Health Economics

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Week – 05

Lecture 25- Information Economics in Health: Adverse Selection

Welcome friends. Welcome, friends, again to our NPTEL MOOC module on Health Economics. We are explaining the unit concerning financing and insurance in healthcare, unit number 5. And in this particular lecture, we are emphasizing on adverse selection as part of the information problems in healthcare. In the previous lecture, we emphasized on moral hazard in healthcare. We have discussed the concept of moral hazard, then type, the determinants, and how to limit moral hazard or control moral hazard so that the market might function well.

Its evidence and offside of moral hazard etc were emphasized and discussed. This lecture will discuss adverse selection and health insurance in particular. Adverse selection, as we know it, has two sides. Information asymmetry has two sides.

Adverse selection is one of the important parts of the information asymmetry. So another one is moral hazard as a problem of information asymmetry. But an important aspect to point out here is which one is direct and which is indirect or hidden action, which comes first or occurs a little later etc. We will discuss. Asymmetric information is often studied using a principal-agent problem in which a principal offers a contract to an agent who has private information.

The two main variants of the principal-agent model are the model of hidden actions and hidden types. One is action, and the other is type. The principal-agent model is called the two-party model in which the party possesses the contract, and it is called the principal. The party who decides whether or not to accept the contract and then performs the terms of contract is called the agent if the contract is accepted. The moral hazard problem is discussed either after or before the event.

We are just discussing this at this moment. It is called the hidden action model. And moral hazards usually arise after insurance is bought. There is information asymmetry between the two parties; hence, it is called the hidden action model. In short, we already discussed this.

Moral hazard refers to a situation where one side of the market cannot observe the actions

of the other. For this reason, it is sometimes called a hidden action problem. In contrast, adverse selection refers to the situation or a situation when one side of the market cannot observe the type or quality of the goods on the other side of the market. For this reason, it is sometimes called a hidden information problem. This usually occurs before the insurance is bought.

There is information asymmetry between the two parties; hence, it is called hidden type model. In the previous one, we used the hidden action model, which is called the hidden type model. So, adverse selection refers to a situation where either the buyer or the seller has information about the aspect of the product quality that the other party does not have. The other party with less security information is usually at a disadvantage since the other has taken advantage. The imbalance in information leads to inefficiency in the insurance market, which we are going to discuss.

For this, we are referring to George Ackerlof's 1970 paper, which starts with the lemon market and the plum market with the seller and buyer identity and some convergence in their contract in the market. Lemon used to be defined as a sub-quality product in the market, and Plum is considered to be relatively better. However, both the terms are slang. The Plum is considered to be slang for the good car market and Lemon is for the bad car market. In this case, we are just trying to say that the maximum possibility is taken in terms of buyers and sellers.

So, seller willing to sell for the Plum, the market for this car as a good one, a minimum of 2000 dollars, whereas the buyer might be quoting at a maximum of 2400, and there are some possibilities of averaging for the Plums, the range is between 2000 to 2400. Any contract or the rate in between is fine. Similarly, the Lemon market might hold better for the final solution, but we will see how it works in the insurance market. However, this does not hold true in a market with an information imbalance; sellers can identify lemon and plum, but buyers cannot. In this case, the sellers has the information about the quality of the car, whereas the buyer does not have, but in case of insurance, it is just the reverse, we are going to just discuss.

So, what happens to the market if buyers cannot observe the quality of the car? Then, there might be subcontracting or bias towards selling the product. In the case of information asymmetry, the buyer will be willing to take the car for the expected price of the Plum and Lemon; that is it has probability, let us assume by 50% probability. So, the buyer says the probability is 1200 for the lemon market and 2400 for the plum market; hence, the expected price is 1800, which is the one buyers are willing to pay. But at this price only Lemon sellers will be happy to be in trade. So, low-quality items crowd out the high-quality items buyers will end up with adverse selection.

This leads to an inefficient market and, hence, market failure. So, since inefficient products will be sold since Lemon market exists at this expected price, this leads to market failure.

Plum owners must signal to prospective buyers about their quality for market correction; hence signalling is one of the solutions we will also discuss. The market for Lemon's in the health insurance market in particular where similarly the insurance products whether to pool of individuals with high or low health risk, the insurance company used to sell their product with certain expected levels. Insurance has no information or risk classification for people.

They set premiums based on average data of the common pool. However, at this premium, high-risk people will be happy to take insurance since they are getting a better deal, and low-risk people will refrain from signing the contract or taking the premium since they will be taking a high-premium deal for themselves. Hence, the high-risk people have paid the premium at a low price rate because of the averaging of the common pool issue. So, then they end up paying less whereas the low-risk one, the percentage used to be very high. They used to be covering the market with their numbers, even the incidents are very high with the other categories since they are not up for the insurance; hence the insurance market is not capturing more coverage since they are refraining from signing the contract.

This leads to an inefficient market for insurance as well. I think this case we have discussed even in the previous one for the car market we also discussed. One difference is that, in this case, we are emphasizing about the buyers. In the previous case we emphasized on the sellers. In both the cases, it has market failure aspects.

Compulsory insurance for all will be a solution for market correction, but it is a very costly affair as well, and if public policy is very active enough, then it will work that way. Here information imbalance occurs, as I already said, in the used car market, the sellers has the information about the quality of the product, whereas in case of the insurance market you will see the buyers usually know the situation. Some of the models we will be emphasizing where how insurance market works and how adverse elections are dealt. Akerlof presumed that we are referring to Rothschild and Stiglitz's model in 1976. We start with the reference to Akerlof's resumed risk neutrality in his adverse selection model.

Rothschild and Stiglitz improved it by considering risk-averse behavior in individuals. Heterogeneous risk types are the ones we are clarifying. There are two types of individuals with different risks: frail and robust. Frail person is more likely to fall sick than the robust one. Model discusses two types of equilibrium hands: pooling based or separating based.

Pooling where, as I told you a contract that attracts both robust and frail customers and simultaneously satisfies the equilibrium conditions, wherein separating equilibrium is a set of two contracts that satisfy the equilibrium conditions. One that attracts robust customers and the other one that attracts the frail customers. In that case, we will just see what is happening. In this model, predictions by Rothschild and Stiglitz are that there will be no pooling equilibrium or no pooling equilibrium can exist. It is because the resilient individuals, despite being risk averse, are unlikely to support vulnerable individuals in an

insurance market.

While insurance markets effectively distribute risk among those with similar risk profiles, they are not optimized for pooling risk across population with diverse risk profiles. In the presence of a separating equilibrium, individuals with frail health conditions will have complete insurance coverage but will be charged a high premium per unit of coverage. On the other hand, individuals with robust health will have partial insurance coverage accompanied by a lower premium that aligns with their lower health risk. So, this is what the predictions are given by the model. We are linking the adverse selection in a real market context as per the Rand Health Insurance Experiment.

We also discussed a bit in different modules of our course, which referred to the work of Marquis and Phelps in 1987. Participants were asked to make predictions of their healthcare costs for the coming year and how willing they are to purchase insurance policies for the coming year. Families with high predicted values for healthcare costs were more likely to offer health insurance. They incurred high healthcare costs in the following year. In the normal setting, insurers could not simply predict these by using demographic factors.

Information advantage to health insurance customers: the information there will be helpful. So, real market context, other studies are also there. Other studies show a positive risk coverage correlation such as low-income Mexican family as mentioned by Spankus. I think low-income Mexican family. And elderly Medicare beneficiaries mentioned by Brown and Finkelstein, Harvard professor and staff etc.

There are some other studies that have derived evidence. Again, there are some evidence which are against adverse selection. I must mention in the context of advantageous selection, a study by Fang et al. 2008 observed negative correlation, not positive, between risk and coverage. Healthcare beneficiaries disproportionately opted for supplemental insurance policy.

Seniors who opted for insurance incurred about even 4000 US dollar, lesser on average. So, advantageous selection occurs because seniors with better cognitive ability were healthier and more likely to purchase even health insurance. So, this advantageous selection is a phenomenon where less risky people are more likely to purchase insurance than more risky people. This may occur as less risky people are more risk averse, wealthier or have better ability to understand the benefits of insurance since they understand better; hence there might be some reverse evidences. What prevents adverse selection? Four possible reasons, I think, not to explain much.

Customers misperceive their own risk. Customers do not act on their private information. Insurers can accurately observe customer risk and selection on other factors such as like their cognitive ability, risk aversions, extent of risk aversion, overcome adverse selection

and health risk. So, these might prevent adverse selection problem. So, some of those, there are three predictions of asymmetric information models. One is called positive correlation between risk and coverage, another is called bull markup and another is called adverse selection death spiral.

So, as far as the positive correlation between risk and coverage is concerned, there will be a positive correlation between these two customers who are more likely to rack up insurance expenditures and should be more likely to have insurance policies. Whereas in the case of bull markup, insurers will use bull markup in their pricing strategies. Customers with more insurance coverage should have not only higher premiums but higher per-unit premium as well. So, that is basically called the markup, which is doubly loaded and can be discussed in the context of information asymmetry. Adverse selection death spiral where pooling between different risk types people cannot survive in the market in the long run.

However, some inducements such as legal mandates or subsidies may prevent the lowest people from dropping out of the insurance. There are some countermeasures to reduce asymmetric information called signaling as proposed by Michael Spence. Here the concept is clarifying some signals exhibited by buyers to sellers, like the buyer or the seller signals the other uninformed party to increase their information about the product in trade. On-informed party provide information to the, the informed party provide information to the uninformed parties and reverses where they are expecting the better. So, the informed one, the informed party, provide information to the uninformed parties.

So, in the labour market where high- and low-ability workers are presented as not easy and not distinguishable, employing somebody can be very costly to the potential employer. If an employer hires a low-ability worker for a job requiring high ability, he will be in several losses. In such a case market signaling works. The high-ability workers can signal the employer about his abilities and which stand out among the low-ability candidates. Signals could be in the form of better resume, maybe through their resume submission at the time of application, maybe being highly qualified, educational level, swing good etiquette, speaking decent language etc. are called signaling which reduces the information asymmetry. Another one is called screening. If you have a better screening of the candidate or regarding car or even health insurance market would correct the information asymmetry. What is then the difference? One is signalling explaining exhibiting information, whereas the second is the party or the seller deriving the information through screening. Uninformed parties initiate communication by conducting a test either for the informed parties or the goods those parties seek to trade.

Basically, there should be further communication. Just citing one example that is in the second-hand market, the potential buyer of a second-hand car can learn about its quality by getting it checked again by a mechanic or learn about accident record of the car. Similarly, please go through these health insurance company and their signaling strategy and will help. In this case, the difference, which is just said, is the difference between screening and

signaling; it matters who gives information to whom.

There you can find out the clarity. Similarly, there are other measures to counter information asymmetry, such as warranty, mandatory information disclosure, incentives and penalties, etc. Some figures I just want to mention about health insurance market in India. We are taking the figures from the most authentic source, IRDAI, where we discuss insurance density comparison across countries. You can just see and highlight the India as a figure and their density is much lower than other countries. The number of health insured person as per the IRDAI figure till the 21-22 is still very impressive.

Still it shows that rising from 2013-14, but it seems very stagnant in the recent years. Number of persons in thousand covered with health insurance in India is also presented by their standalone package or by private insurance or public. Still the public insurance coverage is most dominating and you can follow for your work. Here we are giving a timeline of social health insurance and government funded health insurance schemes in India referring to the work of Lancet, 2023 paper. We start with the initiation year of 1948 with the introduction of employees state insurance scheme, which has both state and center scheme.

And similarly, we are also emphasizing on other scheme over the time and to mention a few we have explained here. The Employee State Insurance Scheme of India 1948 is for the blue-collar workers of the organized sector that is part of the ESIS which was started under the employee state insurance act 1948 and is still working. And there are some financing aspect and coverage aspect we discussed. The scheme is financed by contributions from employers as well as employees.

The company contributes around 3.25 percent and the employee contributes 0.75 percent for all employees earning Rs 21,000 or less per month in salary for a total share of 4 percent in total. This scheme has a coverage since it started in 1952 from Kanpur and Delhi. Today it covers 33 states and UTs and applies to 7.83 lakhs factories and establishments across the country benefiting about 2.13 crore insured persons or families. Total beneficiaries are 8.28 crores. Health insurance and its evolutions starting from 1954 from the CGHS that is central government health scheme and used to be for the central government employees and the families. We are referring some important timeline where in 1986 the insurance was mostly with the GIC, General Insurance Corporation. GIC physically launched India's first Medicare policy but, famously known as GIC.

This is considered to be a voluntary health insurance scheme. This exclude pre-existing disease, pregnancy, childbirth, HIV, etc. In 1991 after the new economic policy and liberalization process, privatization of insurance sector had taken place and the regulatory body that is IRDAI, Insurance Regulatory Development Authority was set up in 1999. This is considered to be the prime body in this particular sector. To emphasize the important scheme called Rastiya Swasthya Bhima Yojana in the context of healthcare, it was started

working on April 1st, 2008 and the objective was to provide protection to the BPL families and from financial liabilities arousing out of their health shocks because of their incidence of hospitalization.

The eligibility are like unorganized sector workers belonging to the BPL category and their family members. Usually the family cap is restricted at 5. The total sum of benefits were 30,000 rupees per family per year on a family floater basis. All pre-existing diseases to be covered, transportation costs, etc. are also discussed. Within this scheme, within limit transportation cost as part of this Bima Yojana is covered as 1000 rupees. Funding is funding is Government of India and state government both and also beneficiaries would pay rupees 30 for a year as their registration or renewal fee and this is subsumed under the famous scheme PMJAY in the recent time. Jan Arogya Yojana, Pradhan Mantri Jan Arogya Yojana.

So, RSBI is no longer defined. We are referring to PMJAY. So, another aspect scheme is called senior citizen health insurance scheme provided insurance coverage to senior citizens as a top of cover for the RSBI scheme. Additional coverage of 30,000 rupees per senior citizen to the eligible RSBY beneficiary family. Later on, this is also subsumed with PMJAY. Another important policy is called as I already told you, the latest policy is called PMJAY.

It is not just the coverage of the RSBI. It is the health insurance component under Ayushman Bharat scheme of Government of India, also known as national health protection scheme. It was launched on October 23rd, 2018 in Ranchi Jharkhand. It subsumed the RSBY, Rashti Swashhya Bima Yojana in 2008. The RSBY scheme was introduced in 2008, and PMJAY has covered this program, as well as the senior citizen health insurance scheme. This is funded by the government and insurance cover was of 5 lakhs per family per year for secondary and tertiary care hospital.

Hospitalization across public as well as private this is important to mention and private empanelled hospitals in India. So, no restriction on family size. Earlier family cap was 5 members. No restriction on age, gender and the pre-existing diseases are also covered from the very first stage.

So, there are important features. So, these are all we need to just summarize what we did in this lecture. We discussed about healthcare financing. So, what we discussed all about is healthcare financing, resource allocation, health account, uncertainty and health insurance, asymmetric information that is moral hazard. Then we also emphasized in this particular lecture, this is the total summary of the week and we are emphasizing in this particular lecture adverse selection and we did it.

And here are the readings for you. I think it will be useful and I hope you have raised some queries. We will be happy to address it in the respective lecture.

Thank you. So, we are going to stop here. Thank you. Thank you very much.