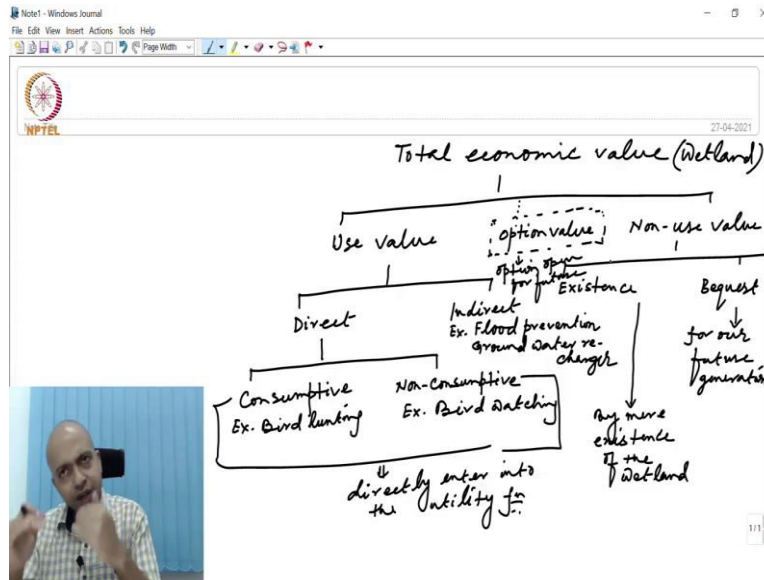


Environmental and Resource Economics
Professor Sabuj Kumar Mandal
Department of Humanities and Social Sciences
Indian Institute of Technology Madras

Lecture 37

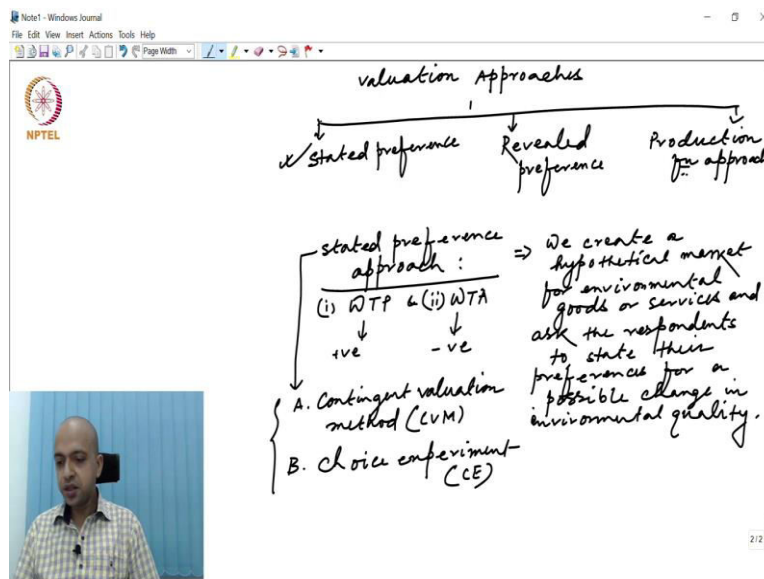
Economic Valuation of Environmental Goods and Services- Different Valuation Approaches Part - 1

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Now let us talk about the different approaches to estimate or to capture total economic value of environmental goods and services.

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So basically, when I talk about valuation approaches let us say this is valuation approaches then we have mainly three categories. First one is called stated preference,

then second one is called revealed preference and third one is called production function approach.

So let us now first talk about stated preference approach. In the stated preference approach we ask the respondents to state their preference about environmental goods and services. That is why it is called stated preference approach. Since, there is no direct market for the environmental goods and services we create a hypothetical market for environmental goods and services.

How to create that market that we will discuss in detail in a later part of our discussion. For the timing please keep in mind, in this stated preference approach we create a hypothetical market for environmental goods and services and we ask the respondents to state their preference for a possible change in environmental goods and services. So, what we do here?

We create a hypothetical market for environmental goods or services and ask the respondent to state their preferences for a possible change in environmental quality. This is called stated preference approach.

So that means respondents are asked to state their preference. How they will state their preference? When there is a positive change in environmental quality we will ask whether they will contribute something for that positive change? When there is a negative change in the environmental quality then we will ask the respondents whether the respondents are willing to accept some compensation for deterioration in the environmental quality.

By quantifying the amount, they would be willing to pay or accept we will estimate their preference. So that means stated preference approach the depends on willingness to pay or WTP and willingness to accept compensation. So this is for a positive change and this is for a negative change in environmental quality.

This is called stated preference approach and basically there are two methods; one is called contingent valuation method and secondly, we have choice experiment. So these are the methods that we apply in the category of stated reference approach.

Basically, whether we use contingent valuation method or choice experiment our objective would be to estimate their willingness to pay or willingness to accept willingness to pay for a positive change in environmental quality; willingness to accept

for a negative change in the environmental quality we will estimate willingness to pay and willingness to accept compensation through which we are basically estimating their preferences.

And since, this is not real payment this is through a hypothetical market we are asking question about a potential payment this is called stated preference. So that means they will only state their preference either by quoting their willingness to pay or willingness to accept this is not a real payment that the respondents are going to make.

They only state their preference they only state their willingness to pay or willingness to accept amount. So, this is called stated preference approach and there are two methods contingent valuation method in sort this is called CVM and this is called choice experiment CE.

So, we will discuss in detail about different steps of contingent valuation method, then how to estimate willingness to pay or accept through this contingent valuation method, what are the limitations of contingent evaluation method and then we will talk about choice experiment. So, this is the first category which is called stated preference approach consumers or respondents are asked to state their preference.

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Revealed Preference Approach:

- Preferences for environment are already revealed.
- Preference for environment is revealed through related market

A. Hedonic pricing
Ex. Preference for env. is revealed through housing market

B. Travel Cost method: Amount of money spent to travel to enjoy natural beauty of a place shows consumer's preference for environment.

Then second category is revealed preference approach. Here the preferences of the consumers are already revealed; preferences for environment are already revealed. This is unlike stated preference approach we are not going to ask them to state their

preference rather the consumers they have already revealed their preferences for environment.

Now, you might be thinking that for most of the environmental goods and services there is no market and in absence of any market how is it possible for the respondents to reveal their preference. If there is a market then we can understand we all can reveal our preference for different goods and services if there is a market, we go to the market we buy the product or do not buy the product through which anyone can actually understand our preference for those goods and services.

But, these goods environmental goods and services they do not have direct market then how is it possible for them to reveal their preference? Yes, it is possible for them to reveal their preference for environment through related market. This is something very important we need to understand.

So, preference for environment is revealed through a related market. Now, I will give you an example and the example will come through the approach; the first approach for this revealed preference is Hedonic pricing. I will give you an example to understand what is hedonic pricing and how is it possible for respondents to reveal their preference for environment through related market.

We all know about the housing market. A price of a house how much you will be paying for a house depends on some attributes what are those attributes some attributes are very, very specific to the apartment. For example, what is the square feet, what is the carpet area, in which floor the apartment exists, how many bedrooms it has, whether it has any attached balcony or not, whether it is a north facing or south facing whether there is a proper ventilation or not.

So, these are all apartment specific feature that determines the price of a house. Now, apart from the apartment specific features the price also depends on where is the house located. For example, if the apartment or house is located in a completely green area so that you have a fresh air to breathe the price of that house would be much more than the same type of house same in a sense other attributes are similar but located in a very, very polluted and congested area.

So that means for a same 2 BHK apartment consumers might be willing to pay something extra if the house is located in a different place where there is lot of greenery

and there is less pollution. Then the additional money the premium what the consumers are paying that is basically showing the consumer's preference for environment which is revealed through this housing market.

So, that means we can say that preference for environment is revealed through housing market. How to determine we will discuss in detail when we talk about hedonic pricing. So basically, I am giving you the idea price of a house depends on two things one is apartment specific or house specific and second, second is the neighbourhood specific.

Now, in the neighbourhood specific factors one such important factors in that category is environment. So, just by collecting price of a house we can actually understand what is the premium the respondents are paying for the better environment and that basically shows the respondents preference for environment and that is how preference for environment is revealed through this housing market.

So, this is the first approach under reveal preference category. Second is called travel cost method. Many a times, we travel to different locations to enjoy the natural beauty is not it? We go to the hilly region to enjoy the beauty, we go to the sea side to enjoy the sea beach, we go to the countryside to enjoy the natural beauties so that means respondents they incur some amount of cost.

Because, travelling it involves some amount of cost; the cost of ticket, then your lodging, then your fooding, then the amount of money what you sacrifice in terms of foregone, wage or salary everything actually counted as a travel cost. And this much of money you are spending for what this much of money you are spending to enjoy the environment to enjoy the natural beauties of the environment.

And that basically shows how much money you spend to enjoy a specific environmental location, a location with natural beauty that shows individuals preference for environment. So, that means here amount of money spent to travel to enjoy natural beauty of a place shows consumers preference for environment.

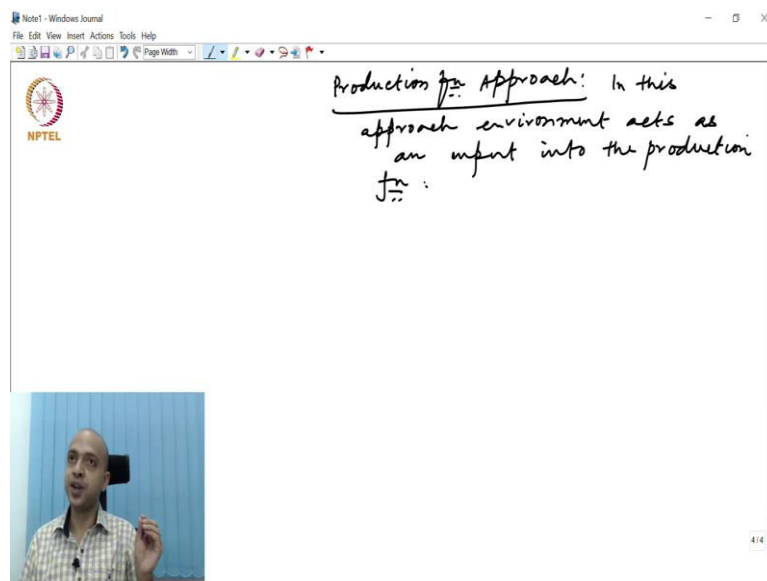
Of course, this is not as simple as I am talking about because when the individual travel to a particular place then individual, they do not really go to enjoy only a specific site, rather one trip of that place involves traveling to many competing sites, traveling to many competing sites.

For example, when I go to Marina Beach then probably, I will not only go to Marina but I will see some of the nearby sites as well. When I go to on the way to Pondicherry maybe I will be enjoying the Mahabalipuram then in the Pondicherry itself there are different competing sites.

So we need to understand that means the total amount of money if we take only to get the economic value of a particular sight let us say Auroville and Pondicherry that may not be correct, because by spending that amount of money I have actually enjoyed many different sites.

So, in that case how to how to estimate the economic value of a specific site that is basically a challenging task. So, we need to discuss in detail about the travel cost method. So, in revealed preference approach that means in short I am saying that there are 2 methods one is called hedonic pricing and second one is called the travel cost method. In both these cases, the respondent's preference for the environment is revealed through a related market.

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Then the third approach as we discussed is called production function approach. Here, in this approach environment acts as an input into the production function. For example, when we are talking about the valuation of wetland may be wetland the water from the wetland is used for the irrigation purpose.

Then when the water from the wetland is used for the irrigation that means wetland is entering as an input in the production process. So, by calculating what is the contribution

of the water, the irrigation water into the nearby farmer's production value we can actually calculate economic value of the environment through this production function approach also.

So, that means by now what we understood is that there are basically three approaches stated preference, reveal preference and production function approach to estimate the economic value. Now, as I said there is no guarantee that stated preference, reveal preference and production function approach all of them would be able to capture the entire economic value that means total economic value.

It may so happen that production function approach captures only a fraction of the total economic value while stated preference approach captures the entire economic total economic value. So, there is a difference across these approaches in terms of what is the proportion of total economic value it can capture.

So, while stated preference approach in stated preference approach respondents are asked to state their preference through creation of a hypothetical market and by asking their willingness to pay and willingness to accept in real preference approach their preferences are already revealed.

How they are revealed through a related market and as an example what we discussed about the housing market wherein respondents they express their preference for environment through the housing price. Same house located in a greener area is completely different from the same house which is located in a congested place.

Thereby, we can actually calculate the respondent preference for the environment. And in a travel cost method what we do, we actually calculate what is the total amount of money the consumers or the respondent they spend to enjoy the natural beauty of a particular site.

And in production function approach environment acts as an input in the production function. So, by estimating the production function we can actually calculate the economic value of the environment. These are the three different approaches and in our next class what we will do we will discuss these approaches one by one.

We will first start our discussion on revealed preference, sorry stated preference approach and within the stated preference approach we will first discuss about contingent valuation method. Thank you.