An Introduction to Microeconomics
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Lecture – 34
Budget Line and Budget Set

So, we talked about 4 basic building blocks of consumer theory we talked about consumption set or choice set that is all about what you can conceive in your mind. It is not limited by any of the constraints that you face, it is all about what you can conceive in your mind and whatever bundle or coming that is bundle is a combination of goods whatever combination of goods that you can conceive in your mind would be part of this consumption set and then from conceivability we move to the affordability.

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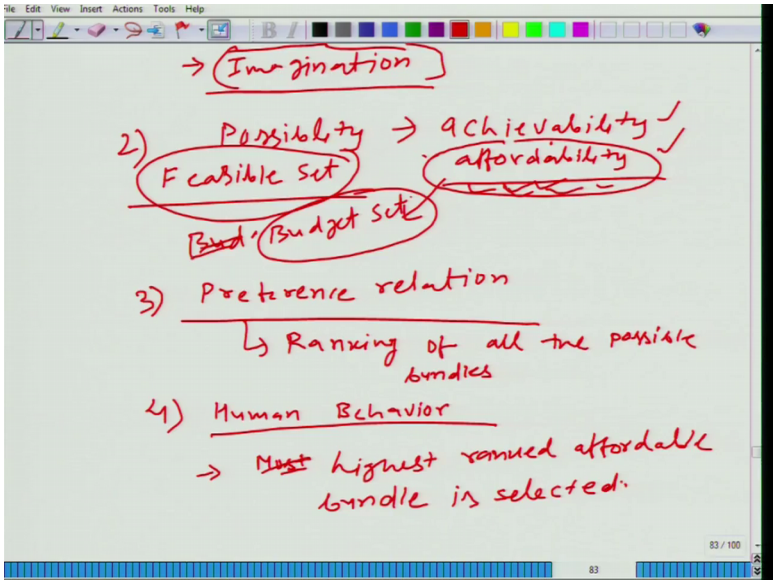

And affordability has something to do with the either monetary constraint because of monetary constraint you cannot access certain bundles. So, the bundle that you cannot afford because of monetary constraint that bundle cannot be a part of your feasible set or if we are not if we can also call it the budget set what whatever bundle that fits in your budget would be part of this budget set and here the key word is affordability as opposed to conceivability in consumption set.

And third we talked about preference relation that that is about ranking of all the bundles. So, that given your constraint you can choose the bundle that you like most and

lastly the 4th block that we talked about is the human behavior that here you choose the highest ranked bundle.

Now, conceivability of course, it depends on what you know of if I talked about a world which has only one good available then you cannot conceive of any other bundle, you can conceive of a bundles different bundles which contains different amount of the same good. But that is not a very interesting example because there is a typical cutoff point let us say it is about money, then let us say if I have all the fish that you can buy and you have let us say if you are this is the only one good available in this world.

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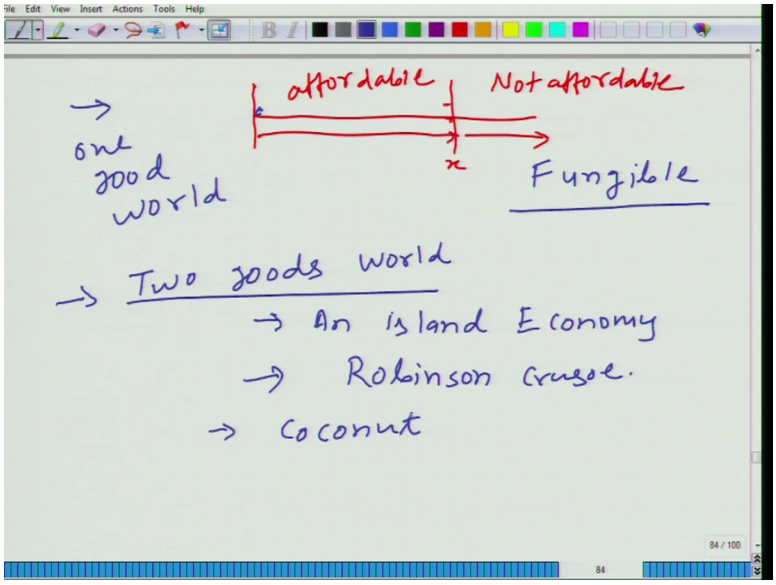

So, of course, you can buy up to the certain point x and then you cannot afford beyond x. So, this is affordable and this is not affordable fine this is very simple. But one thing I want to mention that the bundle here the fish bundle here at this point and fish bundle here the unit here there they are the same they are interchangeable they are perfect substitute of one another this is a big mistake that we make in our day to day life. Let me give you an example from cricket because that is the most popular game in India.

So, when let us say India needs to win India needs to needs to score at least 254 run to win a game against Pakistan and then we say that person who scores the 254 run he says that he contributed to the India's win. But just think about it the person who contributed the first run or the second run those run have equal value as the last run. So, those two runs are interchangeable they are the same it does not matter. Similarly let us say if you

want to buy shirt and you are sort of let us say 100 rupees and someone gives you the 100 rupees then you say I bought shirt using his 100 rupees. It does not make any sense if you look if you think about economics perspective because if you are using 100 rupee you could use that particular 100 rupees for some other work and the 100 rupees you are going to use for the other work you can pull it in for buying the shirt. So, all these 100 rupees are interchangeable. So, in other word they are the word use is called fungible. So, never ever get confused about it.

You can exchange although we why I am mentioning it because time and again I am going to talk about the last unit, but in terms of your the gain that you get from either the first unit or the last unit day you can exchange them the order can be exchanged anyway that is for the one good world.

Now, let us talk about two goods world and there we can talk about the budget set affordability because it is not as trivial as the earlier one just to make it interesting. Let us imagine an island economy and this island is populated by Robinson Crusoe and he is maroon on this island. He has access to either, let us say coconut he has access to coconut or he can use his time to catch fish. Let me denote coconut by C and fish by F.

Let us say that in 24 hours he cannot work for more than 8 hours.

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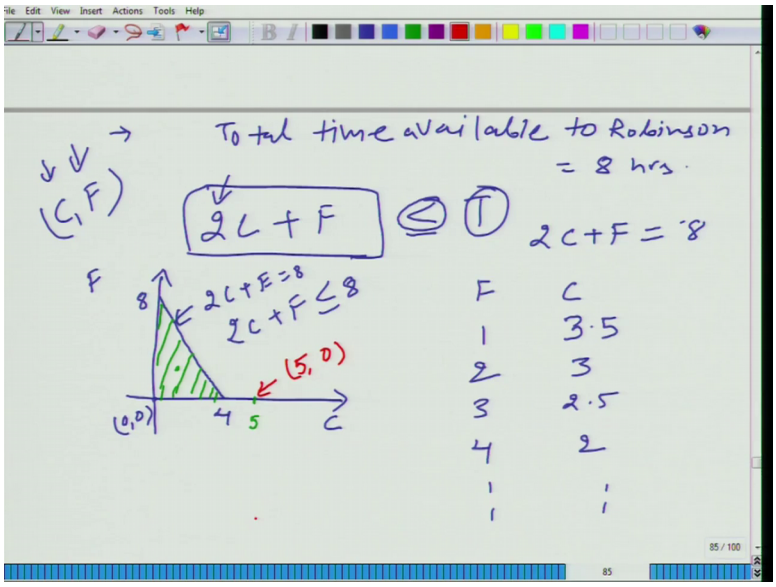

So, total time available to him is to Robinson 8 hours and let us say that it takes 1 hour to catch 1 unit of fish and it takes 2 hour together 1 unit of coconut. So, the all the combination that he can consume what is happening let me say here I may reverse it, but let us say 1 hour for 1 unit and 2 hours for 1 unit.

Let us say if he gathers C units of coconut how many hours he spends on collecting coconuts 2 C and if he catches F units of fish then how many hours he spends catching fish F. So, 2 C plus F because this is the total time he is spending in gathering C units of coconut and catching F units of fish. So, in this bundle we have C comma F, C denoting the number of the first number denotes the number of coconut and the second number denotes then a unit of fish and this has to be less than or equal to 8. And this is his budget constraint. Although it is not in terms of money it is in terms of time, but you can very well imagine a scenario where a person is interested in only two things coconut and fish or it can be cloth and fish does not matter any 2 items. And then 2 rupees is the cost of 1 unit of C and 1 rupee is the cost of 1 unit of F and he may have 8 or 4 I if you want to want to change 8 to some abstract number you can say it is time T, but this time here because 1 is in hours. So, it is in hours. But if it is in rupees then T will be in rupees fine and this is the constraint. Can we draw it?

Let us say we put C on x axis and F on y axis. How would it look like? Downward sloping straight line just. So, so that it becomes clear to you let us forget this less than sign and just let us focus on 2 C plus F is equal to T. So, if F is one unit how many and let us put here for this example it is equal to 8, how many F you can get?

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You can get 6, oh sorry I you can get 3.5 and if you have 2 units of F how many units you can get.

Student: 3.

3 and similarly 2.5 and 2 and so on, and if you plot you will get a curve that is how does it look like.

Student: Downward sloping straight line

Downward sloping straight line 8 and here you will have 4. How about a point here? Let us say this point 0 comma 0 is it affordable, it is affordable if we again bring the less than sign. So, if we are talking about 2 C plus F is equal to 8 then we get the straight line and when we talk about 2 C plus F less than or equal to 8 then we get this straight line and also this triangular area and any bundle here is inside this triangle or on this triangle is a affordable. And how about a bundle outside this triangle? Let us take a bundle here. This green point what does it indicate which bundle does it indicate it indicates a bundle 5 comma 0, 5 units of coconut and 0 units of fish. To gather 5 units of coconut how many hours do you need?

Student: 10.

10 and that is not feasible given here you can say very well how about we include the next day, but that would change the problem we are talking we are here the basic assumption although I did not mention it explicitly. The basic may assumption is that you cannot store these products and we are talking about 1 day budget, you gather it and you spend it on the same day fine. Now, what can we do we can rewrite this equation 2 C plus F is equal to 8, it means we are taking the straight line only. This straight line is called the budget line and the whole triangle is called the budget set. How the budget line is different from the budget set?

Student: The budget line is only the maximum we can take we can.

Maximum in which sense.

Student: In terms of.

Let us say for this problem this problem the budget set indicates the maximum amount of fish you can get given the amount of coconut you have already gathered or you can reverse it also the maximum amount of coconut you can gather given that you want to catch this much amount of fish, while any point inside the triangle it gives you all the possible bundles.

So, let us look at it just on the line what do we get we can write it like this also let me write it in terms of F what do we get 8 minus 2 C and what is this 8 this is math problem not the economics problem. What is this 8? 8 is a vertical intercept 8 is the vertical

intercept and also it gives you the maximum amount of fish you can catch, of course, when we want to catch the maximum amount of fish you have to decrease the amount of coconut to 0 fine.

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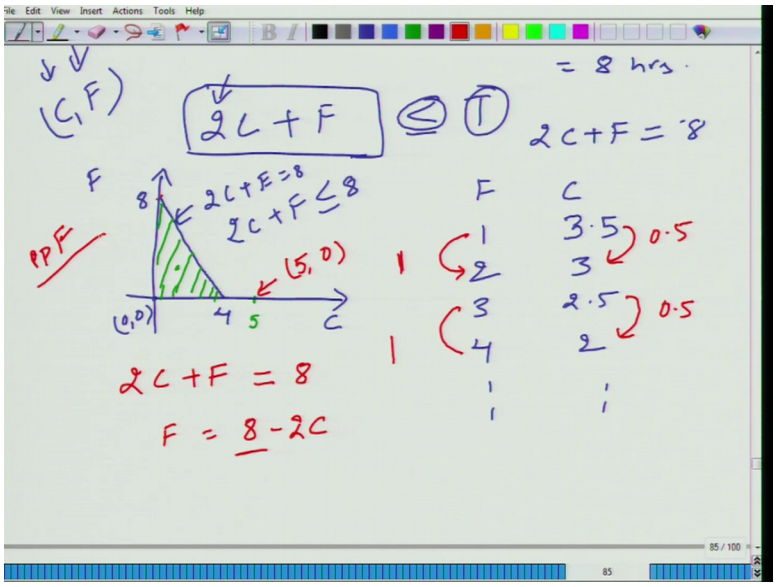

We should also think here if you look at pay attention to this table if you increase your fish catching by 1 unit what happens to the coconut.

Student: It decreases by 0.5.

It decreases by half a unit. So, here one unit implies 0.5 units at any level you see here from 3 to 4 you go in fish gathering fish catching then coconut goes down from 2.5 unit to 2 units, so 1 0.5. So, can I say the cost of 1 unit of fish is half units of coconut or price of one unit of coconut is 2 unit of fish, can I say that. This is the relative price in way relative prices of coconut in terms of fish or fish relative price in terms of coconut.

This also indicates the opportunity cost of catching fish in terms of coconut what is opportunity cost by the way. Just a revision we have talked about opportunity cost during the first chapter, but what do we mean by the opportunity cost.

Student: By substituting one good we can the amount of other good that we can get.

But here it is simple you are talking in this context. So, what basically we mean by opportunity cost is in general that it is the cost of it is the value of best alternative for

gone. Like say you devote one more hour to catching fish you devote more 1 more hour to catching fish it means you are devoting 1 hour less to gathering coconut and in this economy you have only two activities catching fish or gathering coconut. So, 1 more hour devoted to catching fish is means 1 less hour to gathering coconut. So, what is the best alternative of catching fish here?

Student: Gathering coconut.

Gathering coconut. So, when you catch fish this is the alternative for gone. In more complex world when you can do more than to act you can have option of choosing among choosing from a list of a large number of activities then your opportunity cost is the value of best alternative for gone. For example, here this person can do also apart from catch catching fish gathering coconut he can also gather let us say some other fruit apple that is on the other side of the island although we are not considering for this example what will be the opportunity cost of catching 1 unit of fish.

Student: Apple or coconut.

Which one how would we figure out it depends, it will depend on that particular person what he likes most after fish. Since he has decided to catch fish of course, he likes the catching fish most, he prefers catching fish most. So, you will have to figure out what is the best alternative among these two. So, this is also giving you the opportunity cost fine.

And also we are talking here in terms of production just to give you some again that concept work that we learned in the first chapter. This budget line is also a production possibility frontier PPF, production possibility frontier how it is production possibility frontier what does it give. What is the production possibility frontier? Combination of output that can be produced in an economy given the limited supply of input and that is how you get the production possibility set. And what is the frontier? The frontier gives you the most efficient combination of outputs that you can produce.

So, here for example, the points inside they are in production possibility set, but on the straight line it is production possibility frontier. I also just a moment I want to take to emphasize that budget set is not always a straight line it is not always a straight line. For an example think let us come out of this island economy let us talk about real world where someone is concerned about only fish and coconut another think is that if you buy

more than 5 units of coconut in the market then the seller gives you discount that is the general practice, in that case budget curve is not going to be a straight line what is going to happen.

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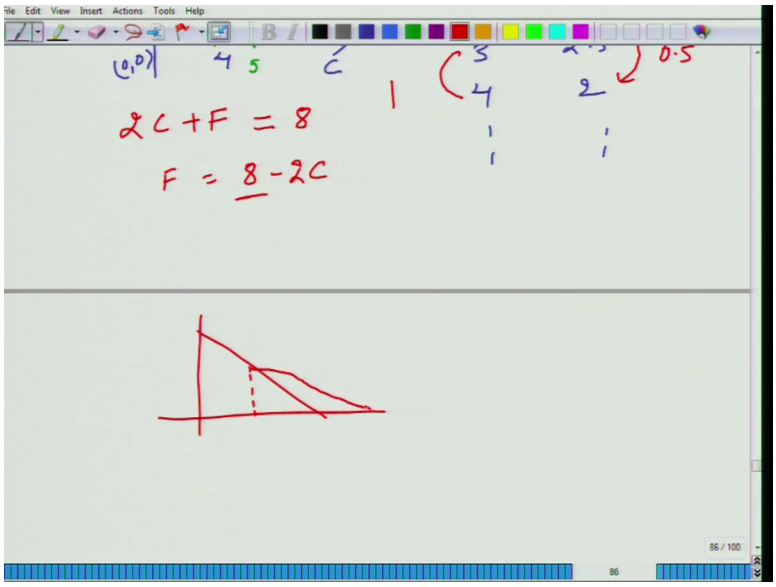

Student: Still 5 units or could be a.

Still 5 units you will have this particular line and beyond 5 units.

Student: If the price will decrease so.

Price will decrease so.

Student: It would.

So, let us focus on this what happens when price decreases or income or amount of resources increases, that is how we will focus on the factors affecting the budget line.