**Unit One**

**RISK AND RELATED TOPICS:**

In the present day context, individuals have a strong desire for financial security and protection against those events that threaten their financial security. Financial security can be threatened by numerous factors such as;

-          If the family head is killed in an accident

-          Destruction of property by fire, floods, earth quakes and other natural factors.

-          Infected by serious diseases such as AIDS, Cancer, Heart disease, etc.

  Thus, it is apparent that certain factors can threaten the financial security of individuals and their families.

**Definition of Risk:**

“Risk is defined as uncertainty concerning the occurrence of a loss”

For example, the risk of being killed in an auto accident for a truck driver is present because uncertainty is present. Likewise, the risk of lung cancer for smokers is present because uncertainty is present.

Thus, risk is uncertainty regarding loss. This means that the loss may or may not happen. If a loss is certain to occur, it may be planned in advance and treated as a definite. However, if there is uncertainty about the occurrence of a loss, then the risk becomes an important problem.

**RISK Vs UNCERTAINTY:**

The dictionary meaning of risk is “the possibility of meeting danger or suffering harm or loss”

The dictionary meaning of uncertainty is “the state of being uncertain”. Here, uncertain means “feeling doubt about”.

**Thus, uncertainty of meeting with a loss or damage is known as risk.**

Although risk is defined as uncertainty, employees in the insurance industry often use the term risk to identify the property or life being insured.

**RISK & PROBABILITY:**

Chance of loss is closely related to the concept of risk. “Chance of loss” is defined as the probability that an event will occur. Probability has both objective and subjective aspects.

Objective Probability:

          Objective probability refers to the long-run relative frequency of an event based on the assumptions of an infinite number of observations and of no change in the underlying conditions. Objective probabilities can be determined either by deductive reasoning or by inductive reasoning. In case of deductive reasoning, it is called a priori probabilities. For example, the probability of getting a head from the toss of a perfectly balanced coin is ½ because there are two sides and only one is a head.

The example of inductive reasoning is that the probability that a 21-year old person die before the age 26 cannot be logically deduced. However, by a careful; analysis of past mortality experience, life insurers can estimate the probability of death.

Subjective Probability:

          Subjective probability is the individual’s personal estimate of the chance of loss. It need not coincide with objective probability. For example, people who buy a lottery ticket on their birthday may believe that it is their lucky day and over-estimate the small chance of winning. However, some may think that their wedding anniversary day as a lucky day. Thus, a wide variety of factors can influence subjective probability such as age, sex, intelligence, education, etc.

          In subjective probability, a person’s estimate of loss may differ from objective probability because there may be ambiguity in the way in which the probability is perceived. For example, assume that a slot machine in a gambling casino requires triple zero (“000”) to win. The person playing the machine may perceive the probability of winning to be quite high. But if there are numbers from 0 to 9 on each reel and only one zero in each reel. Thus, the objective probability of hitting the jackpot with three zeros (“000”) is quite small. Assuming that each reel spins independently of the others, the probability that all three will simultaneously show zero (“0”) is the product of their individual probabilities, i.e., 1/10x 1/10x 1/10 = 1/1000. Thus, this knowledge is advantageous to casino owners, who know that most gamblers are not trained statisticians and therefore likely to overestimate the objective probabilities of winning.

Chance of loss Vs Risk:

          Chance of loss is the probability that an event will occur. Objective risk is the relative variation of actual loss from expected loss. “The chance of loss may be same for two different groups, but objective risk may be different. For example, Africa Insurance Company (AIC) has 10000 homes insured in Addis Ababa and 10000 homes insured in Jimma and that the chance of loss in each city is 1%. Thus, on an average 100 homes should burn annually in each city. However, if the annual variation in losses ranges from 70 to 120 in Addis, but only from 90 to 110 in Jimma, objective risk is greater in Addis even though the chance of loss in both cities is the same..

**RISK, PERIL & HAZARD:**

          Peril is defined as the cause of loss. If a house burns because of fire, the peril (the cause of loss) is the fire. Likewise, some common perils that cause damage or loss to the property include lightening, windstorm, tornadoes, earthquakes, theft and burglary.

          A hazard is a condition that creates or increases the chance of loss. There are three types of hazards;

i)             Physical hazard

ii)           Moral hazard

iii)          Morale hazard

i) Physical Hazard:

     A physical hazard is a physical condition that increases the chance of loss. Examples of physical hazards are icy roads that increases the chance of an auto accident, defective lock on a door that increases the chance of theft, etc.

ii) Moral Hazard:

          Moral hazard is dishonesty or character defects in an individual that increase the frequency or severity of loss. For example, the dishonest persons may fake an accident to collect the insurance or they intentionally burn unsold merchandise that is insured.

          Moral hazard is present in all forms of insurance and it is difficult to control. Dishonest individuals often rationalize their actions on the ground that “the insurer has plenty of money”. However, this view is incorrect because the insurer can pay claims only by collecting premiums from other insured. Because of moral hazard, premiums are higher for everyone.

iii) Morale Hazard:

          Morale hazard is slightly different from the moral hazard. Moral hazard refers to dishonesty by an insured that increases the frequency or severity of loss. Morale hazard is carelessness or indifference to a loss because of the existence of insurance. Examples of morale hazard include leaving a door unlocked that allows a burglar to enter, rash driving without proper signaling. Careless acts like these increase the chances of loss.

**(2.5) CLASSIFICATION OF RISK:**

          The risks may be classified basically into eight types. They are as follows;

1)   Objective risks

2)   Subjective risks

3)   Pure risks

4)   Speculative risks

5)   Static risks

6)   Dynamic risks

7)   Fundamental risks

8)   Particular risks

**1) Objective Risk:**

          Objective risk is defined as the relative variation of actual loss from the expected loss. For example, assume that a property insurer has 1000 houses insured over a long period of time, and on average, 1% (or) 100 houses burn each year. However, we cannot expect 100 houses to burn each year exactly. In some years, 90 houses may burn, while other years 110 houses may burn. Thus, there is a variation of 10 houses (square root of 100) from the expected number of 100, or a variation of 10%. This relative variation of a actual loss from expected loss is known as OBJECTIVE RISK.

          Objective risk declines as the number of observations increases. It varies inversely with the square root of the number of cases under observation. In our previous example, 10000 houses were insured and the objective risk was 10/100 or 10%. Now, assume that 10,00,000 houses are insured.. The expected number of houses that will burn is now 10000, but the variation of actual loss from the expected loss is only 100 (square root of 10000). Objective risk is now 100/10000, or 1%. Thus, the objective risk declined to one-tenth of its former level, i.e., from 10% to 1%.

          Objective risk can be statistically measured by some measure of dispersion, such as standard deviation or co-efficient of variation. As objective risk can be measured, it is an extremely useful concept for an insurer.

**2) Subjective Risk:**

          Subjective risk is defined as uncertainty based on a person’s mental condition or state of mind. For example, a person who has drunk more in the bar may attempt to drive home on his own and he may uncertain whether he or she will arrive home safely without being arrested by the police for drunken driving. This mental uncertainty is called SUBJECTIVE RISK.

The impact of subjective risk varies depending on the individual. Two persons in the same situation may have a different perception of risk, and their behavior may be altered accordingly. If an individual experiences great mental uncertainty (high subjective risk) concerning the occurrence of a loss, that person’s behavior may be affected. Thus, high subjective risk often results in conservative and prudent behavior, while low subjective risk result in less conservative behavior. A motor cyclist who has met with an accident in a particular road will be more cautious and he will drive slowly while riding through that road. However, another motor cyclist who has not met with an accident may have a rash driving on the dame road. Thus, the risk of meeting with an accident is perceived in different manner by the two motor cyclists. The first motor cyclist has high subjective risk and thus prudent, but the second motorcyclist has less subjective risk and thus less conservative.

**3) Pure Risk:**

          Pure risk is defined as a situation in which there are only the possibilities of loss or no loss. The only possible outcomes are adverse (loss) and neutral (no loss). Examples of pure risks include premature death, job-related accidents, etc.

Types of Pure Risk:

          The following are the important types of pure risks;

i)             Personal risks

ii)           Property risks

iii)          Liability risks

i) Personal Risks:

          Personal risks are risks that directly affect an individual. Examples of personal risks are possibility of the complete loss or reduction of earned income, extra expenses,etc. There are four major personal risks..

a)    Risk of premature death

b)   Risk of insufficient income during retirement

c)    Risk of poor health

d)   Risk of unemployment

(a) Risk of premature death is defined as the death of a household head with unfulfilled financial obligations. The obligations may be dependents to support, a mortgage to be paid off or children to educate. If the surviving family members receive an insufficient amount of replacement income from other sources, they may be financially insecure.

Premature death can cause financial problems only if the deceased has dependents to support or dies with unsatisfied financial obligations. Thus, the death of a child age 10 is not “premature” in the economic sense.

(b) Risk of insufficient income during the retirement is another major risk associated with old age. The majority of workers in America retire before age 65. When they retire, they lose their earned income. Unless they have sufficient financial assets, or have access to other sources of retirement, they will be exposed to financial insecurity during retirement.

      (c) Risk of poor health is another important personal risk. The risk of poor health includes both the payment of medical bills and the loss of earned income. The costs of major surgery have increased substantially in recent years. For example, an open heart surgery can cost more than 50,000 Birr, a kidney transplant can cost more than 30,000       Birr. Unless these persons have adequate health insurance, private savings, and financial assets, or other sources of income to meet these expenditures, they will be financially insecure.

      (d) Risk of unemployment is another major threat to financial security. Unemployment can result from business cycle downswings, technological & structural changes in the economy, etc. Unemployment can cause financial insecurity in three ways;

-          First, the worker loses his or her earned income

-          Second, because of economic conditions, the worker may be able to work only part time

-   Finally, if the duration of the unemployment is extended a long period, past savings may be exhausted

(ii) Property Risks:

          Persons owning property are exposed to the risk of having their property damaged or lost from numerous causes. Personal property can be damaged because of fire, lightning, windstorms and numerous other causes.

          There are two major types of loss in the damage of property;

a)    Direct loss

b)   Indirect loss

A direct loss is defined as a financial loss that results from the physical damage, destruction, or theft of the property. For example, if a factory is damaged by a fire, the physical damage to that is known as direct loss.

An indirect loss is a financial loss that results indirectly from the occurrence of a direct physical damage or theft loss. It is also known as consequential loss. Thus, in addition  to the physical damage loss, the factory would lose profits for many months which it is being rebuilt. Here, the loss of profits during that rebuilt period is known as indirect loss (or) consequential loss.

Extra expenses are another type of indirect loss. For example, if we own a newspaper or dairy, we must continue to operate even if a loss occurs. Otherwise, we will have to lose our customers to our comp

(iii) Liability Risks:

Liability risks are another type of pure risk that most persons face. One can be made legally liable, if he or she do something that results in bodily injury or property damage to someone else. The court of law may order that person to pay substantial damages to the person who is injured.

          Motorists are being held legally liable for the negligent operation of their vehicles. Business firms are also being sued because of defective products that harm or injure customers.

          Liability risks are important for the following reasons;

1. First, there is no maximum upper limit with respect to the amount of the loss. One can be sued for any amount. However, if a person owns a property, there is maximum limit on the loss. For example, if a person’s automobile has an actual value of 10000birr, the maximum physical damage loss is 10000birr. But if he is negligent and cause an accident, which results in serious bodily injury to the other driver, he can be sued for any amount- 10000birr, 50000birr or even 1million birr- by the person he has injured.

(b)  Second, a lien can be placed on one’s income and financial assets to satisfy a legal judgment. For example, if Mr.X has injured someone, the court of law orders him to pay substantial damages to the injured party. If Mr.X cannot pay the judgment, a lien may be placed on his income and financial assets to satisfy the judgment.

(c)  Finally, legal defense costs can be enormous. If a person have no liability insurance, the cost of hiring an attorney to defend himself will be higher.

**(4) Speculative Risk:**

          Speculative risk is defined as a situation in which either profit or loss is possible. For example, if Mr.X purchases 100 shares of a company, he would gain if the price of that share increases but would lose if the price declines. Thus, here there are possibilities of both profit and loss.

Pure risk Vs Speculative risk:

          Speculative risk can be differentiated from the pure risk in three ways;

(i)           Private insurers generally insure only pure risks. Speculative risks are not considered insurable and other techniques must used to cope with risk. However, there are certain exceptions. One exception is that some insurers will insure institutional portfolio investments and municipal bonds against loss.

(ii)          The law of large numbers can be applied more easily to pure risks than to speculative risks. The law of large numbers is important because it enables insurers to predict loss in advance. But, it cannot be applied to speculative risks in order to predict future loss experience. An exception is the speculative risk of gambling, where casino operators can apply the law of large numbers in a most efficient manner.

(iii)        Society may benefit from a speculative risk even though a loss occurs, but it is harmed if a pure risk is present and loss occurs. For example, a firm may develop new technology for producing cheaply. As a result, some competitors may fail. Despite the failures, society benefits since the computers are produced at a lower cost. However, society does not benefit when a loss from the pure risk occurs, such as floods, earthquakes, etc.

**(5) Static Risks:**

          Risks can also be classified according to the extent to which uncertainty changes over time.

          Static risks, which can be either pure or speculative originates from an unchanging society that is in stable equilibrium. Examples of pure static risks include the uncertainties due to lightning, windstorms and death. Business undertakings in a stable economy illustrate the concept of speculative static risk.

**(6) Dynamic Risks:**

          Dynamic risks are produced because of changes in society. It can also be either pure or speculative. Examples of sources of dynamic risks include urban unrest and changing attitude of legislations and courts about a variety of issues.

Static Vs Dynamic Risk:

          Static and dynamic risks are not independent. Greater dynamic risks may increase some types of static risks. An example involves uncertainty due to weather related losses. This risk is usually considered to be static. However, recent evidence suggests that environmental pollution caused by increased industrialization may be affecting global weather patterns and there by increasing the source of static risk. Here,  the increased industrialization is a dynamic risk.

**(7) Fundamental Risk:**

          A fundamental risk is a risk that affects the entire economy or large number of persons or groups within the economy. Examples include high inflation, cyclical unemployment & war.

          The risk of a natural disaster is another important fundamental risk. Tornadoes, earthquakes, floods and forest fires can result in property damage as well as the loss of numerous lives.

**(8) Particular Risk:**

          A particular risk is a risk that affects only individuals and not the entire community. Examples are car thefts, bank robberies, etc. Here, only individuals experiencing such losses are affected, not the entire economy.

Fundamental Vs Particular Risk:

            The distinction between a fundamental and particular risk is important since government assistance may be necessary to insure a fundamental risk. Social insurance and government insurance programs, as well as government guarantees and subsidies, may be necessary to insure certain fundamental risks. For example, the risk of unemployment generally is not insurable by private insurers but can be insured publicly by State Unemployment Compensation Programs.