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Discounted cash flow techniques

DCF - 201406 Q2

Required: b)

a) **Comment** on the **corrections made to the original net present value estimate** and **explain** the APV approach taken in part (a), including any **assumptions** made.

(10 marks)

NPV/IRR&MIRR - 201412_Q3

Project Drugi, annual after-tax cash flows expected at the end of each year (€000s)

Year	**Current**	**1**	**2**	**3**	**4**	**5**
Cash flows (€000s)	(11,840)	1,230	1,680	4,350	10,240	2,200

	Privi	**Drugi**
Net present value	€2,054,000	€2,293,000
Internal rate of return	17·6%	Not provided
Modified internal rate of return	13·4%	Not provided
Value at risk (over the project's life)		
95% confidence level	€1,103,500	Not provided
90% confidence level	€860,000	Not provided

NPV/IRR&MIRR - 201412_Q3

Required: b)

Calculate the figures which have not been provided for project Drugi and recommend which project should be accepted.

Provide a justification for the recommendation and explain what the value at risk measures.

(13 marks)

APV - 201406 Q2

Required: b)

a) **Comment** on the corrections made to the original net present value estimate and **explain the APV approach** taken in part (a), including any **assumptions** made.

(10 marks)

VAR - 201412 Q3

Required: b)

Calculate the figures which have not been provided for project Drugi and recommend which project should be accepted.

Provide a justification for the recommendation and explain what the **value at risk** measures.

(13 marks)

MIRR

Advantage

- MIRR has the advantage over IRR that it assumes the reinvestment rate is the company's cost of capital, IRR assumes that the reinvestment rat is the IRR itself.
- In many cases where there is conflict between the NPV and IRR methods, the MIRR will give the same indication as NPV.

MIRR

Disadvantage

- It suffers form the problem that it may lead an investor to reject a project which has a lower rate of return but ,because of its size, generates a larger increase in wealth.
- In the same way, a high-return project with a short life may be preferred over a lower-return project with a longer life.

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Application of option pricing theory in investment decisions

Option Value

Option value = intrinsic value + time value

Intrinsic value also equal to payoff at expiration

- Call: max (0, S – X)
- Put: max (0, X – S)

Time value

- Option premium minus intrinsic value
- Also called speculative value

Option time value - 201506 Q4

(iii) It is unlikely that **option** contracts will be exercised at the end of the hedge period unless they have reached expiry. Instead, they more likely to be sold and the positions closed.

Option time value - 201506 Q4

The value of an option prior to expiry consists of **time value**, and may also consist of **intrinsic value** if the option is **in-the-money**.

If an option is exercised prior to expiry, Daikon Co will only receive the intrinsic value attached to the option but not the time value.

If the option is sold instead, whether it is in-the-money or out-of-money, Daikon Co will receive a higher value for it due to the time value.

Unless options have other features, like dividends, attached to them, which are not reflected in the option value, they would not normally be exercised prior to expiry.

BSOP

Assumption

- Suitable for European style options therefore it assumed that the warrants are of the European style
- There are no taxed or transaction costs
- The share is continuously traded and the share price has a log-normal distribution
- Volatility of returns will remain constant
- Interest rates are constant and certain

BSOP

(c) The value of the option depends on the following variables.

(i) The price of the security
A decrease in the price of the security will mean that a call option becomes less valuable. Exercising the option will mean purchasing a security that has a lower value.

(ii) The exercise price of the option
A decrease in the exercise price will mean that a call option becomes more valuable; the profit that can be made from exercising the option will have increased.

BSOP

(c) The value of the option depends on the following variables.

(iii) Risk free rate of return

A decrease in the risk free rate will mean that a call option becomes less valuable. The purchase of an option rather than the underlying security will mean that the option holder has spare cash available which can be invested at the risk free rate of return.

BSOP

(c) The value of the option depends on the following variables.

(iv) Time to expiry of the option

A decrease in the time of expiry will mean that a call option becomes less valuable, as the time premium element of the option price has been decreased.

(v) Volatility of the security price

A decrease in volatility will mean that a call option becomes less valuable. A decrease in volatility will decrease the chance that the security price will be above the exercise price when the option expires.

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Cost of capital

WACC

A company's WACC is the average of the after-tax costs of the difference sources of finance that it uses, weighted in proportion to the market values of those funds.

WACC can be used as a discount rate to evaluate the company's potential projects provided:

- There is no significant change in the capital structure of the company as a result of the investment
- The operating risk of the new project is the same as the company's existing systematic risk.

Cost of capital - 201306 Q1 - Answer

Mlima Co cost of capital explanation

Ziwa Co's **ungeared cost of equity** represents the return Ziwa Co's shareholders would require if Ziwa Co was financed entirely by equity and had no debt. The return would compensate them for the business risk undertaken by the company.

This required rate of return would compensate Mlima Co's shareholders as well because, since both companies are in the same industry, they face the same business risk.

This rate is then used as Mlima Co's cost of capital because of the assumption that Mlima Co will not issue any debt and faces no financial risk. Therefore its cost of equity (ungeared) is its cost of capital.

Capital rationing

Capital rationing is a restriction on an organization's ability to invest capital funds, caused by an internal budget ceiling being imposed on such expenditure by management (soft capital rationing), or by external limitations being applied to the company, as when additional borrowed funds cannot be obtained (hard capital rationing).

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Estimating the credit spread

Estimating the credit spread

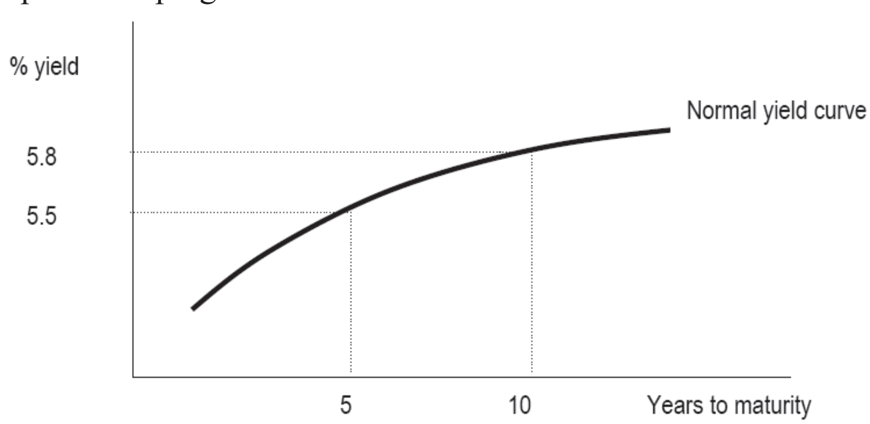
The cost of a bond will depend on two factors:

a) The risk free rate derived from the **yield curve** for a bond of that specified duration

b) The **credit risk premium** – derived from the bond's credit rating

Yield curve

The yield curve shows how the yield on government bonds vary according to the term of the borrowing. Normally it is upward sloping.



Yield curve

There are a number of explanations of the yield curve; these are not competing explanations, and at any one time all may be influencing the shape of the yield curve.

a) **Expectations theory** – the curve reflects expectations that interest rates will rise in the future, so the government has to offer higher returns on long-term debt.

b) **Liquidity preference theory** – the curve reflects the compensation that investors require higher returns for sacrificing liquidity on long-dated bonds.

c) **Market segmentation theory** – short-dated bonds tend to be more popular with banks and long-dated bonds are more popular with pension funds. If demand for bonds is higher in one of these markets the government can offer lower returns.

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Duration

Duration - 201406 Q1

c) A four-year CHF60,000,000 loan's principal amount will be repayable in full at the end of the fourth year.

As an alternative to paying the principal on the loan as one lump sum at the end of the fourth year, CMC Co could pay off the loan in equal annual amounts over the four years similar to an annuity. In this case, an annual interest rate of 2% would be payable, which is the same as the loan's gross redemption yield (yield to maturity).

Required:
Calculate the modified duration of the loan if it is repaid in equal amounts and **explain** how duration can be used to measure the sensitivity of the loan to changes in interest rates.
(7 marks)

Duration - 201406 Q1

(c) Annuity factor, 4 years, 2% = 3·808
Equal annual amounts repayable per year = CHF60,000,000/3·808
= CHF15,756,303

Macaulay duration
(15,756,303 × 0·980 × 1 year +
15,756,303 × 0·961 × 2 years +
15,756,303 × 0·942 × 3 years +
15,756,303 × 0·924 × 4 years)/60,000,000
= 2·47 years

Modified duration = 2·47/1·02 = 2·42 years

Duration - 201406 Q1

The equation linking modified duration (D), and the **relationship** between the change in interest rates (Δi) and change in price or value of a bond or loan (ΔP) is given as follows:

$\Delta P = [-D \times \Delta i \times P]$

(P is the current value of a loan or bond and is a constant)

The **size of the modified duration** will determine how much the value of a bond or loan will change when there is a change in interest rates.

A higher modified duration means that the fluctuations in the value of a bond or loan will be greater, hence the value of 2·42 means that the value of the loan or bond will change by 2·42 times the change in interest rates multiplied by the original value of the bond or loan.

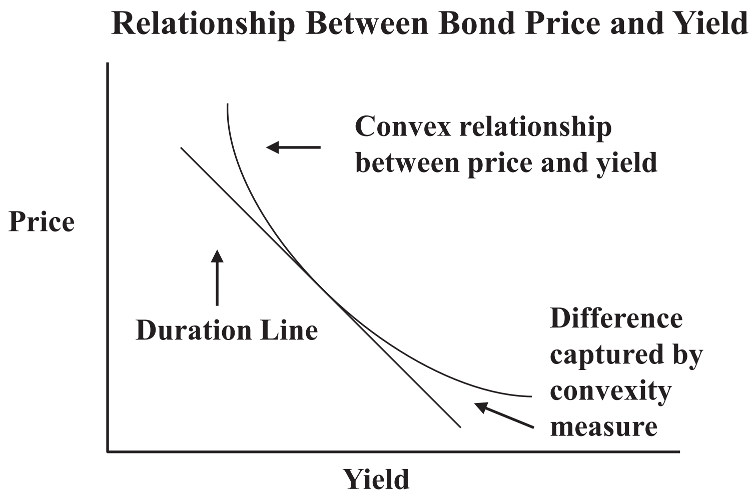
Duration - 201406 Q1

The relationship is only an approximation because duration **assumes** that the relationship between the change in interest rates and the corresponding change in the value of the bond or loan is **linear**.

In fact, the relationship between interest rates and bond price is in the form of a curve which is **convex** to the origin (i.e. non-linear).

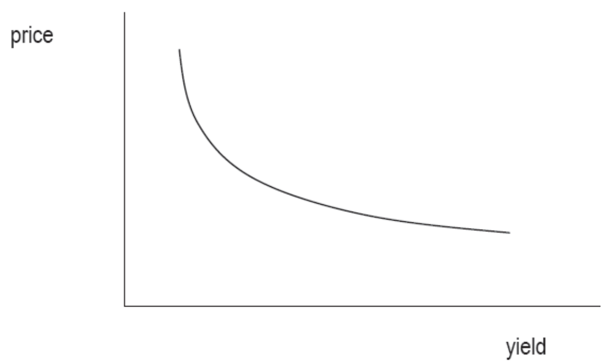
Therefore duration can only provide a reasonable estimation of the change in the value of a bond or loan due to changes in interest rates, when those interest rate changes are small.

Duration



Modified duration

In fact, the actual relationship between price and yield is given by the line below.



The impact of **convexity** (ie non-linear relationship) will be that the modified duration will tend to **overstate the fall** in a bond's price and **understate the rise**. The problem of convexity only becomes an issue with more substantial fluctuations in the yield.

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Acquisition and mergers

Method of development – 201406 Q3

Required:

a) **Discuss** the possible reasons why Vogel Co may have switched its strategy of **organic growth** to one of growing by **acquiring** companies.
(4 marks)

Joint venture

Benefit:

- A joint venture with a local partner would give company relatively low cost access to an overseas market and tax incentives or grants.
- A joint venture partner could assist with marketing, cultural ad language issues and dealing with government restriction and bureaucracy
- A joint venture partner will give company the chance to share costs with the local partner.

Method of development - 201506 Q1

Required:

a) Discuss the possible benefits and drawbacks to Imoni Co of setting up its **own assembly plant** in Yilandwe, compared to **licensing** a company based in Yilandwe to undertake the assembly on its behalf. (5 marks)

Joint venture

Disadvantage:

- The most significant problem with entering into a joint venture is the potential effects on reputation. Company may suffer from negative publicity if it chooses a poor academic institution which to have a joint venture.
- Joint venture can restrict managerial freedom of actions as opinions of both sets or managers may differ.
- Cultural differences present major challenges to business setting up overseas. There are also differences in attitudes towards teaching and learning methods.

Synergy - 201306 Q2

Required:

a) Distinguish between the different types of **synergy** and discuss possible sources of synergy based on the above scenario. (9 marks)

Sources of financial synergy

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.

Risk of acquisition – 201406 Q3

Required: b)

Discuss the **possible actions** Vogel Co could take to reduce the **risk that the acquisition** of Tori Co fails to increase shareholder value. (7 marks)

201406 Q3 – MJ's Answer

(b) Vogel Co can take the following actions to reduce the risk that the acquisition of Tori Co fails to increase shareholder value.

Since Vogel Co has pursued an aggressive policy of acquisitions, it needs to determine whether or not this has been too aggressive and detailed assessments have been undertaken.

201406 Q3 – MJ's Answer

The Board of Directors of Vogel Co needs to ensure that there are **good reasons** to undertake the acquisition, and that the acquisition should result in an increase in value for the shareholders.

Research studies into mergers and acquisitions have found that often companies are acquired not for the shareholders' benefit, but for the benefit of the acquiring company's management.

The non-executive directors should play a crucial role in ensuring that acquisitions are made to enhance the value for the shareholders.

A **post-completion audit** may help to identify the reasons behind why so many of Vogel Co's acquisitions have failed to create value. Once these reasons have been identified, strategies need to be put in place to prevent their repetition in future acquisitions.

201406 Q3 – MJ's Answer

Procedures need to be established to ensure that the **acquisition is not overpaid**.

Vogel Co should ensure that the **valuation** is based on reasonable input figures and that proper **due diligence** of the perceived benefits is undertaken prior to the offer being made.

And Vogel Co should determine the maximum premium it is willing to pay and not go beyond that figure.

Vogel Co and its management need to guard against this and maybe formal procedures need to be established which allow managers to step back without loss of personal reputation.

201406 Q3 – MJ's Answer

Research indicates that often too much is paid to acquire a company and the synergy benefits are not sufficient to cover the premium paid.

Often this is the result of the management of the acquiring company wanting to complete the deal at any cost, because not completing the deal may be perceived as damaging to both their own, and their company's, reputation.

The acquiring company's management may also want to show that the costs related to undertaking due diligence and initial negotiation have not been wasted.

Vogel Co and its management need to guard against this and maybe formal procedures need to be established which allow managers to step back without loss of personal reputation.

201406 Q3 – MJ's Answer

Vogel Co needs to ensure that it has proper procedures in place to **integrate** the staff and systems of the target company effectively, and also to recognise that such integration takes time.

Vogel Co may decide instead to give the target company a large degree of autonomy and thus make integration less necessary; however, this may result in a reduction in synergy benefits.

Vogel Co should also be mindful that its own and the acquired company's **staff and management** need to integrate and ensure a **good working relationship** between them

Financing - 201306Q2

Hav Co has proposed to pay for the acquisition using one of the following three methods:

I. A cash offer of $5·72 for each Strand Co share; or

II. A cash offer of $1·33 for each Strand Co share plus one Hav Co share for every two Strand Co shares; or

III. A cash offer of $1·25 for each Strand Co share plus one $100 3% convertible bond for every $5 nominal value of Strand Co shares. In six years, the bond can be converted into 12 Hav Co shares or redeemed at par.

Financing - 201306Q2

c) **Calculate** the percentage premium per share that Strand Co's shareholders will receive under each acquisition payment method and justify, with **explanations**, which **payment method** would be most acceptable to them.

(10 marks)
(25 marks)

Financing - 201312 Q3

Required: c)

Estimate the additional funds required if a premium of 50% is paid instead of 30% and **discuss** how this premium could be financed. (7 marks)

Financing mergers and acquisitions

The factors that the directors of the bidding company must consider include the following.

COMPANY AND ITS EXISTING SHAREHOLDERS	
Dilution of EPS	Fall in EPS attributable to existing shareholders may occur if purchase consideration is in equity shares
Cost to the company	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
Gearing	Highly geared company may not be able to issue further loan stock to obtains cash for cash offer

Financing mergers and acquisitions

The factors that the directors of the bidding company must consider include the following.

COMPANY AND ITS EXISTING SHAREHOLDERS	
Control	Control could change considerably if large number of new shares issued
Authorised share capital increase	May be required if consideration is in form of shares. This will involve calling a general meeting to pass the necessary resolution

Financing mergers and acquisitions

SHAREHOLDERS IN TARGET COMPANY	
Taxation	If consideration is cash, many investors may suffer immediate liability to tax on capital gain
Income	If consideration is not cash, arrangement must mean existing income is maintained, or be compensated by suitable capital gain or reasonable growth expectations
Future investment	Shareholders who want to retain stake in target business may prefer shares
Share price	If consideration is share, recipients will want to be sure that the shares retain their values

Regulation of M&A - 201512 Q1

Required: d)

Takeover regulation, where Anatra Co is based, offers the following conditions aimed at protecting shareholders: the mandatory-bid condition through **sell out rights**, the **principle of equal treatment**, and **squeeze-out rights**.

Required:

Explain the main purpose of each of the three conditions.

(6 marks)

Regulation of M&A - 201512 Q1

(d) Each of the three conditions aims to ensure that shareholders are treated fairly and equitably.

The mandatory-bid condition through **sell out rights** allows remaining shareholders to exit the company at a fair price once the bidder has accumulated a **certain** number of shares. The amount of shares accumulated before the rule applies varies between countries.

The bidder must offer the shares at the highest share price, as a minimum, which had been paid by the bidder previously.

The main purpose for this condition is to ensure that the acquirer does not exploit their position of power at the expense of minority shareholders.

Regulation of M&A - 201512 Q1

The **principle of equal treatment** condition stipulates that all shareholder groups must be offered the same terms, and that no shareholder group's terms are more or less favourable than another group's terms.

The main **purpose** of this condition is to ensure that minority shareholders are offered the same level of benefits, as the previous shareholders from whom the controlling stake in the target company was obtained.

Regulation of M&A - 201512 Q1

The **squeeze-out rights** condition allows the bidder to force minority shareholders to sell their stake, at a fair price, once the bidder has acquired a **specific percentage** of the target company's equity. The percentage varies between countries but typically ranges between 80% and 95%.

The main purpose of this condition is to enable the acquirer to gain 100% stake of the target company and prevent problems arising from minority shareholders at a later date.

Note: *Credit will be given for alternative, relevant approaches to the calculations, comments and suggestions/recommendations*

Regulation of M&A - 201412 Q1

Required: b)

Discuss why the European Union (EU) may be concerned about Nahara Co's stated intention and how selling Fugae Co could reduce this concern. (4 marks)

Methods of defence

Golden parachute.

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.

Poison pill

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.

Methods of defence

White knights and white Squires

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.

Crown jewels

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.

Methods of defence

Pacman defence

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 favor of the acquisition but they disagree about which company should be in control

Defence strategy 201512_Q1

Required: c)

c) Discuss whether the **defence strategy** suggested by Anatra Co's CEO of disposing assets is feasible. (6 marks)

Defence strategy 201512_Q1

(c) The feasibility of disposing of assets as a defence tool against a possible acquisition depends upon the type of assets sold and how the funds generated from the sale are utilised.

If the type of assets are fundamental to the continuing business then this may be viewed as disposing of the corporation's '**crown-jewels**'.

Such action may be construed as being against protecting the rights of shareholders. In order for key assets to be disposed of, the takeover regulatory framework may insist on the corporation obtaining permission from the shareholders first before carrying it out.

Defence strategy 201512 Q1

On the other hand, the assets may be viewed as not being fundamental to the core business and may be disposed off to generate extra funds through a **sell-off**. This may make sense if the corporation is undertaking a programme of restructuring and re-organisation.

In addition to this, the company needs to consider what it intends to do with the funds raised from the sale of assets.

If the funds are used to grow the core business and therefore enhancing value, then the shareholders would see this positively and the value of the corporation will probably increase.

Defence strategy 201512 Q1

Alternatively, if there are no profitable alternatives, the funds could be returned to the shareholders through special dividends or share buy-backs. In these circumstances, disposing of assets may be a feasible defence tactic.

However, if the funds are retained but not put to value-enhancing use or returned to shareholders, then the share price may continue to be depressed.

And the corporation may still be an attractive takeover target for corporations which are in need of liquid funds. In these circumstances, disposing of assets would not be a feasible defence tactic.

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Business reorganization

MBO - Pilot Paper Q3

Required:

a) Briefly discuss the possible benefits of Doric Co's parts division being divested through a management buy-out. (4 marks)

MBO - Pilot Paper Q3

(a) Possible benefits of disposing a division through a management buy-out may include:

Management buy-out **costs** maybe less compared with other forms of disposal such as selling individual assets of the division or selling it to a third party.

It may be the **quickest** method in raising funds compared to the other methods.

MBO - Pilot Paper Q3

There would be **less resistance** from the managers and employees making the process smoother and easier to accomplish than if both divisions were to be closed down.

It may offer a **better price**. The current management and employees possibly have the best knowledge of the division and are able to make it successful. Therefore they may be willing to pay more for it.

MBO& MBI 201506 Q3

Required: a)

a) Distinguish between a **management buy-out (MBO)** and a **management buy-in (MBI).** Discuss the relative benefits and drawbacks to Okazu Co if it is disposed through a MBO instead of a MBI.
(5 marks)

MBO& MBI 201506 Q3

A **management buy-out (MBO)** involves the purchase of a business by the management team running that business. Hence, an MBO of Okazu Co would involve the takeover of that company from Bento Co by Okazu Co's current management team.

However, a **management buy-in (MBI)** involves purchasing a business by a management team brought in from outside the business.

MBO& MBI 201506 Q3

The benefits of a **MBO** relative to a MBI to Okazu Co are that the existing management is likely to have detailed knowledge of the business and its operations. Therefore they will not need to learn about the business and its operations in a way which a new external management team may need to.

It is also possible that a MBO will cause less disruption and resistance from the employees when compared to a MBI. If Bento Co wants to continue doing business with the new company after it has been disposed of, it may find it easier to work with the management team which it is more familiar with.

The internal management team may be more focused and have better knowledge of where costs can be reduced and sales revenue increased, in order to increase the overall value of the company.

MBO& MBI 201506 Q3

The drawbacks of a MBO relative to a **MBI** to Okazu Co may be that the existing management may lack new ideas to rejuvenate the business. A new management team, through their skills and experience acquired elsewhere, may bring fresh ideas into the business.

It may be that the external management team already has the requisite level of finance in place to move quickly and more decisively, whereas the existing management team may not have the financial arrangements in place yet.

It is also possible that the management of Bento Co and Okazu Co have had disagreements in the past and the two teams may not be able to work together in the future if they need to. It may be that a MBI is the only way forward for Okazu Co to succeed in the future.

Sell-off & MBI - 201512 Q1

Required:

a) Distinguish between a divestment through a **sell-off** and a **management buy-in** as forms of unbundling. (4 marks)

Sell-off & MBI - 201512 Q1

(a) Both forms of unbundling involve disposing the non-core parts of the company.

The divestment through a sell-off normally involves selling part of a company as an entity or as separate assets to a third party for an agreed amount of funds or value.

This value may comprise of cash and non-cash based assets. The company can then utilise the funds gained in alternative, value-enhancing activities.

Sell-off & MBI - 201512 Q1

The management buy-in is a particular type of sell-off which involves selling a division or part of a company to an external management team, who will take up the running of the new business and have an equity stake in the business.

A management buy-in is normally undertaken when it is thought that the division or part of the company can probably be run better by a different management team compared to the current one.

Demergers

A demerger is the splitting up of a corporate body into two or more separate and independent bodies. It is not a sale of the separate bodies themselves, as the original shareholders have shares in both companies.

Advantage

- The split does enable analysts to understand the two businesses fully, particularly when the two main divisions are in different fields.
- The two divisions are likely to have different risk profiles, and splitting them up enables shareholders to adjust the proportion of their holdings between the two different companies.

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Risk

Centralise& decentralise - 201412 Q2

Required: b)

Discuss how a **centralised treasury department** may increase value for Keshi Co and the possible reasons for **decentralising** the treasury department. (6 marks)

Centralise& decentralise - 201412 Q2

(b) Free cash flows and therefore shareholder value are increased when corporate costs are reduced and/or income increased. Therefore, consideration should be given to how the centralised treasury department may reduce costs and increase income.

Centralise& decentralise - 201412 Q2

The centralised treasury department should be able to evaluate the financing requirements of Keshi Co's group as a whole and it may be able to negotiate better rates when borrowing in bulk.

The department could operate as an internal bank and undertake matching of funds. Therefore it could transfer funds from subsidiaries which have spare cash resources to ones which need them, and thus avoid going into the costly external market to raise funds.

The department may be able to undertake multilateral internal netting and thereby reduce costs related to hedging activity.

Experts and resources within one location could reduce duplication costs.

Centralise& decentralise - 201412 Q2

The concentration of experts and resources within one central department may result in a more effective decision-making environment and higher quality risk monitoring and control.

Further, having access to the Keshi Co group's entire cash funds may give the company access to larger and more diverse investment markets.

These factors could result in increasing the company's cash inflows, as long as the benefits from such activity outweigh the costs.

Centralise& decentralise - 201412 Q2

Decentralising Keshi Co's treasury function to its subsidiary companies may be beneficial in several ways.

Each subsidiary company may be better placed to take local regulations, custom and practice into consideration.

An example of custom and practice is the case of Suisen Co's need to use Salam contracts instead of conventional derivative products which the centralised treasury department may use as a matter of course.

Centralise& decentralise - 201412 Q2

Giving subsidiary companies more autonomy on how they undertake their own fund management may result in increased motivation and effort from the subsidiary's senior management and thereby increase future income.

Subsidiary companies which have access to their own funds may be able to respond to opportunities quicker and establish competitive advantage more effectively.

Managing risk

Risk can be managed in several different ways.

(a) Hedging – for example currency risk and interest rate risk. Hedging involves taking actions to make an outcome more certain.

(b) Diversifying. This is effectively the prevention of 'putting all your eggs in one basket'. A portfolio of different investments, with varying degrees of risk, should help to reduce the overall risk of the business. One way of achieving diversification is via acquisition or merger.

(c) Risk mitigation. This involves putting control procedures in place to avoid investments in projects whose risk is above the shareholders' required level.

Managing risk – delta hedging

The **writer** of a call option can use delta hedging to manage its exposure to the risk the asset increasing in value.
A **call option will increase in value in a rising market** as it fixes a lower strike price allowing the holder to buy at a cheaper price.
A delta hedge ensures that **the option writer also owns the underlying asset which will show a gain as the price rises.**

Managing risk – delta hedging

N(d1) is the number of shares that a trader will buy each time a call option is sold, the purchase of the underlying to hedge their position is called a **delta hedge**.

The formula for a delta hedge is :

Assets held by option writer = Delta $\times$ options written

Where delta = N(d1).

Delta value - 201312 Q2

Required: b)

A member of Awan Co's treasury team has suggested that if option contracts are purchased to hedge against the interest rate movements, then the number of contracts purchased should be determined by a hedge ratio based on the delta value of the option.

Required:

Discuss how the **delta value** of an option could be used in determining the number of contracts purchased.

(6 marks)

Delta value - 201312 Q2

The delta value measures the extent to which the value of a derivative instrument, such as an option, changes as the value of its underlying asset changes.

For example, a delta of 0·8 would mean that a company would need to purchase 1·25 option contracts (1/0·8) to hedge against a rise in price of an underlying asset of that contract size, known as the hedge ratio.

This is because the delta indicates that when the underlying asset increases in value by $1, the value of the equivalent option contract will increase by only $0·80.

Delta value - 201312 Q2

The option delta is equal to N(d1) from the Black-Scholes Option Pricing (BSOP) formula. This means that the delta is constantly changing when the volatility or time to expiry change.

Therefore even when the delta and hedge ratio are used to determine the number of option contracts needed, this number needs to be updated periodically to reflect the new delta.

Gamma - 201306 Q3

Required: c)

a) When examining different currency options and their risk factors, it was noticed that a long call option had a high gamma value. Explain the possible characteristics of a long call option with a high gamma value. (3 marks)

Gamma - 201306 Q3

(c) Gamma measures the rate of change of the delta of an option.

Deltas range from **near 0** for a long call option which is **deep out-of-money**, where the price of the option is insensitive to changes in the price of an underlying asset, to **near 1** for a long call option which is **deep in-the-money**, where the price of the option moves in line and largely to the same extent as the price of the underlying asset.

When the long call option is at-the-money, the delta is 0·5 but also changes rapidly. Hence, the gamma is highest for a long call option which is at-the-money.

The gamma is also higher when the option is closer to expiry. It would seem, therefore, that the option is probably trading near at-the-money and has a relatively short time period before it expires.

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The use of financial derivatives to hedge against foreign exchange risk

Multilateral netting - 201306 Q3

Required: b)

Calculate, using a tabular format (transactions matrix), the impact of undertaking multilateral netting by Kenduri Co and its three subsidiary companies for the cash flows due in three months. Briefly discuss why some governments allow companies to undertake multilateral netting, while others do not. (10 marks)

Netting

Advantage:

- It reduces foreign exchange costs including commission and the spread between selling and buying rates .
- It limits the number of foreign currency exchange transaction hence reduces the transaction cost and transaction risk

Netting

Disadvantage:

- The netting arrangements is making netting contacts legally enforceable. As well as cross-border issues, there may be taxation problems to resolve before the netting arrangements can be approved.
- The success of the netting arrangement depends on acceptance of liabilities by all parties, both internal and external to the group.

Margin & marked-to-market - 201506 Q4

(ii) Daikon Co will need to deposit funds into a margin account with a broker for each contract they have opened, and this margin will need to be adjusted when the contracts are marked-to-market daily.

Margin & marked-to-market - 201506 Q4

Both **mark-to-market and margins** are used by markets to reduce (eliminate) the risk of non-payment by purchasers of the derivative products if prices move against them.

Mark-to-market closes all the open deals at the end of each day at that day's settlement price, and opens them again at the start of the following day. The notional profit or loss on the deals is then calculated and the margin account is adjusted accordingly on a daily basis.

The impact on Daikon Co is that if losses are made, then the company may have to deposit extra funds with its broker if the margin account falls below the **maintenance margin** level. This may affect the company's ability to plan adequately and ensure it has enough funds for other activities.

On the other hand, extra cash accruing from the notional profits can be withdrawn from the broker account if needed.

Margin & marked-to-market - 201506 Q4

Each time a market-traded derivative product is opened, the purchaser needs to **deposit a margin (initial margin)** with the broker, which consists of funds to be kept with the broker while the position is open.

As stated above, this amount may change daily and would affect Daikon Co's ability to plan for its cash requirements, but also open positions require that funds are tied up to support these positions and cannot be used for other purposes by the company.

Basis risk - Pilot Paper Q2

Required: c)

Explain what is meant by basis risk and how it would affect the recommendation made in part (b) above.

(4 marks)

Pilot Paper Q2 - Answer

(c) **<u>Basis risk</u>** <u>occurs when the basis does not diminish at a constant rate</u>. In this case, if a futures contract is held till it matures then there is no basis risk because at maturity the derivative price will equal the underlying asset's price.

However, if a contract is closed out before maturity (here the June futures contracts will be closed two months prior to expiry) there is no guarantee that the price of the futures contract will equal the predicted price based on basis at that date.

For example, in part (b) above the predicted futures price in four months assumes that the basis remaining is 0.18, but it could be more or less. Therefore the actual price of the futures contract could be more or less.

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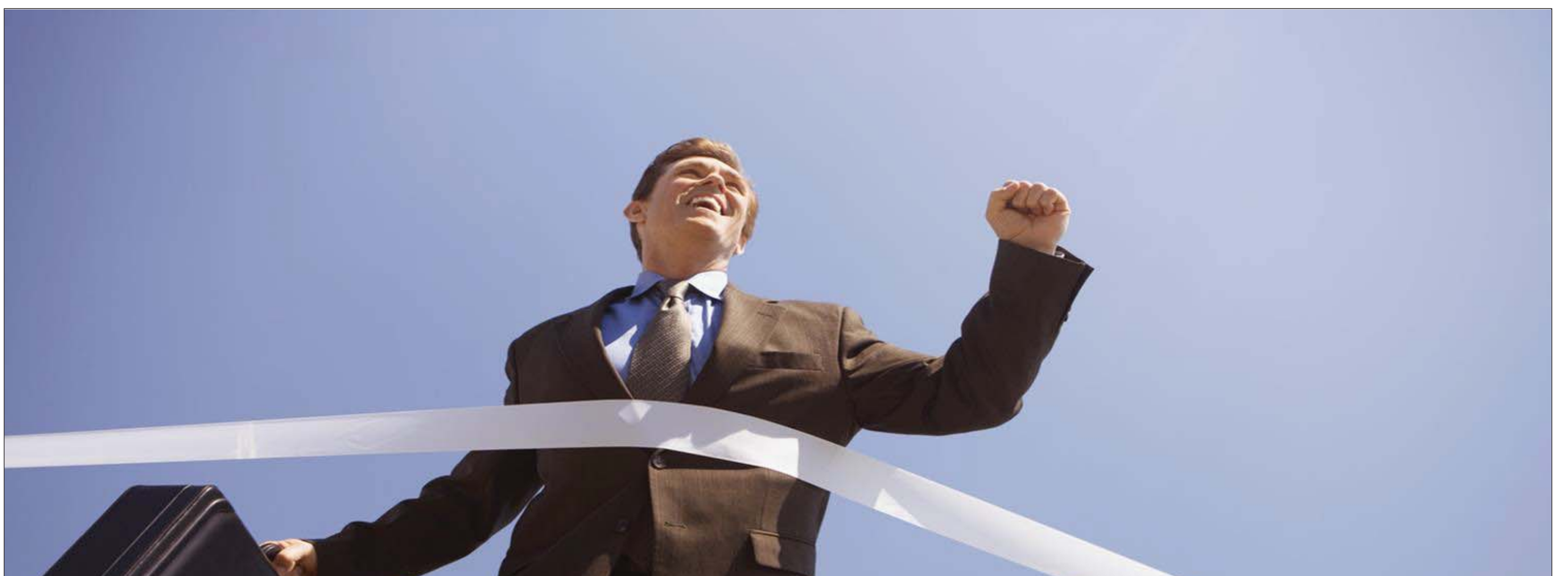
The use of financial derivatives to hedge against interest rate risk

Collar - Pilot Paper Q2

Required: a)

a) Briefly discuss the main advantage and disadvantage of hedging interest rate risk using an interest rate collar instead of options. (4 marks)



You're a Champion!

Thanks for staying with us. You have finished this task.

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Trading and planning in a multinational environment

WTO - 201312 Q1

Required:

a) Discuss the role of the **World Trade Organisation (WTO)** and the possible benefits and drawbacks to Mehgam of reducing **protectionist measures**.
(9 marks)

WTO - 201312 Q1

The World Trade Organisation (WTO) was set up to continue to implement the General Agreement on Tariffs and Trade (GATT), and its main aims are to reduce the barriers to international trade.

It does this by seeking to prevent protectionist measures such as tariffs, quotas and other import restrictions. It also acts as a forum for negotiation and offering settlement processes to resolve disputes between countries.

The WTO encourages free trade by applying the most favoured nation principle between its members, where reduction in tariffs offered to one country by another should be offered to all members.

WTO - 201312 Q1

Whereas the WTO has had notable success, some protectionist measures between groups of countries are nevertheless allowed and some protectionist measures, especially non-tariff based ones, have been harder to identify and control.

WTO - 201312 Q1

Mehgam could **benefit** from reducing protectionist measures because its actions would make other nations reduce their protectionist measures against it.

Normally countries retaliate against each other when they impose protectionist measures. A reduction in these may allow Mehgam to benefit from increased trade and economic growth.

Such a policy may also allow Mehgam to specialise and gain competitive advantage in certain products and services, and compete more effectively globally. Its actions may also gain political capital and more influence worldwide.

WTO - 201312 Q1

Possible **drawbacks** of reducing protectionist policies mainly revolve around the need to protect certain industries.

It may be that these industries are developing and in time would be competitive on a global scale. However, inaction to protect them now would damage their development irreparably.

Protection could also be given to old, declining industries, which, if not protected, would fail too quickly due to international competition, and would create large scale unemployment making such inaction politically unacceptable.

Certain protectionist policies are designed to prevent 'dumping' of goods at a very cheap price, which hurt local producers.

IMF

To support stability of the international monetary system by providing support to countries with balance of payment problem.

When a member is having difficulties overcoming balance of payments problem, the IMF will offer advice on economic policy and lend money at subsidized rates.

World bank

Partially funded by the IMF, exists to fund reconstruction and redevelopment and to eliminate poverty. Loans are normally made directly to governments, for period of 10-20 years and tied to specific projects.

Central Banks

Normally have control over interest rates and support the stability of the financial system.

Collaboration between central banks is supported by the bank of international settlements.

European Union - 201412 Q3

Required:

a) Discuss the aims of a free trade area, such as the **European Union (EU),** and the possible benefits to Riviere Co of operating within the EU. (5 marks)

European Union - 201412 Q3

A free trade area like the European Union (EU) aims to remove barriers to trade and allow freedom of movement of production resources such as capital and labour.

The EU also has an overarching common legal structure across all member countries and tries to limit any discriminatory practice against companies operating in these countries.

Furthermore, the EU erects common external barriers to trade against countries which are not member states.

European Union - 201412 Q3

Riviere Co may benefit from operating within the EU in a number of ways as it currently trades within it.

It should find that it is able to compete on equal terms with rival companies within the EU.

Companies outside the EU may find it difficult to enter the EU markets due to barriers to trade.

A common legal structure should ensure that the standards of food quality and packaging apply equally across all the member countries.

European Union - 201412 Q3

Due diligence of logistic networks used to transport the food may be easier to undertake because of common compliance requirements.

Having access to capital and labour within the EU may make it easier for the company to set up branches inside the EU, if it wants to.

The company may also be able to access any grants which are available to companies based within the EU.

Obtaining a listing on one or more exchanges

It will be important to conform to local regulations. Taking when the London Stock Exchange is used as an overseas exchange, the relevant regulations are:

a) At least **three years** of audited published accounts

b) At least **25%** of the company's shares must be in public hands when trading begins

c) Minimum market capitalisation of £700,000

d) A **prospectus** must be published containing a forecast of expected performance

In addition the company will have to be introduced by a **sponsoring firm** and to comply with the local **corporate governance requirements**.

Public listing - 201306 Q1

Reasons for the public listing

The main reason given for the public listing is to use the funds raised to eliminate the debt in the company. There are other reasons why a company may undertake a public listing.

These include: gaining a higher reputation by being listed on a recognised stock exchange and therefore reducing the costs of contracting with stakeholders; being able to raise funds more easily in the future to undertake new projects; the listing will provide the current owners with a value for their equity stake; and the listing may enable the current owners to sell their equity stakes and gain from the value in the organisation.

Public listing - 201306 Q1

Issuing shares at a discount

Issuing only 20% of the share capital to the public at the initial listing would make them minority shareholders effectively.

As such, their ability to influence the decision-making process in the company would be severely curtailed, since even if all the new investors voted as a bloc against a decision, they would not be able to overturn it.

The discounted share price would reflect the additional risk of investing in a company as a minority shareholder.