LESSON: Asymmetric Information

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References:

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Learning objectives:

The objective of this chapter is to explain how asymmetric information may lead to the problems of market failure, adverse selection and moral hazard. How sometimes we can improve the performance of market by signaling. We will also discuss as to how asymmetric information may change the evaluation of incentive schemes.

1. Asymmetric information and market inefficiency:

Asymmetric information means that buyers and sellers do not have same information about goods involved in transactions. This generally happens for those goods for which it is costly to get information about quality of the good involved. Mostly it is true for second hand goods. For example, the sellers of old cars have perfect knowledge about the quality of the car but for buyers it is very costly or just impossible to get the information about the quality of car. However, even if second hand goods are not involved, we may face problem of asymmetric information. Take the example of labor market. Here we can say that suppliers of labor effort (i. e. employees) have good knowledge about their quality in terms of productivity but buyers of labor effort (i.e. firms) do not have much knowledge about their productivity and it is very costly also to get that information. Now we will see as to how asymmetric information may lead to various types of obstacles in the efficient functioning of market system.

1.1 Market failure:

Let us look at a model of a market where buyers and sellers have asymmetric information about the quality of the goods being sold.

Example 1:

Suppose there are 1000 sellers of used cars and correspondingly 1000 buyers of old cars. We also assume that 50% of these cars are high quality and 50% are low quality. The

sellers of these cars have perfect knowledge about the quality of their car but buyers do not have any knowledge. The owner of a high quality car wants to sell it for Rs. 2,00,000/- while the owner of a low quality car wants to sell it for Rs. 1,00,000/-. The buyers are willing to pay Rs. 2,40,000/- for a high quality car and Rs.1,20,000/- for a low quality car.

Now suppose that buyers also have information about the quality of car. Then there is no problem. High quality cars will be sold at a price between Rs.2,00,000/- and Rs.2,40,000/- while low quality cars will be sold at a price between Rs. 1,00,000/- and Rs. 1,20,000/-.However, if buyers do not have knowledge about the quality of the car, then they will have to make a guess about the worth of an old car. Suppose they are willing to pay average value of an old car. Since the probability of getting a high quality car or a low quality car is same, so the average value that they are willing to pay will be (Rs. 1,20,000 + Rs.2,40,000/-)/2 i. e. Rs.1,80,000/-. Now at this price only low quality cars will be offered for sale. Owners of high quality cars need at least Rs.2,00,000/- for their car and so are not willing to sell at a price of Rs.1,80,000/-. In other words, size of the market gets reduced due to asymmetric information. No transaction will take place for high quality cars even though the price at which buyers are willing to buy high quality cars exceeds the price at which sellers are willing to sell. Further, when buyers know that only low quality cars will be offered for sale at this price, then the market equilibrium price cannot be Rs.1,80,000/-. It will be somewhere between Rs. 1,00,000/- and Rs. 1,20,000/-.In conclusion, asymmetric information has led to market failure.

Question 1: For above example derive limits with in which consumers' surplus will lie in market equilibrium.

Answer: Since in equilibrium trade will take place only in low quality cars and the maximum that consumers are willing to pay for a low quality car is Rs.1,20,000/-. The supply price of low quality car being Rs.1,00,000/-, maximum consumers' surplus can be Rs.20,000/- per transaction. So the maximum surplus can be Rs.20,000x500= 1,00,00,000/-. Since in equilibrium price cannot be less than Rs.1,00,000/- so the minimum surplus can be Rs.0/-. Hence the limits are Rs.0 to 1 crore.

Question 2: Now suppose that we randomly assign buyers to sellers. How much consumers' surplus would be created. Compare your answer with your answer in Question 1.

Answer: If we randomly assign buyers to sellers than average consumers' surplus per transaction will be average willingness to pay minus average willingness to sell i.e. Rs.1,80,000 – Rs.1,50,000 = Rs.30,000. Since the number of total transaction is 1,000 so

total consumers' surplus will be 30,000x1,000= 3,00,00,000/-. This surplus is much larger than the surplus in market equilibrium in Question1.

However, in the above case it is possible to improve the performance of market by signaling. Suppose the owners of high quality used cars give a signal to the potential purchasers about the quality of old car by offering a warranty. The warranty may take the form of a promise to pay some agreed upon amount to the purchaser in case the car does not turn out to be a high quality car. Obviously, only the owners of high quality used cars can afford to offer such a warranty while the owners of low quality cars cannot afford this. Since the problem of asymmetric information is solved through signaling so market will perform in a better way.

Example 2:

We have seen above in the used car example that signaling has improved the performance of used car market. However, signaling may also worsen the performance of a market. We can show it with the help of a simple example.

Suppose total workers L are divided into two types. L_1 denotes the total workers of type 1 and L_2 denotes the total workers of type 2, such that $L_1 + L_2 = L$. The marginal product of type 1 workers is a_1 and that of type 2 workers is a_2 such that $a_1 < a_2$. We assume a linear production function so that the total output produced by two type of workers is $a_1 L_1 + a_2 L_2$. We also assume that labor market is perfectly competitive. Now if the firm has information about the type of each worker, then it will just pay a wage of $w_1 = a_1$ and $w_2 = a_2$ to type 1 workers and type 2 workers respectively. Each worker is being paid his marginal product and we have an efficient equilibrium.

However, if the firm cannot identify the type of each worker then the best that it can do is to offer an average wage which is

$$w = \frac{a_1 L_1 + a_2 L_2}{L_1 + L_2}$$

As long as both types of workers agree to work at this wage, there is no problem of adverse selection and again there is an efficient equilibrium given our assumption of linear production function. However it is quite possible that type 2 workers are not willing to work at this average wage. In such a situation labour market will be restricted to only type 1 workers . In conclusion asymmetric information has reduced the size of the market.

However, suppose now that there is some signal that the workers can acquire that will distinguish the two types. Assume that the workers can acquire education level e* as a signal. Let c_1 be the per unit cost of acquiring education for type 1 workers and c_2 be the per unit cost of acquiring education for type 2 workers, so that total cost is c_1e* for type 1 workers and c_2e* for type 2 workers.

Now two important decisions will have to be taken. First, the workers have to decide whether to acquire the education level e* or not and second, the firms have to decide how much to pay workers with signal and without signal. We assume that the education does not have any effect on productivity although this assumption is quiet unrealistic. It can be shown that the cost of acquiring education for two type of workers plays an important role in determining the nature of equilibrium in this model. We can have separating equilibrium or pooling equilibrium depending on whether $c_2 < c_1$ or $c_2 > c_1$.

First assume that $c_2 < c_1$. We already know that $a_2 > a_1$. Combining these two inequalities, it can be shown that there will necessarily be an education level e* such that

$$\frac{a_2 - a_1}{c_1} < e^* < \frac{a_2 - a_1}{c_2}$$

Now type 2 workers will acquire education level e* because the cost of acquiring education c_2e* is less than the benefit to the worker in terms of increase in wages. However, type 1 workers will not acquire education level e* because the cost of acquiring education c_1e* is more than the benefit to the worker in terms of increase in wages. Firms pay a wage of a_2 to workers with education level e* and a wage of a_1 to workers with education level less than e*. Since neither workers nor firms have any motivation to change their actions so equilibrium is sustainable. We call such type of signaling equilibrium, a separating equilibrium because one type of workers are using a signal to separate themselves from the other type of workers. However, from the point of view of the society, this will not be an efficient equilibrium because total output will be same irrespective of whether workers acquire signal in terms of higher education or not as we have assumed that education does not increase productivity. Hence money spent on acquiring education as a signal is a total waste from the point of view of the society although it has private benefit. Thus inefficiency has arisen due to the presence of asymmetric information i.e. firms do not have any information about the productivity of different workers while workers have full information about their productivity.

Now suppose that $c_2 > c_1$ instead of $c_2 < c_1$. It can be shown that this will lead to a pooling equilibrium in which each type of worker makes the same choice of not giving a signal. We already know that $a_2 > a_1$. Combining these two inequalities it can be shown that there must be an education level e* such that

$$\frac{a_2 - a_1}{c_1} > e^* > \frac{a_2 - a_1}{c_2}.$$

Now we can see that it is profitable for type 1 workers to acquire education if they are not being paid a wage equivalent to that of type 2 workers. However, given that productivity of type 1 workers is less than the productivity of type 2 workers and acquisition of education does not affect the productivity, it will not be possible for firm to pay type 1 workers a wage equivalent to that of type 2 workers. Obviously, firm cannot pay more than what is being produced. So in equilibrium all workers will be paid according to their average ability and no signaling will occur. If both types of workers agree to work at this wage, then there will be an efficient equilibrium.

1.2 Adverse selection:

Now let us look at a model of a market where asymmetric information may induce producers to produce a low quality product.

Example 1.

Suppose there are two qualities of umbrellas supplied in the market. Some manufacturers produce high quality umbrellas and some produce low quality umbrellas. Suppose the cost of production is Rs.100 for both types of umbrellas and the industry is perfectly competitive.

Assume further that each buyer purchases a single umbrella. Buyers are willing to pay Rs.140/- if umbrella is of good quality and Rs.80/- if umbrella is of low quality. However, they cannot distinguish between the two types of umbrellas without using it in a few range storms. So buyers are willing to pay the expected price of an umbrella. Suppose the fraction of high quality umbrellas is q, then the consumer would be willing to pay p=140q+80(1-q) for an umbrella.

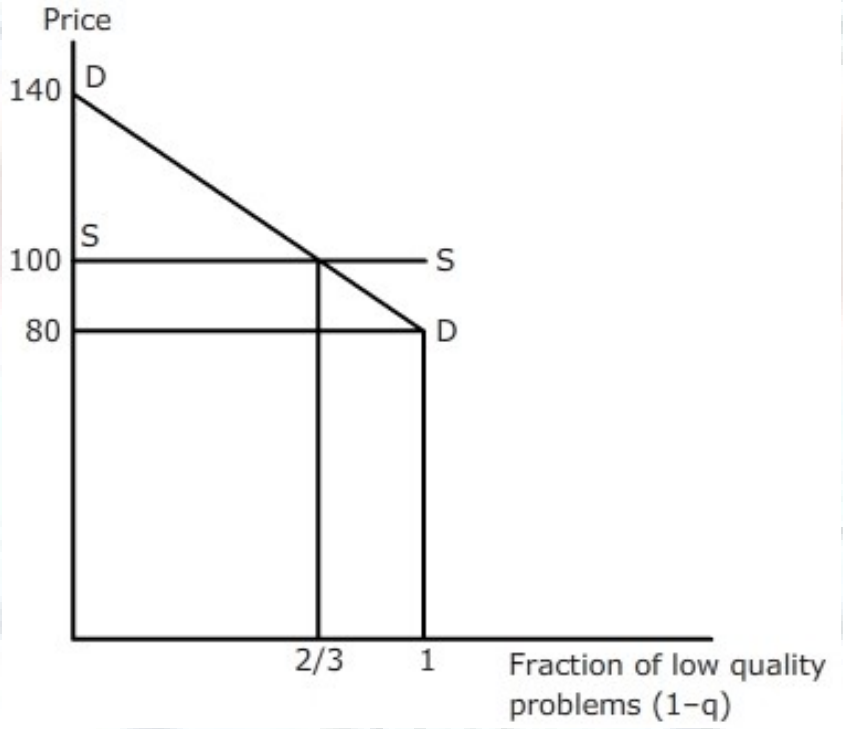
Now we will find out the combination of high and low quality umbrellas that will be produced at equilibrium level. We will consider three cases.

Firstly , suppose only low quality manufacturers produce. Since q=0 so expected price of an umbrella is Rs.80/- and so buyers would be willing to pay only Rs.80/- for an umbrella. Since marginal cost of production is Rs.100/- for an umbrella, so neither high quality manufacturers nor low quality manufacturers will produce any umbrella.

Secondly, suppose only high quality manufacturers produce. Since q=1, so expected price of an umbrella is Rs.140/- so buyers would be willing to pay Rs. 140/=for an umbrella. However, the cost of producing an umbrella is Rs.100/- and the industry is competitive, so the equilibrium market price of an umbrella will be equal to its marginal cost i.e. Rs. 100/-. At this price there will be some consumers' surplus for buyers.

Thirdly, suppose that both low and high quality manufacturers produce. Since industry is competitive, so price will be Rs.100/-. However, buyers will be willing to pay Rs.100/- only if the value of q is such that expectd value of an umbrella is at least Rs.100/- i.e. $140q + 80\,(1-q) \geq 100$

which implies that q should be at least $\frac{1}{3}$. It means that if high quality producers produce one third of the total supply of umbrellas in the market, then buyers would be willing to pay just Rs.100/- for an umbrella. Now we will show the determination of equilibrium ratio of high and low quality producers with the help of a diagram.



In this diagram horizontal axis measures (1-q), the fraction of low-quality producers. The vertical axis measures the average price of high and low quality umbrella. The demand curve DD shows the consumers' willingness to pay for an average umbrella if the fraction of low quality umbrellas is (1-q). The supply curve SS shows the producers' willingness to supply an average umbrella for different values of (1-q). Since the cost of production is same for high and low quality umbrellas and industry is competitive so SS

curve is a horizontal line at Rs.100/-. Consumers are willing to purchase umbrellas only if $140q+80(1-q) \geq 100$ which means that (1-q) can be at most $\frac{2}{3}$. So the equilibrium value of (1-q) can be between 0 and $\frac{2}{3}$.

We can see that the equilibrium price in the market will be Rs.100/-. However, buyers will be willing to pay anywhere between Rs.100/- and Rs.140/- depending upon the value of q. Any value of (1-q) between o and $\frac{2}{3}$ will lead to an equilibrium with consumers' surplus. Consumers' surplus will be zero if $(1-q)=\frac{2}{3}$.

However all of these equilibrium values of q are not equivalent from social point of view. Since we have perfect competition and marginal cost of production is constant, so producers' surplus will be equal to zero at all equilibrium values of q. However, consumers' surplus will be larger, the smaller the fraction of low quality umbrellas. In the extreme case, when only high quality umbrellas are produced, the consumers' surplus will be largest. So from the point of view of the society, only high quality umbrellas should be produced.

Now we extend this model by only changing the assumption of same cost of production of high and low quality umbrellas. Suppose the cost of production is Rs.100/- for a high quality umbrella and Rs.90/- for a low quality umbrella.

Assume that the fraction of high quality producers is q. Obviously, q will lie between 0 and 1. Consider the case of a high quality producer. He might logically think that in the competitive industry, he is a negligible supplier. So, if he shifts his production from high quality to low quality then he can make more profits since the cost of production is less for low quality umbrella but the price that consumers are willing to pay for an average umbrella will not change by his action. However, it is reasonable to expect that ultimately all high quality producers will behave in the same way and only low quality umbrellas will be produced. Now we know that consumers are willing to pay only Rs. 80 for a low quality umbrella, so the equilibrium involves zero production of either quality of umbrella. So high cost of acquiring information has led to the problem of adverse selection, i.e., low quality items crowding out the high quality items and even completely destroying the market.

Example 2.

Now let us consider one more example of adverse selection. Suppose an insurance company is planning to offer insurance for bike theft. Naturally, first of all it will make a careful survey to guess some approximate value about the probability of bike theft. However, while conducting the survey, it found that probability of bike theft varies widely across cities. We assume that the insurance company decides to offer the insurance at the

average rate of bike theft. In other words, the price of insurance is same in all cities irrespective of the risk of theft.

Now we will show that the insurance company will broke down very soon. The reason being that people in safe cities will not be willing to purchase the high-priced insurance. Only the people in cities with probability of bike theft higher than the average rate will be willing to purchase the insurance. This is exactly the problem of adverse selection. Now since majority of the insurance purchasers live in high-risk areas, so the rates of insurance claims filed with insurance company will be much larger than the rates expected by the company on the basis of average rates of bike theft. Ultimately the insurance company will broke down.

In order to make sure that the insurance company either makes profits or just achieves break-even point, the price of insurance must be fixed on the basis of probability of theft in cities where the rate of theft is highest. In other words, the insurance company cannot decide its rate on the basis of average rate of bike theft. It must decide its rate on the basis of average rate of theft among potential purchasers of insurance. It can be noted that most of the potential purchasers will be people living in areas with high probability of bike theft.

However, in the above situation it is possible to make everyone better off by making it compulsory for every bike owner to purchase the insurance. In that case the price of insurance will be the average rate of bike theft. Now, the people living in cities with rates of bike theft higher than the average rate will be better off because now they can purchase insurance at rates which are less than when only high risk people purchased insurance. Same holds true for people living in areas with rates of bike theft lower than the average rate. In other words, restricting choice has led to Pareto improvement due to asymmetric information.

Now we will see as to what asymmetric information implies about the nature of wage contracts that will be offered in labour market. Mostly employers make it compulsory for their employees to join the health insurance plan so that the insurance company does not face the problem of adverse selection.

1.3 Moral Hazard:

Asymmetric information may also lead to the problem of moral hazard. Again consider the example of bike theft insurance company. Assume that the probability of theft

is same in all cities so there is no problem of adverse selection. However, the probability of theft maybe affected by the actions taken by the bike owners.

For example, if the bike owners do not bother to lock their bikes or use insecure locks then the probability of bike theft is much more as compared to the probability of theft if they use a secure lock. So while setting its rates the insurance company must ensure that consumers have an appropriate amount of incentive to take care. Naturally, those who have not purchased bike theft insurance would use large expensive locks. In fact, they want to invest in taking care until the marginal benefit from more care just equals the marginal cost of doing so. On the other hand, those who have purchased bike theft insurance would be somewhat careless in taking care because the cost inflicted on them in case the bike is stolen is much less. In the extreme case, of complete insurance offer, the purchaser will be totally careless about the theft of his bike because he knows that if bike is stolen, he will get 100% reimbursement. This carelessness is called moral hazard. So there is a trade off involved: too little insurance means that people bother to much about the security of their bike, too much insurance means that people are totally careless about the security of their bike. The reason underlying this trade off is again asymmetric information because the insurance company cannot observe the amount of care taken by the insured party.

Now we will see as to what does asymmetric information imply about the types of insurance contracts that will be offered? Obviously the insurance companies will not offer complete 100% insurance which makes them totally careless. They will always offer such an insurance contract that insured party has to bear some reasonable amount of risk. This is why most insurance policies include a 'deductible', an amount that the insured party has to pay in any claim. In other words, consumers are willing to buy more insurance but due to the problem of moral hazard insurance companies are not willing to pay complete insurance.

2. Incentives:

Now we will try to explore the types of incentive systems in the context of asymmetric information with the help of an example. Suppose Ram owns a plot of land and wants to hire someone to do the farming for him. What type of compensation system should he set up so that the hired person has an incentive to work?

One plan may be that Ram pays the worker a lump-sum fee independent of how much he produces. However, the worker will have no incentive to work in such a case. He will have an incentive to work only if his payment depends on the output he produces. However if his payment is completely related to output, then he will have to bear too much

risk due to output fluctuations. The problem of incentive design is to determine exactly how sensitive the payment should be to the produced output.

2.1 Perfect Information:

Let us start with a case where Ram has full information about the amount of effort put by the worker.

Suppose x denotes the amount of effort that the worker expends. Let $y = f(x)$ be the amount of output produced. Assuming that the price of output is one, y also measures the value of the output. Let $s(y)$ denote the amount that Ram pays the worker if he produces y Rs. worth of output. Ram will try to maximize his profits $y - s(y)$ while deciding the level of $s(y)$.

What are the constraints that Ram faces. Assume that the worker finds effort costly. Write $c(x)$ for the cost of effort x. Also assume that both total and marginal costs increase as effort increases. Now if the worker chooses effort level x then his utility will be given by

$$s(y) - c(x) = s\{f(x)\} - c(x).$$

Suppose $\bar{u}$ is the level of utility that the worker receives from his next best alternative available to him. While designing incentive scheme, Ram should take care that the utility derived from this job must be at least as large as the maximum utility that he can derive elsewhere. This gives us the participation constraint:

$$s\{f(x)\} - c(x) \geq \bar{u}$$

Now the problem is to induce the worker to choose an effort level such that Ram's profits are maximized subject to the participation constraint of the worker:

$$\frac{max}{x} \; f(x) - s\{f(x)\}$$

such that $s\{f(x)\} - c(x) \geq \bar{u}$

In general, Ram will want the worker to choose x to just satisfy the constraint so that

$$s\{f(x)\} - c(x) = \bar{u}$$

Substituting this into the objective function we have the unconstrained maximization problem.

$$\frac{max}{x} \; f(x) - c(x) - \bar{u}$$

Maximization will take place at the effort level x^* such that

$$MP(x^*) = MC(x^*)$$

Now we will try to find out as to what compensation system will induce the worker to choose the effort level x^*. There are several ways to do this:

Rent:

Suppose Ram rents the land to the worker for some price R. Now

$$s\{f(x)\} = f(x) - R$$

The worker will try to maximize

$$s\{f(x)\} - c(x)$$

which means maximizing

$$f(x) - R - c(x)$$

Maximization will occur at the effort level x^* where marginal product is equal to marginal cost. However, R will be determined from the participation constraint. So

$$R = f(x^*) - c(x^*) - \bar{u}$$

Wage labor:

In this scheme, Ram pays the worker a constant wage per unit of effort along with a lump-sum K. This means that the compensation system takes the following form:

$$s\{f(x)\} = wx + K$$

The wage rate w is equal to the marginal product of the worker at the optimal choice x^*, $MP(x^*)$. The constant k is chosen in such a way that the participation constraint is satisfied.

Again worker will try to maximize $s\{f(x)\}$ - $c(x)$. However, it is equivalent to maximizing

$$wx + K - c(x)$$

which means that the worker will choose x such that wage rate is equal to marginal cost of his effort. However, Ram has set wage rate at MP(x*). This means that the worker will choose x * such that MP(x*) = MC(x*), which is just what Ram wants.

Take-it-or-leave-it:

In this scheme Ram pays the worker B* if he works x* and zero otherwise. The amount B* is determined by the participation constraint, so B* = $\bar{u}$ + $c(x^*)$. If the worker chooses any x other than x*, his utility will be - c (x). If he chooses x*, he gets a utility of $\bar{u}$. Hence the optimal choice for the worker is to set x = x*.

We have seen that each of the above compensation schemes gives the worker a utility of $\bar{u}$ and each one gives the worker an incentive to work the optimal amount x*. Hence each of the above compensation schemes are optimal.Now we will look at a non optimal scheme.

Sharecropping:

It is a system where both worker and land owner get a fixed percentage of the output. Suppose that worker's share gets the following form:

$$s\{f(x)\} = \propto f(x)+F$$

Where F is some constant and $0 < \propto < 1$. Now the worker will try to maximize $\propto f(x)+F - c(x)$. Differentiating with respect to x we can see that he would choose a level of effort $\hat{x}$ where $\propto$ MP ($\hat{x}$)= MC($\hat{x}$). However the efficiency condition is that

MP(x) = MC(x)

which will be satisfied only if $\propto$=1. In conclusion, we can say that an incentive scheme will be efficient only if it makes sure that the person who makes the effort decision is the **residual claimant** to the output. Residual claimant means that decision taker has full claim over the marginal output.

Example: Voting rights in the corporation

Normally shareholders in a corporation have voting rights while bondholders do not. The reason is that shareholders are residual claimants to the profits, so they have an

incentive to make profits as large as possible. On the other hand, bondholders have a fixed claim, so they only have an incentive to make sure that profits are at least as large as their fixed claims. In such a situation, if shareholders who are the residual claimants to the output are given rights to make decisions, profits will be larger.

Example: Chinese Economic Reforms:

In China rural communes were organised along marxist lines before1979. Workers were paid according to their contribution to communal income. Private farms were restricted to only five percent of the commune's land. Even the owners of these private farms were not allowed to travel to cities to sell the output produced on these farms. They have to sell through a regulated government market.

At the end of 1978, the Chinese government started the "responsibility system". Under this system each household was responsible for giving a lump-sum amount to the commune and the rest could be sold on private markets. The government removed restrictions on private plots and increased the amount of land devoted to private farming. The new system led to a drastic increase of about 45% in agricultural output between 1978 and 1984. Again we can see that if decision taker is the residual claimant to the output, then efficiency will definitely increase.

2.2 Asymmetric information:

In the above discussion regarding incentives, it was assumed that the owner of the firm has perfect information about the effort of the worker. Practically the owner can only make a judgement about the amount of effort put by the worker by looking at total output produced. However, amount of output depends not only on work effort but also on weather, the quality of inputs etc. Hence, due to asymmetric information the owner has to pay the worker according to total output produced by the worker which is not determined by work effort alone.

Now we will reconsider the four incentive schemes described above keeping in mind that output is not perfectly correlated with effort.

Rent:

In this scheme, the worker will have to bear the whole risk of randomness in output due to random factors. However, if the worker is more risk averse than the owner, then it is not efficient. Usually the worker would be willing to give up some of the residual profits in order to have a less risky stream. It means that both owner and worker can be made better off by having an incentive scheme other than fixed rent.

Wage labour:

This incentive scheme also becomes inefficient in a situation where the owner cannot perfectly observe the amount of effort put by the worker. Usually there are high monitoring costs. However, these monitoring cost can be reduced significantly if employer makes it very costly for employees to be fired. This can be achieved by paying the workers much more than they could get elsewhere. It means that both owners and workers can be made better off by having an incentive scheme other than where workers are paid a wage equal to their next best alternative.

Take-it-or-leave-it:

We will have the same problem with this scheme as with wage labor if incentive payment is based on the labor input. However, if the payment is based on output, then the scheme involves the worker bearing all the risk as in the case of rent. Again incentive plan in terms of take - it – or – leave - it becomes inefficient due to asymmetric information.

Sharecropping:

In the presence of asymmetric information, sharecropping becomes a better option. The payment to the worker depends in part on observed output, so he has an incentive to work. Further the worker does not have to bear all the risk as the risk of output fluctuations is shared by both worker and the owner. Thus we see that asymmetric information has drastically changed the evaluation of incentive methods. If the owner cannot observe effort, then wage labor is infeasible. Rent and the take-it-or-leave-it scheme leave the worker bearing too much risk. Sharecropping is a compromise between the two extremes: it gives the worker some incentive to produce but it does not leave him with all the risk.

Now we will show with the help of one more example as to how asymmetric information leading to high monitoring costs may change the ranking of financial institutions in under developed countries such as Bangladesh.

Example: The Grameen Bank

The Grameen Bank does not lend to individual people but does sequential group lending. Suppose there are five people in a group. Then first of all, it will lend to two people of the group and when these two people return the loan, then it will give loan to the other two people of the group and when they also return the loan, then it will lend to the fifth member (leader) of the group. Since it is in the interest of all members of the group that each member of the group succeeds in his/her investment and repays the loan so everyone is very careful while selecting members of the group, help each other to make the project successful and monitor the progress of the repayments.

The Grameen Bank of Bangladesh has been very successful. It is lending huge amount of money through group responsibility program. Their loan-recovery rate is about 98%. Other poverty-stricken areas in North and South America have also started adopting this group responsibility program.

Practice Questions:

Q1. What do you mean by asymmetric information and how it may reduce the size of the market?

Q2. What is meant by adverse selection? How asymmetric information may lead to the problem of adverse selection?

Q3. Explain with the help of an example as to how asymmetric information may lead to the problem of moral hazard?

Q4. Explain with the help of an example the role of signaling in the performance of market system.

Q5. Suppose you own a plot of land and want to hire someone to do the farming for you. Assume that participants have perfect information. Discuss some of the optimal and non optimal incentive schemes.

Q6. In continuity of Q5 now assume that participants have asymmetric information. Show how asymmetric information has drastically changed the evaluation of incentive methods?

Q7. Explain how rent as an incentive scheme is superior to share cropping if participant have perfect information and how the presence of asymmetric information makes share cropping a better option?

Q8. Discuss various types of obstacles in the efficient functioning of market system due to asymmetric information.

Q9. Write short notes on Grameen Bank, Chineses economic refoms and Voting rights in a corporation.

Q10. Why most insurance policies include a 'deductible', an amount that the insured party has to pay in any claim?