

Subject A311

CMP Upgrade 2022/23

CMP Upgrade

This CMP Upgrade lists the changes to the Syllabus objectives, Core Reading and the ActEd material since last year that might realistically affect your chance of success in the exam. It is produced so that you can manually amend your 2022 CMP to make it suitable for study for the 2023 exams. It includes replacement pages and additional pages where appropriate.

Alternatively, you can buy a full set of up-to-date Course Notes / CMP at a significantly reduced price if you have previously bought the full-price Course Notes / CMP in this subject. Please see our 2023 *Student Brochure* for more details.

This CMP Upgrade contains:

- all significant changes to the Syllabus objectives and Core Reading
- additional changes to the ActEd Course Notes and Assignments that will make them suitable for study for the 2023 exams.

0 Changes to the Syllabus

This section contains all the ***non-trivial*** changes to the syllabus objectives in relation to the chapters in the Course Notes.

Chapter 29

Delete syllabus objective 12.3.3.

1 Changes to the Core Reading

This section contains all the ***non-trivial*** changes to the Core Reading.

As well as the points listed, pronouns have been amended to be non-gender-specific.

Chapter 1

Section 1.1

Amend the start of the final sentence in this section to '**In the private sector, ...**'.

Section 5.1

Add the following at the end of the second paragraph:

An example of this could be a charity for animals that would have specific aims relating to the welfare of animals.

Chapter 2

Section 9.3

In the penultimate Core Reading paragraph in this section, amend '**economic**' to '**environmental**'.

Chapter 12

Section 6.4

Under the sub-heading 'Other factors', insert the word '**funds**' after '**sources of investment**' in the first sentence.

Chapter 16

Section 4.1

Delete the final sentence of the first paragraph under the sub-heading 'Banking sector', and replace the second paragraph with:

In the event that customers want to withdraw their deposits early, banks cannot demand early repayment of loans (and mortgages) to finance the outflow of deposits. This creates liquidity risk for the bank.

Chapter 25

Section 2

The bullet point list of benefits of a risk management process has been amended (as has the ActEd text below it). Replacement pages 7 and 8 are included at the end of this document.

Section 3

This section has been materially rewritten. Replacement pages 9 to 10b are included at the end of this document.

Section 5.1

Amend the bullet point list to the following:

- **carry out different types of activity within the same company (eg finance, marketing, IT, customer administration)**
- **carry out activities in different industry sectors (eg financial, manufacturing) or in different areas within the same sector (eg banking, insurance)**
- **operate in different locations, countries or markets**

Chapter 26

Section 5.2

The sub-section headed 'Banks' has been materially rewritten. Replacement pages 15 to 20 are included at the end of this document.

Chapter 27

Section 2.3

Amend the third bullet point to:

- **failure by the sponsor to pay contributions in a timely manner**

Chapter 28

Section 2

Sections 3.4 and 3.5 have been moved to become new Sections 3.3 and 3.4. Section 3.3 has been materially rewritten as new Section 3.5. Replacement pages 11 to 14 are included at the end of this document.

Chapter 29

Section 1.4

Insert the following after the second Core Reading paragraph:

In the European Union, the Solvency II standard formula for insurers uses a factor-based approach based on premiums.

Section 2.2

In the first sentence of the first paragraph, insert the word '**extreme**' after '**specific**'.

Amend the second sentence of that paragraph to:

For example, the financial impact on a company of a shock fall in equity values or a shock increase in claim frequency.

In the second sentence of the second paragraph, insert the word '**insurance**' after '**modelling**'.

Add the following at the end of that paragraph:

It models the impact of the event but not the probability of it occurring.

Chapter 37

Section 2.1

In the Core Reading paragraph starting '**Under Solvency II ...**', amend '**firms**' to '**insurance companies**'.

Amend the boxed text to:

Economic capital is the amount of capital that a provider determines is appropriate to hold (in excess of liabilities) to cover its risks under adverse outcomes, generally with a given degree of confidence and over a given time horizon.

In the bullet point list, amend '**the provider**' to '**it**' in the final bullet point and add the following (as a new third bullet point):

- **business objectives of the provider**

Chapter 40

Add the following term:

Futures (and forwards)

Both forward and futures contracts are contract to buy (or sell) an asset on an agreed basis in the future. Futures contracts are standardised contracts that can be traded on a recognised exchange.

2 Changes to the ActEd material

This section contains all the *non-trivial* changes to the ActEd text.

Chapter 1

Section 5.1

Replace the third paragraph with:

A charity's objectives would normally relate to its own purpose and aims, including ethical concerns. Such objectives will be an important consideration when providing advice on aspects such as investment strategy. For example, it is unlikely to be appropriate to recommend that the charity mentioned above should invest in a company that tests its products on animals.

Chapter 5

Section 0

Amend the second sentence of the second paragraph to:

A provider of benefits may directly contribute towards all or part of the cost of the benefit (eg State, employer or individual) or simply provide the vehicle for the benefit (eg pension scheme, savings scheme or insurance contract).

Section 1.4

Insert '(normally the employer)' at the end of the first sentence under the 'Key information' heading.

Chapter 6

Section 14.1

Add the following at the end of the second paragraph:

due to physical impairment, or may not be able to perform them unsupervised due to mental impairment.

Chapter 16

Section 4.1

Replace the final paragraph of this section with:

Liquidity risk in banking is considered further in the chapter on Risk identification and classification.

Section 5.2

In the paragraph starting 'The value of the liabilities ...', amend the phrase 'is likely to be impossible in practice' to 'may not be possible in practice'.

Chapter 25

Summary

The summary has been updated in line with the Core Reading changes for this chapter. Replacement pages 23 and 24 are included at the end of this document.

Chapter 29

Section 1.4

Amend the opening of the paragraph starting 'This relates to the assessment of' to 'The above examples relate to the assessment of', and change 'and' to 'which' later in that same sentence.

Amend the paragraph below it to:

The Solvency II factor-based approach for operational risk capital requirements involves taking specified percentages of provisions and premiums.

Summary

Insert the following sentence at the end of the first paragraph under the heading 'Evaluation of risks':

It provides information of the severity but not the likelihood of the risk.

In the same section, amend the paragraph after the first bullet list to:

Stress testing assesses the impact of a specific extreme adverse event over a period of time, such as a shock fall in equity values or shock increase in claim frequency.

Chapter 35

Section 1.2

Insert the following paragraph at the end of this section:

Increasingly, insurance companies are producing resolution plans as well as recovery plans. Resolution planning is used when recovery actions have not been successful and insolvency seems inevitable.

Section 1.3

In the first sentence of the first paragraph, add the word 'recovery' after 'In any of these' to allow for the insertion in Section 1.2 above.

Chapter 37

Summary

Under the heading 'Economic capital', amend the first sentence to:

Economic capital is the amount of capital that a provider determines is appropriate to hold (in excess of liabilities) to cover its risks under adverse outcomes, generally with a given degree of confidence and over a given time horizon.

Add 'business objectives of the provider' to the bullet point list below that paragraph.

Practice Question 37.1

In the sub-section 'Economic capital requirement', amend the first solution point to the following:

The economic capital requirement is the amount of capital that the bank determines is appropriate to hold (in excess of liabilities) to cover its risks under adverse outcomes, generally with a given degree of confidence and over a given time horizon. [1]

In the same section, add the following extra point:

Other business objectives should be taken into consideration in the model, such as the volume of business from new customers / products. [½]

3 Changes to the X Assignments

There have been no significant changes to the Assignments.

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The risk appetite will influence the extent to which the company will choose to reject (or avoid), accept fully or accept partially each risk to which it is exposed, and thus the extent to which risk controls are required.

1.6 Risk financing

Risk financing involves:

- **determining the likely cost of each risk (including the cost of any mitigations and the expected losses and cost of capital arising from retained risk)**
- **ensuring the organisation has sufficient financial resources available to continue its objectives after a loss event occurs.**

Ensuring that adequate financial resources are available in relation to retained risks is covered in more detail in a later chapter.

1.7 Risk monitoring

Having decided that all or part of a risk should be retained, with or without controls, the risks should be monitored.

Risk monitoring is the regular review and re-assessment of all the risks previously identified, coupled with an overall business review to identify new or previously omitted risks. It is important to establish a clear management responsibility for each risk in order that monitoring and control procedures can be effective.

Risk monitoring is the process of ensuring that risks *continue* to be managed. The objectives of risk monitoring might be to:

- determine if the exposure to risk and/or the risk appetite of the organisation has changed over time
- identify new risks or changes in the nature of existing risks
- report on risks that have actually occurred and how they were managed
- assess whether the existing risk management process is effective.

Carrying out risk monitoring does not *complete* the risk management process. The risk management process, like the actuarial control cycle, is iterative. From the objectives of risk monitoring listed above, we can see that the risk monitoring stage leads logically back into the risk management process through the re-identification of risks.

2 Benefits of a risk management process

Through an effective risk management process, a provider of financial benefits will be able to:

- **avoid surprises**
- **react more quickly to emerging risks**
- **improve the stability (i.e. reduce earnings volatility) and quality of their business**
- **improve their growth and returns by exploiting risk opportunities**
- **improve their growth and returns through better management and allocation of capital**
- **identify their aggregate risk exposure and assess interdependencies (i.e. concentration of risk, diversification benefits, natural synergies)**
- **integrate risk into business processes (e.g. pricing) and strategic decision making (e.g. product development, mergers and acquisitions, etc)**
- **give stakeholders in their business confidence that the business is well managed.**

The stakeholders referred to in the final point would include shareholders, regulators and credit rating agencies. The role of stakeholders in risk governance is considered further in Section Error! Reference source not found..



Question

Explain with the use of examples how natural synergies may arise in:

- (i) life insurance
- (ii) general insurance.

Solution

An insurer's portfolio may contain various risks that naturally offset (or *hedge*) each other, at least to some extent.

For example:

- (i) A life insurance company may sell some products (e.g. term assurance) that expose it to mortality risk and others (e.g. annuities) that expose it to longevity risk.
 - (ii) A general insurer may find that good weather increases claims on its domestic property policies as there are more subsidence claims, but reduces claims on its motor policies as there are fewer accidents.
-

Ideally, in the management of risk, providers need to look to find the optimal set of strategies that balance the needs for return, growth and consistency. The risk management process should:

- **incorporate all risks, both financial and non-financial**
- **evaluate all relevant strategies for managing risk, both financial and non-financial**
- **consider all relevant constraints, including political, social, regulatory and competitive**
- **exploit the hedges and portfolio effects among the risks**
- **exploit the financial and operational efficiencies within the strategies.**

3 Risk vs uncertainty

3.1 The relationship between risk and uncertainty

There is no single accepted definition of risk, although it can be said that risk arises as the consequence of uncertain outcomes. This uncertainty may relate to the probability associated with a particular outcome, the severity of a loss in relation to that outcome, or a combination of the two.

There is a difference between uncertainty and risk. A key distinction is that uncertainty cannot be modelled but it is often possible to model risk.

In general usage, the word 'uncertainty' simply means a situation in which something is not known. In the above context it is being used more narrowly, referring to both a lack of complete certainty and a lack of knowledge on which to base an estimate or prediction – and so it cannot be measured. There may not be any choice as to whether uncertainty is faced and it may not be possible to reduce it. On the other hand, risk can usually be managed and typically there is a choice as to whether to take it.

Once a risk has been identified, it will be important to measure the risk through quantifying (or at least estimating) the likelihood and size of the particular risk. However, there may be a number of challenges in quantifying risks accurately, such as a lack of credible data. Whilst many risks can be measured, some cannot and so are unquantifiable. This could be because the distribution of potential losses cannot be identified, or the exact nature of the risk is difficult to assess.

Therefore, we cannot simply state that risk is something that can be measured or modelled whereas uncertainty cannot.

3.2 Examples

The difference between uncertainty and risk can be illustrated by considering climate change:

- Climate change could lead to a number of different potential outcomes, with the likelihood of any one outcome occurring being hard to establish and quantify due to the range of factors which could influence that outcome. Climate change is therefore an uncertainty.
- Climate change could directly lead to a range of different risks, such as the risk of increased frequency and severity of extreme climate change related weather events (heat waves, floods, storms), or the risk of longer-term shifts in climate (e.g. rising sea levels, changes in rainfall patterns, etc). These are risks, for which the potential severity and/or probability of occurrence can be estimated.

Risks relating to climate change are covered further in the chapter on Risk identification and classification.

From a modelling perspective, it is possible to model the financial impact of specific risks such as average annual temperatures being 2 degrees higher than current levels. However, it is much more difficult to say with certainty which climate change outcome will actually occur – for example, whether average temperatures are more likely to increase by 2 degrees or 4 degrees.

As another example, consider an individual with a lump sum that they wish to invest in order to gain high returns.

Investor A has the choice between five investment funds. They have details on the investment objectives, current constituents and past performance of each fund. In allocating their lump sum investment between the funds, this investor is taking on risk.

Investor B has paid their lump sum to a third party, who will make their investment choices for them from across every possible asset type and investment provider available. Investor B has performed no research, provided no instructions about their investment preferences and imposed no limitations on the third party. This investor is facing uncertainty.

3.3 Upside risk

Risk is often taken as being synonymous with uncertainty and volatility.

However, risk should not be considered as only relating to adverse outcomes. Risk can also be positive, if an outcome is better than expected.

For example, whilst climate change may have a number of adverse impacts, it could also lead to new opportunities that may not have otherwise existed, such as the emergence of new industries developing renewable energy sources.

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A company may act to improve its credit rating and these actions may affect the market for that company's and other companies' shares.

Investment grade is a level of credit rating deemed to be carrying minimal risk to investors. Ratings below investment grade are considered low credit quality and these instruments are termed junk.

5 Liquidity risk

5.1 Definition

The normal definition of liquidity risk relates to individuals or companies.



Liquidity risk is the risk that the individual or company, although solvent, does not have available sufficient financial resources to enable it to meet its obligations as they fall due.

This definition can be extended with: 'or that they can secure such resources only at excessive cost'.

5.2 Liquidity risk for different organisations

Non-financial institutions

Liquidity pressures are the most common reason why a trading company goes into liquidation. The phrase 'into liquidation' immediately gives the reason for the action.

A trading company may well have sufficient assets, probably largely stock and work in progress, to cover its liabilities, but if those assets cannot be realised the company may not be able to satisfy its creditors.

In such a case, the creditors may be able to prevent the company from trading.

Insurance companies and benefit schemes

Insurance companies and benefit schemes normally have little exposure to liquidity risk, because a large proportion of their assets is in cash deposits or bond and stock market assets. In general, these can readily be sold in the market to raise cash when required.

General insurers face liquidity risk if claim costs are higher than expected, for example, in the event of a catastrophe.

A benefit scheme may face liquidity risk in the event of a bulk transfer out of the scheme.

Banks

In banking, liquidity risk arises because banks typically 'borrow short and lend long'. That is, the maturities of a bank's assets (loans, including mortgages) are typically longer than the maturities of its liabilities (deposits).

So banks face liquidity issues if more customers than expected demand cash, *ie* withdraw their deposits.

In practice, the difference between behavioural maturities is likely to be much less than the difference between contractual maturities, because loans such as mortgages are often repaid early, while deposits often remain in place for years.

However, in the event that customers want to withdraw their deposits, banks cannot demand early repayment of loans to finance the outflow of deposits.

To protect themselves against liquidity risk, banks must hold high-quality liquid assets which can easily and immediately be converted into cash if required to finance an outflow of deposits.

Banking regulations typically require banks to hold sufficient high-quality liquid assets to finance the expected outflow of deposits in a 30-calendar-day period of liquidity stress.

Collective investment schemes and insurance funds

Similarly, collective investment schemes and insurance funds that invest in real property need to protect themselves if clients request access to their funds when the underlying properties cannot be sold. Such funds frequently have the power to defer withdrawals by up to six months if necessary, to allow time for property sales. Hedge funds that invest in illiquid assets also often have lock-in periods to mitigate liquidity risk.

The reference to 'insurance funds' here means that unit trusts and other funds used as the backing investments for unit-linked business face liquidity risk if more policyholders than expected surrender their policies.

Similarly, collective investment schemes face liquidity risk if more customers than expected wish to sell their units.

This is particularly the case if the scheme, trust or fund is invested directly in property, as this is not a liquid asset.

5.3 Managing liquidity risk

Financial companies will maintain a degree of liquidity to deal with anticipated liability withdrawals. In the event of these withdrawals being greater than expected, the company may have to convert some of its less liquid assets to cash or else try to borrow additional funds (which may be unavailable or expensive).

Financial companies can allow for liquidity risk to some extent, by allowing a margin for withdrawals being higher than they expect and by allowing for predictable seasonal variations (e.g. higher bank withdrawals pre-Christmas). Typically, the biggest liquidity risk issues for a financial company arise as a result of a *sudden surge* in liability withdrawals.



Question

Explain why there might be a sudden surge in customers withdrawing their deposits from a bank.

Solution

A sudden surge may occur for a number of reasons, including:

- concerns about the bank's security (i.e. its continued solvency)
- solvency concerns about one bank leading to heightened concerns about the solvency of other banks – this effect is known as 'contagion'.

Banks do not hold sufficient reserves to be able to repay all deposit holders immediately.

Therefore, if concerned about the solvency or security of a bank, customers may be keen to withdraw their deposits in full as quickly as possible.

This would in itself further threaten the bank's solvency, and a 'run on the bank' may result.

5.4 Market liquidity risk

In the context of financial markets, liquidity risk can arise where a market does not have the capacity to handle (at least, without a potential adverse impact on the price) the volume of an asset to be bought or sold at the time when the deal is required.

In general, the larger a market is, the easier it is to trade and the more liquid it will be, because more participants in the market will be trading at any one time. Thus, when any member of the market wishes to complete a trade, it is likely that the market will be able to find a counterparty willing to accept the trade.

The market is sensitive to factors such as changes in interest rates and the economic outlook, which means that the price of the assets can vary significantly over time, so there is a risk that the asset holder may make a loss if they are required to make a sudden sale at a time the price is depressed.

The terms marketability and liquidity are often used interchangeably. Strictly speaking though, the two are slightly different:

- *Marketability* is how easy it is to buy or sell an asset.
- *Liquidity* is a measure of how quickly the asset can be converted into cash at a predictable price.

A highly liquid asset therefore has two characteristics:

1. It either will quickly become cash because of the terms of the asset itself (e.g. a short-term bank deposit or a government bond with one week until redemption) or else there is a high degree of certainty that the asset could be sold quickly if required.
2. The amount of cash it will or could become is (almost) certain.

Marketability considers only the characteristic of how certain it is that an asset can be sold quickly if required.



Question

Give one example of each of the following:

- an asset that is highly liquid but not marketable
- an asset that is marketable but not liquid.

Solution

A 7-day fixed-term deposit at a bank is a highly liquid asset because it will become cash within a week. However, such deposits cannot be traded, so they are completely unmarketable.

A long-term government bond is a marketable asset because there are many market participants willing to trade at any time. However, it is not a liquid asset as the market value is quite volatile.

(We discussed the relative marketability of short-term and long-term bonds in an earlier chapter.)

6 Business risk

6.1 Definition

Business risks are risks that are specific to the business undertaken.

Business risk differs from operational risk in that the latter are non-financial events that have financial consequences.

We will discuss operational risk in the next section.

The business risks *of financial product providers* can be further divided into the following subcategories:

- underwriting risk – arising in relation to the underwriting approach taken
- insurance risk – arising from the uncertainties relating to claim rates and amounts
- financing risk – arising in relation to the financing of projects or other activities
- exposure risk – arising in relation to the amount of business sold or retained, or to its concentration or lack of diversification.

Examples of business risk are:

- **a life or general insurer not having adequate underwriting standards, and thus taking on risks at an inadequate price**
This is an example of underwriting risk.
- **an insurer suffering more claims than anticipated**
This is an example of insurance risk.
- **a provider of finance, such as a bank, investing in a business or project that fails to be successful**
- **a retail bank's newly launched card product does not sell as expected.**
This is an example of financing risk.
- **a reinsurer having greater exposure than planned to a particular risk event – for example, through writing whole account protection covers as well as primary reinsurance of the risk**
This is an example of exposure risk.
- **a music production company promoting a CD that fails to sell**
- **a competitor launching a new product in the week before your similar product launch**
- **an umbrella manufacturer whose sales suffer in a drought.**

It might be argued that a drought, as an external event, is an external risk. However, the profits of the company will be so closely correlated with the amount of rainfall that the risk is key to the company's business.

- a margin for costs and required profitability.

3.2 Cost of risk

Refer to Chapter 29, Risk measurement and reporting, for methods of quantifying risk.

Each risk covered by a product has a cost. Methods of quantifying risk are outlined in the next chapter and are covered in more detail in the various Specialist Principles subjects.

However, it is important to note that the cost of risk depends not only on the features of the financial product being designed, but also on the features and other business of the product provider.

For example, an insurance company with a large book of immediate annuity business may be able to offer competitive terms for without-profit whole life assurances, such as products designed to cover funeral costs or inheritance tax liabilities. While there is no perfect match for the annuities, writing the new assurance products will reduce longevity risk across the company and it may be able to include negligible or zero cost of mortality on the new contract.

Good product design techniques will list all the risks involved in the product and will consider how each is controlled, transferred, or accepted and costed.

3.3 Appreciation of benefits by recipient

In most cases, financial products and schemes are designed to meet the needs and desires of the beneficiaries, by someone other than the beneficiaries themselves. This might be an employer or the trustees of a sponsored benefit scheme, or the marketing department of an insurance company.

There is a risk that the designer's perception of the needs and desires is not consistent with the views of the potential beneficiaries. If the beneficiaries do not appreciate the benefits, it is unlikely that they will purchase the product, or take up the relevant scheme options.

This risk can be mitigated by small scale product trials, market research, focus groups and similar activities.

3.4 Product complexity

It is a common feature of product design that various groups consulted in the design process believe that the product will be that much more marketable or will look better than a competitor's product if this or that additional option was included.

It is important to realise that all such options introduce new risks, and that each additional risk needs to be paid for.

Reverting to the underlying risk analysis behind the product will enable the designers to determine an appropriate design for a mass-market product and to decide on the extent to which additional risks can be covered.

In markets aimed at high net worth individuals, including additional options and complexity may be viewed as being part of providing a superior product and worth the additional costs.

3.5 Risk classification

In order to determine an appropriate cost for a particular policy, it is necessary to perform risk classification. In this context, risk classification means analysing a portfolio of prospective insured risks by their risk characteristics, such that each subgroup represents a homogeneous body of risk.

Good risk classification is a key part of the design of financial products.

A company selling financial products will want to classify its risks into broadly homogeneous and credible risk sub-groups. This will enable the company to charge premium rates that fairly reflect the relative risk of each sub-group.

This will reduce the likelihood of anti-selection by policyholders where a higher proportion of the policies are taken up within the risk sub-groups that are relatively under-priced.

Careful underwriting is the mechanism by which insurers will group risks into broadly homogeneous risk sub-groups. The underwriting process can determine:

- **which policies receive standard terms**
- **which policies should have special terms applied – and what those special terms should be.**

Underwriting is described in more detail in the chapter on Other risk controls.

The insurer will classify risks into broadly homogeneous risk sub-groups using rating factors, where a rating factor is measurable in an objective way and relates to the likelihood and/or severity of the risk.

Good rating factors should define the risk clearly, and not be too closely correlated with other rating factors.

If one potential rating factor is strongly correlated with another (*eg* height with shoe size), it will probably not add sufficient additional insight to the risk classification process to be worth including.

Rating factors also should be practical to obtain.

It must be possible for the rating factor characteristics of the customer to be determined through the underwriting process, particularly through questions on the proposal form. Ideally, these questions should have quantitative answers or a defined range of possible qualitative responses.

The rating factors used to define the risk for a financial product will vary depending on the type of financial product. For example:

- **age, medical history, gender and smoker status are often commonly used as rating factors for life insurance products**
- **annual mileage, vehicle type, engine size and occupation are commonly used for motor insurance products.**

An insurance company may not always be able to use the rating factors it wants to when determining the premium for a particular risk, and may need to use a proxy which is correlated with the ideal rating factor.

For example, in motor insurance, a driver's speed is likely to be one of the key determinants of risk for that driver. However, insurers will generally not be able to obtain this information for a particular driver. The insurance company may decide to use a proxy such as the type of car driven by an individual or the engine size, which is likely to be correlated with the driver's speed.

In deciding on the extent of the classification by rating factor, there will be a trade-off between the desire for homogeneity within each group of risks (and hence for more accurate pricing of the contract) and the need to have sufficient data in each risk group to give credibility. If the risk classification process has split the risks into too many subgroups, there will be insufficient data in each subgroup to be meaningful.

Whilst the aim of risk classification is to obtain homogeneous data for each risk sub-group, this may not always be possible in practice. For example, an insurance company may want to use a number of rating factors to determine the premium on a particular product. However, the insurer may not have sufficient credible data for each sub-group. In this situation, the insurer could choose to group together sub-groups with broadly similar levels of risk and accept that there is some heterogeneity. Alternatively, the insurer could look to augment the data it has with other external data.

These ideas were discussed in the earlier chapter on Data..



Question

- (i) Suggest rating factors that a general insurer could use to classify risks under a personal motor insurance policy.
 - (ii) Explain why there is typically a greater degree of risk classification for general insurance risks compared to life insurance risks.
-

Solution

- (i) A general insurance company could classify risks under a personal motor policy by:
- gender of the insured driver
 - age of the insured driver
 - occupation of the insured driver
 - postcode of the area in which the vehicle is kept
 - type of vehicle
 - size of engine
 - age of vehicle
 - number and type of previous accidents / claims
 - use of the vehicle – social / domestic / pleasure, commuting, business
 - existence of driving convictions
 - anticipated annual mileage
 - and many more...
- (ii) The reasons for typically greater risk classification in general insurance than in life insurance are that:
- General insurance is highly competitive and largely sold on price. Market pressures have led to greater classification in order for general insurance companies to protect themselves against adverse selection from the policyholder.
 - General insurers typically have a greater volume of data to work with than life insurers, making greater risk classification more possible and meaningful.
 - Policyholders are likely to be more willing to provide the data required by general insurers, e.g. in relation to number of miles driven, type of car, etc. when purchasing motor insurance, as opposed to data required by life insurers relating to their state of health.
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4 Risk taken as an opportunity

In financial services, risk is a tradable commodity. Insurance is one of the processes whereby risk is assessed and priced. If the price at which one party is happy to accept a risk is less than the perceived cost of the risk to a second party, the opportunity exists for a risk transfer to the mutual satisfaction of both parties. This is a fundamental rationale for both insurance and reinsurance.

It is wrong to believe that risk is always bad. Often, risk can represent an opportunity. For example, people that live in coastal or riverside areas may face the risk of flooding to their property. However, companies that produce sand bags or flood defences will see this risk as an opportunity. In fact, the *non-occurrence* of flooding or the removal of flood risk could be a business risk for such companies, as it could even put them out of business.

4.1 Insurable risk

Not all risks are insurable. There are some criteria that a risk *must* satisfy in order for an insurer to be prepared to take on the risk.

For a risk to be insurable:

- **the policyholder must have an interest in the risk being insured, to distinguish between insurance and a wager**
- **a risk must be of a financial and reasonably quantifiable nature**
- **the amount payable in the event of a claim must bear some relationship to the financial loss incurred.**



Question

Explain why each of the bullet points above is important for a risk to be insurable.

Solution

- The policyholder must have an interest in the risk being insured in order to have an interest in the claim event not happening. They therefore will not (in theory) encourage it to happen. For example, a homeowner has an insurable interest in protecting their own home against theft and fire but not in protecting someone else's home. Therefore, a homeowner can generally only take out insurance on their own property or properties and not on a property or properties belonging to other people.
- The risk must be of a financial and reasonably quantifiable nature so that a monetary claim amount from an insurer can compensate for the loss, and so that the insurer is able to assess the risk and set an appropriate premium.
- The claim amount must bear some relationship to the size of the financial loss since:
 - if the claim amount is too large, this will encourage fraud and moral hazard
 - if it is too small, purchase of the insurance may not be deemed to be worthwhile.

Chapter 25 Summary

The risk management process

Risk management can be described as the process of ensuring that the risks to which an organisation is exposed are the risks to which it thinks it is exposed and to which it is prepared to be exposed.

The risk management process consists of risk:

- identification (of risks that threaten the income or assets of an organisation, and of possible controls)
- classification (into groups, including allocation of 'ownership')
- measurement (probability and severity)
- control (mitigation to reduce the probability / severity / financial and other consequences of a loss)
- financing (determining the likely cost of each risk, including the cost effectiveness of risk control options, and the availability of capital to cover retained risk)
- monitoring (regular review and re-assessment of risks together with an overall business review to identify new / previously omitted risks).

Risk appetite is an important input into this process.

Benefits of a risk management process

Through an effective risk management process a provider will be able to:

- avoid surprises
- react more quickly to emerging risks
- improve the stability (i.e. reduce earnings volatility) and quality of their business
- improve their growth and returns by exploiting risk opportunities
- improve their growth and returns through better management and allocation of capital
- identify their aggregate risk exposure and assess interdependencies
- integrate risk into business processes and strategic decision making
- give stakeholders in their business confidence that the business is well managed.

The risk management process should:

- incorporate all risks (both financial and non-financial)
- evaluate all relevant strategies for managing risk
- consider all relevant constraints
- exploit hedges and portfolio effects
- exploit financial and operational efficiencies.

Risk vs uncertainty

Risk arises as the consequence of uncertain outcomes.

Uncertainty cannot be modelled, but it is often possible to model risk.

Systematic vs diversifiable risk

Systematic risk is risk that affects an entire financial market or system and cannot be diversified away.

Diversifiable risk arises from an individual component of a financial market or system and can be diversified away.

Whether a risk is systematic or diversifiable depends on the context.

Enterprise risk management (ERM)

A company's business unit might:

- carry out the same activity but in different locations
- carry out different activities at the same location
- carry out different activities at different locations
- operate in different countries
- operate in different markets
- be separate companies in a group, which each have their own business units.

The parent company could determine its overall risk appetite and divide it between the units. However this is likely to make no allowance for the benefits of diversification. A preferable approach is to establish group risk management as a major activity at the enterprise level.

The key features of enterprise risk management are:

- consistency across business units
- holistic – considers the risks of an enterprise as a whole, rather than in isolation, thus allowing appropriately for diversification, etc.
- seeking opportunities to enhance value.

Stakeholders in risk governance

In an efficiently run organisation, *all* members of staff are stakeholders in risk governance.

All large companies and all providers of financial products should have a designated Chief Risk Officer, normally at enterprise level. Business units should also have a risk manager.

Customers, shareholders, credit rating agencies and regulators also have a stake in the risk governance of an organisation.