Microfoundations of Macroeconomics

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Lecture – 01
One Period Model I

Hi everyone, we are going to talk about a new course that I have just introduced, and it is about the microfoundations of macroeconomics. So, at the intermediate level, macroeconomics becomes interesting when we analyse the size of the government, when analyse the money supply; we analyse the inflation; we analyse unemployment. So, all these things play a very important role and when you have an understanding of the IS-LM framework, then the IS-LM framework gives you a complete idea about the movement of goods and money market.

But those dimensions are important, and we always try to see macroeconomics from that perspective, because macroeconomics speaks about the macroeconomic indicators like GDP, inflation, employment, all the indicators that explains the general overview of the economy. So, maybe at the top level, it can be called as from the top point of view that from the economy point of view, which all indicators are important, but it can be understood from the micro perspective also.

So, we are trying to see that when a particular firm reacts to different policies, how the macroeconomic indicators are going to be impacted. And in the same way, when I say that we have the consumers, so, consumers are also having some demand and this consumer always tries to maximise his or her profit.

So, when I say that consumer is going to maximise the profit or consumer is going to maximise the utility or when we have the consumer asking for more and more utility, more and more satisfaction or when it is asking for more and more goods and services and what are the macroeconomic implications. At the time when we are in a completely new normal environment when we have shocks like COVID-19.

And in these environments, it has become I would say critically important to examine the micro behaviour of different agents in the economy. So, which all are the micro behaviour of the agents when we talk about the agents, talking about the micro aspects of the economy, so, of course, the normal name comes in our mind is about the consumer and firm.

So, here, we will be trying to see from the microeconomics perspective, talking about utility, talking about the consumer equilibrium, talking about what happens to consumer equilibrium when you have sudden change in either the income preference of the individuals or if there is some exogenous shock coming to this individual. So, maybe the government is going to increase the tax, maybe the income that this representative consumer was going to get from somewhere it is going to be impacted.

So, how the overall demand which when we aggregate these consumers at the macro level, talking about aggregate consumption, which is one of the important variables in macroeconomics, then how this particular variable is going to be impacted. So, can we draw some inference from for the macro-economist also? So, that is the underlying idea behind this particular course.

And we will spend some more time, not just trying to understand the tenets of the microeconomic foundations, but also, we will spend some more time talking about how we can apply these micro phenomena in different types of economic activities. So, in case of money supply, so, can we apply the macrofoundations? In case of trade, can we apply the macrofoundations?

In case of the investment demand, can we apply the macrofoundations at firm level? So, all these dimensions will be covered. So, in a half an hour time, we will try to understand the microfoundations of macroeconomics from the microeconomic analysis perspective and also from the macroeconomic analysis. So, I hope this course will give you a sufficient background about the behaviour of different agents in the economy.

And we can fragment those agents into different components of macroeconomic models, and we try to aggregate at the economy level. So, we will be talking mostly in the framework of closed economy that how these representative consumers and firms are going to react. So, I have prepared some slides and I will be sharing with you. So, here are the references.

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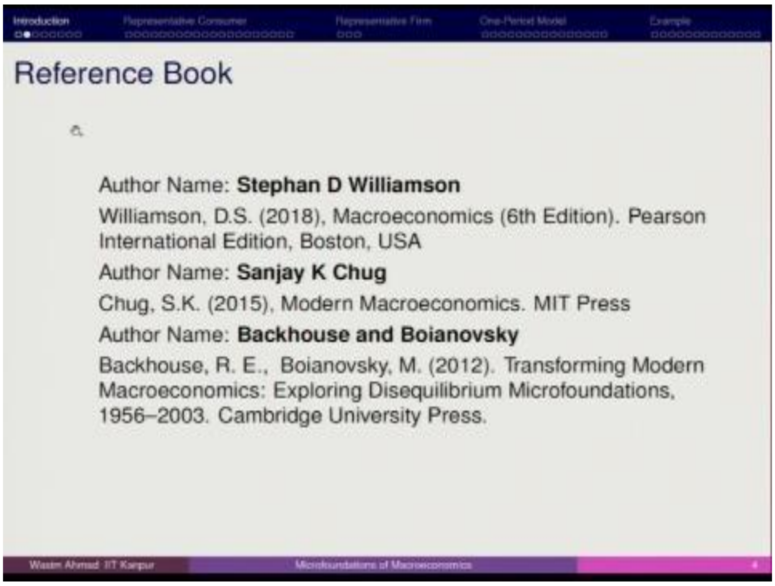

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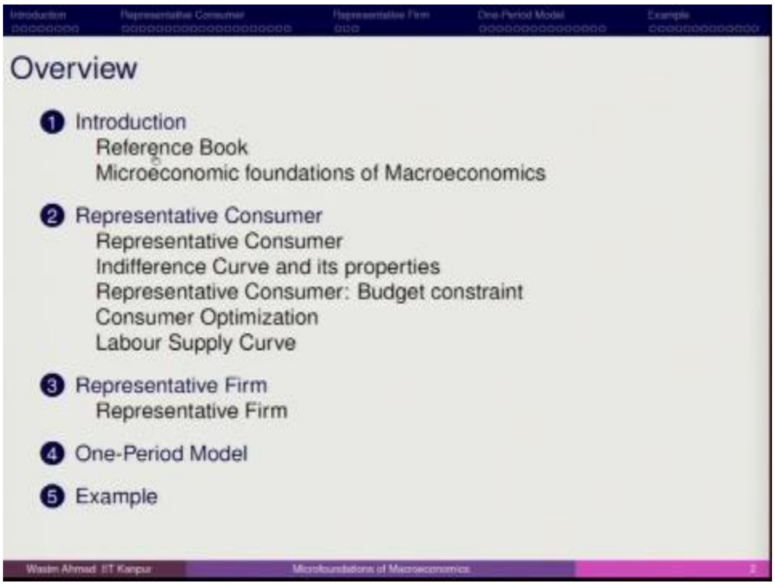

So, when I say about the consumer, so, here I am mentioning about; here, this is the brief outline of the topics that I will be covering under the representative agent, representative firms, different macroeconomic agents. But one thing here, I would like to mention that here we will be talking only in the current period terms, so it's a static model and not a dynamic model. What is the difference between static and dynamic model?

In the static model, we talk about one period model. So, under that period, you do not have any future period; you only have the current period. So, whatever you are earning, whatever income that you have, whatever consumption that you do, whatever amount that you save, you are going to utilise all these things in the current period itself. There will not be any future period.

So, when I mentioned that there will not be any future period, then we are not going to talk about that how this particular representative consumer saving is going to help this consumer in future. So, that is not the purpose. Here, the purpose is that in the current period environment, can I understand the behaviour of different agents in the economy? And, can I draw some inference for the macroeconomic picture? So, we have to now think.

So, here we will be having the reference book, then the microeconomic foundations of macroeconomics, then we have the representative consumers, these are the micro agents. So, we will be talking about them. So, the representative consumer when I mention, will have certain behaviours. So, we will try to characterise the representative consumer that how this representative consumer is going to have.

So, he will have the utility preference, then he will be also having subject too. So, there will be some kind of restrictions on the income of the representative agent. So, this representative agent will also face a budget constraint. So, budget constraint we will try to define. Second thing is about the consumer optimization.

So, when I say consumer optimization, so, we will try to see that what is the optimal level of consumption of this representative consumer, but here you have to also note that we will be talking about a single period model that is also called the one period model. In one period model, we will have the setup like consumer and leisure. Leisure in the sense that we are trying to examine that if the particular representative consumer exists.

And if he or she has been given chance to earn some amount of money, the real wag, how this particular representative consumer is going to utilize that income and given the time that this particular representative consumer has so, which is about the 24 hours in a day. So, for this representative consumer works for 8 hours and on some kind of income through working in a firm or doing some activity, leisure here implies that this particular consumer is not willing to work.

So, even he is not working for 8 hours; he is just utilising 24 hours for just doing extracurricular activities or something he is interested in for which he does not earn any money. So, non-income generating activities are part of leisure. So, maybe, he would like to spend some more time going for photography rather than going to work. So, those things will be trying to see.

Here, consumption means that whatever income that this particular guy is going to earn, it is going to translate into consumption, but then that will be subject to how many hours of time this particular representative consumer is going to devote to work. If he is not going to devote that much amount of time, then there will be an increase in leisure.

So, we will be trying to see how with the help of consumer and leisure, the representative agent is going to decide about his income behavior, his utility preference how this particular representative consumer is going to optimise his level of consumption given the real wage and the leisure opportunity that this particular representative consumer has.

And based on that, we will try to derive the labour supply curve that what happens when we have an increase in labour supplies, whether this representative consumer when he or she has income, whether this dependent consumer is going to see or going to increase the number of hours that he or she was supplying in the market. So, number of labour hour if he or she is supplying the market or going to the firm as in supply of labour, then he or she gets income.

So, whether the preference of getting more income is important or going for leisure is important, that is the underlying idea. So, when we talk about at the micro level that what should be the equilibrium wage rate for the labour and at the macro level when we talk about the country level policies when we design the wage policies or the labour policies of the government. So, it is not always good to have a higher income.

And that is not the ultimate thing and that doesn't lead to more productivity or more supply of labour. If you are giving more income, then it also means that this representative consumer would feel that it is enough for him to survive, and he may not like to supply that much amount of labour that he used to supply. So, there will be some kind of a role of income and substitution effects here.

And that we will be examining that the higher increase in wage rate does not imply the increase in leisure also. Leisure sometimes higher increase in wages does not imply an increase in labour hours; it may also imply an increase in the leisure hours. So, this particular representative consumer would like to go for more leisure than compared to working for more number of hours.

So, that is why when you talk about the equilibrium wage rate at the macro level, then you have to take into account these things that what incentivizes the worker to work for more number of hours rather than for leisure. So, if you have a leisure variable playing a very important role, then you have to think about that what will be optimal. For that reason, we will have consumer optimization and the labour curve.

Then, the next agent as I talked about, that there are firms operating and these firms hire the representative consumer and once they hire representative consumers, then these representative consumers, get paid from the representative firms. And once we are trying to define, then there will be a role of marginal productivity, then there will be a role of marginal product of labour.

What happens if this particular representative firm is going to change the technology? If this representative firm is going to change the technology, then of course, there will be higher productivity increase in labour. So, whether the firm would like to hire the same amount of labour or he would like to work for less than number of labour, so, those dynamics will be involved.

Third thing, when we are trying to see that we have now defined the representative consumer, we have defined the representative firm, how can we arrive at equilibrium. So, when I say that we are arriving at equilibrium, so, here there will be a macroeconomic picture playing a role. So, here we will be assuming that suppose, income identity that we always assume in the case of macroeconomics is Y is equal to C + I + G + X – M.

Here, we are ruling out the external sector outlook. So, we do not have X – M. Here, we will be simply talking about Y is equal to C + G. So, when we have Y is equal to C + G, then we will be talking; we will be trying to arrive at this identity with the help of the kind of budget constraint that we have a specified for the representative consumer and the kind of production function, we have used for the representative firm. So, these 2 are critically important to examine.

Now, here if you think about the reference book or recommended readings for this particular lecture, is this Stephan D Williamson, then we have Sanjay K Chug, book of modern macroeconomics, it also talks about one period model, but Williamson’s book is more organised and more popular, I would say.

Then, if you want to understand the microfoundation that from where this idea came that we were so happy about analysing the GDP inflation, unemployment interest rate, but suddenly how come we started going back at the firm level and the consumer level and then we started analysing or then we started getting the inference for the macroeconomic policies. So, when it was, it started, from where it had.

So, if you want to see, then there is a very good book, transforming modern macroeconomics exploring disequilibrium, microfoundations. This particular book is really important from the perspective of having an overview. So, it is up to you, but we will be mostly sticking ourselves to the Williamson’s macroeconomics and we will be also seeing from different sources that how we can understand the one period model better.

So, here we have, let us spend some time thinking about macroeconomic foundations. So, I have already given you sufficient idea about macroeconomic foundations of macroeconomics.

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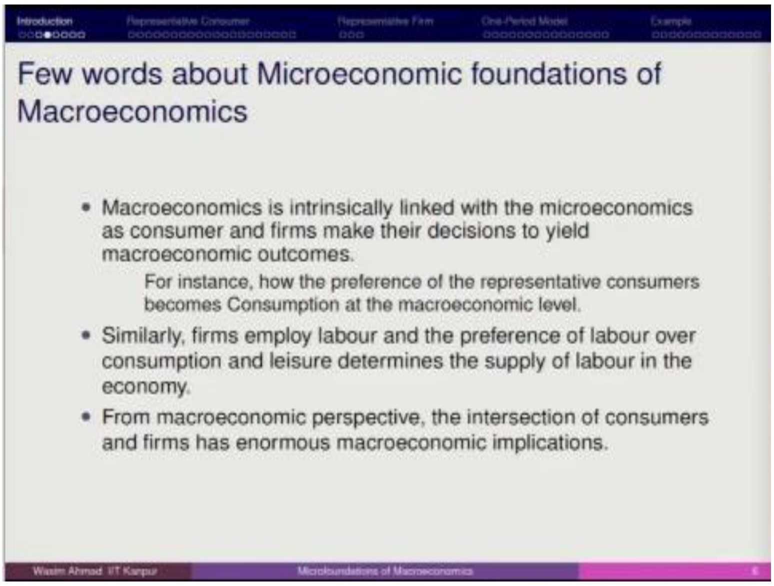

But if you try and understand from the perspective of the representative consumer, then the representative consumer is a critical agent in the economy and the reactions or the actions of the representative consumer play a very important role in deciding about the macroeconomic policies. For example, if you aggregate the individual preferences of different consumer, suppose in India, we are having the population of 139 or 140 cores.

Out of this, if suppose we assume that there are around 70 core or 60 core consumers leaving and asking or utilising certain services demanding goods. So, if we try to arrive at some macroeconomic picture that how much they consume in 1 year. Now, the aggregating variable that we call consumption, will have to take into account the heterogeneous demand of all these consumers.

So, in order to arrive at the macroeconomic picture, we try to devise certain norms, certain rules, assume certain parameters and certain assumptions then we work on the model. So, from microeconomics perspective, which is linked with the macroeconomics, this can be justified in this way. Similarly, we employ the labour. So, once I am talking about labour, then the labour plays a very important role, because it is also one of the important variables in the macroeconomics and also in the microeconomics.

So, here, the labour implies we are talking about the consumer only and but when we deal with the supply of labour to the firm, then we try to define the representative consumer also as labour. So, because this particular labour will have certain characteristics with regard to the production; at what point this labour will be more demanded, what happens when the marginal productivity of labour is greater than the wage rate.

So, whether at that point this representative consumer will be given some kind of preference, asking about things. So, that plays a very important role. And then, once the representative consumer is hired by firm, then we try to see at the intersection of this plays very important role and from there, we try to define the macroeconomic implications.

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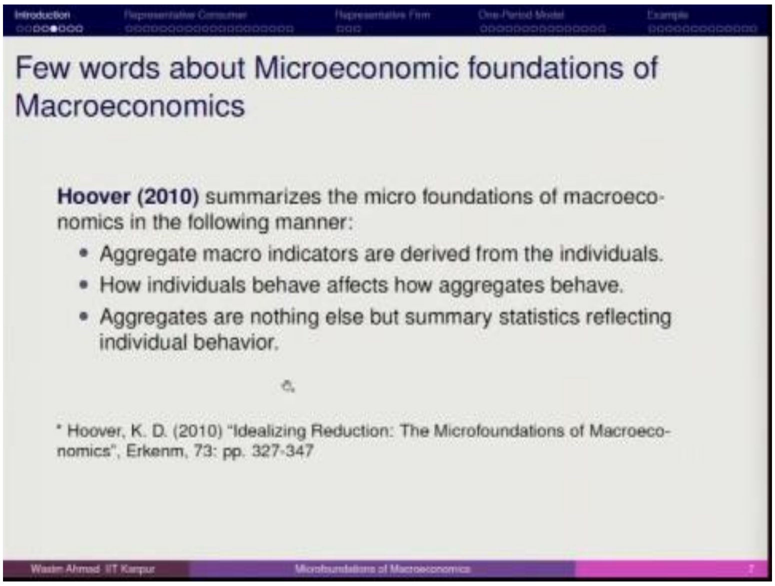

Now, if you want to see that how we can get the concrete idea about microeconomic foundations, then Hoover in 2010 utilising reduction the microeconomic foundations of macroeconomics, he tried to at least give some idea about what should be the appropriate approach of understanding the specific to general approach which means that we are starting with the firm, then we are going to the at very macro agent level.

So, firm and the consumer we are starting, then we will try to draw the inference at the macro pictures which means that we are moving from the specific to general; normally, we have the macroeconomic talking about only general, but here we are talking from the consumer, then firm, then we talk about the markets, we talk about the different agents in the economy, for example, government and then we try to deduct from these things to at the macro levels. So, here we try to understand from that perspective.

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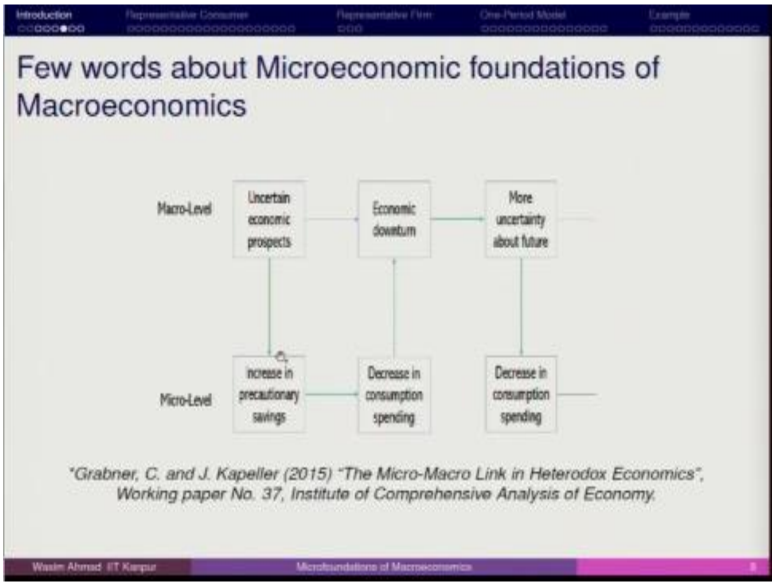

Now, let us have an example that how does it look like? Let us first deal with the macro level. At macro level, what do we have? So, here we have uncertain economic prospects, which means that you have some shocks in the economy and the shock has created. So, you can think about the unprecedented shock that we are having the COVID-19. So, COVID-19 shock is started. So, this creates uncertain economic prospect.

From here, we go to increase in precautionary saving. So, the moment we have increasing precautionary saving, which means that you are trying to save more to deal with the unforeseen situations. Now, if you are going for precautionary saving, it means that you are going to compromise on your normal savings. So, maybe you had 10 types of food items in a month.

But now, because of this uncertain outlook, you are having only 5 types and 5 types whatever money that used to spend on 5 types, you are going to save for because you are not sure that how the future is going to unfold. So, if you are not sure how future is going to unfold, then you have at micro level. So, this is the macro variable. The micro variable is the consumer. So, consumer is reacting with precautionary saving.

This precautionary saving is leading to a decrease in consumption spending and this decrease in consumption spending that you have that which called paradox of thrift also some time. So, decrease in consumption spending, again, it worsens the economic downturn. So, this is the macro outcome that we have. So, here we have uncertain economic prospect then economic downturn, but this uncertain economic prospect drives this idea also that in the economy when you have uncertainty, this will increase the precautionary savings.

Precautionary savings further propels the decrease in consumption spending; decrease in consumption spending will again augment the scenarios of economic downturn. Economic downturn will again go for more uncertainty about the future. And this will lead to decrease in consumption spending. So, you can think about these inter linked reactions that we have in the economy.

So, why a microeconomic analysis becomes very important? Because here, we have the uncertain economic prospect, you can think about that in an economy normal functioning economy, if this economy is going to face very uncertain situation, then how the agent in the economy is going to react. So, once I say about agents in the economy are going to react then here it is.

An increase in precautionary saving, then we have a decrease in consumption spending, again, it worsen the scenario then again, you have an economic downturn. And once I am saying more uncertainty about the future than here, it is what is called the decrease in consumer spending, and this will continue. So, in an economy, if you are ignoring the role of micro agents and focusing only on the macro, so, maybe you will be having some idea about the money supply interest rate.

But, if until unless you try and work out with the micro agents, then you will not be able to break this chain. So, breaking this chain is important, because if this is the uncertain outcome and because of these reactions, you have, you are falling into an economic downturn, better to react here itself and try to work out so, maybe some kind of extra incentive, maybe given to the household that you do not have to worry about, you have a certain income.

And government supports provides minimum wages, unemployment benefits, because of these people have some amount of income and they also have the assurance that even if there will be a bad situation in future, there will be something left for them to utilise for consumption and the risk of getting into complete economic downturn can be avoided. So, I hope these flowcharts make you understand why we are studying the microeconomic foundations.

So, in this particular analysis, the Grabner and Kappler had given this idea and then they emphasise in their work that this is how it works.

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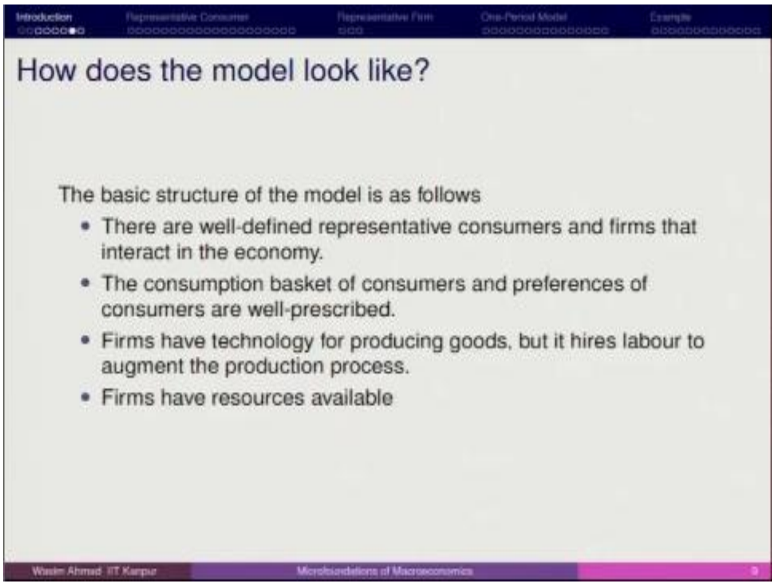

Now, when we talk about the model, how do we go about the model, how do we define those agents we require and how we can work out with the modelling setup? So, now, we will be going into the model, and we will work out and we will try to first specify the representative consumer because that is the most important part. Second thing is that we will work out with the consumption basket of the representative consumer whether this representative consumer is having what is a level of preference, what kind of preference this representative consumer is going to have.

We will not be getting deep into the microeconomic foundation, but a simple understanding of the indifference curve the marginal rate of substitution will help you understand the model better. Then, we have the firms which have the technology, it employs labour; it pays wage to the worker and then worker receives and then we try to define the labour demand-supply scenario with the help of labour supply and also from the firm side the major productivity of labour that will decide about the demand for labour.

So, here the basic structure of the model is that first, we will define the representative consumer, then we define the firm. So, this is the ultimate idea that in this particular model, we follow.

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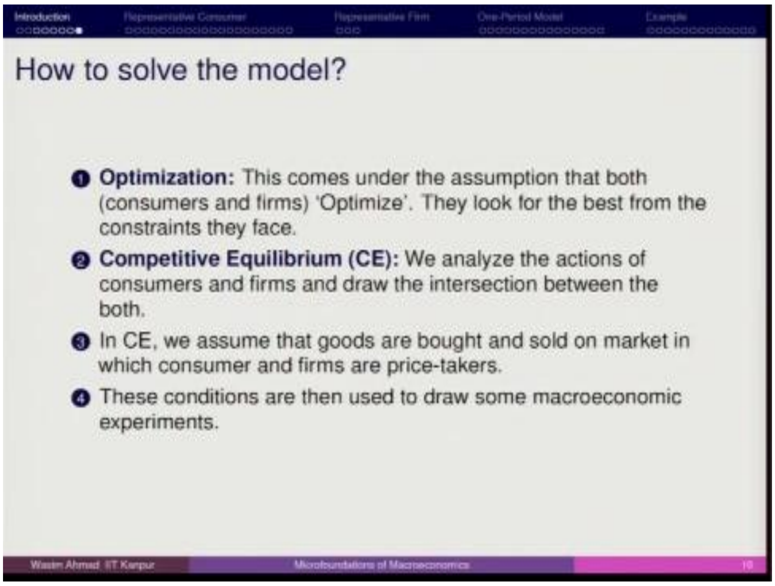

Now, once we have defined these 2, then we have to work out what is the optimal level of consumption and what is the optimum level for the firms to utilise labour and employ labour. So, we will be working out with those criteria, I think it is part of the microeconomics when we say that the consumer is at equilibrium when we have the modulator of substitutions following the particular pattern.

And your indifference curve is tangent to the budget constraint or marginal rate of substitutions is just equal to the ratios of the prices and there also we have. Now here, in competitive equilibrium, we will be trying to see how the actions of both representative consumers and the representative firms are going to play a very important role. Can we draw some kind of intersection between these two?

Now, the competitive equilibrium becomes important because first we have to define, and we have to work out the size of the economy. So, what is the production possibility of this particular firm or what is the production possibility of this particular economy at what rate one good can be transformed into another? And on top of that, when we superimpose the condition of the representative consumer that how this representative consumer is going to decide about, then you have the role of the equilibrium that we try to arrive.

And that, we call the competitive equilibrium. So, that will decide about the rate of transformation of the two goods that we have consumption and leisure and then, how the firm is going to play an important role and how the consumers are going to decide about their optimal level of consumption. So, these things are important. And from here, we will draw some macroeconomic implications that when we define the representative agent when we define the firm, then how are we going to talk about.

So, this will be really important to see and one more thing that you have to keep in mind that, we will also be working with some kind of comparative statics. Comparative statics in the sense that, if the representative consumer, first when we are going to define the representative consumer, then this representative consumer will have a certain amount of income. Some sources of income that this consumer is going to get.

The moment we say sources of income, then we will work out with some comparative statics and these comparative statics give you the idea that what happens when there is a dividend increase, what happens when the wage rate increases, what happens when this representative consumer is going to think about the increase in the dividend that he or she is receiving?

So, will this lead to a different level of equilibrium or will this lead to an increase in; will this lead to a direct parallel shift in the budget constraint of the representative consumer or it will be different. What will be the shape or shift in the budget constraint? So, we will be examining; will be also trying to see how the firm is going to react to a different set of marginal product conditions.

So, I hope this particular lecture gives you a sufficient idea about what are the roles of microeconomic foundations of macroeconomics. So, microeconomic foundations basically help you understand or draw the macroeconomic picture based on the actions of microeconomic agents from basically the firm and the representative consumer. So, this is for this lecture, and we will continue in the next lecture from here and try to work out with some more detailed analysis of one period, consumption leisure model.

And I will also try to arrive at; will try to also work out some more comparative statics that we will be discussing. Thank you. Thank you so much.