



How insurance works

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Insurance is a cornerstone of modern life. Without insurance, many aspects of today's society and economy could not function. The insurance industry provides the cover for economic, climatic, technological, political and demographic risks that enables individuals to go about their daily life and companies to operate, innovate and develop.

Despite this, the way insurance functions and its value are not always well understood. This booklet explains how insurance works, the value it provides and the importance of the regulatory environment in maximising the benefits that insurance can offer.

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How insurance works: the basics

Insurance is the transfer of risk. It transfers the risk of financial losses as a result of specified but unpredictable events from an individual or entity to an insurer in return for a fee or premium. If a specified event occurs, the individual or entity can claim compensation or a service from the insurer.

Insurance is therefore a means of reducing uncertainty. Buying an insurance policy for a smaller, known premium, removes the possibility of a larger loss. By pooling premiums and insured events, between groups of policyholders and/or over time, the financial impact of an event that could be disastrous for one policyholder is spread among a wider group.

So risk pooling is the key?

Essentially, yes. Pooling spreads the cost of losses between a number of policyholders. Take household contents insurance against fire, for example. When the risk of a fire is pooled, the large cost to the few who suffer from a fire is spread between all members of the pool. The average cost to members of the pool (the premium) is relatively low, as only a small number of them is likely to suffer a loss.

The price of the insurance should be such that the individual is prepared to pay the smaller, known premium in return for not having to pay the unknown — and potentially very large — financial cost of the insured event. Each policyholder should pay a fair premium according to the risk of loss that they bring to the pool.

How is a fair premium calculated?

As long as there is sufficient experience or knowledge of past events, insurers can use the resulting statistics to make sophisticated calculations. This process — called underwriting — involves calculating the probability of the risk for each insured or category of insureds. Based on the principle of large numbers, the larger the pool of policyholders, the more accurately the probability of the risk can be calculated. The premiums charged are based on these calculations. Inevitably there will be variations in claims costs at different times, so the premium will also include a margin to enable the insurer to build up a reserve to draw on in bad years.

Unique and rare risks — injury to a professional footballer's legs, for example — can sometimes also be insured, but the premiums will be comparatively high.

Insurance protects people and businesses against the risk of unforeseeable events. It is a risk transfer mechanism by which the losses of the few are paid for by the many, with the premiums based on the risk of each individual or entity.



A little more detail

Modern insurance — although based on a very simple principle — is an extremely sophisticated risk-transfer mechanism that comes in many forms.

Insurance has developed over many centuries. It started with crude marine insurance by which merchants agreed to make contributions to those who had suffered a loss after it had taken place. The problem with this system was that it did not fully transfer the uncertainty; the merchants never knew how much they might have to pay. Modern insurance has, therefore, developed so that policyholders know upfront the full extent of their required share of losses (ie their premium).

The value of this certainty to individuals, society and the economy is huge (see p13). Indeed, it is fair to say that modern society could not function without insurance. Many daily activities that we take for granted involve some risk of loss and might not be performed were it not for insurance.

In general, a large number of similar risks are required for insurance to be economic. Insurance for unique risks is nevertheless possible, but it can be prohibitively expensive. There are certain prerequisites that have to be fulfilled for something to be insurable (see p10) and regulation has a crucial role to play here (see p17).

How do insurers assess a risk?

The process by which the risk of the policyholder is assessed is called underwriting. The premium and terms of the insurance contract are based on the insurer's assessment of the level of the risk.

Each individual or entity wishing to be insured brings a different level of risk to the insurer; a timber house is at greater risk of fire than one made of brick, for example. To make sure that each insured pays a fair premium, insurers use a series of rating factors to assign the level of risk. In general, the higher the risk, the higher the premium.

The underwriting process will differ from insurer to insurer, depending — for example — on the level of risk they are prepared to accept. Terms and conditions may be applied to policies to further homogenise the risks by removing particular events or circumstances under which claims would be paid. Terms and conditions are also important to help reduce the impacts of moral hazard and adverse selection (see p8).

Risk assessment is economically efficient, as it allows the price of the insurance to reflect the cost of providing it. While underwriting must be consistent with the law,

any restriction of the freedom of insurers to underwrite and price according to the risks they are accepting will most likely lead to higher insurance prices and therefore lower availability, affordability and choice for consumers. The role of regulation here is explained in more detail later (see p16).

Does risk-based pricing have any other advantages?

Yes, risk-based pricing encourages insurers to innovate so that they can compete more effectively both on price and on products. Developing new, or more sophisticated, rating factors can enable insurers to offer more competitive rates, or to offer insurance for risks that were previously uninsurable. As insurers learn more about the diagnosis and treatment of certain illnesses, for example, cover can be offered for diseases that were previously uninsurable. Likewise, better modelling of flood risk can make previously uninsurable homes insurable. Risk-based pricing can also influence positively the behaviour of individuals (see p14 on the promotion of safe practices).

So what is moral hazard?

Moral hazard is the risk that the behaviour of policyholders changes once they have entered into an insurance contract in a way that makes the risk event more likely to happen. For example, a car owner may drive less carefully once they have insurance that passes the risk of the car being damaged on to an insurer.

Moral hazard can result in more claims than the insurance company expected based on its underwriting and could result in premiums increasing for all policyholders if it is not managed effectively. This is why it is important for the terms and conditions of insurance contracts to be tightly worded.

And what does adverse selection mean?

Adverse selection is a situation in which higher risk individuals are more likely to take out insurance. One of the objectives of underwriting is to avoid this by identifying relevant risk factors and setting premiums to correctly reflect the risks.

For example, if smokers and non-smokers are offered life insurance at the same price (based on the average life expectancy for both groups), the premium will be better value for smokers — who can be expected to have a higher than average mortality rate — than for non-smokers. As a result, more smokers than non-smokers are likely to take out the insurance. The insurer will then end up with a higher than average

mortality rate (and hence higher claims) than it anticipated when it was pricing the product, which will affect its reserves or the premiums it then charges. However, by taking smoking into account as a rating factor in the underwriting process, insurers can offer lower life insurance premiums for non-smokers than smokers.

And finally, what is reinsurance?

Put simply, reinsurance is insurance for insurers.

Similarly to insurance, reinsurance reduces an insurer's risk of loss by sharing the risk with one or more reinsurers. Reinsurance generally works by either transferring a portion of a particularly large risk that has been taken on by an insurance company (facultative reinsurance), or by transferring a portion of all the pool (or book) of risks (treaty reinsurance) to a reinsurer in return for a share of the original premium. In the event of a claim, the reinsurer compensates the insurer for its share of the risk.

The financial compensation that would be required in the event of a commercial airline plane crash, for example, could be too great for a single insurer, so reinsurance is sought to share the loss. Alternatively, a certain level of the risk from, say, an insurer's motor or life insurance business could be transferred to a reinsurer.

The underwriting process benefits policyholders. The more information held about an individual risk, the more the premium can be tailored to that risk. If the insurer's freedom to underwrite and price is restricted, either the pricing and availability of the policies or the insurer's profitability is affected.

What is insurable?



For a risk to be insurable, a number of prerequisites need to be in place:

The risk must be definable and financially measurable

Insurance provides financial compensation against a risk materialising or offers a benefit or service if that risk occurs. The risk must therefore be fully definable, in order to remove any dispute over whether the loss has occurred (and hence when a claim payment is due). It must also be possible to put a price on the cost of the loss, in order to determine the level of compensation required.

For insurance against car theft, for example, determining when the event has occurred and how much compensation is due is relatively straightforward. For injuries suffered in an accident, the courts will often decide on the level of compensation. For life assurance, where the financial losses are less straightforward, the compensation is specified in advance.

The risk should be random and independent

It is not possible to insure against an event that will definitely occur, since it involves no uncertainty and therefore no transfer of risk takes place. The occurrence of the insured event should be unpredictable and happen purely by chance, or at least be outside the control of the beneficiary of the insurance, otherwise moral hazard could result (see p8). Definite events, such as damage caused by wear and tear or depreciation, and events that are caused voluntarily and intentionally by the insured or someone hired by the insured, usually cannot be insured.

Life assurance works within this principle as, although death is certain, its timing is unknown.

The insured must have an insurable interest

There must be a recognisable relationship between the insured and the risk.

Typically, this “insurable interest” is established by ownership or direct relationship. For example, people have insurable interests in their own homes and vehicles, but not in those of their neighbours.

The insurer must be able to calculate a fair premium for the risk

As explained on p5, the premium charged to the policyholder must make economic sense. On the one hand, the insurer must be able to charge a premium that is high enough to cover future claims on its pool of risks and its expenses while still making

a profit. On the other hand, the amount charged to insure an individual or entity must be a sum that the insured is willing to pay and must be substantially below that of the covered amount or it would not make sense to purchase the cover. This balance is best struck in an open, competitive private insurance market.

The likelihood of the risk must be calculable

In order to calculate a fair premium, the insurer must be able to calculate the possibility of the risk. This involves calculating both the average severity and the average frequency of similar risks with some degree of accuracy. To do this requires analysis of a reasonably large claims history for the particular event, based on the insurer's own experience, industry data or other sources.

There should be limited risk of catastrophically large losses

The financial impact of the loss should not be so large that the insurer could not hope to pay for the loss.

For events that could result in significant losses, insurers can use techniques such as reinsurance (see p9) to reduce their exposure. This is typically the case for insurance for natural catastrophes or airlines.

Coverage is generally only for indemnity

The payment made following the occurrence of an insured event only indemnifies the policyholder for the loss actually incurred; the policyholder cannot profit from the claim as this could change their behaviour to make the loss more likely (see "moral hazard" on p8).

Not all risks are insurable. For a risk to be insured, it must have a number of specific characteristics.

Why do we need insurance?



Insurance helps people and businesses to assess, manage and reduce their risks. It benefits policyholders as it provides a means of turning large, unexpected costs into manageable smaller payments. Without insurance, people would be less likely to engage in some activities of modern life because the potential financial costs they would be exposed to would be too great.

For example, people would be less likely to start their own business, since they would have to be entirely responsible for the cost of an accident or fire. They might also be less likely to buy their own home for the same reasons.

Benefit: consumer and business confidence

Insurance provides individuals and companies with the confidence to go about their daily life and business and to enter into transactions with others. They can be secure in the knowledge that the company they are doing business with will be able to continue to operate and will be able to meet its obligations. For example, holidaymakers gain comfort and confidence from booking with a hotel that has insurance which would refund their deposit should a significant event, such as a fire, close the hotel.

Benefit: control of risks and promotion of safe practices

Society in general benefits from a competitive insurance market that can use sophisticated risk pricing to encourage better risk management practices.

The prospect of lower premiums can change behaviour, encouraging individuals and businesses to reduce their risks where they can by altering their behaviour or taking preventative measures. Examples include individuals giving up smoking to reduce their life insurance premiums or fitting smoke alarms to reduce their household insurance costs, and businesses implementing more effective risk management systems to reduce their liability premiums. Another common example is the promotion of safer driving through no-claims discounts on motor premiums.

Benefit: long-term investment in the economy

Insurers invest the premium income they receive, making them among the largest institutional investors. For life insurance companies in particular, the products they write are long-term in nature, and so correspondingly long-term investments are made and held to maturity. This steady flow of long-term capital provided to the financial markets by the insurance industry is crucial for the financial system as

a whole, as it reduces market volatility and thus contributes considerably to the stability and functioning of markets.

Benefit: stable and sustainable savings and pension provision

Insurers are significant providers of savings and pension products. The products they provide are fundamental to old age financial security, particularly in light of ageing populations.

As well as using their experience and sophisticated models to ensure a fair premium is charged, insurers are able to combine different risks. This reduces the likelihood of claims being significantly different from what was assumed in the underwriting and in turn reduces the costs of offering the products.

For example, taking on both the longevity risks inherent in pension products and the mortality risk from life assurance products reduces the financial impact of changes in life expectancy (increases in life expectancy will increase the costs to the insurance company for pensions products, as they will need to pay out for longer, but have an offsetting benefit for the insurance company on life assurance products).

Without a competitive and innovative insurance industry, many aspects of our modern society and economy would cease to exist or would function much less effectively.

The importance of the regulatory environment



Regulation is vital to ensure that policyholders can feel confident buying insurance products. Inappropriate regulation, however, can have a significant impact on the ability of insurers to function effectively and sustainably and to supply the insurance products that individuals and businesses wish to purchase.

Against the background of growing public debt and ageing populations in developed economies, with the resulting strains on state social welfare and taxation systems, it is increasingly important to ensure that the regulatory environment supports a well-functioning private insurance sector.

The product development and pricing strategies of companies are often driven by the regulatory environment in which they operate. Individual companies can be affected by regulation that is unsuitable for their business. International groups can be affected by inconsistencies in regulatory environments that can even lead to corporate restructurings.

Below are just four examples of areas in which regulation can affect the optimal functioning of the insurance market. They show how important it is that all the possible implications are considered when regulations are developed or revised.

Enough capital, but not too much

Insurers need to be able to provide cost-effective insurance to policyholders while also holding sufficient capital to pay claims. It is vital that the capital that insurers are required to hold is proportionate to the risks they are taking; the regulatory requirements should inspire consumer confidence but should not be overly prudent.

Should companies be forced to hold excessive capital, there is the risk that the additional costs could be passed on to policyholders through higher premiums, that products could be redesigned to offer fewer guarantees and benefits to policyholders, or that products could be withdrawn altogether. This could potentially result in individuals and companies buying less insurance and therefore retaining more risk themselves, with detrimental consequences for society and the economy (see p13).

Recognising the long-term value of insurance

The size of the private pension market held by insurance companies is significant. Insurers are also major long-term institutional investors.

Should regulation discourage insurance companies from holding long-term assets,

this could affect the insurance industry's ability to provide efficient savings and pension products. It would likewise reduce the industry's role as a long-term investor in the financial markets and thus its crucial role as a stabiliser of market volatility. Any reduction in the level of savings or private pension provisions could result in increased costs for social welfare systems and could have an impact on the wider economy.

Differentiation, not discrimination

The fewer restrictions placed on the number and type of rating factors that insurers can use, the more competitive and innovative they can be. This benefits both policyholders and society as a whole, as shown in the previous section.

Such risk assessment does not constitute unfair discrimination, in fact quite the opposite. Differentiation is the fairest way to ensure that the premium charged accurately reflects the risk. It is also the fairest way to ensure that a maximum number of people can be offered insurance at an affordable price.

Risk assessment is not only economically efficient, it also helps to reduce moral hazard and adverse selection, as shown in the example of smokers and non-smokers on p8.

The person seeking insurance will always know more about their risks than the insurer. Nevertheless, the risks to the insurer can be minimised through appropriate risk assessment and information collection. This benefits all insureds.

If legislators impose restrictions on the information that can be gathered or used by insurers, perhaps in order to avoid perceived unfairness, insurance companies may charge higher premiums to policyholders in order to compensate for the higher degree of uncertainty surrounding the risks they are taking on. Here it is also important to mention the importance of the collection and free dissemination of data, such as ensuring public access to local authorities' data related to flood risk.

Freedom to insure what is insurable

As we have seen, risk assessment and risk-based pricing in a private market not only enable insurers to set fair premiums but also enable them to innovate and develop new or more sophisticated products for existing or emerging risks. Such insurance markets are the most dynamic and cost-effective. Any regulation to make specific types of insurance compulsory should therefore always be carefully considered, as

despite being well-intentioned it could actually have the opposite effect to that intended; ie stifling innovation and economic efficiency.

An effective regulatory environment is key to the successful operation of the insurance market. To be effective, the regulation needs to fully take into account the unique characteristics of insurance.

Annex: How are premiums calculated?



Insurance premiums are calculated so that they can reasonably be expected to cover the likely claims arising from an insurance contract with a safety margin to ensure the long-term viability of the insurer. The calculation is generally based on the probability of the insured event occurring, combined with the likely financial loss resulting from the claim. This “risk premium” is then adjusted to cover the expenses of the insurance company and to provide some profit:

$(\text{Expected claim amount} \times \text{probability}) + \text{expenses} + \text{profit} + \text{safety margin} = \text{premium}$

The expense adjustment must cover:

- the initial cost of writing the product (including processing the application and performing underwriting)
- regular costs associated with maintaining the product
- any additional costs incurred at the point of claim (including processing the claim and any expenses due to verifying the claim)

How these expenses are charged to the premium depends on the type and structure of the product and how the expenses are incurred. They may be fixed amounts, percentage increases based on the size of the potential claim amount (the sum assured) or a combination of both.

The probability of a claim is commonly determined by analysing historical data from homogeneous groups representing similar risks and by forward-looking risk analysis. For example, life assurance policyholders may be split into groups based on:

- age
- occupation
- geographical location
- smoker/non-smoker

This is on the assumption that individuals in the same group experience broadly consistent mortality. Analysis of the historical data for these risk groups provides a good indication of the probability that a policyholder falling into each group will claim (in this example that the policyholder will die) in each year following the inception of the policy.

Generally, the more risk factors that can be included to divide policyholders into similar groups, the more accurate the assumptions on which the probability of a claim being made will be. However, when determining the number of risk groups to split policyholders between, a balance must be found between having too few

groups (in which case the risks are not homogeneous) and too many groups (in which case the number of policyholders in each group may be too small for the analysis to be statistically significant). Similarly, groups must be selected so that sufficient historical data is available in order to perform meaningful analysis. Where historical data is not available, insurers can look to other sources such as industry data, publically available statistics, or data from reinsurance companies.

The final premium also depends on the individual business strategy of the insurer. For example, a company may wish to position its products as the cheapest in the market in order to gain market share by reducing the level of profit in the premiums.

What is the combined ratio?

It is important that companies regularly review their claims experience against the premiums charged to ensure that the premiums remain appropriate for the risks and that underwriting practices are aligned with the setting of premium rates, so that the risks that the company takes on are consistent with those that have been priced.

One way of doing this in non-life insurance is by using a combined ratio. This is the ratio of expenses and claims losses to premiums and it can be applied to monitor how well the company has priced its products (relative to its business plan) and the efficiency of its underwriting in matching the risks to the pricing structure.

If the combined ratio is less than 100%, the premium charged is sufficient to cover the payments and there is an underwriting profit.

If the combined ratio is greater than 100%, the company will have made an underwriting loss.

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