Economic Growth and Development
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Lecture-07
Strategies of economic development and growth – II

Hello and welcome to lecture 7 of the NPTEL MOOCs course on Economic Growth and Development in this lecture. We continue with a discussion on economic growth models. Let us first begin with what we did in the last lecture.

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In the last lecture, we summarized 3 important issues with respect to development models and development thinking. The first part of the last lecture related to the trends in development thinking that took place right from the beginning of 1900's to the beginning of the 1990's. We covered a period of at least a century of development thought and how systematically we can categorize different development models under different heads of development thinking.

As far as the trends in development thinking was concerned, we started with the period of the 1900s, where development was looked that as universal history. There was a lot of influence in this school of thought with respect the writings of marks.

And it was development was thought as a progression through a series of socio economic stages. And each stage represented a different mode of production in terms depicting the different types of relationship between people and resources in the production process. We also looked at the period of 1950's where development started being talked of more in terms of economic growth. And which is also primarily the most the important focus of our discussion with respect to economic models on development and growth, when we discussed the doctrine of balanced growth this is what the era what we were referring to.

So, the second strain of development thought we focused on was economic growth. And the overwhelming importance that was laid during this period of 1950's when people started thinking of development as economic growth was with respect to capital accumulation. How much capital accumulation has taken place and how that is contributing to modern economic growth.

In the 1960's and 70's we saw that there was a lot of influence from American sociologists and political scientist, who started looking at development as modernization. And how diffusion of education technology and various other forms of technical assistance takes place, and how that affects economic development and growth.

The 1970's development thought tilted more towards what we have come to know as the dependency theorists. Here they challenged the modernization theory of the 1960's and the 1970's, and they called themselves as belonging to the structurally tradition, this was also heavily influenced by Martian thought. And this dependency theory enjoyed a lot of influence in the 1970's. And it was broadly seen as a left wing challenge to a more right wing modernization theory. The 1980's saw a radical shift from development thinking that took place in the 50's in the 60's in the 70's. The 1980's basically saw the emergence of the re emergence of what is referred to as the as neoclassical economics or neo liberalism as was called in the 1980's ah; is it was considered to be a radical shift, because it was a shift in terms of thinking towards state from the notion of state led intervention.

And towards more of the role of free markets, and it was the through the international monetary fund and the World Bank. These neo liberal policies started playing a central role in the developing countries. And these this school of thought justified itself in part on the grounds of corruption within the state institutions of many developing countries,

which clearly did not have development interest at their heart. The 1990's and the subsequent publication of the human development reports of the UNDP saw the emergence of development thought as reduction in inequalities of the poverty reduction. So, this was a brief for framework, a brief timeline of how development thought had progressed over a period of time starting from the 1900's.

Now, while we looked at the timeline of development thinking we also saw- what was the timeline of the emergence of economic growth models.. Because there is a lot of correspondence with development thinking and the economic growth models and we lastly look those 2 categories of growth models. We briefly discuss what are the implications of these different growth models. The first was the classical model of economic development in which the economists such as Rostow, Harrod, Domars, Morrison, Edelman. Arthur Lewis . And delital dos Santos these were the economists who were talking about linear stages of growth models, structural change models, international dependence models in the neoclassical counter revolution models.

And as you might have rightly guessed that all of these economic models have also has a strong correspondence to the trends in development thinking that we were discussing. For example, the linear stage of growth model has a correspondence with the development as economic growth. In fact, all of these model structural change models the international dependence models, they have a lot of correspondence to the development thinking termed as development as economic growth and development as world structural change and so on.

The second set of growth models that we briefly discussed was the contemporary models of economic development; which is also referred to as the new growth theory. And here the focus was more on the creation of a knowledge economy and not just creation of human capital. Creation of human capital was not enough, but also their needed to be these growth models stressed up on the need of looking at the investments made in research and development, and how increase in knowledge can lead to a modern economic growth.

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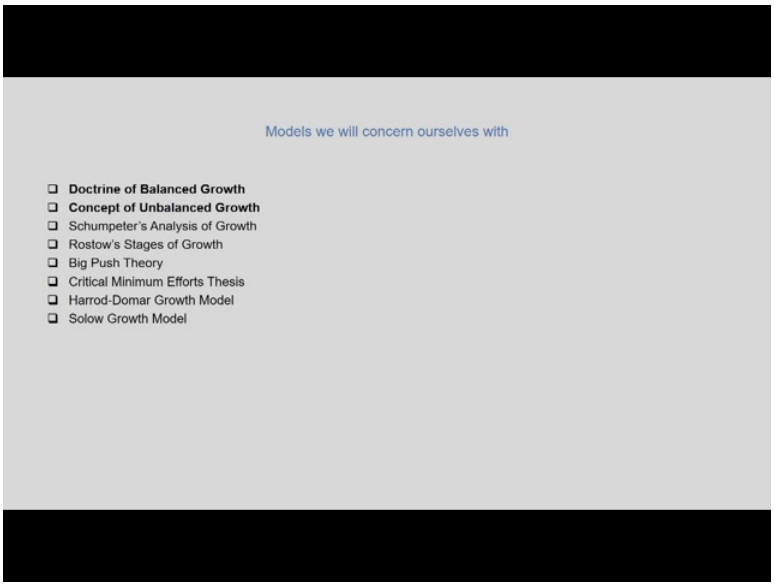

A large part of last lecture was we concerned ourselves with Ragnar Nurkses theory on balanced growth model. And while there are various growth models doing the rounds when we look at a basic course on growth and development.

We decided we will concern ourselves with the following growth models as is being shown on your slide. Now the doctrine of balanced and unbalanced growth Schumpeter's analysis, Rostows stages of growth big push critical minimum efforts, and the Harrod Domar and the Solow growth model. So, we began with a discussion of the doctrine of balanced growth. And the major proponents of the balanced growth as we discussed in the last class were Professor Paul Rosenstein Rodan, Professor Ragnar Nurkses and Arthur Lewis. We began with a discussion of Ragnar Nurkse's views and balance both doctrine.

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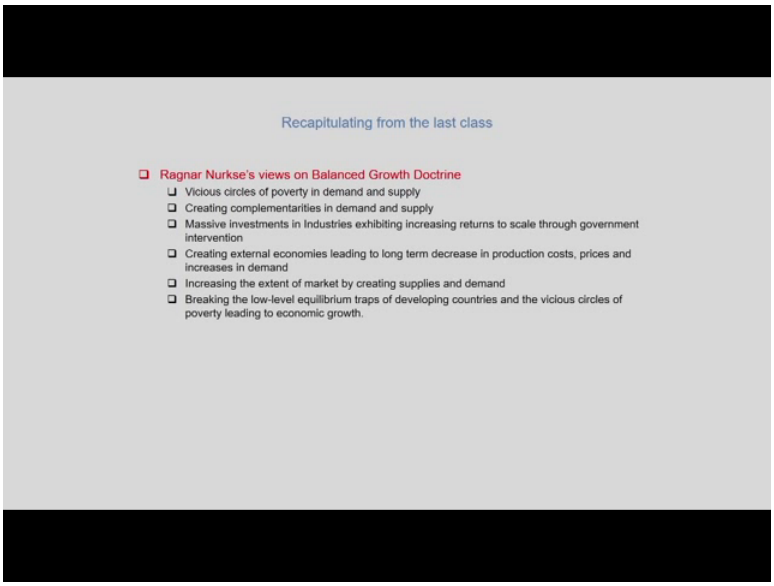

Because that had a lot of influence in development thinking particularly the 1950's 60's leading up to the 1970's.

And what was the basic point that he was trying to make that we discussed in the last class was that, he understood that there is a vicious circle of poverty in demand and supply. And this vicious circle is largely because of the structural characteristics, the rigidity that we see in the underdeveloped countries starting from low incomes, to low savings, to low investments and low capital formation and low production of goods and services. That intern leading to limiting the extent of the market and because there is a limited extent of the market, there is a fall in the process of capital formation, and that leads to low level equilibrium traps.

So professor Nurkse was trying to find a way out of this vicious circle of poverty, and he was suggesting that since that is the these vicious circles are operating both on the demand side and the supply side, that needs to be we need to create complementarities of demand and supply on both side. And this could be done by bringing out bringing about massive investments in industries that exhibit increasing returns to scale. And one of the things that he was pointing towards such kinds of massive investments can take place only when there is government intervention. And because government intervention is required for identifying which are those industries that exhibit increasing returns to scale.

And as such private entrepreneurs can be supported with subsidies and other forms of investment decisions. He was also focusing on those on providing investments to those industries which have the potential of creating external economies. As these external economies lead to long term decreases in production cost prices and increases in and therefore, increases in demand; ultimately leading to the extension of market or expansion of market.

So, these was the 3 points that Ragnar Nurkse was trying to make one was compliment creating complementarities in demand and supply. Secondly, enhancing a government intervention being necessary as a part of increasing massive investments in different kinds of industries and also creating these external economies. So, as a result of creation of these 3 important characteristics as a part of balanced growth, the underdeveloped countries which are facing vicious circles of poverty in demand. And supply can actually break themselves out of the low level equilibrium traps and promote economic growth.

In the last class I also mentioned about professor Rosenstein Rodan and Arthur Lewis. In today's lecture we will be discussing in brief, what are the proposition that was being made by Rodan and Arthur Lewis and there is a lot of literature on balanced growth which says that there is not much similarity in the propositions made by most of the proponents of balanced growth. Different economists have meant different things when they have talked about balanced growth some have talked about balanced between different sectors. For example, agriculture manufacturing and industry, some economist has talked about bringing balance within the same sector.

So, there are different formulations with respect to the balanced growth model. However, we will we are sticking to only the propositions made by these 3 notable economists because that is where the most of the influence has been with respect to the balanced growth model.

As we progress in this lecture, we will also look at the challenges post to the balanced growth model in the form of the unbalanced growth theory. And we will also look at who the proponents were and what were the major points that they were trying to make as a part of a model of unbalanced growth theory.

In the last class I also mentioned that all of these economists who were discussing about balanced growth model or the unbalanced growth model. As a part of the development

thinking of the 1950's ah, they were referred to as the high development theory. Now these high development theory did not enter did not formalize their models in forms of mathematical formulation, because of which the importance of these high development theory in the economic literature went down in the 1970's and the 1980's.

It was not that economists were not talking about these ideas and these propositions that were made by these very important economies in the 1950's and the 1960's. But because of a lack of mathematical formulation of these models they went out of development thinking in the 70's and the 80's and was replaced by more sophisticated economic growth models primarily the neoclassical growth models and so on.

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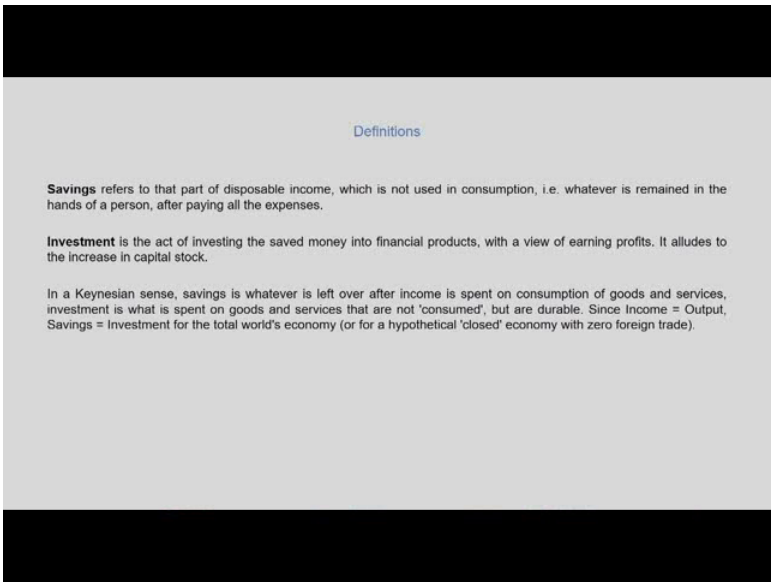

Now before I move on to the doctrines of balanced growth as propounded as propositioned by Rosenstein Rodan and Arthur Lewis; for the benefit of students of this course who are from different backgrounds and different disciplines, I would like to run you through some of the definitional issues of the economic concepts that are have been constantly using in the growth models. And as we come across different models I will also try to introduce you to give you simple simplified definitions of various other concepts.

I keep using the terms savings and investment and output and capital formation when we as a part of discussion of balanced and unbalanced growth models. I will also be coming across using the terms marginal social benefit, marginal private benefit, marginal private

cost marginal social cost, the external costs and we are also talking a lot about external economies. So, what I have done as a part of this lecture is to introduce you to some of the basic concepts. That will help you better in understanding this thesis that we have been discussing about these thesis of balanced growth or unbalanced force model.

Now there are 2 very basic concepts in economics to begin one is savings and the other is investment. If you recall from one of the earlier classes where I was talking about the circular flow of income and output among households and firms households basically saves and the firms invest. To give you a definition of savings basically refers to the part of disposable income which is not used for consumption.

And it remains after a person or a household has paid for all the expenses that she has made during a given period of time. So, savings can be calculated at different periods of time it can be calculated for a month or for a quarter or for a financially for an agriculturally and so on and so forth. Investment is basically the act of investing the saved money into financial products ah, with a view of earning profits. And it refers to the increase in capital stocks, or the more the savings the more the investment and more the increase in capital stock. And in a Keynesian sense Keynes has a lot of contribution to bringing this consumption to the fore front.

Because his economics is largely a short run economic analysis and in which the macroeconomic identities of savings investment output play a very big role. So, when we are referring to savings and investment, we are mostly referring to savings and investment in a Keynesian sense, where a savings is whatever is left over after income is spent on consumption of goods and services. And investment is what is spent on goods and services that are not consumed, but are durable in nature. And in terms of an identity, if we consider hypothetical closed economy which does not have any foreign trade, a country not having entering into any foreign trade with other countries. Then in the final identity we always assume that income is equal to output and savings is equal to invest investment.

So, which means that whatever savings is done by the household is a ultimately gone as investment by the forms. So, the general assumption here is that, the households that are saving a part of the disposable income are not saving those incomes as in their houses, but they are putting them into the banks. And because the savings go the income dispose

part of the disposable income goes into the banks the forms then a use of these incomes that are lying in the banks as investment.

So, that is the basic idea of what constitutes savings and what constitute investment. And it is very obvious that of course, when investment increases, capital stock increases which means that capital accumulation in the country increases. And in terms of a macroeconomic aggregation, the more the investment, the more the capital accumulation and more the capital accumulation the more the addition to GNP or output and income.

Now, there are certain important factors that determine the rate of savings of a household.

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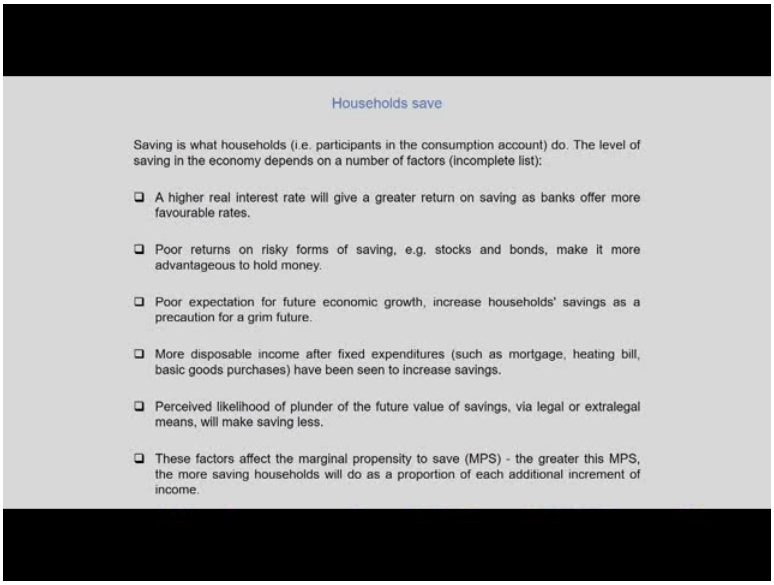

And that is also something one needs to understand when we are looking at growth models. So, the level of savings in the economy depends upon a number of factors, but some of them can be listed as follows. One is of course; whenever there is a high real interest rate in the economy it will give a greater return on savings as banks of more favorable rates.

So, whenever there is a high rate of interest in the economy, then the household stand to save more in the banks. Second if that when the returns are risky when the households find it more advantages to hold back money than putting it in the banks. So, poor returns

on risky forms of saving for example, stocks and bonds we will make it more advantageous for the households to hold back the money in their own households.

The third point that effects savings rate in the economy and ultimately investment and capital formation in the economy is the poor expectations for future economic growth. So, whenever the overall expectations of economic growth in the in the countries dull, then the households tend to increase their savings as a precautionary mechanism. So, that they do not generally transact more and more in the economy. And savings increases the amount of money amount of disposable income is withheld more by the households.

Similarly, more disposable if the households are left with more disposable income after taking care of fixed expenditures, then they are seen to have saved more. Now there are various ways in which such a situation can happen which leads to more disposable income. That can happen when the overall levels of income have increased, and the business prospects within the economy is looking good, or it can also happen if the overall price level in the economy has gone down which means people are spending less and less for the for the for the very basic consumption expenditures that they need to do.

So, if they are left with more disposable income after taking care of their fixed expenditures of with respective fooding and housing and clothing and various other necessities for example, education and so on then this, then they are seen to be increasing their savings. Another feature is when their perceived likelihood of plunder of the future value of savings weather legal or extra illegal means then they will save less and spend more.

Now this decline in incomes through legal or extra legal means can happen because of various factors within the economy one of the reasons being that if the business prospects within the economy are not looking good then people tend to save less for the future and spend more in the current times.

And all of these factors together and many more which I have not discussed in this slide effect what is referred to as determine what is referred to as the marginal propensity to save. So, the higher the marginal propensity to save of the households the higher they are induced to save. So, the greater these NP's the more saving households will do as a proportion of each additional increment of income. So, the marginal propensity to of to save is basically telling us that with every one-unit increase in income what is the

addition, or what is the change in the propensity to save of the households. And this is a very important factor in determining the prospects of the economy within a given period of time or a point in time.

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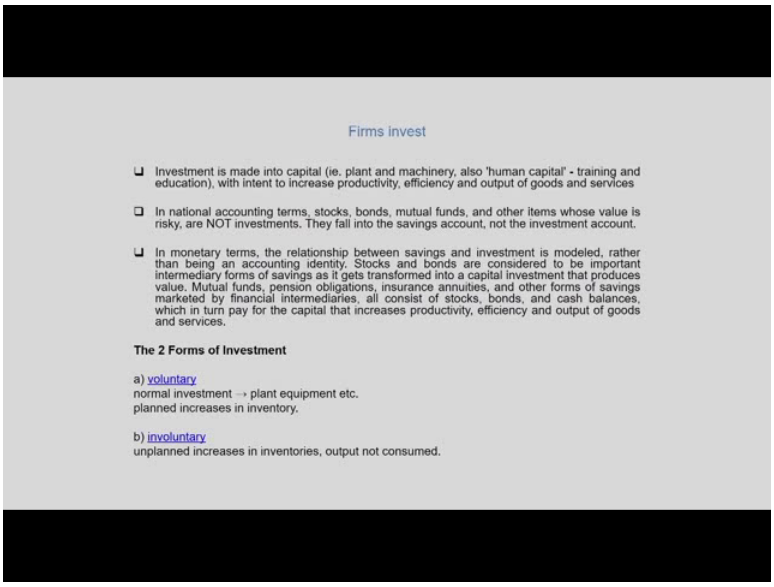

Similarly, since firms invest there are different kinds of investments that we need to understand of, but very basic understanding of what is investment should do for the growth models investment is basically made into capital. And this is the intention is to increase productivity efficiency and output of goods and services.

In national income accounting terms it is important to understand which of these investments enter into investment account which and which enters into savings account. Now for a household investing in stocks and bonds and mutual funds, which provides future incomes may look as investment, but in macroeconomic terms these are not considered as investments. And therefore, they fall into savings account. Whereas enhance they are not counted in the investment account. In monetary terms the relationship between savings and investment is modeled rather than being an accounting identity. Mutual funds pension obligations insurance annuities and other forms of savings marketed by financial intermediaries. All consists of stocks bonds and cash balances, which in turn pay for the capital that increases productivity efficiency and output of goods and services.

And generally there are 2 forms of investment that we consider when we are looking at savings and investment when we are modeling a savings and investment in the growth models. One is voluntary investment and the other is an involuntary investment. Voluntary investments are the general investments that you make in factories plants plant equipments and that is plant increases in inventory.

So, voluntary investment is something which the more the investments, the more the increase in output, it is considered good for the economy is found to be expanding. And involuntary investments are those which are unplanned increases it leads to a creation of output which is not consumed. And this need not necessarily lead to expansion expansionary activities within the economy.

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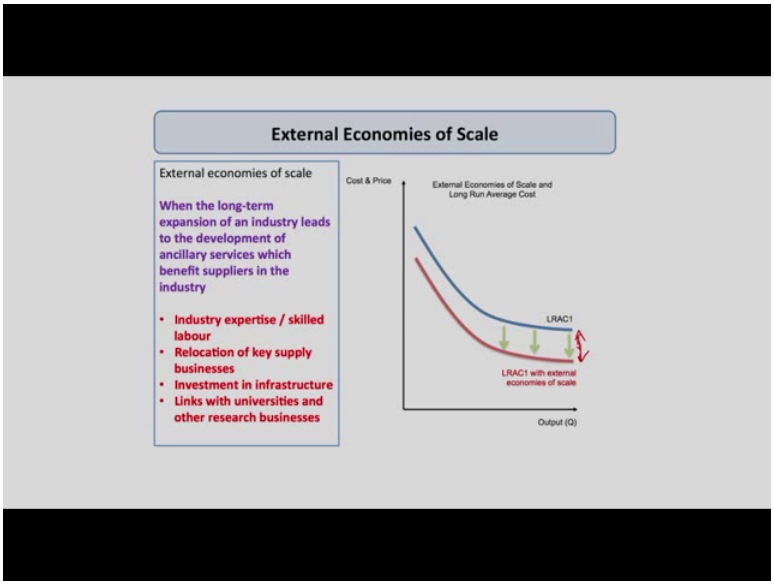

Another related concept which is important for us to understand within this discussion of balanced and unbalanced growth model is, this is what is referred to external economies of scale, and this is a Marshallian concept Alfred Marshall came up with this concept of external economies of scale. The understanding here something very simple in this graph, you see x axis showing the output produced by a firm in the long run or by the industry in a long run. The y axis shows the costs and the prices. The 2 curves the blue curve shows the long run average cost curve. And the red line shows the long run average cost curve after taking into account external economies of scale. And this is important for us to understand here.

So, when in the long term expansion what is the reasoning here, what does the proposition here? It is that in the long term when industry expands it leads to development of various other subsidiary industries or services, and that benefit the suppliers. So, obviously, when it benefits the suppliers the costs are bound to come down for the suppliers. That may be because of various reasons there may be increase in industry expertise, then being increases skilled labor force within the economy, there may be reallocation of relocation of key supply a business's investments, in infrastructures as may bring down additional costs in the long run. There may be linkups with research and development activities through universities in other businesses. And it may also bring down the costs in the long run.

And because of these decline in costs in the long run, that adds to external economy certain benefits are created in the long run, and which is why the long run average cost curve will invariably always come down. And this is what is meant by this gap here basically the shift down of the long run average cost curve from LARC1 to this the red line shows what are the external economies of scale that have crude. Because of the increase in benefits to expansion of industries in the long run.

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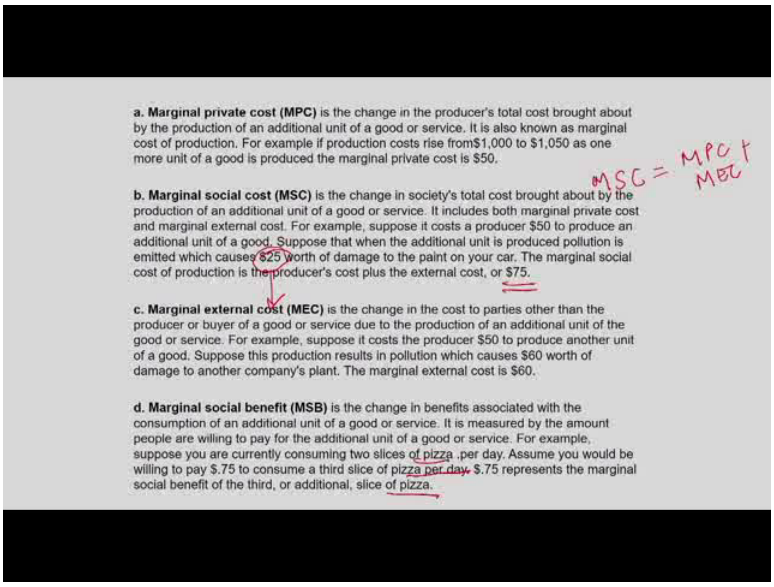

A few other concepts which are largely a part of public economics also needs to be understood in this context. Before I run you through these concepts which are showing

on the slide, let me introduce you to this very simplified graph; where the x axis here shows the quantity of output being produced in an economy at a certain point of time.

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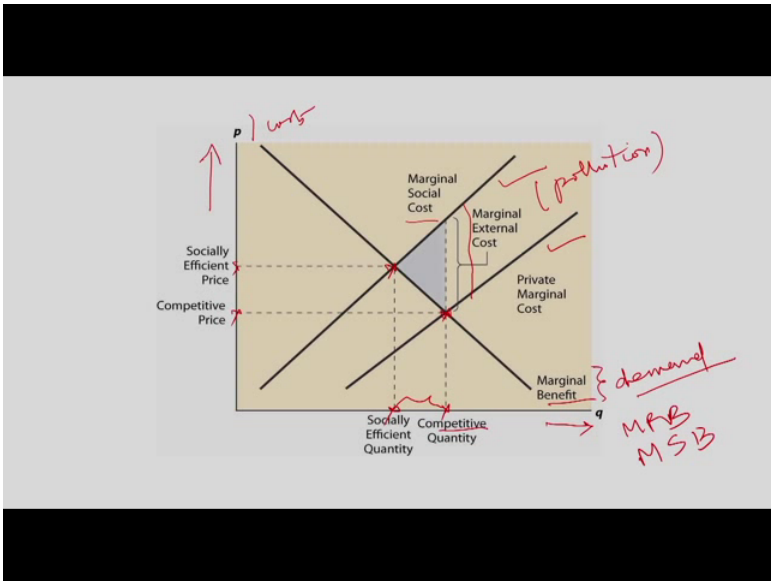

The y axis shows the price and you can also say it shows costs incurred within a given economy or a given production system at a point of time; the downward sloping curve which is the termed as marginal benefit curve. If you have had some introduction to demand and supply curves earlier, you would you can consider this as some kind of a demand curve or something similar to a demand curve. So, this is the marginal benefit the curve this cost curves are showing for a firm. And this is the marginal benefit a curve accruing to a firm.

And this marginal benefit curve includes both marginal private benefit and marginal social benefit. So, this has been all added up to show the marginal benefit curve. There are 2 upward sloping curves, this is the private marginal cost curve, and this is the social marginal cost curve. And you can in terms of a simple demand supply analysis we know that demand curves slope downwards and the supply curve slope upwards. You are familiar with if you are familiar with those kinds of curves, you can think of a marginal benefit curve as a demand curve, and the private marginal cost curve as some kind of a supply curve.

And we know that the equilibrium quantity is produced or consumed at the intersection of the supply curve and the demand curve. And in this case the equilibrium quantity or

the competitive quantity that a firm should be producing is at this point ah. So, this is the competitive quantity, if the firm has is faced with this private marginal cost, and if the firm is faced with the marginal benefit curve here.

Now if you look at this curve which is the marginal social cost curve, it basically looks at what is the in a certain setup. If there are certain external costs accruing to a firm apart from the marginal cost a private marginal cost that is a accruing to it. And if we add up the external cost or the private cost then we get what is called the marginal social cost. And this is usually seen in the case of polluted industries.

So, if you have an industry which is producing say steel. And it is a polluting industry and of course, the firm has a certain private marginal cost. But if we add up the environmental damages that this industry is causing, and if we give some kind of a valuation to that cost which is the external cost, then we will come up with a cost calculation which is much higher than the private marginal cost curve here.

So, this is so assuming that this is a polluting industry. And if we are adding of the marginal external costs of say pollution here, then we can say that private marginal cost plus marginal external cost will lead to a very high marginal social cost curve. And given that the marginal benefit curve is just the same and if the firms are compulsorily made to pay a cost which is equal to the marginal social cost curve here, then the socially efficient quantity which is being produced will be much less than the competitive quantity it is being produced here.

So, this is the socially efficient price, this is the competitive price the socially efficient price after accounting for marginal external costs and constructing a marginal social cost is much higher than the competitive price that the firm would be paying it, if it was faced only with the private marginal cost.

And it is important for us to understand this concept of private marginal cost and marginal social cost. When we are looking at balanced growth and unbalanced growth models of an a calculation takes place with regard to what is the amount of marginal social cost accruing, and what is the amount of marginal private cost accruing. And often when the marginal social cost is higher than the marginal private cost, then we say that there are external diseconomies taking place.

But if the marginal social benefit is higher than the marginal social cost, then we say that external economies are taking place. So, we are always looking for so, there is always a valuation a calculation with respect to whether a particular production process whether a particular production is creating more of external economies or external diseconomies.

Now, I will take you back to these very simple concepts in economics that that one needs to be aware of when we are looking a growth models. It is keeping the graph that I showed you in mind ah, you can now understand this cost concepts here. The first is the marginal private cost. So, this is basically a cost that the firm has to calculate on it is own. Given it is raw materials given it is resources, given it is cost conditions that the firm faces. So, it is basically the change in the producers total cost brought about by the production of an additional unit of a good or service.

And it is also known as marginal cost of production ah. Marginal basically here means what is the additional what is the change in the cost of production what is the additional unit of cost added to the total cost of production. So, for example, if production cost raise from 1000 USD to 1050 USD, as one more unit of a good is produced in the marginal private cost would be 50 USD. So, that is the addition to total private cost that is taking place because of a because of the production of an additional unit of a good.

The marginal social cost we will take into account; marginal private cost plus the marginal external cost. So, in a way you can say that MSC or the marginal social cost is equal to the marginal private cost. Plus, the marginal external cost. So, it is the change in society's total cost brought about by the production of an additional unit of a good or service. That includes both marginal private cost and marginal external cost.

So, for example, suppose it cost the produce the 50 USD to produce an additional unit of a good. And when that additional unit is produced pollution is emitted which causes 25 USD worth of damage, then the marginal social cost will include the marginal external cost of 25 dollars which will come to 75 USD. So, this 25 USD is basically the marginal external cost.

To give a simple definition of marginal external cost, it is the change in the cost to parties other than the producer of buyer of a good or service due to the production of an additional unit of the good or service. An example as already been given; however, it is in most simplistic terms you can mostly when you are looking at 2 more industries, and

one produced and one industry is a pollution emitted and the others are not. The environmental damages of pollution at the costs associated to the environmental damages of pollution can be referred to as the marginal external cost.

And similarly the marginal social benefit; which is basically the change in benefits associated with the consumption of an additional unit of a good or service, in the slide I have given you an example of a pizza. But a better example would be to look at the consumption of vaccinations for example, when certain when some children are vaccinated against certain diseases or some people are vaccinated against certain disease and others get benefited out of it.

Because they did not face any form of a contagious, they did not come in contact with those kinds of diseases because of those vaccinations. Then it is referred to some kind of a marginal external benefit arising out of it. And then if the private benefit and the external benefit are all added up together, then we come up with the concept of marginal social benefit.

Now, let us keep this out of the way what I tried to do here is to just introduce you to some of the basic concepts of savings and investment and marginal social cost and marginal external cost concepts to you; because it is important for us to understand those models. And what is essential that the take away from here is that, if we are looking at investments which should be encouraged in a balanced growth model, we are basically looking at a setup where the marginal social costs of production should be less than the marginal social benefits that we derived out of it. So, any investment wish is to be encouraged by the government will take place only when the marginal social benefits are such that it far exceeds the marginal social costs of production.

Now, I will come to I will come back to the discussion on balanced growth model.

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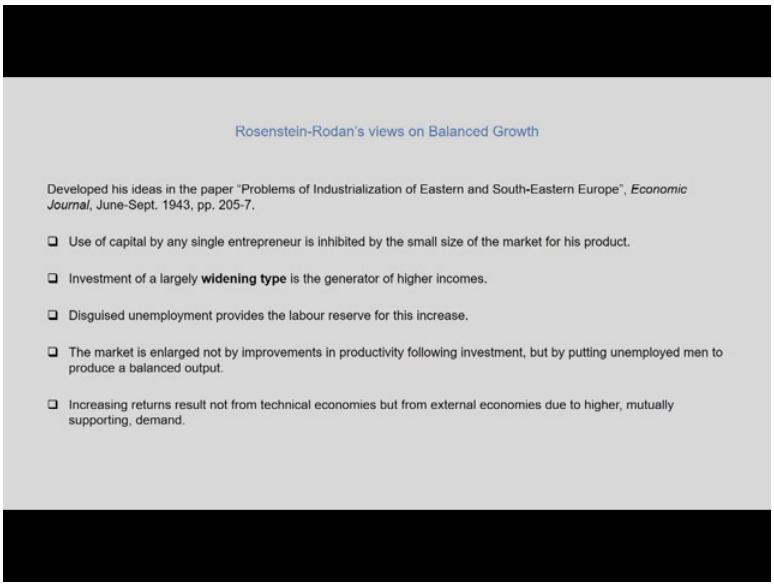

The second important proponent of the balanced growth model was as I have mentioned earlier Rosenstein Rodan. And Rosenstein Rodan himself never used the term balanced growth; however, he is shown as one of the proponents of the balanced growth model because he discussed the certain problem. And he developed his ideas in a 1943 paper which was titled problems of industrialization of Eastern and South-Eastern Europe in Economic Journal. It came out in 1953 and he was trying to formulate a certain problem only in the context of Eastern and South-Eastern Europe.

So, there was no way that he was trying to generalized to the rest of the world. And some of the most important points that he was trying to make which is more or less in lines with what Professor Ragnar Nurkses was also trying to make are as follows. First is that the use of capital by any single entrepreneur is inhibited by the small size of the market for his product, which means that and of course, he is talking in the context of underdeveloped countries less developed countries; where anyway there are very few private entrepreneurs. And the capacities of the single entrepreneurs is inhibited the use of capital by the single entrepreneurs are inhibited because anyway, there is a very small size of the market for their product.

And therefore, investments of a largely widening type can be the generator of higher income, and when he is referring to the term widening type he is basically referring to investments made in one industry; which can lead to increase in a demand for products

because of investments made in other industries and so on. So, he is also looking at those kinds of industries which show increasing returns to scale which have more external economies accruing to them.

The third point he was making is with regard to disguised unemployment. Because these countries eastern and south eastern European countries were mostly agrarian economies, and there was a lot of disguised unemployment. So, there was a lot of reserve labor in these countries. So, disguised unemployment or the labor reserve provides the basis for this increase in investments. So, this labor force needs to be employed in those widening type of investment related industries. That can lead to increase in employment and therefore, demand and therefore, economic growth and so on.

The market is enlarged not by improvements in productivity following investment, but by putting unemployed men to produce a balanced output. And increasing returns results not from technical economies, but from external economies due to higher and mutually supporting demand.

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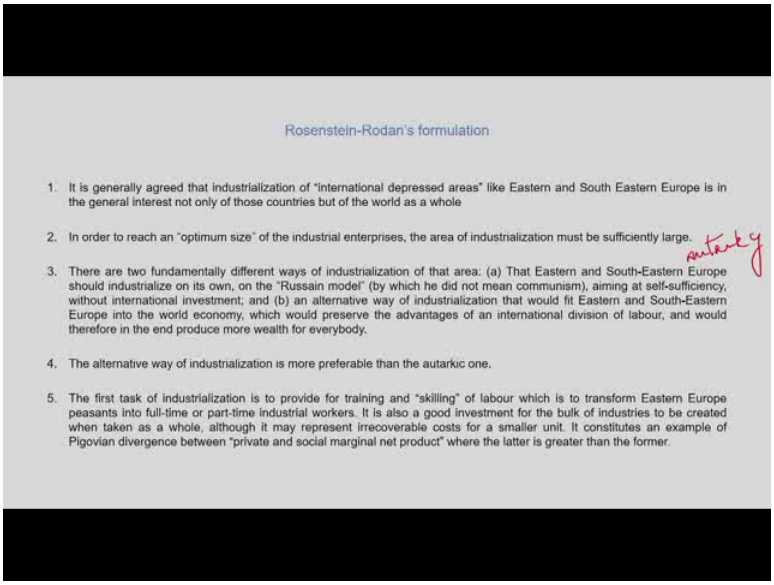

I will go into a little detail into what was his proposition. Really his preposition came in the form of a formulation. And so, this was his formulation I have put them down in numbers. The first thing that he was trying to make in this paper was it is generally agreed at industrialization of international depressed areas like Eastern and South-

Eastern Europe; is in the general interest not only of those countries, but of the world as a whole.

. So, he is looking at not the development of certain sectors within a country, but he is looking at the world as a whole and how development of certain areas, and what kind of balanced growth model should be followed in certain area. So, they can be integrated with the world as a whole. Because international division of labor as pointed out bu Adam Smith when he was writing in the 18th century can lead to the increase in the wealth of nations.

So, second point he was saying was that in order to reach an optimum size of the industrial enterprises the area of industrialization must be sufficiently large. And there are 2 fundamentally different ways of industrialization of that area; that one is that the eastern and southeastern Europe should industrialize on it is own, without entering into foreign trade and international investment aiming itself sufficiency. Mostly referred to as what called autarky is referred to as what is called autarky.

And the second form of investment was industrialization was an alternative way that would fit eastern and southeastern Europe into the world economy; which would preserve the advantages of international division of labor. And would therefore, in the end produced more wealth for everybody. And this alternative way of industrialization is obviously, the more preferable one then the autarkic one.

And the first task of this form of industrialization will be to provide for training and skilling of labor, which is to transform Eastern Europe presents into full time or part time industrial workers. And it will be a good investment for the bulk of industry is to be created when taken as a whole. Although, it may represent is recoverable costs for the smaller unit. It constitutes an example of what we just discussed the divergence between private and social marginal net product; where the social marginal net product is greater than the private marginal net product.

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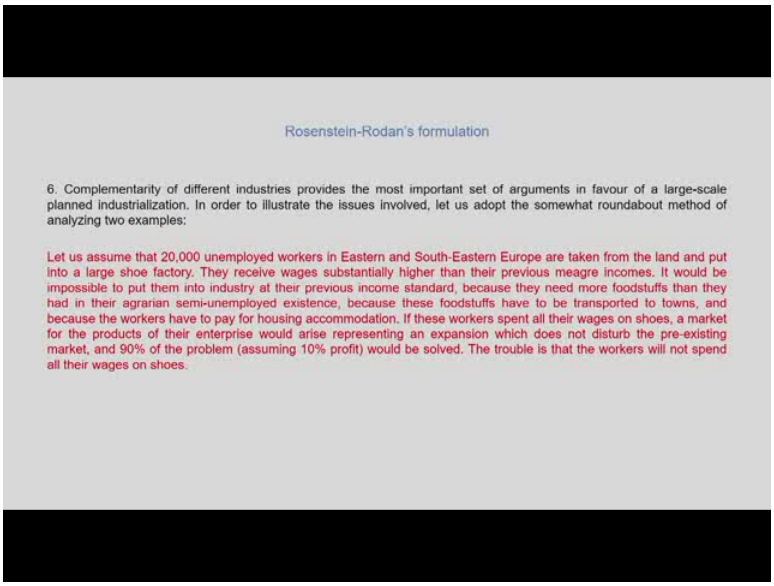

So, he was also talking like Ragnar Nurkse about complementarity of different industries. And he said that complementarity of industries provides the most important set of arguments in favor of a large scale plan industrialization. So, he gave a certain example of a shoe factory; which is one of the most highly exemplified one of the most common examples taken in the context of balanced unbalanced growth models.

So, he was saying let us assume that 20,000 unemployed workers in Eastern and South-Eastern Europe are taken from the land and put into a large shoe factory. There is a wages substantially higher than their previous meager incomes. And it would be impossible to put them into industry at their previous income standard. The previous income standard being a more unskilled more agrarian income wishes, much lesser than what it existed in the industry. Because they need more food stuffs, then they had in their agrarian semi unemployed existence and also because these foodstuffs have to be transported to towns and because the workers have to pay for housing accommodation. In other words, their costs have increased so, they cannot receive a wage which was equivalent to their previous wage. Rates now if these workers spent all their wages on shoes market for the products of their enterprise would arise representing an expansion which does not disturb the preexisting market.

In other words, what is basically trying to say here is that, now these workers receive wages, they are working in a shoe factory now? But they will not demand only shoes;

they will be demand for other things, for example, foodstuffs. But if they were demanding only shoes then 90 percent of their problem would have been solved assuming 10 percent is profit.

But the trouble is that the workers will not spend all their wages on shoes and therefore, the requirement of complementarity investments in other industries.

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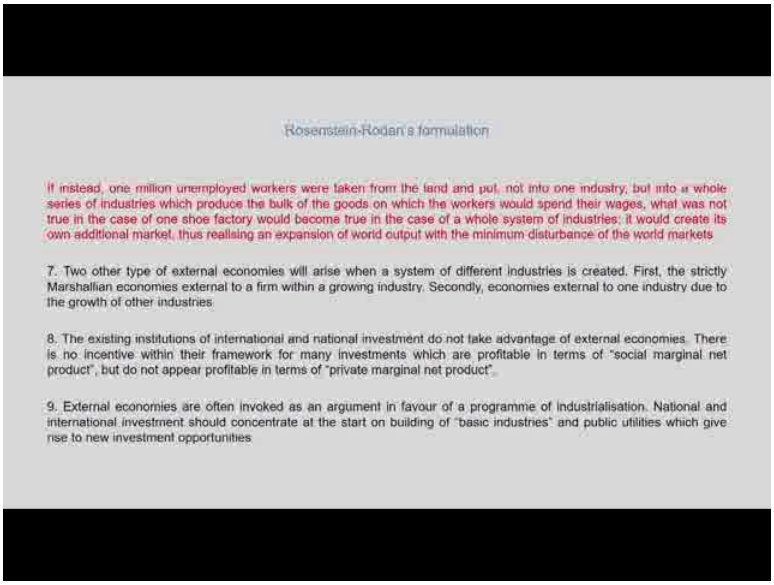

So, his formulation was that if instead one million unemployed workers were taken from the land and put not into one industry, but into a whole series of industries, which produce the bulk of the goods on which the workers would spend their wages. What was not true in the case of one shoe factory would be come true in the case of a whole system of industries. It would create it is own additional market. Thus, realizing and expansion of world output with the minimum disturbance of the world markets.

And 2 other type of external economies will arise when a system of different industries is created. First is a strictly Marshallian economics external to a firm within a growing industry and the second the external economies to one industry due to the growth of other industries. And the existing institutions of international and national investment do not take advantage of external economies. There is no incentive within their framework for many investments which are profitable in terms of social marginal net product, but not appear profitable in terms of private marginal net product.

Now, he Rosenstein Rodan was a formulation in the context of eastern and southeastern Europe. And he ended with the question; he said that, if the aim of industrialization in international depressed areas is to produce the structural equilibrium in the world economy by creating productive employment for the agrarian excess population. It may be assume that the creditor countries will not be willing to enter into commitments for more than 10 years. How much can be achieved in that period and what is the rough order of magnitude of the capital required?

So, Rodan was coming up with the basic problem which was mostly in the context of eastern and southeastern Europe. And therefore, it cannot be generalized as is being done of the balanced growth model for all the countries of the world.

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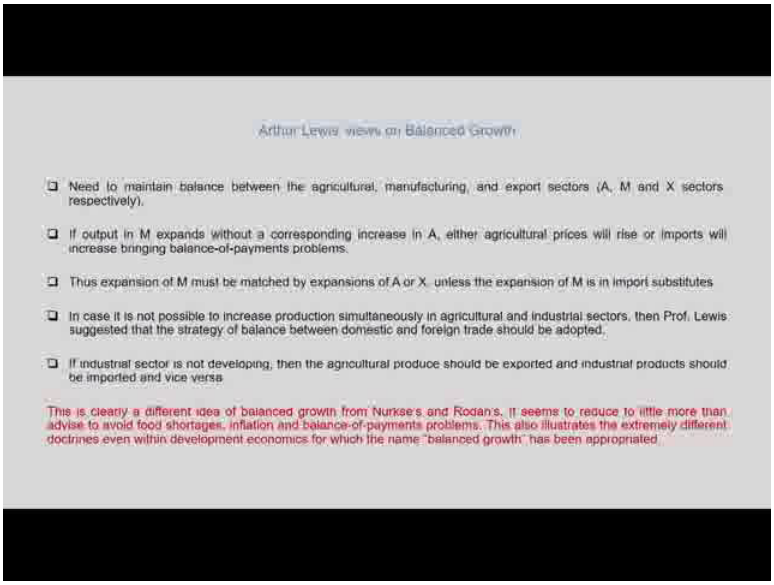

Arthur Lewiss views on balanced growth model weremuch more simpler and of a completely different kind then Nurkse's and Rodan were trying to say. He was trying to talk about balanced the need to maintain balanced growth between agriculture manufacturing and exports sector. So, he was talking about sectoral balance and between within a country; so, agriculture being represented by a manufacturing by M an exports sector by X. So, if output in the manufacturing sector expands without a corresponding increase in agriculture, then either agricultural prices will rise on imports will increase bringing balance of payment problems.

. So, expansion of manufacture sector must be matched by expansions of agricultural exports, unless the expansion of manufacturing is cated to by import substitutes. And in case it is not possible to increase production simultaneously in agriculture and industrial sectors. Then Professor Lewis suggested that strategy of balance between domestic and foreign trade should be adopted. And if industrial sector is not developing then agricultural produce should be exported and industrial products should be imported and vice a versa.

Now, this is clearly a very different idea of balanced growth from Nurkse's andRodan's ah. It seems to reduce to little more than advice to avoid food shortages inflation and balance of payments problems. And it also illustrates the extremely difficult extended different doctrines even within development economics for which the name balanced growth has been appropriated.

And this is not the end of the discussion the balance growth model there are many more, about we will skip it for the sake of this course. But this gives you are this roughly gives an overview of what was meant by balanced growth model, and what the different proponents were trying to say.

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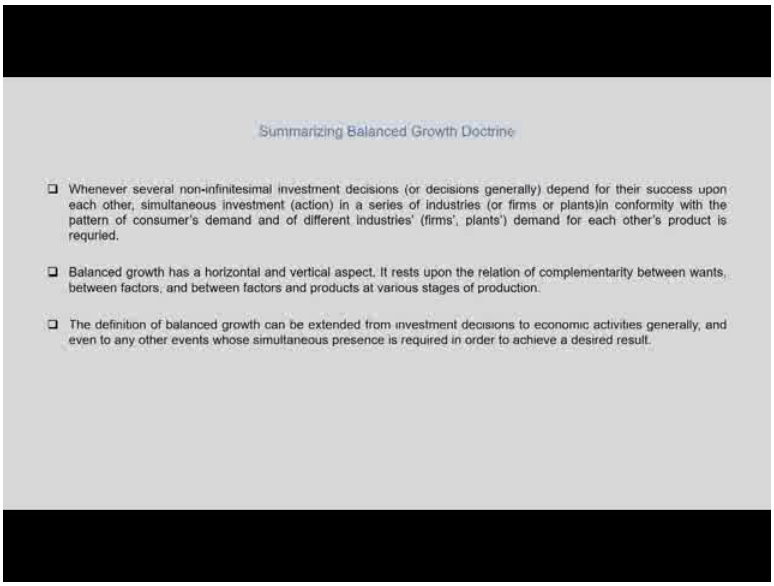

To summarize this discussion on balanced growth for you made out 3 points here. First is that whenever several non-infinite symbol investment decisions depend for their success upon each other. Simultaneous investment in a series of industries in conformity with the

pattern of consumers demand and of different industries, demand for each other's product is required.

So, we have basically talking about non infinite symbol investment in different industries at a point in of different industries in a given economy. So, their demand for each other's product is also cap top and the markets expand.

Balanced growth doctrine is also talking about also has a horizontal and vertical aspect; it rests upon the relation of complementarity between wants between factors, and between factors and products at various stages of production. And the definition of balanced growth can be extended from investment decisions to economic activities generally, and even to any other events whose simultaneous presence is required in order to achieve a desired result. So, this is all about the balanced growth doctrine.

However as is true of many models in of development and growth in economics, the balanced growth model also faced various challenges. And one of the biggest challenges it faced was with regard to it is different kinds of investment that need to be carried out and the time during which the different investment need to be carried out.

And the challenges to the balanced growth model came up with what is referred to as the unbalanced growth model or the unbalanced growth strategy. And like and the unbalanced growth strategy proponents can also be put into the high development thinking category. And there is no there is not much sophisticated mathematical formulation on the unbalanced growth strategy also. However, it needs it warrants some discussion as to what the proponents of the unbalanced growth strategist were trying to tell us; which is what we can look at now.

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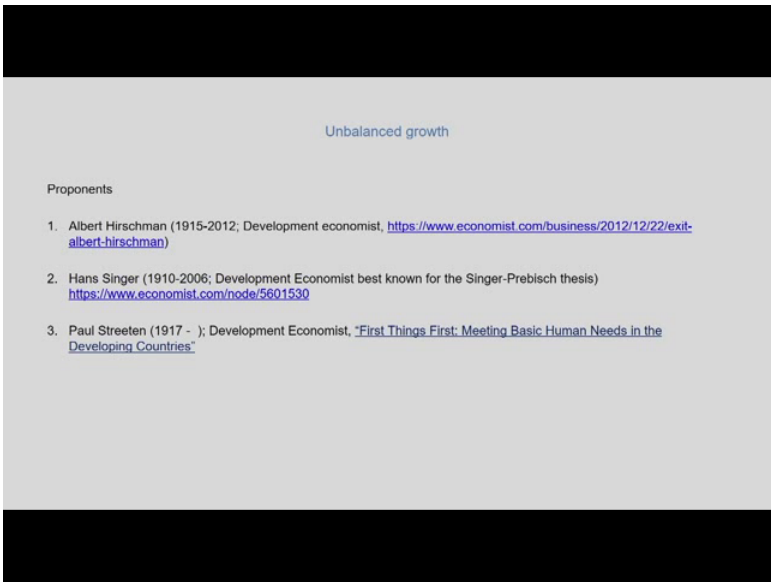

So, like the balanced growth model there are various proponents of the unbalanced growth model as well. And I have picked up 3 major proponents of the unbalanced growth model. Albert Hirschman, Hans Singer and Paul Streeten. All 3 of them were development economists. Anyone of you who is interested in looking up in detail on these economist some very interesting obituaries were written on Hirschman and Hans Singer in economist which I have of which I have provided a link to in this slide. I would urge you to follow up on these links to be able to so that you can get to know more about these economist about whom we are not talking much nowadays.

About it is important to look at their prepositions, what they were propounding because our writing for a very long period of time, and it has a lot of implications to the growth of developing economies. Paul Straten turned 100 years old last year and is also a development economist. He is very highly he is highly acclaimed book first things first meeting basic human needs in the developing countries is an interesting read and I would also urge those interested if you are interested to look up this book as well.

Now, of all of these economists who propounded the unbalanced growth strategy, I will discuss only Hirschman's thesis here. And all are others more or less follow Hirschman's line of thinking and like Ragnar Nurkse had a lot of influence on the balanced growth strategy thinking in the 1950's and the 60's.. Similarly, not the 60s because Nurke's died

in the late 1950's particularly Hirschman had a lot of influence with respect to the unbalanced growth model.

Now Hirschman also began with a point of view he understood he also began with the point that the underdeveloped countries the UDCs or the less developed countries LDCs have a vicious circle of poverty.

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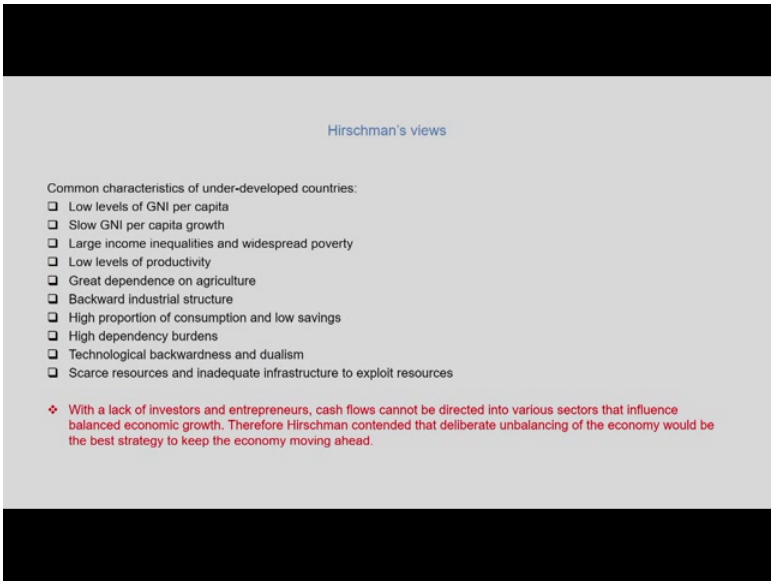

There are there is a vicious circle operating on the demand side and the supply side also. The basic assumption the basic beginning points of the proponents of balanced and unbalanced growth strategies for more or less the same.

So, Hirschman was also saying that yes there are low level the underdeveloped countries have very low levels of GNI per capita. The rate of growth of GNI is very slow. The income inequalities avoid spread. They are highly dependent upon agriculture. There is a technological backwardness and the traditional and the modern sector the agricultural and industrial highly industrial sector coexist. And there are scarce resources, and there is inadequate infrastructure to exploit these resources.

But Hirschman says that because there is a lack of investors and entrepreneurs and cash flows cannot be directed into various sectors that influence balanced economic growth ah. He contended with the balanced growth strategies the deliberate unbalancing of the economy would be the best strategy to keep the economy moving ahead.

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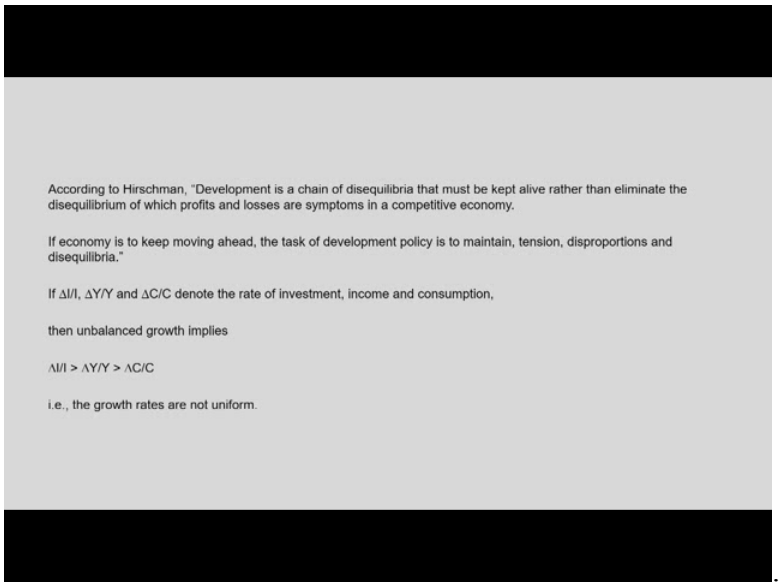

So, Hirschman says that development is the chain of disequilibria that must be kept alive, rather than eliminate the disequilibrium of which profits and losses are symptoms in a competitive economy.

And he says that the economy is to keep moving ahead, the task of development policy is to maintain tension disproportion and disequilibrium. This idea can be explained the in terms of the growth rates of investment income and consumption. If we look at these notations here that I have provided on the slide change in I to I which is basically showing as the rate of investment income and consumption. In terms of unbalanced growth, it basically says that all of these growth rates are not uniform, a change in investment change in income and change in consumption are not uniform. And it is not desire that they be uniform.

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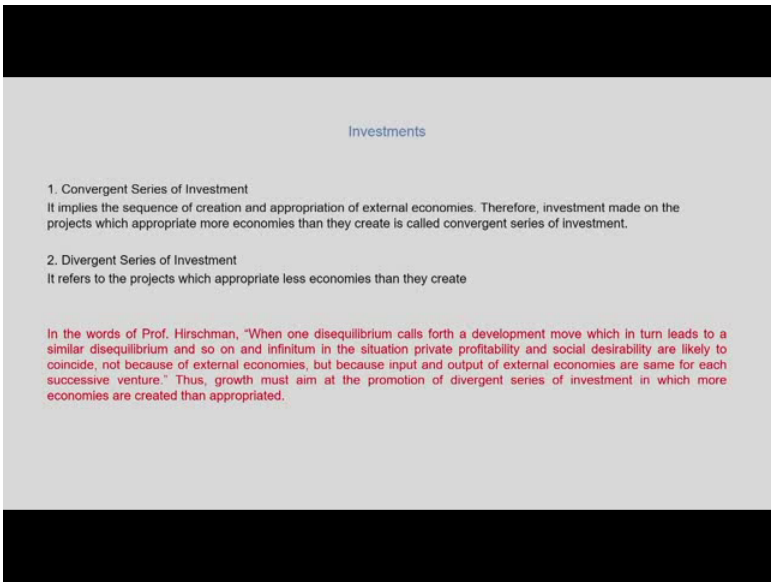

Now, Hirschman is also proposing or the unbalanced growth strategies are also proposing heavy investments huge investments; however, the way the investment should be carried out is different is what they are basically saying. So, the strategy of unbalanced growth they are saying is most suitable in breaking the vicious circle of poverty.

And the poor countries are in a state of equilibrium at a low level of income ah. Production consumption savings and investment are so adjusted to each other at an extremely low level that the state of equilibrium itself becomes an obstacle to growth. And the only strategy of economic development in such a country is to break this low level of equilibrium by deliberately planning unbalanced growth.

So, Hirschman is of the opinion that shortages be created by unbalanced growth. Because they of a considerable incentive for innovations and inventions. He is classifying investments into series of investments into 2 categories: one is the convergent series of investment and the second is the divergent series of investment. The convergent series of investment implies the sequence of creation and appropriation of external economies. So, investment made on the projects which appropriate more economies then they create is called convergent series of investment ah.

So, mostly the private firms would be more keen to carry out convergent series of investment, because they are more keen on appropriating economies then creating economies.

Divergent series of investment refers to projects which appropriate less economies then they create. So, these are basically those investments that need to be carried out by public agencies or the government. So, which means that the objective of social desirability is very high as far as the divergent series of investment is concerned. And in the words of Hirschman when one this equilibrium calls 4th development move which in turn leads to a similar disequilibrium and so on, and infinite terms. In the situation private profitability and social desirability are likely to coincide, not because of external economies, but because input and output of external economies are same for each successive venture.

Having he is basically talking about 2 different kinds of investments here convergent series of investment to be carried out by private enterprises, divergent series of investment to be carried out by the public enterprises or the public agencies.

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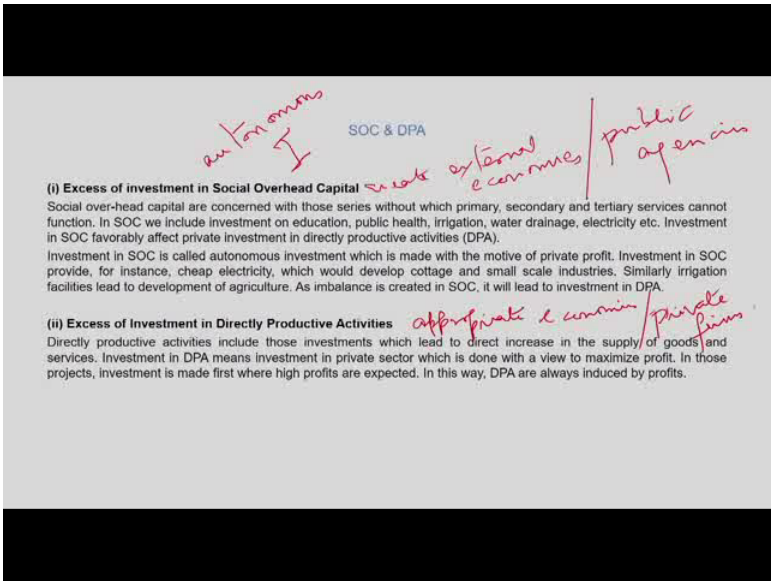

Now in this context Hirschman is saying that development policy should be so designed that they may enhance the investment in social overhead capital. And which can create external economies, and discourage investment in directly productive activities.

Also he is asking to unbalance the economy by creating he is asking about creating unbalances within the economy, which is and it is possible by investing either in social overhead capital or in directly productive activities. Social overhead capital creates external economies, whereas, directly productive activities appropriate them.

So, social overhead capital creates external economies. They create external economies, and the directly productive activities appropriate economies. So, which means that social overhead capital will be largely taken up by public agencies and directly productive activities will be taken up by private firms.

Now, social over it is to give a short definition of what he means by social overhead capital. They are basically those concerned with primary secondary and tertiary services. In social overhead capital we include investment on education public health, irrigation, water drainage, electricity, investment in SOC favorably affect private investment in directly productive activities. So, which is by the private firms will also be more interested in taking up social over in the in public agencies taking up social overhead capital.

Investment in SOC or social overhead capital will also be referred to as autonomous investment; will also be refer to as autonomous investment; which is made with the motive of private profit investment. In SOC provide for instance cheap electricity which would develop cottage and small scale industries. Similarly, irrigation facilities lead to development of agriculture and imbalance is created in SOC if an imbalance is created in SOC it will lead to investment in DPA.

Directly productive activities include investments which lead to direct increase in supply of goods and services and investment in directly productive activities means investment in private sector which is done with a view to maximize profits. In those projects investment is made first where high profits were expected. In this way DPA are always induce profits whereas, social overhead capitals may or may not be induced by profits.

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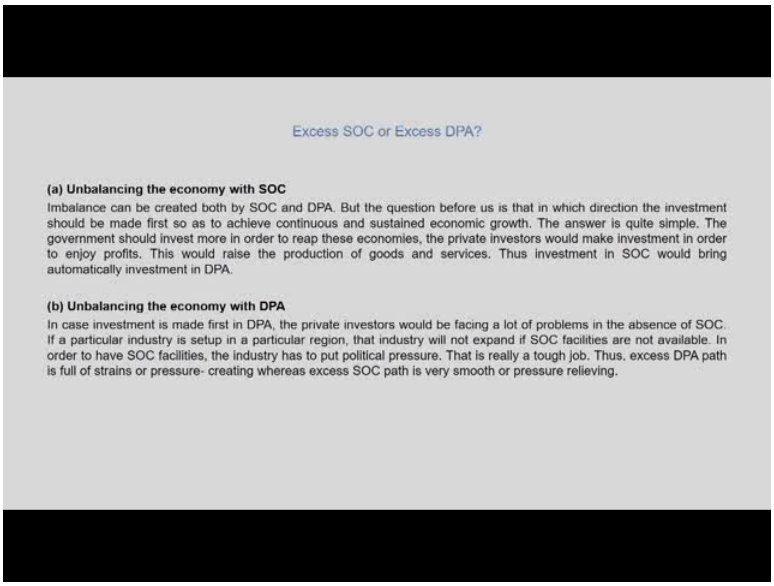

Now the question arises whether one should go with excess social overhead, how does one unbalance the economy? Whether unbalancing of the economy should take place by creating excess social overhead capital, or creating excess directly productive activities. And it can be in balance can be created by both by SOC and DPA. But the question before us is that in which direction the investment should be made first so, as to achieve continuous and sustained economic growth.

And the answer according to him is quite simple the government should invest more in order to reap these economies. The private investors would make investment in order to enjoy profits. So, this would raise the production of goods and services are investment in SOC would automatically bring investment in directly productive activities. In case investment is made first in DPA the private investors would be facing a lot of problems, because social overhead capital has not been created for them for they cannot take advantage of the external economies arising out of social overhead capital.

So, if a particular industry is set up in a particular region that industry will not expand if SOC facilities are not available. And in order to have SOC facilities the industry has to put political pressure, and which is of course, the tough job. So, excess DPA path is full of pressures because whereas, excess SOC path will smoothen out things for the private industries.

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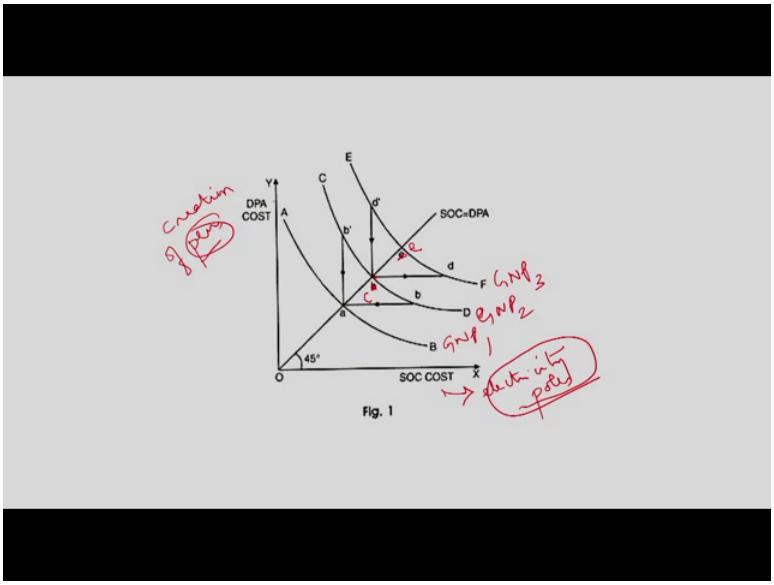

Now, let us try to look at this understand this better by looking at this figure here. So, Hirschman as I have discussed lead 2 assumptions for unbalancing for the thesis of unbalanced growth or imbalancing the economy. The first is SOC social overhead capital investments in SOC and DPA should not be increased at the same time. And second is that path should be followed which maximizes private investment. Now both social overhead capital and directly productive activities can go to increase investment, but the contention here is that which path should be followed first.

Now in this figure on the x axis we have shown the social overhead costs. Y axis shows the directly productive activity cost. So, you can take an example of let us say creation of electricity poles. Let us say as an example of a social overhead capital costs. DPA would be let say creation of creation of pens which of course, also requires electricity. So, that is a directly productive activity cost you producing an output here, but here you have producing an infrastructure so that it can create the DPA.

So, the x axis shows the SOC cost and the y axis shows DPA cost. The curves AB CD and EF they are the isoquants or the equal product curves. So, the isoquants are basically showing the different combinations of DPA and SOC cost. And these different quantities of DPA and SOC give us the same GNP at any point of time. So, each of these isoquants AB CD and EF, they are basically talking about different levels of GNP.

Let us say GNP different levels of or different levels of income. So, these combinations of different combinations or different quantities of SOC cost and DPA cost gives us different levels of incomes. And of course, it is always desirable that we climb higher isoquants then coming down. So, higher the isoquant higher will be the GNP and vice a versa.

The curves are drawn in such a manner that a 45-degree line. Through the origin connects the optimal points on the different curves. And this line shows the balanced growth of SOC and DPS. So, which on this line SOC is equal to DPA; so it shows the balanced growth of social overhead capital and directly productive activities.

In this diagram, the period points a c and e are all equilibrium points where SOC is equal to DPA. Now if the development is followed via excess capacity of SOC, then the path of development would be from if the direction followed first is the investment in SOC. Then the path followed will be from a b to c d and then to e. When investment in SOC is increases by AB the investment in DPA it will lead to an increase in DPA to AB dash. So, this increase in SOC AB will lead to a corresponding increase in DPA to AB dash. Now these types of investments will shift the equilibrium from ac to ce and so on.

Now so, to go back to this again; so, let us stay there is an increase of investment by AB on SOC. And then there is a corresponding increase in investments in DPA by AB dash. Then you are moving to a higher isoquant here, and because there is a tendency to choose the optimal combination of SOC and d SOC and DPA. Therefore, we will come to the second equilibrium point which is c here, and this is on a higher isoquant CD, which means that it is a higher level of income and it is of course, the most preferable.

Now this is because excess SOC will lead to forward operation of what we call in economics is the multiplier. Due to which income will increase multiple times, and investment in DPA due to excess SOC will lead to the operation of the accelerator. And that way there will be cumulative increases in income. Now this means that investment both in SOC and DPA leads to higher level of GNP. And induced by this increased investment in SOC will be increased by the government which should be equal to c d, ok.

So, just to bring more clarity to this what it is. So, what I just said is that, if investments first increased on SOC by AB private firms come in and bring about a corresponding

increase in directly productive activities by AB dash. Then the government is encourage to spend more on social overhead capital, because multiplier effects would have been created within the economy and income levels of increased.

So, autonomous investment by the government will increased by CD, which will then lead to a corresponding increase in directly productive activities by the private firm by CD dash. Now both types of investment would raise the equilibrium to e on the isoquant EF curve. So, it is clear as investment is made in SOC first there is, corresponding an automatic investment in DPA.

But on the other hand if path of development by a shortage of SOC is adopted; in that case, the path of economic development would be first a b dash. So, suppose this social overhead capital is not created here, and the investment is first made in directly productive activities by a b dash then there is no social overhead capital from which external economies can rise which can help in creating multiplier effects within the economy.

And therefore, the private firms have to put political pressure on the government to be able to create this social overhead capital by a b. So, there will be and then there will be obstacles within the economy. Therefore, the most ideal way is for the government to first create autonomous investments push make autonomous investments in social overhead capital.

So, that a b is already created; however, it is also possible to create DPA first, but then it will lead to a lot of bottlenecks within the economy; however, since AB dash has been created in the long run AB will also be created because the private firms will start pressurizing the government to create the social overhead capital.

So, out of the 2 paths of development, the first path of excess SOC that is a b c d e is very smooth. And this path is self-propelling it automatically leads to increase in directly productive activities. On the contrary excess DPA that is a b dash c d dash e path needs political pressure. And Hirschman was right probably in saying the development via shortages is an instance of disorderly compulsive sequence while via excess SOC capacities essentially permissive.

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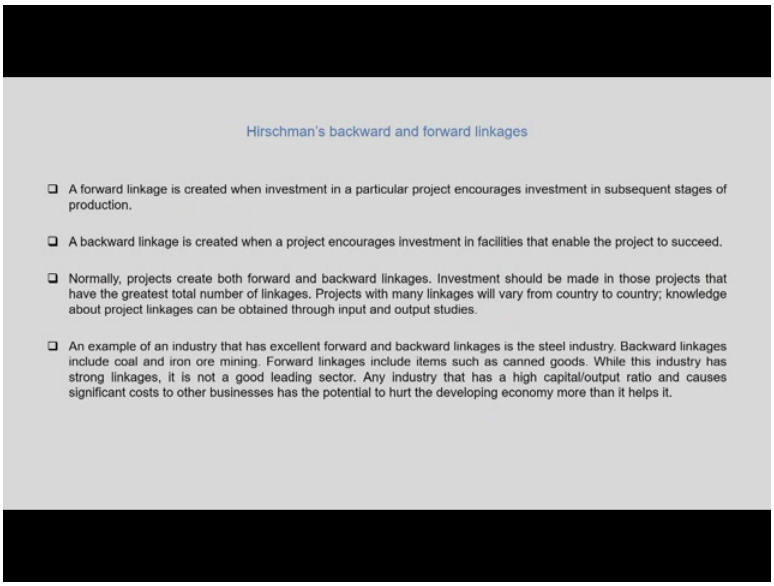

I will end this discussion on unbalanced growth by focusing a little on what is a very important concept that was introduced for the first time by Hirschman when he was discussing unbalanced growth model and that is backward and so forward linkages. So, after evaluating the paths of economic development, the question is for self-reliance or self-propelling in which industries one should make investment first so, as to make development effective.

And in this connection Hirschman primarily came up with 2 types of linkages one is forward linkage and backward linkage. Of course, he also came up with total linkages, let us begin with backward linkages first. By backward linkages he means growth due to a set of industries that stimulate the growth of those which supply raw materials.

So, setting up of a steel plant for example would stimulate the demand for steel scrap coal and other related goods, and precaution of these goods will accordingly increased. So, these are backward linkages. Forward linkages referred to the growth of certain industries owing to the initial those which supply raw materials. And expansion of steel industry for example, will encourage industries making machines tools etcetera, using steel as their basic input. So, in short the study of forward and backward linkage facilitates the choice of activities through which growth with imbalances should be generated in the system. And industries generating maximum linkages are to be developed first.

So, let me summarize today's discussion. In today's discussion we looked at too very important models of economic development or if you wish to say so. There are 2 the we have we looked at balanced growth model and unbalanced growth model we looked at certain contexts in which the proponents of these models talked about balanced development of the economy.

And unbalanced development of the economy as far as balanced development of the economy is concerned we focused more on Ragnar Nurkses ideas where he was talking about the vicious cycle of poverty on the demand side and the supply side.

And what needs to be done to be able to get out of this low level equilibrium traps, as we see in the less developed countries, and his preposition was that we should create more investments within the economy that creates complementarities of demand and supply, by encouraging more of government intervention government investments. And also by identifying those industries which have more increasing returns to scale that have more economies that can create more economies of scale.

The unbalanced growths model came up as a challenge to be balanced growth model, because the unbalanced force model says, primarily the model preferred by the model proposed by a Hirschman; said that, unbalance or imbalance is probably most preferable. Because unbalance has the capacity of creating more growth in different industries.

And he suggested 2 different kinds of investments convergent series of investments, divergent series of investments. The conversion series of investments appropriate more economies then creating them, divergent series create more economies than appropriating. So, convergent series of investment are more preferable by the private firms, divergent series of investment is are to be taken up more by the public agencies.

We also saw different yeah types of investments that can be carried out ah, that was proposed by Hirschman. 2 types proposed by Hirschman, one was investments and social overhead capital and the other was directly productive activities. His preposition was that it is possible to carry out took develop the economy by inducing investments in both social overhead capital and directly productive activities.

But the most preferable form of carrying out development was to create excess capacity through social overhead capital. So, that the directly productive activities can take can

appropriate the economies that are arising out of social overhead capital, and therefore, economic activities can increase.

However, if we if the other is done where are shortages are created in social overhead capital, and directly productive activities through private investments are taken place first, then the process of development will not be smooth, because the directly productive active will anyway require to appropriate the economies of the social overhead capital.

And they will have to put pressure political pressure on the governments to create social overhead capital after creating directly productive activity. So, the most preferred form of investment is creating excess capacity through social overhead capital and then moving onto directly productive activities ah. Hirschman also after through his thesis pointed out that one should look at development of those industries which have total linkages backward and forward linkages. And investment can be development policies can be planned in such a manner.

We will continue this discussion on growth models in the next classes ah. Just to remind you we have we will be looking up mostly on these models.

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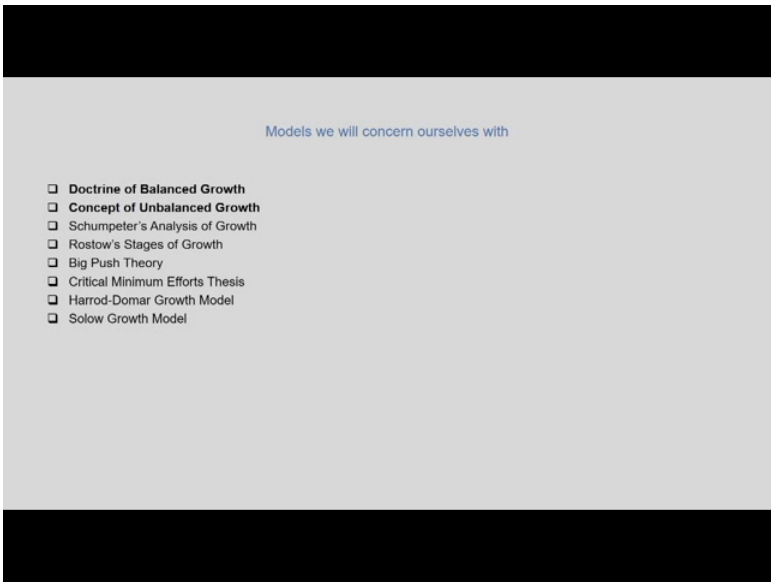

We have completed the doctrine of balanced growth in the concept of unbalanced growth. In the next class we will we will be looking at Schumpeter analysis of growth and Rostows stages of growth. And which is talking about different models of

development in the context of growth models. So, this will be a lecture which will continue in the next class. I will take references 2 the balanced and unbalanced growth models are well.

Thank you.