

Class: MSc Sem 4

Subject : Actuarial Practice 2

Chapter: Unit 1 Chapter 4

Chapter Name: Understanding Risk Appetite

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1 Risk appetite and efficiency

Risk appetite of different stakeholders

Risk appetite can be broadly defined as being a **statement** of the **maximum amount** and **types of risk** that an individual or organization is **prepared** to take on, to meet their objectives.

Different stakeholders will have different appetites for risk and even within a particular class of stakeholder there will be different appetites for risk. Corporate entities also have different appetites for risk. Frequently the risk appetite is described in public documents, such as the **company's annual report**.

Although the published statements of risk appetite may be **unquantified**, most organizations, and particularly those in the financial sector, should **quantify their risk appetite** so that it is a measurable item that can be included in monthly or quarterly management information packs.

Risk appetite may be linked to other features of the individual or company, such as their existing exposure to a particular risk, but it may also be a feature of the culture of the company or the type of individual.



Give examples of features of a company that may influence its risk appetite

1 Risk appetite and efficiency

Capital requirements of risk

A person or company that **retains** any risks needs to have **sufficient capital** to cope with the **consequences of the risk event occurring**. For individuals, this is almost never the case.

Companies also have risk appetite, and this can result in **inadequate available and working capital** being held for the risks retained.

To avoid financial product providers adopting an **inappropriate risk appetite**, regulatory authorities may **impose minimum levels of retained solvency capital** derived from a risk assessment of the business.

In Europe and other territories that have adopted regulatory regimes based on **Solvency II**, insurance companies are required to hold sufficient capital as calculated by an **internal model** or **standard formula** based on the company's exposure to the main risks affecting insurance business.

1 Risk appetite and efficiency

Markets for risk

The fact that different entities have different **appetites** for risk enables a **market for risk**. Risk can then be **transferred** between entities with a **small appetite** to those with a **larger appetite**. Almost all financial transactions can be simplified to a **transfer of risk** from one entity to another in exchange for a payment of money.

An important illustration of this 'market for risk' is the transfer of risk from an individual to an insurance company through the purchase of a life or general insurance contract. For example, an individual is likely to have an appetite for theft of contents from their home that is lower than the value of the contents that might be stolen. The individual consequently pays a premium to an insurance company to transfer the risk to the insurance company. The insurance company has a greater appetite for the theft risk because:

- it is larger
- by pooling the risks, the company can still have stable returns and make a profit from the premiums it charges.

Where there is a good market for risk transfer, the system is said to be **risk efficient**. Individuals and companies with **excess of risk** can transfer the excess to others who have **less risk** than they are prepared to accept. If the market is of adequate size, normal economic factors will result in an efficient market.

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2 Risk and Product Design

Financial products as a risk transfer mechanism

A **financial product** is a means by which one party transfers risk to another party, normally making a cash payment to the party taking on the risk.

The payment made not only needs to cover the **cost of the risk** being transferred but also needs to enable the party taking on the risks to **make a profit**.

It is more difficult to see why **investment** in a **collective investment scheme** results in risk transfer. It can be argued that the investor does not want to take the risk of **poor performance** because of a lack of knowledge of certain investment markets. The investor buys a service, investment expertise, because they cannot do the job as well themselves, and any poorly done job increases the risk of failure.

It is also possible that the person transferring the risk may be able to do the job just as well themselves, but there are other activities they would rather spend their time doing, either because they are more profitable, or just because they are more enjoyable. **Quality of life has a value**.

2 Risk and Product Design

Cost of risk

Each risk covered by a product has a **cost**.

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**.

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.

2 Risk and Product Design

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 analyzing a portfolio of prospective insured risks by their risk characteristics, such that each subgroup represents a **homogeneous** body of risk.

In deciding on the extent of the classification, 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.



Suggest factors by which a general insurer could classify risks under a personal motor insurance policy.

2 Risk and Product Design

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**.

2 Risk and Product Design

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 realize 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.

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3 Risk taken as an opportunity

Introduction

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**.

3 Risk taken as an opportunity

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.

In most countries, individuals are deemed to have an unlimited insurable interest in their own lives and that of any spouse.

3 Risk taken as an opportunity

Principle of pooling of risks

Insurers and reinsurers take on risks in return for a premium because in doing so they can combine or pool many risks together, which means that there is greater certainty in the future payments they are likely to have to make on the occurrence of an insured event.

3 Risk taken as an opportunity

Principle of pooling of risks

Ideally risk events need to meet the following criteria if they are to be **insurable**, as the **law of large numbers** means that these will help the insurer reduce the volatility of the risk profile they hold:

- Individual risk events should be **independent** of each other.
- The **probability** of the event should be **relatively small**. In other words, an event that is nearly certain to occur is not conducive to insurance.
- Large numbers of potentially **similar risks should be pooled** in order to reduce the variance and hence achieve more certainty.
- There should be an **ultimate limit** on the liability undertaken by the insurer.
- **Moral hazards** should be eliminated as far as possible because these are difficult to quantify.
- There should be sufficient existing **statistical data / information** to enable the insurer to estimate the extent of the risk and its likelihood of occurrence.

3 Risk taken as an opportunity

Principle of polling of risks

It is in the assessment and quantification of risk that the actuary can create **opportunities**.

This analysis may be taken to a further stage with the recommendation of risk mitigation processes. A process by which risks are identified and by which procedures are proposed to manage and control them is further evidence of opportunity arising from the existence of risk.

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