Infrastructure Finance
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Lecture - 17
Project Financing Attributes and Motivations

Welcome back to this course on Infrastructure Finance, this is lecture number 17. We have been looking at the various aspects of project financing for the last couple of lectures, and we will try and do, so in this lecture as well. Specifically we will focus on some of the Attributes and Motivations of using project financing.

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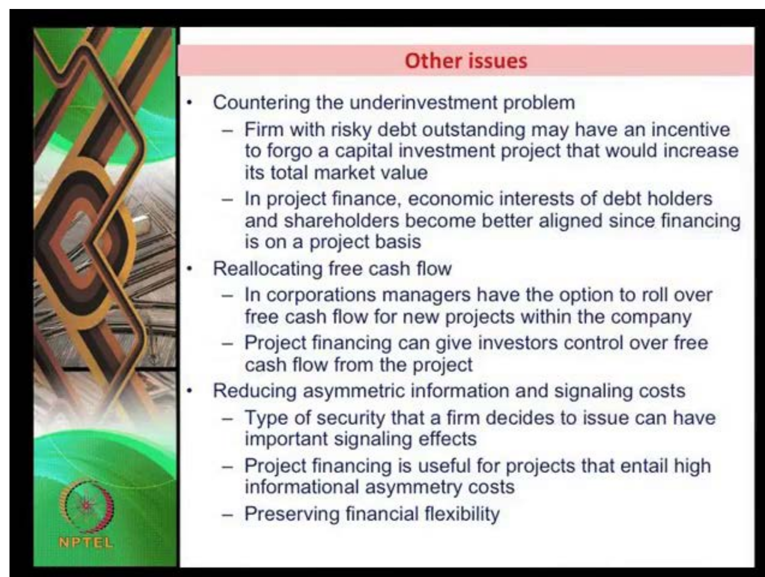

And what I am going to really look at first is how project finance helps to avoid or overcome some of the traditional management problems with respect to investment making. The first thing that I would like to point out is ability to overcome what is called as your underinvestment problem. Before we really come to what is called as underinvestment problem, broadly we know that from our earlier discussions, that when a firm finds an investment opportunity, that has a positive net present value, it undertakes an investment. That is the benefits are more than the investment or the cost, and by undertaking the good projects for which the benefits are higher, the firm actually benefits, so the net present value is positive.

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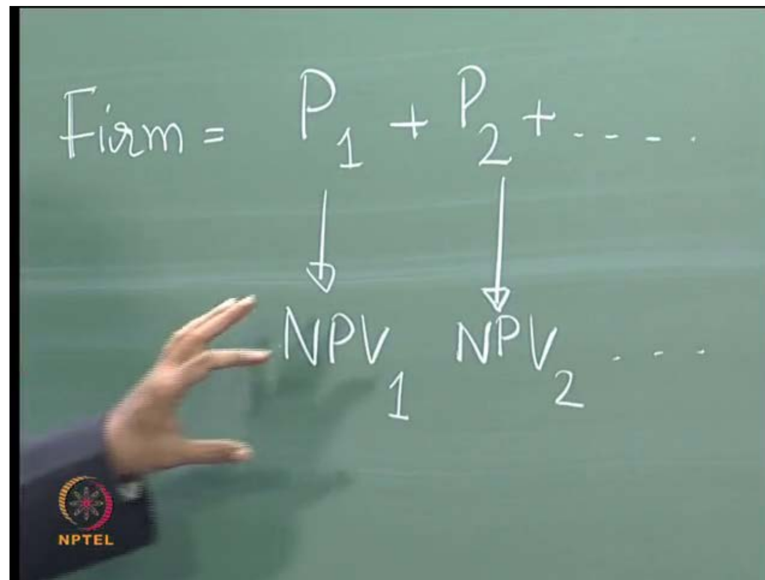

So, what is actually a firm, if you want to illustrate, so the value of the firm is nothing but a series of projects, and if you assume that each and every project has net present value; project 1 has net present value 1, project 2 has net present value 2 and so on. So, seen from this perspective, the value of the firm is nothing but the sum of all the net present values of the individual projects.

Now, if a firm takes up a project that has a negative has net present value, that reduces the overall value of the firm. Only if the firm keeps consistently taking up positive net present value projects will the firm value increase. Now, by the same token it is also understood that, for a firm that is intent on maximizing it is value, should accept all the positive net present value projects. If the form for some reason does not accept all the positive net present value project, then it foregoes some amount of value, it foregoes some amount of profit making opportunities.

And that is not considered to be good management or investment practice, so therefore a firm should be in a position to undertake all positive net present value projects, if it is intent on maximizing the firm value. Now, what is this underinvestment problem, an underinvestment problem can occur when there are situations, where the firms does not undertake certain positive net present value projects. Now, under what circumstances can it occur, let us discuss that using a simple example.

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Let us say there is a firm, now for the coming year the economic conditions can be either or the two, the economic can be in a recession or the economic can be in a boom, so the firm actually has a value, that differs in either of these two conditions. Now, consider a simple example, where the firm in a boom and in a recession, so the value of the firm in a boom period is, let us say is 5000. And the value of firm in recession is 2400, because during the recession the economic conditions are bad, the business prospects are bad.

So, therefore, the value of the firm is much lesser as compared to what we see in the boom conditions. So, now also assume that the firm also has certain level of debt and by the end of the year, the firm will have to repay the debt that actually it owes to the lenders. Now, if we assume that the level of debt that the firm will have to pay back to the lenders is 4000, so for debt holders need to be paid 4000, during the boom, if the economy is in the boom the firm is actually having the value of 5000.

And therefore, the firm will be able to pay the debt of 4000, the remaining value of 1000 will go to the equity holders. Now, let us look at what happen in a recession, in a recession the firm actually has a value of only 2400, so therefore, the debt holders will not get paid the entire 4000 that the firm owes to them. And the maximum that the debt holders will get paid is only 2400, because that is the maximum value of the firm. The firm will not be able to pay the entire debt capacity, debt level of 4000, because it will be unable to given the recessionary conditions in the economy.

And the equity holders during the recession, they get nothing simply, because all the value is expropriated by the debt holders. So, if you assume that the boom and the recession occur with equal probability, that is the economic boom has 0.5 percent probability and the recession has 0.5 percent probability. We can all calculate the economic value of the firm, the economic value or the expected value of debt that will get repaid, and the expected value of equity.

So, the expected value of the firm will therefore, be I am going to put it in between the expected value of the firm is nothing but half of 5000 plus half of 2400, so that would be 2500 plus 1200, this will be 3700; so this is the expected value of the firm. And the expected value of the debt that likely to be paid would be, half of 4000 plus half of 2400, so this would be 3200. And expected value of equity would be nothing but the expected value of the firm minus the expected value of debt and this will be therefore 500, so this is the current situation or the forecast for the firm.

Now, let us assume that the firm has an opportunity to undertake an investment project, and for undertaking an investment project, the firm would actually need to make and investment of 1000. If the firm makes an investment of 1000, then it results in a benefit of 1400, irrespective of economic conditions, so this is a very simple example, but let us assume that it is a very, very good investment opportunity; the economic conditions do not affect the outcome.

So, therefore the outcome of the project or the outcome of the investment does not vary despite the economic conditions. So, you make an investment of 1000, and the firm value increases by 1700, in either the boom or recession conditions. So, now let us look at what is going to happen with the project, so this is with the project and this is without project. Now, the value of the firm during the boom period would be 5000 plus benefit of 1700, because of undertaking the new project, so the total would be 6700.

So, this is the value of the firm, because the firm undertakes a project, during the recession again the value of firm will increase by 1700. And so therefore, the value of the firm during the recession would be 1100 in both the economic scenarios the value of the firm increases by 1700, it does not change. So, what happen to the case of debt, so during the boom period the debt holders will get paid the entire 4000, the firm is valued 6700; obviously, it is higher than the value of debt, the debt holders will get paid. And

during the recession also the value of the firm is 4100 and the value of debt is only 4000, so the debt holders will get paid in entirety.

Now, let us look at what happens in the case of equity is, during the boom period the equity holders will get the residual value of 2700, and during the recession the residual value is only 100, which is what the equity holders will get. So, now let us calculate the expected values for all these three cases, so for the firm the expected value would be half of 6700 plus half of 4100, so this will be 5400. So, essentially if you look at it, this expected value increases by 1700, so it becomes 5400.

Now, let us look at what happens in the case of debt, the debt holders get paid 5400 in both the scenarios, so therefore the expected value of the debt will be 4000. And in the case of equity the difference between the expected value of the firm, and the expected value of debt, so that would be the expected value of equity, so that will be 1400.

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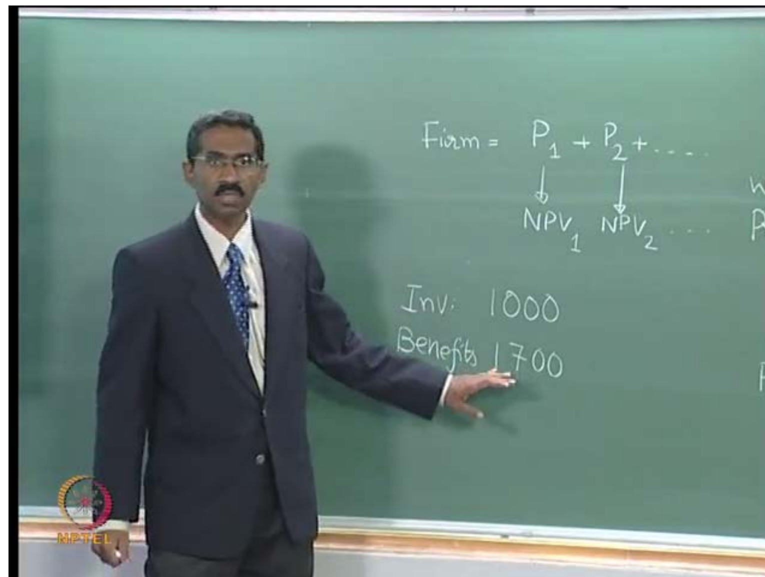

Now, the question is will the investment in the new project likely to happen, if you actually see the firm undertakes the investment, which costs 1000, and then the benefits of this investment is 1700. So, therefore, the benefits are more than the cost, so this is the positive net present opportunity, because the benefits are more than the investment cost, investment cost are 1000, the benefits are 1700. So, technically speaking the firm should actually undertake this investment project, but for the example that we are talking about will this kind of investment likely to happen.

Now, the answer would be no why, the answer would be no for the simple reason that, so in this case the entire investment of 1000 is being made by the equity holders, the debt holders are unlikely to make the investment simply, because the firm is already on the verge of bankruptcy. So, therefore, the entire amount of 1000 is going to be invested by the equity holders, so what happens is the equity holders invest 1000, but the expected increase in the equity holders value is only 900.

So, earlier without the project the expected value of equity was 500, after undertaking the project the expected value of equity is 1400, so the difference is 900. Whereas, the equity holders are making the investment of 1000, so in a sense the equity holders do not get the entire benefit of the project gains, so who is then getting the benefit of project gains. The project gains is actually are going to the debt holders earlier, the expected value of the debt was 3200, now that has now increased to 4000 without any participation from the side of the debt holders.

So, what is likely to happened is the equity are losing out, and the debt holders are gaining and at the cost of the equity holders, so therefore equity holders are unlikely to approve of this kind of an investment, which makes them worse off as compared to they were before. So, this is the classical underinvestment problem, in this case it is an underinvestment, because the firm is likely to undergo, the firm is likely to forego positive net present opportunity.

And the firm is foregoing despite the fact that, it might actually affect the firm value, because of the way the capital has been structured, the amount of debt and the amount of equity. Now, consider a situation, if this project has been implemented separately outside of the existing firm structure, the investment would have happened simply, because of the fact that this is a separate project and this is the project, which a has positive net present value.

And all the investors are likely to benefit from the project benefits, and therefore the firm would have implemented the project. So, this is where the project financing technique can actually come in, what is project finance, project finance is a way of implementing a project in a ring fence entity. So, it is actually implemented outside of the corporate structure and therefore, by implementing it outside of the corporate structure, we are

trying to avoid this underinvestment problem; by overcoming the underinvestment problem it also helps to increase the value of the parent firm.

So, thus an important takeaway or benefit of using the project finance is it helps to overcome a classical underinvestment problem, that we see in corporations that have a certain level of risky debt. When we say risky debt, that is a certain amount of debt, which is unlikely to be paid, because of changes in or uncertainty that is in the business environment. So, the example that we talked about is case of a firm with risky debt, where some level of debt is unlikely to be paid, if there are any adverse changes in the business environment. In a project finance entity, in a project finance structure, we actually have a situation where the economic interest of the debt holders, and the shareholders are much better aligned.

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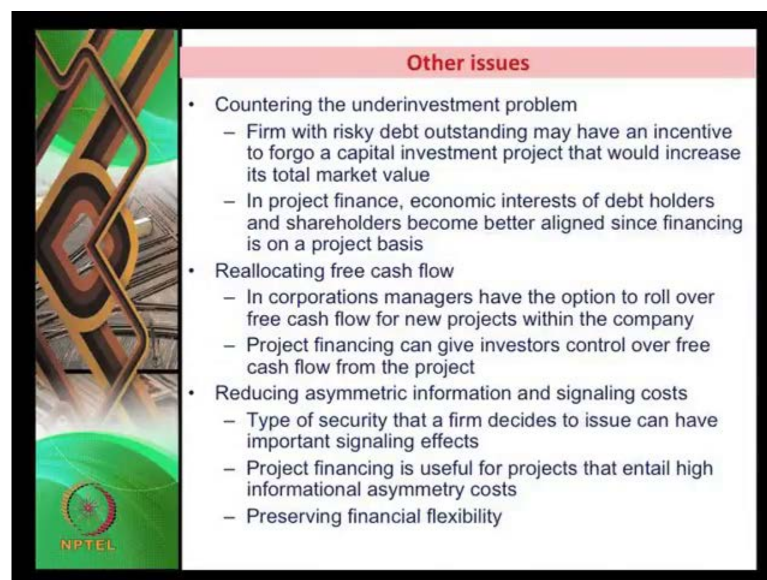

And therefore, the issue of underinvestment is less pronounced as compared to what we probably see in the traditional corporate structure, now second important an advantage of project finance structure is, the way in which we allocate free cash flows. Normally, what happens, when the company implements projects, the company get some revenues, after deducting all the expenses the company makes some profits. So, we have what is called as your free cash flow, that is available to the firm from the profits that the company makes.

The company has two options, option number 1 is to actually declare this profits as dividends and distribute the earning to the shareholders of the firm. Second the company can retain these kinds of surplus cash, and use it to reinvest in other profitable investment projects. Now, in a project finance company there is no need for reinvestment simply, because by definition a project finance company is not expected to make investments in other project.

The project finance is a ring finance entity and the boundaries of the project are a lot clearly defined, so the free cash flow that is needed in the traditional corporate or subsequent opportunities is not needed in the case of a project finance structure. So, what is the kind of impact that we see here, the impact is the managers do not need as much free cash flow in a project finance entity, and there for they are forced to give it back to the shareholders or they are forced to use it for repaying debt.

So, the discretionary powers that exist in the n hands of managers in the conventional corporate structure is a lot lower in a project finance structure, simply because there is no need for retaining the surplus cash flows, for allocating it to the other investment opportunities. The third motivation or the benefit from project finance is, it helps to reduce asymmetric information and signaling cause, so typically what happens, when a firm decides to issue a particular kind of security. The firm also gives a kind of signal in terms of how good a project is let us say for example, if the firm decides to issue a debt.

The firm is giving a signal to the market that the project is really good, and the firm is confident of repaying back the debt, and that is why the firm is actually issuing the debt. And this is the signal that the firm or the company gives to the market, when the decide to issue a particular kind of security and on the other hand, if the firm decides to issue equity. Then the market perceives this as a signal of risk as compared to what it would have been if the firm would have decided to issue debt.

So, we teach in every kind of security that the firm decides to issue, the market perceives a certain amount of signal. If the firm says the project is very good, the market is unlikely to believe because everybody would tend to believe actions more than words. So, on the other hand, if the firm decides to issue a particular kind of security, then the market takes a lot more signal from that rather than the firm simply saying very good or

the project is risky and so on. So, normally what happens in a project finance, in a project finance structure capital is largely raised on a private basis.

So, do not actually raise money from the public capital markets either in terms of equity or in terms of debt. So, whenever a firm decides to raise capital from the public markets then there is substantial investment that is needed to reduce or to provide adequate level of information to the prospective investors. Now, trying to provide as much information as possible without affecting the competitive advantage of the firm is going o be very difficult, if the firm tries to provide a lot of information.

Then the competitors can take advantage of that information, and that can actually affect the value or the business prospects of the firm that is implementing the project. But, in the case of project finance since the investment is raised from a closed group either from banks or either from a closed group of sponsors, the level of information that needs to be shared to a large group is completely absent.

So, the information needs to be shared only to a small set of investors, and these investors are probably lot more sophisticated in terms of understanding, information that comes from the firm. So, therefore, for the firm that is implementing the project, the effort the cost and the time that it would need to provide the information on the project would be a lot lesser, in the case of project finance as compared to raising money from the public capital markets.

So, this is a fairly important advantage as far as a project finance implementing structure is concerned, and then the fourth aspect that is to be considered is it helps to preserve the financial flexibility of the parent firm. Now, let us assume that the parent firm tries to implement a project, and if the project involves a substantial amount of borrowing then the leverage level of the parent company also increases.

So, when the leverage level increases it limits the amount of borrowing, that it can actually do for the future projects, but if the project is implemented as a separate project finance structure. And if the project finance structure, and if the borrowing is under project finance structure, then it does not affect the debt carrying capacity of the parent company.

So, the parent company will retain it is existing financial flexibility, and it can use it for some exigencies in the future, rather than completely exhausting it is debt carrying capacity. For example, any firm can actually only take certain level of debt without affecting its risk level, beyond a certain level the amount of debt affects, the risk of the firm. And therefore, any excess debt can have actually an adverse impact on the firm value, but trying to borrow in a project finance structure, the firm is not exhausting it is entire debt carrying capacity. And whatever capacity that exists to borrow further still retains and thereby financial flexibility is still preserved.

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So, we have actually seen some of these benefits to the investors, but we should also understand, how a project finance structure can also benefit, other stakeholders that are associated with the project. Let us say for example, how can it actually benefit a consumer, does using a project finance structure benefit a consumer, because it I ultimately very important that unless until that the benefits are in some way, provided to the consumer the use of project finance is not likely to be sustainable.

Let us look at some of the benefits that other stake holders can expect to get, because of the use of project finance, the first benefit could be lower product or service cost. Now, the hypothesis is that by using project finance, it helps us to provide a service to deliver a product to an individual at a lower cost as compared to, the traditional way of structure now you can come back and ask me a question, how is this possible.

So, there are several ways in which you can explain, but I am going to tell you a very simple reason, the simple reason is that we have earlier seen that in a project finance entity a major feature is a high level of debt. We are able to support the project, we are able to support the investment with a high level of debt. Now, what does it mean to have a high level of debt, as compared to having a high level of equity. We have also seen that when you have debt, the cost of debt is generally lower than that the cost of equity, so when you actually have a high level of debt.

Then the amount of earnings that is needed to service the debt, or to service the investor, is going to be lesser compare to scenario, when you have a high level of equity, because the equity holders would expect a higher returns as compared to debt holders. And with the high level of equity, means that the firm will have to generate a higher level of earnings, to meet the returns expectation of the investors. Now, how will a firm get a high amount of earnings by probably charging more, if the earning requirement is not very high, then the firm can charge or operate at a price point that is at a lower level.

So, therefore, the customers are likely to benefit, because of a high level of debt, and use of project finance structure helps to actually achieve a capital structure that has a lot of debt. Let us look at another benefit, how would it benefit, let us say the government, how would the process of project finance structure benefit the government, government today needs to make a lot of investment in various areas of socio economic development. So, there are some areas where it is going to be very difficult to get private sector investment, this could be in social infrastructure areas like health, education, rural transport, sanitation, water supply and so on.

So, these are some of the areas where it is going to be very, very difficult to get private sector investment, because of the fact that, the projects form the cash flows may not be able to give any adequate return on the investment made by the private sector. On the other hand there are some sectors for example, power telecom ports and so on, where it is possible for the private sector to earn economical return on their investments.

So, given the fact that there are certain levels of limitations, in how much resources the government has for infrastructure development. Governments normally tend to focus providing investments on those areas, which are unable to attract private sector investments. So, therefore, when you have project finance structures that facilitate

private sector investments, the benefit that come together is public sector is able to focus, it is investment in those areas, where it is most needed where it is actually difficult to get private sector investment.

The third benefit, this is again not a benefit that can be specifically attributed to a project finance structure, but this is a benefit that can attributed to having more involvement from the private sector. So, the logic is when there is an in involvement in the infrastructure sector, much of the private sector investment happens by way of a project finance infrastructure. Therefore, many instances finance infrastructure is synonymously seen as a project finance investment.

So, when you have more involvement form the private sector, the risk is transferred from the public sector to the private sector, that could be several types of risks. That risk could be revenue risk, the risk could be project completion risk, the risk could be financing risk, if the project could have been implemented by the public sector, then all these risks would have been borne by the public sector. Now, the project is being invested by the private investor, then all the risks that were borne by the public sector, now is transferred to the private sector, now does it actually benefit does the risk transfer benefit.

Yes, because there is enough evidence, there are a lot of studies, which indicate that private sector is able to manage, certain amount of risks a lot more efficiently than the public sector. For example, private sector has a lot of capabilities in terms of managing complex projects, so they may be able to manage the risk of project completion a lot better. Project when the need a lot of sophisticated management or financing schemes, a private sector is able to provide a lot more innovation, as compared to what the public sector would have been able to do, because there are various limitations under which a public sector firm works.

So therefore, when there is a transfer of risk form the public sector to the private sector, it actually benefits everybody, because of the fact that a private sector is in a lot of better position, they are much better equipped to manage some of these risks. And then finally, whenever you have a substantial amount of debt, in the project the lenders are going to do substantial monitoring, the vendors are going to do a lot of due diligence, before they finally, agree to fund the projects.

Now, it is felt that due diligence that would be done by the lenders itself would be a big contribution, because it helps them to identify the weak points of the project and it helps them to, develop various means and ways to strengthen the weak lanes of the project. So, this monitoring by the lenders can itself be value addition of the project, simply because of the fact that the lenders will actually exercise the maximum diligence, because if the project is unable to repay the principle or the interest that is agreed, then the lenders are going to be the most affected. Third party due diligence by the lenders, in essence helps to identify the weak points, and by this process of identifying their weak points one is able to strengthen many areas of the project that might in other ways not have been possible.

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Now, at this stage we should try and understand what could be some of the disadvantages of using project finance. We have seen there are various benefits, but then we should also understand that there are some limitations, there are some disadvantages of using project finance. I am going to try and highlight some of the major disadvantages of using project finance, point number 1 project finance is a very very complex structure as compared to a traditional corporate form of financing project financing is a very complex.

So, whenever you have complexity in involves a lot of senior management time, so the heads of the organizations will have to devote, their time and their energy to successfully

complete a project finance transaction. Given the fact that their time is a lot more valuable, as compare to management at the middle level or the junior level, a project finance structure can involve a lot of investment on the part of the sponsors. Point number 2, whenever there are any changes to any of the contracts, then the contracts will have to be negotiated by all the parties that are involved.

For example, if the is a change let us say in concession agreement, then that can lead to a cascading renegotiation between lenders as well, because when the lenders agree to finance the project, they would have actually based their financing decisions based on some terms of agreement. Now, if there is a change in terms of concession agreements then; obviously, the lenders come into the pictures of renegotiation, so likewise in any major contract relating to the project, if there is any change if there is any renegotiation, then all the parties will have to be involve during this process.

The second point is in the project finance structure as we have seen earlier, it is called as non recourse finance or limited recourse financing. That is the lenders do not get any guarantee, the lenders do not get the comfort of cash flows from the other businesses of the corporation, for getting their debts to be repaid. So, there is no direct support from the parent company or form the sponsors to repay debt, so there is in some sense what is called as an indirect credit support could be in terms of a guarantee or could be by way of a letter of comfort and so on and so forth.

So, whenever the sponsoring firms, or the parent companies do not provide any direct support. So, direct credit support means, if the project is unable to pay, then as a sponsoring firm, we will ensure that we will ensure that the lenders are repaid, so that is a direct credit support. So, in a project finance support we do not really have this kind of direct credit support for most of the projects.

So, therefore, the absence of direct credit supports could, so the key word here is could, it is not always it could result in a high cost of debt. So, the interest rate on a debt in project finance structure could be higher, as compared to the interest rates in a corporate financing structure. Simply, because in a corporate financing structure, even if one project fails the cash flows from the other projects will be able to meet, the obligations of the lenders.

The next point that is normally associated in a corporate financing structure is a very high transaction costs, a very high transaction costs partly also comes from the complexity, that is associated in a project financing structure. So, because of the complexity there is substantial investment that is needed in terms of legal, in terms of various ways of corporate forms and so on. So, the legal investment the legal cost of the project finance entity will be a lot higher, as compared to the traditional corporate structure.

And, because of the extensive reliance on contractual arrangements, the project finance structure it leads to a situation where there is extensive documentation. So, there are structures, where the contracts and agreements run in to tens and thousands of pages, now this kind of extensive documentation, creating and preparing this extensive documentation is not going to be easy. There will be substantial cost involved, legal cost, documentation cost incorporation cost and so on, and so forth. So, this is another disadvantage of a project finance.

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We shall also have a clarity in terms of what is not project finance, point number 1, we should be in a position to clearly distinguish, between a single purpose company formed to realize a given project ((Refer Time: 43:53)) company, whose cash flow is generated by a single project. So, when you have a single purpose company that is a project finance

entity, but if you have a company whose cash flow is generated by a single project that need not necessarily be a project finance company.

Because, the company's cash flows are generated by a single project, tomorrow it could implement another project and few years down the line it could take another project and so on. So, the company does not have any restriction in terms of the number, and the types of projects that could be implemented, so therefore it should not be construed as a project finance company.

A project finance company is one which has a single purpose of developing a given project, we should also not consider a project finance as a way of supporting a project that is economically weak, and which cannot be funded by the traditional corporate finance structure. So, project finance is structured that helps to overcome, that helps to manage certain level of risks a lot more effectively, but at the same time it should not be seen as a way of financing projects that are riskier. It should not be seen as a way of financing projects that are economically weak, or as a way of financing projects which can provide suboptimal returns to the investors, all of this is not a case of project finance.

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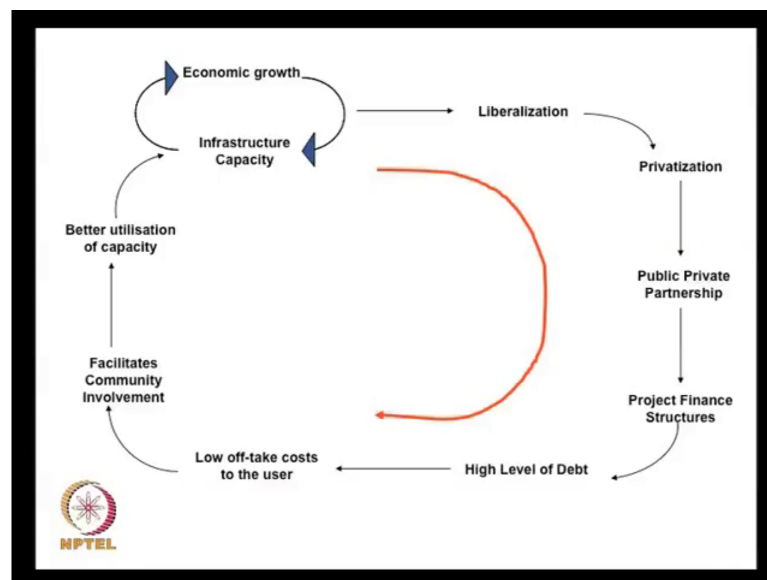

Now let us quickly look at a summary, so if you really look at it, there is a simultaneous relationship between infrastructure capacity and economic growth, when the economy grows it creates demand for more infrastructure capacity. And when infrastructure capacity is created it results in higher economic growth, so there is in some sense a dual

causality between economic growth and infrastructure capacity. So, many developing countries today have perceived, what is called as a path of liberalization to promote economic growth.

So, there were constraints in terms of how much growth can be achieved in the traditional public sector dominated model. So, there have been more and more sectors opening for private sector investment, so that is called as a liberalization, liberalization is opening up various sectors were restricted initially for public sector investment, to also for public sector investments.

So, opening up the economy, which is liberalization leads to privatization, and when you talk about privatization. There are many instance, where you do not really have only private participants, but we have what is called as partnership between the public, and the private, so we have what is called as public private partnership. And this public private partnership leads to use of project finance structure, so the traditional public sector dominated, we do not really have this kind of project finance structure, project finance structure emerges only when we have private sector investments.

So, consequence of having project finance structure is you have a high level of debt, and when you have a high level of debt what happens it results in a benefit. The benefit being low uptake cost to the user, and when costs are lower then there are more people who are willing to consume the products or the services. So, low uptake cost it increases, it facilitates community involvement more and more people are willing to are able to consume a product or service.

And when more and more people are beginning to consume, then it results in a better capacity utilization of the project, so when higher capacities are being utilized, then it creates a demand for more infrastructure capacity and then the cycle continues. So, what we actually see is a very dynamic relationship between economic growth and infrastructure capacity on one hand use of project finance structure on the other hand, and 3 benefits to the consumers that results in better utilization of the infrastructure capacity. So, with this schematic I am going to end this discussion on project finance, but before we do that a couple of thought questions for you.

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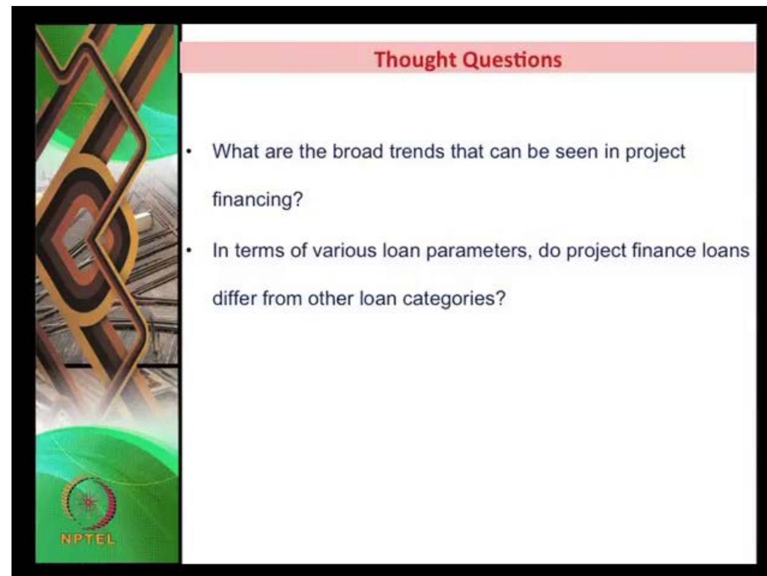

What could be the broad trends, that could be seen in the project financing the project financing has developed evolved, over the last few decades, what are the project trends what are the trends that we can actually see in project financing. Question number 2 in terms of various loan parameters, do project finance loan differ from other loan categories. There are several types of loan categories, so between these several types of loan categories project finance is one type of loan category. So, are there any differences between project finance loans ((Refer Time: 51:22)) other loans, so think about these questions, and we will discuss in the next session.