.25 per share in Noggin. This is only the value of the bid so long as Velvet's shares remain valued at \$4.50. If their value falls, the bid will become less attractive.

This is why companies that make takeover bids with a share exchange offer are always concerned that the market value of their shares should not fall during the takeover negotiations, before the target company's shareholders have decided whether to accept the bid.



### Case study

In 2009 US IT firm Hewlett-Packard acquired UK IT company Autonomy, which at the time was a company in the FTSE100 index. The purchase price was US\$11 billion. In 2012, Hewlett-Packard announced that it was reducing the value of its investment in Autonomy by US\$5 billion, and accused the former management of the company of fraudulently misrepresenting its profitability.

In response to the allegations, the UK accountancy regulator launched an inquiry into the allegation. In the meantime, shareholders in Hewlett-Packard sued the company for negligence in their conduct of the takeover.

If the market price of the target company's shares rises above the offer price during the course of a takeover bid, the bid price will seem too low, and the takeover is then likely to fail, with shareholders in the target company refusing to sell their shares to the bidder.

## 13.2 EPS before and after a takeover

If one company acquires another by issuing shares, its EPS will **go up or down** according to the P/E ratio at which the target company has been bought.

- If the target company's shares are valued at a **lower P/E ratio**, the **predator company's shareholders** will benefit from a **rise in EPS**.
- If the **target company's shares** are **bought** at a **higher P/E ratio** than the predator company's shares, the predator company's shareholders will suffer a **fall in EPS**.



### Illustration: Mergers and takeovers (1)

Giant Inc. takes over Tiddler Co. by offering two shares in Giant for one share in Tiddler. Details about each company are as follows:

	<i>Giant Inc.</i>	<i>Tiddler Co.</i>
Number of shares	2,800,000	100,000
Market value per share	\$4	–
Annual earnings	\$560,000	\$50,000
EPS	20c	50c
P/E ratio	20	

By offering two shares in Giant worth \$4 each for one share in Tiddler, the valuation placed on each Tiddler share is \$8, and with Tiddler's EPS of 50c, this implies that Tiddler would be acquired on a P/E ratio of 16. This is lower than the P/E ratio of Giant, which is 20.

If the acquisition produces no synergy, and there is no growth in the earnings of either Giant or its new subsidiary Tiddler, then the EPS of Giant would still be higher than before, because Tiddler was bought on a lower P/E ratio. The combined group's results would be as follows:

	<i>Giant group</i>
Number of shares (2,800,000 + 200,000)	3,000,000
Annual earnings (560,000 + 50,000)	610,000
EPS	20.33c

If the P/E ratio is still 20, the market value per share would be \$4.07 ( $20.33 \times 20$ ), which is 7c more than the pre-takeover price.

The process of buying a company with a lower P/E ratio in order to boost your own EPS is sometimes called **bootstrapping**. Whether the stock market is fooled by this process is debatable. The P/E ratio is likely to fall after the takeover in the absence of synergistic or other gains.



### Illustration: Mergers and takeovers (2)

Redwood Inc. agrees to acquire the shares of Hawthorn Co. in a share exchange arrangement. The agreed P/E ratio for Hawthorn's shares is 15.

	<i>Redwood Inc.</i>	<i>Hawthorn Co.</i>
Number of shares	3,000,000	100,000
Market price per share	\$2	–
Earnings	\$600,000	\$120,000
P/E ratio	10	

The EPS of Hawthorn Co. is \$1.20, and so the agreed price per share will be  $\$1.20 \times 15 = \$18$ . In a share exchange agreement, Redwood would have to issue nine new shares (valued at \$2 each) to acquire each share in Hawthorn, and so a total of 900,000 new shares must be issued to complete the takeover.

After the takeover, the enlarged company would have 3,900,000 shares in issue and, assuming no earnings growth, total earnings of \$720,000. This would give an EPS of:

$$\frac{\$720,000}{3,900,000} = 18.5c$$

The pre-takeover EPS of Redwood was 20c, and so the EPS would fall. This is because Hawthorne has been bought on a higher P/E ratio (15 compared with Redwood's 10).



### Illustration: Mergers and takeovers 3

Buying companies with a higher P/E ratio will result in a fall in EPS unless there is profit growth to offset this fall. For example, suppose that Starving Inc. acquires Bigmeal Inc., by offering two shares in Starving for three shares in Bigmeal. Details of each company are as follows:

	<i>Starving Inc.</i>	<i>Bigmeal Inc.</i>
Number of shares	5,000,000	3,000,000
Value per share	\$6	\$4
Annual earnings		
Current	\$2,000,000	\$600,000
Next year	\$2,200,000	\$950,000
EPS	40c	20c
P/E ratio	15	20

Starving Inc. is acquiring Bigmeal Inc. on a higher P/E ratio, and it is only the profit growth in the acquired subsidiary that gives the enlarged Starving group its growth in EPS.

	<i>Starving group</i>
Number of shares ( $5,000,000 + 3,000,000 \times \frac{2}{3}$ )	7,000,000

#### Earnings

If no profit growth ( $2,000,000 + 600,000$ ) = \$2,600,000 EPS would have been 37.14c

With profit growth ( $2,200,000 + 950,000$ ) = \$3,150,000 EPS will be 45c

If an acquisition strategy involves buying companies on a higher P/E ratio, it is therefore essential for continuing EPS growth that the acquired companies offer prospects of strong profit growth.

## 13.3 Further points to consider: net assets per share and the quality of earnings



### Topic highlights

There are circumstances where a dilution of earnings is acceptable if any of the following benefits arise as a result:

- Earnings growth
- Quality of earnings acquired is superior
- Dilution of earnings compensated by an increase in net asset backing

You might think that **dilution of earnings** must be avoided at all costs. However, there are **three** cases where a dilution of earnings might be accepted on an acquisition if there were other advantages to be gained:

- (a) **Earnings growth** may hide the dilution in EPS as above.
- (b) A company might be willing to accept earnings dilution if the **quality of the acquired company's earnings** is superior to that of the acquiring company.
- (c) A trading company with high earnings, but with few assets, may want to increase its assets base by acquiring a company which is strong in assets but weak in earnings so that assets and earnings get more into line with each other. In this case, **dilution in earnings is compensated for by an increase in net asset backing.**



### Self-test question 1

Intangible Inc. has an issued capital of 2,000,000 ordinary shares. Net assets (excluding goodwill) are \$2,500,000 and annual earnings average \$1,500,000. The company is valued by the stock market on a P/E ratio of 8. Tangible Co. has an issued capital of 1,000,000 ordinary shares. Net assets (excluding goodwill) are \$3,500,000 and annual earnings average \$400,000. The shareholders of Tangible Co. accept an all-equity offer from Intangible Inc. valuing each share in Tangible Co. at \$4.

*Required*

Calculate Intangible Inc.'s earnings and assets per share before and after the acquisition of Tangible Co..

**(The answer is at the end of the chapter)**



### Self-test question 2

Roytel Inc. is a ready-meal preparing company for schools in Gooland. The market for school meals is satiated and there are few profitable investment opportunities for the company in its current line of business. The board has decided to look outside the ready-meal sector into other sectors for possible candidates for acquisition. They have narrowed down the potential candidates to two: Quinnon Co. which owns a number of hotels in the south east of Gooland, and Geranium Co. which owns a number of leisure centres for children in the area of Katycille, which is the capital of Gooland.

The current return on assets and the expected future growth rate in annual earnings for the three companies are shown below:

	<i>Roytel</i>	<i>Quinnon</i>	<i>Geranium</i>
Return on assets (%)	25	17	20
Growth rate in annual earnings (%)	2	6	5

The income statements and the statements of financial position of the three companies are:

#### INCOME STATEMENTS (all figures in \$)

	<i>Roytel</i>	<i>Quinnon</i>	<i>Geranium</i>
Net operating income	23.71	8.91	18.4
Interest on debt	1.50	1.20	1.20
Profit before taxation	22.21	7.71	17.2
Taxes	6.66	2.31	5.16
Net income	15.55	5.40	12.04
Number of shares (millions)	5	1	2
Earnings per share	3.11	5.40	6.02

#### STATEMENTS OF FINANCIAL POSITION

	<i>Roytel</i>	<i>Quinnon</i>	<i>Geranium</i>
Debt	15	12	12
Equity	80	40	80
Total assets	95	52	92

The directors of Quinnon have indicated that they would be prepared to support a takeover bid from Roytel on the basis of 5 Roytel shares for every 2 shares in Quinnon.

The directors of Geranium have indicated that they would be prepared to support a takeover bid from Roytel on the basis of 2 Roytel shares for every 1 share in Geranium.

*Required*

Calculate the expected effect on the EPS of Roytel if either takeover (but not both) were to occur on the basis of share-for-share exchange as indicated.

**(The answer is at the end of the chapter)**

## 14 Effect of offer on financial position and performance



### Topic highlights

Often takeovers fail to achieve their full potential because of lack of attention paid to **post-acquisition integration**. A clear programme should be in place, designed to re-define objectives and strategy, and take appropriate care of the human element.

### 14.1 Effects on earnings

Failures of takeovers often result from **inadequate integration** of the companies after the takeover has taken place. There is a tendency for senior management to devote their energies to the next acquisition rather than to the newly-acquired firm. The particular approach adopted will depend upon the **culture** of the organisation as well as the **nature** of the company acquired and **how it fits** into the amalgamated organisation (for example, horizontally, vertically, or as part of a diversified conglomerate).

One obvious place to start is to assess how the merger will affect earnings. P/E ratios (price to earnings per share) can be used as a rough indicator for assessing the impact on earnings and this was discussed in section 13. The higher the P/E ratio of the acquiring firm compared to the target company, the greater the increase in earnings per share (EPS) to the acquiring firm. Dilution of EPS occurs when the P/E ratio paid for the target exceeds the P/E ratio of the acquiring company.

The size of the target's earnings is also important; the larger the target's earnings are relative to the acquirer, the greater the increase to EPS for the combined company. The following examples will illustrate these points.



### Self-test question 3

Greer Company has plans to acquire Holt Company by exchanging stock. Greer will issue 1.5 shares of its stock for each share of Holt. Financial information for the two companies is as follows:

	<i>Greer</i>	<i>Holt</i>
Net income	\$400,000	\$100,000
Shares outstanding	200,000	25,000
Earnings per share	\$2.00	\$4.00
Market price of stock	\$40.00	\$48.00

Greer expects the P/E Ratio for the combined company to be 15.

*Required*

What is the expected share price after the acquisition?

**(The answer is at the end of the chapter)**



### Self-test question 4

Romer Company will acquire all of the outstanding stock of Dayton Company through an exchange of stock. Romer is offering one of its shares for every two shares in Dayton. Financial information for the two companies is as follows:

	<i>Romer</i>	<i>Dayton</i>
Net income	\$50,000,000	\$12,000,000
Shares outstanding	5,000,000	2,000,000
Earnings per share	\$10.00	\$6.00
Market price of stock	\$150.00	
P/E ratio	15	



*Required*

- Calculate the number of shares to be issued by Romer.
- Calculate combined EPS after the acquisition, assuming no synergy.
- Calculate the P/E ratio valuation of shares in Dayton
- Compare the P/E ratio valuation of Dayton with the pre-acquisition P/E ratio of Romer
- Calculate maximum price that Romer could pay before dilution of its EPS occurred

**(The answer is at the end of the chapter)**



### Illustration: Effect on the statement of financial position

In this example we investigate the effects of a takeover of the financial position of a company. ABC Co. is planning to bid for DEZ Company. The acquisition will be funded by cash which ABC will borrow.

#### STATEMENT OF FINANCIAL POSITION OF ABC

	<i>Assets</i>		<i>Liabilities</i>
	\$m		\$m
Non-current assets	600	Short-term liabilities	30
Equity investments	20	Long-term liabilities	100
Receivables	15	Share capital	50
Cash	45	Reserves	500
	<u>680</u>		<u>680</u>

#### STATEMENT OF FINANCIAL POSITION OF DEZ COMPANY

	<i>Assets</i>		<i>Liabilities</i>
	\$m		\$m
Non-current assets	80	Short-term liabilities	10
Equity investments	5	Long-term liabilities	10
Receivables	25	Share capital	50
Cash	10	Reserves	50
	<u>120</u>		<u>120</u>

This is a cash offer funded entirely by the issue of debt. The company makes an offer of \$120 million which is raised by issuing corporate bonds worth \$120 million.

#### STATEMENT OF FINANCIAL POSITION OF ABC AFTER THE OFFER

	<i>Assets</i>		<i>Liabilities</i>
	\$m		\$m
Non-current assets	600	Short-term liabilities	30
Equity investments	20	Long-term liabilities	220
Receivables	15	Share capital	50
Cash	45	Reserves	500
Investment	<u>120</u>		<u>800</u>
	<u>800</u>		<u>800</u>

## CONSOLIDATED STATEMENT OF FINANCIAL POSITION

	<i>Assets</i>		<i>Liabilities</i>	
	\$m		\$m	
Non-current assets	680	Short-term liabilities	40	
Equity investments	25	Long-term liabilities	230	
Receivables	40	Share capital	50	
Cash	55			
Goodwill	20	Reserves	500	
	<u>820</u>		<u>820</u>	

## 15 The role of the financial adviser in mergers and takeovers



### Topic highlights

While the SFC Codes on Takeovers and Mergers and Share Repurchases do not have the force of law in Hong Kong, they do have some important provisions regarding the role of financial advisers in mergers and takeovers (M&A).

Among other things, the Code states; “Financial and other professional advisers must have the competence, professional expertise and adequate resources to fulfil their role and to discharge their responsibility under the Code. If a financial adviser is in any doubt about its ability to meet these requirements, it should consult with the Executive in advance. If the Executive considers that a financial adviser is not able to meet these requirements, it may not allow the adviser to act in that capacity. Financial advisers must also be mindful of conflicts of interest.”

At present the majority of M&A advice is provided by full service investment banks. In the last few years some specialist financial advisers have emerged, and these provide only M&A advice, but not financing.

There is likely to be more than one financial adviser involved on a given M&A transaction. Both the bidder and the target will retain at least one financial adviser. On large or complex transactions it is usual for several financial advisers to be retained by each party to the transaction.

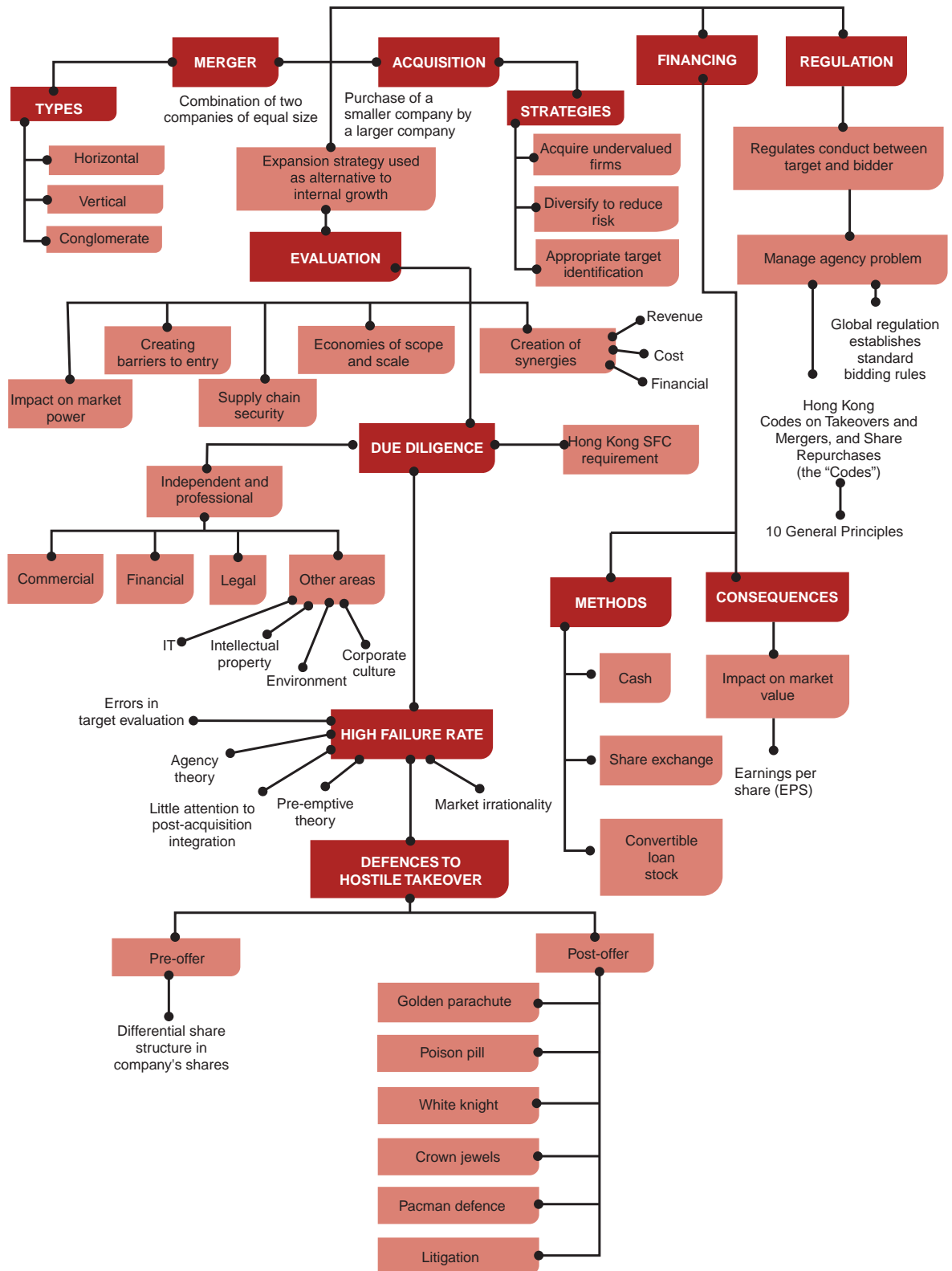
The actual role performed by financial advisers will differ from deal to deal, but on acquisition of a large listed public company, might include:

- advice on the approach to the deal, including strategy and negotiation tactics
- assistance with the assembly of a team of advisers including legal adviser, financiers, management consultants; and other independent experts
- co-ordination of the advice received from the other adviser
- advice on the valuation of the target company
- advice on the optimal capital structure for the deal, which will then impact how the deal may best be financed
- advice on the proposed arrangements to finance the deal, including working with the proposed financier or brokerage firm
- assistance with the co-ordination of due diligence, but not actually performing of the due diligence exercise
- advice on the likely stock market reaction to the proposed deal, in conjunction with other professional firms (such as a brokerage firm)

## Corporate Financing

- advice and assistance with the design of investor communications, usually in conjunction with an external PR firm and
- co-operation with the legal advisers in the production of documentation for the deal.

# Topic recap



## Answers to self-test questions

### Answer 1

- (a) Before the acquisition of Tangible Co., the position is as follows:

$$\text{Earnings per share (EPS)} = \frac{\$1,500,000}{2,000,000} = 75\text{c}$$

$$\text{Assets per share (APS)} = \frac{\$2,500,000}{2,000,000} = \$1.25$$

- (b) Tangible Co.'s EPS figure is 40c ( $\$400,000 \div 1,000,000$ ), and the company is being bought on a multiple of 10 at \$4 per share. As the takeover consideration is being satisfied by shares, Intangible Inc.'s earnings will be diluted because Intangible Inc. is valuing Tangible Co. on a higher multiple of earnings than itself. Intangible Inc. will have to issue 666,667 ( $4,000,000/6$ ) shares valued at \$6 each (earnings of 75c per share at a multiple of 8) to satisfy the \$4,000,000 consideration. The results for Intangible Inc. will be as follows:

$$\text{EPS} = \frac{\$1,900,000}{2,666,667} = 71.25\text{c} \text{ (3.75c lower than the previous 75c)}$$

$$\text{APS} = \frac{\$2,000,000}{2,666,667} = \$2.25 \text{ (\$1 higher than the previous \$1.25)}$$

If Intangible Inc. is still valued on the stock market on a P/E ratio of 8, the share price should fall by approximately 30c ( $8 \times 3.75\text{c}$ , the fall in EPS) but because the asset backing

$\left( \frac{\text{Net assets excluding goodwill}}{\text{Shares}} \right)$  has been increased substantially the company will probably now be valued on a higher P/E ratio than 8.

The shareholders in Tangible Co. would receive 666,667 shares in Intangible Inc. in exchange for their current 1,000,000 shares, that is, two shares in Intangible for every three shares currently held.

- (a) **Earnings**

Three shares in Tangible earn ( $3 \times 40\text{c}$ )	\$ 1.200
Two shares in Intangible will earn ( $2 \times 71.25\text{c}$ )	1.425
Increase in earnings, per three shares held in Tangible	<u>0.225</u>

- (b) **Assets**

Three shares in Tangible have an asset backing of ( $3 \times \$3.5$ )	\$ 10.50
Two shares in Intangible will have an asset backing of ( $2 \times \$2.25$ )	4.50
Loss in asset backing, per three shares held in Tangible	<u>6.00</u>

The shareholders in Tangible Co. would be trading asset backing for an increase in earnings.

## Answer 2

This analysis is based on the following assumptions:

- EPS is calculated for the current year, to indicate what EPS would have been if the takeover had occurred last year.
- EPS is also calculated for next year, on the assumption that total earnings for the businesses of the three companies grow at the rate indicated.

### EPS based on current year performance

	<i>Roytel acquiring Quinnon</i>	<i>Roytel acquiring Geranium</i>
Number of new shares in the combined company	7.5	9
Total earnings of the combined company:		
Roytel business	15.55	15.55
Quinnon/Geranium business	5.40	12.04
Total	<u>20.95</u>	<u>27.59</u>
EPS in the combined company	2.79	3.07
Change in EPS of Roytel shareholders	-0.32	-0.04

### EPS based on next year performance

	<i>Roytel acquiring Quinnon</i>	<i>Roytel acquiring Geranium</i>
Number of new shares in the combined company	7.5	9
Total earnings of the combined company:		
Roytel business (+ 2%)	15.86	15.86
Quinnon/Geranium business (+ 6%/5%)	5.72	12.64
Total	<u>21.58</u>	<u>28.50</u>
EPS in the combined company	2.88	3.17
Change in EPS of Roytel shareholders	-0.23	+0.06

The acquisition of Geranium would have the least effect on Roytel's EPS.

## Answer 3

Combined earnings = \$400,000 + \$100,000 = \$500,000

Combined shares = 200,000 shares + (25,000 × 1.5) = 237,500

Combined EPS =  $\frac{\$500,000}{237,500} = \$2.11$

Expected price of stock = expected P/E ratio × combined EPS = 15 × \$2.11 = \$31.65

## Answer 4

(a) Shares to be issued by Romer: 2 million shares in Dayton × ½ = 1 million shares in Romer.

(b) Combined EPS:  $\frac{\$50,000,000 + \$12,000,000}{5,000,000 + 1,000,000} = \$10.33$

(c) P/E ratio valuation of shares in Dayton:  $\frac{\$12,000,000}{1,000,000 \text{ shares}} = 12$

## Corporate Financing

- (d) Dayton is acquired on a P/E ratio valuation of 12, which is less than the pre-acquisition P/E ratio of Romer. Consequently the P/E ratio after the acquisition will increase, even without any synergy effect on annual profitability.

- (e) Maximum price before dilution of EPS:

There will be no dilution of EPS if Dayton is purchased on a P/E ratio multiple of 15, which is the P/E ratio of Romer before the acquisition (and assuming no synergy effect on post-acquisition profits).

Combined earnings after the acquisition = \$62,000,000

EPS (no change): \$10

Number of shares = \$62,000,000/\$10 per share = 6,200,000

Romer has 5,000,000 shares in issue before the acquisition, and there would be no dilution in EPS if it issued 1,200,000 new shares to acquire Dayton. This would involve a share exchange of 3 new shares in Romer for every 5 shares in Dayton.

## Exam practice



## Company P and Company S

36 minutes

Company P (P) offers to buy 100% of Company S (S). Total consideration will be settled by issuing new shares based on P's pre-acquisition share price stated below. Before the acquisition, the relevant financials are summarised below:

	P	S
Profit after tax (Earnings)	\$50,000,000	\$10,000,000
No. of shares outstanding	5,000,000	2,000,000
Share price before acquisition	\$150	\$60
EPS	\$10	\$5

The CEO believes that the main rationale for this acquisition is that the expected synergy effect of \$5 million will result from a permanent cost reduction of \$2 million and increased profit of \$3 million due to enhanced market position enjoyed by the combined company. The CEO is also of the opinion that the enhanced market position is to be of strategic importance as the acquisition will make P the industry leader. Synergy is expected to materialise between 12 to 24 months after the deal is completed.

It is the policy of P to maintain or improve EPS after each acquisition, ie the projected EPS of the combined company cannot be lower than that of P prior to acquisition.

*Required*

- Assuming a no synergy position and the earnings of both companies remain unchanged before and after acquisition, what is the EPS of the combined company if P offers to buy all S's shares at \$65 per share? Will this price be approved by P's Board based on an EPS maintenance strategy? **(5 marks)**
- If the shareholders of S demand a selling price of \$90, what will be the EPS of the combined company if P agrees to this price, assuming no synergy? Will P's Board approve it? State the reasons. **(3 marks)**
- Assume the \$5 million synergy materialises as planned. What will be the maximum price P can offer and still maintain the post-acquisition EPS to the pre-acquisition level of \$10 between 12 to 24 months after acquisition? All other aspects of the deal remain unchanged. **(5 marks)**
- Assuming you are the CEO of P, how would you convince the Board to approve the acquisition price up to the amount calculated in (c)? Show all calculations and state all necessary assumptions. **(4 marks)**
- If you were a member of P's Board, how would you assess the reliability of the \$5 million expected synergy? Assume the maximum price calculated in (c) is offered, what is the impact on future EPS if this synergy is not achieved; and if it is achieved? **(3 marks)**

**(Total = 20 marks)****HKICPA December 2011**



## Snowey

50 minutes

Snowey is a conglomerate with its headquarters in London. The company manufactures and distributes different lines of consumer products in Europe. Snowey's annual sales reached USD3.5 billion last year. In order to maintain growth, the Board has targeted China as its most important market for future expansion. Indeed, the plan is to increase the percentage of income from China from 0% to 15% within five years. The board believed that it could only be achieved by merger and acquisition. After spending seven months on market research, Snowey has identified a takeover target: a Hong Kong company, Luke & Co.. This company has 15 years' experience in marketing and distributing consumer products in China.

After signing the Letter of Intent with Luke & Co., Snowey commenced the due diligence and made the following financial projections:

	Year				
	1	2	3	4	Thereafter
Sales growth rate	10.0%	12.0%	12.0%	12.5%	7.0%
Pre-tax operating margin (% of sales)	18.0%	18.0%	20.0%	20.0%	19.0%
Depreciation (% of EBIT)	12.0%	12.0%	12.0%	12.0%	12.0%
Working capital (% of sales)	23.0%	22.8%	22.0%	20.0%	19.0%
Capital expenditure (% of sales)	15.0%	11.0%	10.0%	10.0%	10.0%

The sales and working capital requirements for this year (year 0) are expected to be \$550 million and \$120 million respectively. The target company has an effective tax rate of 17%. Currently, the only debt in Luke & Co.'s financial statements is a bank loan of \$380 million.

After much negotiation, the owner of Luke & Co. agreed to sell the entire company to Snowey at \$744 million. According to the agreement signed today, Snowey has to pay 40% of the price in one month and the remainder in three months from now. The CFO of Snowey does not want to expose the company to the foreign exchange rate risk. Therefore, he asked the Finance Manager to hedge the payment sum into GBP by using forward foreign exchange contracts (i.e. sell GB£ forward against HK\$). The following is the information provided by a bank:

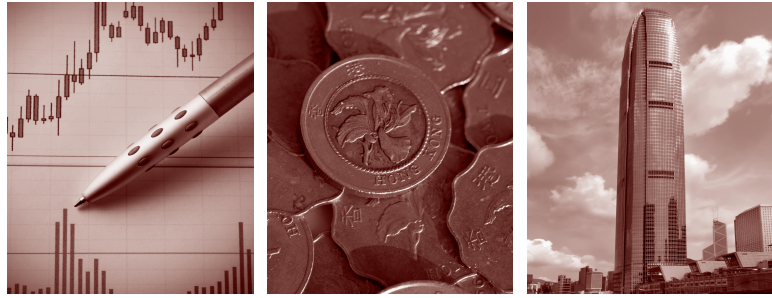
GBP/HKD	Bid	Offer
Spot rates	15.8238	15.8288
Forward points:		
1-month	-0.0228	-0.0212
2-month	-0.0416	-0.0408
3-month	-0.0628	-0.0605

### Required

- Using the FCF Model, calculate the equity value of Luke & Co. by using 12% as Snowey's weighted average cost of capital (WACC). **(14 marks)**
- What are the possible reasons to justify the premium paid by Snowey over the equity value of Luke & Co.? **(5 marks)**
- How much will Snowey need to pay in GBP after hedging? **(4 marks)**
- If GBP depreciates against HKD by 1.5% on the payment dates compared to the spot rate, how much will the difference be if Snowey had not hedged the HKD payment? Is Snowey better off by having the exposure hedged? **(2 marks)**

**(Total = 25 marks)**

**HKICPA May 2008**



## chapter 19

# Corporate reorganisation and change

### Topic list

- 1 Business reorganisation**
  - 1.1 Portfolio restructuring
  - 1.2 Organisational restructuring
- 2 Unbundling**
  - 2.1 Divestments
  - 2.2 Demergers
  - 2.3 Sell-offs
  - 2.4 Spin-offs
  - 2.5 Carve-outs
- 3 Management buy-outs (MBOs) and buy-ins (MBIs)**
  - 3.1 The parties to a buy-out
  - 3.2 Reasons for sale to management
  - 3.3 The role of the venture capitalist
  - 3.4 The appraisal of proposed buy-outs
  - 3.5 The financial arrangements in a typical buy-out
  - 3.6 Problems with buy-outs
  - 3.7 Buy-ins (MBIs)
- 4 Leveraged buy-outs (LBOs)**
  - 4.1 Procedures for going private
  - 4.2 Reasons for de-listing
  - 4.3 Advantages of leveraged buy-outs
  - 4.4 Disadvantages of leveraged buy-outs

### Learning focus

In this chapter we discuss methods of business reorganisations concentrating primarily on methods of unbundling companies. Methods discussed include sell-offs, spin-offs, carve-outs, and management buy-outs.

**Learning outcomes**

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Corporate reorganisation and change</b>		
Identify and explain the key issues relating to methods of change to corporate structures:		
<b>12.01</b>	<b>Divestment and Demerger</b>	2
12.01.01	Identify and explain the key reasons for divestment or demerger	
12.01.02	Describe the various forms of unbundling available and evaluate their likely financial and other benefits	
12.01.03	Recommend, with reasons, strategies for unbundling parts of an organisation	
<b>12.02</b>	<b>Public to private (delisting)</b>	2
12.02.01	Identify and explain the key issues related to going from a public company to a private company (leveraged buyout)	
<b>12.03</b>	<b>Management buy-out and mechanics</b>	2
12.03.01	Discuss the advantages and disadvantages of a management buy-out (MBO) and buy-in (MBI)	
12.03.02	Advise on the financial considerations relating to an MBO and MBI	
12.03.03	Assess the financial implications of an MBO for the management team and the venture capitalist	
<b>12.04</b>	<b>Alterations to capital</b>	2
12.04.01	Explain the key issues involved in financial reconstruction	
12.04.02	Determine whether a financial reconstruction is the most appropriate strategy in a given company situation	
12.04.03	Evaluate the impact of a proposed reconstruction scheme on the organisation and assess the likely response of the capital market	
12.04.04	Recommend and justify a reconstruction scheme for a given business situation	

# 1 Business reorganisation



## Topic highlights

**Business reorganisations** are undertaken when companies have got into difficulties or as part of a strategy to enhance the value of the firm for its owners.



## Key term

**Business reorganisations** consist of portfolio restructuring and organisational restructuring.

Reorganisations of the operations and the structures of business is a constant feature of business life. Companies are restructuring in the pursuit of long-term strategy in order to achieve a higher level of performance or in order to survive when existing structures and activities are problematic. Corporate restructuring is usually the result of extreme changes in corporate governance such as takeovers and bankruptcy, but it can also be initiated as a response to product market pressures and internal corporate controls. Companies which experience negative earnings due to competition, overexpansion, high costs and excessive debt respond in many ways such as cutting research and development expenditure, reducing debt levels, reducing employment levels and introducing changes in the internal organisation.

Depending on the actions that a company needs to take as part of its reconstruction plans, these restructuring schemes are usually classified in three categories.



## Key terms

**Financial reconstruction** involves changing the capital structure of the firm. This is discussed in more detail in Chapter 20.

**Portfolio reconstruction** involves making additions to or disposals from companies' businesses, for example, through acquisitions or spin-offs.

**Organisational restructuring** involves changing the organisational structure of the firm.

The last two types of restructuring are collectively known as business reorganisations. However, all three types of restructuring are linked and it may be necessary for all types to be undertaken for a restructuring to be successful. In this chapter we concentrate primarily on portfolio restructuring.

## 1.1 Portfolio restructuring



## Key term

**Portfolio restructuring** consists of changes in the mix of assets owned by the firm or the lines of business in which the firm operates in order to increase the performance of the firm.

Portfolio restructuring is the acquisition or disposal of assets or business units by a company in the form of divestments, demergers, spin-offs or management buy-outs.

Portfolio restructuring involves a number of one-off diverse transactions such as the sale of underperforming assets, spin-offs and acquisitions which have permanent effects on the financial performance of the company. Therefore, portfolio restructuring can be seen as part of a strategy to increase the performance of the company which involves not only the buying and selling of a business but also the establishment of performance monitoring and evaluation systems.

According to Copeland, Koller and Murrin (*Valuation of Companies*), constant portfolio restructuring is necessary in order to improve value, otherwise external raiders will get an opportunity to takeover the company. It is therefore in the best interest of both management and shareholders to keep the gap between the potential and actual value as close as possible. This can be achieved by improving the operations of the company leading to increasing revenue or declining costs, by acquiring or disposing of assets and by improving the financial structure of the company.

## 1.2 Organisational restructuring



### Key term

**Organisational restructuring** consists of changes in the organisational structure of the firm, such as divisional changes and hierarchical structures.

Organisational restructuring involves significant changes in the way a company is organised. As part of such a restructuring a company may redraw divisional boundaries, it may flatten the hierarchical structure, it may streamline processes, it may adopt a different system of corporate governance and it may reduce employment.

Organisational restructuring on its own does not seem to have a significant effect on the performance of the company. However, when in conjunction with other forms of restructuring it seems to be a more potent means of increasing performance.

## 2 Unbundling



### Key term

**Unbundling** is a portfolio restructuring strategy which involves the disposal and sale of assets, facilities, production lines, subsidiaries, divisions or product units.

Unbundling can be either voluntary or it can be forced on a company. A company may voluntarily decide to divest part of its business for strategic, financial or organisational reasons. An involuntary unbundling on the other hand may take place for regulatory or financial reasons. The main forms of unbundling are these:

- Divestments
- Demergers
- Sell-offs
- Spin-offs
- Carve-outs
- Management buy-outs

### 2.1 Divestments



### Key term

**Divestment** is the partial or complete sale or disposal of physical and organisational assets, the shut-down of facilities and reduction in workforce in order to free funds for investment in other areas of strategic interest.

A divestment is the disposal of a company's assets.

In a divestment the company ceases the operation of a particular activity in order to concentrate on other activities. The rationale for divestment is normally to reduce costs or to increase return on assets. Divestments differ from the other forms of unbundling because they do not require the formation of a new company.

Divestments are undertaken for a variety of reasons. They may take place as a corrective action in order to reverse unsuccessful previous acquisitions, especially when the acquisition has taken place for diversification purposes. Divestments may also take place as a response to a cyclical downturn in the activities of a particular unit or line of business. However, divestments may be proactive in the sense that a company may want to exit lines of business which have become obsolete and redeploy resources to activities with a higher return on invested capital.

Where divestments are part of a strategic response for business realignment, the issue of which assets to divest is as important as the decision of which assets to acquire. A company has to decide what constitutes core activities and where the next growth opportunities exist. The growth opportunities may be realised by concentrating on the core business, organic growth and development of the right product lines, or by acquisitions and investment in the right markets.

This refocus of the company priorities may imply that the company may decide to disengage from certain business activities.

## 2.2 Demergers



### Key term

A **demerger** is the splitting up of corporate bodies into two or more separate bodies, to ensure share prices reflect the true value of underlying operations.

A demerger is the opposite of a merger. It is the splitting up of a corporate body into two or more separate and independent bodies.

For example, the ABC Group plc might demerge by splitting into two independently operating companies AB plc and C plc. Existing shareholders are given a stake in each of the new separate companies.

Demerging, in its strictest sense, stops short of selling out, but is an attempt to ensure that share prices reflect the true value of the underlying operations.



### Case study: Cadbury-Schweppes

In March 2008, **Cadbury-Schweppes** agreed financing with five banks for a £5.4 billion demerger of its US drinks business which eased concerns that the deal would fall through due to the global credit crisis. The demerger was finalised on 7 May 2008 when the new US drinks company Dr Pepper Snapple Group was listed on the New York Stock Exchange with net debt of £1.9 billion. Cadbury – the maker of Dairy Milk and Trident gum – was listed on the London Stock Exchange on 2 May 2008 with debt of £1.65 billion.

The demerger cost Cadbury-Schweppes over £1 billion (almost 10% of its market value), with approximately £370 million of this arising from unwinding tax synergies. Refinancing resulted in an increased annual cost of debt of around £17.5 million.

**Note.** Possibly partly as a consequence of the demerger, Cadbury became a takeover target and in 2010 was acquired by US corporation Kraft.

### 2.2.1 Advantages of demergers

The main advantage of a demerger is its greater operational efficiency and the greater opportunity to realise value. A two-division company with one loss making division and one profit making, fast growing division may be better off by splitting the two divisions. The profitable division may acquire a valuation well in excess of its contribution to the merged company.

### 2.2.2 Disadvantages of demergers

- (a) **Economies of scale** may be **lost**, where the demerged parts of the business had operations in common to which economies of scale applied.
- (b) The **smaller companies** which result from the demerger will have **lower turnover**, profits and status than the group before the demerger.
- (c) There may be **higher overhead** costs as a percentage of turnover, resulting from (b).
- (d) The **ability** to raise **extra finance**, especially debt finance, to support new investments and expansion may be reduced.
- (e) **Vulnerability to takeover** may be **increased**. The impact on a firm's risk maybe significant when a substantial part of the company is spun off. The result maybe a loss in shareholder value if a relatively low beta element is unbundled and as a result the remaining risk increased.

## 2.3 Sell-offs



### Key term

A **sell-off** is the sale of part of a company to a third party, generally for cash.

A sell-off is a form of divestment involving the sale of part of a company to a third party, usually another company. Generally, cash will be received in exchange.

### 2.3.1 Reasons for sell-offs

As part of its strategic planning, a company has decided to **restructure**, concentrating management effort on particular parts of the business. Control problems may be reduced if peripheral activities are sold off.

It wishes to sell off a part of its business which **makes losses**, and so to improve the company's future reported consolidated profit performance. This may be in the form of a management buy-out (MBO), discussed in section 3 below.

In order to **protect the rest of the business from takeover**, it may choose to sell a part of the business which is particularly attractive to a buyer.

The company may be **short of cash**.

A **subsidiary** with **high risk** in its operating cash flows could be sold, so as to reduce the business risk of the group as a whole. However, as in point (e) in section 2.2.2 above, the reverse may actually be the case.

A **subsidiary** could be sold at a **profit**. Some companies have specialised in taking over large groups of companies, and then selling off parts of the newly-acquired groups, so that the proceeds of sales more than pay for the original takeovers.

### 2.3.2 Liquidations

The extreme form of a sell-off is where the entire business is sold off in a **liquidation**. In a voluntary dissolution, the shareholders might decide to close the whole business, sell off all the assets and distribute net funds raised to shareholders.

## 2.4 Spin-offs



### Key term

A **spin-off** is the creation of a new company, where the shareholders of the original company own the shares.

In a spin-off, a new company is created whose shares are owned by the shareholders of the original company which is making the distribution of assets.

In a spin-off:

- (a) There is **no change** in the **ownership of assets**, as the shareholders own the same proportion of shares in the new company as they did in the old company.
- (b) Assets of the part of the business to be separated off are transferred into the new company, which will usually have different management from the old company.
- (c) In more complex cases, a spin-off may involve the original company being split into a number of separate companies.

For a number of possible reasons such as those set out below, a spin-off appears generally to meet with favour from stock market investors:

- (a) The change may make a **merger** or takeover of some part of the business **easier** in the future, or may protect parts of the business from predators.
- (b) There may be **improved efficiency** and more streamlined management within the new structure.
- (c) It may be easier to see the value of the **separated parts** of the business now that they are no longer hidden within a conglomerate.
- (d) The **requirements of regulatory agencies** might be met more easily within the new structure, for example if the agency is able to exercise price control over a particular part of the business which was previously hidden within the conglomerate structure.
- (e) After the spin-off, shareholders have the opportunity to **adjust the proportions** of their **holdings** between the different companies created.

## 2.5 Carve-outs



### Key term

A **carve-out** is the creation of a new company, by detaching parts of the company and selling the shares of the new company to the public.

In a carve-out, a new company is created whose shares are owned by the public with the parent company retaining a substantial fraction of the shares.

Parent companies undertake carve-outs in order to raise funds in the capital markets. These funds can be used for the repayment of debt or creditors or they can be retained within the firm to fund expansion. Carved out units tend to be highly valued, as they often tend to be the “key” assets within a business and the carve-out is used to maximise their value.



### 3 Management buy-outs (MBOs) and buy-ins (MBIs)



#### Topic highlights

A management buy-out is the purchase of all or part of a business from its owners by its managers. The main complication with **management buy-outs** is obtaining the consent of all parties involved. Venture capital may be an important source of financial backing.



#### Key term

A **management buy-out (MBE)** is the purchase of all or part of the business by its managers. Management buy-outs can be the best way of maintaining links with a subsidiary, and can ensure the co-operation of management if a disposal is inevitable.

A management buy-out is the purchase of all or part of a business from its owners by its managers.

For example, the directors of a subsidiary company in a group might buy the company from the holding company, with the intention of running it as proprietors of a separate business entity.

- (a) **To the managers**, the buy-out would be a method of setting up in business for themselves.
- (b) **To the group**, the buy-out would be a method of **divestment**, selling off the subsidiary as a going concern.

#### 3.1 The parties to a buy-out

There are usually three parties to a management buy-out.

- (a) A **management team** wanting to make a buy-out. This team ought to have the skills and ability to convince financial backers that it is worth supporting.
- (b) **Directors** of a group of companies, who make the divestment decision.
- (c) **Financial backers** of the buy-out team. The main financial backers will usually want an equity stake in the bought-out business, because of the **venture capital risk** they are taking. Often, several financial backers provide the venture capital for a single buy-out. The main financial backers, for example, may persuade a bank to provide venture capital funding in the form of loans.

The **management team making the buy-out** would probably have the aims of setting up in business themselves, being owners rather than mere employees; or avoiding redundancy, when the subsidiary is threatened with closure.

#### 3.2 Reasons for sale to management

A **large organisation's board of directors** may agree to a management buy-out of a subsidiary for any of a number of different reasons:

- (a) The **subsidiary** may be **peripheral** to the group's mainstream activities, and no longer fit in with the group's overall strategy.
- (b) The **group may** wish to **sell off a loss-making subsidiary**, and a management team may think that it can restore the subsidiary's fortunes.
- (c) The parent company may need to **raise cash quickly**.
- (d) The subsidiary may be part of a **group** that has just been **taken over** and the new parent company may wish to sell off parts of the group it has just acquired.

- (e) The **best offer price** might come from a **small management group** wanting to arrange a buy-out.
- (f) When a group has taken the decision to sell a subsidiary, it will probably get better co-operation from the management and employees of the subsidiary if the sale is a management buy-out.
- (g) The sale can be arranged more quickly than a **sale** to an **external party**.
- (h) The selling organisation is more likely to be able to maintain beneficial links with a segment sold to management rather than to an **external party**.

A **private company's shareholders** might agree to sell out to a management team because they need cash, they want to retire, or the business is not profitable enough for them.

To help convince a bank or other institution that it can run the business successfully, the management team should prepare a **business plan** and estimates of sales, costs, profits and cash flows, in reasonable detail.



### Case study: Honda

In December 2008, **Honda** announced that it was pulling the plug on its Formula 1 activities, blaming the global economic downturn for its decision. On 29 December it was revealed that a management buy-out led by Nick Fry (Team Principal) and Ross Brawn (Technical Director) was being pursued. This was considered to be a logical and probably the easiest solution to Honda's Formula 1 problem as closing down the team would have been a major blow to Honda's image. It was also estimated that shutting down the team would cost in the region of \$100 million.

On 27 February 2009 it was announced that the management buy-out bid had been successful and that Fry and Brawn had persuaded the Honda Board to release the \$100 million it would have cost to shut the team down to fund the buyout. Under the new regime, Brawn GP (the new team name) won three of the first four races of the 2009 Formula 1 season and went on to secure the driver's and constructor's championships.

## 3.3 The role of the venture capitalist



### Key term

**Venture capital** is risk capital, normally provided in return for an equity stake.

Venture capital **may be provided to fund** business start-ups, business development, MBOs and the purchase of shares from one of the owners of the business.

Venture capital can also be provided through **venture capital funds**, which is a pool of finance provided by a variety of investors, which will then be applied to MBOs or expansion projects.

Venture capitalists will normally require an **equity stake** in the company and may wish to have a **representative on the board** to look after its interests.

A number of clearly defined **exit routes** will be sought by the venture capitalists in order to ensure the easy realisation of their investment when required.

Venture capitalists are far more inclined to fund MBOs, management buy-ins (MBI) and corporate expansion projects than the more risky and relatively costly early stage investments such as start-ups.

While the return required on venture capital for the high-risk, early stage investments may be as high as 80%, where the funding is for a well established business with sound management it is more commonly around the 25 – 30% mark. While this may be achieved by the successful

investments, of course there will be many more that fail, and the overall returns on venture capital funds average out at around 10 – 15%.

For MBOs and MBIs the venture capitalist will not necessarily provide the majority of the finance – a \$500 million buy-out may be funded by, say, \$15 million venture capital \$20 million debt finance and \$15 million mezzanine debt.

Venture capital funds may require:

- A 20 – 30% shareholding
- Special rights to appoint a number of directors
- The company to seek their prior approval for new issues or acquisitions

### 3.3.1 Exit strategies

Venture capitalists generally like to have a predetermined **target exit date**, the point at which they can recoup some or all of their investment in an MBO. At the outset, they will wish to establish various **exit routes**, with these various possibilities open to them:

- (a) The sale of shares to the public or to institutional investors following a **flotation** of the company's shares on a recognised stock exchange, or on the equivalent of Hong Kong's GEM.
- (b) The **sale** of the company to another firm.
- (c) The **repurchase** of the venture capitalist's shares by the company or its owners.
- (d) The sales of the venture capitalist's shares to an **institution** such as an investment trust.

## 3.4 The appraisal of proposed buy-outs

### 3.4.1 How likely is a management buy-out to succeed?

Management-owned companies seem to achieve better performance probably because of:

- A **favourable buy-out price** having been achieved
- **Personal motivation and determination**
- **Quicker decision making** and so **more flexibility**
- **Keener decisions** and action on pricing and debt collection
- **Savings in overheads** (for example, in contributions to a large head office)

However, many management buy-outs, once they occur, begin with some redundancies to cut running costs.

### 3.4.2 How should an institutional investor evaluate a buy-out?

An institutional investor (such as a venture capitalist) should evaluate a buy-out before deciding whether or not to finance. Aspects of any buy-out that ought to be checked are as follows:

- (a) Does the management team have the **full range of management skills** that are needed (for example, a technical expert and a finance director)? Does it have the right blend of experience? Does it have the commitment?
- (b) **Why** is the **company for sale**? The possible reasons for buy-outs have already been listed. If the reason is that the parent company wants to get rid of a loss-making subsidiary, what evidence is there to suggest that the company can be made profitable after a buy-out?
- (c) What are the **projected profits and cash flows** of the business? The prospective returns must justify the risks involved.
- (d) What is **being bought**? The buy-out team might be buying the shares of the company, or only selected assets of the company. Are the assets that are being acquired sufficient for the task? Will more assets have to be bought? When will the existing assets need replacing?

How much extra finance would be needed for these asset purchases? Can the company be operated profitably?

- (e) What is the **price**? Is the price right or is it too high?
- (f) What **financial contribution** can be made by members of the management team themselves?
- (g) What are the **exit routes** and when might they be taken?

### 3.5 The financial arrangements in a typical buy-out

Typically, the **buy-out team** will have a **minority** of the equity in the bought-out company, with the **various financial backers** holding a **majority** of the shares between them. A buy-out might have several financial backers, each providing finance in exchange for some equity.

Investors of venture capital usually want the **managers to be financially committed**. Individual managers could borrow personally from a bank to invest in shares.

The suppliers of equity finance might insist on investing part of their capital in the form of **redeemable convertible preference shares**. These often have voting rights should the preference dividend fall in arrears, giving increased influence over the company's affairs. They are issued in a redeemable form to give some hope of taking out part of the investment if it does not develop satisfactorily, and in convertible form for the opposite reason: to allow an increased stake in the equity of a successful company.

Large MBOs usually also require debt finance, and banks may be willing to provide loans (at a suitable rate of interest and probably with some form of security).

### 3.6 Problems with buy-outs

A common problem with management buy-outs, especially small deals, is that the managers have little or no experience in **financial management** or **financial accounting**.

Other problems exist:

- (a) Tax and legal complications.
- (b) Difficulties in deciding on a fair price to be paid.
- (c) Convincing employees of the need to change working practices.
- (d) Inadequate cash flow to finance the maintenance and replacement of tangible non-current assets.
- (e) The maintenance of previous employees' pension rights.
- (f) Accepting the board representation requirement that many sources of funds will insist upon.
- (g) The loss of key employees if the company moves geographically, or wage rates are decreased too far, or employment conditions are unacceptable in other ways.
- (h) Maintaining continuity of relationships with suppliers and customers.
- (i) Dealing with the loss of central support services previously provided by the group/parent company.

### 3.7 Buy-ins (MBIs)



#### Key term

A **management buy-in (MBI)** is when a team of outside managers, as opposed to managers who are already running the business, mount a takeover bid and then run the business themselves.

A management buy-in might occur when a business venture is running into trouble, and a group of outside managers see an opportunity to take over the business and restore its profitability.

Alternatively, research suggests that buy-ins often occur when the major shareholder of a small family company wishes to retire.

Many features are common to management buy-outs and buy-ins, including **financing**.

Buy-ins work best for companies where the existing managers are being replaced by managers of **much better quality**. However, managers who come in from outside may take **time** to get used to the company, and may encounter **opposition** from employees if they seek to introduce significant changes.

## 4 Leveraged buy-outs (LBOs)



#### Key term

In a **leveraged buy-out (LBO)** a publicly listed company is **acquired** by a specialist established **private company**. The private company funds the acquisition by substantial borrowing.

### 4.1 Procedures for going private



#### Topic highlights

A company **goes private** when a small group of individuals buys all the company's shares. Going private may **decrease costs** and make the company **less vulnerable** to hostile takeover bids.

A public company “**goes private**” when a **small group of individuals**, possibly including existing shareholders and/or managers and with or without support from a financial institution, **buys all of the company's shares**. This form of restructuring is relatively common in the USA and may involve the shares in the company ceasing to be listed on a stock exchange. Going private may **decrease costs** and make the company **less vulnerable** to hostile takeover bids.

### 4.2 Reasons for de-listing

In many instances, going private forms part of a larger transaction, with a de-listing being the last step in the assumption of control by a strategic or financial investor. Going private may also be based on the realisation that neither a wide share ownership nor possession of stock exchange listing is necessary or beneficial for future corporate strategy.

The reasons for de-listing are varied:

- (a) Maintaining a listing entails various costs which may no longer be justifiable, particularly for smaller, undervalued companies.
- (b) Ongoing expenditure relating to financial reporting and disclosure requirements and the management of investor relations may be avoided.
- (c) A de-listing also frees the company from certain transparency and disclosure obligations.

- (d) Following the stock market slumps of the last few years, many smaller businesses have found that refinancing opportunities may be restricted due to low stock market valuations.

A de-listing, on the other hand, provides strategic and financial freedom:

- (a) Long-term strategic planning is facilitated as short-term considerations of yields become less important;
- (b) Restructurings may be carried out with less public attention; and
- (c) In the event of a takeover by a strategic investor, a planned consolidation or reorganisation can be effected more easily.

### 4.3 Advantages of leveraged buy-outs

- (a) The costs of meeting listing requirements can be saved.
- (b) The company is protected from volatility in share prices which financial problems may create.
- (c) The company will be less vulnerable to hostile takeover bids.
- (d) Management can concentrate on the long-term needs of the business rather than the short-term expectations of shareholders.
- (e) Shareholders are likely to be closer to management in a private company, reducing costs arising from the separation of ownership and control (the “agency problem”).

### 4.4 Disadvantages of leveraged buy-outs

The main disadvantage with leveraged buy outs is that the company loses its ability to have its shares publicly traded. If a share cannot be **traded** it may **lose some of its value**. However, one reason for seeking private company status is that the company has had difficulties as a listed company, and the prices of its shares may be low anyway.

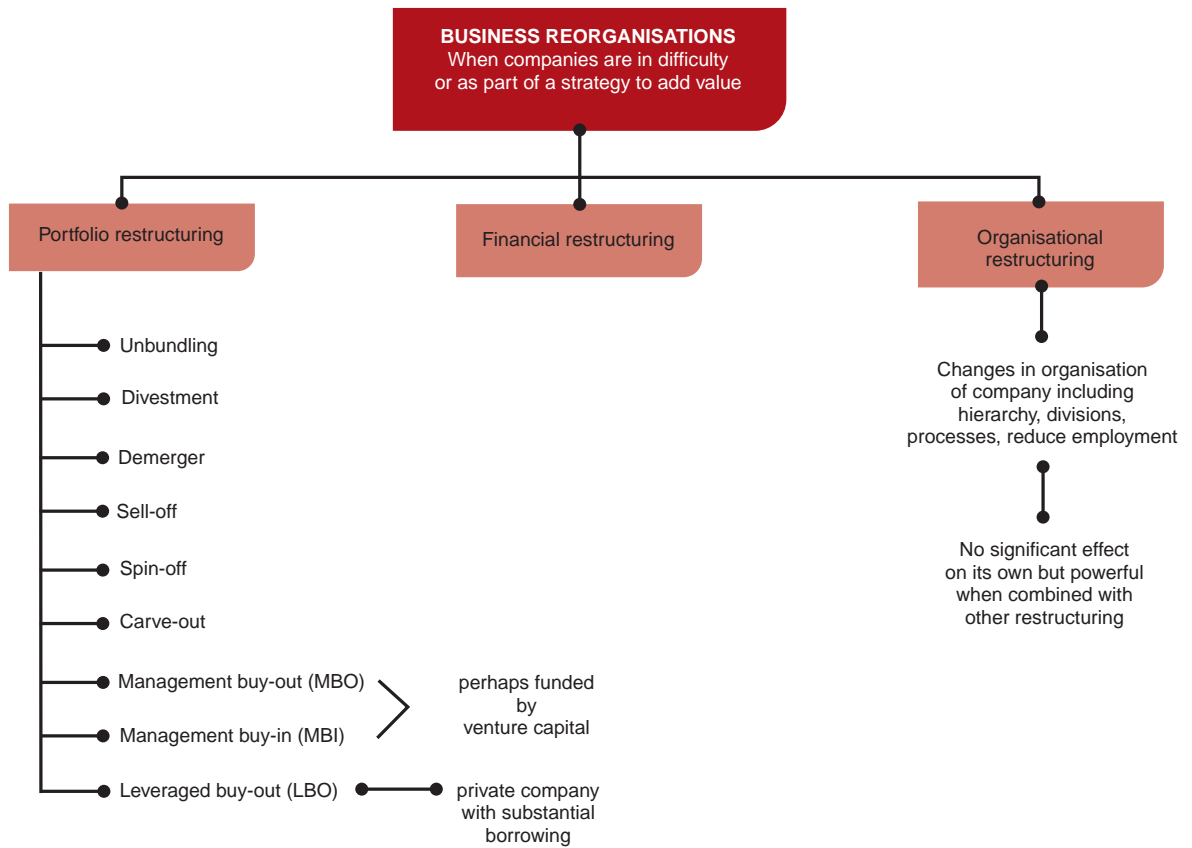


#### Case studies: Virgin and SAGA

One example of going private was **SAGA** the UK tour operator which changed status from public to private in 1990. While public, 63% of the company was owned by one family. The family raised finance to buy all of the shares, to avoid the possibility of hostile takeover bids and to avoid conflicts between the long-term needs of the business and the short-term expectations which institutional shareholders in particular are often claimed to have.

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# Topic recap



## Exam practice



### Strategic review

27 minutes

A conglomerate company is conducting a strategic review with a view to restructuring its operations through divesting one or more of its under-performing segments and/or the distribution of the sales proceeds of assets to shareholders.

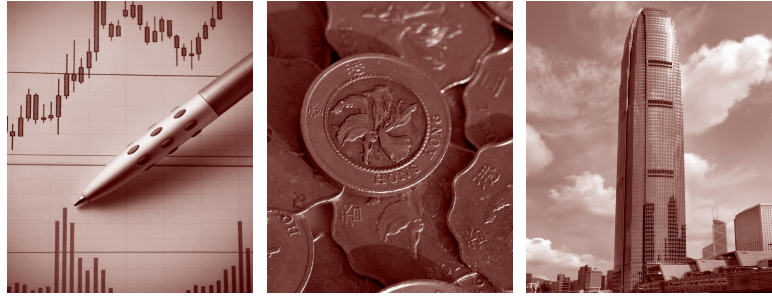
You are a CPA working in the finance department of the company, and your boss has asked you to prepare a brief presentation to the next meeting of the finance team on the topic; reasons for restructuring and divestiture. Specifically she has asked you to cover briefly the following reasons:

- (a) Spin-offs to achieve reverse synergy
- (b) Change in strategic direction
- (c) Wealth transfers from debt holders to shareholders
- (d) Information signalling of divestiture to financial markets
- (e) Management's personal agenda.

(15 marks)







## chapter 20

# Business failure and insolvency

### Topic list

- 1 **Introduction**
- 2 **Causes of excessive debt or solvency problems**
- 3 **Common problem areas within finance and treasury**
- 4 **Actions to resolve common problem areas**
  - 4.1 Understanding financial risks and their impact
  - 4.2 Decision on level of gearing
  - 4.3 Preferring simplicity to complexity
  - 4.4 Involvement of “central control”
- 5 **Business failures**
  - 5.1 Reasons for business failure
- 6 **Methods of predicting corporate failure**
  - 6.1 Financial ratios to predict failure
  - 6.2 Beaver's univariate approach
  - 6.3 Altman's multivariate approach (the Z-Score model)
- 7 **Insolvency**
  - 7.1 The insolvency process
  - 7.2 Voluntary winding-up
  - 7.3 Financial reconstruction schemes

### Learning focus

The global financial crisis has led to the insolvency of a number of businesses.

In this chapter, we outline the common factors that lead to business collapse, including excessive debt, and the preventive measures that might be taken to avoid business failure. We also discuss the main methodology for predicting corporate failure based on the financial characteristics of companies and industry-accepted models such as the Z-Score model.

Finally, we examine the key aspects of insolvency and the process of winding-up a company, whether involuntary or voluntary.

**Learning outcomes**

In this chapter you will cover the following learning outcomes:

		Competency level
<b>Business failure and insolvency</b>		
Identify and explain the key issues relating to business failure and insolvency:		
<b>11.01</b>	<b>Key factors which lead to business failures</b>	2
11.01.01	Outline common factors leading to potential business failure	
11.01.02	Understand the application of methods of predicting corporate failure	
<b>11.02</b>	<b>Common finance and treasury problem areas</b>	2
11.02.01	Identify key risk factors (e.g. breach of covenants, rating triggers) that create financial performance problems and recommend feasible solutions and preventive measures	
11.02.02	Identify causes of excessive debt (inappropriate capital structure) that may lead to distress in an organisation	
11.02.03	Identify potential key risk areas within the treasury operation and what corrective actions and preventive measures might be taken to resolve these	
<b>11.03</b>	<b>Provision of basic advice on insolvency</b>	2
11.03.01	Demonstrate an understanding of the key aspects of insolvency and/or bankruptcy	

# 1 Introduction



## Topic highlights

There are many common reasons for business failure including bad management, weak capital structure and poor financial management. Companies that are making losses may be at risk of insolvency. Profitable companies may also fail: they may be at risk of failure due to insufficient liquidity.

Inappropriate cash flow and risk management can destabilise a company. This can be caused by many factors both external in nature (for example, events in financial markets can result in corporate collapses) and internal in nature (for example, inappropriate capital structures and risk exposure strategies financing the underlying business).

## 2 Causes of excessive debt or solvency problems

Excessive debt can create risks of insolvency due to losses (insufficient profit to cover interest costs) or lack of liquidity (no cash to make interest payments). There are numerous causes for a company having what is regarded as excessive debt. The significant ones associated with corporate failures over the last 20 years can be summarised as follows.

- (a) **High gearing policy.** A policy of high gearing (i.e. high financial leverage) affects both the profitability and the solvency objective of companies. Unexpected increases in interest rates can have an immediate, catastrophic impact.
- (b) **Capital losses from a fall in asset prices.** This directly impacts the company's statement of financial position and a company can find itself unable to meet its ratio obligations (financial covenants). This places the company in default of its loans. When the loans are called up, the solvency of the company comes into question.
- (c) **Complex ownership structure.** When potential (and existing) lenders cannot understand the ownership structure of a company, and they believe that the company could shift assets around, they may be reluctant to lend funds. Lenders are concerned about the ability of the company to service its debt and the lender has to understand how the company proposes to do this. They may question why companies develop complex ownership structures. These are generally created to avoid something (perhaps taxation minimisation) but provide a warning sign to any potential lender, which in turn affects the funding opportunities for the company.
- (d) **Overtrading.** This generally refers to rapid or excessive expansion activity without consideration of the ability of the company's management to manage or fund the strategy. Whenever a company increases risk of any kind, an increase in equity rather than capital should be a consideration at the strategy evaluation (not implementation) stage.
- (e) **Overpaying for an acquisition.** Merger/acquisition activity requires a sound reasoning process to ensure that a company achieves fair value for its shareholders. Often, however, management overestimating the revenue cash flow streams and underestimating the expenditure cash flow streams creates a positive net present value. In addition, introducing greater debt into the capital structure, therefore increasing financial leverage, can potentially reduce the discount rate. The result is that the company overpays for its acquisition, sometimes excessively. A sound, rational process is essential in merger/acquisition activity.
- (f) **Purchase or pursuit of a “white elephant” and/or construction of a “Taj Mahal”.** Some developing companies out of ego rather than sound rational decision-making embark on purchasing (or sinking more cash into) a doomed project (white elephant), which has no

economic logic building a “corporate palace” (Taj Mahal). Such activities have the ability to consume vast cash resources and can place the capital structure out of line.

- (g) **Under-performance of a business unit.** This can be caused by external economic events but often is the result of poor management (logistical and financial).
- (h) **Working capital implosion.** A company carrying levels of inventories, receivables or cash in excess of those required to operate the company on a day-to-day basis will experience unnecessary increased financing costs with a direct impact on profitability and solvency.
- (i) **A recessionary economy.** This could have a number of direct impacts on a company through no fault of management (examples might be a fall in demand for products or services, a squeeze in operating margins, reduced cash flows, etc.). This clearly affects profitability and a result may be that the company can be deemed to be in default of their loans if financial covenants cannot be met. This can result in loans being called up and can cause solvency (or insolvency) problems.

### 3 Common problem areas within finance and treasury



#### Topic highlights

The results of treasury actions have a direct effect on the financial position of a company. Treasury activity is secondary to the underlying business of the company but as a result of the business activity, cash flows require to be generated and this gives rise to financial risk.

The board of directors will set treasury policies but some of the information that treasury provides to the board may be incorrect due to errors within sensitivity models or lack of expertise. Part of the internal audit process should be charged with identification of potential problems and implementation of policies and procedures to adapt to a changing environment.

There are many potential problems:

- (a) **Inadequate or excessive liquidity.** Treasury should analyse all cash flows in terms of operational cash flows, forecasts based on the statement of financial position and ratio analysis. This ratio analysis will reveal a trend of the company's position with regard to its working capital liquidity (current assets and liabilities). Operational cash flow forecasts must be updated regularly and any shortfalls or surpluses must be identified at an early stage so that the company can either arrange borrowing facilities or investments.

- (i) Cash deficiencies might spell disaster for a company.
- (ii) Cash surpluses might make a company a “takeover target”.

Liquidity problems can be caused by an unexpected issue such as bad debts (i.e. a large single customer or a number of smaller customers not paying on time, or at all).

In today's market, many liquidity problems are caused by the loss of the support of lenders due to:

- (i) lack of, or reduction in value of, collateral security
- (ii) invoking the “material adverse changes” clause in loan documentation
- (iii) technical default (for example, breach of financial covenants)
- (iv) reduction in credit perceptions about the company.

- (b) **Inadequate capital and excessive gearing.** This issue is discussed above in section 2. Inadequate capital and excessive gearing bring the effects of operational leverage and financial leverage together and it is essential that the board understands the company's exposure and what the implications are for corporate survival.
- (c) **Inability to access funding.** This could be an inability to gain equity, debt, or hybrid finance (for example, convertibles). Funding is generally available to well managed companies. The

key issue is the cost of the desired funding and the risk/return trade-off between raising funds and investing them in profitable business opportunities.

Lack of funding may result from either internal or external events:

- (i) **Internal events** such as the company being unprofitable or having insufficient cash flows to attract an investor (equity and/or debt) to invest funds as the company's credit rating is inadequate.
  - (ii) **External events** such as government, central bank, regulatory authorities or economic conditions restricting the availability of funding. Market liquidity is another external event that can cause a lack of funding. If lack of market liquidity causes interest rates to rise dramatically, funding choices of the company will be restricted because the cost of raising funds may be greater than the investment returns the company can generate.
- (d) **Interest rate increase or adverse currency movements.** This makes the cost of raising debt funds potentially greater than the investment returns the company can generate. In these circumstances, the corporate treasurer should look for cheaper funding through alternative sources and manage existing interest rate risk on current funding to ensure that any increased cost of debt funding is managed and will not result in negative returns on existing investments.

Movements in foreign exchange rates introduce transaction, translation and economic risk to a company and the potential impact on its cash flows.

- (e) **Business market or product/service failure.** As a result of this increased business risk, revenue cash flows may fall and expenditure cash outflows increase. This is one reason for treasurers to arrange standby facilities that can be drawn down at immediate notice.

The effects of these types of failure are many. For example, credit lines might be withdrawn because either financial covenants may not be able to be met due to reduced profitability or there has been a "material adverse changes" clause in loan documentation. There is also a high risk that customers will sue because of the flow-on effect to their businesses.

- (f) **Cash management.** This is self-explanatory. Anything that reduces normal cash flow increases risk (for example, loss of revenues, increase in expenditures, inability to raise funding etc.). Lack of cash flow will threaten the viability of any business. A company can be highly profitable but still face bankruptcy due to illiquidity (or insolvency).

Debt collection and payment of expenditure are potential cash flow problems. Credit collection policy, on the revenue side and payment terms, on the expenditure side, may get out of line. This is part of working capital management. Due to timing problems and credit issues, funding must be available to meet any shortfall, or investment policy must be developed to invest cash surpluses.

- (g) **Breach of lending documentation.** A liquidity crisis could result for a company if loans were to be "called up" due to:
  - inability of a company to meet financial covenants
  - decline in company's credit rating to an unsatisfactory level (rating trigger)
  - invoking of "material adverse change" clauses
  - other non-compliance issues (some technical aspect of the loan being breached)

The corporate treasurer should negotiate a period of grace for remedying any breach of loan documentation clause. The definition section of the loan documentation is critical (for example, definitions of "material adverse change" and so on).

- (h) **Shareholder, banker and capital market dissatisfaction.** The CEO should be involved in investor relations. This investor relations role is an important part of the funding process and the corporate treasurer must ensure that potential investors, debt or equity, are comfortable with the management of the company.

- (i) **Excessive risk (business or financial).** Whenever risk increases (actual or simply perceived), the level of equity capital should increase accordingly. If lenders are of the opinion that risk has increased they will take action, which may include reduction of funding, an increase in the cost of funding or in extreme cases a withdrawal of funding.
- (j) **Lack of internal controls within the treasury function.** Internal controls are essential within any treasury function. Key issues are the segregation of duties and the development of a risk culture to ensure there are adequate controls. A mixture of internal audit and external audit processes should manage these issues.

## 4 Actions to resolve common problem areas

### 4.1 Understanding financial risks and their impact

The key financial risks will be:

- Interest rate risk
- Falling rates of return on the company's asset base
- Foreign exchange risk
- Unexpected funding requirements
- Changing sentiments in debt and equity markets
- Taxation and accounting changes

The treasurer then has to assess the nature of each risk and how they might impact the company. Some or all of the following actions may be appropriate:

- (a) Decision on what financial risks the company is prepared to bear and what risks must be hedged or insured.
- (b) Preparation of liability management budgets taking into account the company's decision on risk.
- (c) Design and implementation of a model that projects results given a liability strategy and a range of assumptions (for example, interest rates, foreign exchange rates and so on).
- (d) Appointment of a person (or team) that understands the risks and impacts, can implement the strategies and has appropriate authority.
- (e) Implementation of an effective system for recording and analysing actual transactions and net positions and one that enables measurement of the liability management performance.

### 4.2 Decision on level of gearing

In general, more equity improves a company's credit rating and reduces its cost of debt funding. Debt is cheaper than equity and so weighted average cost of capital falls. This does not, however, automatically mean an increase in the share price. A company should ensure that it remains sufficiently flexible to switch from debt to equity funding or *vice versa* as the company's requirements and capital market conditions dictate.

### 4.3 Preferring simplicity to complexity

Over time, fast growth businesses usually involve many different funders either through cheaper cost of funds, or through selective allocation of collateral security in order to optimise borrowing capacity. Ultimately, their financing may become complex and potentially inefficient.

Companies with an array of finance from different investors and lenders, with differing investment and security terms and conditions leave themselves in a highly inflexible position, and therefore exposed if there is a downturn in their operations.

## 4.4 Involvement of “central control”

Modern management is generally decentralised in nature. The management of liabilities and the associated financial risks, however, cannot be fully delegated to subsidiary companies, divisions or business units. Reality dictates that only the corporate head office (central control) can satisfactorily manage the group's overall foreign exchange and interest rate exposure. For example, the strength of the group's consolidated statement of financial position may enable finer borrowing margins to be achieved by head office than by the subsidiaries, divisions or business units.

Total “central control” of liability management is often impractical in a conglomerate, and sometimes potentially dangerous if subsidiary units have localised complex risks that are capable of being monitored by them. In these cases, a more decentralised approach may be favoured.

## 5 Business failures



### Topic highlights

A significant issue is often an inappropriate capital structure financing the underlying assets, usually with an over-reliance on external borrowings (i.e. excessive debt) in the capital structure. Excessive debt results in both unacceptable levels of operating and financial leverage.

Business failures occur at regular intervals, caused sometimes by company specific issues, external specific issues or a combination of both. No matter how severe a recession, some companies survive but others fail. If a company is run badly enough then it can quickly collapse. Bad management rather than bad economies is the main cause of corporate failure.

### 5.1 Reasons for business failure

The following are some of the major factors contributing to business decline and failure in the recent past.

#### 5.1.1 Inadequate management

- (a) Inbuilt personality factors of the senior management involving a lack of key traits (examples of which would be determination, resilience, self reliance, ruthlessness, willingness to take risks, effort, perseverance)
- (b) One man rule with a non-participating board of directors leading to a completely unbalanced top management team
- (c) Lack of management experience and specific skills
- (d) Imbalance and skill gaps in the management team
- (e) Unwillingness to take advice from external (and internal) advisers
- (f) Inability to organise, delegate and control
- (g) Inability to change and grow with the business
- (h) Inability to get on with other workers and managers
- (i) Lack of commercial maturity and profit-consciousness
- (j) Moral, social and political hang-ups allowing these emotions to cloud business judgment
- (k) Complacency
- (l) Insufficient concern for customer



### 5.1.2 Weak capital structure

- (a) Undercapitalised/overgeared, perhaps involving a reluctance to part with equity (excessive dependence on outside funding for finance)
- (b) Burdened with the wrong mix of short and long-term debt where long-term debt is financing short-term assets and short-term debt is financing long-term assets
- (c) Wrong financing scheme altogether
- (d) Overtrading, with insufficient permanent finance to support the level of business activity

### 5.1.3 Lack of financial management

- (a) No regular management accounts
- (b) Unreliable management accounts
- (c) Inadequate accounting information or internal control (for example, some months after the departure of the financial controller, there may not be sufficient internal control on cash outflow, debt collection, work in progress and control on expenditure on capital items)
- (d) Poor control of inventories and receivables
- (e) Clumsy juggling of the payment of creditors
- (f) Over-reliance on a major supplier or major customer, which itself may be in financial difficulties or in a position to exercise unfair advantage over the company
- (g) Problems of wages being allowed to rise without the corresponding uplift in performance and/or productivity
- (h) No product profitability analysis
- (i) Failure to forecast (or update forecasts of) cash flow
- (j) "Buying work" (i.e. taking on loss-making work which the business can ill afford to finance)
- (k) Profit sensitivity
- (l) Problems of introducing new computer systems
- (m) Fraud/Creative accounting

### 5.1.4 Structural economic/market changes

- (a) Lack of controlled research and development expenditure combined with a failure to improve and innovate
- (b) Collapse in market or company-specific demand
- (c) Changes in fashion
- (d) Changes in weather
- (e) Shifts in seasonality (ordering, production, inventory holdings)
- (f) Changes in public expectation of standards and quality
- (g) Alternative (or substitute) products
- (h) Changes in competition (especially from abroad)
- (i) Governmental changes (for example, exchange control tariffs)

### 5.1.5 High cost structure

- (a) Incorrect breakeven analysis specifically failing to recognise the breakeven point
- (b) Inadequate throughput or excessive capacity
- (c) Effect of partial close-downs on the remainder of the company
- (d) Current machine inefficiency or labour inefficiency and an unwillingness to change

- (e) Getting manning levels right
- (f) Short-time working compared to redundancies
- (g) Too much capital tied up in non-productive assets
- (h) Uncontrolled research and development expenditure

### 5.1.6 Failure of big projects and acquisitions

- (a) The predicted (and relied upon) synergies failing to materialise post-acquisition
- (b) Inability to say “stop” or “no” to a project that has started to go bad
- (c) Bad timing or bad judgment
- (d) Inadequate application of investment appraisal techniques
- (e) Construction of a “Taj Mahal” and/or not knowing how to dispose of a “white elephant” (see section 2)
- (f) Exaggerated fear of bad publicity and public relations on a closedown

## 6 Methods of predicting corporate failure



### Topic highlights

Business failure can be predicted by various models, which emphasise defects, mistakes and symptoms.

**Ratio analysis** often forms the basis of comparisons with performance over time or with other companies. Comments on a company based on such ratios are far more likely to be right than comments based on a casual read through of a set of accounts.

Primarily, a company's financial health can be assessed with the help of various financial ratios. For predicting corporate failure, a single ratio may not be useful and therefore a combination of ratios might be necessary. Various models have been developed to assess a company's risk of failure.

### 6.1 Financial ratios to predict failure

Financial ratios are indicators of the performance and financial position of a company. They are used to draw meaning out of the financial statements

- (a) **Performance ratios**, including ratios that are indicative of the performance of the company, for example, gross margin, operating margin, ROCE.
- (b) **Efficiency ratios**, conveying the efficiency levels at which a company is functioning, for example, labour turnover ratios and labour efficiency ratios.
- (c) **Risk related ratios**, important to lenders of finance as they indicate the obligation fulfilling capacity of a borrowing company (for example, gearing ratios, debt service coverage ratios etc.).
- (d) **Liquidity ratios**, indicating whether sufficient cash is available to meet short-term obligations, for example, current ratio and cash exhaustion ratio.
- (e) **Working capital ratios**, such as debtor days, creditor days and stock days, which enable calculation of the number of days in the working capital cycle and help to identify what is causing any short-term liquidity problems.

- (f) **Stock market ratios**, which help equity shareholders to value their investments and assess the returns from them (for example, PE ratio, EPS and dividend yield ratio).

All of these ratios are useful to some extent in determining whether a company is performing to the desired standards and benchmarks. However, ratios alone cannot be relied upon to predict corporate failure.



### Topic highlights

As well as ratios, **other information** can be used to analyse a company's performance and identify possible problem areas. This will include information relating to **non-current assets** and **financial obligations, contingencies** and **post balance sheet events**.

In the context of predicting corporate failure, there are two main approaches to using financial ratios.

## 6.2 Beaver's univariate approach

The univariate analysis to predicting business failure is based on a single financial ratio to distinguish between companies with a probability of failure and other companies that do not show signs of failure. William Beaver first developed it in 1966.

According to Beaver, cash flow borrowing is the best indicator of failure in companies. Cash flow borrowing indicates borrowing against the actual cash flow as against the earnings before interest and tax. Operating cash flow is the cash that a company generates through running its business. He argued that operating cash flow is a better measure of a business's profits than earnings because a company can show positive net earnings on the income statement and still not be able to pay its debts. It is the cash flow and not the accounting profit that pays the debts.



### Key term

$$\text{Beaver's failure ratio} = \frac{\text{Operating cash flow (i.e. EBIT) + Depreciation} - \text{Taxes}}{\text{Short- and long-term debts}}$$

Subsequent studies have shown that companies with a Beaver failure ratio of less than 0.3 fail within five years. Even though, in most cases, it was found that individual ratios could be used to distinguish between a potential failure and a non-failure firm, the univariate approach was considered too rigid due to its dependency on a single ratio. Instead, a combination of ratios was considered more useful in predicting failure.

## 6.3 Altman's multivariate approach (the Z-Score model)



### Topic highlights

Altman researched the **multivariate approach** to predicting business future by analysing a number of variables for **failed** and **non-failed** companies. **Five key indicators** emerged which are used to derive Altman's **Z-Score model**.

Edward Altman researched a number of financial ratios of companies that had failed and of those that had not failed in the US. The result of his research was the development, in 1968, of the Z-Score model for predicting corporate failure.

This model combines five different financial ratios to determine the likelihood of insolvency among companies. The ratios included in the model are considered to be significant indicators of the

financial health of a company. Each ratio is given a separate weighting and the values are added together to obtain a score called the Z-Score.



### Key term

The **Z-Score model** is stated as follows:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

Ratio	To measure (i.e. significance of)
Where: $X_1$ = working capital/total assets	Liquidity
$X_2$ = retained earnings/total assets	Cumulative profitability
$X_3$ = earnings before interest and tax/total assets	Productivity of assets
$X_4$ = market value of equity + preference shares/ book value of total debt	Gearing levels
$X_5$ = sales/total assets	Revenue generating capacity

The scores are assessed on the basis of the following table:

Z-Score	Prediction
<b>Less than 1.81</b>	High probability of corporate failure
<b>1.81 to 3</b>	Needs further investigation
<b>Above 3</b>	Financially sound company

The lower the score, the higher the possibility of bankruptcy. Companies with Z-Scores above 3 are considered to be healthy and therefore unlikely to become bankrupt. Scores between 1.81 and 3 lie in a grey area and companies with scores of less than 1.81 are highly likely to fail.



### Example: Z-Scores

Calculate the Z-Score from the following information on SEG Company.

#### STATEMENT OF FINANCIAL POSITION

		\$m
<i>Total liabilities and equity</i>		
Equity share capital (10m shares)		120
Retained earnings		130
Long-term debt		200
Total		<u>450</u>
<i>Total assets</i>		
	\$m	\$m
<i>Non-current assets</i>		
Tangible assets	203	
Intangible assets	<u>60</u>	
		263
<i>Current assets</i>		
Inventory	122	
Receivables	33	
Cash and cash equivalents	105	
<i>Current liabilities</i>		
Account payables	<u>73</u>	
Net current assets		187
Total		<u>450</u>

## INCOME STATEMENT

	\$m
Net revenue	1,283
Cost of sales	678
Trading profit	<u>605</u>
Operating expenses	525
EBIT	<u>80</u>
Interest	30
Profit before tax	<u>50</u>
Tax @ 16%	8
Profit after tax	<u><u>42</u></u>

The market value of one equity share is \$15.

**Solution**

	<i>Ratio</i>	\$m	\$m
X <sub>1</sub>	Working capital/total assets (W1)	<u>187</u> 523	0.36
X <sub>2</sub>	Retained earnings/total assets	<u>130</u> 523	0.25
X <sub>3</sub>	Earnings before interest and tax/total assets	<u>80</u> 523	0.15
X <sub>4</sub>	Market value of equity/book value of total debt (W2)/(W3)	<u>150</u> 273	0.55
X <sub>5</sub>	Sales/total assets	<u>1,283</u> 523	2.45

## WORKINGS

1	Total assets	= Non-current assets + Current assets = 263 + (122 + 33 + 105) = 523
2	Market value of equity	= 10m shares × \$15 = 150
3	Total debt	= Long-term debt + Current liabilities = 200 + 73 = 273
	Z-Score	= 1.2X <sub>1</sub> + 1.4X <sub>2</sub> + 3.3X <sub>3</sub> + 0.6X <sub>4</sub> + 1.0X <sub>5</sub> = 1.2(0.36) + 1.4(0.25) + 3.3(0.15) + 0.6(0.55) + 1.0(2.45) = 0.432 + 0.350 + 0.495 + 0.330 + 2.45 = 4.057

As the Z-Score is above 3, it may be concluded that SEG Company is financially sound.

The Z-Score model is regarded as a good indicator of corporate failure. Banks and financial institutions for credit risk analysis extensively use Z-Score models. It also helps them to decide how much risk premium must be added to the interest rate on corporate loans.

### 6.3.1 Disadvantages of the Z-Score model

The Z-Score model does have some disadvantages:

- (a) It is a statistical measure and is subject to some error. There is, therefore, the possibility that it may predict the failure of a company that may be financially sound or the success of a company which may be financially unstable.
- (b) It is difficult to draw conclusions for companies whose Z-Score falls between 1.81 and 3 (i.e. the “grey area” for which there is no prediction).
- (c) It was designed only for manufacturing companies, hence cannot be used by non-manufacturing companies without modification.
- (d) It cannot be applied uniformly to all companies across different industries, as the problems faced by each company are different.
- (e) It indicates the probability of financial distress but does not provide solutions to overcome the distress.
- (f) Its  $X_4$  ratio requires market value of equity, therefore the model is meant only for listed companies.
- (g) Financial data to calculate the Z-Score may not be available when the company is actually failing.
- (h) Z-Scores are effective only for the short to medium term.
- (i) It is valid only for a given point in time thus not indicating whether the financial condition is improving or worsening.

Application of financial distress models in emerging markets is problematic because the information required for prediction may not be accurate.

## 7 Insolvency

### 7.1 The insolvency process



#### Topic highlights

Insolvency has afflicted an increasing number of companies recently. The insolvency process generally begins when the company is unable to meet scheduled payments on its debt.

Bondholders' rights are senior to those of the equity holders, especially if the bondholders have liens or mortgages on assets owned by the distressed company. The creditors of a company generally have the right to force a company into bankruptcy if scheduled debt payments are not made or if the condition of the company is such that debt payments may be in default in the near future. This is known as an “involuntary winding-up” and is initiated when any creditor of the company petitions the court to begin proceedings against the company.

Insolvency may occur when a company's projection of cash flows indicate that it will not be able to meet its debt obligations in the near future. The board of directors are the key decision-makers in this process but will often involve the major creditors in the decision concerning bankruptcy. The management of the company may petition the courts for voluntary winding-up.

Shareholders have limited rights in the event of financial distress of their company. They have the lowest-priority claim on both the earnings stream and the assets of the company.

The principal legislation in Hong Kong relating to corporate insolvencies has been the Companies Ordinance (Cap 32), supplemented by the Companies (Winding Up) Rules (Cap 32H). With the introduction of the new Companies Ordinance the winding up and insolvency law will be retained,

but included in a Companies (Winding Up and Miscellaneous Provisions) Ordinance. (A separate review of the law on winding up and insolvency will be undertaken in the future.) The new Companies Ordinance is expected to come into force in 2014 after various pieces of subsidiary legislation are passed. Until that time Companies Ordinance (Cap 32) will continue to apply.



### Key terms

**Bankruptcy** is a legally declared inability or impairment of ability of an organisation to pay its creditors.

Creditors may file a bankruptcy petition against a debtor (**involuntary bankruptcy** or **winding-up**) in an effort to recoup a portion of what they are owed or initiate a restructuring.

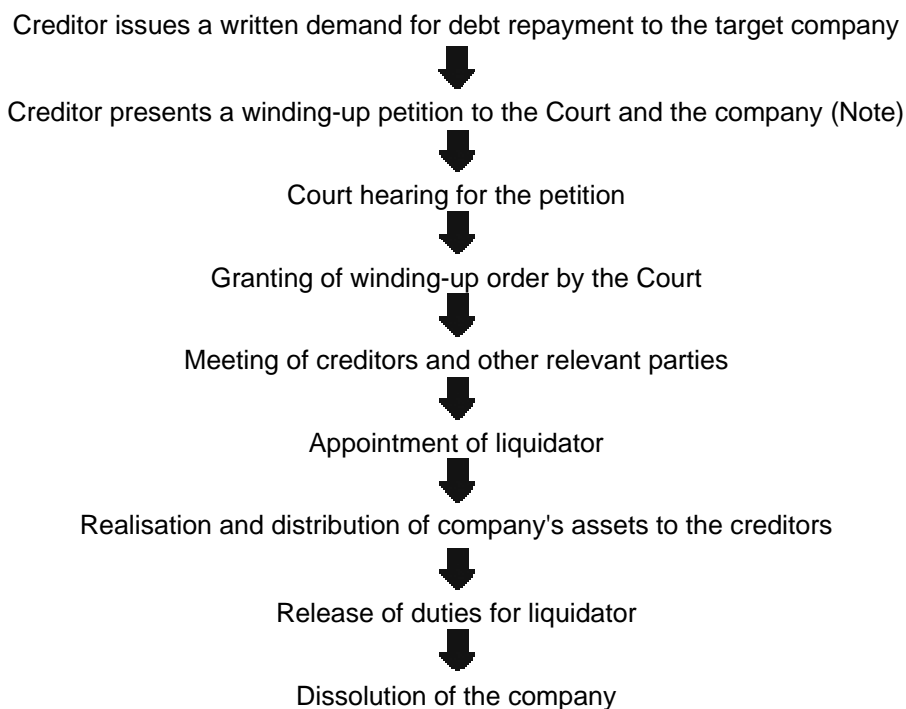
Bankruptcy initiated by the insolvent organisation is known as **voluntary bankruptcy** or winding-up.

In a **winding-up** of a limited company, all the assets of the company would be realised (sold off and converted to cash) through a legal process in order to repay its debts. Winding-up would bring the company to an end.

There are several key questions to address:

- Is the company's inability to meet scheduled debt payments a temporary cash flow problem?
- Is it a permanent problem caused by the company's losses?
- Can a short-term restructuring arrangement work?
- What is the impact on the long-term value of the company?
- To its lenders and shareholders, is the company worth more liquidated than continuing to trade?

#### 7.1.1 Overview of the process for an involuntary winding-up



**Note.** The winding-up proceedings are deemed to commence at the time of presenting the winding-up petition to the Court.

### 7.1.2 Petition for winding-up

Before presenting a petition, a **written demand** issued by the creditor requiring the company to pay the debt must be left **by hand** (not sent by post, by registered post, by fax, or by electronic means) at the registered office of the company. 21 days must be given to the company to pay the debt.

If the company fails to pay the debt within 21 days, the creditor can present the petition to the Court.

A shareholder or the company itself can also present a winding-up petition. The company may also be wound-up voluntarily without a Court's winding-up order (see section 7.1.4)

### 7.1.3 Grounds for a winding-up order

The usual circumstances under which the Court would make a winding-up order are:

- (a) The company itself has, by a special resolution of the members (subscribers or shareholders), resolved that the company be wound up by the Court;
- (b) The company does not commence its business within a year from its date of incorporation, or suspends its business for a whole year;
- (c) The company has no subscriber or no shareholder;
- (d) The company is unable to pay its debts;
- (e) An event occurs on the occurrence of which the company's memorandum or articles of association provides that the company is to be dissolved; or
- (f) The Court is of an opinion that it is just and equitable (reasonable) to do so. A winding-up order may also be made if it is proved that the affairs of the company have been conducted in a manner unfairly and prejudicial to the interest of some shareholders of the company, or its shareholders generally.

In considering these grounds, the Court will usually take into account the circumstances of the company including whether it is insolvent and whether there is an alternative solution to the dispute, such as buying out the shares of a disgruntled/dissatisfied shareholder.

### 7.1.4 Impact of a winding-up order

When a winding-up order has been made, no legal proceeding shall be continued or commenced against the company without approval from the Court.

#### Impact on creditors

After a winding-up order has been granted by the Court, the company's creditors will be asked to attend the "First Meeting of Creditors and Contributories". A statement of the company's affairs, which is prepared by the director or responsible officer of the wound-up company, will be presented at the meeting. This statement is similar to a statement of financial position of the company and contains details of all the company's assets and liabilities.

Furthermore, resolutions may be passed in relation to the further conduct of the winding-up, such as whether or not to apply for the appointment of a liquidator in place of the provisional liquidator, and whether or not to appoint a committee of inspection.

If the creditors wish to attend the meeting but are unable to do so, they may send proxies to represent their interests and to vote on behalf of them.

#### Impact on company

After the commencement of winding-up proceedings (that is, after the presentation of the winding-up petition), all dispositions of the property of the company is void pursuant to s.182 of the 'old' Companies Ordinance. In other words, no transfer of any property of the company is allowed.



Therefore, banks will usually freeze a company's account when they know that a winding-up petition has been presented against that company.

### Impact on shareholders

After the granting of winding-up order, the shareholders' liabilities are limited to the value of shares held by them (limited by shares). In this case, there will be no liability further than the value of any shares in the relevant shareholders' names which they have not yet paid for at the time the company is wound up.

### Impact on directors

Directors will not be subject to personal liability unless they have obtained advantages from the company unlawfully or in breach of the duties as a director. The powers of all directors of the company will cease after the making of a winding-up order.

## 7.1.5 Conclusion of winding-up

The liquidator can apply to the Court for the release of the duties once the following have been accomplished:

- All the assets of the company have been realised (i.e. all assets have been sold and converted to cash);
- Investigations related to the winding-up proceedings are completed; and
- A final dividend (if any) has been paid to the creditors to settle the debts.

The liquidator will send notices, together with a summary of the relevant receipts and payments in the liquidation, to the creditors and contributories of the company of the intention to apply to the Court for release from the duties as liquidator. At this point, any creditor or contributory has 21 days from the date of the notice to raise objection to the intended release of the liquidator.

After obtaining the order for release from the court, the liquidator will file a "Certificate of Release of Liquidator" with the Registrar of Companies. The company shall be dissolved two years after the filing of the "Certificate of Release of Liquidator".

## 7.1.6 Alternative to involuntary winding-up

The company may try to negotiate with the creditors in order to reach a compromise regarding the repayment of the debts, and see if the creditors can be persuaded to withdraw the petition.

Alternatively, the company can propose a scheme of arrangement under the Companies (Winding Up and Miscellaneous Provisions) Ordinance (previously under section 166 of the 'old' Companies Ordinance). Upon application by the company, the creditors, or the liquidator (in the case where a winding-up order has been granted), the Court may order a meeting of all the relevant parties be held to discuss and negotiate the details of an arrangement for debt repayment.

If a majority in number representing three-fourths in value of the creditors (who are voting either in person or by proxy at the meeting) agree to any compromise or arrangement, the compromise or arrangement shall be binding on all the creditors if it is also sanctioned by the court. Sometimes the approved arrangement may involve the re-organisation or transfer of the company's share capital, or even the merging of two or more companies.

## 7.2 Voluntary winding-up

No matter whether the company is in financial difficulty or not, it may hold a general meeting of its shareholders to bring itself to an end by winding-up procedures. If a special resolution is passed for winding-up, the company may then apply to the Court for a winding-up order (via procedures similar to a creditor's petition discussed in section 7.1.2 above).

Alternatively, a special resolution that the company be wound up voluntarily may be passed. In that case, no winding-up order from the Court is necessary.

### 7.2.1 Procedure for voluntary winding-up

- (a) A special resolution for voluntary winding-up is passed by the shareholders, on the recommendation of the directors.
- (b) The company calls a meeting of creditors.
- (c) A liquidator is appointed, by the shareholders (subject to approval by the creditors) or by the meeting of creditors.
- (d) Further, an inspection committee (consisting of representatives of the creditors) may be appointed to supervise the exercise of power by the liquidator.
- (e) The directors of the company have to make a full statement of the position of the company's affairs, together with a list of creditors and the estimated amount of their claims.
- (f) The liquidator deals with the affairs of the company, the liquidation of assets and payments to creditors until the liquidation process is complete.
- (g) When the affairs of the company have been fully wound up, the liquidator will produce an account of the winding-up, and call a final meeting of the company and of the company's creditors. The liquidator obtains his release.
- (h) The company is dissolved.

At the commencement of the voluntary winding-up, the company ceases to carry on business except that which may be required for the benefit of winding-up smoothly. Furthermore, any transfer of shares (except a transfer made by the liquidator or made with his/her approval), and any alteration to the status of the members of the company which is made after the commencement of a voluntary winding-up, will be void.

The legal status and powers of the company will continue until it is dissolved.

### 7.2.2 Board resolution

If no special resolution can be passed at a general meeting of shareholders, the board of directors may nevertheless pass a resolution that the company be wound up because the company cannot by reason of its liabilities continue its business. Insolvency proceedings by the directors (and not by the shareholders or creditors) is a unique feature of Hong Kong insolvency law.

A declaration recording such resolution has to be signed by the directors and be delivered to the Registrar of Companies. Meetings of the company and of the creditors have to be summoned within 28 days of the delivery of such resolution to the Registrar of Companies. A provisional liquidator also has to be appointed upon the delivery.

## 7.3 Financial reconstruction schemes

It is possible to perform either a reorganisation or liquidation informally.

In an informal liquidation, title to the distressed company's assets is transferred to a third party (called an assignee or trustee) who liquidates the assets through a sale or public auction and then distributes the proceeds to the creditors on a pro rata basis, according to the seniority of the claims.

The informal liquidation is usually only appropriate for smaller companies and does not automatically result in a full and legal discharge of all of the debtor's liabilities.

An informal reorganisation typically involves a company which is fundamentally sound, but which is undergoing temporary financial difficulties. Its creditors often carry this out via an agreed write-off of some portion of the company's debts. The company's creditors work directly with management to establish a plan for returning the company to a sound financial basis. These plans usually involve some restructuring of the company's debt, with creditors agreeing either to reduce or reschedule debt payments in order to ensure the company's continuing operation.

### 7.3.1 Response of the individual suppliers of capital to a reconstruction scheme

When a company is liquidated suppliers of capital are repaid in the following order of priority:

- Secured money lenders (e.g. debentureholders)
- Preference shareholders
- Unsecured creditors
- Ordinary shareholders

The interests of all individual suppliers of capital must be taken into consideration in a financial reconstruction scheme. The response of each party will be different depending upon the benefit they obtain from a financial reconstruction as compared to liquidation.

### 7.3.2 Secured lenders

Secured lenders (such as debenture holders and long-term loan lenders) will respond positively to a financial reconstruction scheme if they are convinced that they cannot recover their entire dues on liquidation. The reconstruction can be made more attractive for the lenders by attaching debt-equity swaps to their securities in the company so that they can hope to recover their claims out of future profits.

### 7.3.3 Preference shareholders

Preference shareholders generally suffer a lower amount of loss as compared to the ordinary shareholders in the case of liquidation. However, like debtholders, preference shareholders will respond positively to a financial reconstruction scheme if they are given a share in equity. If the reconstruction results in a reduction in the nominal value of their shares, they may ask for an enhancement in the rate of dividend.

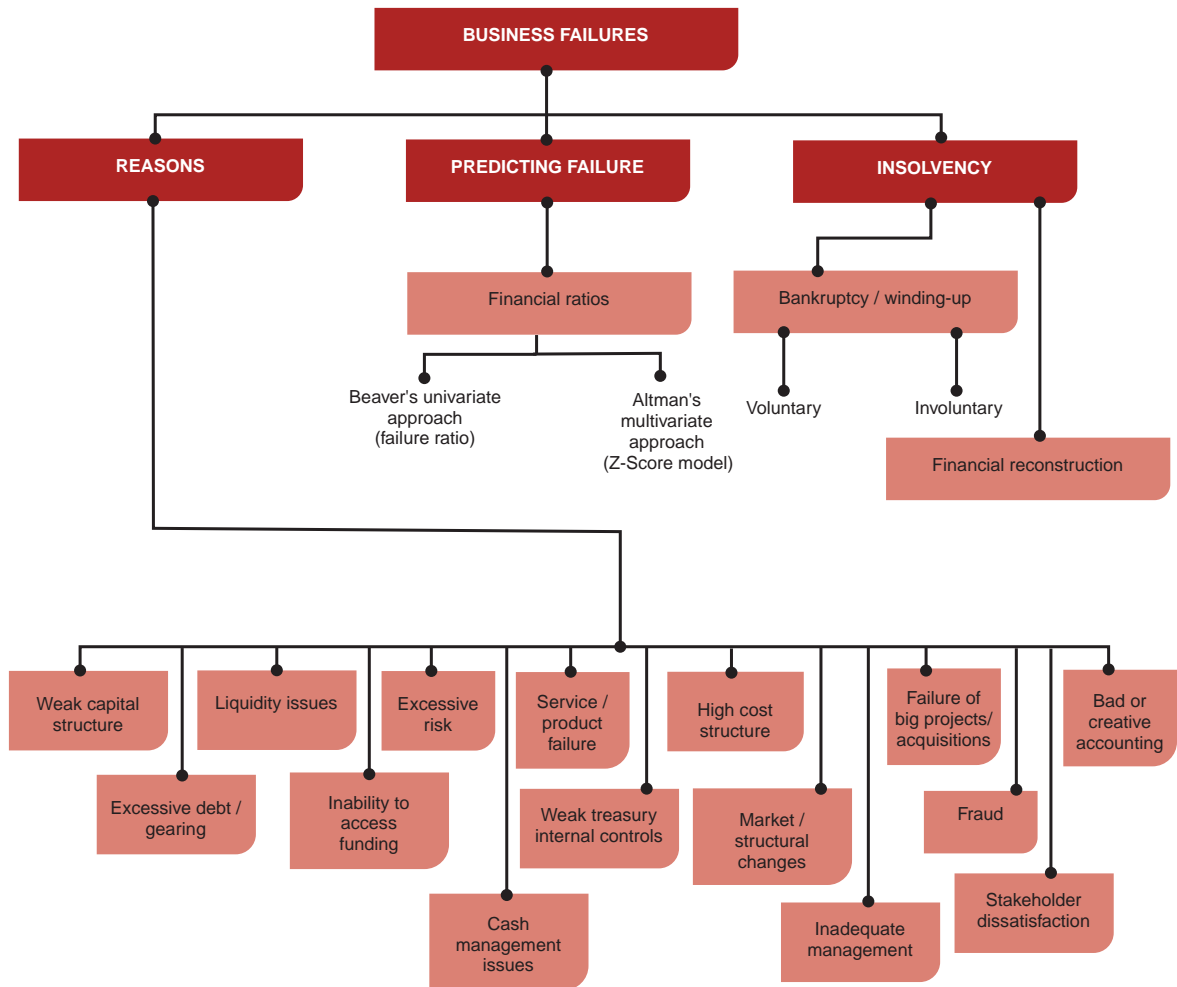
### 7.3.4 Unsecured creditors

Unsecured creditors are more at risk of losing money in the case of liquidation. They will vote in favour of reconstruction if they hope to recover maximum claims in this manner. A financial reconstruction scheme can be made more attractive to unsecured lenders by converting their unsecured debts into secured debts.

### 7.3.5 Ordinary shareholders

Ordinary shareholders are the last in line to receive repayment of their capital if the business is wound up on liquidation. Sometimes they do not receive anything at all as the losses are too high. As a result, ordinary shareholders are more likely to favour a financial reconstruction scheme that will help them to retain their stake in the company as well as to achieve a better value for their shares upon reconstruction.

# Topic recap



## Exam practice



## Central Cinema Company

18 minutes

Central Cinema Company (CCC) operates a chain of cinemas throughout greater Hong Kong. In recent months, the company has experienced increased difficulty in paying its bills. The company has been marginally profitable until the last two years, when it began suffering losses. The cinemas are located on reasonably valuable real estate, which is owned by the company. The company's assets have an estimated liquidation value of \$40 million, of which \$35 million is real estate and \$5 million is arcade equipment.

After a lot of discussion with the company's bank and creditors, management has agreed to a voluntary liquidation. A trustee, who is appointed by the various parties to liquidate the real estate, will charge \$500,000 for his services. In addition to the trustee, a liquidator has been appointed and his fee is expected to be \$600,000. CCC owes \$2.8 million in back property taxes. It has an \$8 million bank loan secured on its arcade equipment that is estimated to have a disposal value of only \$5 million. The other long-term debt is not secured.

Creditor claims are as follows:

<i>Claims</i>	<i>Book value of claims</i>
	\$
General creditors	15,000,000
Owing to employees	900,000
Secured bank loan	8,000,000
Other long term debt	18,000,000
Ordinary shareholder equity	15,000,000

### *Required*

Discuss this situation and calculate the amount each claim is likely to receive upon liquidation.  
(10 marks)

## Further reading



### *Insolvency*

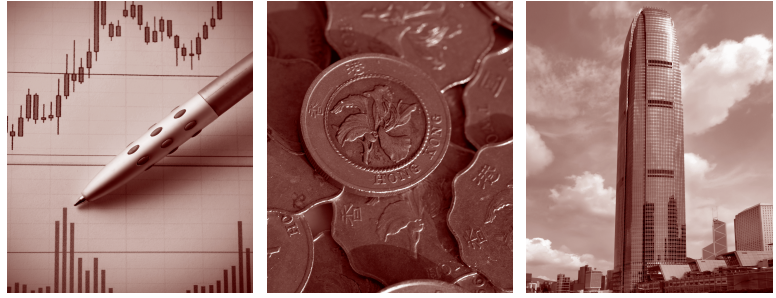
Community legal information Centre (established by the Law & Technology Centre of the University of Hong Kong)

[www.hkcllc.org/en/topics/bankruptcy\\_IndividualVoluntaryArrangement\\_Companies\\_Winding\\_up/index.shtml](http://www.hkcllc.org/en/topics/bankruptcy_IndividualVoluntaryArrangement_Companies_Winding_up/index.shtml)

Official Receiver's Office – simple guide on compulsory winding-up of companies

[www.oro.gov.hk/eng/publications/guidwu.htm](http://www.oro.gov.hk/eng/publications/guidwu.htm)





# Answers to exam practice questions





## Chapter 1 Ethics in business

### Yanah Petroleum

Professional accountants are required to comply with some fundamental principles: (1) integrity, (2) objectivity, (3) professional competence and due care, (4) confidentiality and (5) professional behaviour.

Based on the information provided, there are potential breaches in Principles (1), (2), (4) and (5).

#### *Integrity*

- (1) To fulfil the obligation of integrity, professional accountants shall be straightforward and honest.
- (2) Effort should be made to avoid statements or communications which are false or misleading.
- (3) The team leader has reminded the team members of the company policy not to trade in Yanah's shares. By interpreting the firm's policy of "no trading" in client's shares as "not selling" the shares is stretching the policy to its limit.
- (4) Indeed, even the "no selling" argument *per se* is questionable. By placing a stop-loss order, he has actually set up an automatic mechanism for selling the shares when a specified price is reached.
- (5) Remaining silent on his position can be regarded as misleading the firm on his financial interests.
- (6) If he is in doubt, it is advisable to disclose the fact about his shareholding to the firm.

#### *Objectivity*

- (1) The objectivity principle disallows any compromise on professional judgment due to bias, conflict of interest or undue influence on others.
- (2) Sean's shareholding in Yanah has potential conflict with his work on the project.
- (3) Not only on his own position, the potential conflict test extends to close family members, i.e. Sean's sister in this case.
- (4) Sean should disclose his financial interests in the client firm to his supervisor before the commencement of the project.
- (5) To avoid the potential conflict of interest, the firm could request him to sell his shares or place the shares in a discretionary investment account managed by an independent and unconnected party.
- (6) The management of Topadvice should also be alert to the firm-wide conflict of interest.
- (7) Both the offeror and offeree of the takeover are the clients of the firm. Such circumstances may give rise to conflict between the interests of different clients.
- (8) Even if the management of Topadvice considers that the conflict is immaterial and unlikely to prejudice seriously the interests of any one of these two clients, they should still notify both clients and obtain their consent to act for both parties.
- (9) However, Topadvice should refrain from accepting Yanah's appointment if the conflict is deemed to be material or would prejudice seriously the interests of any one of the two clients.
- (10) The firm should impose a firewall policy.

*Confidentiality*

- (1) Under the confidentiality principle, all confidential information acquired as a result of professional and business relationships should not be used for personal advantage.
- (2) Although Sean has not told his sister about the client's confidential information directly, his suggestion to her to lift the stop-loss order level has indeed put him in a dangerous position that could threaten compliance with the confidentiality principle.
- (3) Sean shall always maintain the confidentiality of information by not disclosing it in any form of communication to persons not involved in the project.

*Professional behaviour*

- (1) The principle of professional behaviour imposes an obligation on professional accountants to comply with relevant laws and regulations and avoid any action that may bring discredit to the profession.
- (2) The Codes on Takeovers and Mergers and Share Repurchases require that a financial adviser has to be independent. The potential conflict of acting as adviser for both of its clients may give rise to a breach of the Code by Topadvice.
- (3) Sean's hinted advice to his sister on the share price may put him at risk of violating the laws that prohibit insider dealing.

## Chapter 2 Strategy formulation and choice

### Formulating strategy

To: Mr. Y. H. Tong, Managing Director  
From: Ding Lee, Financial Controller  
Date: dd/mm/yyyy  
Re: Overseas Expansion Strategy

Regarding the strategic options and operational issues that management should consider before making an overseas expansion strategy, my comments are as follows:

- (a) *Major concerns and strategic options*
  - FGH lacks experience in overseas markets.
    - It needs to recognise that there will be a series of steps to follow in the planning and implementation process in order to minimise any potential pitfalls.
    - It may pursue an experimental small-scale expansion overseas first before becoming heavily committed to the strategy.
  - FGH may consider taking over an existing organisation (Buy Strategy) in a foreign country or applying a more steady organic growth pattern (Build Strategy).
    - A takeover would give instant market access. However, it needs to be financed and managed properly.
    - Steady organic growth may allow FGH to retain more control over the development. However, it takes time to build up the required structure.
  - FGH may consider strengthening its existing local market position. Overseas business may have a lower profit margin than domestic business. FGH has the scale locally as cost leader and client relations to up sell or cross sell other products. FGH can defend its market position by providing better services and increase its marketing efforts to promote its brand locally.

(b) *Operational issues*

- Demand
  - FGH must be clearly aware of the potential demand in overseas markets which it enters (e.g. the Philippines).
  - The selection of the market must be carefully considered and situated in a location where there is high level demand for FGH services.
- Competition
  - FGH must be clear about who its competitors are in the overseas markets.
  - FGH must be able to satisfy the diverse demands for its services in overseas locations.
- Regulations
  - There may be restrictions or opportunities depending on the level of regulations in the overseas country.
  - Environmental regulations may differ between countries. Certain landslide work may not be allowed. As such, FGH must determine whether it possesses the required technical expertise and ability to satisfy the local demand.
- Resources
  - FGH needs to be aware of the local infrastructure and methods of working in the overseas locations.
  - It may need to rely on local subcontractors to carry out analysis or provide materials for the testing of landslides.
  - It may also need to employ local staff. In this case, cultural issues within FGH may need to be addressed.
  - The required technical skills and quality standards need to be determined and maintained.
  - The whole issue of the organisational structure for developing overseas would need to be addressed.
- Technical issues
  - FGH may need to transfer its own technology overseas.
  - It has to consider the level of its investment.
  - The training of the local staff.
  - It may need to consider establishing analytical facilities overseas.
- Finance
  - FGH has to consider currency and interest rate volatility.
  - It must clearly consider the financing of the whole expansion programme.
  - It may need to consider where the required finance resources can be obtained.
  - The regulations relating to import tariffs, taxes and repatriation of profits need to be studied.
  - Does the overseas government offer support for overseas companies who choose to establish there?

Best Regards

Ding Lee

## Chapter 3 Financial analysis and strategy

### Charity funding

- (a) (i) The maximum amount shall be \$470,000, which is the lowest cumulative balance during the week.

Date		Net Change	Cumulative Balance
1 Sept	Mon	2,723,000	2,911,000
2 Sept	Tues	(1,411,000)	1,500,000
3 Sept	Wed	2,820,000	4,320,000
4 Sept	Thurs	(3,850,000)	470,000
5 Sept	Fri	2,255,000	2,725,000
6 Sept	Sat	-	2,725,000
7 Sept	Sun	-	2,725,000

- (ii) Your way: 7-day call deposit + overnight deposit

Date	Net Change	Cumulative Balance	7-Day Call	Interest	Overnight	Interest	Net Interest
1-Sep Mon	2,723,000	2,911,000	470,000	54.73	2,441,000	183.91	238.64
2-Sep Tue	(1,411,000)	1,500,000	470,000	54.73	1,030,000	77.60	132.33
3-Sep Wed	2,820,000	4,320,000	470,000	54.73	3,850,000	290.07	344.79
4-Sep Thu	(3,850,000)	470,000	470,000	54.73	-	-	54.73
5-Sep Fri	2,255,000	2,725,000	470,000	54.73	2,255,000	169.90	224.62
6-Sep Sat	-	2,725,000	470,000	54.73	2,255,000	169.90	224.62
7-Sep Sun	-	2,725,000	470,000	54.73	2,255,000	169.90	224.62
							<b>1,444.36</b>

$$(*) : [470,000 \times (7/365) \times 4.25\%] + [(2,411,000 + 1,030,000 + 3,850,000 + 2,255,000 + 2,255,000 + 2,255,000) \times 2.75\% \times (1/365)] = 383.08 + 1,059.01 = 1,442.09$$

Previous practice: overnight deposit only

Date	Net Change	Cumulative Balance	7-Day Call	Interest	Overnight	Interest	Net Interest
01-Sep Mon	2,723,000	2,911,000	-	-	2,911,000	219.32	219.32
02-Sep Tue	(1,411,000)	1,500,000	-	-	1,500,000	113.01	113.01
03-Sep Wed	2,820,000	4,320,000	-	-	4,320,000	325.48	325.48
04-Sep Thu	(3,850,000)	470,000	-	-	470,000	35.41	35.41
05-Sep Fri	2,255,000	2,725,000	-	-	2,725,000	205.31	205.31
06-Sep Sat	-	2,725,000	-	-	2,725,000	205.31	205.31
07-Sep Sun	-	2,725,000	-	-	2,725,000	205.31	205.31
							<b>1,309.15</b>

$$(*) : (2,911,000 + 1,500,000 + 4,320,000 + 470,000 + 2,725,000 + 2,725,000 + 2,725,000) \times 2.75\% \times (1/365) = 1,309.15$$

$$\text{Extra interest income: } \$1,444.36 - \$1,309.15 = \$135.21$$

- (b) A bank overdraft is a flexible borrowing instrument. Within the approved limits, the borrower can have immediate access to funds.

However, an overdraft is not a committed bank facility for a fixed period of time.

The bank has the right to withdraw the facility at very short notice.

Therefore, it is dangerous to finance long-term liability with a bank overdraft.

- (c) Regular reports on the historical, actual, budgeted cash flows to relevant management in the company (such as daily, weekly, monthly, quarterly, annually dependent on the types of business).

Utilisation of committed banking facilities with longer maturity.

Financing (funding) plans for projected future requirements by maturity and source.

Spreading out the maturity of the debt securities issued by the company.

Regular benchmarking of the interest rate paying/receiving with prevailing market offerings.

Regular monitoring of the credit standing of the company and its lenders.

## Chapter 4 Cost measurement and analysis in service and manufacturing environments

### Cost control

To: Terence Choy  
 From: Judy Poon  
 Date: XX December 20X5

*Re: Company strategy, investment in new production line and cost control*

- (a) Activity Based Costing (“ABC”) is an attempt to allocate overheads to products or services more accurately. Unlike traditional cost allocation methods that use one or a few allocation bases to allocate individual production departments’ overhead costs to products, ABC generally uses cost pools to accumulate the cost of significant business activities, and then assigns costs from these cost pools to products based on appropriate cost drivers.

Target costing is concerned with managing product costs right at the beginning of the product design phase. In general, the target price that the customer is prepared to pay for specified product functions is determined first. After deducting the required profit margin, a target cost is set for the engineering department to deliver a product that satisfies both the target cost and specification of functions.

“Kaizen” refers to the process of making continuous incremental improvements. Like target costing, Kaizen costing refers to the establishment of cost reduction targets and relying on employee team work to improve the production process and to reduce production costs.

- (b) Although ABC is often referred to as a “world class costing” system, it may not necessarily be applicable to TJP.

While there will definitely be advantages in adopting ABC, for example, the staff of the company will have a better understanding of company activities, the advantage of a more accurate overhead costs allocation may not be so apparent to TJP.

This is because one of the principal purposes of ABC is to have better control of costs that do not vary with production volume but with other activities. However, production overheads account for only about 1.5% of TJP’s total production cost. In fact, very few cost controls could be applied to the overhead costs since about half of the costs are depreciation. The cost of implementing ABC in TJP may outweigh its benefits.

Both target costing and Kaizen costing are good cost control concepts. They are cost management tools more than cost measurement systems. Where it is practical, it is worthwhile introducing these concepts to the engineering and production departments and to put these concepts into actual practice.

- (c) Clearly, one focus of cost control would be the material costs, which account for about 98% of TJP’s production costs.

For example, adverse currency movement may increase imported material costs.

Measures have to be established to assess whether TJP is able to obtain raw materials (of the same quality) at lower prices, for example, through bulk purchases as a result of the increase in production volume.

There should also be measures to reduce adverse material price variance, for example, to determine the appropriate inventory level to reduce the effect of price fluctuation, and entering into long-term contracts with suppliers to reduce the risk of price changes.

Another cost control focus would be product quality costs.

Inefficient production lines would result in damaged products and wastage of materials.

Appropriate quality costing measurement should be developed to measure and control quality conformance costs (e.g. product quality inspection cost) and non-conformance costs (material wastage due to defective items, loss of production capacity due to breakdowns, sales returns etc.).

## Chapter 5 Performance measurement systems

### Performance analysis

To: Mr. Leung, Chief Executive Officer  
From: XXX, Accounting Manager  
Date: XXX

I understand that you are interested in setting up a more formal management control system in the company. I have prepared this memo setting out my views on such a system and how it should be implemented.

(a) *Applying principal processes of management control to help the company turnaround*

The principal processes of management that the company needs to adopt are (1) strategic management, (2) budgeting, and (3) performance evaluation.

#### *Strategic management*

Strategic management is a process which involves decisions about ABC's organisational aims and long-term objectives.

It is a process of deciding on the types of activities that ABC will undertake and the approximate amount of resources that will be deployed to facilitate these activities over the next few years.

It usually implies a time horizon of three to five years or even longer in some cases. Its purpose is to anticipate future needs or opportunities that require ABC to take specific steps.

It is an activity which takes place against the background of the organisation's external environment and internal strengths and weaknesses. Therefore, strategic long-term planning is closely related to strategy formulation.

For example, ABC is operating in an environment with rapidly changing technology and competition in the retailing and industrial sectors, but ABC has some advantages in the specialist sector.

Based on these external environmental and internal characteristics, the Managing Director, with the Team Managers, may work out a number of strategic options, and determine the company strategy or strategies.

For example, ABC may decide to tighten cost control in the Retailing and Industrial Teams so that ABC is able to compete on a cost basis.

ABC may also concentrate its resources in a few special businesses, promoting itself as the leader in terms of service quality in these sectors.

On the basis of these strategic options, ABC may then carry out its strategic plan in obtaining and allocating resources in the longer term.

#### *Budgeting*

Budgeting is a form of short-term planning activity. The period covered by a budget can be any period from the immediate future up to about one year.

ABC may implement a formal budgeting process to serve a number of purposes. First, the process is a fine-tuning of ABC's strategic planning. Second, it helps the communication and co-ordination of various teams or divisions and assignment of responsibility. Third, it serves as a basis for performance evaluation.

Since a budget is usually prepared and completed just prior to the beginning of the budgetary year, ABC's managers have the opportunity to use the latest information to come up with a more reliable and more detailed plan compared with the long-term strategic plan.

ABC's activities have been divided into teams. With each team, tasks may be broken up into manageable parts.

Therefore, it is essential that these teams and tasks are co-ordinated in order to enable the company to achieve its objectives efficiently.

A budget should establish the framework within which the activities of the three teams of ABC, as well as the administrative staff, are to be performed and also assign who is responsible for taking action. A budget clearly defines the Team Manager's responsibilities and lines of authority.

The budgeting process involves substantial interchange of ideas, beliefs, facts, opinions and so on between Mr Leung and the Team Managers, and among the staff of each team. These communications can take many forms, formally and in writing or informally in discussion.

In a formal budgeting system, the teams are linked in a hierarchy with a formal communication structure to enable instructions to flow downwards or upwards. This ensures that the information reaches the people who need it.

#### *Performance evaluation*

Performance evaluation involves a comparison of actual performance of the teams with their corresponding plans so that deviations from the plans can be identified on a timely basis.

This process enables the managing director to assess whether the team objectives have been achieved or not. Material deviation of actual performance from team plans gives early warning of potential problems and enables the objectives and commitments to be tackled before any serious damage occurs.

If the actual performance deviates from the plan to an unacceptable extent, corrective action has to be taken.

Remedial action may be taken to ensure that actual performance will conform to the original plan, or a revision of the original plan may be made to arrive at a more realistic expectation of each team's performance.

The behaviour of the Team Managers (or the staff) can be influenced by linking their performance in meeting the annual budget or strategic plan to his/her remuneration so that they are incentivised to work towards the objectives of ABC. Therefore, strategic planning and budgeting produce a drive or incentive that influence actions towards meeting the company's objectives.

I must add that when adopting the principle of strategic management, the whole series of strategy formulation, budgeting and performance evaluation are inter-connected.

Budgeting executes strategies to achieve revenue, cost and time targets. Performance evaluation is about identifying revenue and cost drivers through attribution analysis to explain favourable and unfavourable variances, as well as establishing results-oriented rules to reward, motivate and discipline managers.

#### (b) *How to implement annual budgeting in the Retailing Team*

I illustrate below how the Retailing Team may go through a budgeting process. The same process may also be applied to the Industrial Team and the Specialist Team with necessary modification.

Budgeting usually involves the preparation of (1) a revenue budget; (2) a cost of sales budget; (3) an expenses budget and (4) a capital budget. These budgets will then be combined into a budgeted income statement and a budgeted statement of financial position.

Before actually preparing these budgets, the Team Manager and staff of the Retailing Team should conduct a detailed analysis of the team's activities so that they can obtain an understanding of the activities that generate revenue and those that incur cost.

For example, the provision of free consulting services to potential clients is generally a marketing activity. The Retailing team needs to estimate the level of these activities in the budget year. Based on past experience of the success rate and the manager and staff's knowledge of the latest market situation, the Team should be able to estimate the amount of



sales that would be successfully obtained in the budget year. The team revenue budget will then be based on these estimates.

ABC may need to perform some kind of customer profitability analysis so that it knows how to choose the right customer and when to decline a money losing transaction.

Free consulting services may only be limited to certain customer sub-segments that are not likely to shop around or be too price conscious.

While the company may target revenue growth, it should not risk subsidising customers with its own capital fund.

The hardware and software costs are a major component of the team's cost of sales. An estimate of the amount of these costs of sales can be estimated based on past experience and latest information. As the operations of customers of the Retailing Team are likely to be homogeneous, the estimates of these costs of sales should be reliable.

Since the Retailing Team is facing price erosion, the business will not be profitable unless ABC has the bargaining power to reduce the procurement cost hardware and software from suppliers.

Similarly, the salary costs of technical staff are major component of the operating expenses. As the operations of customers of the Retailing Team are likely to be homogeneous, the estimates of the cost of technical staff are likely to be reliable.

The other components of the operating costs, such as depreciation, office rentals and administrative staff costs are a fixed costs for the Retailing Team. The spending level is beyond the control of the Team Manager.

As ABC is not a capital intensive company (as judged from the low level of depreciation and high level of office rental), a capital budget may not be needed at the Retailing team's level.

Based on the estimates of hardware/software costs and technical staff costs, the Retailing Team may come up with certain standards so that actual performance could be measured against and reported through variance analysis.

The Retailing Team may also develop flexible budgets for a number of different levels of revenue amounts to see how the variation in revenue level affects the team's performance.

*[Candidates may have other relevant points relating to the budgeting process.]*

- (c) Based on the limited information I have on hand, I have prepared an analysis of the performance of the three operating teams as follows:

	<i>Retailing</i> HK\$'000	<i>Industrial</i> HK\$'000	<i>Specialist</i> HK\$'000	
Sales revenue	31,500	18,900	12,600	(50%, 30% & 20% of HK\$63,000)
Hardware/software costs	(25,200)	(14,175)	(8,405)	(80%; 75%; 66.71% of sales revenue)
Technical staff costs	<u>(5,670)</u>	<u>(4,347)</u>	<u>(4,410)</u>	(18%; 23%; 35% of sales revenue)
Contribution margin/(loss)	630	378	(215)	
Administrative staff costs	(781)	(496)	(496)	(22:14:14 of (16,200 – 5,670 – 4,347 – 4,410))
Depreciation	(352)	(224)	(224)	(22:14:14 of 800)
Rentals	<u>(880)</u>	<u>(560)</u>	<u>(560)</u>	(22:14:14 of 2,000)
	<u>(1,383)</u>	<u>(902)</u>	<u>(1,495)</u>	
Loss in % to sales	(4.39%)	(4.77%)	(11.87%)	

*Comments:*

Accounting for half of ABC's revenue, it is expected that the Retailing Team should report a higher level of contribution to recover the fixed costs of ABC.

However, although the Retailing Team reports a positive contribution margin, the amount of the contribution was too low to sufficiently recover the Team's share of the fixed costs.

The performance of the Industrial Team was very similar to the Retailing Team, probably because they were facing similar problems.

Although the gross profit margin of approximately 33% achieved by the Specialist Team after deducting hardware and software costs was comparatively high compared with the Retailing and Industrial Teams, it reported a contribution loss after deducting the employee cost of technical staff.

The Managing Director and the Team Managers need to find out the underlying reasons, which could be due to inefficiency of the teams, or under utilisation of human resources due to poor market position.

The above analysis is subject to a number of limitations: for example, with standards as benchmarks, the reasons for the team's poor performance are not apparent. In addition, the Team's activities have not been analysed to identify the principal revenue and cost drivers.

The contribution margin of all the three teams was either negative or too low. All three teams have to critically review their revenue and cost structure, cease loss-making activities and focus on serving customers that are prepared to pay for their services.

The contribution of the Retailing and Industrial Teams together was only around HK\$1 million in 20X4 but the company made a loss of HK\$3.78 million. Unless there are drastic changes in the revenue and cost structure, ABC is not likely to achieve a successful turnaround.

*[Candidates may give other comments and limitations.]*

## Balanced scorecard

To: Mr. Lee  
 From: Eagle Wong  
 Re: Five-year Investment Plan and (Balanced Scorecard (BSC) system)

Regarding your queries about the strategic motives and rationale to enter the pulp business, possible locations, related business risks, and how the BSC system could help the company to achieve its vision, my response is as follows:

Accounting measurements only reflect the past financial performance of a company and offer little information about how we might perform better in the future. Besides, they do not include non-financial factors, which are also important for the success of a company.

BSC provides an organisation with a comprehensive framework that translates the organisation's vision and strategy into a coherent set of performance measures (Kaplan and Norton, 1996). Both financial and non-financial information is included.

To implement a BSC system, a company must identify its vision (e.g. reasons to exist as a business). The company then identifies all key and relevant performance measurements which lead to the achievement of the vision (cause-and-effect relationships).

The performance measures in a BSC are organised under four perspectives: financial (e.g. revenue growth, cost reductions in key areas), customer (e.g. market share, customer satisfaction), internal business processes (e.g. time to complete customer jobs, number of pollution complaints) and learning and growth (e.g. skill levels of employees, hours of employee training). These document the company's strategy to achieve its vision by laying down a sequence of cause-and-effect relationships.

Each perspective has a short-term goal (e.g. revenue growth under the financial perspective) with one or more critical success factors (CSFs) identified (e.g. double digit growth in revenue p.a.) with that goal. The CSFs are structured into a set of linked, understandable and measurable operational targets or key performance indicators (KPIs) (e.g. sales per employee).

The balanced scorecard approach can lead to consensus on organisational priorities, clear specification of goals, rigorous planning and improvement processes, alignment of strategy goals with shorter-term actions, clearer communication, team working and knowledge sharing and clearer accountability for results.

Top management commitment to the balanced scorecard approach is necessary for it to succeed.

## Chapter 6 Performance measures for organisational units

### Containerboard Division

- (a) (i) The general guideline for transfer pricing is that the price should equal the outgoing cost (variable costs) plus the opportunity costs in the selling organisation.
- (1) No internal price could be reached. The contribution margin of existing business ( $\$80 - 25 = \$55$ ) is higher than the internal transfer ( $\$72 - 25 = \$47$ ).
  - (2) The operating profit would be  $\$2,000,000$  ( $\$4,000,000 - \$2,000,000$ ).
  - (3) The performance bonus would be  $\$152,000$  [ $(2,000,000 - (4,000,000 \times 12\%)) \times 10\%$ ].
  - (4) No sub-optimal decision, as there would be no decrease in profit for the group as a whole.
- (ii) (1) The decrease in operating profit for the Pulp Division, Containerboard Division, and the company as a whole would be – ve  $\$40,000$  [ $5,000 \times (72 - 80)$ ], zero, – ve  $\$40,000$  respectively.
- (2) The performance bonus would be  $\$148,000$  [ $1,960,000 - (4,000,000 \times 12\%) \times 10\%$ ].
  - (3) No. The head office decision would reduce the profit for the group as a whole. Besides, this would affect staff morale in the Pulp Division due to the reduction of the performance bonus.
- (b) (i) A transfer price can be agreed. It would be  $\$72$  per ton.
- (1) The additional increase in the operating profit for the Pulp Division, Containerboard Division, and the company as a whole would be  $\$235,000$  [ $5,000 \times (72 - 25)$ ], no change,  $\$235,000$  respectively.
  - (2) The performance bonus would be  $\$65,500$  [ $(\$1,135,000^* - (\$4,000,000 \times 12\%)) \times 10\%$ ].  
 $^* \$1,135,000 = (30,000 \times 80 + 5,000 \times 72) - [(30,000 + 5,000) \times 25 + (50,000 \times 15)]$
  - (3) The range of the transfer price would be  $\$25 \leftarrow$  within  $\rightarrow \$72$ .
  - (4) The Pulp Division has surplus capacity. Additional sales would not cut normal sales.
  - (5) No sub-optimal decision, as the group profit would be increased by  $\$235,000$ .

- (ii) (1) The Pulp Division will have an increase in profit of \$275,000 [ $5,000 \times (80 - 25)$ ]. The Containerboard Division will have a decrease in profit of \$40,000 [ $5,000 \times (72 - 80)$ ]. The company as a whole will have an increase of profit of \$235,000 [ $5,000 \times (55 - 8)$ ].
- (2) Performance bonus would be \$69,500 [ $(1,175,000^* - (4,000,000) \times 12\%) \times 10\%$ ].  
 $\$1,175,000^* = \$1,650,000 - 750,000 + 275,000$
- (3) Yes and No. The profit for the group as a whole will be increased by \$235,000. However, the profit of the Containerboard Division will be decreased by \$40,000. Therefore, this may create a *staff morale problem* in the Containerboard Division due to a decrease in performance bonus. Therefore, the head office needs to consider this when setting up a policy on the internal transfer price.

## Chapter 7 Treasury management

### Treasury management

- (a) *Mechanism*
- (1) Define a materiality threshold.
  - (2) For transactions above the threshold obtain competitive quotes from more than one bank.
  - (3) The purpose is to ensure that the transactions are at a favourable market rate.
- (b) *Dealing records*
- (1) The dealers shall record all transactions on the dealing tickets immediately after the deals are closed.
  - (2) The tickets have to be sequentially numbered and the details verified by the back-office employees to ensure segregation of duties.
  - (3) It is important that the dealing tickets are filed in a secure place.
  - (4) These processes are to ensure that all the executed trades will be reflected in the accounting records and proper audit trails be maintained.
- (c) *Credit rating*
- (1) Limits are to be defined for each counterparty.
  - (2) The counterparty limits shall be based on their respective credit ratings.
  - (3) Higher limits are to be assigned to those with better ratings.
  - (4) Avoid over-concentration of the credit risk.
  - (5) The monitoring of the outstanding exposure against the limits should be carried out by employees not involved in the dealing function.

### Inter-company fund transfers

- (a) Without Netting System
- $$24 \times (24 - 1) \times 40 \times \$100 = \$2,208,000$$
- (b)
- Using a netting system can help Grow Fast reduce the amount of actual cash flow and hence the transfers between the group companies.
  - Under the netting system, the payments will not be made for every transaction.

- Instead, the payment information is accumulated until the end of a payment period (e.g. monthly) and only the net amount is settled with each of the group companies.
  - Usually, one of the subsidiaries or the group's treasury will act as the netting agent.
- (c) (i) Using a Separate Netting Centre

$$24 \times \$100 = \$2,400$$

**Note:** A saving of  $\$2,208,000 - \$2,400 = \$2,205,600$

**OR**

- (ii) Using one of the existing subsidiaries as a Netting Centre

$$(24 - 1) \times \$100 = \$2,300$$

(**Note:** Some candidates may assume that the netting of USD and Euro will be conducted separately. Hence, the answer of \$4,800 ( $\$2,400 \times 2$ ) for (i) and \$4,600 ( $\$2,300 \times 2$ ) for (ii) will also be acceptable.)

## Chapter 8 Working capital management

### XYZ Limited

(a)

$$\begin{aligned} \text{Operating cycle} &= \text{Inventory period} + \text{Trade receivables period} \\ &= 365 / (16,400 / 5,500) + 365 / (23,000 / 3,600) \\ &= 122.4 + 57.1 \text{ days} \\ &= 179.5 \text{ days} \end{aligned}$$

$$\begin{aligned} \text{Cash cycle} &= \text{Operating cycle} - \text{Trade payables period} \\ &= 179.5 - 365 / (16,400 / 1,800) \\ &= 139.4 \text{ days} \end{aligned}$$

(b) (i) Annual savings:

$$\text{100\% short-term loan: } \$35 \text{ million} \times [0.2 - 0.06(1 - 0.16)] = \$5.24 \text{ million}$$

$$\begin{aligned} \text{(ii) 40\% by standby credit facility: } &(\$20 \text{ million} \times 0.2) - [\$20 \text{ million} \times 0.1(1 - 0.16) \times 0.5] \\ &- [\$10 \text{ million} \times 0.02(1 - 0.16) \times 0.5] - [\$30 \text{ million} \times 0.02(1 - 0.16) \times 0.5] \\ &= \$ (4 - 0.84 - 0.084 - 0.252) \text{ million} \\ &= \$2.824 \text{ million.} \end{aligned}$$

$$\text{(iii) 100\% long-term debt: } \$35 \text{ million} \times [0.2 - 0.1(1 - 0.16)] = \$4.06 \text{ million.}$$

**Note:** as WACC is 20% and the company has no debt, the 20% is equal to the cost of equity. This question basically asked for savings using various forms of debt over equity.

(c) (i) **Risks**

**Standby credit facility**

- Withdrawal of credit facility by bank due to either deterioration of credit standing or market credit crunch.
- Variable interest rates and fee for unused balance of facility.

**Short-term borrowing**

- Variable short-term interest rates.
- Risk of non-renewal of facility.
- The need for collateral.
- Loan covenants may be imposed that limit financial flexibility.

**Long-term loan**

- Collateral may be required.
- Loan covenants may be imposed that limit financial flexibility.
- Increase in debt/equity ratio (which may increase the incremental borrowing cost).

(ii) **Suitability**

**Short-term borrowing**

- When interest rates are expected to decline.
- Short-term assets are available to fund the principal repayment.

**Standby credit facility**

- The borrower has stable and/or strong cash flow.
- Cheaper sources of financing are expected to be available in the near future.

**Long-term loan**

- When interest rates are expected to increase.
- When finance for capital investment in fixed assets is needed.
- When capital markets are expected to be volatile.
- When the company has a stable and predictable cash flow.

## Cash conversion cycle

(a)

<i>Description</i>	<i>Calculation</i>	<i>VMC</i>	<i>Fruit-Xpress</i>
Receivables collection period	Average receivables / (Sales/365)	102	43
Inventory conversion period	Average inventory / (COGS/365)	40	37
Payables deferral period	Average payable / (COGS/365)	(14)	(111)
<b>Cash conversion cycle</b>		<b>128</b>	<b>(31)</b>

(b) VMC

- The CCC for VMC is equal to 128 days which is longer than the industry standard of 90 days.
- This means that VMC takes more than three months to receive cash inflows after making payments to its suppliers.
- Apparently, VMC has to pay its suppliers relatively quickly after the purchase of goods. The average length of time is only 14 days.

- On the inventory turnover, the average number of days that VMC takes between the acquisition and sale of the produce is about 40 days.
- VMC sells the produce to Fruit-Xpress with long credit terms. The average length of time from the sale of goods to collection of payment requires about 102 days.

#### Fruit-Xpress

- The CCC for Fruit-Xpress is equal to negative 31 days which is more favourable than the industry standard of 20 days.
- This means that Fruit-Xpress receives trade payments from its US customers before it makes payment to VMC.
- Compared to VMC, Fruit-Xpress has a much shorter collection period of 43 days on its receivables.
- There is only a slight advantage over VMC in terms of the inventory conversion period.
- But Fruit-Xpress is particularly successful at bargaining long credit periods from its suppliers and enjoys an average payable deferral period of 111 days.

#### Conclusion

As such, VMC is weaker than Fruit-Xpress in managing its cash conversion cycle.

(c) VMC can take the following actions to improve its cash flow situation:

- Improve credit collection procedures;
- Negotiate a shorter credit period with Fruit-Xpress;
- Make use of factoring to convert the receivables into cash earlier;
- Seek a longer payment period to the pitaya farms;
- Reduce the inventory level; and
- Constantly benchmark with industry norms.

(d) Other financial risks include:

- Credit risk if the counterparty defaults; and
- Foreign exchange risk.

## Chapter 9 Types and sources of finance

### Funding an investment

(a) **Early settlement discount**

The company may be able to turn normal accounts receivable into cash quickly by offering an early settlement discount. The company may set a policy to allow our customers a discount (pay less than the full amount of their debt) if they pay sooner than the end of the pre-set credit period.

If this policy is established, the company will receive less cash from its customers, and this will reduce reported profits. A comparison can be made between the cost of the reduction in receipts from customers with the cost of borrowing to finance the proposed investment.

If customers pay earlier there will be a reduction in the working capital of the company. This will provide a financial benefit. The early collection of payments will increase the cash balance. Some of this cash could be used to finance the proposed investment. If the cash balance increases by a larger amount, the cash could be used to reduce the bank loan or overdraft, and so reduce interest costs.

Early collection of receivables may also reduce bad debt risks from receivables.

Total sales may possibly increase if customers are attracted by the early settlement discount.

(b) **Financing the investment project**

A short-term financing option tends to be riskier than long-term financing as future interest rates may fluctuate.

Short-term bank borrowing facilities may not be renewable due to market uncertainty and, of course, due to the internal financial results and position of the company.

The short-term financing option has higher risk. However it may lead to higher expected returns, because in normal circumstances, short-term interest rates are lower than long-term interest rates (i.e. the term structure of interest rates is normally upward-sloping).

During the financial tsunami, short-term interest rates were higher than the long-term interest rates, and some banks did not want to offer short-term loans due to the market uncertainty. Therefore, the uncertainty level for short-term bank financing is very high.

However, the short-term financing option does offer high flexibility for our company, which has sufficient cash to pay off the short-term debt at any time.

As a general principle under the maturity matching approach, an enterprise should finance long-term assets (i.e. non-current (fixed) assets and other permanent current assets) by using long-term financing options (such as long-term debt, equity and leasing) whereas by matching its seasonal variations in current assets with the short-term financing option for temporary asset requirements by using short-term borrowings or payable financing option, the enterprise, indeed, hedges against changes in short-term interest rates.

If an enterprise adopts a conservative approach, it can finance long-term assets, all permanent current assets, and some temporary current assets with long-term sources of funds. This approach relies more heavily on long-term financing than the other approaches. The enterprise will need to pay higher interest expenses under normal circumstances.

The enterprise may adopt an aggressive approach; that means the enterprise finances all temporary current assets, and some of its permanent current assets with short-term sources of financing. This approach will use up more short-term financing than the other approaches. The enterprise may pay lower interest expenses under normal circumstances.

During the board meeting, the time available for discussion the financing option may not be sufficient as we need to consider the overall financial position in order to determine the optimal financing solution for our company.

As the company will have payable to settle and other short-term requirements, for example, for the settlement of long-term loans soon, the financing option for the investment project should not merely consider the large sum of accounts receivable and the cash available.

It is a very good start for the board meeting to consider the financing option and it is believed that the company should formulate a financing policy from a board perspective after considering the short-term, and long-term funding requirements for the foreseeable future by taking into account the market dynamics, i.e. the expected sales volume, the economic situation, the expected supply of raw materials.

(c) **Spin-off subsidiary company on HKSE**

The reasons for spinning-off the subsidiary by listing its shares on the stock exchange are as follows:

- It provides the enterprise with access to capital markets to finance independent growth. The enterprise can raise finance at the time of listing and at later stages.
- The capital market may provide the company with access to capital to finance its plans for investment and growth.



- It will give the enterprise a broader shareholder base.
- It also provides a better employee incentive and commitment resulting from the granting of employee share options. It may be difficult to retain key staff without offering them a good incentive scheme.
- The high profile and visibility in the capital market could generate reassurance among the company's customers and suppliers.
- It may offer the opportunity for the company to have a separate credit rating and to have a loan independently without a cross-guarantee from the holding company.
- It may also offer a good opportunity for increasing the valuation of the company.
- The company may also increase its transparency to the public, shareholders' and bankers; therefore it may get a lower cost of funds in future.
- Rigorous disclosure standards demand an improvement in the company's control, management information and operating systems. This may also result in greater efficiency for the company as a whole.
- The group may sell some of its existing shares in the subsidiary during the spin-off in order to raise more funds for the expansion of its other businesses.
- Since the group has large and diverse operations, it may not be able to provide the kind of management, financial support and resources that the subsidiary needs for continuous growth.
- After the spin-off, the group can focus its attention and resources on its core operations.
- The spin-off allows the leaders of the subsidiary to make their own decisions about management, finance, operations and other resources issues.

In conclusion, the spin-off will have a lot of benefits for the subsidiary and the group.

(Other valid points may be included in the answer.)

## Debt or equity?

- (a) A useful equation for calculating the indifference point between debt and equity is as follows:

The indifference point is the level of operating profit before interest and tax (OP) where earnings per share (EPS) is the same for both methods of financing.

$$\text{EPS with equity finance} = \text{OP} \times (1 - 0.16) / 125,000,000$$

$$\text{EPS with debt finance} = [(\text{OP} - 7,500,000) \times (1 - 0.16)] / 100,000,000$$

Indifference point:

$$\text{OP} (1 - 0.16) / 125,000,000 = [(\text{OP} - 7,500,000) \times (1 - 0.16)] / 100,000,000$$

$$100,000,000 \times 0.84 \times \text{OP} = 125,000,000 \times 0.84 \times (\text{OP} - 7,500,000)$$

$$84,000,000 \text{ OP} = 105,000,000 \text{ OP} - 787,500,000,000,000$$

$$21,000 \text{ OP} = 787,500,000,000,000$$

$$\text{OP} = \text{HK\$}37,500,000$$

(b)

	<i>Equity</i>	<i>Debt</i>
	HK\$	HK\$
Operating profit	37,500,000	37,500,000
Interest	<u>0</u>	<u>7,500,000</u>
Profit before tax	37,500,000	30,000,000
Tax	<u>6,000,000</u>	<u>4,800,000</u>
Profit after tax (earnings)	<u>31,500,000</u>	<u>25,200,000</u>
Number of shares	125,000,000	100,000,000
<b>EPS (in \$)</b>	<b>0.252</b>	<b>0.252</b>

- (c) At a level of operating profit above \$37,500,000, it will be better to issue debt for taking on the project, as every dollar of earnings will be distributed between existing shareholders (lower shareholder base). At a level of operating profit below \$37,500,000, it will be better to issue equity, as the loss of each dollar will be shared by more shareholders.

Therefore, the company's attitude will depend on what levels of earnings it expects and also the variability of possible earnings limits. Variations from what is expected will have a greater impact on earnings per share if the company chooses the debt financing option.

## Chapter 10 Dividend policy

### Dividend policy

#### (a) Advantages of share repurchase

- It has the effect of reducing the number of shares outstanding. Since this action does not affect earnings, therefore, earnings per share (EPS) will increase. This improves the profitability performance and will cause the share price to move up.
- It reduces equity and therefore results in an increase in financial leverage (i.e. D/E ratio) without having to incur additional debt. This change will improve the return on equity (ROE) ratio and project a positive impact on profitability performance.
- It is not a commitment and unlike a dividend does not create future expectations from the shareholder. This flexibility to future cash flow can be very beneficial to XYZ due to uncertainty in future profitability.
- The action passes a signal to the market that the repurchase price is an attractive valuation of the company's shares. As such, it will provide support to share prices which have been adversely affected by the recent financial crisis.

#### Disadvantages of share repurchase

- It will only benefit shareholders who are willing to sell their shares. The longer term investors will receive nothing compared to a cash dividend. Also, the repurchase price is usually low and, therefore, those shareholders who sell may lose the opportunity for capital gain when the price rebounds.
- The action can be interpreted by the market that the company is running out of growth opportunities and therefore can affect its valuation.
- The support of the share price may be temporary, particularly during a period when market sentiment is weak.

(b)

1 **Expect permanent increase in profits**

Best policy: Option (i) – increase dividends over the last dividend payment.

Advantage: Communicates future prospects to shareholders via this policy.

Risk: As this increase is considered by shareholders as permanent, if the increase in profit does not materialise, the higher dividend may pose future cash flow problems. Shareholders will also be disappointed if the dividend increase is not sustainable.

2 **Unstable future profit**

Best policy: Option (ii) – declare a one-time special dividend.

Advantage: Return of extra cash to shareholders without creating an expectation that this increase will be repeated.

Risk: Little risk but share price may not benefit much.

(c) The company should either pay a special dividend or repurchase shares from the market. The reason for this is that investors usually expect annual dividends to be the same as or (preferably) higher than in previous years. Increasing the annual dividend will pass a signal to the market that future profits will be similar or even higher than in the current year and that the higher annual dividend payments will be sustained. This is contrary to the view of the Directors.

Given the share price has declined substantially due to the financial crisis and the Directors believe that the share price is undervalued, share repurchase is recommended. By purchasing shares in the market, the company may be able to increase the share price.

(d) Paying a dividend or share repurchase will reduce equity. If no debt is repaid, the D/E ratio may exceed the 37% maximum limit.

Check new D/E ratio if no debt is repaid and the dividend payment or share repurchases amount to \$100M:

$$D/E = \$350M / (\$1,000 - 100)M = 38.89\%$$

The new D/E ratio would exceed the 37% limit.

Assume D is the maximum dividend payment or share repurchase to maintain the 37% D/E ratio.

$$D/E = 0.37 = 350 / (1,000 - D)$$

Solving:

$$0.37(1,000 - D) = 350$$

$$0.37D = 20$$

$$D \text{ (in millions)} = 54.05$$

The maximum amount that XYZ can pay as dividend or in share repurchases is \$54.05M.

Check:

If it does this, the D/E ratio will be:  $350 / (1,000 - 54.05) = 0.37$ .

## Dividend

(a) Pros:

Some research shows that there is a significant signalling effect on dividend. An unexpected change in the dividend could be regarded as a sign of management's positive view of the future prospects of GR.

- In many instances, the share price would react positively to such an announcement.
- Some pension funds and institutional investors favour high dividends due to their tax-exempted status.
- Those relying on share dividends for income will prefer to receive gains through higher dividends.
- Shareholders subscribing to the agency theory, which argues that managers may not always act in the best interests of the owners, will appreciate having the excess cash returned to them.
- There is a view that avoiding a high cash pool in the company can safeguard against hostile takeovers.
- Other valid points.

Cons:

- In the case where GR requires cash from the shareholders for future development, it will have to raise it through a rights issue; the success of which depends on the prevailing conditions in the equity markets and involves transaction costs.
- There is always reluctance to lower dividends because management prefers to maintain a steady dividend policy. However, the higher dividend to be paid by GR this year may not be sustainable.
- Some institutional investors (e.g. insurance companies and endowment funds) may prefer a steady dividend payout or dividend amount.
- Retail and entertainment are cyclical businesses which are not in a position to sustain the dividend payout in the future.
- There may be information content to dividends. Distributing significant sums of cash resources to the shareholders may be considered by some as an indication that the company has failed to identify investment opportunities for future growth.

Other valid points may be included in the answer.

(b) An alternative to returning the money to the shareholders is repurchasing/buying back the issued shares.

Share buyback is more common when a company is uncertain about the sustainability of a sharp increase in dividend for a particular year.

For the company, a share buyback is more flexible with regard to execution and adjustment of the cash situation.

However, shares repurchase will reduce the company's equity and affect its Debt/Equity ratio.

(c) The company should either pay a special dividend or repurchase shares from the market. The reason for this is that investors usually expect annual dividends to be the same as or (preferably) higher than in previous years. Increasing the annual dividend will pass a signal to the market that future profits will be similar or even higher than in the current year and that the higher annual dividend payments will be sustained. This is contrary to the view of the Directors.

Given the share price has declined substantially due to the financial crisis and the Directors believe that the share price is undervalued, share repurchase is recommended. By purchasing shares in the market, the company may be able to increase the share price.

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Check new D/E ratio if no debt is repaid and the dividend payment or share repurchases amount to \$100M:

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The new D/E ratio would exceed the 37% limit.

Assume D is the maximum dividend payment or share repurchase to maintain the 37% D/E ratio.

$$D/E = 0.37 = 350 / (1,000 - D)$$

Solving:

$$0.37(1,000 - D) = 350$$

$$0.37D = 20$$

$$D \text{ (in millions)} = 54.05$$

The maximum amount that XYZ can pay as dividend or in share repurchases is \$54.05M.

Check:

If it does this, the D/E ratio will be:  $350 / (1,000 - 54.05) = 0.37$ .

## Chapter 11 Identifying, measuring and managing financial risks

### DEF

- (a) Net US\$ exposure = \$10,000,000 – \$6,000,000 = \$4,000,000

#### Forward contract

$$\text{Cost (£)} = \text{US\$ } 4,000,000 / 1.5 = \text{£}2,666,667$$

#### Money market hedge

1. Borrow £ now at 6.5%:  $\text{US\$}4,000,000 / 1.04 / 1.558 = \text{£}2,468,648$
2. Convert to US\$ at spot =  $2,468,648 \times 1.558 = \text{US\$}3,846,154$
3. At the end of 6 months, US\$ available =  $\text{US\$}3,846,154 \times 1.04 = \text{US\$}4,000,000$
4. At the end of 6 months, total £ cost =  $\text{£}2,468,648 \times 1.065 = \text{£}2,629,110$

The cost of a money market hedge is lower by  $(2,666,667 - 2,629,110) = \text{£}37,557$ .

So use a money market hedge.

- (b) **Merits of currency options**

- Opportunity to capture profits when currency moves in favourable direction.
- It is a right, not an obligation, therefore offers flexibility.
- Can close out position before expiry date.
- OTC option can provide a fully hedged arrangement.

#### Disadvantages

- Option premium is expensive.
- Premium must be paid up front.
- Due to contract size, not all currency exposure can be fully hedged.
- Only options for major currencies are available.

## Tin Tin Trading

All dollar figures are in millions unless otherwise stated

	(a)	(b)
FC\$ / HK\$ spot rate	25.2	21.12
Foreign currency receipts	20	20
Premium (HK\$ per 100 FC\$)	0.144	0.144
Option exercise price (FC\$ / HK\$)	23.16	23.16
When there is no hedging		
Actual receipts	0.793651	0.94697
When option is purchased as hedge:		
Premium paid	0.0288	0.0288
Actual receipts * / +	0.863558	0.94697
Net receipts	0.834758	0.91817
Net benefit / (cost) over no hedging	0.041107	-0.0288

\* Since the option is in the money, it is exercised

+ Since the option is out of the money, it is not exercised

### (c) Advantages

- Holder of option will benefit from favourable movement while obtaining protection from unfavourable movement of exchange rates.
- Suitable for planning when there is no commitment to foreign currency until a later date. (Applicable to American-style options).
- Can be sold easily in the market, which is liquid.
- Protection from counterparty default risk.
- Over-the-counter (OTC) options can be tailor-made to customers' needs.

### Disadvantages

- Option premiums are expensive.
- Premium is paid up front, so has a cash flow impact.
- May not be able to fully hedge the exposure due to limitation of contract size and maturity period.
- Traded options are not available for every currency.

## Lippert

- (a) (i) **Interest rate cap** – a contract which allows the buyer of the cap the right to fix the interest rates payable at a maximum level. The seller of the cap has to compensate the buyer if interest rates move higher than the agreed level on the fixing dates.

**Interest rate swap** – an instrument commonly used to hedge the interest rate exposure on longer-dated loans. The buyer of the interest rate swap can swap their floating interest costs to fixed interest costs for the tenor of the swap.

**Forward rate agreement** – an agreement where two parties agree that the buyer can pay a pre-determined fixed rate beginning with a start date in the future. The contract will specify the termination date as well as the notional value.

- (ii) As Max is of the view that the interest rates can increase sharply, interest rate swap should be the most suitable hedging instrument to reduce the impacts of higher interest rates.

### Interest rate swap

#### Advantages

- Rates are fixed at a specified level and not affected by future changes in market rates.
- Over-the-counter transactions; flexible on rates and tenor.
- No premium is required.

#### Disadvantages

- Not able to enjoy the benefit if the market moves in your favour.
- Not exchange traded, higher risk of counterparty default.

**Note.** Candidates who recommend one of the following two instruments and can provide reasonable arguments in a clear way will also be awarded with marks.

### Interest rate cap

#### Advantages

- Over-the-counter transactions; flexible on strike level and tenor.
- Limited downside risk.
- Opportunity to enjoy favourable movement in interest rates.
- Suitable for uncertain market or when lacking firm view on the direction of the market.

#### Disadvantages

- Premium cost to be paid.
- Not exchange traded, higher risk of counterparty default.

### Forward rate agreement (FRA)

#### Advantages

- Over-the-counter transactions; flexible on rates and tenor.
- Rates are fixed at a specified level and not affected by future changes in market rates.
- FRA is more liquid for tenor with 12 months or shorter; longer-dated FRA is uncommon or not available.

Disadvantages

- Not able to enjoy the benefit if the market moves in your favour.
- Not exchange traded, higher risk of counterparty default.

(b)	Borrowing (HK\$m)	5,300
	Cap rate	1.00%
	Cost of cap	1.05%

(i)	<b>Interest cost without cap</b>	Year 1				Year 2			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	3-month HIBOR	0.15%	0.50%	1.05%	1.50%	2.00%	2.45%	3.00%	3.65%
	Borrowing margin	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%
	Total	1.12%	1.60%	2.15%	2.60%	3.10%	3.55%	4.10%	4.75%
									HK\$m
	Interest cost	16.56	21.20	28.49	34.45	41.08	47.04	54.33	62.94
	Total interest cost	306.08							
(ii)	3-month HIBOR	0.15%	0.50%	1.05%	1.50%	2.00%	2.45%	3.00%	3.65%
	Effective rate with cap	0.15%	0.50%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
	Borrowing margin	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%
	Total	1.25%	1.60%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%
									HK\$m
	Interest cost	16.56	21.20	27.83	27.83	27.83	27.83	27.83	27.83
	Interest cost sub-total	204.74							
	Premium(*)	55.65							
	Total	260.39							
(iii)		HK\$m							
	Interest cost without cap	306.08							
	Interest cost with cap	260.39							
	Saving	<u>45.69</u>							



## Chapter 12 Investment appraisal

### TTphone

(a)

Description	Y0	Y1	Y2	Y3	Y4
	HK\$'000	HK\$'000	HK\$'000	HK\$'000	HK\$'000
Initial investment	(100,000)				
Annual cash flow from operations		37,592	37,592	37,592	37,592
Disposal of equipment					200
Annual cash flows	<u>(100,000)</u>	<u>37,592</u>	<u>37,592</u>	<u>37,592</u>	<u>37,792</u>
Discount factor (10%)	1.000	0.909	0.826	0.751	0.683
Present value at 10%	<u>(100,000)</u>	<u>34,171</u>	<u>31,051</u>	<u>28,232</u>	<u>25,812</u>
<b>NPV at 10%</b>	<b>+ 19,266</b>				
Discount factor (20%)	1.000	0.833	0.694	0.579	0.482
Present value at 20%	<u>(100,000)</u>	<u>31,314</u>	<u>26,089</u>	<u>21,766</u>	<u>18,216</u>
NPV at 20%	(2,615)				

Note. Calculation of annual cash flow	HK\$'000	HK\$'000
Annual cash flow before tax		40,000
Less: Tax at 16%		<u>(6,400)</u>
Annual cash flow after tax		33,600
Annual depreciation	24,950	
Annual tax shield from depreciation at 16%		<u>3,992</u>
Total annual cash flows after tax		<u>37,592</u>

#### NPV of investment at 10% = + HK\$19,266,000

$$\text{IRR} = 10\% + [19,266 / (19,266 + 2,615)] \times (20 - 10)\%$$

$$\text{IRR} = 18.8\%$$

(b)

Payback	Y0	Y1	Y2	Y3	Y4
	HK\$'000	HK\$'000	HK\$'000	HK\$'000	HK\$'000
Annual cash flow	(100,000)	37,592	37,592	37,592	37,592
Cumulative cash flow	(100,000)	(62,408)	(24,816)	12,776	50,568

$$\text{Payback} = 2 \text{ years} + (24,816 / 37,592) \times 1 \text{ year}$$

**Payback = 2.66 years**

<b>Accounting rate of return</b>	HK\$'000
Annual cash flow from operations	40,000
Less: Depreciation	<u>(24,950)</u>
Annual accounting profit	15,050
Less: Tax	<u>(2,408)</u>
Annual profit after tax	<u>12,642</u>

$$\text{ARR} = 12,642/100,000 = 12.6\%$$

(For this question, ARR = ROI = ROCE)

**(c) Payback****Advantages**

- It highlights the liquidity prospects of a proposed investment project.
- This is important for a company that wishes to receive a quick cash payback on investments.
- It is easy to understand.

**Disadvantages**

- It ignores the time value of money by assuming that future cash flows are equally valuable as current cash flows.
- It ignores cash flow after the payback period.

**Accounting rate of return (ARR)****Advantages**

- It shows the profitability of a proposed project during a period of time.
- Bonus payments can be linked to the realisation of profits.
- It is easy to understand.

**Disadvantages**

- It ignores the time value of money.
- Accounting results can be subject to manipulation by creative managers.

**Recommendation**

Both the NPV and IRR (higher than the cost of capital) are attractive. The accounting rate of return is reasonable although it is lower than the IRR, so management may need to consider this.

Given the volatility of a high-tech industry, management may need to consider if the estimated payback period is reasonable or not.

## ABC Company

(a) Working capital of 100,000 at year 0

Year	0	1	2	3	4	5
Investment	-800,000					
Sales		800,000	840,000	882,000	926,100	972,405
COGS		480,000	504,000	529,200	555,660	583,443
Expenses		80,000	84,000	88,200	92,610	97,241
Depreciation		160,000	160,000	160,000	160,000	160,000
EBIT		80,000	92,000	104,600	117,830	131,721
Interest		0	1,000	1,000	1,000	1,000
Tax		20,000	22,750	25,900	29,208	32,680
Net income		60,000	68,250	77,700	87,622	98,041
Operational cash flow (EBIT+ depreciation - tax)		220,000	229,250	238,700	248,622	259,041
Working capital	100,000					-100,000
After tax salvage						75,000
Project cash flow	-700,000	220,000	229,250	238,700	248,622	234,041
Discount factor (1/1.1 <sup>t</sup> )	1	0.909	0.826	0.751	0.683	0.621
Present Values	-700,000	200,000	189,463	179,339	169,813	145,321
<b>NPV at 10 %</b>		<b>183,936</b>				

Conclusion: since  $NPV > 0$ , the project should be accepted.

(b) There are two situations under which IRR will give a different result.

(1) **Non-conventional cash flow**

Non-conventional cash flows are cash flows that change direction more than once, e.g. negative cash flow at initial investment, positive cash flow for one or several years followed by at least one negative cash flow again in subsequent years.

In this situation, there will be multiple IRRs that satisfy the  $NPV=0$  equation. Such an outcome is inconclusive and can lead to serious errors in deciding whether to accept or reject a project.

(2) **Mutually exclusive projects**

This is a situation when only one project can be chosen among two or more investment choices. For example, you can only either go to work full-time or study full-time but not both.

NPV and IRR may give a different ranking of projects, i.e. the project with the highest IRR may not be the one with the highest NPV.

Since only one project can be taken, the one with the higher NPV is preferred and IRR may lead to an incorrect decision.

- (c) Capital rationing is a situation in which a company has a limited amount of capital to invest in all positive NPV projects. As such, the combination of investments needs to be compared with one another in order to allocate the available capital to achieve maximum NPV.

Profitability index (PI) method:

- As PI gives the net cash inflow for each dollar of investment, the higher the PI, the more efficient it is for the investment fund to be put to use.
- To achieve maximum NPV, investment funds should be allocated to projects based on PIs in decreasing order until funds are exhausted. In this case, the total investment dollar will generate the highest NPVs.

## Chapter 13 Cost of capital

### Weighted average

- (a) After-tax cost of bonds =  $7\% \times (1 - 0.165) = 0.0585$

Cost of preference shares =  $7\% \times \$100/\$60 = 0.1167$

Cost of common stocks =  $3\% + 1.5(15 - 3)\% = 0.21$ .

**Weighted average cost of capital:**

<i>Capital item</i>	<i>Number</i>	<i>Total MV\$</i>	<i>Cost</i>	<i>MV × Cost</i>
Bonds	10,000	10,000,000	0.0585	585,000
Preference shares	2,000,000	120,000,000	0.1167	14,004,000
Common stocks	5,000,000	<u>250,000,000</u>	0.2100	<u>52,500,000</u>
		<u>380,000,000</u>		<u>67,089,000</u>

WACC =  $67,089,000/380,000,000 = 0.1766 = 17.66\%$

- (b) To: Board of Directors  
 From: Finance Director  
 Date: x/x/xx  
 Subject: **Discount rate**

The company's WACC should not be used as the discount rate to evaluate the proposed investment into the media business in mainland China.

This is because the company's WACC reflects the risk in its current business operations, which are in real estate in Hong Kong.

The proposed investment has totally different risk characteristics from the current business of XYZ. The risk in media is different from the risk in real estate development.

In addition, XYZ is a Hong Kong company and the proposed investment is in mainland China. The business and legal environment in mainland China is different from Hong Kong. This is another reason why the risk from the new investment differs from the risks in the company's current HK business.

## Chapter 14 Capital structure

### Investment proposal

- (a) The CFO's concern is reasonable.

In many takeover transactions, the acquirers finance the acquisition fully or partially by debts.

The underleveraged target company raises the overall debt capacity of the acquirer.

- (b) The cost for the immediate source of financing shall not be taken as the same as the hurdle rate of the project.

The investment decision shall not be based on the cost of borrowing.

A higher gearing ratio shall lead to higher risk to the shareholders who will in turn require a higher return.

The weighted average cost of capital is more appropriate as it uses current or expected costs of capital.

Therefore, it is the weighted average cost of capital that should be considered.

- (c) It is more likely that a more diversified business is associated with a lower WACC.

One of the main reasons is that the revenue and cash flow of a company with a higher degree of diversification tend to be more stable.

Such a company can normally raise its debt at a lower cost.

Also, the lower variability on its cash flow enhances the capacity for a higher level of debt which is a less costly component than equity in the equation for WACC.

The combined effect of a higher debt level and the lower cost of borrowing is that the WACC will be lower.

From another perspective, diversification may reduce the systematic risk of the company and therefore the cost of equity.

This lower cost of equity will further suppress the WACC.

## Chapter 15 Regulatory environment

### Securities and Futures Commission

- (a) **Licensed corporations carrying out activities in financial markets**

The SFC regulates licensed corporations carrying out the following activities:

- Dealing in securities
- Dealing in futures contracts
- Leveraged foreign exchange trading
- Advising on securities
- Advising on futures contracts
- Advising on corporate finance
- Providing automated trading services
- Securities margin financing
- Asset management

The SFC administers this regulatory role in the following ways:

- Sets licensing standards to ensure that all practitioners are fit and proper.
- Approves licences and maintains a public register of licensees.
- Issues codes and guidelines to inform the industry of its expected standard of conduct.
- Monitors licensees' financial soundness and compliance with Ordinance, codes, guidelines, rules and regulations.
- Handles misconduct complaints against licensees.
- Investigates and takes action against misconduct.

(b) **Listed companies**

The SFC regulates listed companies in the following ways:

- Approves changes to the Stock Exchange Listing Rules.
- Monitors announcements and vets listing application materials under the Dual Filing regime.
- Administers the Codes on Takeovers and Mergers and Share Repurchases.
- Considers requests for exemptions from prospectus requirements under the Companies Ordinance.
- Conducts enquires into listed companies suspected of prejudicial or fraudulent transactions or provision of false or misleading information to the public.

(c) **Investment products offered to the public**

The SFC regulates investment products offered to the public in the following ways:

- Sets standards for the authorisation and regulation of investment products.
- Authorises investment products offered to the public and their promotion (including advertisements and marketing materials).

## Chapter 16 Financial markets

### Commercial papers

(a) Commercial papers provide short-term financing to the issuing company.

A commercial paper is an unsecured note issued directly to the investors or through the dealers.

A commercial paper is issued on a discount basis.

The tenor of commercial paper usually ranges from a single day to 270 days, although longer maturity is possible if it is placed privately.

Principal buyers include institutional investors, insurance companies, pension funds and banks.

Credit ratings on commercial paper are normally required by investors.

A stand-by letter of credit is usually in place as a form of credit enhancement.

(b) A stand-by letter of credit is a way to enhance the credit of the commercial paper.

It is a back-up form of credit for the issuer.

The stand-by letter of credit facility provides insurance for the holders of the commercial paper in case the issuers cannot repay or refinance the debt.

In such a case, the holders can rely on the credit facility for repayment of the debt.

- (c) The major risk to NB Steel is the liquidity risk.

This is due to the fact that the company relies heavily on the commercial paper to finance its operations.

As commercial paper have relatively short maturity, failing to roll over these short-term debts will immediately cause liquidity problems to the company.

NB Steel should diversify its funding sources.

In the steel industry, which is capital intensive and requires significant investment in plant and machinery, longer-term financing is more suitable, for examples bonds, syndicated loans, preference shares, convertibles, may better suit the company's needs.

- (d)

Par value	20,000,000	48,000,000
Coupon rate	5.0%	3.5%
Maturity (years)	3	2
Yield to maturity	12.80%	8.44%

<i>Period</i>	<i>Bower</i>	<i>Amil</i>	<i>Portfolio</i>
1	500,000	840,000	1,340,000
2	500,000	840,000	1,340,000
3	500,000	840,000	1,340,000
4	500,000	48,840,000	49,340,000
5	500,000		500,000
6	20,500,000		20,500,000
<b>Price (NPV)</b>	<u>16,212,221</u>	<u>43,718,616</u>	<u>59,930,837</u>

- (e)

Yield to maturity 10.00%

<i>Period</i>	<i>Cash flow</i>
0	(59,930,837)
1	1,340,000
2	1,340,000
3	1,340,000
4	49,340,000
5	500,000
6	20,500,000

Yield to maturity = IRR

- (f)

Yield to maturity 10.00% 9.00%

<i>Period</i>	<i>Cash flow</i>	<i>Cash flow</i>	<i>Difference</i>
1	1,340,000	1,340,000	
2	1,340,000	1,340,000	
3	1,340,000	1,340,000	
4	49,340,000	49,340,000	
5	500,000	500,000	
6	20,500,000	20,500,000	
Price (NPV)	59,930,471	61,201,317	1,270,846
or Price (NPV)	59,930,837*	61,201,317	1,270,480

\* based on part (d)

The offer by the fund manager is a better option because it will result in a higher realised value of US\$1,270,846 (or US\$1,270,480).

## Chapter 17 Business valuations

### Valuations

(a)  $(\$0.70 - \$0.65) / \$0.65 = 0.076923$

$(\$0.72 - \$0.70) / \$0.70 = 0.028571$

$(\$0.75 - \$0.72) / \$0.72 = 0.041667$

Dividend growth rate (g) =  $(0.076923 + 0.028571 + 0.041667) / 3 = 0.049054$

Current share price (p) =  $\$0.75 (1 + 0.049054) / (0.0793 - 0.049054) = \$26.01$

(b) 
$$P = 50 / (1.04) + 50 / (1.04)^2 + 50 / (1.04)^3 + 50 / (1.04)^4 + 50 / (1.04)^5 + 50 / (1.04)^6 + 50 / (1.04)^7 + 50 / (1.04)^8 + 1,100 / (1.04)^8$$

$$= 48.077 + 46.228 + 44.450 + 42.740 + 41.096 + 39.516 + 37.996 + 36.535 + 803.759$$

$$= \$1,140.40$$

(c) A bond's yield- to-maturity (YTM) is determined by:

- Due to real interest rate representing the change in the real purchasing power of money expected inflation.
- Pricing risk, i.e. the longer the term of the bond, the higher the yield investors expect to compensate for the opportunity cost and uncertainty.
- Credit risk of the borrower.
- Liquidity premium, i.e. the more active the secondary market for a bond, the lower the premium required.
- Taxability, lower YTM is required if the bond is tax free.

(d) Whether preference shares are debt or equity depends on the substance rather than legal form.

Considered as debt when the instrument has some or all of the following characteristics:

- No conversion feature, or conversion to a variable number of the company's ordinary shares,
- Redemption at the option of holder,
- With a maturity date,
- No voting rights.

Considered as equity when the instrument has some or all of the following characteristics:

- Convertible to a fixed number of ordinary shares,
- No redemption or redemption at the option of issuer,
- No maturity date,
- Has some voting rights.



## Offer price

- (a) The price that Adam will offer is HK\$788.8 million.

	Now	Forecasts				Thereafter
		Yr 1	Yr 2	Yr 3	Yr 4	
Sales growth		12%	11%	10%	9%	8%
Sales	1,386.0	1,552.3	1,723.1	1,895.4	2,066.0	2,231.3
Working capital requirement (20% on sales)	(165.0)	(310.5)	(344.6)	(379.1)	(413.2)	(446.3)
EBIT (13.5% on sales)		209.6	232.6	255.9	278.9	301.2
Less: Tax (17% on EBIT)		(35.6)	(39.5)	(43.5)	(47.4)	(51.2)
Add: Depreciation (11.5% on EBIT)		24.1	26.7	29.4	32.1	34.6
Change in working capital		(145.5)	(34.1)	(34.5)	(34.1)	(33.1)
Less: Capital expenditure		(155.2)	(172.3)	(113.7)	(124.0)	(133.9)
FCFF		(102.6)	13.4	93.6	105.5	117.6
Terminal value [(FCFF <sub>1</sub> )/(WACC-g)]					1,568.0	
Total FCFF		(102.6)	13.4	93.6	1,673.5	
Present value factor (15.5%)		0.8658	0.7496	0.6490	0.5619	
Present value of FCFF		(88.8)	10.0	60.7	940.4	
Enterprise Value	922.3					
Less:						
Debt	133.5					
Value of equity	<u>788.8</u>					

- (b) No. If John accepts Adam's offer, the cash level will increase to only HK\$214.8 million (=-\$574m + \$788.8m) which is lower than the targeted level of HK\$500 million.

- (c) In order to achieve the targeted cash level, John has to be able to self Goldsteron at the price of HK\$1,074 million (=-\$574m + \$1,074m = \$500m).

Working backwards, the NPV of the free cash flows has to be \$1,207.5 million (=\$1,074m + \$133.5m). By working out the IRR of the following cash flow stream, John will have the answer (8%) on which to base his counter-offer:

### WORKING

Year 0	-1,207.5
Year 1	-102.7
Year 2	13.4
Year 3	93.6
Year 4	1,673.5

## Chapter 18 Mergers and acquisitions

### Company P and Company S

- (a) Number of new shares issued by P =  $\$65 \times 2,000,000 / \$150 = 866,667$   
 Total number of shares after acquisition =  $5,000,000 + 866,667 = 5,866,667$   
 Total earnings after the acquisition =  $\$50,000,000 + \$10,000,000 = \$60,000,000$   
 EPS after the acquisition, with no synergy =  $\$60,000,000 / 5,866,667 = \$10.23$   
 If the Board makes its decision on the basis of EPS maintenance, it will approve the acquisition because EPS will increase from \$10 to \$10.23.
- (b) Number of new shares issued by P =  $\$90 \times 2,000,000 / \$150 = 1,200,000$   
 Total number of shares after acquisition =  $5,000,000 + 1,200,000 = 6,200,000$   
 EPS after the acquisition, with no synergy =  $\$60,000,000 / 6,200,000 = \$9.68$

If the Board makes its decision on the basis of EPS maintenance, it will not approve the acquisition because EPS will fall from \$10 to \$9.68.

- (c) Assume the maximum price is P.  
 Number of new shares to be issued =  $(2,000,000 \times P) / 150$   
 Total number of issued shares =  $5,000,000 + (2,000,000P/150)$   
 Earnings of combined company with synergy =  $\$(50,000,000 + 10,000,000 + 5,000,000) = \$65,000,000$   
 $EPS = (65,000,000) / [(5,000,000 + (2,000,000P/150))] = 10$   
 $P = \$112.50$
- (d) There will be a temporary dilution in the EPS (to \$9.23 (note)) immediately after the acquisition, but the synergy will increase earnings within 24 months, and EPS will rise back to the pre-acquisition level of \$10.

The acquisition of Company S will enhance the market position of Company P. Company P will become the market leader. The capital market will value the market leader on a higher PE ratio. When this happens the share price of Company P will rise above its current level of \$150, even though the EPS is still \$10.

**Note.** Number of new shares issued =  $\$112.50 \times 2,000,000 / \$150 = 1,500,000$

$EPS = \$(50,000,000 + 10,000,000) / (5,000,000 + 1,500,000) = \$9.23.$

- (e) I would expect that the cost synergies of \$2,000,000 can probably be achieved, but I would require more information about the expected reduction in costs, to confirm my expectation.

The estimate of higher profits is probably much less reliable. It is assumed that the improved market position of the combined companies will lead to higher revenues and profits. This will only occur if the company's business strategy after the acquisition is successful.

If the full synergies of \$5 million are not achieved, the EPS of the combined company will be less than the EPS of Company P before the acquisition.

Even if the synergies of \$5 million are achieved, the EPS of the combined company will be just \$10, the same as for company P before the acquisition.

## Snowey

(a)

	Now	Yr 1	Yr 2	Yr 3	Yr 4	Thereafter
Sales	550.0	605.0	677.6	758.9	853.8	HK\$ m 913.5
EBIT		108.9	122.0	151.8	170.8	173.6
Less: tax		(18.5)	(20.7)	(25.8)	(29.0)	(29.5)
Add: depreciation (EBIT × 12%)		13.1	14.6	18.2	20.5	20.8
Less: change in working capital req't	(120.0)	(19.2)	(15.3)	(12.5)	(3.8)	(2.8)
Less: capital exp.	0.0	(90.8)	(74.5)	(75.9)	(85.4)	(91.4)
Free cash flow		(6.4)	26.0	55.8	73.0	70.7
Residual value (*)					1,414.5	
Total FV		(6.4)	26.0	55.8	1,487.5	
Discount factor		0.8929	0.7972	0.7118	0.6355	
Total PV		(5.8)	20.7	39.7	945.3	
NVP of FCFF	\$1,000.0					
Less: debt	\$380.0					
Value of equity	\$620.0					

(\*) Residual value  $\$70.7m / (12\% - 7\%) = \$1,414.5$  (Constant Growth Model)

- (b) Acquisition is a more rapid means to expand the company than organic growth. Acquiring Luke & Co. can help Snowey enter the Chinese market before its major competitors.

Snowey can make use of Luke & Co.'s established distribution channels to gain direct access to consumers in China.

Snowey can gain Luke & Co.'s specific know-how on the Chinese market in a shorter period of time.

With a large potential market for its products, Snowey may enjoy savings in manufacturing costs due to economies of scale.

If the cash flow streams of the two companies are not perfectly correlated, the acquisition can achieve financial synergy through the lowering of the costs of capital.

(c)	HK\$ m	Forward rate	GBP m
40% of the price	297.6	15.8010	18.83
60% of the price	446.4	15.7610	28.32
Total	<u>744.0</u>		<u>47.15</u>

$$15.8238 - 0.0228 = 15.8010$$

$$15.8238 - 0.0628 = 15.7610$$

(d) Hedged	HK\$ m	Forward rate	GBP m
40% of the price	297.6	15.8010	18.83
60% of the price	446.4	15.7610	28.32
Total	<u>744.0</u>		<u>47.15</u>

	HK\$ m	Forward rate	GBP m
No hedge			
100% of the price	744.0	15.5864	47.73
Difference			-0.58
$15.8238 \times (100\% - 1.5\%) = 15.5864$			

Snowey will be worse off by GBP 0.58m if it has not hedged its foreign exchange exposure.

## Chapter 19 Corporate reorganisation and change

### Strategic review

#### Brief outline of reasons for restructuring and divestitures:

- (a) **Spin-offs to achieve “reverse synergy”**

This refers to a situation where; “4 minus 2 equals 3”. That is, the divested segment may be more valuable to another organisation in generating positive cash flow and profits. As a result, another company is willing to pay a higher price for the segment than its present value to your company.

In some situations the segment may be losing a lot of money, and the present owner may be unwilling to commit the funds and management necessary to turn it around and make it profitable.

- (b) **Change in strategic direction**

The conglomerate company may be seeking a change in strategic direction. Most companies review their strategic direction and long range plans periodically in order to answer the basic question; “What business should we be in?” Among the strategic considerations are internal capabilities (capital, assets, and people), the external product markets, and the activities of competitors.

The market, as well as the competitive advantage of a company within a market, changes over time and often quickly. An organisational segment that once was a good fit may no longer be so. As a result, a decision may be reached to divest a particular segment or segments.

Strategic realignment is one of the most common reasons for divestiture.

(c) **Wealth transfers from debt holders to shareholders**

If a company divests a segment of the firm and distributes the proceeds to shareholders, there will be a wealth transfer from debt holders to shareholders. This type of transaction, by reducing the firm's earning assets, lowers (if only slightly) the likelihood that the debt will be repaid, and the debt will have a lower value.

If the value of the debt declines by virtue of more default risk, the value of the equity will increase, assuming that the total value of the company remains unchanged. The shareholders will have effectively "stolen" away part of the company, thus reducing its collateral value to debt holders.

(d) **Information signalling to financial markets**

When a divestiture is announced, this may signal to financial markets that the company has a change in its investment strategy or in operating efficiency that, in turn, may have a positive effect on the share price.

On the other hand, if the announcement is interpreted by the market as the sale of a profitable segment in order to deal with problems elsewhere within the company, the signal will be negative.

Whether a company is truly under or over valued is always subject to debate. Management usually believe their company is under valued, and in certain cases they may have information that is not available to the market. However, there may be ways to more effectively convey value other than by an irreversible corporate restructuring.

(e) **Management's personal agenda**

Sometimes the decision to divest all or part of a company reflects the personal agenda of management. In a privately held company, the controlling shareholders (who are often the top management group) may want their company or a segment of it to be purchased by a public company in order to make their investment liquid.

The owners of a privately held company may have too much of their wealth tied up in the company. By selling off all or part of their shareholding to a public company, they obtain a marked improvement in their liquidity, which enables them to sell some of their shares and diversify their investments.

## Chapter 20 Business failure and insolvency

### Central Cinema Company

Out of the proceeds of \$40,000,000, the trustee's fee of \$500,000, the liquidator's fee of \$600,000 and the back property taxes of \$2,800,000 must be paid first, leaving \$36,100,000 available for distribution to other claimants.

The bank receives \$5,000,000 from the proceeds of the cinema equipment over which it had security, but becomes a general creditor for the balance of \$3,000,000.

Next comes the \$900,000 owing to employees.

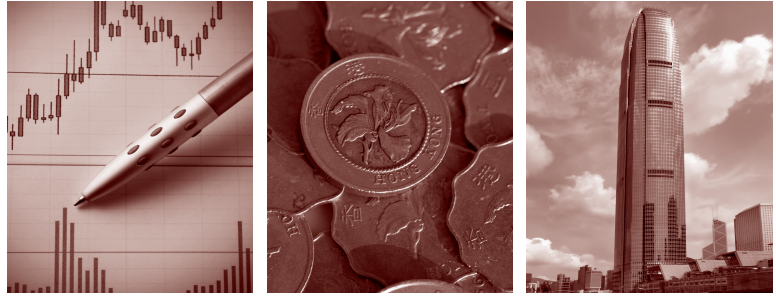
This leaves \$30,200,000 available to distribute to creditors, and unpaid creditors of  $$(15,000,000 + 3,000,000 + 18,000,000) = $36,000,000$ . The payment to unsecured creditors will be approximately 84 cents in the dollar ( $30,200,000 \div 36,000,000$ ).

The ordinary shareholders would receive nothing.

The following table summarises these claims.

	<i>Original claim</i>	<i>Distribution</i>
Trustee's fee	\$500,000	\$500,000
Property taxes	\$2,800,000	\$2,800,000
Secured bank loan ( $5,000,000 + 0.84 \times 3,000,000$ )	\$8,000,000	\$7,500,000
Unsecured long term debt	\$18,000,000	\$15,100,000
Liquidator's fee	\$600,000	\$600,000
Owing to employees	\$900,000	\$900,000
General creditors	\$15,000,000	\$12,600,000
Ordinary shareholders	<u>\$15,000,000</u>	<u>0</u>
Total	\$60,800,000	\$40,000,000

There is some rounding of the figures in the column for the amount distributed to creditors.



# Question bank – questions



## CASE STUDY 1

**QJ Corporation** is a petrochemical company specializing in mixing plastic materials for industrial uses. In the past years, the company had performed badly due to the fact that the industry is a very capital intensive one requiring a large initial investment.

Even though the performance of the company has not been satisfactory, the company is proud to remain committed to the highest quality and standards of excellence and it is recognised that the company has had one of the best working environments for five consecutive years.

In the company, normally the materials being handled are hazardous and need to be handled with extreme care. Therefore, the working environment requires that the workers and other staff have a very comprehensive understanding of the materials they handle. Training is always given to workers and other staff to make sure that they understand the safety requirements and standards when handling the materials and production processes.

The following data are being considered by the management to budget for the 20X3 performance and to be included in a report to the board of directors for approval.

Annual sales volume (tons)	120,000	150,000	180,000	240,000
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**(The following data are all expressed in \$'000, including annual depreciation before taking into account the Additional Information)**

Average selling price per ton	8	8	8	8
Variable costs per ton				
Direct material costs	3	3	3	3
Indirect material costs	2	2	2	2
Labour costs	2	2	2	2

Total fixed costs = Annual depreciation of \$150,000.

### ADDITIONAL INFORMATION

(i) Sales discounts are offered to customers for various levels at the following rates:

Sales volume (tons)	120,000	150,000	180,000	240,000
Sales discount rate	5%	5.5%	6%	6.5%
Percentage of sales volume estimated to be entitled to sales discount.	20%	25%	30%	35%

- (ii) The normal production schedule is able to handle the maximum production of 140,000 tons. Any production level over 140,000 tons increases the labour costs by 1/3 due to the overtime payments.
- (iii) In addition, any production level of over 200,000 tons doubles the labour costs as two shifts are required for the required production volume.
- (iv) In order to achieve the production level of over 200,000 tons, certain equipment has to be purchased at the beginning of the year and annual depreciation has to be increased by \$20,000,000.
- (v) A potential buyer is under negotiation with the management to explore the opportunities to buy out the petrochemical operation.
- (vi) Everything being equal, all data would remain constant and the normal rate of return for the capital project is 8%.



## Question 1

**68 minutes**

Assume that you are the CFO of QJ Corporation.

*Required*

**You are required to write a memo to explain the 20X3 forecast performance of the company.**

Your memo should cover the following areas and may present all figures in \$'000:

- (a) Analyse the company's position by using the contribution approach. **(15 marks)**
- (b) Comment on which sales volume would enable the company to maximise the contribution. **(3 marks)**
- (c) Based on the analysis above, comment on whether the company should continue the production. **(3 marks)**
- (d) Comment in general on the opportunities that the company should explore internally for improving profitability, i.e. when the selling prices could not be increased. **(5 marks)**
- (e) Based on the information available, what would be the factors to be considered to determine the recommended price for starting negotiations with a potential buyer to sell the operation? **(3 marks)**
- (f) If the information available were not sufficient for making the recommended price, what other information would you request to enable you to determine the recommended price? **(3 marks)**
- (g) What are the limitations of using the contribution approach for performance evaluation? **(6 marks)**

## Question 2

**22 minutes**

In a traditional Chinese merchant system ("CMS"), the merchants practised their business based on three core values ranked as follows: social responsibility, integrity, and profitability. Nowadays, the notion of Corporate Social Responsibility Disclosure ("CSR D") looks new, but by reference to our Chinese traditional merchant practices, it looks in fact like a very old topic. We observed in the past that the merchants who practised CMS, generally earned very good profits. For today's corporations, CSR D has become a very relevant topic again.

*Required*

- (a) Briefly explain your understanding of Corporate Social Responsibility; **(2 marks)**
- (b) List some core CSR Ds in relation to human resource areas, including health and safety and human resources systems that are suitable for QJ. **(6 marks)**
- (c) Do you believe that a company which seriously practises CSR will benefit in terms of its share prices in the long run? **(4 marks)**

**(Total = 50 marks)**

**HKICPA December 2012**

## CASE STUDY 2

The Delicious Pizza Company Limited (DPC) is a subsidiary of ATL Fast Food Group (ATL) listed on the Hong Kong Stock Exchange. DPC operates many pizza restaurants in Hong Kong, Macau and mainland China. The company mission is to deliver hot and fresh pizza to customers on time, with excellent service and at a competitive price.

### Pizza Delivery Service

Due to the escalating rental costs, DPC has introduced a pizza delivery service to customers which has received an enthusiastic response. To date, DPC has more than 5,000 dedicated and professional delivery teams located in 100 express delivery centres in the region. Hotline centres take orders from customers and are normally situated at different locations from the kitchens in order to optimise the costs involved. Currently, there are 200 hotline order operators.

The Chief Executive Officer (CEO), Mike Chan, strongly believes in the importance of quality service and on-time delivery to customers. The current operation is that when customers call in for a pizza, they often ask the hotline order operators how long it will take to deliver the pizza to them. If the operators quote too long a time interval, customers will very often turn to other pizza restaurants. If the operators quote too short a time interval, but could not meet it, customers will be upset and DPC will lose potential repeat customers.

Mike is very keen to monitor the delivery time to customers in order to improve the service quality. The industry benchmark for the delivery time to customers is within 45 minutes upon receiving the order (“Benchmark”), and rival pizza restaurants can achieve this Benchmark about 50% of the time (out of the total number of deliveries each month). Mike is unsure whether DPC could quote a delivery time of 45 minutes and achieve an on-time delivery performance of 50% for the past three months.

### Delivery performance

DPC pizza delivery schedule		20X1		
		Sept	Oct	Nov
1.	Delivery in 30 minutes or less	10,440	11,780	13,650
2.	Delivery between 31 and 45 minutes	17,400	19,840	22,750
3.	Delivery between 46 and 60 minutes	20,300	21,700	19,500
4.	Delivery between 61 and 90 minutes	9,860	8,680	9,100
Total Pizza deliveries		<u>58,000</u>	<u>62,000</u>	<u>65,000</u>

### December proposal

Mike is also thinking of giving an on-time guarantee for the month of December in order to promote sales. His initial idea is that if a pizza could not be delivered within 30 minutes of placing the order, the customer will get a free pizza. Mike estimates that an extra 25,000 pizzas will be sold while 10,000 pizzas will be given away free. Below is the analysis:

1.	Average price for a pizza	<u>\$200</u>
2.	<b>Cost per pizza</b>	\$
	Variable costs	70
	Fixed costs	50
	Total	<u>\$120</u>

### Prospectus

On 12 Dec 20X1, the Marketing Director of ATL, Dick Lee, invited Frank Chan, the CFO, for a high tea chat at a 5-star hotel. They shared views about the current public invitation of subscription of shares of an ATL subsidiary where a prospectus is due to be issued shortly. Dick told Frank that some key customers of the subsidiary may be running into financial trouble attributable to their customers having been hard hit by the recent economic slowdown in Europe. Dick does not want

Frank to look into this matter and quantify the financial impact on the subsidiary nor to update the Prospectus.

## Question 1

40 minutes

Assume that you are Frank Chan, the CFO, and you are going to write a memorandum to the CEO to explain the past performance and concerns regarding the December proposal. Your memorandum should cover the following areas:

- (a) Analysing the past performance of the pizza delivery, including the comment on whether DPC could achieve a delivery time of 45 minutes and on-time delivery performance of 50% **(6 marks)**
- (b) The estimated financial impact of the December proposal **(4 marks)**
- (c) Consideration of non-financial indicators for the December proposal. **(7 marks)**
- (d) Other actions for improving the delivery time. **(5 marks)**

## Question 2

27 minutes

### Potential acquisitions

DPC believes that the more pizza locations they run, the higher the market share that DPC will be able to achieve by satisfying the customers' demand in terms of delivery time and lowering the material purchase cost. Based on this principle, DPC's board of directors has asked the management to consider acquiring smaller pizza chain stores in the areas covered by DPC. Another principle that DPC wishes to implement is that the targets for acquisition should adopt the DPC brand for future operations.

### Assume you are Mike:

#### Required

- (a) What selection criteria would you consider for the acquisition targets? Particular concerns should be addressed in acquiring pizza chain stores in mainland China. **(5 marks)**
- (b) Recommend the possible way(s) the structure of acquisition or any additional terms can be secured assuming that the liabilities or contingent liabilities were not ascertainable to mitigate the risks of the acquisitions; and **(6 marks)**
- (c) If DPC would like to perform due diligence on the potential targets, what are the limitations of performing financial due diligence on the past financial results and position. **(4 marks)**

## Question 3

23 minutes

Refer to the prospectus issue in the case. Assume that you are the CFO and you wish to consider the following before discussing them with the CEO.

#### Required

- (a) State the ethical dilemmas and problems that arise in this issue. **(3 marks)**
- (b) If you were the CFO who had the following choices:

#### Do nothing:

- (i) What would be the consequence(s) for Sponsor, reporting accountants, and directors and management involved in the IPO? **(4 marks)**

**Conduct investigation:**

- (ii) What would be procedures that you are going to carry out? **(2 marks)**
- (iii) What are the additional disclosures in the prospectus you will consider? **(2 marks)**
- (iv) What would be the expected impact on the current and future financial statements? **(2 marks)**

**(Total = 50 marks)****HKICPA June 2012****CASE STUDY 3**

**Boston Garment Limited (BGL)**, a listed company in Hong Kong, buys and sells sportswear for teenagers in bulk. It uses its own designer silk-screen machines to print specially designed patterns on the sportswear and sells them to a number of retail outlets in Hong Kong and Mainland China. The appeal of the sportswear is largely dependent on the quality of the silk screen, such as the number of colours, use of glitter, and durability of the design. BGL wishes to be known for its trendsetting designs, and it wants its sportswear to be a “must have” for each and every teenager in Hong Kong and Mainland China. The average price for the sportswear is HK\$200, higher than the market average price of HK\$150.

**Operational details for the past five years. (Assume that “now” is the final quarter of 20Y1.)**

Description	20Y0	20X9	20X8	20X7	20X6
Bulk sportswear purchased (unit)	300,000	270,000	250,000	220,000	200,000
Number of sportswear spoiled (unit)	2,900	2,400	2,300	2,000	1,900
Operating margin	40%	38%	38%	37%	36%
Number of retail outlets	150	160	165	150	135
Number of design staff	10	7	7	6	5

At the end of each financial year, the management of BGL determines the quantity of sportswear to be purchased and sold for the coming year, and the amount of the advertising budget to be placed in teenage fashion magazines. The management also determines the number of design staff to support the business activities. The main tasks of the design staff are to develop an eye-catching concept with an easy printing concept in mind and fast delivery to retail and wholesale outlets. There is no direct relationship between the number of bulk sportswear purchased and the number of design staff and its associated costs. However, the success of BGL depends largely on the creativity of the design staff.

Although the business has been running quite well, the Managing Director, Mr. Dickson Chan, is of the view that a set of key performance indicators would be very helpful for him to guide and control the business to achieve the financial targets set by the Board. At a recent Management meeting, he has announced that he is going to implement balanced scorecard (BSC) in the company in order to achieve the financial goal as laid down by the Board. He asks the Financial Controller to consider the applicability of BSC to BGL.

**Forecast cash flow for the 4<sup>th</sup> quarter 20Y1**

Cash control had never been a topic among the management team prior to the employment of the new Financial Controller, Mr. Sammy Lee, this year. Sammy is reviewing the cash flow situation in the last quarter of 20Y1. Based on the discussion with some colleagues, he gathered the following data to prepare the forecast cash flow for the fourth quarter of 20Y1.

**Cash Receipts and Payments Projection**

In HK\$	Oct	Nov	Dec
Cash receipts	4,900,000	5,000,000	5,100,000
Cash payments	4,850,000	4,950,000	4,700,000

He also found out that the cash balance for the current account with a bank was HK\$100,000 on 1 October 20Y1, and a deposit bank account balance of HK\$0. Also, the revolving credit facility has not yet been utilised. As a policy formulated by the Board recently, BGL must maintain a minimum cash balance in its current account of HK\$500,000 for timely payment to suppliers and other parties. Any excess cash at the end of a month is to be invested in a deposit account to earn 2% per annum compounded monthly. Any cash shortages are covered by a withdrawal from the revolving credit facility of HK\$350,000 at 5% per annum interest. Sammy expects all borrowing or deposit to occur at the beginning of the month and interest is paid or received at the beginning of the following month.

### Ethical dilemma

BGL has been very successful over the last five years. It is now October 20Y1 and the Financial Controller, Sammy Lee (CPA) is assessing the forecast profit for the financial year ending 31 December 20Y1. It appears that the company will enjoy record profits attributable to very good business in the first nine months of 20Y1. However, Sammy is concerned about the prospects for the financial year 20Y2 which does not look promising, given the worsening inflation affecting teenagers' spending behaviour. He knows a drop in profits may reflect poorly on his performance for future promotion and his 20Y2 bonus according to the company-wide incentive scheme, for which the profit is capped for the bonus calculation. He is considering the possibility of making a number of accounting adjustments in the financial year 20Y1 which include deferring some sales revenue from 20Y1 and recognising it in 20Y2. This would have the effect of smoothing out the profits over 20Y1 and 20Y2.

## Question 1

31 minutes

Assume that you are the Managing Director, Mr. Dickson Chan, and you are going to write a memorandum to the Board to explain the following:

*Required*

- (a) Identify with reasons what strategy BGL uses. **(2 marks)**
- (b) Prepare a list of positives and negatives for the strategy adopted by BGL. **(5 marks)**
- (c) Explain why a balanced scorecard (BSC) is relevant or useful, with examples, to BGL and how it can be designed. **(10 marks)**

## Question 2

37 minutes

Assume that you are the Financial Controller, Mr. Sammy Lee, and you are asked by the Managing Director to provide the following information [i.e. (a)-(c)] to him.

*Required*

- (a) Complete the cash forecast for each month of the fourth quarter of 2011. **(5 marks)**
- (b) BGL's cash position is very tight and the risks of defaulting accounts receivable keep increasing, suggest the measures that BGL could take to ensure that the cash forecast is achievable. **(5 marks)**
- (c) Refer to the relevant facts in the case. If the forecast cash collection was adversely affected, what type of financial risk would BGL now be exposed to and what would be the possible consequences and possible courses of actions to be taken by BGL? **(5 marks)**
- (d) Now assume that you are the independent director of BGL and you have carried out a working capital review of the company. Having listened to the cash flow forecast presentation by the Financial Controller, comment on the following for deliberation at the Board Meeting,

<i>Description</i>	<i>BGL</i>	<i>Industry</i>
Sales growth between Jan 20Y1 and Sept 20Y1	30%	10%
Inventory turnover period	60 days	45 days
Accounts receivable settlement period	90 days	60 days
Accounts payable payment period	150 days	90 days

and also suggest, apart from tight control of accounts receivables, three possible ways of improving the finance and cash position of BGL. **(6 marks)**

### Question 3

**22 minutes**

Assume that you are the Financial Controller, Mr. Sammy Lee, and you wish to consider the ethical dilemma in light of HKICPA Code of Ethics and possible courses of action.

*Required*

- Identify with reasons which fundamental principles of the HKICPA *Code of Ethics* are relevant to this situation. **(3 marks)**
- Outline three possible courses of action and explain which one you will recommend in the case of BGL. **(6 marks)**
- How much damage is done to the Hong Kong stock market by providing misleading information to investors? **(3 marks)**

**(Total = 50 marks)**

**HKICPA December 2011**

### CASE STUDY 4

Television manufacturing is a highly competitive industry which procures a lot of parts and components. New models with various functionalities are offered to the market on a yearly basis in order to stimulate sales. **Tiger TV Manufacturing Company Limited (TTV or the Group)**, a listed company on the Hong Kong Stock Exchange, has recently (two months after the fiscal year end date) announced a positive profit alert which states that the Group has recorded substantial profit growth which is attributable to (i) the successful implementation of the Group's supply chain strategies resulting in a reduction in raw material and other related costs; (ii) the Group's sales have maintained double-digit growth in Mainland China; and (iii) the successful execution of the Group's promotion and pricing strategies in the rural/countryside and metropolitan areas.

The following items are discussed during a board meeting during June 20Y1. **(Assume that “now” is June 20Y1.)**

#### **Investment Plan**

The management of TTV has decided to make a huge investment in the coming financial year in setting up LCD (Liquid Crystal Display) and LED (Light-Emitting Diode) panel module facilities in Mainland China to sustain the profit growth of the Group and stabilise the upstream supply chain. It is estimated that a capital investment of HK\$200 million is required to purchase additional machineries and other long-term financing funding may be required for this investment (“Investment Project”). Currently, the Group maintains a short-term bank loan of HK\$100 million and overdraft facility of HK\$50 million with the Scott Bank.

In a board meeting, Ms. Tina So, a board member, has raised the issue that since TTV has accumulated over HK\$1,500 million accounts receivable and a cash balance of HK\$500 million, the Group should try to use its best efforts to collect the receivable as early as possible to fund the aforesaid investment instead of obtaining long-term finance. The meeting also deliberated whether this approach was too aggressive in terms of short-term and long-term implications to the Group in the aftermath of financial tsunami.

### TTphone Opportunity

The Chief Financial Officer (CFO) reports in the board meeting that TTV has a subsidiary TTphone which has performed so well in selling mobile phones in the past three years that the members agree to explore the opportunity to spin off TTphone on the Hong Kong Stock Exchange. Continuous investment in distribution networks is a key driver of success in this industry.

### Declaration

Tina So declares that she has sold all her shareholding of TTV right after the public announcement of the positive profit alert i.e. 3 weeks before the final result announcement is to be released.

### Operation Discussions

(1) *Target Cost*

Even though TTV has had a very good business performance in the past years, the competition becomes more intense than ever. It is expected that competitors have started their plans to cut product costs. In order to cope with the competition, the management of TTV has set a target cost for future LCD and LED TV products that is to reduce by 15% the existing product costs and increase two more functionalities compared to the market available functionalities.

A memorandum will be circulated to the board members to explain the target costing concepts shortly after the board meeting.

(2) *Departmental Pricing*

TTV has an LCD and LED module making subsidiary TTM. As a group policy, and in fact an industrial norm, TTM has the free autonomy to sell its products to TTV to make "Tiger" LCD and LED TVs, or to other external TV or display manufacturing companies to make other branded TVs or display products depending on the profitability. Similarly, TTV could buy the modules on the open market if the price offered by TTM is higher than the market price.

Three scenarios have been considered:

Scenario A = TTM has no spare capacity at all

Scenario B = TTM has spare capacity

Scenario C = TTM has a total 4,500,000 modules production capacity

Current TTM output and external sales = 4,000,000 modules per annum

TTM current selling price = HK\$1,600/unit

TTM marginal cost = HK\$867/unit

TTV total demand from internal / external suppliers = 10,000,000 modules per annum

TTV purchase price from external suppliers = HK\$1,400/unit

A report on the discussion between TTM and TTV will be documented for the next board to understand their logic for determining the departmental transfer pricing.

## Question 1

36 minutes

Assume that you are Mr. T. T. Chan, the Deputy CFO of TTV, and you are asked by the CFO to write a memorandum to the board to further explain target costing concepts due to the shortage of board meeting time.

*Required*

- (a) Explain what target costing is and the reasons for using it. **(3 marks)**
- (b) Why is the target costing approach relevant to TV production? **(6 marks)**
- (c) What are the three steps that you will design to attain the target cost? **(6 marks)**
- (d) What are the benefits and limitations of target costing? **(5 marks)**

## Question 2

42 minutes

With reference to the information as set out under the section headed “Departmental Pricing”.

*Required*

- (a) Assuming you are the CFO of TTV, what should be the objectives in setting the transfer pricing system between a group of companies or divisions? **(3 marks)**
- (b) Set out the minimum transaction price(s) between TTM and TTV with an explanation for each scenario. **(13 marks)**
- (c) In which scenario do you think that negotiation may happen? If the scenario fails, what should the Group management do? Justify your decision. **(7 marks)**

## Question 3

12 minutes

Refer to the case and advise whether Tina So's disposal of the Group shareholding is proper. Give advice to the Group and Tina So regarding her disposal of the shares. **(7 marks)**

**(Total = 50 marks)**

**HKICPA June 2011**

## CASE STUDY 5

**Scented candles** are commonly used in high-class restaurants and hotels. Colours and fragrances are added to the wax to produce scented candles. Customers are willing to pay a premium for high quality products. Since Hong Kong has become more affluent, more and more middle class and upper class people are interested in buying these premium products for meditation purposes nowadays.

Mr. C. M. Cheung is the Managing Director of **GOM Company Limited (GOM)**. The company mainly manufactures fancy scented candles for the Hong Kong market. The company was established by C. M.'s father in the 1960s. The factory premises are owner-occupied, with a floor area of about 10,000 square foot, and located in an old factory building in Chaiwan, Hong Kong. It has about 200 employees and is regarded as the market leader in the scented candle industry.

GOM has developed its own brand name (GOM) in the market. The company has been able to acquire a market share of 20% with an enviable profit margin of 15% due to good product design and superior product quality under the leadership of the chief product designer, Mr. Ivan Lee, who had helped the founder to start up and expand the business to its present scale. However, Mr. Lee will retire next year and the company has been looking for his successor for several months already.



During the past few years, the company deferred several expansion plans due to the inadequate resale value of the factory premises to purchase new factory premises on Hong Kong Island. Indeed, the supply of factory premises has become less and less due to the conversion of factory premises into residential property by some property developers. In addition, old plant and equipment could not be replaced by new ones due to floor loading and safety regulations imposed on the present premises, which has also inhibited the expansion plans.

**It is now the final quarter of 20Y0.** In recent years, market share and the profit margins are shrinking as a result of increasing competition from the suppliers in China and South East Asia. Their products are much cheaper and more beautifully designed. However, some of them produce inferior products that are tainted with toxic chemicals.

HK\$'000	20X5	20X6	20X7	20X8	20X9	Industry
Sales	50,000	49,000	48,000	42,000	40,000	200,000
Net profit margin	30%	28%	25%	20%	15%	10%
Number of customers	1,000	1,050	1,000	900	850	5,000
(Key customers)	100	100	100	110	115	

Since the establishment of the company, the setting of the selling price has been based on the total cost plus approach using the standard costing method. Manufacturing overhead is adopted into cost unit by reference to the units produced. Mr. Cheung is worried about this approach as it may not be able to identify those products with a positive contribution, and is too rigid and prone to lead to wrong decisions in setting the selling price. In order to maintain the market share and profit margin, Mr. Cheung wants to hold a brainstorming meeting to discuss the alternatives on setting the selling price, especially the marginal cost plus method which he heard about during a recent seminar held at the Hong Kong Institute of Certified Public Accountants.

Of the many products produced, GOM-Fantasy is the best seller. In a recent management meeting, Mr. Cheung asked Mr. Tommy Lau, the Financial Controller, to compare the cost price in Mr. Lau gathered the following budget data for the month of June 20Y0 as follows:

1	Budgeted Sales and Production in June	100,000 units
2	Selling price of GOM-Fantasy	HK\$100/unit
3	Direct materials costs per GOM-Fantasy	5 units
	Consumption of component X	HK\$4/unit
	Purchase cost of component X	4 units
	Consumption of component Y	HK\$2/unit
	Purchase cost of component Y	
4	Direct labour costs per GOM-Fantasy	4 hours
	Consumption of labour hours per unit	HK\$10/hour
	Labour cost per hour	
5	Variable factory overheads	HK\$4/unit

The actual data for June are as follows:

1	Actual Sales and Production in June (opening and closing inventory were the same)	95,000 units
2	Sales of GOM-Fantasy	HK\$11,400,000
3	Consumption of component X	550,000 units
4	Purchase costs of component X	HK\$2,310,000
5	Consumption of component Y	450,000 units
6	Purchase costs of component Y	HK\$810,000
7	Consumption of labour hours	360,000 hours
8	Total labour costs	HK\$4,320,000
9	Variable factory overheads	HK\$380,000

**Question 1****25 minutes**

Assume that you are Mr. Tommy Lau, the Financial Controller, perform a SWOT analysis in order to summarise the challenges and opportunities for Mr. Cheung to consider. **(14 marks)**

**Question 2****18 minutes**

Prepare a memo to Mr. Cheung, the Managing Director, to contrast the methods of total cost plus pricing with marginal cost plus pricing. **(10 marks)**

**Question 3****36 minutes**

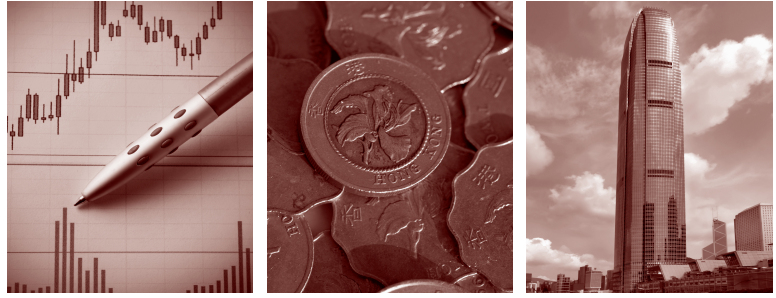
Calculate the budget contribution and actual contribution, and make a reconciliation of the contribution between budget and actual. You need to identify all the variances in this reconciliation statement. **(19 marks)**

**Question 4****13 minutes**

Assume that the chief product designer, Mr. Ivan Lee, has discovered that GOM-Fantasy has been tainted with toxic chemicals. Prolonged exposure to these toxic materials will have a detrimental effect on health. Mr. Lee, who is retiring soon, is of the view that the company should not launch product recalls as it will cause financial and reputation damage to the company. Mr. Lee also intends to continue production until exhaustion of the tainted materials. What HKICPA Code of Ethics for Professional Accountants should be considered if you (i.e. Tommy) are being consulted on the decision for product recalls. **(7 marks)**

**(Total = 50 marks)****HKICPA December 2010**





# Question bank – answers



## CASE STUDY 1 (December 2012)

### Answer 1

(a) Date: xx/xx/20X2  
 To: Board of Directors  
 From: CFO of QJ Corporation

Subject: **20X3 Forecast performance**

#### Contribution table after taking into account the additional information

Annual sales volume (tons)	120,000	150,000	180,000	240,000	200,000	200,001
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(The following data are all expressed in \$'000)

Total sales	960,000	1,200,000	1,440,000	1,920,000	1,600,000	1,600,008
Less: sales discount (Working 1)	<u>9,600</u>	<u>16,500</u>	<u>25,920</u>	<u>43,680</u>	<u>28,800</u>	<u>28,800</u>
Net sales (A)	<u>950,400</u>	<u>1,183,500</u>	<u>1,414,080</u>	<u>1,876,320</u>	<u>1,571,200</u>	<u>1,571,208</u>
Variable costs						
Direct material costs	360,000	450,000	540,000	720,000	600,000	600,003
Indirect material costs	240,000	300,000	360,000	480,000	400,000	400,002
Labour costs (Working 2)	<u>240,000</u>	<u>306,667</u>	<u>386,667</u>	<u>600,000</u>	<u>440,000</u>	<u>440,004</u>
Total variable costs (B)	<u>840,000</u>	<u>1,056,667</u>	<u>1,286,667</u>	<u>1,800,000</u>	<u>1,440,000</u>	<u>1,440,009</u>
Contribution (A) - (B)	110,400	126,833	127,413	76,320	131,200	131,199
Total fixed costs: depreciation	150,000	150,000	150,000	170,000	150,000	170,000

#### Working 1: Calculation of sales discount

Annual sales volume (a)	Selling price/ton (b)	Percentage of sales entitled to discount (c)	Discount percentage (d)	Total discount (e) = (a) × (b) × (c × (d))
120,000	8,000	20%	5%	9,600,000
150,000	8,000	25%	5.5%	16,500,000
180,000	8,000	30%	6%	25,920,000
200,000	8,000	30%	6%	28,800,000
200,001	8,000	30%	6%	28,800,144
240,000	8,000	35%	6.5%	43,680,000

**Working 2: Calculation of labour costs**

Level of production	Strata level	Labour cost per ton	Labour cost per various level	Total labour cost
120,000		2,000		240,000,000
150,000	140,000	2,000	280,000,000	306,666,667
	10,000	2,667	<u>26,666,667</u>	
180,000	140,000	2,000	280,000,000	386,666,667
	40,000	2,667	<u>106,666,667</u>	
200,000	140,000	2,000	280,000,000	440,000,000
	60,000	2,667	<u>160,000,000</u>	
200,001	140,000	2,000	280,000,000	440,004,000
	60,000	2,667	160,000,000	
	1	4,000	<u>4,000</u>	
240,000	140,000	2,000	280,000,000	600,000,000
	60,000	2,667	160,000,000	
	40,000	4,000	<u>160,000,000</u>	

Production level over 140,000 tons increases labour costs by 1/3 to  $2,000 \times 1.333 = 2,667$ .

Production level over 200,000 tons doubles the labour costs to  $2,000 \times 2 = 4,000$ .

Obviously in all cases the contribution margin could not even cover the fixed costs.

The company is in a very bad position as it would be in a loss situation, no matter what the level of sales.

- (b) Any production in excess of 200,000 tons would increase the labour costs. (A double shift is required and would result in additional costs accordingly.)

Non-current (Fixed) assets would be required in addition to achieve the production level in excess of 200,000 tons. The capital investment and the cost of non-current (fixed) assets would increase significantly.

By reference to the table in (a), the maximum contribution level would be at 200,000 tons of production and sales.

- (c) As in all level of sales, the company still generates a positive contribution to the operation, the company still recovers a certain level the fixed overhead costs.

If the company stops production, the fixed overhead costs would not be recovered at all.

Accordingly, the company should still proceed with production until the contribution margin is negative, i.e. the selling price of company would not even be able to recover the variable costs.

- (d) Since the selling prices could not be changed due to the market forces, the company could only explore internal opportunities to save costs.

#### Improvement in efficiency

- (1) The production processes could be studied carefully to check whether such processes could be streamlined and or improved to increase the production output in a given time.
- (2) The staff could be trained to make sure of their understanding of the production processes and the percentage of rejected production during the production process could be reduced.
- (3) Study the whole process, or install some new machines to save electricity and water consumption. A lot of new innovative devices have surfaced to achieve power and water savings, therefore more effort should be made to explore this area.

#### Improvement in formula for mixing products

- (4) Since all petrochemical products have to reach a standard or a benchmark for producing such products, research should be carried out to make sure the formula is the most economical one or other substitutes could also be used to save on material costs.
- (5) The procurement department's function is very important too as it can buy the material at lower costs if they have done good research of the industry and stock up on materials for production when the prices are low.

#### Improvements in other areas

The business model is more complicated in reality.

- (6) The faster the collection period, the less interest expenses incurred. Therefore, consideration should be given to improving the sales strategies, and focusing on good customers in payment terms.
  - (7) There may be loss of control in some operational areas which make such high variable costs, for example, control of labour sick leave, wastage in indirect materials. More time should be spent monitoring and improving the whole production processes.
  - (8) Therefore other costing methods such as activity-based costing could be used to make a detailed examination of performance, instead of simply using contribution costing to make crucial decisions even though it is a good approach to understand the company's performance.
- (e) Since there was no data available for the asset value, no comparison could be made. Further, the price/earnings ratio would not be applicable as the company is in a loss situation.

Accordingly, we can use the maximum contribution per year to approximate our estimation of cash to be generated for the operation assuming things remain constant (as given in the question) by discounting it using the normal rate of return by capital project to estimate the minimum price for selling the petrochemical operation:

The maximum contribution per year	(A)	131,200,000
Discount rate	(B)	8%
Valuation based on contribution	(C) = (A) / (B)	1,640,000,000

- (f) The operation is a very capital intensive one, the asset value is very important to determine whether the operation would be sold at a significant loss using the above method of valuation. If it was the case, the company could sell the assets in the open market instead to maximise the cash inflow.

If the estimates of the future selling prices and the material costs were available, it would be better to estimate and revise the contribution.



The loss might have a definite chance to become a profit if the selling prices were increasing and the material costs were decreasing. Such information is therefore very useful for determining the prices.

As in a loss situation, a price-earnings ratio would not be applicable, but if the revised schedule could show profitability, then the P/E ratio might be appropriate to be used to determine the price.

Could the operation business be changed to some other profitable operation? If the answer is positive, then the whole operation should be revisited and the strategy should be changed as well.

- (g) Contribution analysis is a short run, marginal analysis.

It also assumes that unit variable costs and prices are constant with a certain level of operation. This means cost to volume follows a linear function.

It also assumes that the production costs have a clear division between fixed costs and variable costs.

There are always opportunities for producing more inventories, therefore, storage costs and the holding costs of inventories should not be ignored.

Costs of fixed or variable costs are estimates and sometimes ignore other costs, such as management time and supporting function costs, such as finance. Accordingly the estimates may not be accurate.

Labour efficiency is the most difficult part to estimate especially in developed countries as more labour requests have to be entertained and additional labour policies imposed by national laws always increase the cost of labour.

However all costs are estimates and, in the long run, all costs are variable.

Further, the implications of the external environment have not been considered. Normally, the rise and fall of oil prices will have a significant impact on material costs, i.e. variable costs.

## Answer 2

- (a) Corporate social responsibility (CSR) promotes a vision of business accountability to a wide range of stakeholders, in addition, to shareholders and investors. Key areas of concern are environmental protection and the wellbeing of employees, the community and civil society in general, both now and in the future.

The concept of CSR is underpinned by the idea that corporations can no longer act as isolated economic entities operating in detachment from broader society. Traditional views about competitiveness, survival and profitability are being swept away.

CSR is operating a business in a manner that meets or exceeds the ethical, legal, commercial and public expectations that society has of business. It is the way in which organisations achieve sustainable development.

The scope of CSR varies from business to business and may be reflected in charitable donations, environmental initiatives, involvement in community activities, employee relations, supply chain management, corporate governance and/or sustainable development.

- (b) The disclosures relating to Human Resources issues would be as follows:

- Industrial health and safety
- Preventing industrial accidents
- Spending on accident prevention and safety costs
- Number of accidents
- How accidents are handled and their consequences
- Conducting a risk assessment

- Human Resources systems
  - Staff career development
  - Personal development and educational/training programmes
  - Employment of disabled individuals
  - Re-employment system
  - Support for self-education
  - Treatment of harassment
  - Child nursing/child care system
  - Award system for proposals and innovations
  - Qualifications systems
  - Physical and mental health care
- (c) A company which practises CSR will be viewed by investors as a good company, therefore, more confidence would be gained from the public and shareholders. Therefore it may result in more buy-side activities and boost the share price.

Most large corporations are concerned with profit-making, and this definitely falls within the scope of the management, however, ethical principles should be observed in pursuit of profit. Financial markets are looking at the longer-term and appreciate and reward profit-making behaviour including resources saving such as reduction of electricity consumption, and when the share price increases, so too does the value of the company. This is another principle driver in corporate decision-making: creating shareholder value.

Some studies show evidence that “good corporate governance, sound environmental standards and, to a lesser extent, care of stakeholder relations” are associated with higher shareholder value.

Other studies also show that "stakeholder management", dealing with direct stakeholders of the company (employees, customers, suppliers and communities), has a positive impact on shareholder value.

A company's level of social responsibility can actually attract more customers (brand switching) as they want to use such a company which adopts environmental friendly policies; therefore sales may be boosted as a result.

There are also ethical shareholder groups that are investing in the market to encourage greater ethical corporate behaviour; however the share price impact is not that significant.

In summary, the positive impact of practising CSR will definitely bring long-term benefits to the company.

## CASE STUDY 2 (June 2012)

### Answer 1

(a)

To: Mike Chan, CEO  
 From: Frank Chan, CFO  
 Date: xx/xx/xxxx

Subject: **Performance and concerns regarding the December proposal**

As requested, I have undertaken an analysis of the performance and proposal as follows:

**Past performance**

Delivery in minutes	Sept		Oct		Nov	
	Orders	%	Orders	%	Orders	%
Equal or less than 30	10,440	18	11,780	19	13,650	21
Between 31 & 45	17,400	30	19,840	32	22,750	35
Between 46 & 60	20,300	35	21,700	35	19,500	30
Between 61 & 90	9,860	17	8,680	14	9,100	14
Total	58,000	100	62,000	100	65,000	100

- The industry benchmark is 45 minutes. Improvement in deliveries of less than 30 minutes increased by 3% (up from 18% to 21%).
- Improvement in deliveries of less than 45 minutes increased by 8% (up from 48% to 56%). DPC was slightly below the industry benchmark in the month of September (48%).
- Improvement in deliveries of between 46 and 60 minutes decreased by 5% (down from 35% to 30%).
- Improvement in deliveries of greater than 60 minutes decreased by 3% (down from 17% to 14%).
- In conclusion, with the exception of September, DPC could achieve an on-time delivery performance of 50% during October and November for a delivery time of 45 minutes.

(b)

**Financial impact of the December proposal**

Additional income on extra orders (25,000 x \$200)	\$5,000,000
Less: variable costs (25,000 x \$70)	(\$1,750,000)
Less: variable costs of free meals (10,000 x \$70)	(\$700,000)
Additional profits	<u>\$2,550,000</u>

DPC could go ahead with the December proposal.

(c) **Non-financial indicators for the December proposal**

The non-financial measurement indicators are quality of food, quality of service and human resources.

**Quality of food**

- Cooking temperature and cooking time within an acceptable level.
- Materials used according to recipe.
- Spoilage rate of pizzas

**Quality of service**

- Number of rings before taking the call from customer.
- On-time delivery as committed. Log the time of receiving orders and the time of receipt by customers.
- Number of complaints/compliments from customers.
- Number of customer orders in a month.

**Human resources**

- Amount of additional training to kitchen staff and hotline order operators.
- Some measures of employee satisfaction

**(d) Other actions for improving the delivery time**

- Customer orders are input into the electronic ordering system with linkage to the kitchen staff.
- Ensure that adequate labour is available to minimise waiting time before cooking commences.
- Have adequate number of staff available to deliver the pizzas.
- Maintain cooking equipment well to avoid down time.
- Ensure no pizza has to be thrown away and replaced due to poor quality.

Should you require more information or have more enquiries, please let me know.

Frank Chan, CFO

## Answer 2

- (a) Mike should consider the following factors when approaching the targets and perform the basic procedures before obtaining the financial information:

**Selection criteria to be considered for the acquisition targets**

- Whether the owner(s) of the target pizza chain stores (“Owner”) is/are willing to sell the chain stores.
- The percentage that the Owner is willing to sell to DPC and whether DPC could consolidate the results.
- Whether the Owner is willing to use the DPC brand even if s/he does not sell 100% equity interest to DPC.
- Whether the locations of their stores are supplementary to DPC’s i.e. DPC stores are not operating in the Owner’s store locations or is far away from them. The higher the degree of supplementary level to DPC stores would enhance the value and synergy of the acquisitions.
- Whether any Anti-monopoly laws/rules will disallow such acquisitions.
- Whether the company owning the pizza chain stores is properly formed by performing a company search for the details of the capital and ownership structure.
- The exchange rate fluctuation may be considered as the renminbi fluctuation may affect the profitability and asset level of DPC.
- The tax rate in mainland China is higher than the Hong Kong one.

Therefore, when calculating the investment return, such factors should be considered.

- (b) **Recommend the structure of the acquisition and additional terms or information which can be obtained**

- To enquire whether there are any hidden or contingent liabilities such as non-payment of staff benefit in accordance with the prevailing labour law as any outstanding unpaid benefit or non-compliance with the local labour law may increase the cost of acquisition; validity of the rental agreement as the landlord may not have the right to rent.
- Should there be any difficulties in ascertaining the liabilities or contingent liabilities of the targets of acquisition, DPC could acquire the assets, liabilities, if any, and the business (“Relevant Assets and Liabilities”) from the Owner but not the equity interest of the Owner’s company.

- After the acquisition of the Relevant Assets and Liabilities, DPC may incorporate the newly acquired operation into the company or form a new company to house the business.
- Of course, all existing staff, if capable, could sign a new contract with DPC or its newly formed company.
- Hence, the new business will not carry any past potential liabilities or contingent liabilities as it would be contained in the Owner's business and the Owner should handle the issues himself.

DPC may also consider including the following clauses or terms in the acquisition:

- Personal guarantee that the assets are free of security.
- Personal guarantee for the maximum liabilities and/or contingent liabilities as disclosed to be acquired if any.
- Deferred payment of the consideration as security for a period of time for any future claim.
- Adjustment for consideration clauses for any future claim of assets, liabilities and/or contingent liabilities.

(c) **Limitations of performing financial due diligence**

- Similar to performing audits, even when a proper performance of due diligence has been done, it is also subject to collusion, falsification, or lack of sufficient documentation which may hide errors, omissions, irregularities, or fraud.
- The scope of financial due diligence may be subject to the constraints of cost and the timeframe in completion of such acquisitions, therefore, the risk of undiscovered relevant information may exist.
- Performing a full scope due diligence, including legal, operational and other areas may reveal more relevant information to assist the performance of financial due diligence, as inconsistencies may exist and need to be subject to further due diligence work in the finance area.
- Important parts for financial due diligence include the ascertainment of tax position and other contingent liabilities which may pose a lot of judgment in reporting the appropriate position, including tax expert and lawyers' input; normally a commercial judgment is required in dealing with these controversial areas.

Due diligence does not deal with the internal control system; therefore, such work could not reveal fully the internal weaknesses and accordingly the implication in the financial statements.

## Answer 3

(a) Ethical dilemmas and problems

(1) **Integrity:**

A professional accountant should be straightforward and honest in all professional and business relationships. The problem is Frank should act quickly and look into this issue.

(2) **Objectivity:**

A professional accountant should not allow bias and conflict of interest or undue influence to override professional or business judgments. The problem is the need to present the company in a good financial position.

**(3) Professional behaviour:**

A professional accountant should comply with relevant laws and regulations and should avoid any action that discredits the profession. The problem is that Frank should act professionally when dealing with Dick and should not do anything that would make him be seen to tolerate breaching of the law or regulations.

- (b) (i) Depending on the personal character of Frank Chan, the courses of action may be broadly classified into two categories:

**Passive (doing nothing)**

- To continue issuing the prospectus means that the management has missed a significant matter to be disclosed during an IPO process. This may possibly bring in legal consequences not only to the management and directors of the subsidiary. For example, the sponsor of the IPO may be fined by the regulators for not doing proper due diligence work.
- In order to comply with the terms of the undertaking given to the SEHK by the sponsor, (which include complying with the Main Board Listing Rules applicable to sponsors, and using reasonable endeavours to ensure that all information provided to the SEHK during the listing application process is true in all material respects and does not omit any material information) to the extent that the sponsor subsequently becomes aware of information that casts doubt on the truth, accuracy or completeness of information provided to the SEHK, it will promptly inform the SEHK of such information.
- Therefore, the sponsor may eventually pick up the issues and revise the prospectus which would waste the time for the parties involved and may cause more issues, including cost, reputation and management integrity and the re-auditing of the financial data due to the delay of the listing timetable.
- The auditors and/or reporting accountants of the subsidiary may also cast doubt on the management's integrity and terminate the engagement. It is evident in many cases that reporting accountants resign during the process of an IPO due to management integrity issues. Further, their work in the subsequent events may also pick up such adverse changes and provision may need to be made in the financial statements.
- Should the company be listed without disclosing such risk, and subsequently, such risk became real fact and affected the company significantly then the following exposure might happen to:

**Sponsor**

- The Sponsor might be held liable to the shareholders and/or the regulators due to negligence in the due diligence work. Civil action might be brought against the Sponsor and there may also be criminal liability.

**Reporting Accountants**

- The Reporting Accountants would be questioned on the quality in performing their work diligently and might be challenged by the HKICPA whether their audit work was performed in accordance with the generally accepted auditing standards; the shareholders might recover the loss by taking civil action against them. The Securities and Futures Commission might also challenge their sufficiency of audit work.

**(ii) Active (investigation)**

- Investigate the exposure of the risk in default payment of the accounts receivable from the European customers.

- This could be achieved by talking to the sales teams and checking whether they have monitored the credit risk due to the recent economic downturn as a management process and credit risk management.
- The company could also commission a credit agent to prepare an updated credit report on the European customers as part of the due diligence process for the preparation of the prospectus.
- Investigate whether the future business will be affected by the European economic downturn; of course, this could be worked out together with the sales team and by buying some research reports in the region to assess the country risk.

(iii)

- In the prospectus, it is required to fully disclose the business and financial risks, including the credit and operating risk.
- The subsidiary of ATL should discuss with the sponsor to revise the disclosure to the satisfaction of the regulators based on the principle that the potential public investors should know of such investment exposure.
- Therefore, the results of the above-mentioned investigations should also be disclosed and assessed.

(iv)

- For business risk, it is required to comment on the impact of the current economic situation; in terms of the preparation of the profit forecast, if needed, and the expression of the existing working capital flow statement, such economic risks should be factored in.
- Impact on the next interim or final result, due to the economic impact may affect continuously over many years and it should therefore be properly assessed. A risk factor may also be included when stating the expected financial, working capital, and how the revised credit policy impacts in the financial statements and/or other relevant parts in the prospectus.

#### Final point

If the operating risk is too high in the European market, which may create a significant impact on the financials, and the uncertainty is extremely high, then whether the IPO exercise should continue would be a relevant discussion at this stage.

## CASE STUDY 3 (December 2011)

### Answer 1

(a) Date xx/xx/xxxx

To: Board of Directors

From: Dickson Chan, Managing Director

Subject: **Business strategy and balanced scorecard**

Thank you for the Board's enquiries on the subject. I would like to take this opportunity to give a brief introduction to the following areas in order to address the Board's concerns:

- BGL adopts a product differentiation strategy in one particular market segment.
- The sportswear designs are "trendsetting" and "must have" for each and every teenager in Hong Kong and Mainland China.

- BGL must continue to be the trendsetter in order to charge a premium price for its product.

(b) Positives:

- Can charge premium price to customers
- Can focus on niche market
- Can promote the company as a market leader in the industry.

Negatives:

- Competitors can replicate the design quickly
- Excellent designers may be head-hunted by competitors.
- Short product life cycle (with “trendy” design).
- Higher risk of obsolete stock if the design does not attract market attention and sales demand.
- May lose market share for more general products for which there is big demand.
- Opportunities for economies of scale will be lost.

Other valid “positives” and “negatives” are acceptable as answers.

(c) BSC forces the responsible managers to set both financial and non-financial targets for their own departments which are supportive of the achievement of BGL's financial goal for the year. BSC also forces the responsible managers to work as a team in achieving BGL's objectives.

The key measurements of BGL's balanced scorecard, given its product differentiation strategy:

#### **Financial perspective**

The key measurements will indicate whether BGL has been able to charge premium prices and achieve sufficient operating income through its product differentiation strategy.

- Operating margin and increase in operating margin
- Price premium obtained for products

(Other suitable measurements are acceptable as an answer.)

#### **Customer perspective**

The key measurements will indicate whether the product differentiation strategy is succeeding with customers. These performance measurements are leading indicators of superior financial performance.

- Market share in teenager sportswear
- Number of new customers
- A measurement of customer satisfaction
- Number of times the sportswear is mentioned in leading fashion magazines

(Other suitable measurements are acceptable as an answer.)

#### **Internal business process perspective**

The key measurements will indicate improvements in more distinctive and trend-setting designs delivered to customers, which will lead to superior financial performance.

- Quality of silk-screening (number of colours, use of glitter, durability of the design)
- Frequency of new designs
- Time between concept and delivery of design
- Sportswear spoilage rates

(Other suitable measurements are acceptable as an answer.)



### Learning and growth perspective

The key measurements will indicate the capabilities of BGL to produce distinctive designs, which have a cause-and-effect relationship with improvements in internal business processes, which in turn lead to customer satisfaction and superior financial performance.

- Ability to attract and retain talented designers
- Investment in advanced technology silk-screening hardware and software
- Employee training in marketing and sales
- A measurement of employee satisfaction

(Other suitable measurements are acceptable as an answer.)

Should the board require more information, please let me know.

Dickson Chan

Managing Director

## Answer 2

(a) Cash forecast

	Oct	Nov	Dec	4th Qtr
	HK\$	HK\$	HK\$	HK\$
Beginning cash balance	100,000	500,000	500,000	100,000
Add: Cash receipts	<u>4,900,000</u>	<u>5,000,000</u>	<u>5,100,000</u>	<u>15,000,000</u>
<b>Cash available</b>	<b><u>5,000,000</u></b>	<b><u>5,500,000</u></b>	<b><u>5,600,000</u></b>	<b><u>15,100,000</u></b>
Less: Cash disbursements	<u>(4,850,000)</u>	<u>(4,950,000)</u>	<u>(4,700,000)</u>	<u>(14,500,000)</u>
Cash surplus (deficiency)	150,000	550,000	900,000	600,000
Cash from/(to) credit facility	350,000	(48,542)	(301,458)	0
Less: Interest payment (5%)		(1,458)	(1,256)	(2,714)
Add: Interest receipt			0	0
Cash balance before transfer to deposit account	<u>500,000</u>	<u>500,000</u>	<u>597,286</u>	<u>597,286</u>
Transfer to deposit account			<u>(97,286)</u>	<u>(97,286)</u>
Ending cash balance	<u><u>500,000</u></u>	<u><u>500,000</u></u>	<u><u>500,000</u></u>	<u><u>500,000</u></u>

(b) Knowing that BGL has a very tight cash position, adherence to its cash collection estimates is important. The following measures may be used to prevent a cash shortage:

- Implement rigorous credit checks to reduce the risk of bad debts
- Limit the total exposure on accounts receivable
- Set a shorter payment term for customers
- Re-set the payment term to suppliers (make it longer)
- Follow up customers who have not paid within their payment term. Understand their payment policy to ensure that we have the best estimates for receiving payments from them
- Implement a late payment penalty for customers who do not pay on time
- Implement a policy of offering discounts for early payments
- Review collection policies with customers regularly

- Use warning letters or letters from solicitors for customers who are seriously late with payment
- Apply tighter control over inventories

(Other suitable measures, for example factoring of receivables, are acceptable as an answer.)

(c) BGL would be exposed to liquidity risk for the following reasons:

- As mentioned previously, BGL has a very tight cash position. It has to use the banking facility (\$350,000) in October to meet the minimum cash balance.
- BGL still needs to rely on a credit facility in November and is only able to invest in a deposit account in December.
- The opening balance in the deposit is HK\$0. It is clear that BGL does not have significant cash reserves to utilise if there is a cash shortage.
- The differences between cash disbursements and cash available are very small. This means that the cash position is sensitive to changes in either cash collections or cash payments.

The **consequences** would be:

Shortage of cash may result in BGL eventually defaulting on payments, for example accounts payable, salaries or interest.

(Other valid comments would be acceptable as an answer.)

**Required action:**

BGL should implement strict controls over cash disbursements for any unexpected expenses, such as any increase in the cost of materials due to an unexpected increase in demand.

(Other valid comments would be acceptable as an answer.)

(d) **Working capital review**

Overtrading occurs when a company aggressively tries to achieve too much with insufficient long-term capital. This means that the company is trying to support trading volume that is too large with limited financial resources. In particular, the company is relying too much on short-term financing, such as trade payables.

BGL is evidently in an overtrading situation. Its sales growth is faster than for other companies in the industry and it has a substantial amount of finance tied up in accounts receivable and inventory.

The cash operating cycle is zero (60 days + 90 days – 150 days). This differs from the industry norm of 15 days (where all stakeholders are mostly satisfied).

BGL is financed mainly by external creditors. Should these creditors take legal action to obtain payment, BGL could get into a financial distress situation.

Possible ways to improve:

- Unsold inventory could be sold at a big discount in end-of-season sales
- Receivables could be factored
- The company could make a call for capital from its shareholders (with a rights issue)
- The company could apply for a longer-term bank loan to match its long term financing requirements
- The company could invite new investors to invest: the company has a proven business concept and a good track record

(Other valid comments would be acceptable as an answer, such as introducing just-in-time methods.)

## Answer 3

### (a) Integrity

The Code states that professional accountants should not be associated with information that they consider contains a statement that is false or materially misleading, or information that has been provided recklessly. They should also not be associated with information where there has been an omission that is sufficient to make the information misleading.

Sammy has a responsibility to shareholders, employees and future investors to provide them with honest information about the performance of the company.

### Objectivity

The Code states that professional accountants should not allow bias, conflict of interest or undue influence to override their business or professional judgment.

Sammy must not allow the judgment of his own performance to affect the preparation of the current year financial statements.

### Professional competence and due care

The Code states that professional accountants should be competent to perform professional services and should act diligently in accordance with applicable technical and professional standards when providing professional services.

Sammy must prepare the company's financial statements in accordance with applicable technical and professional standards.

### (b) Possible courses of action and their consequences

#### (1) Reporting the actual 20Y1 results without making such accounting adjustments

- By reporting the actual results, Sammy could provide a true and fair view of the company's financial position and performance to the stakeholders, including shareholders and employees.
- However a fall in future profits would have an adverse financial effect on him personally next year, and also on potential investors who may decide to invest in the company based on the current year's results.
- Moreover if these profits are not sustainable, then the reporting of lower profits in the future may result in losses for investors.

#### (2) Making the accounting adjustments

- By making the accounting adjustments, Sammy is in effect "smoothing" the financial results of BGL.
- This may appeal more financially to Sammy and to potential future investors.
- It may affect the position of employees and existing shareholders, because they may receive smaller bonuses or dividend payments for the current year.

#### (3) Looking for alternative means of disclosure

- Clear statements in the annual report that give warning of difficult business conditions in 20Y2 would mean that Sammy may be able to report the true results.
- As a result Sammy would maintain his integrity, objectivity and professional competence and his moral obligation to the payment of bonuses, and this would not detract from his own performance in the future.

- This alternative means of disclosure may result in a win-win situation for internal management to report the actual results to benefit the relevant stakeholders and potential investors when forming their investment strategies.

### Recommendation

The recommendation is to look for alternative means of disclosure.

- (c) The confidence of investors in the Hong Kong stock market will be damaged and investors will be more reluctant to invest. Hong Kong may not be regarded as a global financial centre for capital.

Adverse media reports will affect the willingness of global investors to invest in the Hong Kong stock market. They will invest in other stock markets where corporate governance is stronger.

More regulatory measures are devised by the regulatory authorities. For example, in Hong Kong the Government has established the Financial Reporting Council, changed the Securities and Futures Ordinance and the Price-sensitive Information Guidelines (and making these a law instead of guidelines). The compliance costs of these measures are high for a Hong Kong listed company and also for the Hong Kong community.

The interest of shareholders is affected because they have received misleading information. Information asymmetry occurs due to the management of BGL, or some core management team members, conducting earnings manipulation activities (insider information). If more listed companies do the same thing, then investors or potential investors will not be able to rely on the market information they receive.

Consequently they may incur more screening costs, for example by:

- conducting more one-on-one investor meetings to understand more about the internal controls of a potential investee company
- carrying out more research into the background of company management
- making their own projections of company performance making use of the available information from the company and its industry, in order to assess the real value of the companies in which they invest.

## CASE STUDY 4 (June 2011)

### Answer 1

Date xx/xx/xxxx

To: Board of Directors

From: Mr. T. T. Chan

Subject: **Various concerns raised by the board members**

Thank you for the board's enquiries on the subject. Our CFO has asked me to explain to the board various matters discussed at the last board meeting.

(a) **Target costing**

Target costing involves setting a target cost for a product by subtracting the desired profit margin from a target/competitive market price. The crucial factors to consider are the target market price and the cost.

Some business enterprises have no control over market price. They are price takers due to the market forces of demand and supply. Enterprises that use target costing typically face this challenge.

Target costing, with the aim of reducing costs, is normally at the product design stage. The opportunities for making reductions in cost are greatest at this stage. They are more difficult after the product has been designed and commercial production has begun.

In order to achieve a reasonable profit margin, it is usual to set a target for costs as a proportion of the target selling price. For example, the target may be for costs to be 80% of the target selling price, in order to achieve a profit margin of 20%.

(b) **TV products have the following features:**

**Understanding TV design**

- (1) A lot of designs for the separate parts, industrial design (the outlook), closely-related parts which may be bonded in a printed-circuit board.
- (2) Each different TV may have its unique outlook, features and functions (software) and hardware due to different functionalities and industrial design.
- (3) Different packaging.
- (4) Common parts are available for all TVs and changes are only required for the outlook and the software.
- (5) The design of the production process is also important to save labour costs and to avoid the LCD and LED TVs becoming heavier and bigger.

**Other considerations**

- (1) Quality control work should be considered carefully, because any re-working or rejection of units in the production process would be costly.
- (2) TVs normally come with a product warranty period for the customers. The facilitation of easy maintenance should therefore be considered at the product design stage.
- (3) Changes in technology are important. The new LCD module may be different from the old one, with more functionalities. It may also be cheaper.
- (4) Tight inventory control over the panel and other spare parts, to avoid product obsolescence (to reduce overall cost). It may be appropriate to adopt just-in-time inventory control, with a strong enterprise resource planning system. Working closely with the purchasing department is also crucial for achieving target cost, because prices of electronic components tend to fall over time.
- (5) The prices of LCD and LED TVs are very transparent in the market. The difference in price for the same line of products should not be material for the same grade or standard of product. Brands produced in Japan or Korea are in a different grade due to the branding effect and these may command a higher price.
- (6) TV manufacturers are normally price takers. Their products do not have much differentiation from each other. The same technologies are shared by the manufacturers, because most technologies are available in the market.
- (7) Target costing is therefore very appropriate for use in the TV manufacturing sector.

(Other valid points can be made in the answer, such as market competition.)

(c) Three steps to attain the target cost:

(1) **Planning stage**

- (a) Set selling prices that the market will accept for products that are to be designed, by comparing the prices of products that are currently available in the market.
- (b) Decide the required profit margin and a percentage of sales.
- (c) Decide the target cost. This is the target sales price minus the target profit margin.

- (d) Compile an estimate bill of material costs for the product, based on the anticipated design specification and current cost levels.
- (e) Calculate the target cost gap. This is the difference between the estimated bill of material costs and the target cost for the product.

(2) **Development stage**

Make an effort to close the gap

- Working with the design team to determine which parts should be combined to save costs of purchasing and even production.
- Working closely with the purchasing and product development departments by sourcing new technologies or products to replace existing components.
- Replacing parts with less expensive parts, without compromising quality.
- Re-designing the production process, if there is an opportunity to reduce labour costs and logistics costs.
- During these processes it may be necessary to make some trade-offs between design/functionality and cost.
- If the estimated cost after these processes still exceeds the target cost, the processes should be repeated until the target cost is achieved.

(3) **Execution and control**

- (a) Manage the costs incurred during production of the product, to attain the pre-set target cost
- (b) Consider:
  - the manufacturing process (for example, breakdown of the power system).
  - technology development (shortage of supply of some old components).
  - the economic situation and increases in material costs (for example, fluctuations in the price of copper).
  - the procurement process: for example, making a decision to get a low price supplier.

(d) **Implementation of target costing has the following benefits:**

- (1) Positive and proactive approach to cost management. Cost is considered at the product design stage to avoid unnecessary spending on materials, logistics and production.
- (2) Since the selling price is crucial, the project team has to think about customers' needs and avoid unnecessary functions/functionalities in the product.
- (3) Co-ordination between departments is extremely important, and the process of target costing in product design will build a closer relationship between the departments involved.
- (4) The implementation process will make employees aware of cost design in the product development process. Employees will be empowered to do the right things during product development in order to achieve corporate objectives.
- (5) During the implementation process, the relationships with suppliers should be fostered and maintained in order to achieve a better purchase ordering cycle and high commitment in terms of quality, quantity and price.

- (6) Non-value added activities will be minimised to reduce unnecessary costs. Focus will be on the selection of activities that add value at the lowest cost.
- (7) A well-planned product design and development process will reduce the time to bring new products to the market.

**Implementation of target costing has the following limitations:**

- (1) Detailed cost data for analysis is essential for the successful implantation of target costing. Precise cost calculation must also recognise market influences on cost.
- (2) Co-operation between departments is essential. The departments involved must be willing to co-operate and must demonstrate commitment to the target costing process.
- (3) The target costing process may be long, with detailed cost analysis. This may require many meetings to co-ordinate activities.
- (4) Using cheaper components will reduce costs, but the components may be of inferior quality. Using these components may therefore reduce the quality of the products and increase the cost of warranties.

Should the board require any more information, please let me know.

T. T. Chan

Deputy CFO

## Answer 2

- (a) Transfer prices are a way of promoting divisional autonomy. Ideally they should not prejudice the measurement of divisional or company performance or adversely affect the maximisation of company profits.

The objectives in setting transfer prices should include the following:

### Divisional autonomy

- Transfer pricing can promote divisional autonomy. They are particularly appropriate for profit centres such as TTM or TTV because if one profit centre does work another, the transfer price will affect the costs of one profit centre and the revenues of the other.
- However, a danger with profit centre accounting is that the business organisation will divide into a number of self-interested segments. Each may act at times against the wishes and interests of other segments and the organisation as a whole. A profit centre manager may take decisions in the best interests of his own centre but against the best interests of other profit centres and the organisation as a whole.
- A task is therefore to prevent dysfunctional decision-making by individual profit centres. To do this, some power and authority must be retained by head office, to bring influence so that profit centres are not allowed to make decisions that are entirely independent and autonomous.

### Corporate profit maximisation

When there is disagreement about how much work should be transferred between divisions, and how many sales a division should make in the external market instead of transferring products to another profit centre, there is a production and sales decision that maximises profit for the organisation as a whole. However unless each profit centre also maximises its own profit at this same level of output and sales, there will be inter-divisional disagreements about output levels. When this happens, profit-maximising output will not be achieved.

- (b) **Scenario A: No spare capacity in TTM factory**

X = Marginal cost of producing modules = \$867

Y = Opportunity cost of making internal transaction = Lost contribution from losing sale to the external customer

= \$1,600 sales price minus \$867 marginal cost  
= \$733 per unit

Minimum transfer price for TTM = X + Y  
= Marginal cost + Opportunity cost  
= \$867 + \$733 = \$1,600 per unit

TTM will not want to sell the product for less than \$1,600 because such action would reduce its divisional profit.

This decision achieves the goal congruence objective (i.e. it is in the best interests of the group as a whole) and any other transfer price would be detrimental to the group's best interests.

### Scenario B: Spare capacity in TTM factory

TTM has spare capacity to increase its output above the current level of four million modules per annum, but there is no demand from external customers for this available capacity. This means that it is now possible to produce some extra modules for sale to TTV without any reduction in the quantity sold to external customers. Where spare capacity exists, there is no opportunity cost in making such inter-divisional transfers.

The minimum transfer price of the modules produced by TTM for transfer can be calculated as follows:

X = Marginal cost of producing modules = \$867

Y = Opportunity cost of making internal transaction = \$0

Minimum transfer price for TTM = Marginal cost + Opportunity cost = \$867 + \$0 = \$867 per unit

If TTM produced the modules using spare capacity and sold to TTV at any price in excess of \$867 per unit, TTM profits would be increased by:

[(Transfer price – \$867) × Number of units transferred]

On the other hand if TTV pays a module price less than \$1,400 per unit (which is the price currently charged by the external supplier). TTV's profits would be increased by:

[((\$1,400 – Transfer price) × Number of units)]

Hence a transfer price greater than \$867 and below \$1,400 will result in higher profits for both divisions, compared with the profits that they would earn if they did not trade with each other.

In line with the principle of divisional autonomy, it is appropriate to leave it to the managers of the two divisions to negotiate the exact transfer price within this price range \$867 < \$1,400.

Goal congruence would be achieved. By using the spare capacity TTM would produce modules at the marginal cost of \$867 and TTV would buy them at a price less than the \$1,400 that it would pay to an external supplier. The profits of the group will increase in total by \$1,400 – \$867 = \$533 for each module transferred by TTM to TTV.

### Scenario C: Limited spare capacity in TTM factory

The maximum production capacity of TTM is 4.5 million modules per annum. Since there is demand from external customers for 4 million modules, the spare capacity is 500,000 modules.

The demand by TTV for modules is much greater than this available spare capacity of 500,000 modules.

- TTM should provide 500,000 modules to TTV using its spare capacity and the price should be the same as in Scenario B – above \$867 but below \$1,400.
- If TTM were also to provide TTV with more than 500,000 modules, it would have to reduce sales to external customers by the same quantity. Therefore, the transfer price for modules in excess of 500,000 should be the same as in Scenario A, \$1,600.



In this situation the optimal arrangement is to have two transfer prices:

- A lower price for transfers that make use of spare capacity
- A higher transfer price for transfers that have an opportunity cost because there will be lost sales to external customers.

It is important to resist the temptation to apply an average transfer price in this situation, because an average price would result in sub-optimal output and sales decisions.

(c) **When negotiation fails**

We saw in Scenario B that inter-divisional negotiations are likely to occur with a view to agreeing the transfer price that should be applied to output that makes use of spare capacity. Inevitably this raises the question as to what should happen if the negotiations fail.

We have seen that the range of transfer prices that would be acceptable to both divisional managers (for output that uses spare capacity) is between \$867 and \$1,400. Each company will try to negotiate a transfer price that is favourable to itself. For example, TTV will try to obtain a transfer price as close to \$867 as possible and TTM will try to negotiate a price close to \$1,400.

If there is no agreement on the transfer price, there will be no transfers between the divisions, and TTV will continue to buy all its modules from external suppliers at \$1,400. Since TTM could produce modules at a cost of just \$567, this would clearly be sub-optimal for the group as a whole.

When the divisional managers cannot agree a transfer price, a question is whether top management in the group should intervene in order to decide the transfer price and ensure that transfers between the divisions occur and that the best interests of the group are served.

For one school of thought, the answer to this question is “No”:

- (1) For the reasons stated earlier, preservation of the autonomy of the divisions is an important principle. This should not be ignored without a good reason.
- (2) If the divisional managers are allowed to make mistakes and suffer because they cannot agree, their profits will be affected and they are unlikely to make the same mistake in the future.

For example, the managers of both profit centres will soon be aware that if they had “shared the difference” and agreed on a transfer price of \$1,133.5 per unit, then each division would have earned an incremental profit of \$266.5 per unit produced with the spare capacity of TTM. By failing to reach agreement on a transfer price they have deprived themselves of profit in the current period. They will probably remember this lesson in future negotiations on transfer prices.

Another school of thought is that the answer to the question is “Yes”:

- (1) A balance should be kept between divisional autonomy (to provide incentives and motivation) and retaining some centralised authority (to ensure that all profit centres work towards maximisation of the group's profit). Therefore, a separate department within the group may be set up to deal with this issue and retain goal congruence within the group.

## Answer 3

### Tina So's disposal of shares

The disposal of shares by a board member is not a problem in business except when he or she possesses insider information about the company.

Although TTV has made an announcement of the positive profit alert, the public still does not have the detailed financial information from the company.

Since the board has approved the announcement of the positive profit alert, it should be expected that the board members have more financial information than the public. Therefore, any dealing in shares by a Board member may be considered insider dealing activity under the Securities and Futures Ordinance of Hong Kong.

Insider dealing takes place when a person buys or sells shares in a listed company when he has insider information – that is, knowledge of certain facts about the company that are not known to the public and which, if known to the public, would have an effect on the company's share price.

Although there are exceptional circumstances when a director may have a good defence for the disposal of shares, the immediate reporting of this incident to the Hong Kong Stock Exchange and the Securities and Futures Commission is recommended, in order to project a good corporate governance image of the company and also to protect the legal interests of Ms. Tina So.

Further, it is recommended that Ms. Tina So should hire her own legal counsel to give her advice on her legal position.

**(Note. Bonus marks** should be awarded for answers that give some details about the rules on share dealing by directors. There is a black-out period for a director to deal in the company's shares. According to the Listing Rules (Appendix 10) a director must not deal in the shares of the company:

- on any day on which its financial results are published
- during a period of 60 days immediately preceding the publication of the annual results (or if shorter, during the period between the end of the financial year and the publication of the annual results), and
- during a period of 30 days immediately preceding the publication of the quarterly results (if any) and half-year results (or if shorter, during the period between the end of the relevant reporting period and the publication of the results for the period).

## CASE STUDY 5 (December 2010)

### Answer 1

#### (a) Strengths

- Well established (more than 40 years) manufacturing company
- Owns a brand name (GOM) itself
- Already has a certain percentage of the market share
- Loyal customers
- Owner-occupied premises
- Superior quality and safer products
- New designer may bring new ideas to the products
- New machines may increase output

#### (b) Weaknesses

- Retirement of the Chief Designer
- New Chief Designer may not bring new ideas acceptable to market and customers

- Old manufacturing building hinders the development of the company
- Cannot replace old plant and machinery with modern equipment due to premises restrictions
- Limited expansion plan hinders economy of scale
- Dropping sales over the years
- Dropping net profit margin over the years
- Dropping number of customers over the years

(c) **Opportunities**

- Increase in premises value can provide an opportunity for selling the premises and moving to another place for future development
- CEPA will open the door for selling into mainland China
- Affluent society leads to expanding market for premium product

(d) **Threats**

- Competition from the mainland and South East Asia for better designed products and cheaper price
- Fancy scented candles can be easily replaced by other products
- Inferior products in the market can badly affect the candle industry
- Short of supply of factory premises may hinder the business development

## Answer 2

To: Mr. C.M. Cheung, Managing Director

From: Mr. Tommy Lau, Financial Controller

Date: dd/mm/yyyy

### Re: Total Cost Plus Pricing and Marginal Cost Plus Pricing

Total cost plus pricing is a method of determining the selling price by including all costs (production and non-production costs) of a product and adding a mark up for profit.

Marginal cost plus pricing is a method of determining the minimum selling price of a product which could at least cover the variable costs of production and target profit required by the company.

#### Total cost plus pricing

Total cost plus is an absorption costing system that attributes all production costs to the individual cost unit.

When using absorption costing as part of a total cost plus pricing system, we must ensure that the volume of sales provides a mark up that is sufficient to cover the non-production costs that are incurred.

We must also ensure to include those costs that would continue to be incurred if the item was not produced.

Total cost plus pricing enables a senior manager to delegate the price setting decision to a front line manager.

However, a front line manager may reject a sale because a customer only wants to pay a price which is less than the absorption cost but higher than the variable cost of production.

Therefore, it may be better to sell the product at a low price because it exceeds the variable cost and thus makes a contribution to the fixed costs that would be incurred even if no production takes place.

### Marginal cost plus pricing

Marginal Costing is a costing system that only attributes variable production costs to the cost unit.

When using marginal costing as part of a cost plus pricing system, we must ensure that the percentage mark-up is sufficient to cover the fixed production overhead costs as well as the non-production overhead costs before any profit results.

Using marginal costing which identifies the variables costs of the item produced gives the lowest price which should be charged in order to avoid a negative contribution.

However, this will risk a front line operation manager setting a price too low with the result that the contribution earned is insufficient to cover the fixed costs of the business.

This also makes it difficult for the company to increase the price at a later stage once it has been listed.

### Common to both costing systems

Both systems can be used when the market-based pricing is difficult or inappropriate to use.

Both systems are not perfect.

Other valid points.

Best regards,

Tommy Lau

## Answer 3

Reconcile the contribution between budget and actual

		HK\$
Budget Contribution	(Note 1)	2,800,000
Sales Variances	(Note 2)	1,400,000 (F)
Materials Variances		
Component X	(Note 3)	310,000 (A)
Component Y	(Note 4)	10,000 (A)
Labour Variances	(Note 5)	320,000 (A)
Variable O/Hs Variances	(Note 6)	20,000 (F)
Actual Contribution	(Note 1)	3,580,000

Breakdown as below:

#### Note 1

##### Calculation of the Budgeted Contribution

		HK\$
Sales	HK\$ 100 x 100,000 units	10,000,000
Costs		
Component X	5 units x 100,000 units x \$ 4	2,000,000
Component Y	4 units x 100,000 units x \$ 2	800,000
Labour Cost	4 hours x 100,000 units x \$ 10	4,000,000
Variables O/Hs	100,000 units x \$ 4	400,000
		7,200,000
Budget Contribution		2,800,000

##### Calculation of the Actual Contribution

Sales	HK\$ 120 x 95,000 units	11,400,000
Costs		
Component X	550,000 units x \$ 4.2	2,310,000
Component Y	450,000 units x \$ 1.8	810,000
Labour Cost	360,000 hours x \$ 12	4,320,000
Variable O/Hs	95,000 units x \$ 4	380,000
		7,820,000
Actual Contribution		3,580,000

**Note 2****Sales Variances**

	HK\$	
Budgeted Sales	10,000,000	
Actual Sales	11,400,000	
Variances	1,400,000	(F)

**Analysis****(a) Sales Volume Variance**

Budget Volume	100,000	units
Actual Volume	95,000	units
	5,000	units
× Budgeted Selling Price	× \$100	
	\$500,000	(A)

**(b) Sales Price Variance**

Budget Selling Price	\$100	
Actual Selling Price	\$120	
	\$20	
× Actual Selling Units	× 95,000	units
	\$ 1,900,000	(F)

**Note 3****Material Variances****(a) Component X**

	HK\$	
Budgeted	2,000,000	
Actual	2,310,000	
Variances	310,000	(A)

**Analysis****(a) Material Usage Variance**

Budget Usage	500,000	units
Actual Usage	550,000	units
	50,000	units
× Budgeted Purchase Price	× \$4.0	
	\$200,000	(A)

**(b) Materials Price Variance**

Budget Purchase Price	\$4.0	
Actual Purchase Price	\$4.2	
	\$0.2	
× Actual Purchase Units	× 550,000	units
	\$110,000	(A)

**Note 4****Material Variances****(b) Component Y**

	HK\$	
Budgeted	800,000	
Actual	810,000	
Variances	10,000	(A)

**Analysis****(a) Material Usage Variance**

Budget Usage	400,000	units
Actual Usage	450,000	units
	50,000	units
× Budgeted Purchase Price	× \$2.0	
	\$100,000	(A)

(b) <b>Materials Price Variance</b>			
Budget Purchase Price	\$2.0		
Actual Purchase Price	\$1.8		
	\$0.2		
× Actual Purchase Units	× 450,000	units	
	\$90,000	(F)	

**Note 5**

<b>Labour Variance</b>	HK\$		
Budgeted	4,000,000		
Actual	4,320,000		
Variances	320,000	(A)	

**Analysis**

(a) <b>Labour Efficiency Variance</b>			
Budget Hours	400,000	hours	
Actual Hours	360,000	hours	
	40,000	hours	
× Budgeted Labour Rate	× \$10.0		
	\$400,000	(F)	
(b) <b>Labour Rate Variance</b>			
Budget Purchase Price	\$10		
Actual Purchase Price	\$12		
	\$2		
× Actual Hours	× 360,000	hours	
	\$720,000	(A)	

**Note 6**

<b>Variable Overheads Variances</b>	HK\$		
Budgeted	400,000		
Actual	380,000		
Variances	20,000	(F)	

**Analysis**

(a) <b>Variable O/Hds Efficiency Variance</b>			
Budget Hours	400,000	hours	
Actual Hours	360,000	hours	
	40,000	hours	
× Budgeted Labour Rate	× \$1.0		
			\$(F)
(b) <b>Expenditure Variance</b>			
Budget Rate	\$1.0		
Actual Rate (380,000/360,000)	\$1.055		
	\$0.055		
× Actual Hours	× 360,000	hours	
round off	\$ 20,000	(A)	

## Answer 4

Referring to the HKICPA Code of Ethics for professional accountants:

(1) **Self-interest**

The Company will act solely with self-interest to save the potential cost of product recalls and to avoid damage to its reputation.

(2) **Integrity**

The Company will not act with integrity if it engages in a cover up. Should this issue be uncovered by the public, the company will have even greater damage to its reputation and financial loss.

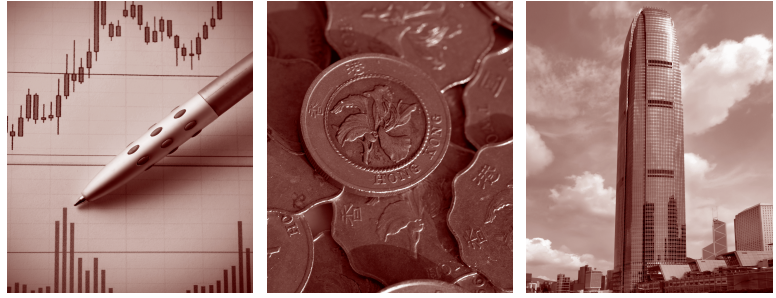
(3) **Professional competence and due care**

The Company will not be acting within this principle if it allows tainted materials in the product and allows this situation to continue after being made aware of a potential issue.

(4) **Professional behaviour**

The Company will not comply with the relevant laws and there is a grave potential that the company and the industry will be brought into disrepute.

The best decision is to draw the attention of the Managing Director to this issue, and plan the necessary actions for the product recalls.



# Glossary of terms





**Absorption costing** (sometimes called full costing), includes fixed overhead in the cost of a product or service.

The **absorption cost pricing formula** defines cost as being equal to all costs incurred in the production process, that is, variable costs plus fixed costs, both direct and allocated.

An **acquisition** describes the purchase of a smaller company by a larger company.

An **actual cost system** measures services/products at their actual cost, i.e. the amount spent on materials, the amount spent on labour, and the amount spent on overhead.

**Accounts payable payment period** =  $\frac{\text{Average trade payables}}{\text{Credit purchases or Cost of sales}} \times 365 \text{ days}$

**Accounts receivable days** or **accounts receivable collection period**

$$= \frac{\text{Trade receivables}}{\text{Credit sales turnover}} \times 365 \text{ days}$$

**Activity-Based Costing (ABC)** is a management accounting information system that identifies the various activities performed in an organisation, collects costs on the basis of the underlying nature and extent of those activities, and assigns costs to products and services based on those activities.

The **after-tax cost of irredeemable debt capital** is:

$$k_{\text{dnet}} = \frac{i(1-t)}{P_0}$$

The **agency theory** suggests that takeovers are primarily motivated by the **self-interest** of the acquirer's management.

The **American Accounting Association model** is a seven-step ethical decision-making model which attempts to apply Aristotle's three aspects of human acts: Principles and causes; Means; and Ends or consequences.

**Ansoff** drew up a **growth vector matrix**, describing how a combination of a firm's activities in current and new markets, with existing and new products can lead to growth.

**Asset and liability management** is strategic management of the balance sheet (statement of financial position) and is concerned with market risks that are affected by movements in:

- interest rates
- foreign exchange
- commodity prices
- share prices

The **Aswath Damadaran framework** is an approach to analyse dividend policy, which illustrates the inter-dependencies between dividend, investment and capital structure decisions.

The **balanced scorecard** approach to performance measurement focuses on four different perspectives and uses financial and non-financial indicators.

**Bankruptcy** is a legally declared inability or impairment of ability of an organisation to pay its creditors.

**Basis risk.** This is the difference between the spot and futures price. For example, if spot interest was 5% and the futures price (100-i) was not exactly equal to 95.00, then there would be basis. This existence of basis means that it is almost impossible to hedge a transaction 100% as the loss in one market will not always exactly equal their gain in the other.

**Beaver's failure ratio** =  $\frac{\text{Operating cash flow (i.e. EBIT) + Depreciation} - \text{Taxes}}{\text{Short- and long-term debts}}$

**Benchmarking** is a systematic and continuous measurement process, a process continually comparing and measuring an organisation's business processes against business leaders, to gain information which will help the organisation take action that will improve its performance.

The **beta factor** measures a share's volatility in terms of market risk.

Fitzgerald and Moon's **Building blocks** for **dimensions, standards and rewards** attempt to overcome the problems associated with performance measurement of service businesses.

A **business model** describes the structure of product, service and information flows between the parties involved.

A **business plan** describes the goals, strategies and resources of a business. Its aim is to assist management in providing shareholders with the highest possible returns by asking questions about how the company is operating, such as: what products should the company sell, what production methods should it use, what markets should the company try to serve and what marketing strategies should it adopt.

**Business reorganisations** consist of portfolio restructuring and organisational restructuring.

**Business risk.** The risk that a company's commercial activities and operations are less successful than in the past or as forecast (for example, a fall in revenues due to a competitor introducing a rival product)

**Call Options (Floors).** An interest rate floor is a series of options setting a minimum interest rate on a medium-term variable rate investment. Each option in the series can be timed to expire on a date coinciding with the interest rate reset date for the investment. Compensating cash settlements become payable if the market rate of interest on an interest reset date is lower than the strike price for the floor.

The **capital asset pricing model** is a statement of the principles explained above. It can be stated as follows:

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

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

$\beta_i$  is the beta factor of the individual security

**Capital budgeting** is the process of identifying, analysing and selecting investment projects whose returns are expected to extend beyond one year.

**Capital expenditure** is expenditure which results in the acquisition of non-current assets or an improvement in their earning capacity. It is not charged as an expense in the income statement; the expenditure appears as a non-current asset in the statement of financial position.

**Capital markets** are markets for trading in long-term finance, in the form of long-term financial instruments such as equities and corporate bonds.

**Capital rationing** is where budget limits or constraints are imposed on the availability of finance – internally (soft capital rationing) or externally (hard capital rationing).

A **carve-out** is the creation of a new company, by detaching parts of the company and selling the shares of the new company to the public.

A **cash flow forecast** is a detailed forecast of cash inflows and outflows incorporating both revenue and capital items.

The **cash operating cycle** is the period of time that elapses between the point when cash starts to be spent on the production of a product and the collection of cash from a purchaser.

**Collars.** Interest rate collars were devised to offer a lower premium than for caps or floors on their own. The collar holder either buys a cap and writes a floor, or writes a cap and buys a floor. Collars provide for the structuring of a maximum and minimum interest rate. It can provide the same upper rate protection as a cap but limits the benefits from a fall in rates to a predetermined level.

**Commodity price risk** is the risk that a price change in a key commodity input or output adversely affects financial performance.

The **Companies Ordinance** forms the core of the regulation of companies in Hong Kong. It sets out the rules and regulations governing Hong Kong companies and the conduct of their affairs.

The **Companies Registry** maintains and makes available for public inspection the financial and other returns made by companies.

The **comparables method** examines data on comparable firms. In many industries there are well-recognised benchmarks that are used for valuation purposes such as the price/earnings (P/E) ratio and Enterprise Value/EBITDA ratio.

**Competitive advantage** is anything that gives one organisation an edge over its rivals. Porter argues that a firm should adopt a competitive strategy intended to achieve competitive advantage for the firm.

**Competitive strategy** means “taking offensive or defensive actions to create a dependable position in an industry, to cope successfully with ... competitive forces and thereby yield a superior return on investment for the firm. Firms have discovered many different approaches to this end, and the best strategy for a given firm is ultimately a unique construction reflecting its particular circumstances”. (Porter)

**Conglomerate mergers** are mergers which are neither vertical nor horizontal. In a conglomerate merger a company acquires another company in an unrelated line of business, for example a newspaper company acquiring an airline.

The **contract price** is the price at which the futures contract can be bought or sold. For all currency futures the contract price is in US dollars. The contract price is the figure that is traded on the futures exchange. It changes continuously and is the basis for computing gains or losses.

The **contract size** is the fixed minimum quantity of commodity that can be bought or sold using a futures contract. In general, dealing on futures markets must be in a whole number of contracts.

**Contract size.** Futures can only be purchased in standard quantities. Unless the amount to be hedged is exactly divisible by the standard contract size, there will be some over- or under-hedging.

**Conversion value** of a convertible bond is:

$$P_0(1+g)^n R$$

Where:  $P_0$  is the current ex-dividend ordinary share price  
 $g$  is the expected annual growth of the ordinary share price  
 $n$  is the number of years to conversion  
 $R$  is the number of shares received on conversion

**Convertible bonds** are bonds that give the holder the right to convert to other securities, normally ordinary shares, at a pre-determined price/rate and time.

**Corporate appraisal** could be defined as “a critical assessment of the strengths and weaknesses, opportunities and threats (**SWOT analysis**) in relation to the internal and environmental factors affecting an organisation in order to establish its condition prior to the preparation of a long-term plan”. Such a definition places SWOT analysis at the heart of any corporate review.

**Cost-plus pricing formulae** define price as being equal to cost plus a mark-up. The basic equation is as follows:

The after-tax **cost of irredeemable debt capital** is:

$$k_{\text{dnet}} = \frac{i(1-t)}{P_0}$$

Where:  $k_{\text{dnet}}$  is the cost of debt capital to the company (net of tax relief)

$i$  is the annual interest payment

$P_0$  is the current market price of the debt capital ex interest (i.e. after payment of current interest)

$t$  is the rate of corporation tax

The **cost of offering credit** is the interest charged on an overdraft to fund the period of credit, or the interest lost on the cash not received and deposited in the bank.

The **cost of preference shares** can be calculated as  $k_{\text{pref}} = \frac{d}{P_0}$

A **cost synergy** results primarily from the existence of economies of scale.

**Customer Profitability Analysis (CPA)** assigns revenues and costs to major customers or groups of customers rather than to organisational units, products, or other objects. CPA considers the total sales revenue from a customer or customer group less all the costs incurred in servicing that customer or customer group.

**Credit risk** is the risk that the other party to a financial transaction completely defaults and does not meet its financial obligations or fails to meet its financial obligations on time.

JS&W define **critical success factors (CSFs)** as “Those product features that are particularly valued by a group of customers and, therefore, where the organisation must excel to outperform the competition”.

A **currency future** is a standardised contract to buy or sell a specified quantity of foreign currency. It is essentially a standardised, market-traded forward exchange contract.

The **current ratio** is the standard test of liquidity.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

The **debt ratio** is another measure of financial risk. There are a number of definitions used, of which one possibility is:

$$\text{Debt ratio} = \text{Total debts} : \text{Total capital employed}$$

**Decentralisation** of the decision-making process is where authority is delegated to divisional managers who may have the freedom to set selling prices, choose suppliers, make product mix and output decisions and so on.

**Deep discount bonds** are loan notes issued at a price which is at a large discount to the nominal value of the notes, and which will be redeemable at par (or above par) when they eventually mature.

A **demerger** is the splitting up of corporate bodies into two or more separate bodies, to ensure share prices reflect the true value of underlying operations.

**Direct costs** are those costs that can be traced to a cost object such as a product being produced in a manufacturing company.

**Divestment** is the partial or complete sale or disposal of physical and organisational assets, the shut-down of facilities and reduction in workforce in order to free funds for investment in other areas of strategic interest.

The **dividend cover** is the number of times the actual dividend could be paid out of current profits.

$$\text{Dividend cover} = \frac{\text{Earnings per share}}{\text{Dividend per share}}$$

**Dividend policy** determines the proportion of profits (if any) paid to the shareholders and the amount retained for internal financing of new long-term projects.

The **dividend valuation model** can be used to estimate a cost of equity, on the assumption that the market value of share is directly related to the expected future dividends from that share.

The **dividend yield** is calculated as follows:

$$\text{Dividend yield} = \frac{\text{Gross dividend per share}}{\text{Market price per share}} \times 100\%$$

In a **divisional** structure, there are separate divisions for each group of products or services.

**Due diligence** is the process of investigation into a potential investment, usually carried out by a professional firm on behalf of investors. The process usually involves an examination of operations and management and the verification of material facts.

**Duration** calculates the weighted (by time) average of the present value of future cash flows.

**Earnings per share (EPS)** is defined as the profit attributable to each equity (ordinary) share;

$$\text{Earnings per share} = \frac{\text{Profit distributable to ordinary shareholders}}{\text{Weighted average number of ordinary shares}}$$

$$\text{Earnings yield (EY)} = \frac{\text{EPS}}{\text{Market price per share}} \times 100\%$$

**Economic exposure** refers to the effect of exchange rate movements on the international competitiveness of a company and refers to the effect on the present value of longer term cash flows.

The **economic order quantity (EOQ)** is the optimal ordering quantity for an item of inventory that will minimise costs.

**Economic Value Added (EVA<sup>®</sup>)** is an alternative absolute performance measure. It is similar to RI and is calculated as follows:

$$\text{EVA}^{\text{®}} = \text{net operating profit after tax (NOPAT) less capital charge}$$

$$\text{where the capital charge} = \text{weighted average cost of capital} \times \text{net assets}$$

The **efficient market hypothesis** is the hypothesis that the stock market reacts immediately to all the information that is available. Therefore, a long-term investor cannot obtain higher than average returns from a well-diversified share portfolio. There are three forms of efficiency: weak, semi-strong and strong.

**Enterprise Risk Management (ERM)** is a process, effected by an entity's board of directors, management, and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.

**Equity share value** = Value of firm – Net debt, where net debt is defined as interest-bearing debt less cash.

**Exchange rate** is the rate at which one country's currency can be traded in exchange for another country's currency.

As an **expansion strategy** mergers are thought to provide a quicker way of acquiring productive capacity and intangible assets and accessing overseas markets. An **expansion strategy** through acquisition is associated with exposure to a higher level of business and financial risk.

**Factoring** involves turning over responsibility for collecting the company's debts to a specialist institution, a **factoring company** which advances a proportion of the money it is due to collect.

**FCFF** represents cash flow that is available to pay interest and principal to lenders and dividends to shareholders.

$$\text{Financial gearing} = \frac{\text{Market value of prior charge capital}}{\text{Market value of equity} + \text{Market value of debt}}$$

**Financial gearing/leverage** is the use of debt finance to increase the return on equity by using borrowed funds in such a way that the return generated is greater than the cost of servicing the debt. If the return on borrowed funds is less than the cost of servicing the debt, the effect of gearing is to reduce the return on equity.

A **financial intermediary** links those with surplus funds (for example, lenders) to those with funds deficits (for example, potential borrowers) therefore providing aggregation and economies of scale, risk pooling and maturity transformation.

**Financial management** is the management of the finances of an organisation in order to achieve the financial objectives of the organisation.

**Financial performance indicators** analyse profitability, liquidity and risk.

Although part of the business plan, the **financial plan** is an important document in its own right because it summarises information prepared for the other parts of the business plan in financial terms. It examines financial consequences in profit and cash flow terms. It therefore shows if the business plan is viable. Once finalised it is the risk and cash flow implications that are managed by the treasury operation.

**Financial reconstruction** involves changing the capital structure of the firm.

**Financial risk.** The risk that financial conditions (for example, the cost of borrowing, the yield from investments, the availability of money to borrow, customer bad debts) could change or be less favourable than expected, resulting in a deterioration of business positions in financial terms (i.e. profitability and solvency).

$$\text{Finished goods (FG) inventory holding period} = \frac{\text{Average FG inventory}}{\text{Cost of sales}} \times 365 \text{ days}$$

The term **Fisher effect** is sometimes used in looking at the relationship between interest rates and expected rates of inflation. The rate of interest can be seen as made up of two parts, the real required rate of return (real interest rate) plus a premium for inflation.

**Foreign exchange risk** is the risk that the rate of exchange used to convert foreign currency revenues, expenses, cash flows, assets or liabilities to the home currency moves adversely, resulting in reduced profitability and/or shareholder wealth.

**Forward rate** is an exchange rate set now for currencies to be exchanged at a future date.

In general, a large organisation can be structured in one of two ways: **functionally** (all activities of a similar type within a company, such as production, sales, research, are under the control of the appropriate departmental head) or **divisionally** (split into divisions in accordance with the products or services made or provided).

**Forward rate agreements (FRAs)** hedge risk by fixing the interest rate on future borrowing. A company can enter into an FRA with a bank that fixes the rate of interest for borrowing at a certain time in the future.

**Free cash flow to the firm (FCFF)** represents cash flow that is available to pay interest and principal to lenders and dividends to shareholders. FCFF is measured as:

$$\text{EBIT}(1 - t) + \text{Depreciation} + \text{Amortisation} - \text{Capital expenditure} +/\text{- Change in net working capital}$$

The **FRICT framework**, (Flexibility, Risk, Income, Control and Timing) is a useful tool for analysing capital structure issues that arise when a firm raises long-term finance and is faced with several alternatives.

In a **functional structure**, all activities of a similar type within a company, such as production, sales, and research and development, are placed under the control of a departmental head.

A **futures market** is an exchange-traded market for the purchase or sale of a standard quantity of an underlying item such as currencies, commodities or shares, for settlement at a future date at an agreed price.

A **futures price** may be different from the spot price, and this difference is the basis (basis = spot price – futures price).

**Gap analysis** is an approach that measures and analyses the gap between the planned objectives of the company and its extrapolated existing performance. It is, therefore, the gap between the planned achievement and where the business will be if it does nothing.

**Gapping** provides a signal about the effect of interest rate movements, but does not take into account the time value of money.

**Gearing ratios** can be used to measure the relationships between shareholders' capital plus reserves, and debt.

$$\text{Gearing} = \frac{\text{Debt}}{\text{Debt plus equity}} \text{ or } \text{Gearing} = \frac{\text{Debt}}{\text{Equity}}$$

A **goal**. Statement of a general aim or purpose that supports the mission. It may be qualitative in nature.

The rate of growth in dividends can be estimated using **Gordon's growth model**,  $g = br$ , where  $b$  is the proportion of profits that are retained and  $r$  is the rate of return on new investments.

A **hedge** is a transaction to reduce or eliminate an exposure to risk.

A **horizontal merger** is one in which one company acquires another company in the same line of business.

**Indirect costs** are those costs which cannot be traced directly to a cost object such as a product.

An **irredeemable bond** is where the company will go on paying interest every year in perpetuity, without ever having to redeem the loan.

**Insider dealing** occurs when an individual who is “connected” to a listed company has price-sensitive information about the company, and uses this information to deal in the company's shares (or advise someone else to deal in the shares) in order to make a profit or avoid a loss.

**Institutional investors** are institutions that have large amounts of funds that they want to invest, and they will invest in stocks and shares or any other assets that offer satisfactory returns and security or lend money to companies directly. The institutional investors are now the biggest investors on the stock market.

The **interest cover ratio** is a measure of financial risk, which is designed to show the risks in terms of whether there is likely to be sufficient profit to service debt, rather than in terms of capital values.

$$\text{Interest cover ratio} = \frac{\text{Operating profit}}{\text{Interest}}$$

**Interest rate parity theory** is a method of predicting foreign exchange rates based on the hypothesis that the difference between the interest rates in the two countries should offset the difference between the spot rates and the forward foreign exchange rates over the same period.

**Interest rate risk** is the risk that adverse movements in **interest rates** will affect profit by increasing interest expense or reduce interest income.



An **intermediate product** is one that is used as a component of another product, for example car headlights or food additives.

The **international Fisher effect** can be expressed as:

$$\frac{1 + i_a}{1 + i_b} = \frac{1 + h_a}{1 + h_b}$$

Where:  $i_a$  is the nominal interest rate in country a  
 $i_b$  is the nominal interest rate in country b  
 $h_a$  is the inflation rate in country a  
 $h_b$  is the inflation rate in country b

$$\text{Inventory holding period (days)} = \frac{\text{Inventory}}{\text{Cost of sales}} \times 365 \text{ days}$$

$$\text{Inventory turnover} = \frac{\text{Cost of sales}}{\text{Average inventory}}$$

**Invoice discounting** is the purchase of a selection of invoices at a discount. It is related to factoring and many factors will provide an invoice discounting service.

Creditors may file a bankruptcy petition against a debtor (**involuntary bankruptcy** or **winding-up**) in an effort to recoup a portion of what they are owed or initiate a restructuring.

**Job costing** is used when each order is substantially different and estimating a common set of production costs is impossible, therefore, each order's (job's) costs are accumulated individually, and are not aggregated, which results in each being costed as a separate unit.

In a **leveraged buy-out LBO** a publicly listed company is **acquired** by a specialist established **private company**. The private company funds the acquisition by substantial borrowing.

The **Legislation** (SFO, Companies Ordinance, etc.) lays down the basic framework in which markets should operate.

**Life cycle costing** tracks and accumulates costs and revenues attributable to each product over the entire product life cycle.

A **limiting factor** or key factor is a factor which at any time or over a period may limit the activity of an entity, often one where there is shortage or difficulty of supply.

**Liquidity** is the amount of cash a company can obtain quickly to settle its debts (and possibly to meet other unforeseen demands for cash payments too).

**Liquidity risk** is the risk of having insufficient cash resources to meet day-to-day obligations, or take advantage of profitable opportunities when they arise. **Liquidity** is the ability to obtain:

- the right amount of funds
- in the right currency
- at the right cost
- at the right price
- in the right time zone
- at the right time.

A **management buy-in (MBI)** is when a team of outside managers, as opposed to managers who are already running the business, mount a takeover bid and then run the business themselves.

A **management buy-out (MBO)** is the purchase of all or part of the business by its managers. Management buy-outs can be the best way of maintaining links with a subsidiary, and can ensure the co-operation of management if a disposal is inevitable.

The **Marginal Cash Flow (MCF)** calculation is:

$$\text{MCF} = \text{contribution margin} - \text{change in working capital}$$

(where the change in working capital is an increase in working capital, if not any decrease is added rather than subtracted).

**Market capitalisation** is the market value of a company's shares multiplied by the number of issued shares.

**Market risk** (systematic risk) is the average risk of the market as a whole.

**Market risk premium** or equity risk premium is the difference between the expected rate of return on a market portfolio and the risk-free rate of return over the same period.

The current **market value** of a convertible bond where conversion is expected is the sum of the present values of the future interest payments and the present value of the bond's conversion value.

The current **market value of an irredeemable bond** is:

$$P_0 = \frac{i}{K_d}$$

Where:  $P_0$  is the market price of the bond ex interest (excluding any interest payments due)  
 $i$  is the annual interest payment on the bond  
 $K_d$  is the return required by the bond investors

With taxation, the current **market value of irredeemable debt** is:

$$P_0 = \frac{i(1-t)}{K_{dnet}}$$

Where:  $P_0$  is the ex-interest value  
 $i(1-t)$  is the annual after tax interest in perpetuity  
 $K_{dnet}$  is the post-tax cost of debt for the company

The **market value of a preference share** is:

$$P_0 = \frac{d}{K_{pref}}$$

Where:  $P_0$  is the current ex-dividend value  
 $d$  is the constant annual dividend  
 $K_{pref}$  is the cost of preference share capital

The **market value of redeemable debt** is the discounted present value of future interest receivable, up to the year of redemption, **plus** the discounted present value of the redemption payment:

$$P_0 = \frac{i}{(1+K_d)} + \frac{i}{(1+K_d)^2} + \dots + \frac{i+p_n}{(1+K_d)^n}$$

Value of debt = (Interest earnings × Annuity factor) + (Redemption value × Discounted cash flow factor)

$$\text{Market value of shares} = \frac{\text{Earnings}}{\text{EY}}$$

**Market value per share** = EPS × P/E ratio

**Matching** is where liabilities and assets with a common interest rate are matched.

A **merger** describes a combination of two companies of roughly equal size.

**Mission.** The organisation's overriding purpose; it reflects the values or expectations of stakeholders and answers the question "what business are we in?".

**Money markets** are markets for short-term capital.

**Mutually exclusive projects** are two or more projects from which only one can be chosen.

**Net cash flow** is the operating cash flow less interest, tax, dividends and extraordinary items (if applicable) and changes in equity, provision for tax and provision for dividend (if applicable).

**Netting** is a process in which credit balances are netted off against debit balances so that only the reduced net amounts remain due to be paid by actual currency flows.

**Non-financial performance indicators** can be used to analyse employee performance and product/service quality.

An **objective**. A specific aim or purpose and will probably be quantified.

**Off-balance-sheet-financing** is the use of financing arrangements that do not appear on the statement of financial position (the balance sheet).

**Organisational restructuring** consists of changes in the organisational structure of the firm, such as divisional changes and hierarchical structures.

**Organisational restructuring** involves changing the organisational structure of the firm.

The **Operating Cash Flow (OCF)** calculation is:

$$\text{OCF} = \text{EBIT} - \text{change in net operating assets}$$

**Operational gearing** considers the proportion of a company's cost base that is fixed rather than variable. It can be measured in different ways:

$$\text{Operational gearing} = \frac{\text{Fixed costs}}{\text{Total costs}}$$

The higher the proportion of fixed costs, the higher the operational gearing.

$$\text{Operational gearing} = \frac{\text{Contribution}}{\text{Operating profit}}$$

**One tick** is the smallest measured movement in the contract price. For currency futures this is a movement in the fourth decimal place. Market traders will compute gains or losses on their futures positions by reference to the number of ticks by which the contract price has moved.

**Overhead costs** are indirect costs that cannot be conveniently or economically traced to a particular service or product.

**Overtrading** occurs when a company tries to expand too quickly or generally tries to do too much too quickly with insufficient long-term capital. This results in the business trying to support too high a level of activity (i.e. large volume of trade) with the current level of capital resources.

**Payback** is the amount of time it takes for cash inflows = cash outflows.

**Payment-versus-Payment (PvP)** is a mechanism for settling a foreign exchange transaction to ensure that payments in the two currencies involved are settled simultaneously.

**PBIT** = profit on ordinary activities before taxation + interest charges on long-term loan capital

**Pecking order theory** has been developed as an alternative to traditional theory. It states that, in practice, companies will prefer retained earnings to any other source of finance, and then will choose debt, and last of all equity. The order of preference will be:

- retained earnings
- straight debt
- convertible debt
- preference shares
- equity shares

**Performance measurement** aims to establish how well something or somebody is doing in relation to a plan.

The **performance pyramid** highlights the links running between an organisation's vision and its functional objectives.

**Porter's generic strategies** are the strategies an organisation can adopt to achieve competitive advantage. They are cost leadership, differentiation or focus.

**Portfolio reconstruction** involves making additions to or disposals from companies' businesses, for example, through acquisitions or spin-offs.

**Portfolio restructuring** consists of changes in the mix of assets owned by the firm or the lines of business in which the firm operates in order to increase the performance of the firm.

**Preference shares** pay a fixed rate dividend, which is not tax-deductible for the company. The current ex-dividend value  $P_0$ , paying a constant annual dividend  $d$  and having a cost of capital  $k_{pref}$ :

$$P_0 = \frac{d}{K_{pref}}$$

The **price-earnings ratio** is calculated in the following way:

$$\text{Price earnings (P/E) ratio} = \frac{\text{Market price per share}}{\text{Earnings per share}}$$

**Process costing** is used in an environment where large volumes of relatively homogeneous products flow through more than one production department.

The **product life cycle concept** holds that products have a life cycle, and that a product demonstrates different characteristics of profit and investment at each stage in its life cycle.

$$\text{Production/work-in-progress WIP period} = \frac{\text{Average WIP}}{\text{Cost of sales}} \times 365 \text{ days}$$

**Professional financial management** has two principal objectives:

- **Profitability** (i.e. a business must achieve long-term profitability objectives that provide shareholders with their required rate of return).
- **Solvency** (i.e. a business must always have sufficient cash to meet its financial commitments when they become due).

**Profitability index** is the ratio of the present value of the project's future cash flows (not including the capital investment) divided by the present value of the total capital investment.

**Profit margin** and **asset turnover** together explain the ROCE, and if the ROCE is the primary profitability ratio, these other two are the secondary ratios. The relationship between the three ratios is as follows:

$$\begin{array}{rclcl} \text{Profit margin} & \times & \text{Asset turnover} & = & \text{ROCE} \\ \frac{\text{Operating profit}}{\text{Sales}} & \times & \frac{\text{Sales}}{\text{Capital employed}} & = & \frac{\text{Operating profit}}{\text{Capital employed}} \end{array}$$

In a **post-completion audit**, information is gathered about actual cash flows generated by a project and these are compared with the projections included in the capital expenditure proposal.

**Purchasing power parity theory (PPPT)** states that the exchange rate between two currencies is the same in equilibrium when the purchasing power of currency is the same in each country:

$$\begin{aligned} (1 + \text{nominal (money) rate}) &= (1 + \text{real interest rate}) (1 + \text{inflation rate}) \\ (1 + n) &= (1 + r)(1 + i) \end{aligned}$$

**Put options (caps).** An interest rate cap is a series of borrower's options setting a maximum interest rate on medium-term variable rate borrowing. Each borrower's option in the series can be timed to expire on a date that coincides with a rollover/interest rate reset date for the loan. Caps are cash settled. When the strike price is below the market rate of interest, the cap writer must pay a compensating amount to the holder. In both situations the treasurer or borrower sets ceiling or cap prices and a floor price to maximise returns or minimise interest rate risk.

$$\text{Quick ratio} = \frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$$

**Rating trigger** is a clause in a loan agreement which specifies the action to be taken in the event of a decline in a company's credit rating to an unsatisfactory level.

$$\text{Raw materials inventory holding period} = \frac{\text{Average raw materials inventory}}{\text{Annual purchases}} \times 365 \text{ days}$$

**Real options** give a firm the opportunity, but not the obligation, to undertake an action in the future.

In a **Real Time Gross Settlements (RTGS)** system, large-value interbank payments are settled on a continuous, deal-by-deal basis through the banks' settlement accounts with the settlement institution of the system. As these payments are settled one by one during the day, systemic settlement risks arising from end-of-day netting are eliminated.

**Regulatory risk** is the risk relating to the timing and amount of foreign exchange conversion that may require regulatory approval.

$$\text{Re-order level} = \text{maximum usage} \times \text{maximum lead time}$$

A **resource audit** is a review of all aspects of the resources the organisation uses.

**Residual income** is a measure of the centre's profits after deducting a notional or imputed interest cost.

**Responsibility accounting** is where there is decentralisation of authority, and "local" divisional managers are accountable to head office for the financial performance of their decentralised unit (division).

There are three types of **responsibility centre: cost centre; profit centre; investment centre.**

$$\text{Return point (RP)} = \text{Lower limit} + \left(\frac{1}{3} \times \text{spread}\right)$$

$$\text{where Spread} = 3 \times \left(\frac{3}{4} \times \frac{\text{Transaction costs} \times \text{Variance of cash flows}}{\text{Interest rate}}\right)^{\frac{1}{2}}$$

$$\text{Return on capital employed (ROCE)} = \frac{\text{Operating profit}}{\text{Capital employed}}$$

where Capital employed = Shareholders' funds plus "payables: amounts falling due after more than one year" plus any long-term provisions for liabilities and charges  
= total assets less current liabilities

**Return on capital employed (ROCE)** for an investment =

$$\frac{\text{Estimated average/total profits}}{\text{Estimated average/initial investment}} \times 100\%$$

$$\text{Return on equity} = \frac{\text{Earnings attributable to ordinary shareholders}}{\text{Shareholders' equity}}$$

**Return on investment (ROI)** shows how much profit has been made in relation to the amount of capital invested and is calculated as (profit/capital employed) × 100%

**Revenue expenditure** is charged to the income statement and is expenditure which is incurred:

- (a) For the purpose of the trade of the business – this includes expenditure classified as selling, and distribution expenses, administration expenses and finance charges.
- (b) To maintain the existing earning capacity of non-current assets.

**Revenue synergy** exists when the acquisition of the target company will result in higher revenues for the acquiring company, higher return on equity or a longer period of growth.

A **rights issue** is an offer to existing shareholders enabling them to buy more shares, usually at a price lower than the current market price. It provides a way of raising new share capital by means of an offer to existing shareholders, inviting them to subscribe cash for new shares in proportion to their existing holdings.

**Risk appetite** (or “risk tolerance”) refers to the extent to which a company is prepared to take on risks in order to achieve its objectives.

A **risk averse attitude** is that an investment should not be undertaken if there is an alternative investment offering either the same return but with a lower risk or a higher return for the same risk. However, an alternative investment might be undertaken if it has a higher risk, but offers a higher expected return.

A **risk neutral attitude** is that an investment should be chosen based on the expected (most likely) return, irrespective of the risk.

A **risk seeking attitude** is that an investment should be undertaken if it offers higher possible returns, even if the risk is higher.

**Sales margin** is revenue less cost of sales.

**Sales minus variable costs equals contribution.** Contribution is a term meaning “contribution towards covering fixed costs and making a profit”. You should see from the formula that total contribution (S – V) minus fixed costs equals profit. Put in another way: total contribution in a time period is the sum of fixed costs during the period plus the profit (or minus the loss) for the period.

$$\text{Sales revenue/net working capital} = \frac{\text{Sales revenue}}{\text{Current assets} - \text{Current liabilities}}$$

A **scenario** is a detailed and consistent view of how the business environment of an organisation might develop in the future (JS&W).

A **scrip dividend** is a dividend paid by the issue of additional company shares, rather than in cash.

The **Securities and Futures Commission (SFC)** is the statutory regulator for the securities and futures market in Hong Kong.

The **Securities and Futures Ordinance (SFO)** lays down the overall parameters which govern corporate finance activities.

A **sell-off** is the sale of part of a company to a third party, generally for cash.

**Sensitivity analysis** assesses how responsive the project's NPV is to changes in the variables used to calculate that NPV.

The **settlement date** (or delivery date, or expiry date) is the date when trading on a particular futures contract stops and all accounts are settled. On the International Monetary Market (IMM), the settlement dates for all currency futures are at the end of March, June, September and December.

A **settlement discount** allows customers to pay less than their full debt if they pay sooner than the end of their credit period.

The **shadow price** is the maximum extra amount that it would be worth paying to obtain one extra unit of a scarce resource.

**Short-termism** is when there is a bias towards short-term rather than long-term performance. It is often due to the fact that managers' performance is measured on short-term results.

The **signalling effect of dividends** refers to the fact that the dividend declared can be interpreted as a signal from management to shareholders about the strength of underlying project cash flows.

**Smoothing** is where a company keeps a balance between its fixed rate and floating rate borrowing. A rise in interest rates will make the floating rate loan more expensive but this will be compensated for by the less expensive fixed rate loan. The company may however incur increased transaction and arrangement costs.

A **spin-off** is the creation of a new company, where the shareholders of the original company own the shares.

**Spot rate** is the exchange or interest rate currently offered on a particular currency or security. The spot rate is the rate of exchange in currency for immediate delivery.

**Stakeholders** are groups of people or individuals who have a legitimate interest in the activities of an organisation. They include customers, employees, the community, shareholders, suppliers and lenders.

A **standard cost system** uses predetermined measures for the resources used in the production of products or the provision of services.

**Stock markets** serve two main purposes:

- (1) As primary markets they enable organisations to raise new finance, by issuing new shares or new bonds.
- (2) As secondary markets they enable existing investors to sell their investments, should they wish to do so.

A **stock split** occurs where, for example, each ordinary share of \$10 is split into two shares of \$5 each, therefore creating cheaper shares with greater marketability.

**Strategy** is the direction and scope of an organisation over the long term, which achieves advantage in a changing environment through its configuration of resources and competencies with the aim of fulfilling stakeholder expectations.

**Strategic capability.** Flows from resources and competencies. Unique resources and core competencies create competitive advantage.

**Strategic control.** Has two parts, first monitoring the effectiveness of strategies and actions and second taking corrective action when required.

A **subordinated loan** is debt which ranks after other debts.

**Sustainable development** is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

**Sustainability reporting** is the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organisational performance towards the goal of sustainable development.

A **swap** is a formal agreement whereby two organisations contractually agree to exchange payments on different terms (for example, in different currencies) or one at a fixed rate and the other at a floating rate. In a currency swap, the parties agree to swap equivalent amounts of currency for a period.

**SWOT analysis:** see corporate appraisal.

**Synergy** is defined as the creation of additional value when two organisations are combined together. It can be described as a "2 + 2 = 5" effect.

**Systematic risk** is the risk involved in holding securities (shares) that is due to variations in market activity.

**Target costing** involves setting a target cost by subtracting a desired profit margin from a competitive market price.

The **target cost gap** is the estimated cost less the target cost.

**Tick size and value:** Usually, tick size is 0.0001% (i.e. four decimal places) and contracts have a three-month life duration. Tick value is simply the tick size multiplied by the standard contract size multiplied by 3/12 (life duration three months). For example, if the futures market prices were quoted in dollars, the minimum price movement would be 0.0001%. For a dollar contract with a standard contract size of \$5 million, the tick value would be \$125.

**Total Quality Management (TQM)** is a philosophy where organisations strive to create an environment that will enable the production of zero defect products or services.

**Transaction exposure** is the risk of adverse exchange rate movements occurring in the course of normal international trading transactions.

**Translation risk** is the risk that the organisation will make exchange losses when the accounting results of its foreign branches, divisions or subsidiaries are translated into the home currency.

A **transfer price** is the price at which goods or services are transferred from one department to another, or from one member of a group to another.

A large organisation will have a **Treasury department** to manage liquidity, short-term investment, borrowings, foreign exchange risk and other, specialised, areas such as forward contracts and futures.

The essence of **treasury management** is the management of company cash flows and the risks of these cash flows to determine how much of the company's cash flow is to be placed at risk.

An automated **Treasury management system (TMS)** can be used to process transactions; forecast and manage cash positions; assist with financing decisions; and provide reporting information.

**Treasury operational risk** is the risk of financial loss arising from the operational activities of the treasury function.

**Unbundling** is a portfolio restructuring strategy which involves the disposal and sale of assets, facilities, production lines, subsidiaries, divisions or product units.

A **unique resource** is one which is both better than its equivalent employed by competitors and difficult to imitate.

**Unsystematic risk** is the risk involved in holding securities (shares) that is specific to the company.

**Value activities** are the means by which a firm creates value in its products. Activities incur costs, and, in combination with other activities, provide a product or service that earns revenue.

**Value chain analysis** is the analysis of the value activities of an organisation into primary and support activities. Primary activities are involved in the production of goods and services. Support activities provide necessary assistance. Linkages are the relationships between activities.

**Value engineering** is a systematic evaluation of all aspects of the business functions, with objectives to reduce costs while satisfying customer needs.

**Variable costs** change as the level of production changes. Variable (marginal) costing assigns only variable costs to a product or service.

**Variable cost pricing models** remove the need for the allocation of fixed costs to individual product lines.

**Vertical mergers** are mergers between firms that operate at different stages of the same production chain, or between firms that produce complementary goods such as a newspaper



acquiring a paper manufacturer. Vertical mergers are either backward when the firm merges with a supplier or forward when the firm merges with a customer.

**Venture capital** is risk capital, normally provided in return for an equity stake.

**Vision or strategic intent.** The future state desired by the organisation's strategists: they aim to guide the organisation's collective aspiration toward it.

Bankruptcy initiated by the insolvent organisation is known as **voluntary bankruptcy** or winding-up.

The **weighted average cost of capital** is the average cost of the company's finance and is calculated by weighting the costs of the individual sources of finance according to their relative importance as sources of finance.

**Working capital** is equal to the value of raw materials, work-in-progress, finished goods inventories and accounts receivable less accounts payable.

**Working capital management** aims to ensure an organisation has sufficient liquid resources to continue in business and to increase its profitability.

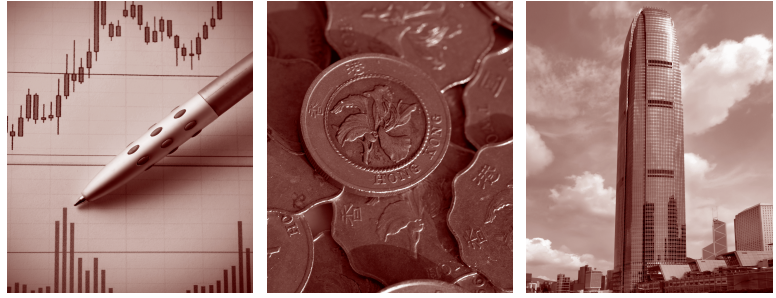
In a **winding-up** of a limited company, all the assets of the company would be realised (sold off and converted to cash) through a legal process in order to repay its debts. Winding-up would bring the company to an end.

**Zero coupon bonds** are bonds that are issued at a discount to their redemption value, but no interest is paid on them.

The **Z-Score model** is stated as follows:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

	<i>Ratio</i>	<i>To measure (i.e. significance of)</i>
Where:	$X_1$ = working capital/total assets	Liquidity
	$X_2$ = retained earnings/total assets	Cumulative profitability
	$X_3$ = earnings before interest and tax/total assets	Productivity of assets
	$X_4$ = market value of equity + preference shares/ book value of total debt	Gearing levels
	$X_5$ = sales/total assets	Revenue generating capacity



# Mathematical tables



## Present Value Table

Present value of 1 i.e.  $(1 + r)^{-n}$ Where  $r$  = discount rate  
 $n$  = number of periods until payment

Periods (n)	Discount rate (r)										
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	1
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	2
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	3
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	4
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	5
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	6
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	7
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	8
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	9
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	10
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	11
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	12
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	13
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	14
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	15
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	1
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694	2
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579	3
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482	4
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402	5
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335	6
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279	7
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233	8
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194	9
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162	10
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135	11
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112	12
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093	13
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078	14
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065	15

Annuity Table

Present value of an annuity of 1 i.e.  $\frac{1 - (1 + r)^{-n}}{r}$

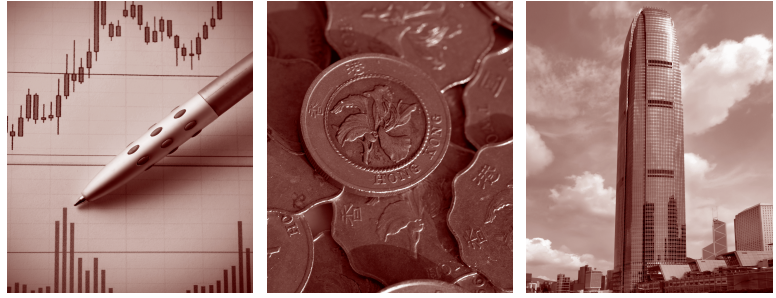
Where r = discount rate  
n = number of periods

Periods (n)	Discount rate (r)										
	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	1
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736	2
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487	3
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170	4
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791	5
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355	6
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868	7
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335	8
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759	9
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145	10
11	10.37	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495	11
12	11.26	10.58	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814	12
13	12.13	11.35	10.63	9.986	9.394	8.853	8.358	7.904	7.487	7.103	13
14	13.00	12.11	11.30	10.56	9.899	9.295	8.745	8.244	7.786	7.367	14
15	13.87	12.85	11.94	11.12	10.38	9.712	9.108	8.559	8.061	7.606	15
(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833	1
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528	2
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106	3
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589	4
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991	5
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326	6
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605	7
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837	8
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031	9
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192	10
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327	11
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439	12
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533	13
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611	14
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675	15

# Formulae Sheet

Baumol model	$\sqrt{\frac{2 \times C \times S}{i}}$ <p>Where: S = demand for cash C = cost of raising cash (for example, selling securities to turn into cash) i = interest cost of holding cash (i.e. opportunity cost) Q = the total amount to be raised to provide for S</p>
Interest rate parity	$F_0 = S_0 \times \frac{(1+i_a)}{(1+i_b)}$ <p>Where: F<sub>0</sub> = forward rate S<sub>0</sub> = current spot rate i<sub>a</sub> = interest rate in country a i<sub>b</sub> = interest rate in country b</p>
Purchasing power parity	$S_1 = S_0 \times \frac{(1+i_b)}{(1+i_a)}$ <p>Where: S<sub>1</sub> = expected spot rate at time 1 S<sub>0</sub> = current spot rate i<sub>b</sub> = expected inflation rate in country b i<sub>a</sub> = expected inflation rate in country a</p> <p>Note that the expected future spot rate will probably not be the same as the "forward exchange rate" currently quoted for time 1.</p>
Fisher formula	$(1+n) = (1+r)(1+i)$ <p>Where: i = rate of inflation r = real rate of interest n = nominal (money) rate of interest</p>
Sensitivity	$\text{Sensitivity} = \frac{\text{NPV}}{\text{Present value of project variable}} \%$
Dividend valuation model	$P_0 = \frac{d}{(1+k_e)} + \frac{d}{(1+k_e)^2} + \frac{d}{(1+k_e)^3} + \dots = \frac{d}{k_e}$ <p>So <math>k_e = \frac{d}{P_0}</math></p> <p>Where: k<sub>e</sub> = the cost of equity capital d = the annual dividend per share, starting at year 1 and then continuing annually in perpetuity P<sub>0</sub> = the ex-dividend share price (the price of a share where the share's new owner is <b>not</b> entitled to the dividend that is soon to be paid)</p>

<p>Dividend growth model</p>	$P_0 = \frac{d_0(1+g)}{(1+k_e)} + \frac{d_0(1+g)^2}{(1+k_e)^2} + \dots$ <p>Where: <math>P_0</math> is the current market price (ex div)  <math>d_0</math> is the current net dividend  <math>k_e</math> is the cost of equity capital  <math>g</math> is the expected annual growth in dividend payments</p> <p>and both <math>k_e</math> and <math>g</math> are expressed as percentages.</p> <p>It is often convenient to assume a constant expected dividend growth rate in perpetuity.</p>
<p>Dividend growth model &amp; perpetuity</p>	$k_e = \frac{d_0(1+g)}{P_0} + g \text{ or } k_e = \frac{d_1}{P_0} + g$
<p>Cost of equity</p>	<p>Cost of capital <math>k_e = \frac{d_0(1+g)}{P_0}</math></p>
<p>Cost of irredeemable debt capital</p>	$k_d = \frac{i}{P_0}$
<p>Cost of redeemable debt capital</p>	$P_0 = \frac{i}{(1+k_d)} + \frac{i}{(1+k_d)^2} + \dots + \frac{i+p_n}{(1+k_d)^n}$ <p>Where <math>p_n</math> = the amount payable on redemption in year <math>n</math></p> <p>The above equation cannot be simplified, so "<math>k_d</math>" will have to be calculated by trial and error, as an internal rate of return (IRR).</p>
<p>Weighted average cost of capital (WACC)</p>	$WACC = k_e \frac{V_e}{V_e+V_d} + k_d(1-t) \frac{V_d}{V_e+V_d}$ <p>Where: <math>k_e</math> is the cost of equity  <math>k_d</math> is the cost of debt  <math>V_e</math> is the market value of equity in the firm  <math>V_d</math> is the market value of debt in the firm  <math>t</math> is the rate of corporate tax</p>



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**Note: Key Terms** and their page references are given in **bold**.

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