

Conservation Economics
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Module 1
What is Economics?
Lecture 2
Interactions

Namaste! We move forward with our discussion on module 1, What is Economics. And in this lecture we will carry forward our discussion on Making Decisions and we will also have a look at Interactions. So, let us begin with a summing up of what we saw in the previous lecture.

In the last lecture we discussed about how we make decisions - how does a person make decisions and how does a society make decisions, and we surmised certain points about it. The first one being that people and society face tradeoffs. Whether it is at the level of an individual or it is at the level of the society there are always certain tradeoffs. What is the tradeoff? A tradeoff is something that because your resources are limited you can use your resources to get say object 1 and if you use your resources to get more and more of object 1 you will get less and less of object 2. A simple example is that suppose we have 2 objects - we have ice creams and we have chocolates and we have a limited amount of money with us. Suppose we have 100 rupees. Those 100 rupees can be used to get ice cream or they can be used to get chocolates.

If you spend your 100 rupees only on ice cream you will get 0 amount of chocolates. If you spend your 100 rupees on getting chocolates you will get 0 amount of ice cream or you can use your 100 rupees to get some chocolates and some ice creams. This is a tradeoff that we are facing at the level of an individual. Similarly society also faces certain tradeoffs primarily in the form of, what to produce, how to produce, how much to produce, whom to produce and so on. For instance, the society can utilise its resources to produce capital goods or it can use them to produce consumer goods.

The society can decide that we should put more and more amount of money into defence or it can decide that we should put more and more amount of money into health care or education. Because the resources are limited if we put more amount of money into say health care we will have less amount of money that is left for education sector. There is always a tradeoff. People and society face tradeoff primarily because the resources are limited. Because of these tradeoffs we have costs. Costs are defined as what you give up to get something.

So, what is the cost of say ice cream? If you are getting a big tub of ice cream for 100 rupees you can see that we have a cost of ice cream to be 100 rupees, but this cost can also be in terms of say time, it can be in terms of effort, it can be in terms of money, it can be in terms of certain other goods. So, for instance in place of having say 100 grams of ice cream you could have had that 200 chocolates. So, you can also say that the cost of 100 grams of ice cream is 200 chocolates.

In Economics we are always concerned about costs - what you give up to get something. And a very major cost that we need to consider is the opportunity cost, which is the cost of the next best thing that you could have had. The 3rd point that we considered was that rational people think at the margin. Economics thinks or Economics considers that people are rational.

Now, who is a rational person? A rational person is one who does all sorts of computations, keeps all sorts of information that he can have access to in his mind, before taking a decision - to optimize the decision for his or her own benefit. That is a rational person. Economics considers that people are rational. So, Economics considers that people are not taking a decision just out of nothing.

Whenever people make any decision they think about it rationally and such rational people are always thinking at the margin. When we say thinking at the margin we are saying that we are not thinking about whether I should use my 100 rupees to get only ice cream or whether I should use my 100 rupees to get only chocolates, but what we are thinking at all points of time is that suppose I have had 50 grams of ice cream should I spend my remaining 50 rupees on getting more ice cream or should I spend it on getting some amount of chocolates.

Because there is a certain amount of satisfaction that, I have already had by having 50 grams of ice cream. So, for the next 50 rupees will 50 more grams of ice cream give me more amount of satisfaction or getting certain chocolates will give me more amount of satisfaction, is something that I am always considering. This is what we mean by saying that rational people think at the margin. So, these are 3 things that we saw in the last lecture.

And in this lecture we will continue with this discussion on, how people and society make decisions. Now, an important point in making decisions is incentives. People respond to incentives. Incentive is something that induces a person to act. This inducement can be to act more or it can be to act less.

For instance if you get, say, a subsidy to start an industry you will be more inclined to start the industry, as compared to a situation where you were facing a large amount of taxation if you started an industry. So, this taxation or subsidy is an incentive that is being used by the government to induce people to do something. Another example is that in the case of cigarettes the government taxes cigarettes heavily. Now, this tax puts up more amount, or requires more amount of resources to be put in for a single pack of cigarette. And this is done so that it acts as a

negative inducement. The government does it so that people spend less amount of money or resources on getting cigarettes because cigarettes are bad for health.

So, the government can use a reward such as a subsidy or a punishment such as an excessive taxation to induce people to do something or to refrain from doing something. So, incentive is something that induces people to act in certain ways. Other examples are practicing hard so that you may win the Olympic gold medal. The incentive here is the Olympic gold medal and to get to that incentive or to get to that reward you are trying to practice more and more so that is an incentive.

Wearing a helmet for the fear of fine: here the fine is an incentive to induce people to act in terms of wearing the helmet. So incentive is something that induces a person to act. And, when we talk about incentives prices are a very major incentive in the economic system.

Prices act as incentives. How do prices act as incentives? Suppose the price of apples increases. You are using different fruits - you are using different food items and out of those food items the cost of apples has gone up. How will you respond?

There will be a certain amount of response. Probably because the apples have gone up in price you will start to consume less and less amount of apples. Or probably if you are, say, a shopkeeper, you will think that ok, the price of apples is going up so let me buy more and more apples. And I should store them so that after some time when the price goes up even further I will sell them off at a profit.

So, the price of apples is acting as an incentive for a consumer to have less and less - to consume less and less, and for the seller to hold more and more.

Suppose the price of apples increases, and the consumers try to reduce their apple consumption by, say, shifting to other fruits. So, you might say, ok, the price of apples is more I will consume less amount of apples; I will have more amount of oranges.

Producers may try to increase their apple production by, say, increasing the number of workers that are employed. Because apples are fetching a larger amount of price in the market it is going to lead to larger amounts of profits. So, the producers may try to increase their apple production. And how do they increase their apple production? By increasing the number of workers employed, or, say by getting newer machinery, or say by putting more and more amount of their land into apple production.

These are the kinds of responses that we are seeing just because the price of apples has gone up. So, the price in this case has induced persons - both the consumers of the product and the producers to act and so price is an incentive in this example. What we are saying here is that

incentive is something that induces people to act and prices in the economic system are very good incentives.

Now let us look at another example: there is a rise in the price of crude oil. Here again we are looking at the price of crude oil as an incentive. What sorts of behaviours will we see if the price of crude oil goes up? Here are some news articles relating to the price of crude oil and how people shift their actions.

The first one is "fuel prices impact daily use items like soap shampoo biscuits to become 5 to 8 percent more expensive." What is happening here is that because the price of crude oil has gone up, so a number of articles that require crude oil or its products for their manufacturing - say plastics, or for say energy use - which includes a number of other consumer goods become more expensive. The price of plastics will go up, the price of energy will go up, the price of transporting things will go up, and when all these prices go up, ultimately the price of the final produce will also go up.

This news article is saying that the fuel price impact is likely to make soap, shampoo, biscuits and other consumer goods more expensive. So how do people act? This news article says big rise in South Africans turning to credit as high fuel prices and cost of living bites.

One response is that I have less amount of money, but I want to maintain the same amount of consumption. So, I will have to borrow this money from somewhere. So, more and more people start moving towards credit and so there is a big rise in people that are turning to credit as a source of funds.

Another thing is that the rising fuel prices could increase the mobile phone bills, because here again the mobile phones towers are fuelled by, say, diesel generators or by electricity. As the price of diesel will go up the price of electricity will also go up. Now, this article says rising diesel prices may hurt the telecom sector. Why? Because the cost of providing this service of telecommunications is going up because of the increase in the price of crude oil. If there is an increase in your cost and there is not a corresponding increase in your selling price, your profits will take a hit.

So, this says that rising diesel prices may hurt the telecom sector.

How will the telecom sector respond? Probably if it was having certain plans of expanding it will put the expansion plans on hold. Or probably it will even try to curtail its operations in certain areas where it is not getting sufficient amount of profits.

So, here again the price of crude oil is acting as an incentive. Rising fuel prices are affecting Swiggy, Zomato's delivery fleet, Ola and Uber drivers because here again the cost of providing

the service is going up. This next article says Uber and Ola drivers go on a strike; demand higher fares for rising fuel cost.

So, the increase in the price of crude oil is now incentivising Ola and Uber drivers to go on strike. Because they are seeing that their profits are going down and in these situations they would demand higher fares for the rising fuel costs.

Another thing that will come up is that people will start giving you a number of suggestions on how to manage your household budget in the times of rising prices. Because we saw here that because of increase in the price of the crude oil the cost of shampoo, biscuits and soaps and other things is also going up. So, another action that has been incentivised is that people who are experts, or who are ready to give you suggestions on how to maintain your household budget - they will come forward.

And what sorts of suggestions will they say? They are asking to track every expense; lower the unnecessary expenses. When the price is going up the amount of consumption will go down. Try to raise income. People will start to look for other sources of income. Go for lifestyle changes because the price is going up and your lifestyle cannot be supported by the same amount of income that you've had so you should try to change your lifestyle so that you are able to accommodate with lesser amounts of stocks. Lower the debt outflow because nobody knows how long this fuel rise will go up.

Another thing that we see is rising petrol and diesel prices give states windfall gain of rupees 227 billion. Now, what this is saying is that because the prices of petrol and diesel have gone up so the amount of money that the government will get in the form of taxes will also go up.

Now, so far we have seen that when the prices of crude oil are going up it is acting as a disincentive for a number of people because their cost of living is going up. But in the case of certain governments this might even lead to more and more amount of money that is coming up in the form of taxes. So, what will government do in certain in these situations? The government will use this money for, say, certain activities.

The government may come up with a new program of infrastructure expansion or the government will come up with a new program of providing money to people or of providing food grains to people so that people are also better off. So, rising petrol and diesel prices to give states windfall gain of rupees 227 billion.

Other kinds of impacts are "Furious French drivers to block roads in fuel price protest." Similar to what we saw in the Indian context that the Ola and Uber drivers are coming up in protest, we also see that the French drivers have come up in protest. What happens then? This is another news: Paris police use tear gas, water cannons as protests against rising fuel taxes turn violent.

So, a rise in the cost of living is now leading to violence. Then rising gasoline prices push Macron popularity down. This news article is saying that the popularity of the president is going down because he is not able to control the prices. This is another impact of the rise in the price of crude oil.

Then it says Transport: PM Philippe suspends the fuel tax rises. The government has now been induced to act - the government has been induced to lower the taxes, so that the price of fuel comes down. So, the increase in price of crude oil has not just acted as an incentive for normal people it has also acted as an incentive for the government to reduce the taxes. This is what we are seeing here, the prime minister is suspending the fuel tax rises.

Another impact is: French fuel price revolt boosted ethanol use, say industry officials. What we are seeing here is that when the price of crude oil is going up the price of petrol and diesel are going up so now people are shifting towards alternatives. One such good alternative is blended petrol. In the case of blended petrol the petrol is mixed with certain amounts of ethanol which is ethyl alcohol.

Now, because the price of petrol has gone up so now people are shifting to add more and more amount of ethanol and to shift towards a blended petrol. This is another act that has been induced - because of the price rise the ethanol is going up. Next news article says SUVs have become classier, but here is the big bump on the road - rising fuel price.

What this news article is saying is that people normally go for large sized vehicles such as the SUVs or the sport utility vehicles. So, they have become classier. But then because they are of a large size they have a large amount of weight. They are not that fuel efficient. And when the cost of fuel goes up - when the cost of petrol, diesel goes up - then there is an incentive for people to shift away from these petrol or diesel vehicles. So, here it says that there is a big bump on the road which is the rising fuel prices.

So, now people will shift away from these SUVs which are not that fuel efficient. This is another activity that has been induced by rise in the crude oil prices. What will be the impact? People are now shifting away from the SUVs, people do not want to have a vehicle that is putting a big strain on their budget. So what happens? The sale of automobiles goes down. This news article is saying price hikes and rising fuel rates slow September auto sales.

Because of the rising fuel rates people are now less incentivised to buy newer vehicles and so the auto industry is going towards a slump. When such a thing happens the auto industry might respond by, say, shifting to different category of vehicles or probably by laying off people. The auto industry might say, ok, people are not buying our cars; we are not having a profitable year, so we cannot afford to have so many employees. Or the auto industry can say that ok people are not buying these sorts of vehicles - why do not we give them an alternative, why do not we

give them certain vehicles that are more fuel efficient that people might be more ready to buy. This is another impact that we are seeing because of increase in the price of the crude oil.

This news article says weak consumer sentiment - no festival cheer for carmakers on rising fuel cost and interest rates. This is from November 2018. November is typically the time when we have festivals like Diwali and people generally go for a large amount of buying in those seasons. But this news article is saying that because of the increase in the fuel cost and because of increase in the interest rates people are not buying the vehicles as was projected earlier.

Next what happens? Gas prices send surge of riders to mass transit. This news article is saying that because people are coming to this conclusion that because of these large amount of fuel prices, we will not be able to afford our vehicle; we will not be able to afford the use of our vehicle to go to our offices or other places every day, so, people are now shifting to mass transit. Mass transit includes things like railways, roadways, or public buses.

This news article is saying that because of increase in gas prices people are shifting towards mass transit. So, the gas prices are acting as an incentive for people to act in a certain manner and in this case the action is to ditch their personal vehicles and to shift to public vehicles. Another article says as gas costs soar buyers flock to small cars. Because the larger sized vehicles are less fuel efficient so people have now been induced to act in a manner - they shift from larger cars to smaller cars. Or even to scooters and 2 wheelers because scooters and 2 wheelers are more fuel efficient as compared to the 4 wheelers. So, if the crude oil price rises then people will shift from cars towards scooters. And the industry may also respond by saying that ok the gas and the crude oil prices are high so let us give people things such as electric vehicles. This is another inducement that has been brought up by the increase in the price of crude oil.

Soaring petrol prices spark interest in electric vehicles. Camel demand up as oil price soars. Now, this is a different kind of a news, but here also it says the same thing. As the cost of running gas guzzling tractors soars even toed ungulates are making a comeback raising hopes that a fall in the population of the desert state's signature animal can be reversed. What is this saying?

It says that, because the use of vehicles has become more and more unaffordable, so; now people are shifting back towards the use of camels. This is another act that has been induced by the rise in the prices. We saw earlier that prices act as incentives and all these different examples are showing the same thing. Another one says that IndiGo faces rough flight as rising fuel cost and price war hurt. Here again in the case of airlines the fuel prices - when they increase, they increase the cost of operations. And this news article is saying that the airlines IndiGo is now facing a rough time because of the increase in the fuel costs.

How will the airlines respond? Rising fuel prices: IndiGo hikes fares and other private airlines

may follow suit. IndiGo in this case is saying that ok our cost of operation has gone up and we need to remain profitable so, this cost will have to be given to someone else and in this case this someone else is the consumer. So, because the price of fuel has gone up, the ticket prices also go up. In this case the increase in the price of the ticket for the airline will now act as an incentive for other people as well.

Delta airlines to increase fares, trim flights as fuel prices rise. Here is another act that has been induced. Not only do airlines increase their fares, but they also reduce operations on those sectors that are not that profitable. Because your cost of operation has gone up so to maintain your profitability you will either increase the fare or you will reduce your operations in certain areas or you will abandon plans of expanding.

This news article says Emirates working to stabilise cost after 42 percent increase in fuel prices. Here again Emirates airlines is trying to stabilise its cost - it is trying to gain money from some other sources so that it can remain afloat. EasyJet investors worry about rising fuel costs. When the price of fuel has gone up, the airlines are not that profitable, and if the airlines are not that profitable the investors who have invested their money in the airlines will also be induced to act in certain ways. They will start thinking - ok, now the airline sector is not doing that good because their cost of operations has gone up. My money is not safe - let me take my money and put it into some other sector. So, the investors might try to reduce the amount of investment that they have made in the airline sector and shift it to some other sector.

So, EasyJet investors worry about rising fuel costs and probably they will take their money out of the airline sector. This article from the economist says: Crisis, What crisis? The airlines are suffering, but the order books of Boeing and Airbus are bulging. So even though the airlines are suffering because their cost of operations have gone up the order books of the airplane manufacturers such as Boeing and Airbus are bulging. Why is that so? This is again a very similar thing that we saw in the case of vehicles. If SUVs have become less incentivising the companies will give you certain alternatives. They will give you electric vehicles - or they will give you small sized vehicles. Similarly when the price of fuel goes up the airline industries that are making the aeroplanes - they will give the airline certain alternatives.

These would be certain aircrafts that are more fuel efficient. And so when these companies give you an alternative which is more fuel efficient more and more airline companies will flock towards these newer models. And so the order books of Boeing and Airbus are bulging because everybody now wants to have these aeroplanes that are more fuel efficient. This is another act that has been induced by the increase in the price of the crude oil. That it is now inducing the industries that make the aircraft such as Boeing and Airbus to come up with newer alternatives of aeroplanes or aircrafts that are more fuel efficient.

This article says how rising crude prices will impact Indian oil industry. Upstream oil firms

could face a higher subsidy burden while any government move to cap prices will hurt the margins of downstream companies. This article says that in the case of the petroleum industry you have certain upstream oil firms and certain downstream oil companies. Now, the upstream oil companies are those that are either extracting this crude oil from the earth or they are those industries that are buying this crude oil from other nations. And, the downstream companies are those that are using this crude oil, processing it and selling off things like petrol diesel kerosene LPG and so on. Now, this article is saying that the upstream oil firms could face a higher subsidy burden because the price of crude oil is now going up which means that the product that they are selling has increased in its price. So, their profits might go up whereas, the downstream companies - because crude oil is a raw material or a resource for these companies and they are selling off other things such as petrol and diesel, so, if the price of petrol and diesel also increases commensurate with the increase in the price of the crude oil then these downstream companies will remain afloat, but if the government tries to reduce the prices of petrol and diesel then these companies might take a hit. So, different players in the oil market will respond in different manners - the upstream companies will respond differently and the downstream companies will respond differently. So, what will be these responses?

Refiners look at cutting inventory as oil prices rise. Refiners are the downstream players. What they are doing is, they are trying to cut the inventory. They are trying to reduce the amount of crude oil that they are purchasing and they are using more and more of their inventory - the stocks that they already have because they do not want to put more money into crude oil at a time when the price of crude oil is already high. The refiners must pay for their crude oils in dollars and the soaring import costs are becoming ahead. In this case this news article says that the refiners are trying to cut in the inventory. Whereas the upstream players will try to increase the fuel storage. Why? Because this is a time when the crude oil prices are going up so the upstream company will think that ok, why don't I take more and more of this crude oil from the Earth - because the prices are going up!

So, it is incentivising the upstream companies to extract more and more of the crude oil or to procure more and more of this crude oil in the hopes that because of these rising prices they will sell them - sell this crude oil off at a larger price and at a larger profit. So, the upstream companies are trying to increase the fuel storage.

Another incentive or another act that has been induced is that solar beats oil and gas price in EU. Because the oil and gas prices are going up - because the crude oil prices are going up, so now the industry is looking at alternatives and one such alternative is solar panels, or solar energy.

With the carbon price set by the blocks emission trading scheme on the rise along with fuel - fossil fuel costs there has never been a stronger economic case for renewables. So, the act that has been induced in this case by the increase in the price of crude oil is that it is incentivising the industry to shift towards the renewable sources of energy.

The energy industry will shift from oil based or gas based power stations to more and more of say solar energy based stations or wind energy based stations or geothermal energy based stations or even say nuclear power stations because the price of crude oil is going up. And every industry is trying to reduce its cost so as to maximise its profit. So, this is another act that has been induced by the increasing price of crude oil which is more and more incentivising towards shift to a renewable source of energy.

Rotten potatoes - that is the governments answer to your rising fuel bill. Here again what it says is that while the government is hoping the rally in global rates declines soon, it is also looking at alternatives and in this case the alternative is ethanol. So, what we have seen so far is that people and society respond to incentives; incentives are those factors that induce people or society to act in certain manners. And in the case of Economics price is a very good incentive. So, if the price of something goes up we will see a large number of actions by different players.

Now, let us now look at interactions in the society. The first thing that we can discern from interactions is that trade can make everyone better off. What this says is that consider a society in which people do not trade. Everybody is trying to produce everything that he or she needs. In this primitive society suppose there is a person - she would have to grow her own food crops, she would have to raise her own cattle to get meat and milk, she would have to raise her own fibre crops, she would have to harvest all of these, she would have to make her own cloth, she would have to say make her own implements and so on; because this society is not a trading society.

So, everybody has to do everything. Now, in such a society suppose we bring in trade. When we say that we are bringing in trade what we are saying is that, suppose there are two people you and me and I am good at cultivating crops and you are good at, say, raising cattle. So, I might say that ok I am good at cultivating crops which means that my cost of cultivation is less than what it would have been if you were cultivating. Suppose in 1 hour I can grow 1 kg of wheat whereas, in 1 hour you can only grow 100 grams of wheat, whereas, your specialisation is in raising cattle. So, in 1 hour you can say produce 1 kg of milk whereas, I can only produce 200 grams of milk.

In such a situation if I were to spend say 8 hours of my day into 4 hours of making the wheat and 4 hours of making milk. How much amount of wheat and milk would I have? In 4 hours I will have 4 kg's of wheat and in 4 hours I will only have 800 grams of milk. On the other hand in your case you are also doing the same thing.

What we are saying here is that for me my rate of production is 1 kg of wheat per hour and 200 grams of milk per hour. For you the productivity is 1 kg of milk per hour and 100 grams of wheat per hour. Now, suppose in the first case - case 1 both of us are devoting 4 hours for wheat and 4 hours for milk. How much amount of wheat do I have in 4 hours? It is 4 times 1 kg is 4 kg of wheat and 4 times 200 grams which is 800 grams of milk. Whereas, you in 4 hours you have

made 4 into 1 kg which is 4 kg of milk, but only 4 into 100 grams which is 400 grams of wheat.

This is the first case in which we are not trading. You are producing both wheat and milk for your use and I am also producing wheat and milk for my own use. And both of us are devoting 8 hours into these activities.

Now, let us look at the 2nd case. Case 2 is with trading. In this case what I do is - because I can make more amount of wheat per hour as compared to you so let me use all 8 hours to make wheat only. So, I have 8 hours into 1 kg is 8 kg of wheat, and I spend 0 hours for milk which gives me 0 gram of milk.

In your case you are using 8 hours to make milk. So, you get 1 kg of milk per hour so you have 8 kg of milk and you spend 0 hours to make wheat and in this case you have 0 grams of wheat.

In the first case the total production in the society was 4 kg of wheat and 400 grams of wheat, which is 4.4 kg of wheat and 4 kg and 800 grams which is 4.8 kg of milk. This was the total production in the society in case 1.

Whereas, in case 2 we will have total production in society is 8 kg of wheat and 8 kg of milk. So, what we are seeing here is that if both of us were to do only those things that we had a certain amount of specialisation in then we would be able to produce more amount of resources with the same amount of input.

In the first case you were working 8 hours I was working 8 hours, in the second case also you are working 8 hours I am working 8 hours. But in the first case the total production is less than 5 kg of wheat and less than 5 kg of milk for both of us combined. Whereas, in the second case it is 8 kg of wheat and 8 kg of milk. Out of this 8 kg I keep 5 kg with me and I give 3 kg to you. What do you do? Out of 8 kg of milk you keep 5 kg with you and you give 3 kg to me. Now, at the end of the day I have 5 kg of wheat and 3 kg of milk, this 5 kg of wheat is what I produced and I kept with myself in this 3 kg of milk is what you had given to me.

And you have 5 kg of milk and 3 kg of wheat. Let us compare this situation 5 and 3 with the earlier situation in case 1.

In case 1 you are only having 4 kg of milk now you have 5 kg of milk. So, the total amount of milk so that you have is more. Earlier you had 400 grams of wheat, but now you have 3 kg of wheat. So, the amount of milk that you have is more than what you had earlier; the amount of wheat that you have is more than what you had earlier.

In my case, I have now 5 kg of wheat whereas, earlier I only had 4 kg of wheat. So, the amount of wheat that I have now with trading is more and similarly earlier I had only 800 grams of milk

whereas, now I have 3 kg of milk. So, the amount of wheat and the amount of milk that I have now is more than what I had if we had not traded.

What we are trying to emphasise here is that because of trading your amount of milk and wheat has gone up and my consumption of milk and wheat has also gone up. So, you are in a more beneficial position and I am also in a more beneficial position.

So, trade is something that can make everyone better off. And why does that happen? This happens because competition permits everyone to specialise in what they have the highest comparative advantage in.

In the case of trading because none of us is constrained to make everything; so, we can focus all our time energy and resources into making those things for which we have the highest comparative advantage. What is the comparative advantage? It is the ability to produce a good at a lower opportunity cost than another producer.

In this case I was able to make 1 kg of wheat per hour and you were able to make only 100 grams of wheat per hour. So, in this case I have a comparative advantage in the case of wheat whereas, in the case of milk I was only able to produce 200 grams per hour, but you were able to produce 1 kg per hour. So, you have a comparative advantage in the case of milk. Comparative advantage is the ability to produce a good at a lower opportunity cost than another producer.

Now, let us look at the opportunity cost: opportunity cost for wheat. For me the opportunity cost of wheat is 200 grams of milk per kg of wheat. So, if I spend 1 hour to produce wheat I will there will be 200 grams of milk that is less available for me. For you the opportunity cost of wheat is 1 kg divided by 100 grams which is 10 kg of milk per kg of wheat. If you look at this portion to make 1 kg of wheat you had to give up 10 kg of milk and so forth. So, my opportunity cost is less my opportunity cost is only 200 grams of milk your opportunity cost is 10 kg of milk.

Because my opportunity cost is less so for the case of wheat it makes much more sense that I should be making that.

Now, let us look at opportunity cost of milk. Now, for me the opportunity cost of milk is 1 kg of wheat divided by 200 grams of milk which is 5 kg of wheat. To produce 1 kg of milk I would I will have to forgo 5 kg of wheat. Whereas, in your case to make 1 kg of milk you only have to forgo 100 grams of wheat per kg of milk. So, in the case of milk your opportunity cost is only 100 grams whereas, my opportunity cost is 5 kg of wheat. So, you have a comparative advantage when it comes to milk and trading would say that you should concentrate more and more of your time and resources in producing milk because you have a comparative advantage in producing milk; whereas, I should spend more and more amount of time, money and resources into production of wheat because I have a comparative advantage.

If both of us focused on what we had a comparative advantage in the society would benefit because all the things will be made at the least possible cost. So, competition permits everyone to specialise in what they have the highest comparative advantage in.

When you are only producing milk and I am only producing wheat it also leads to an increase in efficiency. Efficiency is the property of society getting the most it can from its scarce resources.

In this case the resource is time. The society - which only comprises of you and me in this example - has only 8 hours for you and 8 hours for me. Earlier the society was able to produce 4.4 kg of wheat and 4.8 kg of milk whereas, now the society is able to get 8 kg of wheat and 8 kg of milk. What is happening is that the efficiency of the society has gone up for 1 day. In 1 day earlier it was only getting 4.4 kg of wheat and 4.8 kg of milk whereas, now it gets 8 kg of wheat and 8 kg of milk.

So, the efficiency has gone up for the society as a whole. At the same time specialisation and efficiency reduce prices benefiting the consumers. So, because there is a specialisation - you are only focusing on one thing I am only focusing on one thing - the efficiencies have gone up.

This ultimately benefits the consumers as well because they will be able to get all the resources at the lowest prices. In this example both of us are both the producers as well as the consumers, but we can extend this example to the actual society as well. People can get different items at reduced prices through trade as against different items at high opportunity cost when not trading. Thus trade increases welfare. When we talk about interactions in a society - economic interactions in a society - we need to remember that if there is trading in the society then everybody is much more well off as compared to a situation when there was no trading. So, trade makes everyone better off.

But how do we trade? In this example because there are only 2 people and there are only 2 things so it is easy for both of us to sit down and negotiate, that ok I will give you 3 kg of wheat and you will give me 3 kg of milk. But then in the case of a larger society all the different producers and all the different consumers cannot sit together and so we come up with the concept of market.

Markets are usually a good way of organising economic efficiency. Market economy is an economy that allocates the resources through decentralised decisions of many firms and households as they interact in the market for goods and services.

What is the market economy? It is an economy that allocates resources, in this example the resource that is available is time or the number of hours that are put in. In the market economy both of us are taking the decisions based on the most efficient way of producing the goods.

An economy that allocates resources - in this case the time - through decentralised decisions: Now why are these decentralised decisions? Because there is nobody who is telling us that we should be doing this, it is just you and me who are sitting together and deciding that I should make more and more of wheat you should make more and more of milk. The government is not telling us that. There is no person outside of you and me - outside of the producers and the consumers - that is deciding on how much amount of resources should be allocated - so this is a decentralised decision.

The market economy allocates resources through decentralised decisions of many firms and households. In this case there were 2 producers - you and me and there were 2 consumers - you and me. In the case of a larger society - a larger market - there will be a number of firms and households and they will all interact together in the market. And there are 2 kinds of markets; markets for goods and markets for services.

When all these decisions are happening in a decentralised manner through interactions then we say that this is a market economy.

Markets are a good way of organising economic activity efficiently, because in the case of markets prices and self interest guide decisions which leads to a large autonomy. In this case when we were talking about wheat and milk we were not taking this decision based on - say - benevolence. I was not thinking that ok you should benefit and so you should be doing such and such things. You were not thinking about me. Both of us were thinking about ourselves only.

I was thinking that without the trading I was getting 4 kg of wheat and 800 grams of milk. With trading I will get more amount of wheat and more amount of milk. So, this interaction or this specialisation is beneficial to me and this is why I am ready to get into this arrangement. So, this is for my own benefit - for my own good.

Similarly in your case also earlier you were only getting 4 kg of milk and 400 grams of wheat whereas, now you get 5 kg of milk and 3 kg of wheat. So, it is good for you and because of this reason you are getting into this arrangement.

In the case of market the prices and the self interest are guiding the decision. A market ensures that because both of us are benefiting so we will wholeheartedly participate in this decision. There is a large amount of autonomy that we have because nobody is forcing us to take this decision. We are taking these decisions out of our own sweet will.

Market prices reflect the value of good to the society and also the cost to the society in making that good. The value of the good and the cost of the good is reflected by the market prices. What we saw here was that this is the market price and this is reflecting both the value and cost of the

product. Because in the case of wheat I will think that ok for making wheat I need to give up 200 grams of milk and this is also the cost that I am putting in. Similarly you can also have an indication of the value and the cost to you. For you the cost of milk is 100 grams of wheat whereas, in my case the cost of milk is 5 kg of wheat. So, in this case what will happen is that my value for milk is much greater - my value of milk is 5 kg of wheat. Your value of milk is 100 grams of wheat. Because I value milk much more than you do so if you give milk to me - it will benefit me much more then it will harm you and this is also giving me an indication of the cost.

So, looking at the value and the cost through prices both of us can make a rational decision. There is an automatic transfer of information regarding demand and supply. Why is it automatic? Because if the price of something is going up it means that the demand is going up or the supply is going down.

As you saw in the case of the market for crude oil: if the price of crude oil is going up it is also telling us that the supply is less, because of which the information gets passed on to both the producers as well as the consumers. The consumers will use this information to reduce the demand by using less and less amount of the products of crude oil, such as petrol by shifting to, say, more fuel efficient vehicles or shifting to, say, renewable energy. Whereas to the producers it will give the information that the supply needs to be increased. And market's invisible hand leads firms and consumers to desirable outcomes as against a certain central planner making the decisions.

Here it is important to note that if we think about a central planner the central planner will also have a dearth of information and it will also have a dearth of the resources to process the information. In the case of a market because the decisions are happening automatically the information is getting processed automatically, so it is much more efficient.

To sum up we saw that in making decisions people in society face tradeoffs which lead to cost. Cost is what you give up to get something. We also saw that rational people think at the margin. People respond to incentives. And we also looked at interactions - that trade can make everyone better off. And markets are a good way to organise economic activity. So, this is a summing up of what we have seen so far.

That is all for today. Thank you for your attention. Jai Hind.