Infrastructure Economics
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Module – 01
Lecture - 04
Infrastructure Finance – 1

In today's lecture, we are going to start a discussion on Infrastructure Finance. As we have understood in our previous lectures that infrastructure needs huge investment. Without having finance within the country and outside country, it is really difficult to have infrastructure projects completed on time.

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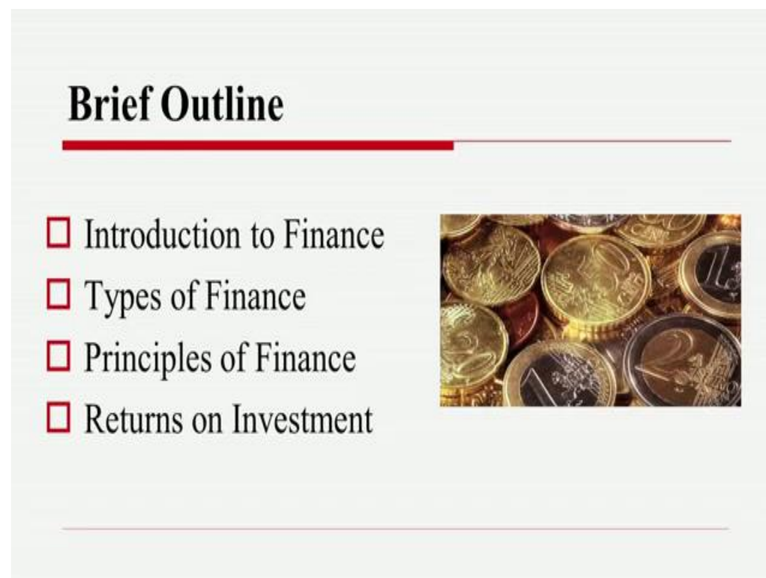

So, in this module, we are going to have discussion on what is basically finance, what are basically different type of finance or principles of finance and how returns on investment is being calculated. Based on this background, theoretical background we will again discuss infrastructure finance in detail. But, before that I thought to discuss the general meaning of finance, types of finance, principles of finance and returns on investment.

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Introduction to Finance

- Finance is generally understood as management of money, banking, investments, and credit. For example:
- Finances of Monetary resources
- The supplying of funds or capital or
- To provide or raise the funds or capital are activities of Finance
- Finance is thus the study of the management of money

Let me begin with what is basically finance. Finance is generally understood as management of money, banking, investment and credit. For example, finances of monetary resources is one of the part of the finance. Lots of monetary resources are being used in financing the infrastructure projects, such as bonds. At the same time, different investors are directly coming to other countries and such steps taken by international agencies are the matter of finance as a part of monetary resources.

The supplying of funds or capital as we discussed that the supply of funds or capital today, it is not only the private affair, it is not only the public affair, but it is also the affair where private and public within the country and outside the country do participate. At same time, we have the supply of funds from different international agencies, such as World Bank, ADB and many other international agencies, such as UNICEF and UNDP.

So, when we have plenty of funds supplied from outside the world, then also it is important to understand how the management of money, how the management of banking, how the management of investment and credit is being done. So, without such background, it is very difficult to understand how infrastructure projects are receiving the funds, how a country receives funds from different international agencies.

And at the same time, it is also important to understand the link between the national and international agencies for completing certain infrastructure projects. So, to provide or raise the funds or capital or activities of finance, the financial companies do try to

enhance the level of capital, do try to promote certain financial assets for the infrastructure companies and there are hidden benefits for those financing companies also.

At the same time, infrastructure companies are also getting certain supports from these financial institutions and without such help, it is very difficult, it is rare to complete projects on time and with better quality. As we have discussed in our previous lectures that infrastructure projects needs a huge investment and it is not possible without proper support from the financial institutions and the banking institutions and credit agencies.

So, finance is just the study of management of money, whether it is national level finance or international finance, the management of money, because money is not only the money, which we are seeing in terms of cash, but money is also today in terms of credit cards, in terms of bonds, in terms of debentures, in terms of shares and in such a situation, it is indeed important to understand the matter of finance.

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Types of Finance

- Finance may be divided into :
  1. Personal finance
  2. Corporate finance
  3. Public finance

So, what are basically the types of finance. If we have to really divide- what is basically finance, what type of division we can make it. One can really say that finance may be a personal finance; finance is corporate finance, public finance and one can also include here the international finance.

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Business Finance or Corporate Finance

- It is a form of applied economics that uses the quantitative data provided by accounting, the tools of statistics, and economic theory in an effort to optimize the goals of a corporation or other business entity.
- Corporate finance has two distinct functions: acquisition of resources and allocation of resources
- Corporations or business entity can raise capital through equity and debt to fund capital projects through SPVs.

So, let me begin with what is basically the personal finance. Personal finance or may be the business finance or corporate finance, it is a form of applied economics that use the quantitative data provided by counting the tools of the statistics and economic theory, which is an effort to optimize the goals of a corporation or other business entity. So, corporate finance has two distinct functions, acquisition of the resources and location of the resources.

One thing is how to have the acquisition of the financial resources and the second thing is how to allocate those resources for the business or for the corporate benefits. So, corporations or business entities can reach capital through equity and debt to fund capital projects through special purpose vehicles (SPVs).

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Personal Finance

- Personal finance deals primarily with family budgets, the investment of personal savings, and the use of consumer credit.
- It includes financial decisions like investing in equities/shares, bonds, purchase insurance, debt-servicing and others.

So, this is one part of the finance; that is basically the business finance or corporate finance. As far as personal finance, comes personal finance, deals with primarily with family budgets, the investment of personal savings and the use of consumer credit. So, it includes the financially decisions like investment in equities, shares, bonds, purchase of insurance, debt services, sometimes insurance and others.

So, the personal finance is not really having a very huge share in infrastructure projects, but at the same time, if investors even at every small level, if they are supported to invest or supported to buy the bonds, or they purchase the equity in the infrastructure projects. That is again one of the major supports for the infrastructure projects in a country.

So, you must have seen today that majority of the countries are launching the infrastructure bonds in the public. So, what is this infrastructure bonds? If anybody is purchasing infrastructure bonds and as you know that bonds are basically the certain returns, a guaranteed returns on your investment. So, after sometime you are having a guarantee on you return, so that return is going to help you in your finance at a very personal level.

But, there is a invisible hand as Adam Smith pointed out that for every activity, there is a invisible hand theory works and that invisible hand is you are basically taking the decision to invest in bonds, because of your own benefits. But, the fact is that, country as

a whole or infrastructure projects as a whole is getting the money from you, because that is the way of getting certain funds from the public.

And through that activity, whether it is bonds or shares or equities, government is mainly raising or sometime and the infrastructure companies are raising the funds from the public and that is a big support sometime for the infrastructure projects. Because, you cannot really depend on the loan, which a company can take from the bank or a company can take from the financial institutions.

One has to depend on different sources of finance and the personal finance is one of the sources, it is true that the personal finance is not as big as the intentional finance or the funds received by the government or the fund received by other bilateral agencies. But, at the same time, it has the capacity to have the buffer stock for the investment and the infrastructure companies do have to think and they are really linking different shares and bonds in the equity markets and so, this is also one of the major tools to understand.

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So, again a type of finance is the public finance, it deals with the government expenditures and revenues. Public finance are basically the finance which is related to the government revenue and expenditure. It may be at the national level, it may be at the state level, it may be at the local level. So, if municipal corporations are raising certain revenues and Municipal Corporations are having certain expenditures, Gram panchayat

is having certain revenues and certain expenditures, we cannot say that is basically the personal finance or that is basically corporate finance; it is basically the public finance.

And this type of finance includes, the revenue includes the taxation and the physical managements and physical federalism. So, at the state level or at the national level, there are certain tax, which government can collect. And when government is collecting the tax, the ultimate role of the government is not to get revenue just for getting the revenue.

But, the ultimate goal is to receive that revenue and to have the expenditure for the public benefit. Because, ultimately the role of the government today in a very economic, open economic environment, the role of government today had changed little bit, government being a producer in a very socialistic model or in a very controlled model. Now, government is shifting its responsibility from being a producer to being a facilitator to promoting the manufacturers.

So, in a completely new environment, where the government has to work as the facilitator and where the government has to work as the launching or the supporting agency for the manufacturer, it is indeed important for the government to help those activities which cannot be helped by any other private agencies or any other personal finance. So, such public policy, public finance includes macroeconomic policies, public borrowings, budgets, debt financing and other means.

Because, it is public finance is a very complicated subject, where you have to take care of many things. If for example, if government today is not ready to tax the people much in that case, your revenue will certainly drop. And if your revenue is certainly drop; it is also important that your expenditure is not going to have much, because your revenue is declining, so you cannot afford more and more expenditure.

So, expenditure and revenue is interlinked. The point which is very important here is, when we are talking about infrastructure finance, public finance has a prominent role especially in developing and least developed countries and including the developed countries, because developed country also today cannot really sacrifice the many role in terms of welfare. Because many European countries are really having a very prominent role in providing welfare schemes to the people including India, if you can see today the entire MGNREGA program or Unnat Bharat and other programs which is launched by the government today.

When it requires lots of public finance, the government has to see for the revenue, different sources of revenue. And at the state level also we are finding the different states or launching different programs, these programs are basically the programs related to the social infrastructure and sometimes related to the physical infrastructure.

But, when it comes for the financing, state government some time do take loan from the international agencies, do take support from the Asian Development Bank in India or Indian state do take supports from the ADB or sometimes from the World Bank for developing certain projects. Sometimes, these supports are in terms of loan, sometimes these supports in terms of assistance.

So, if it is assistance, state has less pressure, but if it is loan the state has more pressure because you have to pay the loan after sometime. But, it has certain objective, because if public finance is not there, economic growth and stability, equity, efficiency and price control is not possible. Sometime, when the market is reflecting a complete price increase, government has to step in that crisis and government may have to provide certain assistance to the public through different price mechanism as the public distribution system in India or in many countries, there are targeted public distribution system.

And or may be certain employment generation program which may really help the people to go to have the income in their hand and if they have the income, then only they can have the purchase of certain items. So, public finance ensures the optimum utilization of resources to augment development and ensures distribution of these resources to increase the efficiency.

So, we have seen that these are three basic types of finance, but, I may also try to include very short international finance today. Because it is not only the private or corporate and public, which makes a difference in infrastructure projects, but it is also the international finance by the international agencies, such as World Bank, ADB (Asian Development Bank) and USID and many other UNICEF, UN DP. And many other international sources are today very much active to achieve the millennium development goal and to help the states to come out from the vicious circle of poverty and the very low level of education or to improve the health condition and with the sanitation facility and to provide the safe drinking water.

So, when we see that international finance comes international finance is also one of the major boost for improving the infrastructure projects today. And these international agencies are not only worried for the physical infrastructure development, but they are really worried for the social infrastructure development, because both are complimentary to each other. Only physical infrastructure is not going to give us better results as long as we are really having a very wide range of social infrastructure developed in a country.

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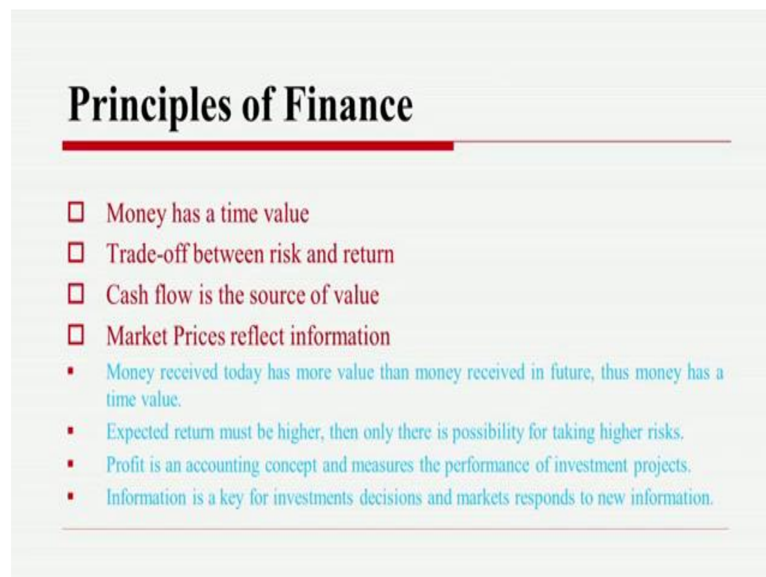

So, let me also discuss briefly about, what are basically principles of finance, one of the principle is having, is the money has a time value; means money received today has more value than money received in future. Thus, money has a time value. So, if infrastructure project is being launched and if you are not receiving the money, today in such case your projects are basically prolonged. You are not able to finish the project on time, and in that case the very purpose of infrastructure development is being destroyed.

So, money has the time value, in fact some of the some of the economists have already discussed that the important part of the money is, if you are receiving on time that only you can really have the value of that money. If a person, suppose if a person is ill and they need medicine, they need hospitalization, and if they do not have money, if they will get the money after 2 years or 3 years or may be 2 months or 3 months, they will not able to survive.

So, it has the time value not only in the day to day life, but also for the day to day development of infrastructure projects. Because, if money is not supplied properly, if money is not supplied on time, such projects are basically facing lots of problem today. At the same time, what are basically the trade-off between the risk and return? So, if the investment environment is very risky, if the country has a very risky environment, the returns on investment will be also very much controlled.

Because, if you have lots of crime, if you have lots of uncertainty in the political circle then, in that case investors do want to avoid certain risky economy, because even if they will invest, they are not sure in that what type of return they will get it. So, it is very important to understand what type of environment a country is having, what type of doing business index, country is having.

One can also see the doing business index available with the World Bank website. I may also give you the link of that, where you can find out that, what type of different criteria a country is fulfilling to start the business. There are few country, which has a very good index, but there are few country even if having huge, huge population and huge labor force, surplus labor force available and raw materials available, their doing business index is not very good. India is one of the countries in that list. So, we can say here that the principle of finance is very important to understand, because there is market price, which is reflected by the information and cash flow is the source of value.

So, profit is an accounting concept and measures the performance of investment projects, what type of flow of cash you are having, it is very important to understand that what type of return one can get, if the source of flow of cash is not available. Then how you will pay to the labor, how you will pay to the raw material, how will you pay to the different inputs of the infrastructure projects. That is a very, very challenging condition, especially in developing country, which has lack or problem in terms getting finance for the infrastructure projects. At the same time today, when the investors are really looking for the investment, information is the key for them to invest for the investment decision and market response to new information.

Suppose, one has to invest in country, one will certainly see that, what type of infrastructure facility they are having and what type of fast communication, transportation, electricity, road connectivity, rail connectivity, a country is having. So, if

those connectivities are having, even if some political risk is there, there are chances for them to invest in a bigger way.

But, even if political stability is there, but there is no road connectivity, very, very less communication facility and all these things are in a very infant stage. If infrastructure condition of a country is in a very infant stage, then the bigger investors of the world will try to avoid certain situations, because they will always have the problem in terms of moving the product from here to there.

And even for the infrastructure development projects, if a infrastructure company, a firm which develops the infrastructure if they wants to invest, they will also have the fear that in case of very less environment, supportive environment, they are not really able to finish the project on time. Because, they will always have not only higher cost of production, but also delay in finishing the projects. Because, lots of things they have to take from different parts of the world and the different parts of the economy. At the same time, it is very difficult to bring all those raw materials and everything at a place where things are not really well connected.

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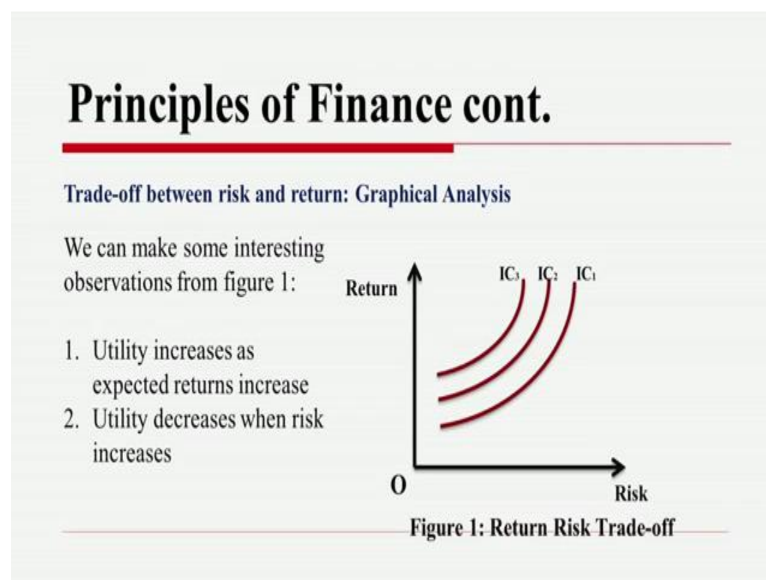

So, these are the basically the basic principles which we have discussed. Here in this diagram, one can see the link between the return and risk. Society's utility or the economy's utility increases as expected returns increases. One can only have more satisfaction more utility derived when you have more expected returns to or increase in

returns. At the same time, if you have more risk increases, ultimately the utility will certainly decrease in certain environment.

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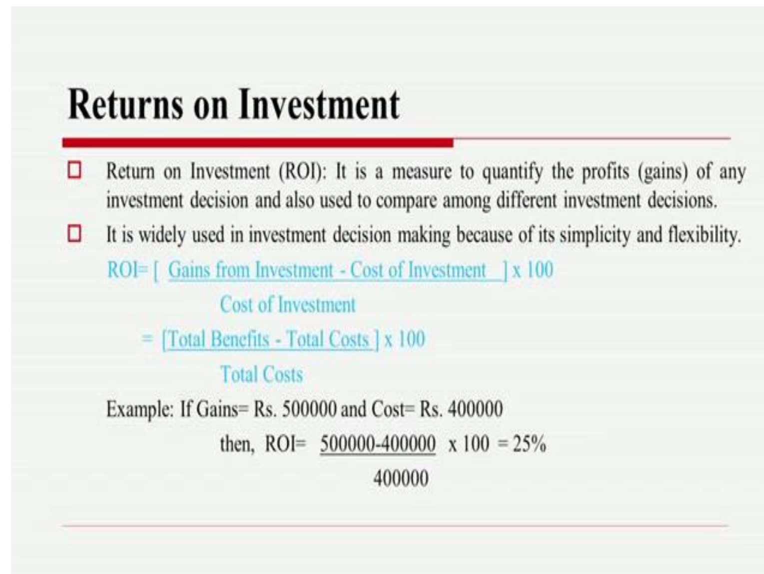

Let me also see here that how to calculate the returns on investment. And what is basically the return on investment. Return on investment is a measure to quantify the profits, gains of any investment decisions and also used to compare among different investment decisions. It is widely used in investment decisions making, because of its simplicity and flexibility.

So, one can briefly calculate what is basically returns of investment, returns of investment is nothing expect gains from the investment minus cost of investment divided by the cost of investment multiplied by 100. So, in brief one can say that return of investment is equal to total benefit minus total cost divided by total cost multiplied by 100.

For an example if your gains from investment is 5 lakh rupees and the cost is 4 lakh, so the returns of investment is 5 lakh minus 4 lakh divided by 4 lakh multiplied by 100 is equal to 25 percent. So, that is the way of the calculating the returns on investment and the investors who basically investing in infrastructure or any other project, they do calculate that what type of returns they are getting.

If the returns on investment is moderate, if the returns on investment is towards the profit, they will continue with investment, if it is not really commendable, if the profit is not, returns are not really having a good impact, then in that case investors will lose the interest in investment and they will try to find out the new destination for the investments and that happen worldwide in last 20 to 30 years where investors got more return on investment. They have jumped into that market where they are having better returns and they have tried to avoid those markets where they have very low level of returns. Returns on investment can also be understood through this example, where C 1 and C 2 is the investment possibility curve, which includes series of projects arranged in accordance with the rate of returns. Here the cost of sacrifice of the present consumption and the return is the gain in the future consumption. The objective of the society is to reach the highest social indifference curve. In this diagram, there are three curves S I 1, S I 2 and S I 3.

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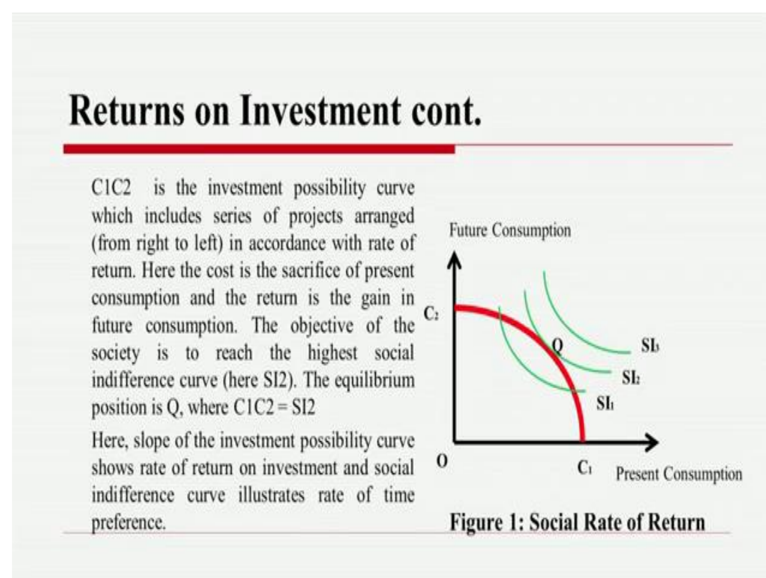

And we find out the that the society's indifference curve is tangent to the C 1 C 2 curve (investment possibility curve) at the point and that point is q where the C 1 C 2 is equal to S 1 2. Here, the slope of investment possibility curve shows the rate of the return on investment and social indifference curve illustrates the rate of time preference. So, in three different social indifference curves, we are finding that the highest social indifference curve is far away from the investment possibility curve and achieving that level of social indifference curve is really difficult. But, at same time we find out that

even if a society is at level of S I 1 that is below the investment possibility curve far below at the point of tangency that is Q, so society has the maximum social indifference curve at the point of Q where the investment possibility curve of that economy is tangent to the S 1 2. So, this is one of the ways to looked at a social rate of return or the investment possibility curve, its interaction with the social returns or social indifference curve. And that is one of the economic way of whether the returns on investment are optimum or not.

So, thank you very much for this brief introduction on the finance. In next module, we are going to discuss infrastructure finance, why it is important, how it is important and what type of different international finance, local finance is available for infrastructure projects. And I think that is going to give you more linkage with the finance with the infrastructure projects.

Thank you.