Overview 10M

There are two main principles that enable the insurance mechanism: 1) The law of large numbers and 2) the decreasing marginal utility of money.

The ***law of large numbers*** states that as the number of observations increases, the average of the results should converge to the expected value. So, by insuring a large number of risks, predicting claims becomes much easier for the insurer.

However, that is not enough. In order for insurance to be viable, each of the individual policyholders must pay more than their expected loss. Why would they do that? That is where the second principle comes into play.

According to the ***decreasing marginal utility of money***, as extra units of wealth or income are added, the utility, or satisfaction, derived from such units decrease. The principle applies to anyone who is **risk averse**. Hence, risk avoiders are willing to pay more than the expected loss in insurance premium as additional units of wealth have decreasing utility to them relative to the utility derived from not incurring large losses.

What Makes a Risk Insurable?

There are six criteria that make a risk insurable.

1. **It should be economically feasible.** The insurer must collect sufficient premium to not only pay for losses, but also cover the cost of maintaining the insurance mechanism, e.g., office expenses and sales commissions.
2. **The economic value of the insurance should be calculable.** A large enough amount of data must be available to support the insurer's calculations with a high degree of confidence. Otherwise, the event could be too uncertain to insure.
3. **The loss must be definite.** This criterion is meant to guard against policyholder manipulation and moral hazard. Moral hazard occurs when the insured is able to increase the value of the insurance beyond that expected in the price or premium. An example of a definite loss is a well-documented car accident that leaves little room for fraud by the policyholder.
4. **The loss must be random in nature.** Similar to the previous criterion, the insured event must be beyond the control of the policyholder.

5. **The exposures in any rate class must be homogeneous.** All units in a class must have the same loss expectation, or equivalently, the same probability of incurring losses. Anti-selection, which is when policyholders gain an unfair advantage via information not available to the insurer, could cause a risk to not satisfy this criterion.
6. **Exposure units should be spatially and temporally independent.** To put it simply, the fact that one insured has a claim should not greatly increase the chances of another insured having a claim. For example, an insurer would not insure all the houses in a neighborhood, since one natural disaster (e.g., a tornado) can result in a huge loss.

A risk that satisfies all six criteria is definitely insurable. However, a risk that does not fully satisfy the criteria is not necessarily uninsurable. With some special care or risk-sharing measures (e.g., reinsurance), insurance can still be possible.

Types of Insurance Products

There are many insurance products that can be purchased to protect against various risks. Insurance products can be categorized as either short-term or long-term depending on the nature of the product.

Short-term insurance products are products with a short life cycle. They are usually renewed every six or twelve months, and claims from these products are settled relatively quickly, usually within a few months. Examples of this type of product are automobile and homeowners insurance.

Long-term insurance products, on the other hand, have a relatively long life cycle. It may take a few years or even decades for a claim to arise or for a claim to be settled (e.g. life insurance).

The illustration below shows a few common short-term insurance products, which will all be discussed in this section.

Insurance Coverages

Property & Casualty **Health**