# Introduction to Risk Management

## UNDERSTANDING AND QUANTIFYING RISK

Although risk may intuitively seem undesirable, it can yield both positive and negative outcomes. Opportunities cannot be pursued, and reward cannot be obtained, without incurring some risk. Because of this risk/reward relationship, individuals and organizations seek to maximize reward while minimizing the associated risk. Risk management helps individuals and organizations to avoid, prevent, reduce, or pay for the negative outcomes of risk so that opportunities for reward can be pursued. Understanding and quantifying risk are the logical starting point for learning how to use risk management.

Risk is a term regularly used by individuals in both their personal and professional lives and is generally understood in context. However, properly defining risk is often difficult because it can have many different meanings. As used in this discussion, risk is defined as the uncertainty about outcomes, with the possibility that some of the outcomes can be negative. Risk can be quantified by knowing the probability of the possible outcomes. See the exhibit "Industry Language—Risk."

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### Industry Language—Risk

Risk can be used in many contexts in risk management and insurance and can have any of the following meanings:

- The subject matter of an insurance policy, such as a structure, an auto fleet, or the possibility of a liability claim arising from an insured's activities

- The insurance applicant (the insured)

- The possibility of bodily injury or property damage

- A cause of loss (or peril), such as fire, lightning, or explosion

- The variability associated with a future outcome

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## Uncertainty and Possibility

The two elements within the definition of risk are these:

- Uncertainty of outcome
- Possibility of a negative outcome

First, risk involves uncertainty about the type of outcome (what will actually occur), the timing of the outcome (when the outcome will occur), or both the type and timing of the outcome. Consider an individual who buys a share of stock in a publicly traded corporation. This individual may experience a positive outcome if the value of the stock increases or a negative outcome if the value of the stock decreases. The timing of either outcome is uncertain because the individual does not know if or when the stock price is going to change or what the new stock price will be. Whether uncertainty involves what will actually happen, when something will happen, or both, it results from the inability to accurately predict the future.

Second, risk involves the possibility of a negative outcome. Possibility means that an outcome or event may or may not occur. The fact that something may occur does not mean that it will occur. For example, it is possible that an individual may be injured while driving to or from work, loading a truck at work, moving some furniture at home, or falling in an icy parking lot at the mall. However, the possibility that these events may occur does not mean that they will occur. Nonetheless, because of the possibility of a negative outcome (injury), risk exists.

## Possibility and Probability

The possibility that something may occur does not indicate its likelihood of occurring. Possibility does not quantify risk; it only verifies that risk is present. To quantify risk, one needs to know the **probability** of the outcome or event occurring.

**Probability**

The likelihood that an outcome or event will occur.

Unlike possibility, probability is measurable and has a value between zero and one. If an event is not possible, it has a probability of zero, whereas if an event is certain, it has a probability of one. If an event is possible, but not certain, its probability is some value between zero and one. Probabilities can be stated as a decimal figure (.4), a percentage (40 percent), or a fraction (four-tenths or two-fifths).

To help understand the difference between possibility and probability, consider the possibility that an individual will be injured in an auto accident while driving to or from work tomorrow. That person will not necessarily be injured in an auto accident tomorrow, and the fact that it is possible does not give any indication of its likelihood. The risk exists and has simply been identified.

Contrast this with there being a 5 percent probability that the same individual will be injured in an auto accident while driving to or from work

tomorrow. This statement not only indicates that it is possible the individual will be injured tomorrow, it gives the likelihood. The risk has now been not only identified but also quantified.

Understanding the probability of various outcomes helps focus risk management attention on those risks that can be appropriately managed. Probability can also be used to help decide which activities (and associated risks) to undertake and which risk management techniques to use.

In the previous example:

- If the probability of injury while driving to or from work was 5 percent, and the probability of injury if the individual took the train to work was 1 percent, the individual may decide to take the train.
- However, if the risk of auto injury was reduced to 1 percent by driving a car with airbags and antilock brakes, and if it was more convenient and quicker to drive, then the individual may decide (cost permitting) to buy a new car with airbags and antilock brakes and then drive to work.

# RISK CLASSIFICATIONS

Classifying the various types of risk can help an organization understand and manage its risks. The categories should align with an organization's objectives and risk management goals.

Classification can help with assessing risks, because many risks in the same classification have similar attributes. It also can help with managing risk, because many risks in the same classification can be managed with similar techniques. Finally, classification helps with the administrative function of risk management by helping to ensure that risks in the same classification are less likely to be overlooked.

These classifications of risk are some of the most commonly used:

- Pure and speculative risk
- Subjective and objective risk
- Diversifiable and nondiversifiable risk
- Quadrants of risk (hazard, operational, financial, and strategic)

These classifications are not mutually exclusive and can be applied to any given risk.
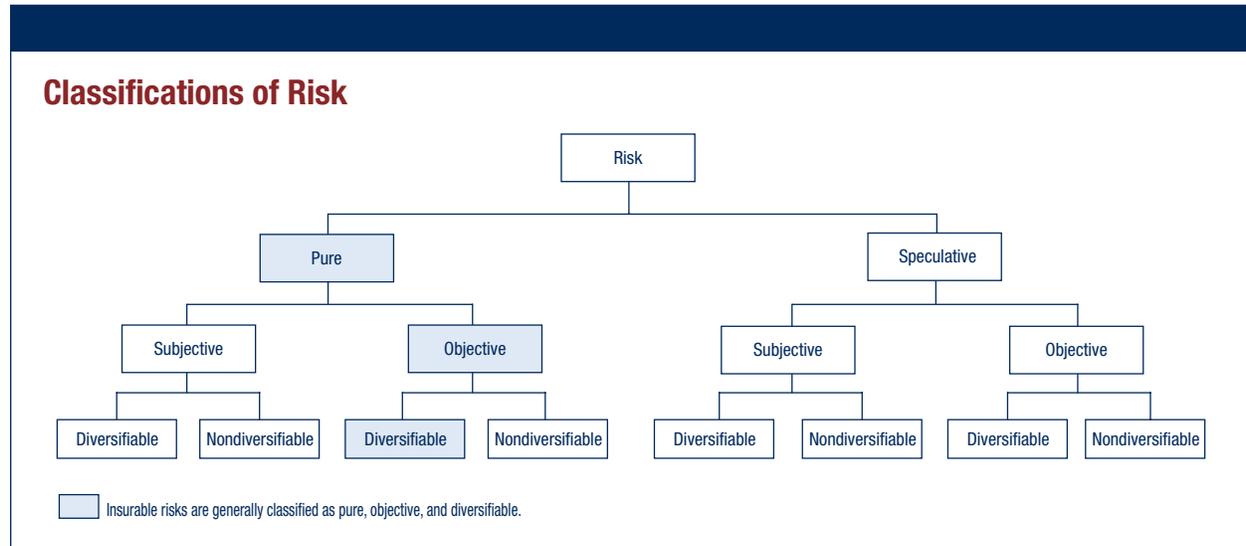
## Pure and Speculative Risk

A **pure risk** is a chance of loss or no loss, but no chance of gain. For example, the owner of a commercial building faces the risk associated with a possible fire loss. The building will either burn or not burn. If the building burns, the owner suffers a financial loss. If the building does not burn, the owner's financial condition is unchanged. Neither of the possible outcomes would produce

**Pure risk**
A chance of loss or no loss, but no chance of gain.

a gain. Because there is no opportunity for financial gain, pure risks are always undesirable. See the exhibit "Classifications of Risk."

## Classifications of Risk

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                              Risk
                  ┌────────────┴────────────┐
                 Pure                    Speculative
          ┌───────┴───────┐        ┌────────┴────────┐
      Subjective      Objective  Subjective       Objective
      ┌────┴────┐    ┌────┴────┐  ┌────┴────┐     ┌────┴────┐
Diversifiable Nondiversifiable Diversifiable Nondiversifiable Diversifiable Nondiversifiable Diversifiable Nondiversifiable
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☐ Insurable risks are generally classified as pure, objective, and diversifiable.

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**Speculative risk**
A chance of loss, no loss, or gain.

In comparison, **speculative risk** involves a chance of gain. As a result, it can be desirable, as evidenced by the fact that every business venture involves speculative risks. For example, an investor who purchases an apartment building to rent to tenants expects to profit from this investment, so it is a desirable speculative risk. However, the venture could be unprofitable if rental price controls limit the amount of rent that can be charged.

Certain businesses involve speculative risks, such as these:

- Price risk—Uncertainty over the size of cash flows resulting from possible changes in the cost of raw materials and other inputs (such as lumber, gas, or electricity), as well as cost-related changes in the market for completed products and other outputs.

**Credit risk**
The risk that customers or other creditors will fail to make promised payments as they come due.

- **Credit risk**—Although a credit risk is particularly significant for banks and other financial institutions, it can be relevant to any organization with accounts receivable.

Financial investments, such as the purchase of stock shares, involve a distinct set of speculative risks. See the exhibit "Speculative Risks in Investments."

Insurance deals primarily with risks of loss, not risks of gain; that is, with pure risks rather than speculative risks. However, the distinction between these two classifications of risk is not always precise—many risks have both pure and speculative aspects.

Distinguishing between pure and speculative risks is important because those risks must often be managed differently. For example, although a commercial