Economic Growth and Development
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Lecture – 09
Strategies of Economic Development & Growth – IV

Hello and welcome to lectures 9 of the NPTEL MOOC's course on Economic Growth and Development. We are continuing with the discussion on the Strategies of Economic Development and Growth. This is part 4 of this discussion.

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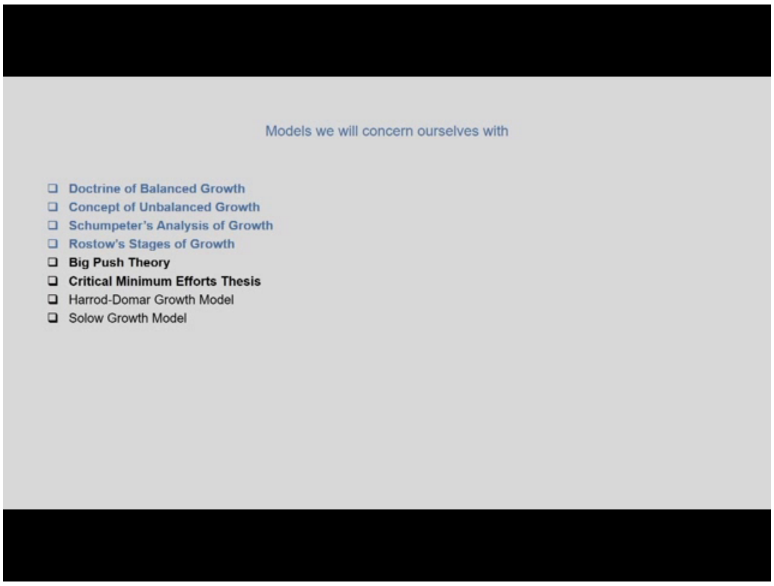

In today's lecture we will discuss about the big push theory and the critical minimum effort thesis as put forward by Professor Harvey Leibenstein.

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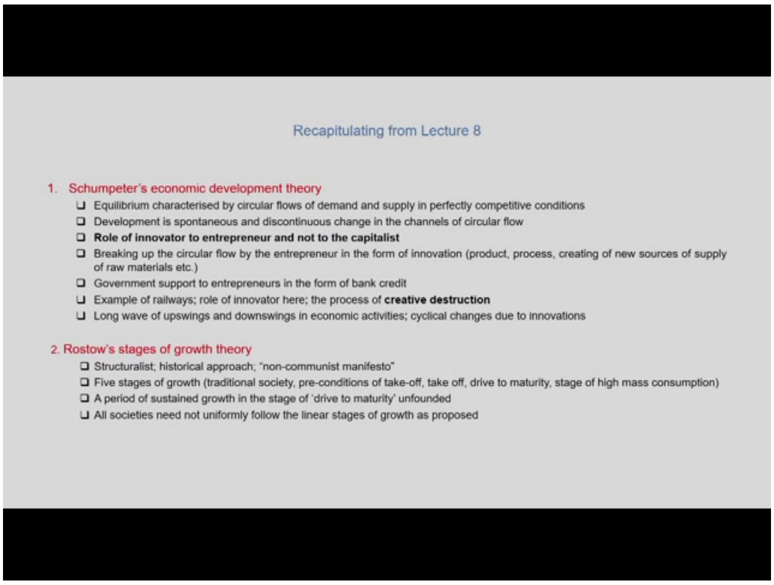

In the last class we looked in some detail into Schumpeter's theory of economic development and Rostow's stages of growth theory. Remember that we are in this part of the discussion looking mostly at the high development theories which look that the economic transformation of the developing countries. What are the prerequisites for the economic transformation of the underdeveloped countries or the developing countries? And most of these economics that we are discussing as a part of the high development theory were writing in the 1930's in the 40's in the 50's.

Many of them were drawing from the experiences of the then highly industrialized developed countries. And they were proposing different ways of development for the UDC's is based upon the experiences of the highly developed countries. And of course, in the last classes we have also discussed in some detail with respect to the different streams of development thought, and what were these development thinkers really trying to stick to as far as their ideologies and their propositions went.

As Schumpeter's economic development theory is concerned, we also discuss that he can be broadly put into the category of development thinkers who proposed looking at development as a form of a universal history. But Schumpeterian analysis was largely overlooked in the 1950's and the 1960's, in fact when most of these growth models were making a huge foray into development thinking.

Schumpeterian analysis was largely ignored as is discussed in the literature; however, there are 2 important concepts of Schumpeter which has seen a reemergence in the growth literature. One is the role of innovations, and the other is the role of the entrepreneur. And it is the entrepreneur who innovates and not the capitalist who innovates. So, Schumpeter was mostly assumed a perfectly competitive economy in which the stationary equilibrium. And in such a stationary state he assumed that there is perfect, there are no profits no interest rates, no saving no investments and no involuntary unemployment.

The there is full employment of resources, and this equilibrium Schumpeter say is characterized by what is called a circular flow. And this circular flow continues to repeat itself in the same manner year after year. Something similar to the circulation of blood is what he had referred to.

The Schumpeter was when he spoke about the role of innovation, and he when he provided a role of innovator to the entrepreneur the kind of innovation he was talking about was mostly product innovations or innovation taking place in production processes, or opening up of new markets or identifying different sources of supply of raw materials or semi manufactured goods and so on. He had taken the example of the railways. How railways can be considered as one of examples of how the stationary equilibrium is broken the circular flow is broken.

And he coined the term called creative destruction taking from Marxian analysis. And he said that it is creative destruction which will lead to economic development in the long run.

He also said for the innovator or for the entrepreneur to be able to carry out innovations to be able to carry out risks in the market in a perfectly competitive equilibrium. His suggestion was that the government have to play a very important role in being able to provide bank credit. So, Schumpeter's model starts with the breaking up of the circular flow with an innovation in the form of a new product by an entrepreneur, but the purpose of the entrepreneur here is to earn profits. And to be able to break the circular flow the innovating entrepreneurs have to be financed by bank credit expansion. And since investment in innovations is risky they must pay interest on it. So, that was the crux of Schumpeterian analysis of economic development.

And it is this Schumpeter believed in the existence of also long waves of upswings and downswings. And he said that it is this innovation carried out by the innovator by the entrepreneur that will lead to a phase of upswings, and there will be increase in economic activities. And when it reaches it is limit there will be a phase of downswing again. So, he was talking about cyclical changes happening within the economy due to innovations. And he was one of those economists who said that cyclical changes or business cycles can take place not just because of economic factors, but also because of non-economic factors within the economy.

Some of criticism that was leveled against Schumpeter was that, one of the prime criticism was that since Schumpeter was also talking about the declining role of the capitalist and therefore, the decline of capitalism. Many analysts had critiqued him that his analysis or transition his analysis of transition from capitalism to socialism is not correct. Because he is giving too much of an importance to bank credit in his theory, and that the downswings and the upswings are not necessarily are not essential for economic development. And it is not necessary that all innovations will be followed by phase of upswing and then a downswing and so on.

So, these were some of the important critics of Schumpeter's theory. We also look at Rostow's stages of growth theory. And we know that Rostow was a structuralist; however, he was also taking a lot from historical analysis. And he was proposing uniform stages of growth based upon the experiences of the developed countries. And he was posing his proposition as some kind of a non-communist manifesto. And he said that there are 5 stages of growth the traditional society the pre-conditions to take off drive to maturity and stages of high mass consumption.

The traditional society rested on static equilibrium, until it is disturbed by some mechanism. Preconditions for takeoff involve slow changes especially in attitudes and organization. Takeoff is the most important stage. It is a watershed in the life of a society. It involves a rapid increase in the rate of change so as to involve discontinuity.

The drive to maturity is a period of sustain growth extending over 4 decades after the end of takeoff. And the age of mass consumption is an age where leading sectors of the economy shift towards durable consumer goods, and a large share of population acquire a very high standard of living. So, there were some of the important characteristics that

Rostow's stages of growth theory was propounding was proposing; however, experiences of development across countries has shown that traditional society and modern societies have coexistence.

Particularly, in the largely the agrarian economies the underdeveloped countries of the world, the stage of take-off never came takeoff never happened. Although there is a section of population in these countries which consumes highly sophisticated goods which transacts in market dealing with high with luxury goods, and durable consumer goods and so on we have a highly consumerist society now.

But at the same time there is a large section of population in these countries. That is still a part of the traditional that that can be still considered a traditional society, that has very low incomes low savings a largely agrarian setup presents the levels of disguised in employment is very high in these economies, and rural urban migration continue to take place. So, because of the experience of these countries Rostow stages of growth theory was criticized. And on the premise that such uniformity or such linear stages of growth is hardly to be seen.

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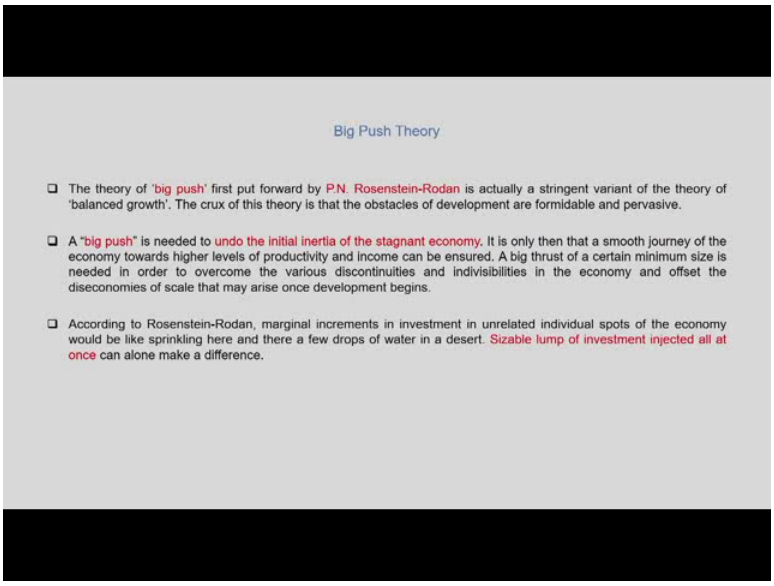

Now, let us go back slightly to Rosenstein Rodan. In the last classes in one of the last classes, I had discussed about Rosenstein Rodan's unbalanced growth thesis or unbalanced growth theory. In which he was suggesting that he was the unbalanced growth theory of Rosenstein Rodan came as a challenge against the balanced growth model of Ragnar Nurkse. And he was suggesting that massive investments need to be carried out, but they need not necessarily be carried out simultaneously in different industries. Certain industries may be chosen where a massive investments need to be carried out. And he has identified that those industries necessarily need to be those are dealing with social overhead capital.

And that is where his big push theory also comes in Rosenstein. Rodan was one of the most active proposers of the big push theory, although there have been many. And the Rosenstein Rodan we can we can actually say that both balanced and unbalanced growth models were proposing big push investments or invest massive investments, only the strategies of development of the big push of the balanced growth theories and the unbalanced growth theories were slightly different.

So, if you read through those who are interested in research if you read through the research articles of these authors who are writing of these economists, who are writing in the 1940's in the 50's and the 60's you would see that there are some there are points were they all agreed with each other as well.

Where for example, Professor Paul Streeten or Professor Rosenstein Rodan Professor Hirschman they all seem to be agreeing with each other with respect to the fact that investments need to take place. And government needs to play a very big role in bringing about economic transformation of the underdeveloped countries. And so, one thing that both balanced growth strategies and unbalanced growth strategies were agreeing upon was the need for massive investments. Only their strategies the or the their proposals of strategies of carrying out this development was different.

So, the idea behind Rosenstein Rodan's unbalanced grow theory is that a big push or a big and comprehensive investment package can be helpful to bring economic development. In other words, what he was suggesting is that, minimum amount of resources must be devoted for developmental programmes' if the success of programs is required. He was taking the example of an aircraft. So, as some ground speed is required for the aircraft to airborne. In the same way certain critical amount of resources need to be allocated for development activities.

So, this theory through Rosenstein Rodan was of the view that through bit by bit allocation no economic and move on the path of economic development, rather specific amount of investment is considered necessary for economic development. Therefore, if so many mutually supporting industries which depend upon each other are started the economies of scale will be reaped.

So, external economies or economies of scale was one of the driving factors that provoked Rosenstein Rodan and others; to suggest that there should be a simultaneous there should be investments big investments being carried out in specific amount in certain industries.

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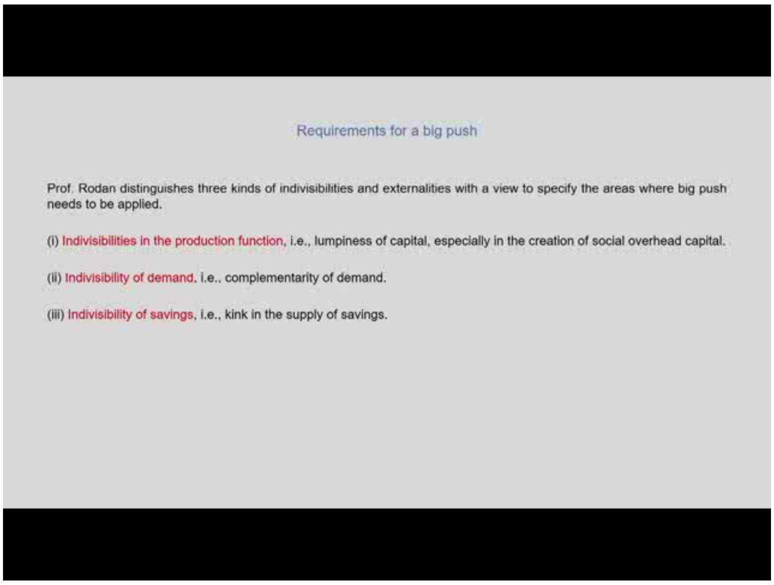

Rosenstein Rodan presented through his big push theory 3 types of indivisibilities. And he said that these 3 kinds of indivisibilities will create externalities, and bring about a rapid economic development. The first indivisibility that he was referring to was with respect to indivisibilities in production function. So, what he was and the meaning of indivisibilities here is that when we are looking at investments in social overhead capital; let us say. So, this investment cannot be divided into small bits and pieces. So, there is a lot of lumpiness in these kinds of investments.

And it is an irreversible change. So, if you are investing and say let us say creation of infrastructure for electricity. So, the infrastructure needed for creation of electricity is huge and it is indivisible. But the externalities arising out of these indivisibilities are also huge, and the private firms can appropriate the externalities arising out of these indivisibilities. However, the amount of investment required for such huge infrastructure itself becomes an obstacle for economic development of the underdeveloped countries. And Rodan was specifying that one needs to take advantage of these indivisibilities.

So, one of the first kind of in indivisibility that he was referring to was indivisibilities in production function, which is basically the kind of investments that are required for establishment of social overhead capital. Like, transport communication and energy resources. The creation of social overhead capital by itself does not create economic wealth, by itself does not bring about economic development. But the externalities arising out of the creation of social overhead capital are used by the private firms for creating directly productive activities and that leads to economic development. So, they all contribute to development indirectly, and they last for a longer period of time. And the most important the crucial part here is that social overhead capital cannot be imported. So, so to construct the social overhead capital there is a need for a big investment within the country.

And, as I was also suggesting in the last class in his thesis on unbalanced growth, when investments are made on social overhead capital; there is a tendency for a creation of excess capacity. In other words, what it means is that once the social overhead capital has been created, and if there are not enough entrepreneurs within the economy, if there are not enough private firms within the economy to take advantage of the social overhead capital, then you are essentially creating excess capacity. And this excess capacity is not look at very nicely in competitive markets because then you are wasting resources.

So, what he was saying is that, after providing big push in investments by creating a social overhead capital, it is alright for excess capacity to exist. Because this excess capacity will in the long run be used by the private entities for creation of directly productive activities or for creating output through directly productive activities. And his estimate was that as far as the underdeveloped countries are concerned about 30 to 40 percent of investment should go to creation of social overhead capital; the second point that he was with regard to indivisibility of demand. He was saying that the complementarity with respect to demand requires that new disease should establish such industries which could support each other.

And to make investment in one project, may be risky because a new disease the demand for goods and services is limited due to lower incomes. So, in other words, indivisibilities of demand required that at least a certain amount of investment we made in so many industries which could mutually support each other. And this is where this indivisibility of demand or complementarity of demand characteristic is where probably Professor Rosenstein Rodan and Ragnar Nurkse would have agreed with each other. Where they talking about creating complementarities of demand, so which means that if you have a shoe factory as in the example laid by as we had taken example of in the last class in the.

So, if you are creating a shoe factory, you cannot you cannot compulsorily ask the wage earners to be consuming shoes. They need to consume food they need to consume clothing. So, while you are investing in the in a shoe factory you also need to invest in clothing and you in also need to invest in other consumer goods that need to be consumed by these workers. So, for creating complementarities of demand, and there are indivisibilities of demand everything needs to be consumed simultaneously. And therefore, there is a need for big push in investments.

Later scholars have tried to show this in a perfectly competitive In a competitive market model framework.

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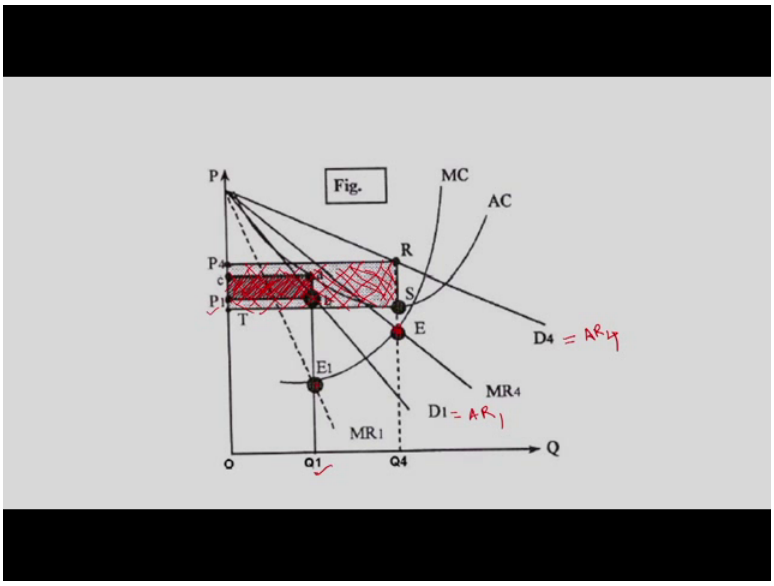

If you look at this figure here on the slide, you would see that this is a very simple figure which is used in competitive market conditions in microeconomics. This figure shows the average revenue curves and the marginal revenue curves of a competitive firm. So, in the x axis we are measuring quantity and on the y axis we are measuring price here. So, here the demand curves in the marginal revenue curve are shown when investment is made in the single firm form. You can also refer to this D1 here as average revenue curve one, and D4 here as average revenue curve 4.

So, basically the D1 is the average revenue curve being faced by the firm. The MR1 is the marginal revenue curve being faced by the firm. Ac is the average cost curve here. And MC is the marginal cost curve here. The first let us assume that a small amount of investment has taken place in some sector of the industry. From standard microeconomics formulations we know that the point of equilibrium is the point where marginal revenue is equal to marginal cost. So, the first point of equilibrium after in a small amount of investment have been made for which the firm is facing D1 and MR1 curves are, that this is the point of equilibrium E1 and at this point of equilibrium the amount of quantity that is being produced by the firm is O Q1. And the price that the firm is being faced with is O P1.

And going by this the if you look at the average cost curve here, the production is taking place below the average cost curve therefore, the competitive firm is actually facing losses worth this area which is equal to P1 b a c. So, this is the area of losses if small investments have been carried out in some sector of the economy or in some small sector of a particular industry.

So, Rosenstein Rodan suggesting that instead of carrying out bit by bit investments, if investment is made in a number of industries after identifying whether these industries can create external economies, then the market will be extended. So, you see that the AR 1 now moves out to AR 4 and the MR1 curve. Now moves out to MR 4 which means at the market has expanded.

So, the firm is now being faced with a higher demand curve, and a higher marginal revenue curve a higher average revenue and a marginal revenue curve. And at this level of investment the firm is producing at a the new equilibrium point; where MR 4 is equal to the marginal cost curve. The marginal cost curve remains the same, and amount produced is O Q4, and the price being faced by the form is O P4. And the firm is producing much above the average cost curve here. And therefore, the firm in this case is now reaping profits worth this area which is P1 S R. So, this is the amount of profits that the firm is now facing when investments have increased.

So, it means that if investments increase to a large extent if markets expand because of a big push in investments, then there is a possibility that the industry can convert losses into profits. In the first case when the amount being produced was O Q1 and the price faced was P1, the firm was producing below the average cost curve and the amount of losses was equal to P1 b a c here, and when the markets expanded, and the firm was faced with a new average revenue curve of D4.

It was producing much above the average cost curve. And the firm could easily convert it is losses into profits. So, this is what Rodan was meaning to say when he talked about indivisibility of demand because there are complementarities of demand it make sense to increase investments to a large extent instead of focusing on small investments.

He was also saying that is indivisibility of savings. And by indivisibility of savings he means that we are anyway caught in the underdeveloped countries are anyway caught in vicious circle of poverty. There is low income and low savings. And if it is low saving you are left with no investment for economic development. So, big push investments need to be carried out so that the marginal propensity to save of the consumers also increase.

So, he was talking about a situation where big push can actually lead to marginal propensity to save increasing, marginal propensity to save being greater than the average propensity to save. And in the presence of all of these are indivisibilities and non-existence of external economies only a big push can take the economy out of a low level equilibrium trap. Otherwise these indivisibilities become obstacles to economic development.

So, Rodan's formation of big push theory is largely based upon his thesis of unbalanced growth model. However, please keep in mind that the big push theory is something which was supported by the balanced growth strategies also. They were also talking about a big push for investments to be carried out in the underdeveloped countries. And that was the crux of both of these different models of development. So, in principle they agreed that investments need to increase however the strategies were different. Now as like most theories hide a development theory the big. Push theory also has it is detractors, and there were various the limitations of the big push theory that were highlighted by the detractors. And it make sense to discuss a little on the criticisms of big push theory.

And I think that the discussion on big push theory is very important in the context of the debate. That has gone on since the 1980's and 90's intensified in the 2000 with regard to public support of public support provided to the social sector. And weather government should increase, it is investment in the social sector or withdraw itself form the social sector leaving space to the private sector. So, the criticisms of the big push theory was the first criticism was that a big push infrastructure may be justified on the ground of external economies. But many economist said that the export factor, and the import substitute sectors are so backward in the underdeveloped countries that they do not create any economies.

So, they were saying that the big push investment theory and all is fine can be carried out within the domestic territory of a country. However, the international trade sector of the UDCs cannot take the advantages of big push. Because this sector is so underdeveloped that there is no scope for creation of any external economies in the international trade sector. Another criticism of the big push theory was that, the goods which are concerned with public welfare are hardly yield external economies and the investment which is aimed at reducing cost does not yield economies.

So, this is one of the criticisms coming in from the domain of the public utilities and externalities. It said that when you are creating social overhead capital let us say for example. It does create welfare individual welfare, it creates social welfare for a people within the country, but externalities so created as such that it need not necessarily be important for the private entities to be able to carry out massive investments. And it is not possible for UDCs to be entirely depending upon the government to carry forward investments. Therefore, these big push investment in public utilities or in social overhead capital has it is own disadvantages or limitations, and that was a caution for the big push investment theory.

The another criticism leveled against the big push theory was that, there is a lot of focus on providing investments for industry, or identification of industry which can create complementarities of demand identification of industry, which can create large scale economies. And in the process there was a lot of neglect of the agricultural sector. And this is a well-founded criticism of the big push theory. And this is the critic suggested that it neglects investments to be made in agriculture and it is allied sectors. And it is important that this needs to be corrected because agriculture continues to provide maximum employment in the underdeveloped countries. And also it is a largest contributed to output the value the net value added to output is also high from agriculture.

Another criticism of the big push theory was that while it is talking about massive investments while it is talking about big investments, the UDC are characterized by inflationary spirals within the economy the general level of prices are rising people are not able to afford the basic items of consumption. So, where do these funds come from? Do these funds for big investments come from foreign loans? So, there was a big question with regard to whether the government should creates it is own resources for providing big push to in the form of investments or big investments, or there should be reliance on funds external funds or international loans.

Another drawback or another criticism leveled against big push theory was that, there is no coordination in the underdeveloped countries between the private sector and the government sector. So, the contention here was that the private sector and the government sector instead of coordinating with each other are actually competing with each other. The underdeveloped countries are characterized by the fact that and this is what the critic had to say, that the underdeveloped countries are characterized by the fact that there are institutional rigidities.

There is corruption there are administrative problems within the bureaucracy. And there are a lot of administrative hassles with regard to forwarding investment projects. And therefore, the government and the private sector here are actually competing with each other. So, under these circumstances, how is it possible that by creating social overhead capital? You are providing you are giving a boost to the private entities. So, this was one of the important criticisms of the big push theory.

Another most important criticism of the big push theory is largely influenced by the development thinking of those times, because most of these models of development. For example, we have discussed Simon Kuznets ideas on reflections on development, where a lot of empirical exercises were being carried out with regard to how these industrialized countries of the world have developed which means that the models of development that were being proposed for based on historical analysis of how countries have progressed over a period of time. However, the big push theory did not have to it is credit any influence as far as historical data was concerned. So, one of the criticisms leveled against this theory was that, it is at best only a recipe for the underdeveloped countries to develop, but it is not derived from historical experience. And therefore, there is a lack of evidence and facts to be able to back this data in a coherent manner.

Now, having done with the big push theory, let us now look at the other important development model that we need to know of; and this is known as the critical minimum efforts thesis.

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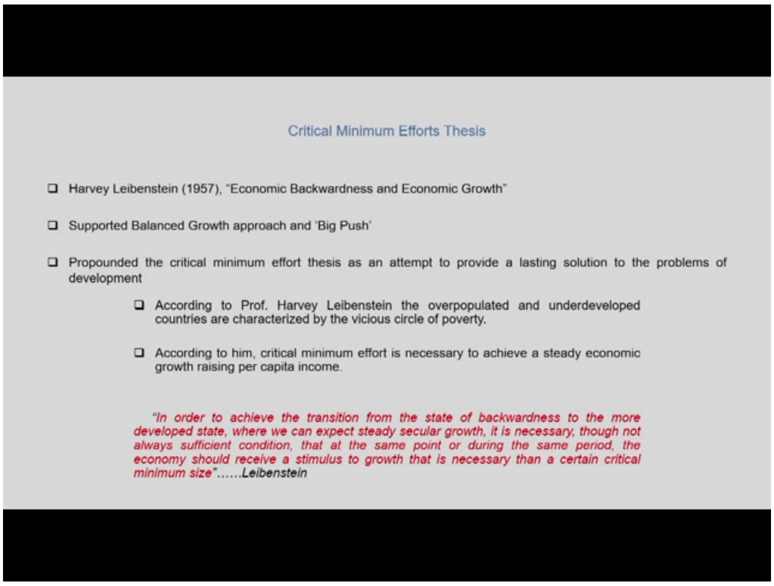

This model was proposed by Professor Harvey Leibenstein in 1957, he wrote a paper called economic backwardness and economic growth. And Leibenstein was basically and Ukrainian born American economist, and he left between 1922 and 1994. His thesis is also a very important in the context of big push and balanced and unbalanced growth models basically the high development theory.

And he has many contributions to development economics, and one of them being critical minimum efforts thesis, and those who are interested in looking up for more research papers in this area may also want to look up Leibensteins ideas on x efficiency; which also was a major contribution to the literature or development economics.

However, let us now focus only on Leibensteins critical minimum efforts thesis. Now according to Leibenstein the overpopulated and underdeveloped countries are characterized by the vicious circle of poverty. Which is a given which is the starting point of most of these high development theory thinkers they have low per capita income the underdeveloped countries have low per capita income. And his proposition was that some attempt has to be made to provide a solution to this economic problem of vicious circle of poverty.

And according to him critical minimum effort is necessary to achieve study economic growth raising which will ultimately raise per capita incomes. So, the main idea of his theory is that economic growth in the underdeveloped and overpopulated countries is not possible, unless a certain amount of a certain minimum level of investment is injected into the system. And this minimum level of investment is what he called the critical minimum effort thesis.

So, in his own words in order to achieve the transition from the state of backwardness to the more developed state; where we can expect steady secular growth, it is necessary though not always a sufficient condition that at the same point or during the same period, the economy should receive a stimulus to growth that is necessary than a certain critical minimum size.

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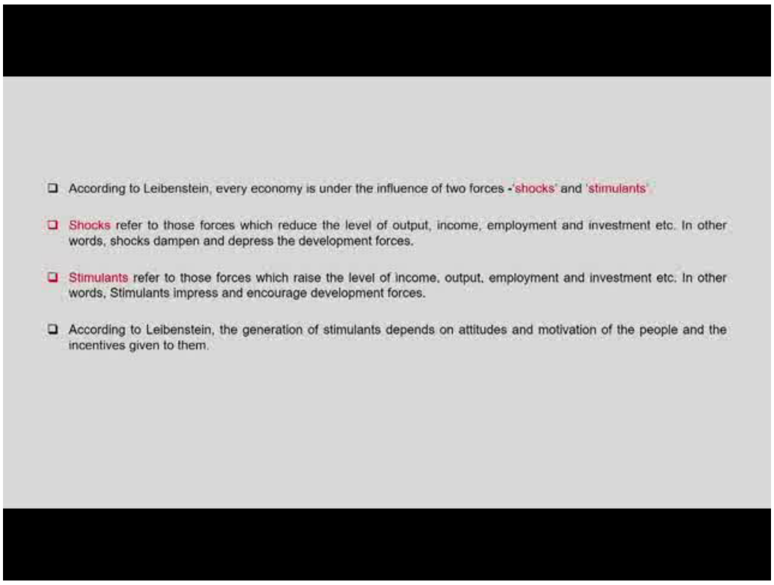

He also introduced these 2 concepts through the critical minimum effort thesis. So, according to him every economy is under the influence of 2 forces. And these 2 forces are shocks and stimulants. A shock refers to those forces which reduce the level of output income employment and investment. So, what basically means that shocks dampen depress development forces. Stimulants raise the level of income output employment and investment. And stimulates impress and encourage development forces. And these stimulants are can be referred to as income generating forces.

And he says that in the long run economic development does not take place in backward and underdeveloped countries, because the magnitude of stimulants in those countries is quite small. Now if you have to ask me what are some of the examples of shocks and stimulants. So, they can be one of the examples of shocks could be the attitude in a institutional rigidities within the underdeveloped countries, and some of the stimulants could be the role of entrepreneur or the role of innovations that Professor Schumpeter was also talking about. So, Leibenstein says that underdeveloped countries largely continue to be underdeveloped, because sufficient stimulants have not been created in the economy to keep the shocks that be.

So, he is of the view that underdeveloped countries must break from this vicious circle by creating sufficient stimulants so that this economic backwardness can be taken care of or they can break away from this economic backwardness. And he also says that the efforts to escape from economic backwardness the spontaneous or forced are below the critical minimum effort required for persistent growth. And therefore, that needs to be the critical minimum efforts towards this.

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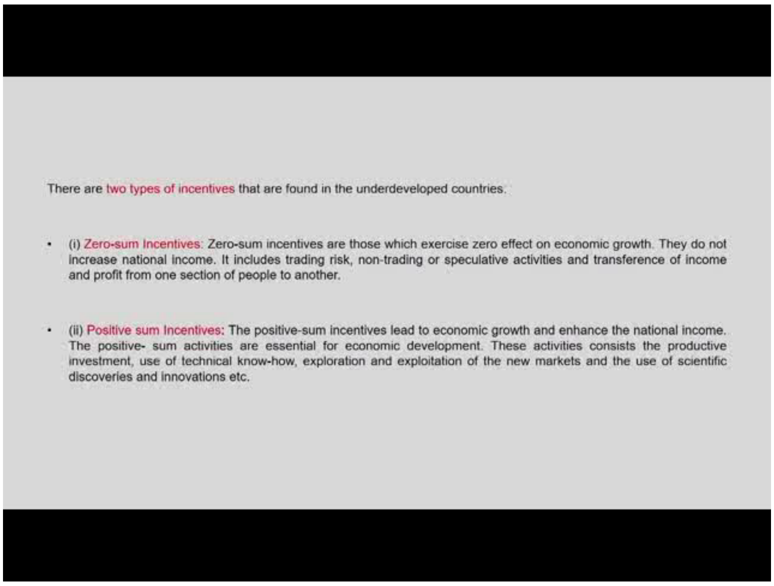

Along with these 2 concepts of first shocks and stimulants he was also saying the he was talking about different kinds of incentives that are required to be able to get out of the low level equilibrium traps or the levels of backwardness. He was saying that the generation of stimulants depends on attitudes and motivation of people and the incentives given to them. The motivation and incentives are useless without the main factors of economic development. And according to Leibenstein there are basically 2 types of incentives that can be found in the underdeveloped countries. There are 0 sum incentives and positive incentives. 0 sum incentive are those that do not increase in increase national income.

They include mostly speculative activities or distributive measures carried out within the economy. Transfer of income from one section of population to the other. While these distributive activities within the economy does create in welfare, but it is not does not give incentives to the economy to be able to get out of the low level equilibrium traps or the level or to get out of economic backwardness.

As an example we can think of let us say most of these say anti-poverty programs, which talk about transferring of incomes from the richer sections to the poorer sections in the form of subsidies. Let us say subsidies provided through a food support system or subsidies provided through an employment security system. So, what Leibenstein was proposing was that, these are welfare creation alright, but they do not provide incentives for people to break out of the low level equilibrium trap. So, these are 0 sum incentives.

And they the 0 sum incentives are carried on in order to secure greater monopolistic position political power and local prestige. They do not add to the aggregate resources of the community. And according to Leibenstein 0 sum incentives there are wastage of scarce resources. And therefore, it is not conducive to economic growth. Therefore, to be able to create economic growth conditions one should look at positive sum incentives.

And positive sum incentives are those that enhance national income, and some of the examples of positive sum incentives are basically productive investments; the use of technical knowhow and exploration and exploitation of new markets and use of scientific discoveries and innovations and so on. So, this is the kind of incentives that is required for the underdeveloped countries to be able to break out of their underdeveloped conditions.

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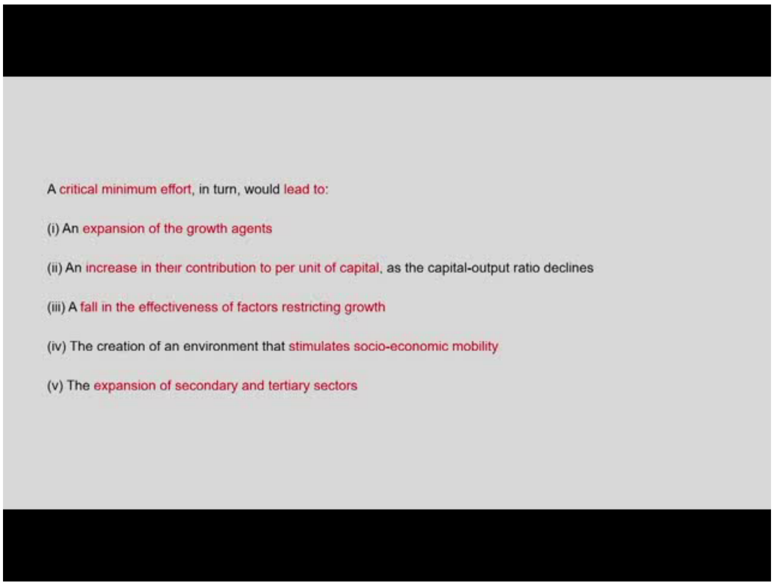

Now, it is interesting also to not here that Leibenstein was also giving a lot of importance to the role of an entrepreneur. And he was saying that the entrepreneur is basically a social change agent, who has a capability of creating advantages within the economy. And the entrepreneur is the person who needs to be given a positive incentives in an economy. And if these entrepreneurs act as growth agents, then there will be increase in contribution to per unit of capital. Fall in effective in capital economic growth would rise the creation of a there will be a creation of an environment that stimulates socio economic mobility. There will be expansion of secondary and tertiary sectors and so on and so forth.

To sum it up of Professor Leibenstein was basically saying that certain influences which work against the positive certain influences which create positive changes needs to be created. And some of those influences which work against the positive change or depress the per capita incomes need to be efficiently tackled with. So, some in fact, he pointed to some the some of those characteristics which work against positive change. For example, he was talking about 0 sum entrepreneurial activities directed towards maintenance of present economic privileges.

He was also talking about conservative attitude of the unorganized workers or the attraction of traditional ideas and resistance to new ideas and knowledge. So, he was talking about some of these non-economic factors of resisting to new ideas and knowledge, that cam create obstacles to economic development. And therefore, sufficient attitudinal changes needed to take place within the underdeveloped countries so that the role of the entrepreneur can be transformed into the role of a change agent ok.

So, with a discussion on big push theory by proposed by Rosenstein Rodan and Professor Leibensteins critical minimum efforts thesis. We basically end our discussion on the high development theory; where all of these theorists although they disagree with each other on the strategies of carrying out development. There is one thing that they all agree upon in principle. And that is that they are all talking about economic transformation of the underdeveloped countries.

And understand that we are talking about these theories which are talking about development of nation states in the post second world war order. And they are largely concerned with the growing disparity of the developed countries and the underdeveloped countries. And they are proposing different ways of creation of economic activities within the underdeveloped countries. While some of them are looking at historical data create a providing examples of developed countries based upon historical data; their stages of development, and proposing that probably the underdeveloped countries need to follow their parts of development.

There are other development theorists who say that like for example, Ragnar Nurkse who says that the development experience of the United Kingdom or that of USA is unique in nature, because they already had competitive labor force in place when industrial industrialization was taking place in those countries. But the underdeveloped country is the history of underdeveloped countries is very different from that of the countries like USA or UK. And therefore, the proposition the models of development have to be very different for these countries.

I will end today's lecture with a short reference to Nelsons low level equilibrium trap.

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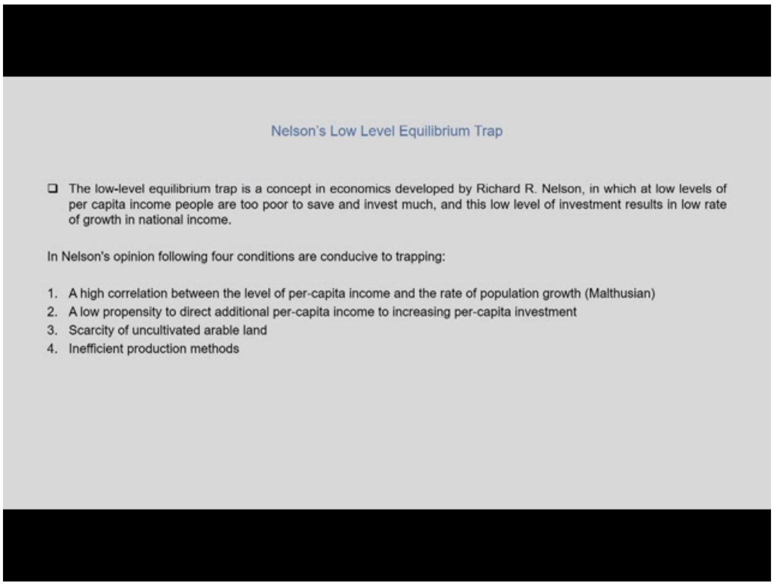

This is Professor Richard Nelson; who proposed who had a very sophisticated mathematical formulation with regard to low level equilibrium. I will not enter into the details of this concept. However, I just want to give you the crux of what this equilibrium trap model really was those of you because I have been referring to this concept of equilibrium trap. And I will just give you a sense of this concept. Those of you who are interested in research in this area may try to look up a paper written by Richard Nelson himself; this paper appeared in the journal of American economic review in 1956. And it was titled a theory of the low level equilibrium trap in underdeveloped countries.

I will read out the first some of the lines from this paper which will give you a sense of what equilibrium low level equilibrium trap is because it is not possible to cover this formulation within the within the course that we are doing now. So, Richard Nelson writes that the melody of many underdeveloped economies can be diagnosed as a stable equilibrium level of per capita income at or close to subsistence requirements. Only a small percentage if any of the economies income is directed towards net investment, if the capital stock is accumulating population is rising at a rate equally fast. Thus the amount of capital equipment per worker is not increasing.

If economic growth is defined as rising per capita income these economies are not growing, and they are caught in a low level equilibrium trap. So, he is proposing a model which is the framework within which to analyze the problems of stagnant economies, rather than as a model the parameters of which are to be statistically estimated. The concept of low level stagnation according to Nelson when during the time when he was write in the 9050s, was scarcely new and different and he hoped that his formulation does more than express the common knowledge of economists in a complicated manner.

So, to the extent that the assumptions are realistic the model according to Nelson provided a tool for analysis of the effects of various policies. And certain pitfalls that are not intuitively obvious are brought to light. So, the Nelsons model showed that even if production techniques are not improved, and even in the absence of a crash investment program the trap may still be escaped if the socio political environment is favorable.

Let me in very simple terms try to summarize Nelsons equilibrium trap for you. So, Nelson developed this theory of low level equilibrium trap for underdeveloped countries. And like Leibensteins critical minimum effort thesis, Nelsons theory is also based on a Malthusian approach to population growth. Which is that with the increase in per capita income of a country above the minimum subsistence level according to Nelson population tends to increase.

So, initially population grows rapidly with an increase in per capita income, but when the growth rate of population reaches a limit and he refers to this as an upper physical limit it starts declining with further increase as per capita income. So, Nelson mentions 4 social and technological conditions which are conducive to this trapping the low level equilibrium trap. And these 4 conditions are first is a high correlation between the level of per capita income and rate of population growth. Second is a low propensity to direct additional per capita income to increasing per capita investment; scarcity of uncultivable land and inefficient production methods.

And he says that the study of economic development of underdeveloped countries reveals that most of them are caught in the low level equilibrium trap due to the presence of all of these 4 conditions. And therefore, he uses certain sets of relationships to show the trapping of an economy at a low level of income. So, and to escape the low level equilibrium trap, there needs to be simultaneous adoption of all the measures. So, that growth rate of income is increased more than the growth rate of population. And once that is achieved above a certain minimum per capita income level sustained growth will take place, and as I have already said those interested in looking at the mathematical formulation of Nelson may please try to look at his paper.

However, the objective of today's lecture is achieved where we were trying to summarize the most important the most important characteristics painted by the big push theory of Rosenstein Rodan. And we also look at the critical minimum efforts thesis what are the main points that were being put by Professor Hardwell Leibenstein. So, that brings us to an end of the discussion of the high development theorists, who were looking at economic development as a strategy of economic transformation of the developing countries.

In the next class, we will look at some of the more one of the first sophisticated growth models introduced by Professor Harrod and Domar and the solo model. So, we will look at these 3 models, and probably if time permits as part of the gross model exercise. We may also look at a snapshot of some of the other models that have been suggested by many other economists.

Thank you.