Health Economics

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Week – 07

Lecture 34- Private Financing Mechanisms

Welcome friends once again to our NPTEL MOOC module on Health Economics. We have been discussing several issues related to health issues and health economics, especially emphasizing this week's economics of the health system. As I mentioned in my previous three lectures this particular week, the health system is indeed defined. We know that the health system in the Indian context is very complex. So, our attempt is to redress the complexities and clarify the possibility of a base health system. Hence, we understand its criteria, and sometimes we also understand whether a health package, maybe through insurance, is actually addressing the problem or not and how far the quality is dealt with.

In the previous lecture, if you remember, we discussed social health insurance mechanisms. Hence, we will stick to our specific context of understanding the private financing mechanism, where we will largely emphasize the role of private insurance premiums, etc. So what are the directions? Of course, the clarifications we are going to make are in terms of out-of-pocket payments.

Largely we mentioned in our very introductory lecture how Indian patients, indeed, are actually bearing the larger burden. Their out-of-pocket expenditure on healthcare is very huge. Still, two-thirds of the health spending is indeed from their own pocket. And, of course, as a developing country where a massive percentage of people are in the bottom line or their income quintile is very low, it is quite expected that they will depend on social insurance packages. However, if the private mechanism works, how far are these mechanisms efficient, and how far can we understand the burden on people?

We will be emphasizing how much of that amount each individual is expected to pay, what their willingness to pay is, etc. Hence, our focus will be on two important aspects of voluntary health insurance: strengths and weaknesses, as well as moral hazard issues. If the insurance is taken, then how far is the insurance misused or overused? These aspects will be discussed.

We are just clarifying what we have discussed at the end. In this lecture, we have highlighted and discussed tax-based health insurance and social health insurance, and now we are discussing private health insurance. The previous two points were discussed in our

previous lectures. As I already told you, two-thirds is dependent, out-of-pocket expenditure is dependent on private spending, or the out-of-pocket payment is explained through private spending. Hence, we will be discussing what voluntary health insurance is and whether it fully or partly deals with health premiums.

So, the private financing mechanism is all about explaining that no system fully relies on and funds specific parts of the system or specific services or specific groups. What are the criteria for out-of-pocket payments? We may directly pay at the point of use by the patients. We will also see how the point of pay is relevant in terms of moral hazard issues. We will also be explaining this. Even if it is a completely market-based mechanism, does it have any wrong signals in terms of externalities, or is the market functioning very well? Some of the health care tools, drugs, etc., are not necessarily expected to be rationally settled in a market mechanism that may request a regulated market mechanism. Simply, when we say market, we refer to free market. The market charges the prices for the services, and there are profit operators in the informal sector as well. Hence, we will be discussing prices and quantities based on the interaction of demand and supply. Another aspect we discussed in the healthcare context is rationing. Strictly based on the willingness to pay and the ability to pay, rationing must be in place to guarantee the resources that are of the highest priority applications.

Then, it has to be determined through equity and incentive how far affordability is a concern. If any policy or scheme is being floated or introduced, how far does it address the issue of affordability? It is another important criterion to be discussed, and an indirect incentive or direct incentive for better care is also expected. So, the burden of payment cannot be redistributed, and that is usually discussed in the context of equity. One of the examples to check this out-of-pocket payment is that a market for drugs, especially prescription drugs, operates in almost all countries, and usually, these are highly regulated.

Usually, the sector is in consultation with the primary care doctors. Properties of out-of-pocket payment based on certain criteria, such as I already mentioned, are payments, market, rationing, equity, and incentives. Only then is the health system expected to be better. Now, we are discussing the features that identify or explain the health system, one of which is called stability. When we say it is market-based, predictability is expected to be unpredictable to a large extent.

Basically, in that case, this is less predictable than regulated or monthly or annual direct tax or SHI, social health insurance contribution-based mechanism. Regarding transparency, we have mentioned here that a direct and transparent link between payment and receipt of the services is considered to be positive. When moral hazard issues arise, we said the problem of moral hazard does not apply in a market-based mechanism because you are supposed to pay as per the expression of demand or willingness to your payment; hence, overuse is considered to be less. Hence, we have indicated that less of a moral hazard

is expected. Equity indeed, in some of the country's contexts, market mechanism does not work well.

There, we largely refer to the context of inequity. In market-based, it is usually not offered to those with inadequate ability to pay, regardless of their need. Even if their need is higher, like in poorer sections, people used to have poor health in the early years of their life. Hence, in the later part of life, the probability of their health conditioning is expected to be poorer than in the richer sections. Hence, they deserve more health care services, whereas the market is not going to regard justice in terms of equity.

Another we just say, administrative cost, we just say it is neither higher nor lower based on which kind of rates are charged, whether it is a flat rate or the payments. Basically, our purpose at this moment is to discuss OOPE, out-of-pocket expenditure, given the market structure and market mechanism. So, our positive or negative directions are based on these two variables. And here we say, yes, to make the health system better, we need to have a certain flat rate. If flat rate charges are there, payments are on the basis of a flat rate; administrative costs could be low relative to revenue generated when the cost of payment or the payment rates are complex.

Hence, it requires huge administrative costs, and the implementation is difficult. Hence, in this case, it is negative where it is positive. So, these are some of the features usually discussed in the context of healthcare. We are further clarifying these pages from Wagstaff's reference. We will also discuss Wagstaff and their contribution in other chapters, such as demand for healthcare, healthcare disparities, etc.

Then, especially in the case of a high need for care with a low ability to pay, out-of-pocket payment systems are likely to impose catastrophic or impoverishing illness costs, as mentioned by Wagstaff, or inhibit healthcare delivery to those most in need. So, Wagstaff emphasizes this. This discourages important health-seeking behaviors, leading to untreated cases and delays in treatment. There are some policy implications, such as mitigating negative impacts and graduated payment structures, that can also be considered, and some of the examples, like exemptions or lower charges for the lower income group, etc., might be helpful. We are discussing the context of externalities. If you go by the microeconomic principles, you might have read the context called externalities. As we know, wherever there are externalities problems, maybe positive and negative, the free-market mechanism may not be the right choice and may not settle the best social value. This is largely applied in the context of healthcare and, eventually, its impact on out-of-pocket payments. Hence, the issues of out-of-pocket payment in the context of externalities should be re-emphasized.

We are just discussing some cases of drugs. We know that drugs are a very regulated market. Here, there are a number of private players. Those private players have enough options in terms of dealing with their profit-maximizing strategies. However, some

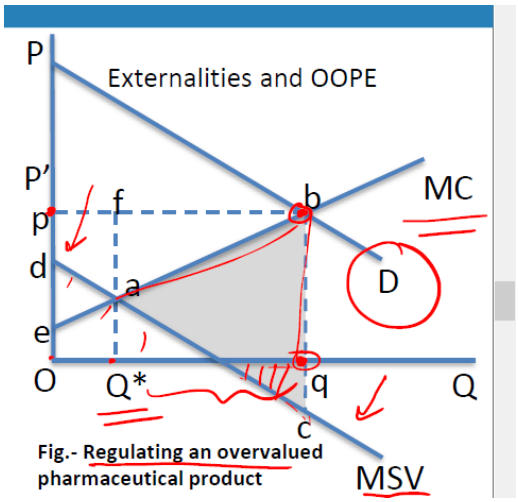
unrestricted use of drugs if it is not 100 percent regulated or partially regulated, there might be some issues of antibiotics issue or resistance to antibiotics and anti-malaria.

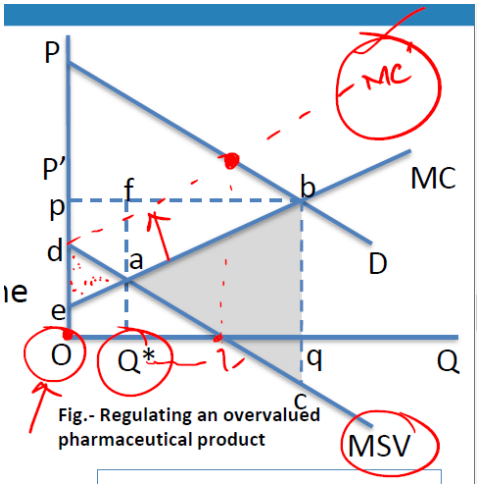
Here, we have taken some drugs, but all its consequences are not well regulated. That might lead to resistance, and that resistance might create a number of negative externalities on the body because other medications might not be effective. Hence, dominant externalities are negative, and lack of information causes people to demand poor quality and inappropriate drugs that they would not demand in the presence of full information. Yes, externalities occur largely due to information problems and information asymmetry. The social choice explanation emphasizes once again that since information is not complete in reality or in a complex healthcare system, social marginal value plays an important role.

We discussed this in our previous lecture while emphasizing our social insurance structures. In our previous lecture on the social health insurance mechanism, tax, and social health insurance mechanism, we discussed how to draw the social marginal value and demand curve or SMV diagram. We know that the demand curve we usually draw is if the market is perfectly informed and all the entities are well informed; it is quite obvious that social marginal value is nothing but the demand curve. But when we know that the healthcare sector and its products are not reflecting its true value. Hence, the consequences are realized at different points in time. Hence, the social marginal value might be situated at the left of the demand curve. Hence, the optimal production level is exceeded.

For other products, the reverse might be the case. The valuation that the relatively poor consumers can place on appropriate and effective drugs may be low. In this figure, in our next slide, we will discuss these cases and how overvalued products are creating difficulties in terms of net losses to society or problems to society. And that is basically called the externality cost. A drug with few effective and potentially harmful effects due to being inappropriately prescribed and past its expiry date or poorly stored is creating trouble.

So, in our curve, we will discuss this by emphasizing the free market mechanism against the externalities-based marginal social curve. So, more regulated out-of-pocket payments can control some of the problems we will also derive from the diagram. Then, it is regulated by what prescriptions, requirements, product licensing, qualification standards and, restrictions on qualified personnel, etc. In this figure, we are discussing once again, starting with the market mechanism and free market demand curve, which is our marginal cost curve for the healthcare product. Based on this, we are quite sure that B is the equilibrium point, and from the authors, we derived that they mentioned the title as regulating an overvalued pharmaceutical product.





Why regulation is required? We are just going to tell you. Let us start with this free market mechanism by which the quantity is this much q, Oq is demanded and supplied. Yes, had it been any pure economic good, we would not have bothered much for our explanation. Consumers would have paid the price and the maximum satisfaction to society, or that is called surplus, in this job. However, given the context of healthcare products, we know that they exhibit externalities; in large cases, there are negative externalities as well.

Hence, we are supposed to understand marginal social valuation. The marginal social valuation is usually after using the healthcare product, maybe the drugs, the patients, or the individuals might realize that it is not worth paying that amount for this quantity; rather, less consumption would have been better. Given the cost, we are not changing the cost structure at this moment because we are not regulating it. We do not emphasize that there should be more regulation because of the overvalued pharmaceutical product. Given the context, we know that marginal social valuation is lower. Hence, there will be a backward shift of that curve, or if we derive two demand curves, this is real; the actual demand curve is MSV, and the market-based demand curve is d.

Given the actual valuation or the willingness to pay, consumers are paying Q*; they are purchasing this, and hence, we are quite sure that since Q* till Q is an overvalued product by the market mechanism. And since all under the demand curve is a willingness to pay, and finally, they are under this demand curve, there will be a possibility of loss due to the externality problem. These are all explained here due to negative externalities or dominant externalities; a lack of information causes people to demand poor-quality and inappropriate drugs. This is explained through the MSV, which is lying left to the demand curve. Along the left of the demand curve that is MSV, few effective applications of drugs and below the quantity in the axis are explained through the negative social valuation.

For many harmful applications, or in this case, we mentioned drugs, the standard area that is ABC shows the welfare loss associated with the pre-market solution in comparison to

the perfect solution. So, there are differences again; you may take note of what is called a pre-market solution and what is called a perfect solution. So, we have just mentioned that A, B, and C that is the triangle area highlighted, and even in this context, the pure negative externalities over this consumption, not necessarily the entire consumption from Q* till Q is, all negative externalities, some of the portions might be clearly emphasized exhibiting negative externalities, so, where we have just said that Q* of the drug is provided in the cases that were most effective. Hence, since there are negative externalities and the welfare loss is highlighted, we require regulatory options.

We need to standardize our healthcare. We need to standardize at the Q if this is being purchased, it is required by the demanders in the society. However, to standardize this, we might expect a higher cost for the production. However, those are the free market mechanism principles or the party to the supply of these products; they might demand higher prices for their quantities. Hence, the supply curve might be shifting upward or left-hand side or backward, which indicates the possibility of higher cost due to standardization, etc. So, we will be discussing that in our another chapter, clarifying all these things very clearly, and maybe somewhere we will also be emphasizing what really happens, how much quantity, yes, number of things you can conclude, yes, the extent of consumption as per the free market mechanism after some standards might fall.

So, we will discuss this in detail later. In the absence of alternative interventions, it might be concluded that since the area ADE is less than that of the area ABC, the regulation is inappropriate. So, after basically what is explained when MSV is clearly mentioned with strong regulation, it might happen that the regulating body might instruct the companies not to sell this quantity at all. So, when nothing is sold, the quantity supply and quantity demand will be at 0. Hence, this portion might again be added to the welfare loss.

So, this is what we said in the ADE area. In the absence of alternative intervention, it might be concluded that since area ADE is less than that of ABC, the regulation is appropriate. So, regulation is required. In this case, we are eventually approaching zero supply and demand for the product, which is not good. Hence, some other proposition is expected: that the healthcare product might be regulated, those who are providing to the society, and the private players who are providing the drugs or supplying the drugs to the society, there must be some standardization. This marginal cost might rise, and that may end up with a higher point of equilibrium; it was the market equilibrium mechanism, and we might end up with a lower quantity of sales, and again, some calculation might be made in terms of the net change in the externalities cost.

We are moving to another aspect called the voluntary health insurance scheme, which is against the social health insurance scheme we discussed earlier in a previous chapter. We want to know what really happens in terms of the cost to the society and, what type of premium we are supposed to pay and what should have been the maximum or the optimum

premium is desired in the society and the individual will be ready to pay for it. So these are the details I will be explaining in a short while. People will voluntarily choose to purchase such insurance only if they are risk-averse.

We also discussed this context in terms of people who are risk-averse, risk-neutral, and risk-loving. The extent to which individuals are risk-averse determines the viability of the insurance market. Risk aversion can be explained in terms of diminishing marginal utility of wealth. Again, risk-averse, etc., I think we discussed in our insurance chapter that the insurance market usually goes with an average calculation.

They calculate all the kinds of people with an average premium rate that eventually ends up being a problem for the insurance company. It has a number of issues, such as informational differentials, signaling issues, and moral hazard issues. However, those who are in the upper segment of our society or those who are on the verge of need for healthcare are usually in a position to go for taking the insurance premiums. So yes, but there is a possibility of high use of insurance, whereas a larger segment of the people are poor in the Indian context, and based on the average pricing structure, they may not be able to purchase. Hence, insurance company is also observed to bear a number of risks.

We discussed those aspects in detail in our insurance chapter. But at this moment, we wanted to understand one aspect, that is, private health insurance, what would go through the voluntary health insurance scheme, what would have been the voluntary amount that would address the risk aversion, and what the maximum premium amount would be paid. We will be taking two things to explain our theoretical explanation, which is presented here. We will be taking the help of diminishing marginal utility of health and expected utility of health.

We know that the expected utility theorem or expected utility of our insurance payment, etc., is not just based on their entire period of payment. It must be considered after the minimum value of health or the minimum value of risk. If the individuals are risk-neutral with respect to utility, they will still be risk-averse with respect to income since the actuarial payment would have a lower utility value than the utility cost of the event multiplied by its probability.

So, we will be emphasizing the actuarial payment as against their payment. We will also be emphasizing two things: one with respect to utility and one with respect to income. One question you might note is very clear: It is very important that individuals are risk-neutral with respect to utility. However, they will be risk-averse with respect to income. So, we will try to prove this theorem through the approach.

So here is the diagram, which we will discuss one by one. This graph has a clear presentation. On the horizontal axis, we have taken income and wealth as a proxy of income.

So, let us go through our understanding. First of all, we need to present here our utility, the diminishing value of its utility that is which we have said here in the diminishing marginal utility of wealth; with the rise in wealth, the incremental change in the utility will eventually decline. And this is what is presented in our red line.

That is basically called the utility curve. At this point, our maximum utility is attained. However, our expected utility is mentioned here. This is basically our utility curve. The expected utility started through a minimum level. From a minimum level of health onwards, we may project our expected utility.

Below that, actually, life may not even exist. We may not derive any utility out of our wealth. Below a certain level of wealth, no utility for your healthcare is defined. Hence, a minimum amount is reserved. At the same time, I want to mention that out of our entire journey, we have certain risk-bearing utilities.

If we want to get more utility, we have to be averse to risk. So, if we are risk averse, let us assume we have 50 units of utils for those who are averse to the risk. Let us start with our wealth-related discussions. Here, I have clarified all these things one by one. Related to now, we have taken the example of a skier.

Skiers have a higher risk of diving in the air. The graph shows the relationship between health levels and utility measured in imaginary utils for a skier. The skier considers the purchase of insurance against the risk of an accident on the slopes. An accident would cost her 5000 rupees. There is a possibility of an accident, and if any insurance is not taken, 5000 is the cost which we have mentioned in this diagram.

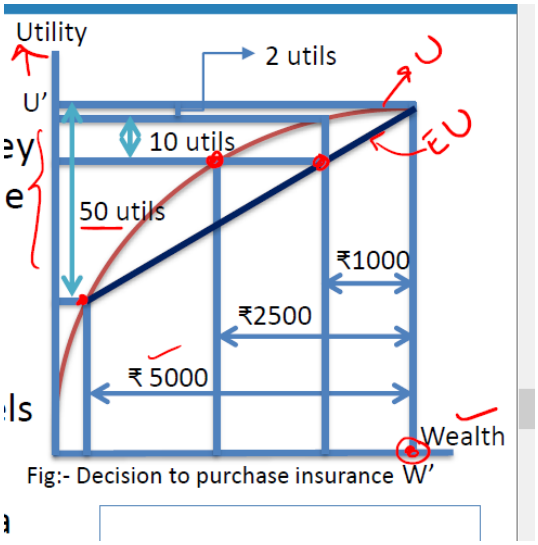


Fig:- Decision to purchase insurance

Then, out of the entire wealth, 5000 is lost. The question is whether 5000 loss can be covered with a 20 percent premium, and the premium is calculated with the chance of occurrence. What is the frequency or the incidence of or the chance of occurrence is 20

percent? Let us at this moment we, assume 20 percent occurrence of these losses are there or incidents are there.

Hence, 20 percent of the 5000 would be 1000. This is what is mentioned. And that is, in fact, called actuarial payment. That payment is needed. And that is basically the probability of loss into the size of loss.

The size of the loss is 5000 rupees, and the probability of loss is 0.20. So that boils down to 1000 rupees. So, 1000 this is lost. Out of my total income and total health, this person is lost. And this is lost. Why? Because I am supposed to pay the income as an insurance premium.

That is basically called the actuarial premium. And if I am paying it, I will reserve it till this point. Out of my total health, I am attending this. But since I am paying, my total income is now lost, and I am ending with this level of income since I have to pay it to the insurers. I have to sacrifice my utility as well. So, my total utility now is ended at this point.

So, arbitrarily, I am just mentioning two letters; two utils are lost. And that is equivalent to my 1000 as a premium. We are just trying to clarify that utility losses are understood at this level. The utility loss associated with paying the actuarial premium is two utils, which we have already discussed. The utility cost associated with the risk is 50 utils. What are these 50 utils? At this level, what is the expected utility? It is equivalent to 10 utils.

What are these 10 utils? We are trying to map it in terms of our utility cost. It is not a premium cost. There are two things we are clarifying. One is in terms of our income loss, and the other is in terms of utility cost. So, what is this utility cost? Given this income, what is the utility cost? The utility cost associated with this risk, let us total risk, is 50 utils. So, how are these 50 utils? Till the maximum amount, we have just started with the minimum level, and if it is 50 utils and out of that, there is a risk attached to our incidences or to the skier.

The skier is, if risk-neutral, willing to sacrifice up to 10 utils. Then what is this? Why is it risk-neutral? We just want to understand why 10 utils are sacrificed. Look at this these two points. We are just comparing these over this. So, to clarify why it is risk-neutral. The skier is willing to sacrifice 10 utils, which is equivalent to out of 50 utils times 20 percent of our probability of this event or this incident.

So that is equivalent to 10 utils for the insurance. An amount that can be identified graphically on a straight line between the starting point and the point should be the risk outcome. So this is basically where we said this income, which you have just finally ended up with, is an expected utility. The consumers will derive an expected utility. We are just trying to map the expected utility if the person is risk-neutral. How is it risk-neutral? Because the expected utility and the total utility remain constant.

Hence, the consumer will be willing to pay the equivalent of 10 utils. We are going to just mention what this is equivalent to in terms of income. So, she is willing to pay up to 2500 in order to achieve this level of utility. And we have already noted that this follows a more utility-diminishing trend. This follows that the more the utility of wealth diminishes, the more an individual will be willing to pay for insurance for any given level of risk aversion with respect to utility. It is expected that risk aversion with respect to utility varies from individual to individual and is related to preference.

Now, basically, I want to mention here that in order to attain this level of utils, the consumer is willing to pay 2500 as their income. However, this is their expected utility level, which is equivalent to the 1000 premium amount. So, the consumer has already attended the expected utility level, but we are still quite sure that the consumer is willing to pay this because they can attain the willingness to pay level by paying another 1500 rupees. Hence, the insurance will be exchanged only if the transaction cost and the profits can be contained within the 1500 rupee slack between the actuarial fair premium and the maximum skier is willing to pay. So, if the insurance amount varies from 1000 to 2500, the consumer is still considered to be risk-averse, and the consumer is willing to pay.

So, voluntary health insurance offers cover for a specific package of healthcare benefits. We have already mentioned this; we have already proved this as well in our theorem, which I already said. The individuals are risk-neutral with respect to utility, which we have already said. They are risk-neutral in terms of utility. However, they will still be risk-averse with respect to income.

Look at in terms of income; they are risk-averse, and their income is reduced. We are just summing up the VHI (Voluntary Health Insurance). So, voluntary health insurance offers cover for a specific package of healthcare benefits. You can read VHI as well. This covers a proportion or all the cost of a range of services and products which we have already discussed.

The rest of the details you can easily find out. We are now going to understand these as opposed to other issues. As we have already discussed, why it is risk-neutral, how far it is, risk-equalization, etc., you can read between the lines and whether prepayment is required or not. We will be discussing all these three concepts, voluntary payment, private payment or prepayment, etc., in the context of moral hazard to clarify this context further. So, moral hazard is important, and it is basically discussed in the context of rationing. Price will not serve the function of a rationing mechanism. This is basically explained as the extent to which the insurer, the insurer, when not faced with the price at the point of use, increases their use of services, and that might lead to unnecessary use of healthcare, and that is basically called moral hazard. It can only observe the resulting level of use, which might

have arisen from unavoidable risk and unnecessary use. But just clarifying these moral hazard issues in the context of demand and supply for healthcare, we will be comparing them with a full insurance scheme, deductible content, and co-payment.

Co-payment refers to the point of use, payment made, point of use, and payment made. Deductible: a certain percentage is deducted from your salary, which we discuss in the Social Health Insurance Scheme chapter as well. Hence, we will also be in a position to clarify the extent of moral hazard. Let us start with a typical demand and supply function for healthcare, and we start with a minimum level, as we already discussed in our different chapters; why are minimum healthcare and a minimum price reserved below that usually the healthcare supply is not possible? Hence, the MC curve is derived from a positive level and taken from a minimum level of healthcare that is reserved. Now, given the free market mechanism, we know that this is our Q*, and this is our price for the service seeker to pay, and if it is the case of full insurance, the entire demand of the healthcare is utilized by the service seeker or the health seekers.

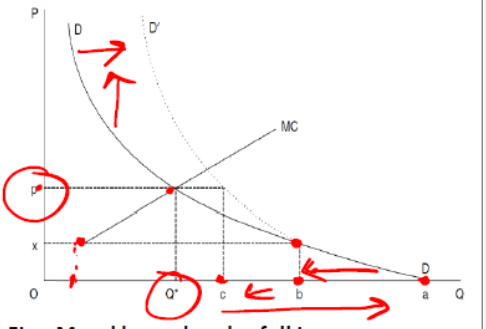


Fig.- Moral hazard under full insurance, deductible and co-payments

If it is completely free, then we may expect that till O to a, O to a is utilized and given a full insurance scheme, or maybe we have already discussed it in the context of social insurance schemes. When some forms of deductible are attached and which are silently deducted, certain proportions are deducted. We may not actually have salary is deducted, but at the point of service, we may not actually able to pay it. Hence, we are projecting on the same diagram, the demand pattern is not shifted much. So, in that context, since deductibles were used, since a certain proportion of income we are actually paying, the access to service might actually decline.

Hence, our Ob is utilized. So, the overuse, said Q* till a, is reduced. Now, only the proportion of moral hazards will be reduced by ab. If we see another context, that is the context of co-payments. The co-payments are there; we simply said that there are certain extra amounts attached for every unit of yours; let us know from b onwards. We wanted to

explain co-payments and if any co-payments are attached. So, what happens for every unit of service? You are supposed to pay a higher amount of payment.

Your price level for every unit of service is expected to be higher. Yes, of course, when your point of service and payment is made, you have a higher demand pattern, and you might demand quality in the care. So, the demand curve is expected to be shifted towards the right, but it has not entirely shifted as we started from this level. Proportionally, we are actually shifting the demand curve based on the extent of payment. And if it is shifting towards the right, what really happens? There might be a further reduction in the consumption of healthcare, and if the price is equivalent to P as per the free-market price mechanism if that is the case, we are still consuming less.

Hence, the moral hazard problem is redressed. The entire amount that we said Q*a is excess demanded is reduced through co-payments. So, though the price, in all cases, price mechanism or the free-market mechanism is a strong deterrence in terms of moral hazard problems and it is considered to be strong rationing given the societies even, whereas in other contexts where some co-payments and deductibles are there, yes we can able to actually minimize our what is called moral hazard. So, all these details I have explained already. So, at price P, demand will be reduced to C, which I have already discussed in the diagram. So, what have we dealt with so far? We have discussed the principles of price mechanisms or free market-based pricing structures to create a better health system.

In that context, we also started comparing voluntary health insurance premiums against public sources or some deductibles, etc. There are a number of strengths and weaknesses, as we identified through our diagram. We also discussed how the equivalent insurance is covered and how the maximum insurance premium based on the ability to pay off the consumer is measured. We also discussed the voluntary health insurance diagram. In the end, we could discuss the price-based rationing mechanism against the social health insurance scheme, as well as against some points of the payment mechanism, to reduce the issue of moral hazard. Hence, regulation is most required, but regulation with some mix of private mechanisms is the best one.

However, externalities are there, as we discussed, and regulation is considered to be the best solution. And here are the references for your ready understanding. And what is going to be there in our next lecture? It is about understanding the reality of the health status in the world vis-a-vis India, and we also understand India's healthcare challenges. With this, I think it is time to stop. I look forward to your participation. Thank you.