Economic Growth and Development
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Lecture – 05
"Modern" Economic Growth

Hello and welcome to the lecture 5 of NPTEL MOOCs course on Economic Growth and Development. I have titled this lecture as modern economic growth. I will run you through the basic ideas of what constitutes modern economic growth, and how did this concept come to exist and who is the major proponent of the concept of modern economic growth. However, before beginning with this lecture let us recapitulate from the last class.

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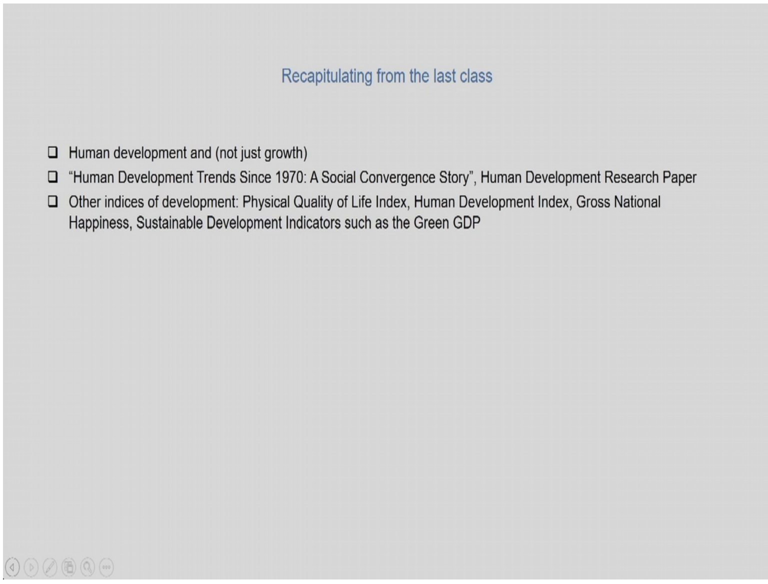

In the last class, we discussed the need for understanding the importance of development and not just growth. We saw that there are various competing indicators of development, but have emerged largely in the 1970's 80's and the 1990's.

We also saw that there is an important, there is a significance of using various lenses of growth and development. To be able to come about to be able to understand this we looked through some of the important summary findings of the first human development report published in 1990 by the United Nations Development Program, whose focus was on trying to understand why human development is important and not just economic growth.

One of the important summary findings of HDR 1990 was that the components of human development between the global north and the global south has seen a substantial progress; however, the gap in incomes between the global north and the global south has unprecedentedly rise in.

Now, this is extremely important for us to understand when we are looking at the concept of economic growth particularly modern economic growth. This report HDR 1990 also focused on how modest levels of human development is possible only with modest levels of income growth.

In other words, incessant income growth need not be an overwhelming objective of economic policies of growth and development. The HDR 1990 also focused on the importance of continuing subsidies 2 countries in the global south, if they need to catch up with the countries of the global north. We also discussed a human development research paper which was titled the human development trends since, 1970 a social convergence story.

And this paper through it is empirical research based on 111 countries came up with some very important findings. One of the first important finding was that 110 of the 111 countries had actually shown substantial progress in different levels of human in different components of human development starting from the 1970s.

And, since this paper came out in the middle of the 2000, it is in important to note that it was trying to make a bring out a clear cut difference in human development in the pre-1990 period and the post 1990 period. And it showed the empirical research showed that in 110 countries substantial progress in human development had taken place in the pre-1990 period.

And that was a 35-year period starting from the 1990's. The second important finding of this paper was that growth HDI growth was fastest for the low HDI countries and the high HDI countries in the pre-1990 period. In other words, those countries which had shown very low levels of human development of in education or health and so on had actually shown very high levels of human development or progresses in human development. The third important finding of this paper was that life expectancy and education grew at a much faster rate than income did.

Which also goes to show that in spite of the very low levels of income, education and health investments had shown rapid rise in the components of education and health. The 4th and the most important finding of this paper was that income and non-income components of HDI change had a near 0 correlation. And this finding is important for the growth story that we are trying to decide for here.

The growth story has so far told us that we need not focus more on human development components but income. Because when income rises over a period of time the level the levels of human development will also catch up with the levels of income; however, this empirical exercise tells us that over a period of time over a period over a period of a large a long period of time such as that of the 35 period, the correlation between income and other components of human development simply does not exist.

So, what does this mean this means that we need to make interventions we need to make income investments on human development components such as education and health. In the last lecture we also discussed certain competing indices of development, such as the physical quality of life, index the human development index, gross national happiness index and certain sustainable development indicators such as the green GDP. We basically tried to discuss the fact that while GDP per capita or GNP is one of the most important indicators of economic growth, various other indices of growth and development have also been worked out to take care of the limitations of GDP growth.

Through this lecture I will introduce you to the concept of modern economic growth, and in this context we will also discuss the contribution of professor Simon Kuznets, who has been credited with giving momentum to this concept of modern economic growth.

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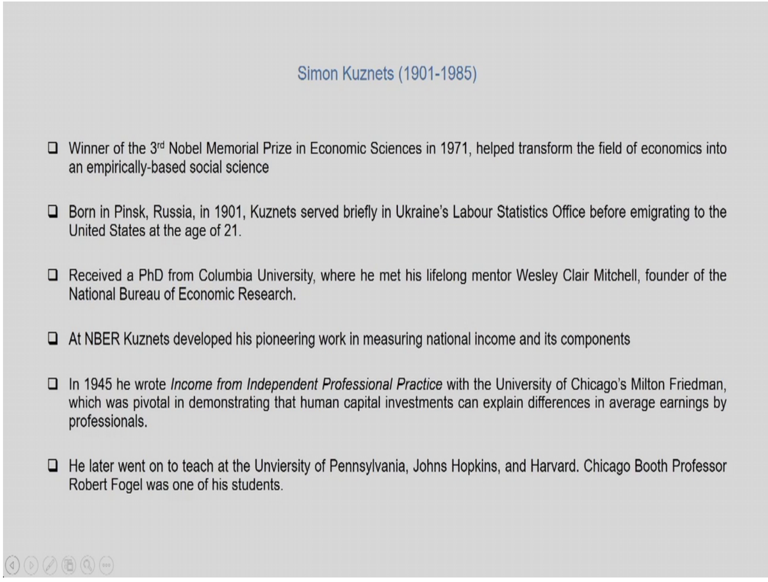

Before we begin let us first try to understand who was professor Simon Kuznets and what was his focus on and why it is important for us to understand what Simon Kuznets did to spread the idea of modern economic growth or giving it more significant place in the lexicon of growth literature. So, Simon Kuznets was the recipient of the third Nobel memorial prize in economic sciences in 1971.

He is credited in towards the helping transform the field of economics into an empirically based social science. Simon Kuznets was probably one of a first economist who worked on long term data, who worked on empirical data to be able to come up with conclusions based upon data historical data. He was born in Russia 1901 and he served briefly in Ukraine's labor statistics office before migrating to the US at the age of 21. He received a PhD from Columbia University and met his lifelong mentor professor Wesley Mitchell, who was the founder of national bureau of economic research. It is important for you to understand that the national bureau of economic research was where the research on national income accounting was taking place.

Most of the concepts of national income accounting were emerging from the national bureau of economic research. And that is the importance of NBER, particularly during the period of the 1940's and the 1950's, when new nation states for emerging the concepts of national income accounting and the different variables of national income accounts was being churned out of the NBER. And that was also the time during which

Simon Kuznets played an important role in the NBER. In 1945 along with Milton Friedman, he wrote an important paper named income from independent professional practice, in which the demonstrated how human capital investments can explain differences in average earnings by professionals.

So, they were talking about human capital investments, in other words, investments in education as being one of the important drivers of earnings in the post world war period. Later on professor Kuznets went on to teach at the university of Pennsylvania Johns Hopkins and Harvard University. Professor Kuznets has to his credit about 31 books and more than 200 research papers. And most of his research concentrated on income growth and distribution of income in the different countries across the world.

Now, why it is important for us to look at Kuznets contribution to economic growth literature is that he was probably one of the first persons who came up with the definition of economic growth.

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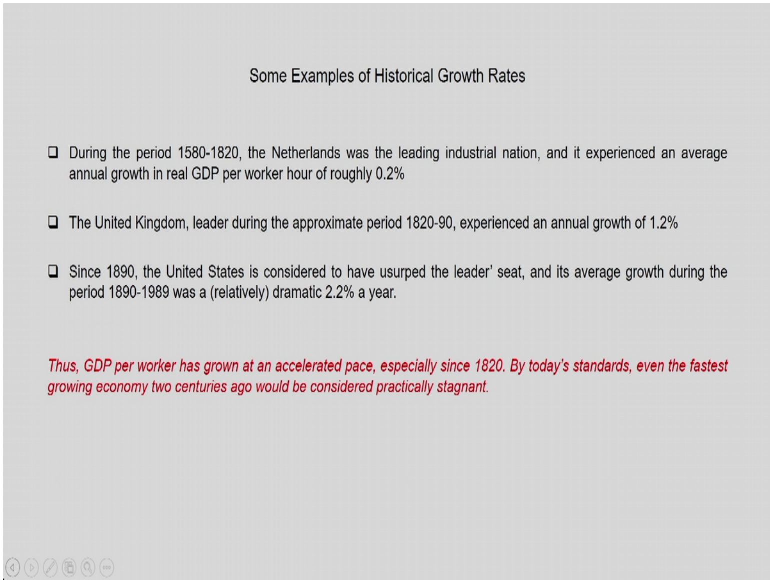

Before we move on to Kuznets contribution to economic growth and his definition of economic growth, what were the characteristics of economic growth that he was working at. Let us look at some of the examples of historical growth rates that we are talking about; when because we are trying to bring out a cleared distinction between modern economic growth, and what we understood historical years economic growth. If you look at these examples during the period 1580 to 1820 which covers the 17th and 18th century, and the later parts of 16th century and the early parts of 19th century.

The Netherlands was considered to be the leading industrial nation, and it experience in average annual growth in real GDP per worker hour of roughly 0.2 percent; which is nothing comparable to what we experience today. Today we find growth rate of about 7 percent to 8 percent or 9 percent something which is very which is achievable; however, compare this to the 0.2 percent growth rate of Netherlands during this period, it may come as very surprising. Note hear that I am referring to GDP per worker hour here which basically refers to labour productivity. The concept that we used today's GDP per capita, but in these examples we are referring to GDP per worker hour which means the GDP per labour productivity.

Similarly, the United Kingdom which was the lead economically growing country, if you may wish during the period 1820 to 90 was experiencing annual growth of about 1.2 percent; which is very less compared to the current 7 to 10 percent that we see in countries across the world. Since 1890 or the later part of the 19th century the United States is considered to have a sub the leader serious as economic growth is concerned. And it is average growth rate during the period 1890 to 1989, roughly a period about a century was about 2.2 percent; 2.2 percent compared to the present time is of course, a very small number.

But, it was dramatic considering the growth rates of 0.2 percent experience by the Netherlands or a growth rate of 1.2 percent experienced by the United Kingdom. Now, what does this mean? This means that GDP for worker or GDP per labour productivity has grown at an accelerated base especially since the 19th century. And by today's standards even the fastest growing economy 2 centuries ago would be considered practically stagnant. Now through most of human history therefore, an appreciable growth in per capita GDP was an exception rather than the rule. And many even say that the modern economic growth as a concept came into existence in the British post industrial revolution period.

And these examples are clearly say so. Now, you must note here that an annual growth rate of 2 percent in per capita GDP does not appear very impressive; however, it has enormous potential if it is sustained.

And Simon Kuznets it is calculations showed us which we will discuss in brief in the later slides, that at a 2 percent rate a nations per capita GDP would have doubled in about 35 years. And a simple calculation we will show you that 35 years is about half the life expectancy of what we experience in various countries of the world today. Now, what does this mean this means that within a half a period of a person's lifetime, you are actually experiencing a doubling up of GDP.

And how does the translate to this translates to the fact that modern economic growth enables people to enjoy a vastly improved living standards compared to their earlier generations.

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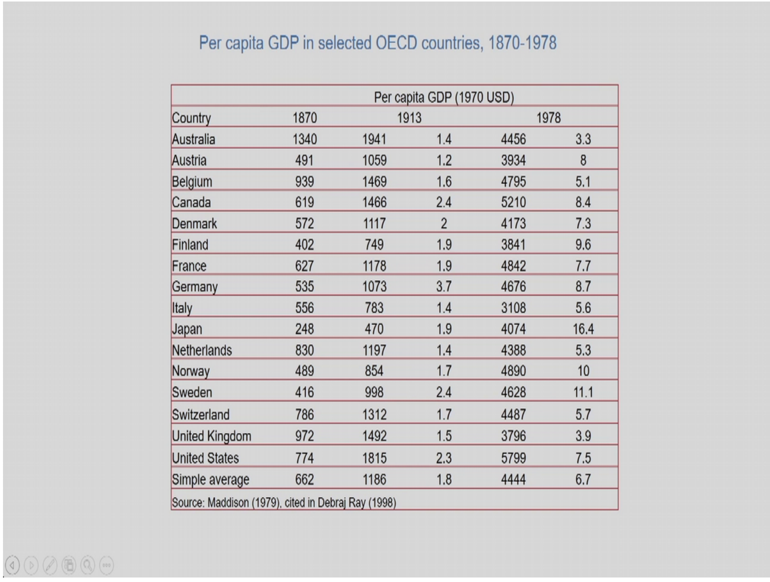
Per capita GDP in selected OECD countries, 1870-1978

Per capita GDP (1970 USD)					
Country	1870	1913		1978	
Australia	1340	1941	1.4	4456	3.3
Austria	491	1059	1.2	3934	8
Belgium	939	1469	1.6	4795	5.1
Canada	619	1466	2.4	5210	8.4
Denmark	572	1117	2	4173	7.3
Finland	402	749	1.9	3841	9.6
France	627	1178	1.9	4842	7.7
Germany	535	1073	3.7	4676	8.7
Italy	556	783	1.4	3108	5.6
Japan	248	470	1.9	4074	16.4
Netherlands	830	1197	1.4	4388	5.3
Norway	489	854	1.7	4890	10
Sweden	416	998	2.4	4628	11.1
Switzerland	786	1312	1.7	4487	5.7
United Kingdom	972	1492	1.5	3796	3.9
United States	774	1815	2.3	5799	7.5
Simple average	662	1186	1.8	4444	6.7
Source: Maddison (1979), cited in Debraj Ray (1998)					

Now, let us try to look at another example of per capita GDP in selected OECD countries during the period 1870 to 1978 which is roughly about a century covering the latter parts of 19th century, and the large part of the 20th century as we know, and the large part of 20th century as we know had registered modern economic growth rates.

Ah Note here that OECD basically stands for organization for economic cooperation and development, which is a group of developed North American and European countries. Now if you look at this table here. This table shows how economic growth has transformed in the now developed world within the space of a century 1870 to 1978. This table shows per capita real GDP valued in 1970 US dollars, for the years 1870, 1913 and

1978. The 1913 and 1978 columns also show you the ratio of per capita in GDP in those years to the corresponding base line which is 1878.

So, columns 3, and column 5 of 1913 and 1978 basically gives you the ratio of the per capita in GDP in those years corresponding to the year 1870. If you simply come down to the last row which gives you the simple average of these figures that we are talking about, you would see that the GDP per capita in 1913 was 1.8 times the figure for 1870, but by 1978 the ratio had risen to 6.7.

That is a nearly 7fold increase in real per capita GDP in the space of a century, and that is the kind of transformation that economist are talking about in the context of modern economic growth. And such figures have the capacity of transforming societies all together. Now the question arises that what are the drivers of such modern economic growth.

And various models of economic growth have been worked at by various economists. In this lecture we will talk about some of the points that Professor Simon Kuznets was talking about in the context of modern economic growth. Particularly the reference here is with regard to, what were the emerging characteristics of the so called industrialized developed nations who had experienced modern economic growth.

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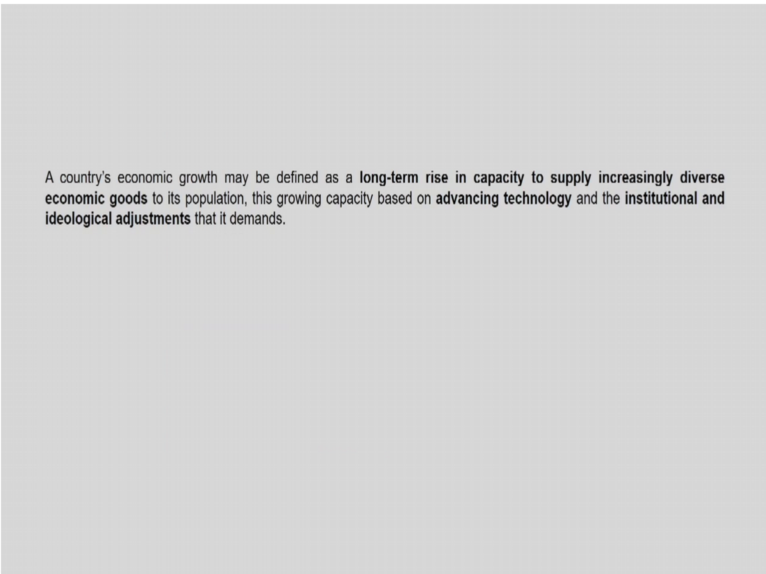

Let me introduce you to definition provided by Professor Kuznets in his pioneering paper called modern economic growth findings and reflections published in the American economic review in 1973.

He said that a countries economic growth may be defined as a long term risen capacity to supply increasingly diverse economic goods to it is population. This growing capacity based on advancing technology and the institutional and ideological adjustments that it demands. And in this definition all these 3 components in bold are equally important, the sustained rise in the supply of goods is a result of economic growth by which it is identified. He was laying a lot of importance to the concept of technology or advance technology.

And he did say that advance advancing technology is a source of all economic growth; however, it only has the potential in other words it is a necessary, but not a sufficient condition for all economic growth. Now we will try to unpack this definition provided by a Simon Kuznets because it is important that we lay some, we spend some time over this definition and what were the reflections that he was having with respect to this definition that he came about. Before I come to some of the important characteristics that was summarized by professor Simon Kuznets.

Let me give you a background to how he came up came about, or how he came to summarize some of these important characteristic features of what constitutes modern economic growth. Now Simon Kuznets was most of his work on economic growth or national income distribution or national income accounting was based in the post Second World War period.

Now during the decade following World War Second, when Simon Kuznets began to lay out his research agenda for studying and explaining high long term rates of economic growth. He was aware that there was a persistent tendency among various economist and observers of economic growth to underestimate the capacity of technological advances. Half a century after the forecast of stagnation, technological advances not only continued, but likely had also accelerated as we saw in the 1970s in the 1980's, there was a lot of talk about technology transfer from the developed countries to the developing countries.

However, during the period of the forties and particularly the period succeeding the great depression, there was a lot of gloom and despair among the observers of economic growth that there are limits to growth, and that there are that technological advances are not the solution to most of the economic problems. Developments in urban sanitation and food processing and substitution of automobiles for horse drawn vehicles and let too dramatic declines in the prevention of prevalence of deadly diseases.

Vaccines, penicillin and other powerful medicines were widely available to deal with these fatal diseases. The US particularly the context in which Simon Kuznets was largely writing in the 1920s in the 1930s had largely have been electrified. And host of household appliances was available to improve the efficiency of home production and to provide low cost entertainment. In the election of 1928 Herbert Hoover had made the promise that if he was elected a president there would be a chicken in every port and an automobile in every garage.

And by 1955 advances in animal feed had turned chicken into the cheapest meet and there was about as many cars as households. Now in the 1950s the spectra of great depression still haunted many economics and policy makers.

They worried that the post war boom would simply not exist. The fear was that that was not cast out of professional and public discoursed in the 1950's, the topic continue to be vigorously debated in 1960s and beyond in the 1970s as well.

Now, as early as 1949 Kuznets was one of a relatively few economists who thought of the great depression as an exception. And not a long term and not that strong, and that long term growth was the rule. So, what was needed was not another speculative theory to confront the pessimistic theories, but a care full study of history that might yield and empirically warranted theory.

But he was considering this question of how to proceed in coming up with the theory long term theory of economic growth, how to organize research into long term trends of economic growth. And there were various problems with incoming of such a theory and one of the problems was with regard to the unit of observation. Should it be individual entrepreneurs? Should it be different climatic zones? Should it be different ethnic groups of population? Or should it be different economic social classes, religious denominations and so on and so forth.

Kuznets rejected all of these options in favor of the nation state, because the available data organized and maintained by sovereign states. And it must be mentioned here that in the post-world war period, particularly the period after 1945, saw the emergence of this discourse of nation states. And it is in this context that one needs to look at national income accounts and the differences in economic growth calculated by Kuznets by taking the nation state as a unit of observations, looking at the historically available data for the industrialize nations of the world. He believed that the political system governing the operation of a particular nation state might turn out to be an important variable in explaining economic growth.

So, Kuznets plan to use national income measures to describe and explain long term economic trends of the industrial nations was formulated in the late 1930s. And the word in spite of the various problems that he faced with regard to coming up putting together the data historical data with regard to income growth in countries.

He came up, he gather statistics on the growth of nations over a period of at least a half century. In order to have secular trends a dominate short term cycles, the data had to be capable of being decomposed in various ways in order to study structural changes in the economy during the course of economic growth. The demands of the data meant that the study of growth would be focused in the score or so of nations that had achieved high levels of industrialization by the mid 20th century. He characterize the modern industrial system as one in which entrepreneur was applied the empirical findings of science to the solution of problems and the organization of production.

Now, this is the background to how Kuznets empirical statistics or empirical data on economic growth or trends of trends in economic growth came to be. Following this he published 10 monographs and quantitative aspects of economic growth I will not enter into the details of these monographs.

But, what is important for us to focus on here is the are the most important characteristics that emerged from his study from here on secular trends in economic growth of the long term trends in economic growth that we are talking about here. His data mostly comprised of the historical data of the 19th century and later parts of the later parts of 19th century, and the early parts of the twentieth century for the industrialized nations of the world.

So, he was trying to come up with some of the most common characteristics of modern economic growth, as was seen in the most industrialize nations of the world. They may be summarized as follows.

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They were basically 6 characteristics that he was talking about. The first is that there are high rates of growth of per capita product and of population in the developed world. There is a rate of rise there is very high rate of rise in productivity rate of structural transformation of the economy is very high. The developed nations of the world have gone through extremely important changes in structures of society and changes in ideologies. He was also talking about the increased power of technology particularly in transport and communication in the developed world.

And lastly he was talking about the limited spread of modern economic growth even look at he will look closely at some of these important characteristics that Kuznets was talking about.

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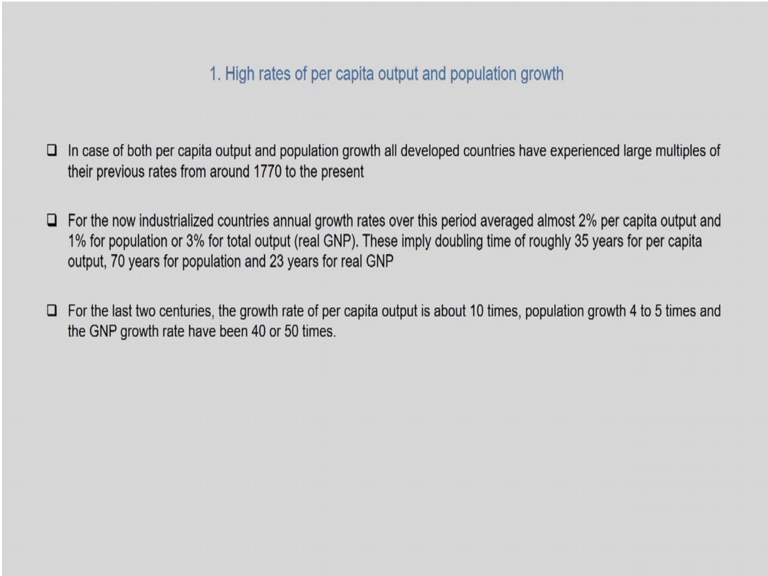

The first among them was high rates of per capita output and population growth. He also pointed out that it is important to understand that all of these 6 characteristics are closely related to each other. And some of the important analysis of his was based upon the conventional measures of national product and it is components population labour force and the like. So, he was basically looking at the estimates of national output, national product population growth rate, and the labour force the structure of the labour force in different sectors of the economy.

And how these changing labour force in different sectors are trying to say about the nature of change in the societies that we are concerned with. The first one was the with regard to very high rates of per capita output and population growth, and what was Kuznets trying to say here was that most developed nations developed countries have seen very high rates of growth of per capita output and of population, in multiples of the previous rates observable in these countries, and of those in the rest of the world at least until the recent decade or 2 and he is talking about this largely in the 1915, the 1950's in the 1960s.

So, basically it mean that both per capita output and population growth of all developed countries have seen very large increases compared to what it was in the later part of the 18th century to the 20th century. That also meant that for the now industrialized countries annual growth rates over this period almost 2 percent per capita output. And 1 percent for population or 3 percent for total output or real GNP; which means that it can be doubled in a time of roughly 35 years for per capita output, 70 years for population and 23 years for real GNP.

Now, these estimates had a real implications in the growth story of nation states, that was shipping up in the post 1940's period or the post second world war period.

It was basically trying to say at that at this rate of growth of the industrialized nations, and if the so called under developed countries of the world are able to catch up with a developed nations following their parts of development. Then at this rate in roughly about 35 years per capita output of the world would have doubled. Population would have doubled in 70 years and real GNP would have doubled in above 23 years.

So, these estimates had real implications for the growth story that was that various economist and observance of the time were engaging themselves. With as a part of this first point high rates of per capita output and population growth, Kuznets also implied that for the last 2 centuries the growth rate of per capita output is about 10 times population growth 4 to 5 times, and the GNP growth rate have been about 40 or 50 times.

Now, note here the importance of the trend that GNP has been rising over a period of time. Among all the important indicators that professor Kuznets was considering whether it is the structure of various sectors within the economy, the labour force in different sectors within the economy, or the various national income concepts. It was basically GNP or GDP per capita which showed a very high potential of increasing drastically over a period of time. And which is why economic growth became one of the important indicators of development based upon these empirical exercises.

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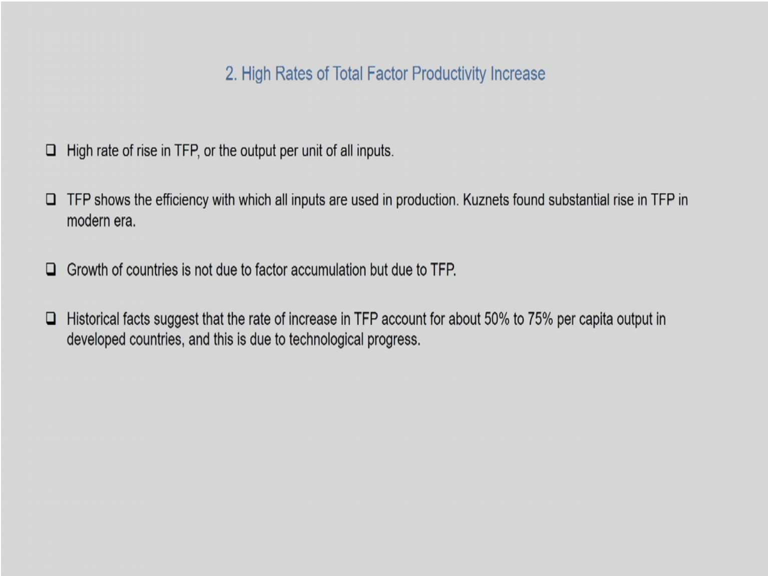

The second point he was referring to was high rates of total factor productivity increase. By factor productivity here we mean the various factors of production that are used for the production purposes within the economy. Labour being one of the most important factors of production here. And Kuznets based upon his empirical exercise was concluding that over this period of half a century in the developed countries of the world or the industrialized nations of the world, there has been a very high rise of total factor productivity the productivity, or the output per unit of all inputs. Even if we include all among inputs other factors in addition to labour, which is the major productive factor and here to the rate is a large multiple of the rate in the past.

Which means that labour productivity has also shown a very high increase compared to the previous periods considering the past half century taking from 1945 onwards before the period of 1940's. The growth of a countries another important point that he was trying to make in terms of total factor productivity increase was that growth of countries is not due to factor accumulation, but due to total factor productivity. Which means that if a country has more of labour abundance or labour accumulation that does not mean that that country will automatically progress, but the used to which the labour is put to will show how much the country has progressed.

And that was that became one of the important features structural differences of the industrialized then the non-industrialized nations of the world. Where the industrialized nations of the world were characterized by how much what is the productivity of the labour force, whereas the underdeveloped countries or the non industrialized nations were characterized by a largely government labour force, that was not involved in various economic activities within the country.

So, it is not just factor accumulation that is important, but growth of countries is due to the total factor productivity, what is the labour productivity or, what is the number of output per unit of all inputs used within an economy. And historical facts also suggested that the rate of increase in TFP account for about 50 to 75 percent per capita output in developed countries.

And this was primarily due to technological progress. And this became one of the cornerstones of Kuznets ideas of modern economic growth the total factor productivity increases have been registered to the extent of 50 to 75 percent of total per capita output and that is primarily due to technological progress. And therefore, technological progress became one of the important drivers of modern economic growth and that is what distinguished factor productivity particularly labour productivity between the developed countries and the under developed countries.

The third important characteristic that Kuznets was talking about was the high rates of economic structural transformation that have taken place in the developed countries.

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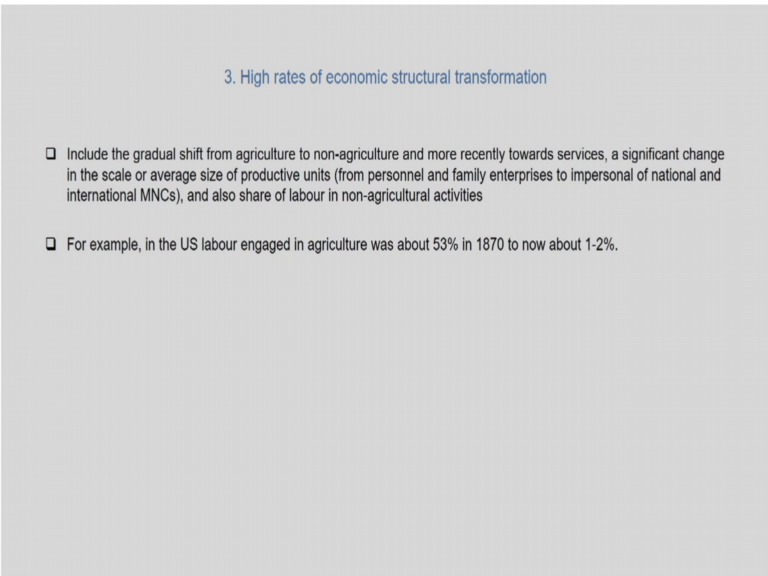

And this related to mostly to the shift away from agriculture to nonagricultural perused in the developed countries. As the name suggests the industrialized nations were producing more of manufactured goods already. There was a shift of labour away from the agricultural to nonagricultural persuades.

And more recently if we look at various countries across the world there is a shift away from non-agriculture to services or from industry to services. So, a change in the scale of productive units or related shift from personal enterprise to impersonal organization of economic firms, with the corresponding change in the occupational status of labour.

So, shifts in several other aspects of economic structure could be added for example, structure of consumption the relative shares of domestic and foreign supplies and so on and so forth. So, this economic structural transformation also contributed to the idea of modern economic growth, and particularly the shift away from agriculture to non-agriculture and in the most recent times of from industrial to services and so on and so forth.

For example, one of the notable examples that we generally take in the growth literature is that of the United States; where labour engaged in agriculture was about 53 percent in 1870. And it had come down to about 1 to 2 percent in the present times. So, the structural composition of the labour force in agriculture in industry and other various other sectors within the economy also contributes to the concept of modern economic growth. And this is not a very new phenomenon this has been observed right from the later part of the 19th century onwards.

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The 4th point that he was trying to make was with respect to the high rates of social and ideological transformation. And here he refers to how important it is to look at the changes that are taking place to the structures of society. And what are the related ideological changes that are taking place within the society. And one of the important areas of discussion with respect and which in which sociologists an anthropologist have laid the way in this area, is with respect to the concept of family the notion of family, and how that has contributed to economic growth or not contributed to economic growth.

What we referred to when we are took in talking about changes in a social and ideological transformation is with regard to how the institutions have been changing within societies because of the change in technology, change of technology use. For example, the concept of nuclear family versus joint families in many countries across the world.

How technology transformed social security programs or how technology contributed to the existence of a family, and the changing notion of a family and how that has contributed to various other components of economic growth. He was also talking he has taken examples of urbanization and secularization.

In other words, the long term changes in the economy because changes in institutions and ideologies that are taking place in an economy and how that contributes to economic growth. A successive economists after him have also added the ideas of economic planning how economic planning contribute to economic growth or the rational allocation of resources between different sectors of the economy.

If you have a more labour abundant economy whether you need to use more of labour intensive technologies, if you have a more capital abundant economy, whether you need to use more capital intensive technologies, these also become important drivers of modern economic growth. And that is what was the focus of his characters of his reflection on high rates of social and ideological transformation.

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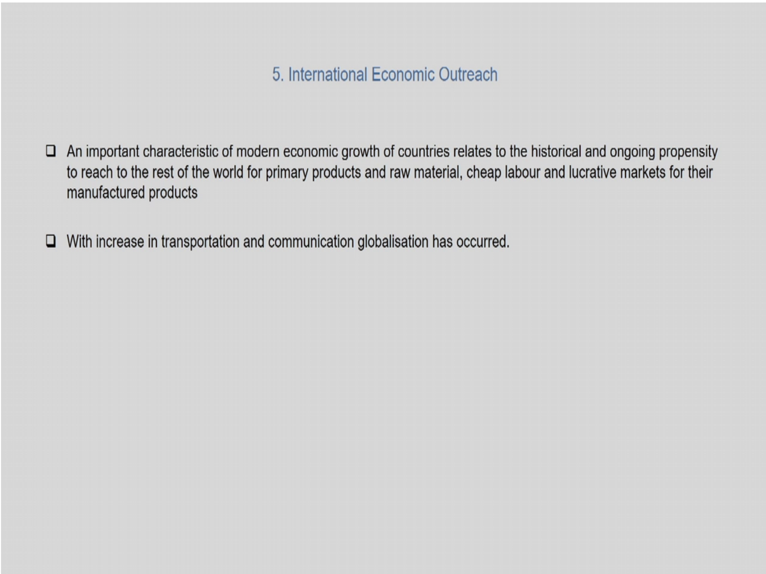

So, this was basically trying to say that the industrialized nations of the world had already seen very high rates of social and ideological transformation. The fifth point he made was with regard to the existence of technology in the industrialized nations of the world and here. He was focusing more on the existence of transport and communication technology. And what are the possibilities of outreach because of the existence of transport and communication technology in the developed countries of the world or the industrialized nations of the world.

So, there is a propensity to reach out to the rest of the world by the industrialized nations because of the existence of the technology of transport and communication. Particularly with regard to excessing primary products and raw materials or cheap labour, alive creative market for the manufactured goods. And this is at the heart of the discussion of what we know as terms of trade between different countries of the world, how international trade takes place, and technology transfer is one of the important factors driving international trade in the context of modern economic growth.

And of course, as the experience of the last 20 30 odd years as shown us, we live in a more globalized world and transport and communication technology have made a very big contribution to such processes of globalization.

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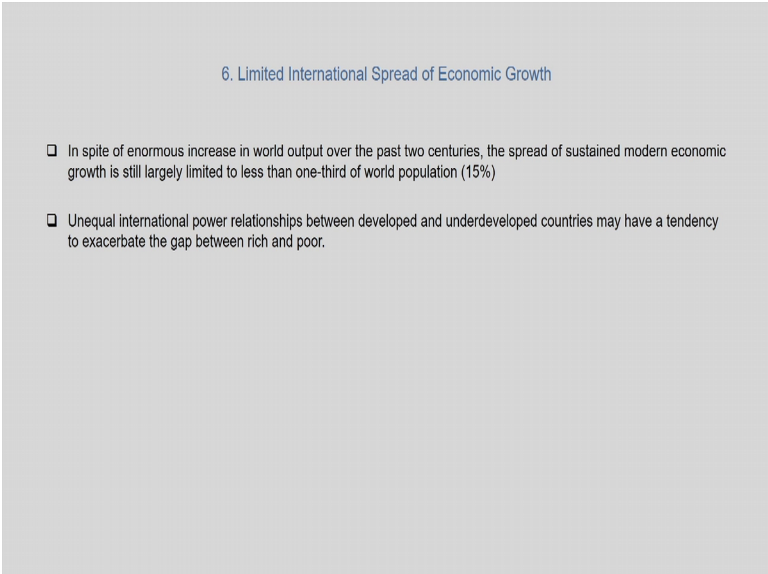

The 6th point and a very important one in that that he was making with respect to modern economic growth was the limited international spread of economic growth. And there are 2 important points in here. The first is that in spite of enormous increases in world output over the past 2 centuries. The spread of sustained modern economic growth is still limited large too less than one third of world population; which was about 15 percent then, which may have gone up to about 30 percent now.

It essentially what it essentially says is that even though economic modern economic growth has unprecedentedly risen historically, it has still not reached even half the world's population today. There are still large numbers of nation states which are lagging behind. And therefore, there is a limited spread of economic growth. And a number of factors contribute to such limited spread of economic growth or the outreach of the international community of the highly industrialized nations to the less industrialized nations. One of them of course being the unequal international power relationships between the developed and the underdeveloped countries.

But added to this of course, are the different kinds of economic policies, the unequal trade policies, unequal ideologies across the countries of the world which contribute to be exacerbation of the gap between the rich and the poor. So, there are different reasons why there is a limited international spread of economic growth so, which means that economic growth is not enough. So, the point that this the implication of this characteristic made by brought out by Simon Kuznets is that, economic growth is not enough. We need to promote economic growth in such a manner that that the distribution of economic growth is equal across countries of the world and the.

And of course, there are various drivers of how this can come about international trade being just about one of them. So, the most distinctive feature of modern economic growth is the combination of a high rate of aggregate growth with disrupting effects and new problems. The high rate of growth is sustained by the interplay between mass applications of technological innovations based on addition to the stock of the knowledge, and further additions to that stock.

The disrupting effects are those imposed by the rapid rate of change in economic and social structure. I just go back to the main points again. These was some of the findings as well as the reflections of Simon Kuznets modern economic growth, the 6th important points that he was making were closely related to each other.

But the most important driver here was technology use with respect to factor productivity, technology use with respect to structural transformation in the economy, technology use with respect to changing structures of society and ideology. And the technology use was one of the necessary conditions of economic growth as pointed out by Simon Kuznets.

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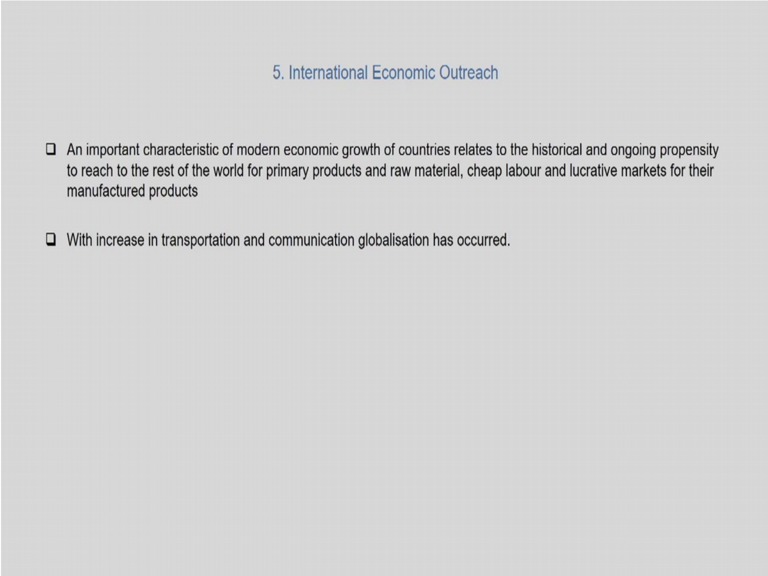

Now, moving on based upon a one of the reasons for introducing Simon Kuznets idea of modern economic growth, in some detail was to lay a foundation to where we are leading to in terms of the economic growth story.

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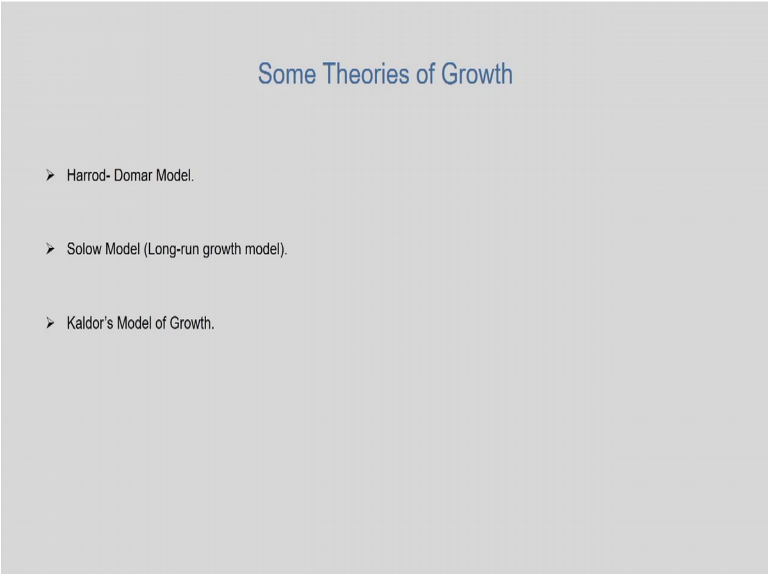

While the economic growth story of the 1990's and the 2000s have largely have seen a large number of changes in terms of principles, and the way forward and the way it should be carried out in different countries, there are certain stylized models in economics that we follow with respect to economic growth. And in this course I will be mostly focusing on 3 models of economic growth, the Harrod Domar model, and the solow model, these are basically growth models which have been forwarded as some of the important pathways of the growth and development by the so called less industrialized nations of the world. Just to introduce you to some of the things that we would be doing as a part of a growth models.

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And it is of course, important that we position these growth models in the context of economic development, and here the distinction is that economic development implies progressive changes in the socio economic structure of country. It involves a study declined in agriculture share in GNP and corresponding increase in share of industries trade banking construction and services. This is one of the most important working definitions or distinction between economic growth and development.

Starting from what Simon Kuznets was talking about in terms of structural transformation within the economies of the industrialized nations. So, this is what we understand is the basic distinction between economic growth, and when we say that economic development has taken place or economic growth has taken place.

Economic growth and economic development or more or less used synonymously. And the distinction comes in when we use the term human development. So, economic development basically means that there is a steady decline in agriculture sharing GNP, and a corresponding increase in the share of industries trade banking construction and services.

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Now, there are various theories of economic development that have been worked out, and are opposed against the theories of economic growth, some of them are as follows the classical theory of economic development, the Marxian theory of economic development. Schumpeterian theory, Lewis theory of unlimited supply of labour and Fei Ranis theory of development. We will be doing in detail the Harrod Domar model and the solow model. And in the theories of economic development we will be looking into detail Schumpeter theory of development, and the Lewis theory of unlimited supplies of labour. And will get snapshots of what is being, what are the basic characteristics of what are the basic features of the classical theory of economic development Marxian theory and the Fei Rani’s theory of development.

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So, if one has to now summarize about what are the basic distinguishing characteristics of growth versus development. Economic growth is quantitative in nature whereas, economic development is qualitative in nature. Economic growth is a narrow concept, but economic development is a wider concept. Economic growth means more output, more GDP per capita on the other hand economic development implies both more output, and changes in the technical and institutional arrangements by which it is produced and developed.

Now, in this context let me also introduce you to what are the basic differences between an endogenous model and an exogenous model.

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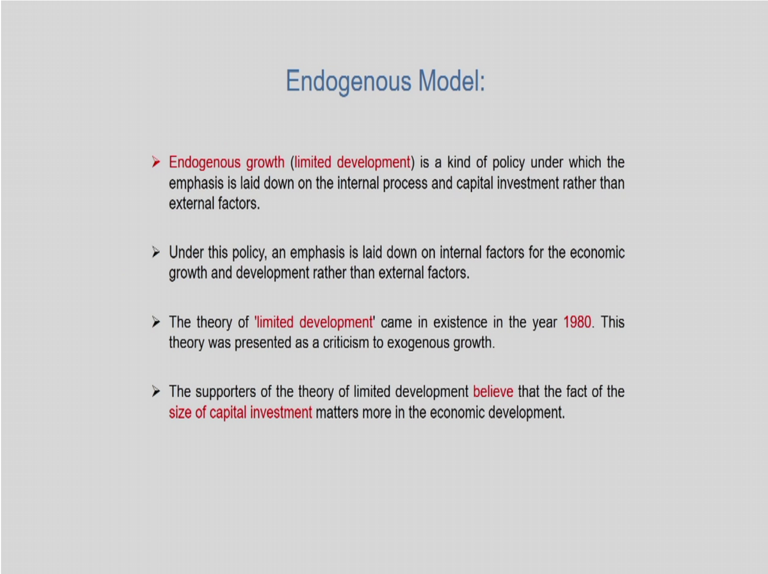

These are some of the basics that we one or to know when one is dealing with when one is go running through a course on growth and development. Endogenous growth is a kind of policy under which the emphasis is laid down on the internal processes and capital investment rather than external factors. Under this policy this is also referred to as the theory of limited development which came into existence in 1980's. This was presented as a criticism to exhaustion growth theory. And the supporters of this theory believe that the fact of a size of capital investment matters more in economic development.

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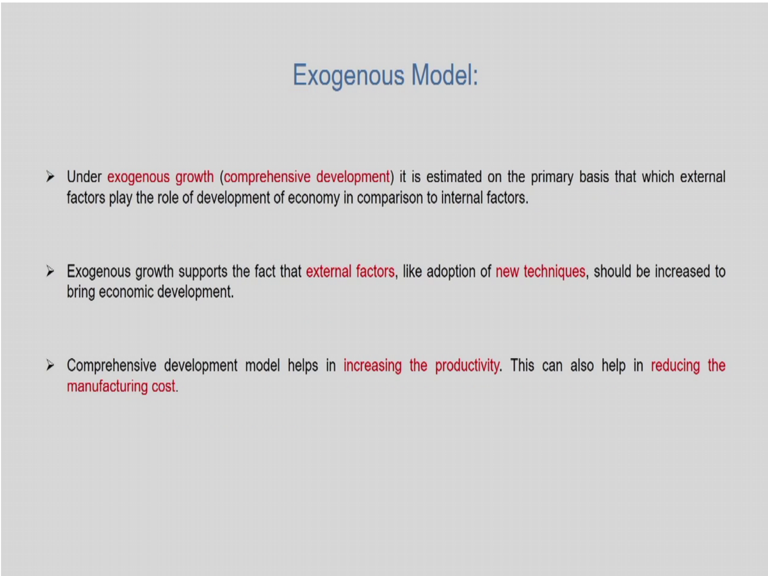

The exogenous growth model or which is referred to a comprehensive development is estimated on the primary basis, that which external factors play the role of development of economy in comparison to internal factors. And the external factors that are half done more when we look at the exogenous models in we deal with the exogenous models, some mostly technology used.

Or the technological interventions that take place within an economy and how that contribute to economic growth. Exogenous growth supports the external factors like adoption of new techniques, as I just mention should be increased to bring about economic development. And comprehensive development model helps in increasing productivity. This can also help in reducing the manufacturing cost.

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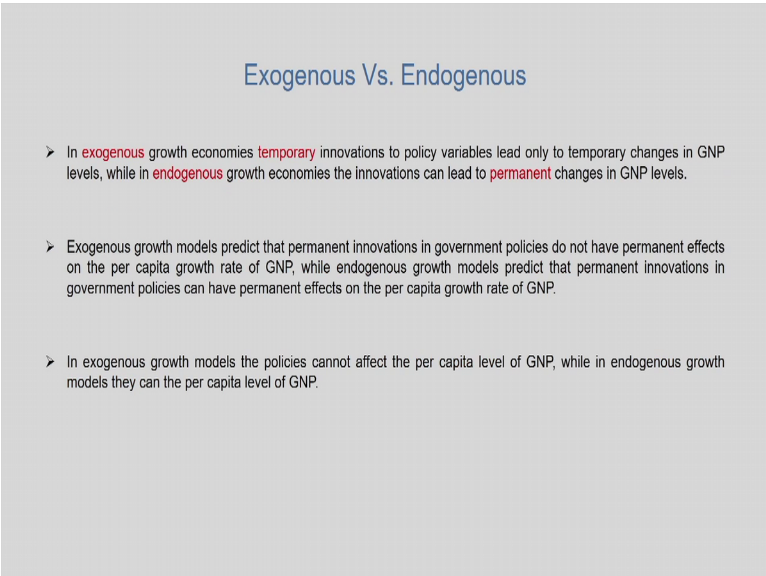

So, to be able to summarize what are the distinctions between exogenous and endogenous growth models. In exogenous growth economy is temporary innovations to policy variables lead only to temporary change in GNP levels. While in endogenous growth economies innovation can lead to permanent changes in GNP levels, because in endogenous growth models we are basically referring to the changes in institutions and structures within the economy.

And any institutional change is of course, a very long run phenomenon, it is a permanent phenomenon. Reversing the role of institutional changes fairly difficult. Exogenous growth models predict that permanent innovations in government policies do not have permanent effects on the per capita growth rate of GNP.

While endogenous growth models predict that permanent innovations in government policies can have permanent effects on per capita growth of GNP. In exogenous growth models policies cannot affect per capita level of GNP; while in endogenous growth models they can affect the per capita level of GNP. So, to conclude in this lecture on modern economic growth, we understood what is what are the basic characteristics of modern economic growth.

We went into some detail with respect to the economist professor Simon Kuznets, who is credited with giving momentum to this concept of modern economic growth; because his a work is one of the first empirical researched work based upon historical data that shows us the trends of modern economic growth.

And the sum of one of important drivers of modern economic growth as pointed out by Kuznets and various other economists after him is the use of technology and how technology use has transformed the highly industrialized nations of the world. And how technology use as also increased total factor productivity of different countries across the world.

And one of the implications of technology used and total factor productivity particularly labour productivity is that, labour abundance is not enough, what is the use to which the technology is put, or what is the use to which the total factors are put, and how much output is increasing with respect to the given number of inputs used is one of the major, major indicators of economic growth and development of a country. In the next lecture, we will go into the models of economic growth starting with the Harrod Domar model of economic growth.

Thank you.