History of Economic Theory

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Module No. # 01
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Keynesian Economics

As we have observed a little while ago, what is crucial in Keynesian economics is not that aggregate supply creates aggregate demand. As is what Keynes thought says lot to be, but the decision towards expenditure which lead to aggregate expenditure, which in turn translated itself into aggregate effective demand and which in turn resulted in supply. So, the whole reasoning is kind of reversed by Keynes. So, the heart of the whole analysis is aggregate spending, aggregate expenditure in the economy. An aggregate expenditure is broken down into two components, one component is consumption expenditure and the other component is the investment expenditure. Consumption is said to be a direct function of the levels of income. So, people spend on consumption out of their incomes.

So, Keynes defined the psychological factor which led to consumption expenditure as the marginal propensity to consume or in brief M P C. This marginal propensity to consume lay somewhere in the range of zero to one, in other words you could spend all your income or not anything at all. More typically, Keynes assumed that whether people earned money or not they had a minimum necessity to spend, because they needed to live on. So, the marginal propensity to consume varied according to the income, but there was a level of consumption which existed even if the income were to be zero. So, Keynes was thinking in terms of a consumption function or a consumption income relationship, where there was a minimum amount of consumption which was involved even with zero income. But after that consumption increased at a particular fraction of income each time and the fraction was a marginal propensity to consume.

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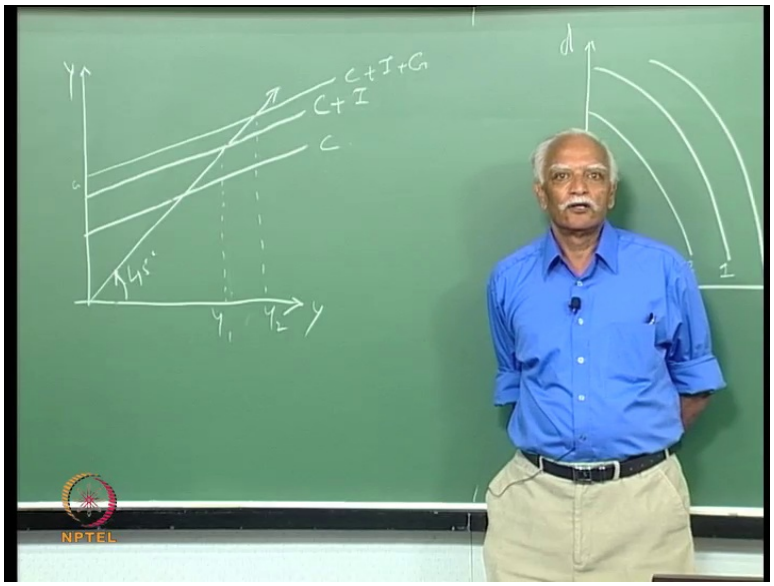

So, in this particular diagram, the line C shows the behavior of consumption as a level of income goes on expanding. You can see that for every rupee of expansion in income the expansion is in consumption is less than one rupee in other words marginal propensity to consume is less than one. So, the slope of C is given by marginal propensity to consume and consumption expenditure expands with income expansion along this slope. So, that is the consumption function, what about investment? Keynes is thinking of investment as autonomous, autonomous with respect to what, autonomous with respect to the levels of income, prevailing at any point in time.

Now, here was a big difference between classical and Keynesian view of looking at investment behavior. According to classical view investment came out of savings, savings was based on decision to abstain from consumption. Keynes did not deny this that Keynes did not deny this that consumption when abstained from led to savings absolutely. But what Keynes said was that the limit to investment did not come from the savings at any point in time, on the contrary when people invested money that gave inducement for people to save.

So, a certain fraction of the income which is saved, responds to this inducement and so, saving is influenced by the level of investment rather than being the determinant level of investment as in classical thinking. So, investment is autonomous of income. So, what is investment decided upon through in the Keynesian system. In Keynes there are two

factors which influence investment decisions one is what he calls marginal efficiency of capital. And the other of course, is the interest rates, that prevails at any point in time according to Keynes investors compare the marginal efficiency of capital at any point in time with the interest rates that prevail and they decide upon the volume of investment that they would undertake on that basis.

What is the marginal efficiency of capital is it the same as the marginal product of capital we do not know at this point in time, because we do not know enough of Keynes in economics. But certainly marginal product of capital is very specific it is a concept which derives out of the behavior of the productivity of capital in industry. Marginal efficiency of capital is rather different, marginal efficiency of capital can be defined as the rate of discount which enables us to arrive at the net present worth of future returns from investment. If for instance, if future returns from an investment are a thousand five hindered rupees then there is a particular rate of discount which enables us to arrive at some net present worth.

Which is smaller than thousand five hundred rupees, because it is discounted. The rate at which we arrive at this net present worth is the rate of discount of future earnings from our investment and in Keynesian thinking this rate of discount is the same as marginal efficiency of capital. Now, what are the factors that determine this rate of discount? One is of course, technological in the sense that future returns from a given investment are determined by specific technology, which is involved as a part of the investment decision. And this technology would tell us, what the returns would be; and what would; what the stream of returns would be over a period of time from a given act of investment today. So, technology is certainly one major factor.

However, technology would tell us how much in actual terms, would be the return from an investment for instance, I might invest a hundred thousand rupees in a particular machine, which might yield me thousand rupees per month over the next 20 years. Now, I can discount these returns over 20 years at a particular rate of discount and I can arrive at the net present worth of all my returns. And see whether investment of hundred thousand rupees is worthwhile or not, as I said this is a function of the net present worth, the net present worth in turn would be determined by the rate of discount.

So, yes part of the factor influencing the estimate of net present worth and the rate of discount is the technology. However, it is not all technology, there are businessman and businessman who are in the market and as businessman and businessman think they think differently. There are some businessman who are naturally optimistic, there are some businessman who are not so optimistic who are more conservative. And there are some businessmen who are positively pessimistic, pretty negative not very convinced about the future of the economy and therefore, not very satisfied about how future incomes will translate into net present worth.

Whatever your businessman and businessman and therefore, you have states of mind in states of mind in which businessman function, here is an sea of subjectivity. Different businessmen think differently about the future and therefore, they think differently about the prospects of investments which are taking place today. And as they think differently the rate at which they discount future earnings, even if they are technologically certainly determined. But the rate at which discount the future income strives depend upon how they perceive the economy in the future, if they are pessimistic. They think about two hundred rupees tomorrow is not the same as even hundred rupees today, much less. On the other hand if they are optimistic, they tend to have a much more positive view of the future, which again affects their rate of discount.

In short whether you discount your future very much or whether you discount your future only marginally is a function of your state of mind your level of confidence about the economy. And it is very subjective, it is not all technology, it is not all productivity now, this is the big difference between the Keynesian and pre Keynesian view of investment. In the pre Keynesian the classical view investment decisions came on the basis of marginal product of capital, if what you had to pay for capital was less than the marginal product of capital, you just went on and invested anyway till such time, as the marginal product became at least equal to the reward for capital.

But, in Keynesian thinking the marginal product of capital might actually decide the future streams of income, but how the capital investor looked at the future streams of investment was highly subjective. Depended upon his state of mind, it depended upon whether he was pessimist an optimist or was he was just neutral and this varied across the economy. In short marginal efficiency of capital involved a substantial level of subjectivity which was completely absent in the estimate of marginal product of capital.

Now, this is the most fundamental and the most profound difference between Keynesian investment function and the classical investment function.

Now, as a result of this big difference, Keynesian investment function is a lot more than simply an estimate of what capital would bring, because Keynesian investment function is determined by whole lot of subjective outlooks. So, what investment might bring actually is very different from what businessmen perceive investments to bring. The returns from investments is looked upon either positively or negatively either optimistically or pessimistically in short the rate at which these returns are discounted is purely a function of the businessman is levels of confidence. These levels of confident oscillate across through time and across the economy. And this is a very crucial factor which Keynes designates as animal spirits.

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Animal spirit, because it is almost like somebody primitive behavioral system, which is non rational it is not based on any calculations of estimated or probability distributions of returns no it is based on purely hunch. Which is a function of purely the levels of confidence which a businessmen is feeling. Now, this is a very crucial thing, because as we shall see this rise of the heart of all kinds of uncertainties in the economy, but that comes later not now. So, investment is autonomous, it is partly determined by the marginal efficiency of capital, let us do a little more consideration of marginal efficiency of capital. Buy and large at any given point of time, you might have the marginal

efficiency or the rate of discount being an inverse function of the quantity of investment. In fact, the higher the investment, the lower the rate of discount.

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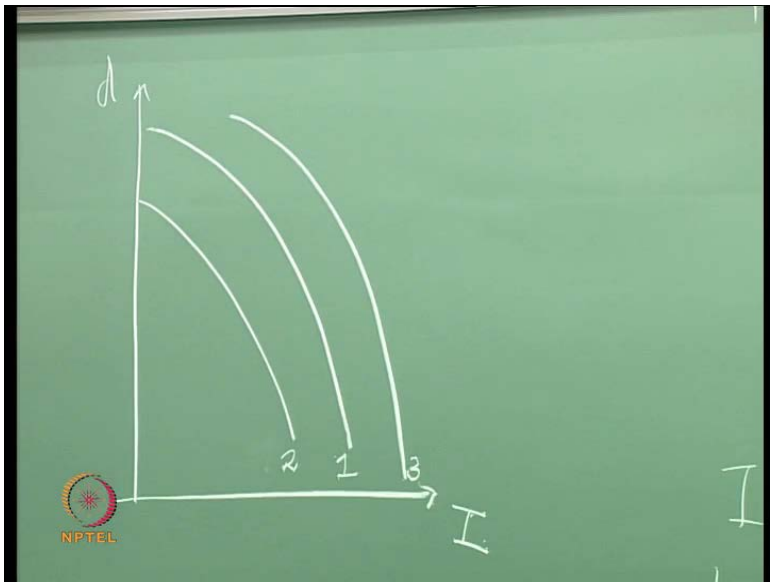

So, rate of discount is here investment level is here, in each of these functions you find that as investment expands rate of discount declines. What Keynes is basically saying is there is a negative relationship rather; inverse relationship between the rate of discount and level of investment. But what is crucial here is also that you see three lines here 1 2 and 3, line 1 is what you might call a normal or an average psychology. Then, you might have somebody who is a lot more pessimist than this normal or average person who might have a rate of discount which is to the left.

So, this is a pessimistic discount function m e c function, this is an optimistic function to the right of the average discount function. In short what we are thinking here is about the possibility that marginal efficiency of capital might be a shifting function and the shifting is entirely due to subjective factors, entirely due to the outlook of the person about the economy. It does not have anything to do with levels of technology, it does not have anything to do with productivities no it is just the businessman is outlook.

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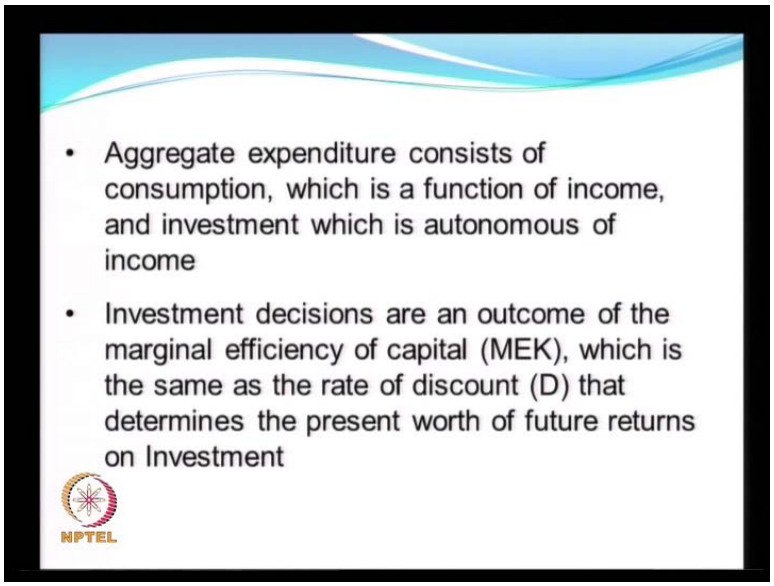

So, this is marginal deficiency of capital, at any point of time the rate of interest in the market is given.

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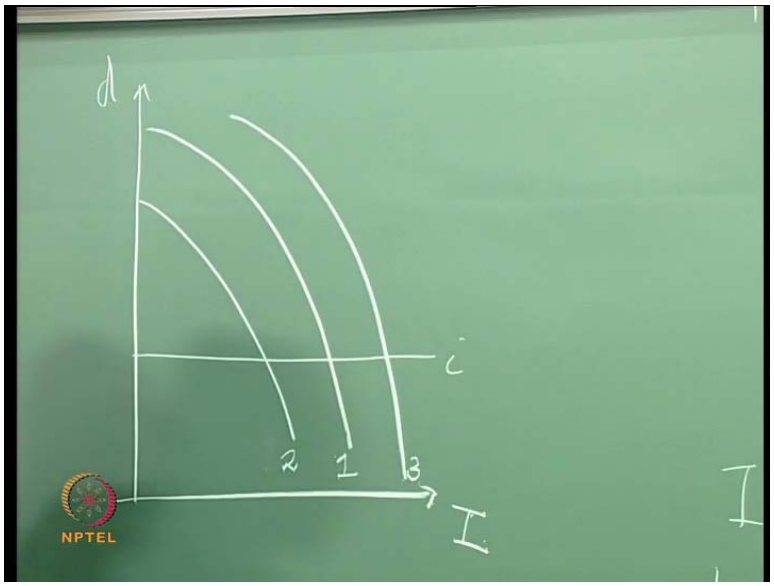

So, the equilibrium in investment happens when the rate of interest equals rate of discount investment level is determined, according to the levels of confidence. So, investment is autonomous and happens on the basis of marginal efficiency of capital, which is the rate of discount of future income streams or return streams, which as I repeat involves a high level of subjectivity and levels of confidence and which Keynes

calls animal spirits, which is at the heart of at all. So, businessmen are not seem to be simply comparing productivities on a blanket format, businessman are seem to be people who are looking at the economy as a whole when they invest.

They look upon the prospects of investment in the economy in the times to come. In short they are people who are induced strongly that the levels of confidence or animal spirits, this has to be repeated again and again so that we understand Keynes properly. So, we have in the economy a consumption function, which is determined essentially by levels of income. And then, we have an investment function which is autonomous of levels of income, for any given level of income the level of investment is given autonomously and together we have an aggregate expenditure function in the economy.

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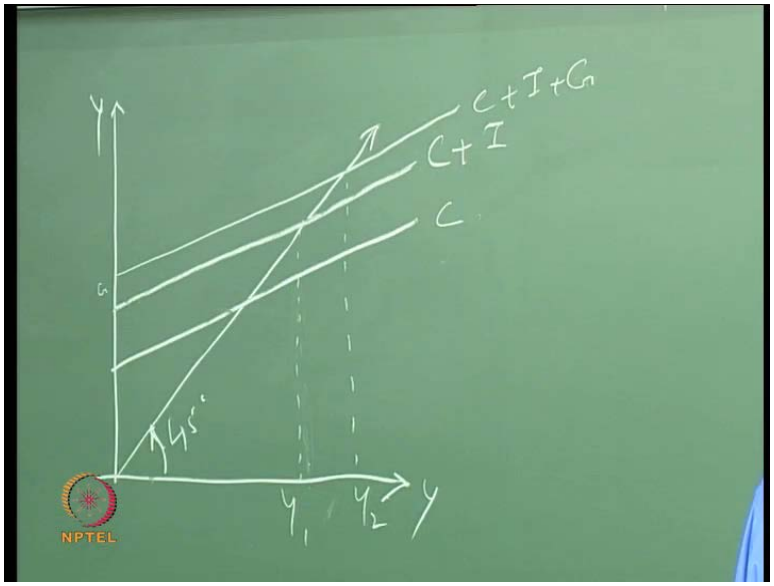

Here, we have for example, a consumption function at this point in time we have assumed some linearity is so that some simplicity of reasoning is possible. So, we have a standard fraction of income constantly being spent on consumption giving the slope. And then, we have an autonomous level of investment so, c plus I is aggregate expenditure in the economy. And equilibrium in the economy simply means that aggregate expenditure equals aggregate production and supply, this is the point of equilibrium. So, why one is equilibrium level of income in the economy, macroeconomic equilibrium happens at income level y 1. De facto as a matter of fact aggregate income equals aggregate expenditure at level y 1.

Let us repeat, according to Keynes this does not necessarily mean full employment equilibrium. It is just some expenditure in the economy, which is matched by production or supply in the economy and that is it does not mean at all that it is full employment equilibrium, which also means that it could well be an underemployment equilibrium. Certain percentage or the working force might be unemployed if you are generating income levels y 1. So, this is important, because we have already said that Keynes distinguished between notional macroeconomic equilibria and actual macroeconomic equilibria.

The notional equilibria are say type equilibria where aggregate demand and aggregate supply are equal to lead to full employment. Where as any actual equilibrium would be simply aggregate demand equals aggregate supply at any level of output de facto at any point in time. The level of employment at that time simply determine whether level of output which in turn means that it might be under employment, it might be full employment, we do not know this is the situation. So, suppose we find that y 1 means at a certain fraction of the work force is unemployed. Let us say at y 1 some two percent three percent four percent of the national work force is unemployed.

We need to generate more demand in the economy, in order that production rises sufficiently enough to employ this three two four percent of currently unemployed work force. And as we have already seen, the adjustment mechanism in this system is not working that is what Keynes says. So, the government as the nurse maid has to come in crucially, but before we go into that I suddenly recall that, I need to tell you something more about the investment function. I simply dropped it at that point, when I said interest rate suppose, it is given at I the equilibrium between d and I will give you the level of investment, but what determines interest rate is something which I had not talked to you about at that time so, let us go in to that. Just spend time, spend some time looking at how interest rate is determined.

Now, the crucial difference between the classical economics and the Keynesian economics is that, in classical economics interest rate is a real phenomenon, in other words people are foregoing abstaining from current consumption. And therefore, they have to be rewarded for abstaining from current consumption. So, the interest rate is a real phenomenon. In other words, if I have to consume twenty percent less than what I wish to and if I am abstaining from twenty percent consumption then I have to be

rewarded. So, the act of saving is real and the reward for it is real in contrast in Keynes interest rate is monetary, it is nominal, let us look at the difference.

In Keynes, interest rate is function of different parts of the money market. The crucial thing in Keynes is the way, he looks at money demand. If we remember in classical theory, new classical theory as well demand for money was demand for cash balances. We may recall that demand for cash balances is nothing but demand for a certain fraction of the nominal national income. Which people needed to perform their transactions and a little bit of precaution taking a little insurance for contingencies. So, cash balance demand was influenced by, as I said the need to have transactions conducted and a certain amount of precaution to face contingencies.

Now, these two facts of transaction and contingency could persist in Keynesian look; Keynesian point of view on money demand. Keynes is language for demand for money is liquidity preference, because Keynes says money is the most liquid form of assets, it need not be sold in the market to be converted into liquidity it is just liquid by itself. If I have a bond or if I have a share or if I have a house property, if I have say a transport a bus or a truck, I can convert this asset into liquidity by selling it in the market. On the other hand I need no selling when money my assets are held in money form so, money is liquid asset.

So, Keynes is asking, what creates the demand for liquid assets in human beings? Which is the same as demand for the money, one Keynes says is the transaction demand for money. There are constant needs that people have for conducting transaction so, a certain fraction of the money that they demand is for transaction purposes. And usually the volume of transaction money is determined by the purchasing power that I have at my hand and how much of it I would like to hold as transaction money. So, by and large transaction demand in modern macroeconomics is looked upon as a function of income levels.

And then of a marginal sense also a function of interest rate on savings accounts, because I can hold my money as a savings account in a bank rather than cash on hand and that would give me a some interest earnings too. So, interests on saving accounts and income levels are considered as two determinants of transaction demand. Precautionary demand is my perception of uncertainty, is my perception of contingencies and therefore, it is not

a function of income, it is a more externally determined than simply income. In a measure, I can hold my money in savings account even for precautionary purposes and draw them out when I need so, savings account interest rates are considered in a measure as determinants or precautionary demand for liquidity.

However, the demand for liquidity arises in a much stronger way when money is looked upon not as some kind of a cash balance, but as an asset. In short if we look upon money as any other like; any other asset which can yield returns then money acquires very different meanings, let us look at this. If I do not have money in my hand, if I do not hold my assets in the form of liquidity then I have to hold it in non liquid forms, which is say some bond or some equity. Now, in order to hold my money in a non liquid form, I need some incentive do I or not. This incentive is what is known as non liquidity premium, in it is a premium I need to hold my assets in a non liquid form. And usually returns on bonds or returns on shares, these returns are the premia for holding money in non liquid forms.

By and large, as bond prices fluctuate the return from bonds fluctuate in opposite direction, if a bond gives me ten rupees return for every hundred rupee face value then as the market value of the bond increases beyond hundred rupees then this ten rupee return becomes a lot less than ten rupees, does it not. Similarly, when the market value of this bond falls to something less than hundred rupees then I find that the ten rupee return is worth more than ten rupees. In short return on investment of assets varies inversely with the price of assets. What is important is to see that interest rates as proxy for return in assets vary inversely with the price of assets.

As at asset prices rise, I might be hoping that the asset prices might rise a little bit more and might buy some assets. If for instance a bond face value hundred rupees is now selling at hundred and five rupees. And if my instinct and gut level feeling about the market tells me that it is going to appreciate a little bit more. Then, I might like to buy this bond expecting to making it; make a little pocket money by selling it at the time when it is selling at hundred and ten. So, I make a five buck margin, which margin is very often called capital gains.

So, the motivation to make capital gains is a very serious motivation when people are playing with assets, when they are converting their liquid assets into non liquid assets

and back, the possibility of capital gains figures significantly. In short there is a new demand for money in this context, which does not arise out of transactionary motive, which does not arise out of precautionary motive, but which arises out of the desire in people to make capital gains. In short people are speculating and Keynes says one of the most important sources of liquidity preference in modern capitalist economies, market economies is this desire for speculation in people, people are congenital gamblers.

And therefore, has returns on assets, as the price of assets vary people would like to invest buy and sell assets according to how they judge the market to be and make capital gains. Speculative motive constitute according to Keynes the central motivation in liquidity preference in modern times. What is crucial is to note that people tend to buy when they expect to make capital gains they tend to sell when they expect to lose money and therefore, lose capital gains. So, when asset prices are rising interest rates are falling, asset prices are falling interest rates are rising usually, according to Keynes. Therefore, the speculative demand for money is associated with this movement of interest rates.

The higher the interest rate, the higher speculative demand for money it simply means that if any interest rates are higher it simply means asset prices are dropping and people try to get rid of assets and convert them into liquidity. So, liquidity preference from a speculative point of view is higher when interest rates are higher, which is the same as saying assets prices are dropping. So, there is an inverse correlation between speculated demand for money and interest rate. At any point of time the three sources of demand for money add up to give you an aggregate demand for money. The precautionary transactionary and speculative demand, give you an aggregate demand for money with speculative demand constituting the majority in this.

So, given this speculative demand as a predominant element of liquidity preference and given money supply at any point of time in the economy, as being given at some value by the government. The equilibrium between aggregate demand and aggregate supply in the money market gives you the equilibrium interest rates. And now, we know how interest rates are determined? We know now that interest rates are purely monetary phenomena and they are determined by the behavior of liquidity preference within a framework of asset demand and supply. As the result of the comparison of interest rates are so determined and the marginal efficiency of capital based on the subjectivity of the investor, you have the level of investment decided in the economy so, autonomous.

So, now we know everything about investment function we had left out interest rate now, we brought in invest interest rates and so, how interest rates were determined? So, let us get back to this program of moving away from underemployment, if you recall we were talking of why one here as a level of income involving a certain amount of under employment in the economy maybe two percent three percent four percent of the workers are unemployed. And the government does not like it is very uncomfortable not only does it have to spend a lot of money on unemployment benefits, but also is politically an insecure more unemployed people in the economy who would mean, more insecurity for the government.

So, it is politically undesirable to have unemployment in the economy, whatever the government wants to get rid of unemployment this two percent three percent four percent. And the only way to get rid of unemployment is to generate jobs. And generating jobs simply means that firms in industries will have to start expanding their production. And production will not expand unless there is demand for the products and demand does not happen, unless there is decision towards expenditure. So, the government has to create expenditure in the economy hoping that this would multiply itself till such time as unemployment is wiped out.

Let is assume that the government in this particular case is going to create an expenditure g, in a very typically Keynesian fashion we may assume that the government is employing people to dig holes on the roads. And the next day fill up the holes with mud and dig holes again on the third day in some other place fill it up again on the fourth day with more mud so, gainfully employed in the sense, that they are getting a wage at the end of the day. So, let us say the expenditure g is incurred by the government in this process of employing people gainfully making them dig holes and fill them up and getting them to earn at the end of the day and more important to spend at the end of the day.

So, what is happening here is that the government is spending some amount of money g in what is called public works, in this public works policy. Remember that treasury view said this would not do and Keynes is saying this of is the only thing which will do or at least one of the things that it that will do. So, let us see how it works, the government spends g, which is say some two hundred thousand rupees on employing people towards public works, at the end of the day these workers go back home rather they go to the

shop on the way back home and buy up food and other things of necessity worth two hundred thousand rupees, which is what they earned that day.

So, the entire expense of g or two hundred thousand which the government has incurred is spent on day one, day two perhaps another two hundred thousand coming up. But more important, the two hundred thousand spent on day one is starting to create it is own flutter. The retailers who sold these workers the necessities on day one have now placed orders for more inventory with the producers. So, the producers have now started recruiting workers, who can be employed to produce two hundred thousand rupees more worth of goods on day three the newly recruited workers they start getting paid and they spend money according to their propensity to consume.

In short what has happened is, the initial two hundred thousand gets translated into many rounds of expenditure, it multiplies itself. See, there is a movement here from y 1 to y 2, because of an expenditure G. So, the aggregate the expenditure in the economy here moves up from C plus I to C plus I plus G, where G is the government spending on public works. And C plus I plus G enables the economy from move from y 1 to y 2 look at the small amount of G reading to a larger amount of expansion in the economy y 1 y 2. Now, this is multiplier, it simply means that a certain amount of investment by the government public works multiplies itself to an additional expenditure in the economy.

And if y 2 is full employment level of income, the government policy has solved the problem it has helped you to move from y 1 which is under employment equilibrium to y 2. And that is happened due to a given expenditure d multiplying itself at some particular rate to lead you to y 2 and what is this rate?

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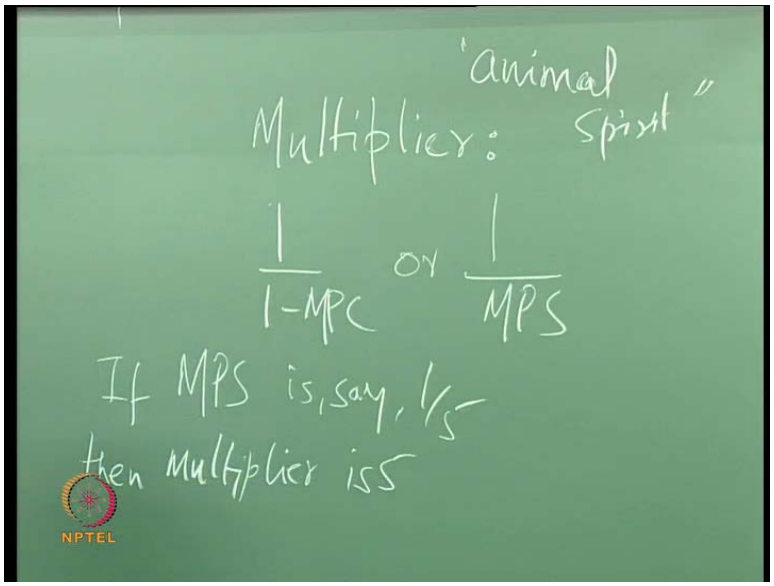

We find that the multiplier is defined as one upon one minus marginal propensity to consume M P C, or one upon marginal propensity to save M P S. What it? Simply means is that if I am saving one out of every five rupees that I get which is my M P S, this little fraction will tell me that if my M P S is one upon five then multiplier is five. If my propensity to save is one out of every five additional rupees then, the rate at which a given government expenditure will multiply is by five. So, each rupee will multiply fivefold which is why you find this expansion here.

So, Keynesian reasoning is very clear here, public spending is very crucial, how does the government involve it is under in public spending? It can do it, either through what is known as open market operations. Which is simply borrowing from public or rather not borrowing from public, but buying and selling a bonds. The government can simply sell bonds to the public and raise the money required for g open market operations. Alternatively you can take an in the Indian case there use to be a practice of central government taken overdraft with the Reserve Bank of India to finance more printing of money so, it could be an over draft.

In short the government could lead to more spending in the economy, essentially through a deficit in the budget. So, government increase in government spending is the way through which this g is financed which leads to an multiplier here. So, increase in government spending or a fiscal policy, a budgetary policy is what is the instrument

involved in public works project. Now, the government need not simply have a fiscal policy for expansion. The government could operate through a monetary policy as well, the government could operate through a monetary policy by expanding money supply in the economy, it can do it in number of ways.

The government can for instance announce that it is reducing the statutory reserve ratio in the banks that means the banks need to hold less reserve for issuing of credit in the economy. Which simply means that, that credit level in the economy will expand with lower reserves? And expansion of credit in the economy would create an expansion in the economy it is equivalent to an increase in money supply. The government can also reduce the rate at which it lends money to commercial banks through the central bank. When that happens that the commercial banks lower their lending rates to the public which leads to an increase demand for investment funds, investment expands.

So, a monetary policy enables investment to expand by creating this interest rate movement up and down, given a particular demand for liquidity, given a stock of money interest rate policies or reserve rate policies could cause interest rate movements up and down, which in turn would lead to monetary induced expansion in the economy. So, fiscal and monetary policy are two crucial instruments in the Keynesian system through which the government can push an economy from an underemployment situation to a full employment situation. So, this is the heart of it all the government as a nursemaid as we have stated in the beginning. And this is how the nursemaid nurses the economy into well being, the two crucial policy instruments fiscal and monetary policy.

There has been substantial interest in the way these policies are worked overtime. In the 1950s for instance after the second world war, most of the European governments even the United States were involved in using monetary policy, not so much in order to induce expansion in the economy, but in the in order to ensure that interest rates are meant stable. So, the purpose of monetary policy in the 1950s Europe was mainly to ensure stability of interest rates so that investment could be stable and economies could be stably expanding. In the 1960s the U S government and then subsequently in the 1970s other European countries too went into big deficits.

In the 1960s the U S government went into deficit on two grounds, one under the presidentship of Lyndon Johnson there was a substantial growth in public spending by

the U S government, which created this multiplier effect and created a pressure of increase money supply in the U S economy. And in the late 1960s the government in U S started increasing expenditure of money to finance it is war in Vietnam. These two factors led to a pronounced inflationary pressure in the U S economy. So, at that time onwards any faith in growth in public spending became discounted. In 1970s onwards by and large most governments in the U S and in Europe started becoming more and more cynical of Keynesian solutions.

It was a rise of an alternative approach to macroeconomics about which I shall not be able to speak to you here monetarism. In the 1970s and 1980s was an era of growing popularity of monetarism principally under monetarism as a school of thought principally under the leadership of Milton Friedmen of Chicago. However, more generally a decline of Keynes in economics was a very crucial factor of those days. Today in U S there is a reemphasis on big public spending under President Obama. The huge recession which U S economy has been facing is now, meeting a standard Keynesian solution wherein Obama is attempting to spend money in order for the economy to recover and almost typically Keynesian multiplier based solution.

Whatever, the world has seen fluctuating interest in Keynes and Keynesian microeconomics, since the time he published the general theory. But the heart is a matter is this, the way people look at economic has changed, since Keynes publish general theory. People no longer believe in any automatic adjustment mechanisms, people believe that policy is a crucial instrument in the economy in ensuring stability. Now, how say for significant which policy is very important, for instance monetarists believed that fiscal policy solutions towards imbalances is usually not cooperative effectively in the long run.

And ineffectively in variedly in the short run, they believe that the crucial thing is for governments to maintain a rate of growth of money supply matching rate of growth of the economy to maintain stability. Whatever it is towards the end of the class you can say this that the advent of Keynes brought in a change in the universals and economics in the worlds view of economics and that is important, good evening.