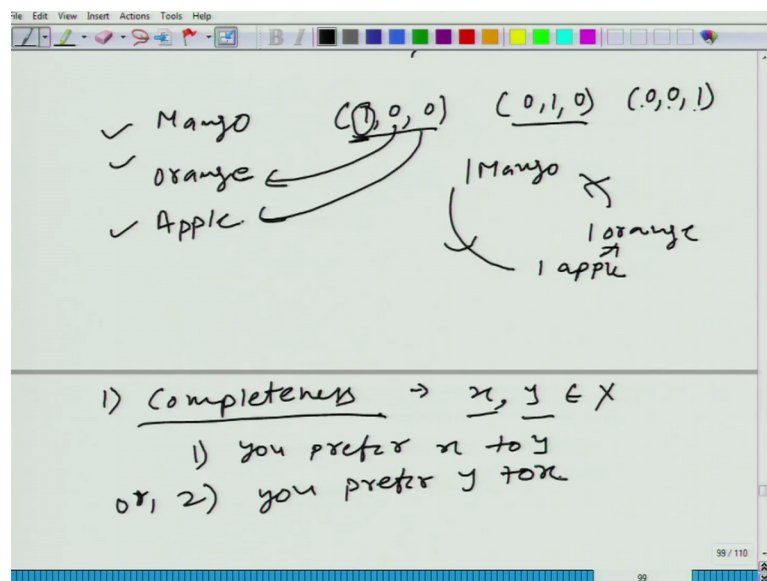


An Introduction to Microeconomics
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Lecture – 40
Some Axioms

Let me just take an example we are talking about a world where 3 different kinds of fruits are available.

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Mango, oranges and mango, orange and let us say apple it does not matter it is just for illustration, it does not matter what fruits you choose 3. Let us say in the one first bundle you have only mango, in the second bundle you have only 1 orange and in the third bundle you have only one apple let me also show you how you will write it mathematically. 1 comma 0 comma 0 let us say first number gives you the first it gives you number of mangoes, second gives you number of oranges, third gives you number of apple.

So, in the second you will have 0 comma, 1 comma 0 and in the third you will have 0 comma, 0 comma, 1, 0 mangoes, 0 orange and 1 apple. Now, let us say there is a person who likes the bundle 1 more than bundle 2. So, 1 mango is preferred over 1 orange and 1 orange is preferred over 1 apple and how (Refer Time: 01:40) if one apple is preferred over 1 mango. So, what is happening, mango for you is better than orange, orange is

better than apple, but apple is better than mango. It happens to us that we say that if tea and coffee is there I will take tea, if coffee and coke is there I will take.

Student: Coke.

I will take coffee, but coke and tea is there then I will take coke, we exhibit this kind of choice, but if we exhibit this kind of choice then one thing that you can say colloquially about this person that this his choices are inconsistent and we cannot talk, I am not saying this consumes consumer theory does not say that you cannot have this kind of preference this kind of liking. It is not saying only thing that it is saying that if you have this kind of liking we cannot use the theory that we are going to learn further to describe your choices, because there is a randomness in your inconsistency in the way you are making choices.

So, when we want to talk about how a person is making choice, how a person is choosing then there should be some consistency in the way he functions in the way he makes choices. So, I am not excluding, I am not saying that you cannot have choices of this kind, but we would not be able to talk about. So, we are putting certain restriction certain in the axiom forms in the building block form and the first axiom that I want to talk about is completeness and what does completeness mean, have you ever heard this term completeness what does it mean?

Student: that you should not have you (Refer Time: 03:41) cyclic order.

No it does not say that.

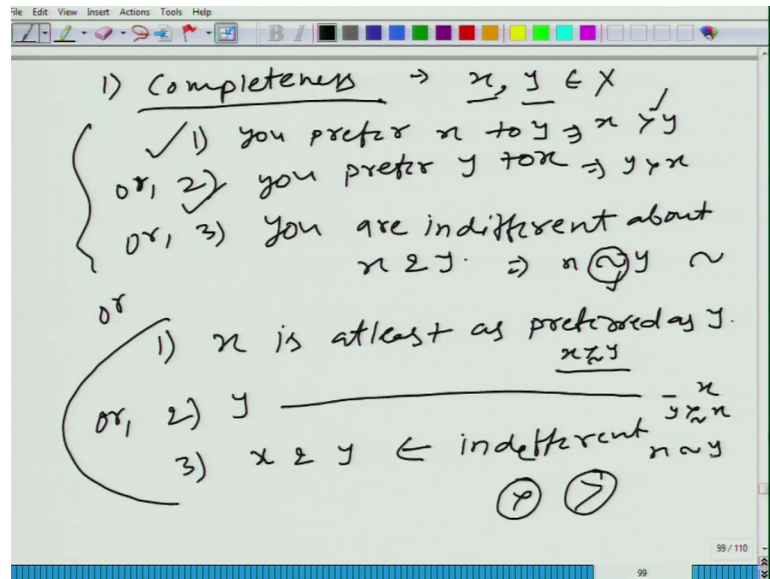
Student: It should be clubbed.

It does not say that it has nothing to do with the earlier example I gave you I will come back to that example in some other property or in some other axiom, but not for this axiom or for this property. Here it is very simple, let me say again let me say start with 2 bundles x and y are any 2 bundles in the conjunction set fine, x and y are any 2 bundles in the conjunction set. You should be able to say one of these 3 things about x and y either you should say able to say that you prefer you like you prefer x 2.

Student: (Refer time: 04:32)

You prefer x to y or you should be or you should be able to say you prefer Y to x.

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And third or you should be able to say that you are, you are you are indifferent about x and y.

One of these 3 things you should be able to say fine and these things can be rewritten in a different form also you can also say that x is at least as preferred as as y or y is at least as preferred as x and third x and y you are indifferent among x and y. Here again you have 3, but here 3 are mutually exclusive, if 1 is true you cannot have second, if second is true you cannot have first and third, if third is true you cannot have first and second, but here these are basically saying the same thing as the earlier one, but here these are not mutually exclusive.

Let us say if you like x and y exactly the same then all 3 would be true, x is at least as preferred as y y is at least as preferred as x and you are indifferent between x and y. Let me also use a notation to describe it this is written as x is you prefer x to y of course, I am talking about you this is not this symbol is not same as this is greater than this is preferred to is preferred to.

So, this symbol means is preferred to and this is y is preferred to x and this is you are indifferent this is sign that says indifference, is like this and here what we say just like here we its looks like similar to greater than here the symbol would look similar to

greater than and equal to. What it says we are combining this and this one and this one I am bringing it here, what it says when x is at least as preferred to y as preferred as y either 1 is true or 3 is true. So, we are combining the symbol similarly here y is at least as preferred to x and here x and y .

So, in other word let me just describe what does it mean, that basically any you are able to conceive different bundles in your mind and all these consumption bundles are in your consumption set when you pick any 2 bundles from this set you should be able to compare them. You should be able to compare them you should be able to say that I like one over the other or you are indifferent between these 2.

Let me describe a situation just to clarify this concept sometime it happens you always when you; you know you are at your home and your mother asks you that would you take tea or coffee and you are confused you are not able to say would you call your, would you call your is it does it does it exhibit completeness.

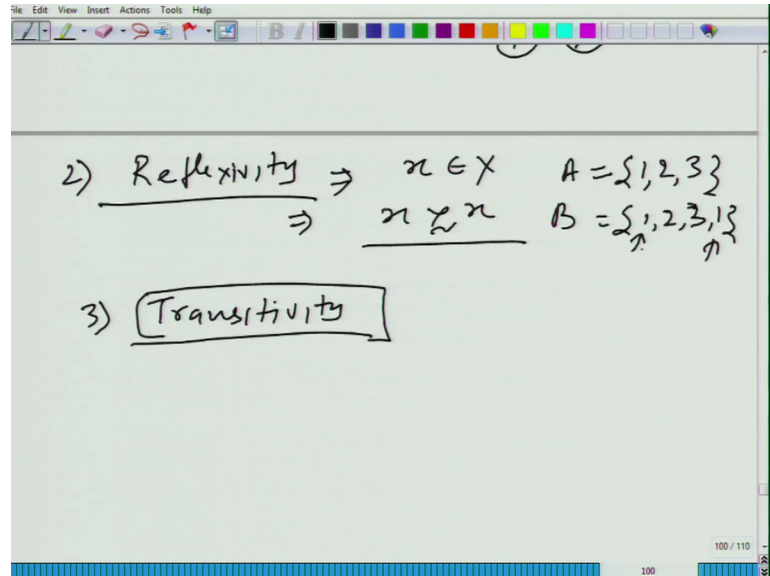
Student: Yes (Refer Time: 08:57).

By the way these are property we are talking about a choice of a person. So, I can say we are talking about preferences of a person; we are describing a preference of a person. So, the question can be that do you think your preferences are complete when you are confused between 2 different bundles here bundle is just you can say when someone is asking you coffee and tea imagine that you are in a 2 good world and you have to choose between a bundle made of coffee and tea.

If you prefer tea if you prefer tea then it is 1 tea comma 0 coffee, you can always translate the problem in the mathematical term ok. So, do you think it is complete or it is not complete, let me tell you no your preferences in this case are not complete because you are not able to compare these 2 you are confused. These are 2 different things when you are confused you are not able to compare, but when you compare in your mind and you say I do not care, I do not mind tea or coffee it means you are you know you are indifferent between the 2. So, that is not a state of confusion is that you are not able to figure out, that situation is excluded that situation is excluded fine is it clear completeness is clear to you ok.

Now, let us talk about second axiom and that is sounds little you know I let me warn you it sounds its bit weird.

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But it is more of a mathematical requirement reflexivity [FL].

Student: [FL] minute.

[FL] minute [FL] reflexivity what it says that you have a bundle and when you compare this bundle with the same bundle then you should be able to say that I prefer the first bundle at least as much as the second the original bundle. So, when you have x a bundle in the consumption set capital X this reflexivity property says that X is at least as preferred as x and it sounds a little funny, but what is the need to talk about it. You know it is there is a 1 condition where the one situation where you should not talk about it, remember if some of you must have done mathematics. So, you know this set x or let me denote it using a 1 2 3 this is a set A and this is a set 1, comma 2, comma 3, comma 1 by set theory definition A and B are the same set.

The only difference between a and b and that you know use a and b are equal that one is mentioned here twice. So, the flexibility is for this kind of scenario, what if you pick this bundle and this bundle they are the same bundle, but there means in twice. So, even in this scenario you should be able to compare them able to compare them that is what it is saying. So, it is more of a mathematical requirement then in economic in nature, third

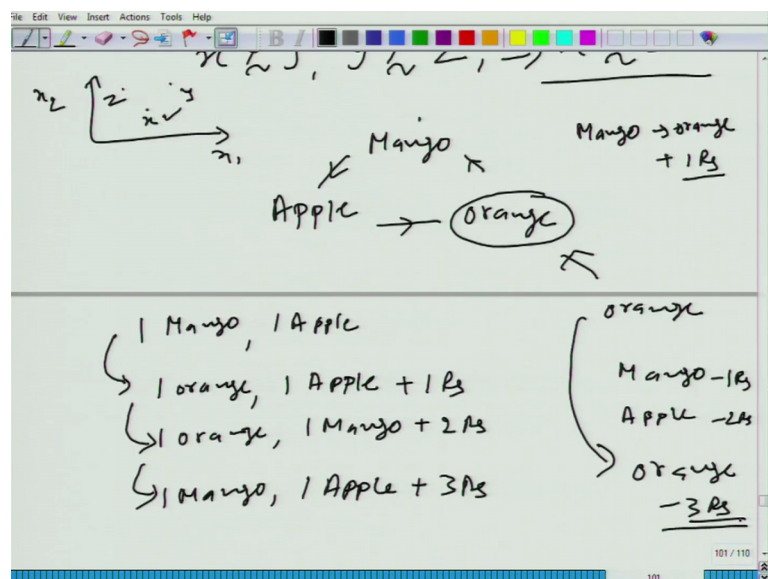
property that I want to talk about is transitivity and this is bit more problematic first and second are that you should be able to compare that is what first and second are talking about transitivity on the other hand is talking about that not only you should be able to compare you should be able to compare them in consistent fashion.

So, what it says let us take now 3 bundle x, comma y, comma z in x if you say x is at least as preferred as y y is at least as preferred as z then it implies that x is at least as preferred as z and remember the earlier example I gave you mango, orange and apple. There this properties violate it, many times this property is not you know this property is violated in our real life, but when we are doing such thing probably we are not thinking enough we are you know or probably we are not thinking enough and or we have inconsistent preference it would be difficult for to make prediction about this scenario ok.

Let me also say is this clear what it means is let us just say here on these 2 axis x one x 2 let us take 3 here is xy xy and z you are able to compare any 2 bundle you are picking x and y by first property you should be able to compare them and let us say. You say x you prefer over y and then you pick another 2 bundles z and y and you figure out that y is at least as good as z then you should be able to say x is at least as good as z fine, now let me say you may feel that what I am saying is excluding various realistic scenarios.

Let me talk about a very realistic scenario, again coming back to that example.

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Mango, orange, apple I am talking about it because you may feel that by using this making this assumption we are excluding various realistic scenarios, but those realistic scenarios are really bad. If you can look at it from this using this example, let us say that you have this kind of preference that you prefer mango over orange, orange over apple and apple over mango and let us say in the monetary term that you are willing to you know let us say if I move you from orange to mango you will pay me at least 1 rupees because you like mango more. So, of course, you are willing to pay more for mango even though the price in the market is lower that is immaterial right here.

I am talking about your likings. So, let us say you have a orange and I have a mango. So, what we can do and you are willing to pay at least 1 rupee probably more than 1 rupee for getting this mango exchanging this. So, what I can say that I will give you mango you give me orange and one rupee. So, now, let us say I start with there are 2 person the person 1 has a mango and 1 apple and person 2 has orange and this is person 2 choice. So, now, after this what I have is 1 orange, 1 apple plus 1 rupee and this person has now mango and here now let us look at it between mango and apple this person prefers apple and his willing to give up at least 1 rupee then we exchange this apple with his mango.

So, now, I give him an apple and take his mango. So, what do I have now 1 orange 1 mango.

Student: 2 rupees.

And 2 rupees and what does this person has now.

Student: (Refer Time: 17:15).

Apple fine. Now we continue with this we say between apple and orange this person prefers orange, I say I will give you orange that is originally his orange and here he has minus 1 rupee minus 2 rupee. Now, I will give you orange and happily he will give me the apple along with 1 rupee.

So, what I will have now after I give up my orange and take apple from him, I will have 1 mango 1 apple.

Student: 3 (Refer Time: 17:59).

Plus 3 rupees and what this person will have orange that he has earlier minus 3 rupees. So, each step on each step if he moved from here to here, here to here, here to here all these transactions were beneficial to him, but we added up all the transaction he is having a net loss of 3 rupees. So, why because he has inconsistent or in technical term intransitive preferences fine so, that is why we assume that a person has transitive preference if I want we want to talk about that person in consistent manner.