Infrastructure Finance
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Lecture - 21
Project Finance Markets Mezzanine / Sub-ordinated Debt

Welcome back to this course on Infrastructure Finance, this is lecture 21. We will look at some different types of debt in this lecture, and so this lecture is going to largely focused on Mezzanine or Sub-Ordinated Debt. So far we have been really looking at various sources of debt, but what we have not done is we have not looked at the different types of debt. For example, we looked at bank loans, we looked at fixed rate market and so on, but within this there are different categories of debt; for example, that could be senior debt that could be sub-ordinated debt and so on. So, what we are going to focus today is going to be on mezzanine or sub-ordinated debt.

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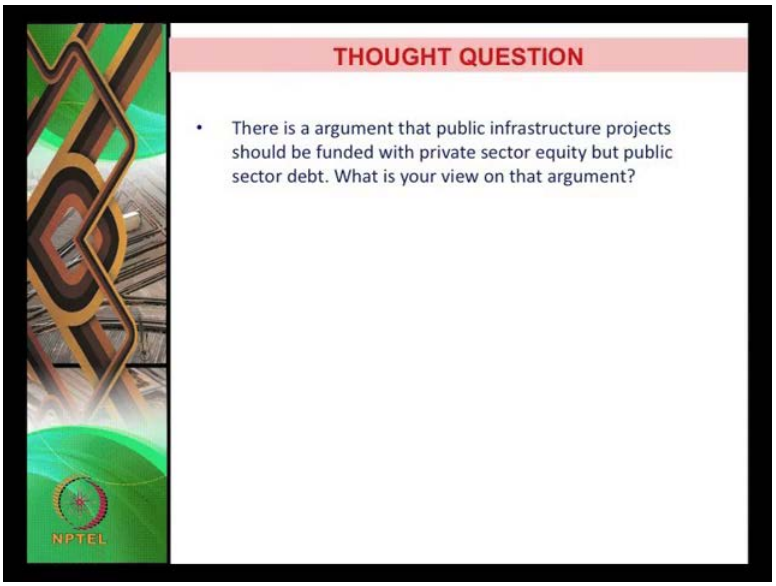

But, before we do that, let us try and discuss the thought question that we put forward in the previous lecture. So, the question was, there is an argument that public infrastructure projects should be funded by private sector equity, but public sector debt. And the question is what is your view in that argument? So, let me try and summarize what the argument is all about.

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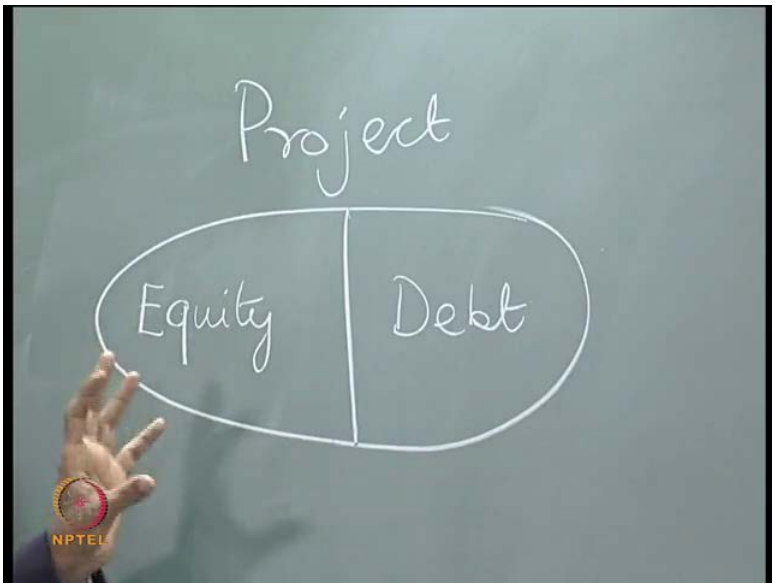

So, if you look at the project, the project capital structure, let us say we divided into two forms that is equity and then we have debt. What is a reason why we actually have private sector participation; in fact, the reason for private sector participation varies depending on what kind of economy or the country we are looking at. But, by enlarge it is spell that, when we actually have private sector participation, and when we say private sector participation, it is largely in terms of private participation in the ownership of the project.

So, if you are talking about private sector ownership, the reason behind having private sector ownership is private sector is lot more efficient, they are lot more innovative and they are lot more dynamic in catering to the needs, as compared to the public sector. And public sector, because of the very nature of the way in which this project are getting funded, and there needs to be lot of processes, there needs to be lot of systems that needs to be complied with. And therefore, they may not be able to act as fast, as what we probably see in a private sector.

So, it spell that when you actually have private sector, it brings in a lot more efficiency, so therefore, we need to actually have a equity in the private sector, but then let us come to the debt. Debt owners do not actually play any active role in the management of the company, they largely provide only capital to that sense, and they are passive investors as compared to equity investors.

So, we should really look at getting that source of debt which is less expensive, so between private debt and public debt, in terms of public source of debt, which are the private debt. We actually find that public can able to actually raise debt lot more competitive rates, as compared to private debt. So, therefore, if you actually have public sector debt so that means, that the cost of capital for the project is going to be lot lesser, and therefore we will be to provide product or service at lot more economical rates.

So, that is the reason for the argument that we should actually have private sector equity and public sector debt, but then will that kind of an argument hold good in the context of developing country. In the context of developing country such as India, one of the reasons for having private sector partnership is not just to introduce private sector efficiency, but also have private sector capital. There is limitation in terms of how much of government funding can actually happen in the case of infrastructure, without affecting the level of fiscal debt and so on.

So, therefore, when we actually have more and more public debt, there are limitations in terms of how much a government can actually fund, and without affecting fiscal debt and so on. So, therefore, public debt may not be able to contribute substantially in terms of capital, as far as developing countries are concerned. So, therefore, the argument that we should actually have public sector debt is maybe having a limited relevance, in the context of developing countries, because of the fact that, the resources that are available of the public sector to invest in such projects are limited.

So, therefore, this is an argument that might hold actually good, if you are really looking at incorporating efficiencies is a private sector in the project. But, if there are capital constraints, then these arguments might not really have a lot of impact. So, now let us actually go back to the topic of the day, which is to really look at mezzanine financing.

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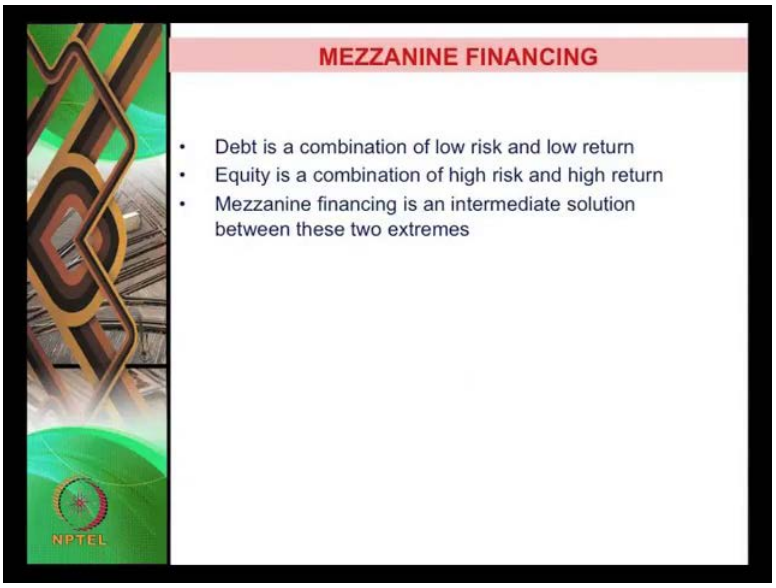

So, many of you might be curious to know why this is actually called as mezzanine financing, so what is what is unique about it. So, when we actually call something as mezzanine, so if you really let us say go to a large hotel or an office complex, there is something called as mezzanine floor, so what is actually called a mezzanine floor. So, something that is in between is actually called as a mezzanine floor, so if you actually have an office that is located between the ground floor and the technically what is called as a first floor, that actually can be called as a mezzanine floor.

So, it is in between two levels, so then means, it is actually called as a mezzanine floor, so in the case of financing what we actually mean by mezzanine is, it actually has characteristics of both equity and debt. So, it is both equity, it does not have all characteristics that are seen in equity investment, and the same time it actually has a lot more than a conventional debt. So, it is in between what is called as a traditional equity and debt, so therefore this is called as a mezzanine structure.

So, first we will look at debt is a combination of low risk and low return, so debt holders are supposed to be paid first and they actually do not really have any upside. So, for example, if the project does extremely well, now if the management is able to improve a lot more, in terms of efficiencies or they are able to make lot more profits, either because of able to charge higher price or because the demand being higher and so on.

Despite the fact that the company is profitable, lot more profitable than what was expected; the interest rate that we actually pay to debt holders does not change, so interest rate remains the same. So, therefore, there is no corresponding increase in returns to debt investors, at the same time the project does not do well, if the project is actually having problems, either because of low demands or either because of delays and so on.

And the returns technically to the debt holders should not get affected; the return stays fixed, so because of this certainty in returns the kind of returns that the debt holders can get is not going to very large. The returns are going to be lower as compared to other investments and risky securities, so therefore debt is basically what is can be called a low risk and a low return. But, what happens to equity, equity is a combination of high risk and high return, equity share holders they get only residual value after paying all the equity, after paying all the debt holders.

So, therefore, when the project does very well, the upside is captured by the equity holders on the other hand, if the project is not doing well and it is experiencing losses, then the equity holders get nothing. All the cash flows that need to be paid is first paid to the debt holders, so because of the fact that the equity holder assume a higher risk on their investment, they are also enter to higher returns.

Now, this are two extremes is there something that we can actually find in between, can we think of an instrument that actually has a little bit of higher risk, and also provides a little bit of higher return. So, that where the mezzanine financing comes into picture, so it is an intermediate solution between what we see as two extremes of debt and equity.

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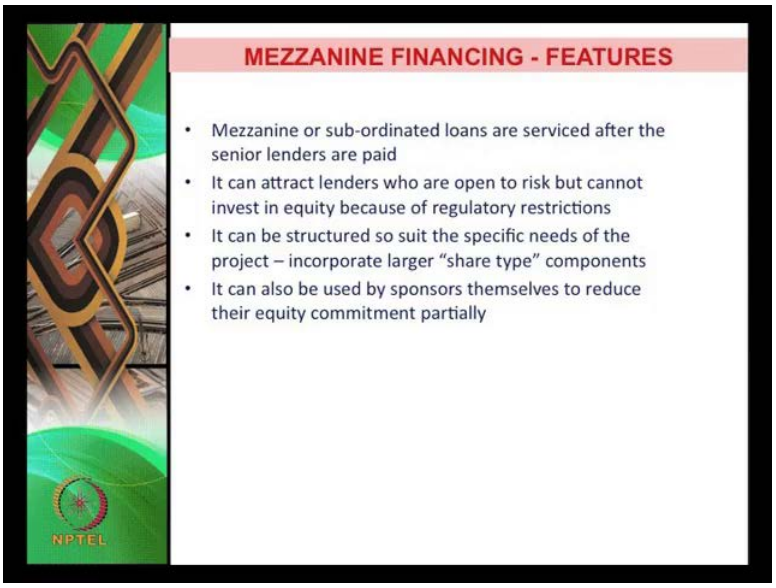

So, now let us look at some of the features of mezzanine financing, first is you know it is also referred by what is called as sub-ordinated lending, if you see in terms of the seniority of payments, so let us look at how the payment are paid to various investors.

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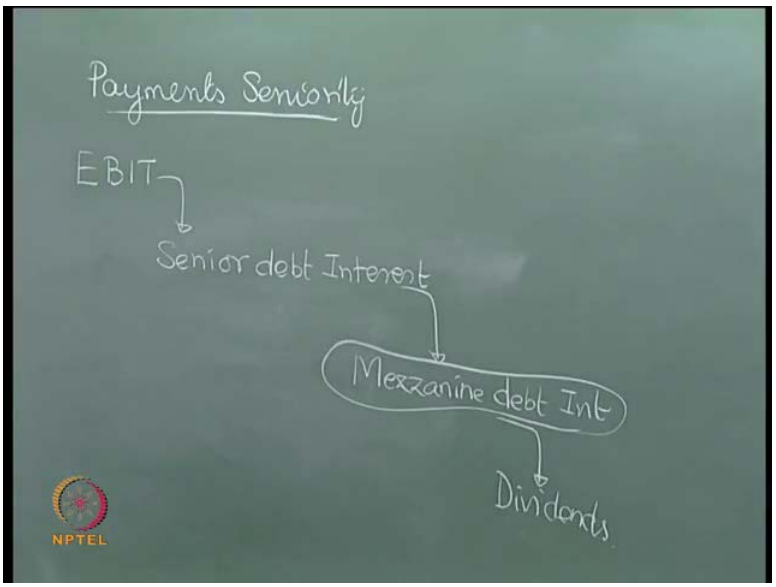

So, in terms of interest payments, so you have EBIT and then the first interest is actually paid to senior debt, senior debt interest; after paying the interest to senior debt holders, then you have interest payment to mezzanine debt. And then any sub place that is left after all this interest is being paid is actually eligible for dividends payment. So,

therefore, what you actually see is, mezzanine debt have junior claims as compared to senior debt, they are actually serviced only after the senior lenders are paid.

Now, the question is who are the kind of investors that invest in this kind of debt products, so basically you actually have investors who are willing to take a little bit of risk, but they are having restrictions in terms of investment is equity. So, in those cases sub-ordinated debt turns out to be a good opportunity, because sub-ordinated debt is not really an equity. But, at the same time it provides scope for earning certain amount of higher returns, because of the fact that the investors are assuming a higher risk; higher risk is in terms of sub-ordinated payments to senior debt holders.

So, lenders who are willing to open certain amount of risk, but not able to invest an equity, can actually consider sub-ordinated debt as investment opportunity. Sub-ordinated debt can also be more flexible, in the sense that it can actually incorporate certain amount of payment structures that are ((Refer Time: 11:44)) to what we can normally see to share holder payments.

So, there are instants where the mezzanine debt is actually having minimum guaranteed interest, but it also is eligible, mezzanine debt holders are also eligible for a proportion of share holder surplus funds. So, it can be structured in such a way, so that it returns some characteristics of equity cash flow payments.

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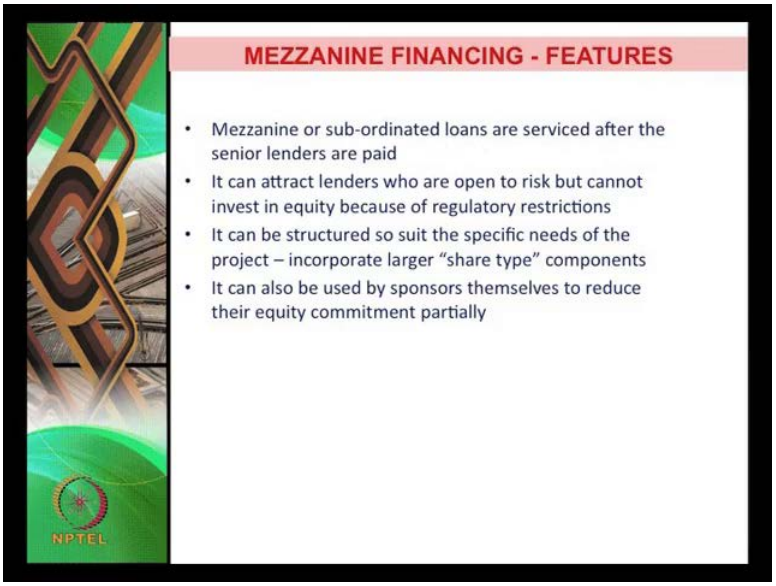

And thirdly sometimes sponsors themselves, you know instead of making their entire investment in equity, they try and split the equity investment as sub-ordinated debt and equity. So, it is sponsors that we will kind of explain the reason why they might actually do so a little bit later. But, generally sponsors would try instead of making and entire investment as equity; they may also invest in terms of sub-ordinated box.

So, we now we need to really look at that should actually have a any advantage to share holders, because ultimately if you really look at implementing structure, which can actually provide certain amount of advantages share holders. We will actually see whether mezzanine financing provides any kind of advantages to share holders through an example.

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But, we also try and look at why those sponsors invest in a mix of equity and mezzanine debt, because if you look at investing in a mezzanine debt, the sponsors remuneration is more certain. Because, the interest on sub-ordinated debt as compared to dividend payments, because even though the company might be not having positive cash flows, they are not being able to make profits. But, if you actually have sub-ordinated debt, sub-ordinated debt helps you to actually recover, recover some returns in the initial years, because the returns are by way of interest payments.

And second since the interest paid is tax detectable, the increase financial leverage creates a tax saving that benefit the sponsors. So, let say for example, we have seen

earlier that when we actually have debt in the balance sheet, it provides certain amount of tax seals to the borrower and if you actually have more amount of debt, then you have the higher amount higher tax seals.

So, when you actually have higher tax seals, it actually creates a benefit to the sponsors in terms of being able to get higher returns. And most importantly, an important benefit is in the initial years of the project life, there is something called as a dividend trap that sets in when you actually have only equity investment. But, when you actually have sub-ordinated debt, the dividend tarp can be avoided. Now, we will try and understand some of the concepts that we have just discussed in the form of a example.

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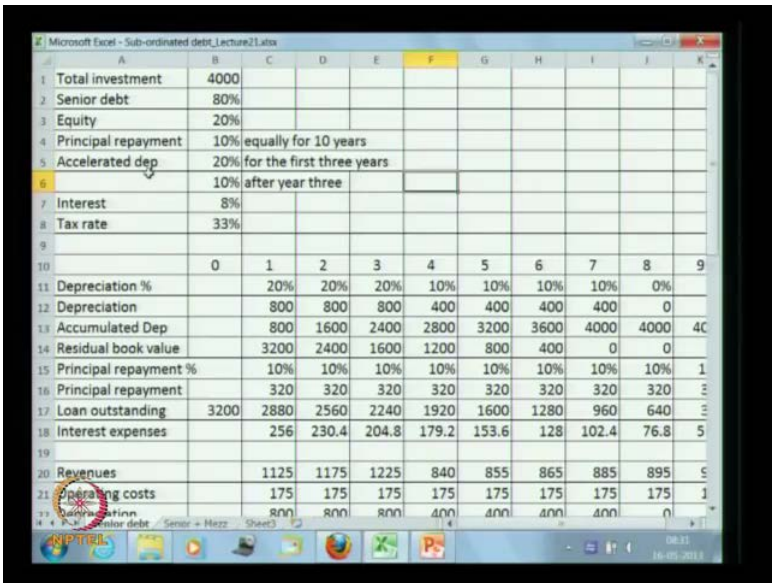

So, we have let us say the following example, so there is a project that needs a total investment of 4000, if the project like we have seen most of the projects are having substantial amount of debt. So, let us assume that the project is funded with 80 percent debt and 20 percent equity, so the ratio of debt to equity is 4 is to 1. And then the debt that is the principle repayment is paid over a 10 year period, so this means that the loan term is 10 years, the loan term is 10 years and the principle repayment is equally made over a 10 year period.

So, that means, that it is not really a bullet payment, it is not really a balloon payment it Is more some kind of an amortization loan. Next we look at depreciation, so the project follows an accelerated depreciation whereby, the law allows for claiming a higher rate of

depreciation in the initial years. So, the depreciation rate is 20 percent for the first 3, years and 10 percent after the first 3 years, the interest rate on debt is 8 percent and the tax rate is 33 percent, so this are the features of the project.

So, now let us try and understand how when the company is being financed, when the project is being financed only by senior debt what happens, so we need to actually calculate the year wise cash flows. So, I have done here is to calculate the year wise cash flows.

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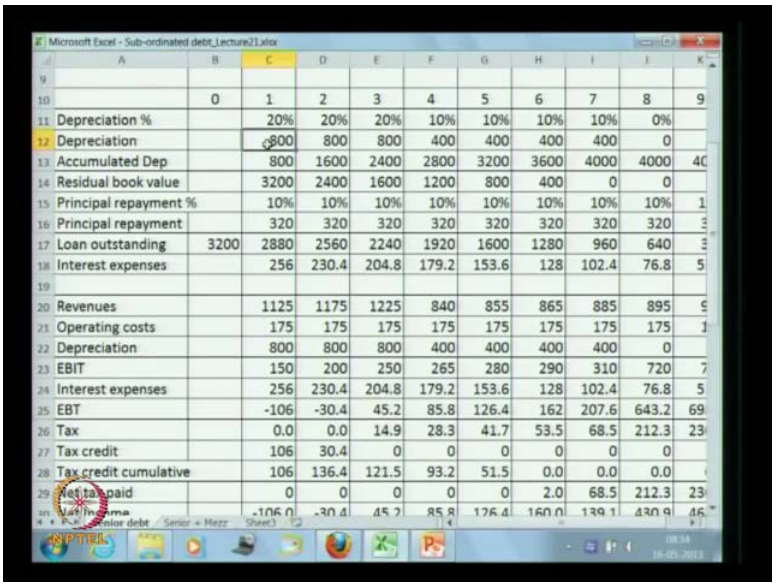

		0	1	2	3	4	5	6	7	8	9
11	Depreciation %		20%	20%	20%	10%	10%	10%	10%	0%	
12	Depreciation		800	800	800	400	400	400	400	0	
13	Accumulated Dep		800	1600	2400	2800	3200	3600	4000	4000	4
14	Residual book value		3200	2400	1600	1200	800	400	0	0	
15	Principal repayment %		10%	10%	10%	10%	10%	10%	10%	10%	1
16	Principal repayment		320	320	320	320	320	320	320	320	3
17	Loan outstanding	3200	2880	2560	2240	1920	1600	1280	960	640	3
18	Interest expenses		256	230.4	204.8	179.2	153.6	128	102.4	76.8	5
19											
20	Revenues		1125	1175	1225	840	855	865	885	895	9
21	Operating costs		175	175	175	175	175	175	175	175	1
22	Depreciation		800	800	800	400	400	400	400	0	
23	EBIT		150	200	250	265	280	290	310	720	7
24	Interest expenses		256	230.4	204.8	179.2	153.6	128	102.4	76.8	5
25	EBT		-106	-30.4	45.2	85.8	126.4	162	207.6	643.2	69
26	Tax		0.0	0.0	14.9	28.3	41.7	53.5	68.5	212.3	23
27	Tax credit		106	30.4	0	0	0	0	0	0	
28	Tax credit cumulative		106	136.4	121.5	93.2	51.5	0.0	0.0	0.0	
29	Net tax paid		0	0	0	0	0	2.0	68.5	212.3	23
30	Net income		-106.0	-30.4	45.2	85.8	126.4	160.0	139.1	430.9	46

So, the project has life of 10 years, so for each of this 10 years I have calculated the various cash flows, so for example depreciation, depreciation of 20 percent for the first 3 years, and then it goes to ten percent from years 4 to 7. So, between years 1 to 7 the asset is 100 percent depreciated and therefore, for years 8, 9 and 10 there is no depreciation, because the assets are 100 percent depreciated in the first 7 years.

So, then if you really look at this kind of depreciation rate, what is the annual depreciation that happens in each of the years, so in year 1 the asset value is 4000, so therefore, the depreciation is nothing but 20 percent of 4000 which is 800. Similarly, we calculate the depreciation for each of the 7 years, so depreciation start with 800 in year 1 and becomes to 400 in year 7. So, the next row is your accumulated depreciation, over the period accumulated depreciation is sum of depreciation that has been accounted for in the previous years.

So, you have 800 in the first year and then it becomes 1600 in the second year, because we have a depreciation of 800 in year 1, and a depreciation of 800 in year 2 and so on. So, as we actually increase the number of years, the accumulated depreciation also increases, ultimately the accumulated depreciation reaches the total asset value of 4000 and stays there. The next row looks at the residual book value, so residual book value is nothing but the opening book value which is 4000 subtracted by the accumulated depreciation.

So, at the end of year 1, the residual book value is nothing but the opening book value of 4000 and subtracted by 800, then it gives 3200. Similarly, we calculate the residual book value for each of the subsequent years, so you actually find by the end of year 7 the asset is completely depreciated. The book value of the asset is 0 after year 7 by the end of the year 7, the book value of the asset is 0, next row talks about the principle repayment, principle repayment is 10 percent in each of the years, so by the end of year 10, 100 percent of the loan is repaid, so principle repayment, therefore is 320.

The loan amount is 3200, because 80 percent of the total project cost is funded by loan and therefore, the total loan outstanding at the beginning of the project is 3200. And principle repayment is 10 percent of the original loan amount, so it is going to be 320, so as we are keep repaying the principle meet of the years, the loan outstanding also reduces. ((Refer Time: 20:45)) And the next row talks about the loan outstanding, the loan outstanding when we beginning of the project is 3200, but as we keep repaying the principle the loan outstanding reduces.

For example, at the end of year 1, the loan outstanding is only 2880, because we have paid 320 of the principle during year 1. Similarly, in year 2 the outstanding principle is 2560, because we have paid principle of 320 during year 2. And when we do the outstanding loan payment at the end of year 10 the loan is completely repaid, and the loan outstanding is 0 in year 10.

Next we actually calculate the interest expense; the interest expense is basically calculated on the loan outstanding at the beginning of the year. So, if you really look at loan expense, the interest expense in the year 1, the interest expense will have to calculated based on the loans outstanding at the beginning of year 1. So, the beginning of

year 1, the project had a loan of 320, and then the interest expense is nothing but the interest rate multiplied by the loan outstanding.

So, if you actually at the interest rate as 8 percent, so therefore the interest expense in year 1 works out to be 8 percent of 3200, which is 256. Similarly, we calculate the interest expense for each of the years, let me again give you an example for year 2, in year 2 the interest expense is 230.4 in a sense how is it calculated, we find that the beginning of a or the beginning of the year 2 the outstanding loan is 2880.

The outstanding loan at the beginning of year 2 is nothing but outstanding loan at the end of year 1, at the end of year 1 the outstanding loan is 2880 and during the year 1 we paid 320 of principle. So, therefore, the outstanding at the end of year 1 is 2000, at the end of year 2 is 2560, so therefore the interest expense is nothing but 8 percent of 2880 which is the beginning in the year 2 and that is 230.4.

Similarly, we calculate the interest expense for each of the years based on the loan outstanding at the beginning of the year for example, the loan outstanding at the beginning of year 10 is nothing but 320. So, therefore, we calculate the interest expense in the year 10 as 8 percent of 320, which is nothing but 256. Next we try and project the cash flows of the project, so row number 20 provides the revenues, let us assume that these revenues are given and are estimated based on some market studies.

I have not done any modeling for this revenue except the fact that I have taken it as given, and then the project has operating cost. Then next row provides details about project operating cost, for the sake of simplicity it has been assumed that the operating cost do not change during the project life, it remains constant at 175 throughout. The next row provides the depreciation value, the depreciation value is nothing but what we had actually calculated previously in row 112. So, I have actually taken the depreciation values that we have calculated earlier into the cash flow statements.

The next row is the calculation of EBIT that is Earnings Before Interest and Tax, earnings before interest and tax is nothing but revenues minus the operating cost minus your depreciation, so that gives your EBIT. So, we actually calculate the EBIT for each of the 10 years and row number 23 gives the depreciation for the EBIT for each of the 10 years.

Now, we will have to pay some interest, after EBIT we account for the interest expense to calculate the EBT, interest expense we have calculated earlier. If you really look at that row number 18 gives interest expense that we have calculated earlier, I have actually replicated these interest expense in row number 24 to calculate the earnings before tax. So, row number 25 gives the earnings before tax, and if you actually find for the first 2 years the earnings before tax is negative and it turns positive only from year 3 onwards.

So, after EBT we will have to calculate the tax, tax is based on how much of earnings the company has before tax and we have seen earlier the tax rate is 33 percent, so we calculate the total tax paid as 33 percent of earnings before tax. So, now we should note an important observation here, when the EBT is negative that indicates that the company has not made any profits before tax. So, therefore, the taxes the company has to pay is 0, the company does not actually pay any tax, when the company is actually made negative earnings before tax.

And from year 3 onwards we calculate the tax as 33 percent of earnings before tax, because the earnings before tax is positive. Next we also have to account for the tax credit for example; the company has actually incurred a loss in the first 2 years. So, therefore, this losses are eligible for obtaining tax credits, in essence what we are really trying to say is the losses can be offset against the future tax payments that the company has to make.

Let us say for example, the loss in year 1of 106 gives a tax credit of 106, similarly the loss in year 2 gives tax credit of 30.4, now this tax credits get accumulated for a certain amount of time. You can actually utilize this tax credits, for let us say 5 years, could be for 3 years and so on, depending on the tax regime that the project falls under. So, if you really look at the tax credit, the tax credit cumulative becomes 136.4 in year 2, now this tax credits can be adjusted against the tax that has to be credit by the company.

For example, the project will have to a tax of 14.9 in year 3, but the company already has a tax credit of 136.4. So, the company need not pay any tax though it is actually made a profit of 45.2 in year 3, because of the fact that it actually has some tax credits. So, this tax that needs to be paid in year 3 can be adjusted in the cumulative tax credits that the project has. So, at the end of year 3, the tax credits gets reduced by 121.5, because the

company is not to pay any tax and the tax credit is reduced to the extent that the tax has to paid in year 3.

Similarly, if you look at year 4, the tax that needs to be paid is 28.3, but since the company has a tax credit that has accumulated previously, it does not pay any tax and the tax that has to be paid is adjusted against this accumulated tax credits. At the end of year 4 the accumulated tax credits gets reduced to 93.2, and again in year 5 the company does not have to pay any tax, because the cumulative tax credit is higher than the tax that need to be paid for that year.

At the end of year 5, the company has accumulated tax credit of 51.5, during year 6 the total tax that needs to be paid is 53.5, the accumulated tax credits is only 51.5. So, therefore, the company will have to pay some tax, the net tax that the company pays is 2 that is the tax that needs to be paid net of accumulated tax credits, which is 53.5 minus 51.5 which is 2. So, the company has exhausted all it is accumulated tax credits during the first 5 years, it does not have any further tax credits from year 6 onwards.

So, the company will continue to pay tax from year 7 as what has been calculated, in year 7 it pays a tax of 68.5 in year 8 the net tax paid is 211.3 and so on, then we calculate the net income, net income is negative 1.6, negative 30.4 that is the company is incurring a loss in the first 2 years, and then after that is your loss. So, for example, in year 3 the company is actually paid, company actually has earnings before tax of 45.2, and it actually incurs a tax of 14.9, but since the company is not paying this tax, because of accumulated tax credits.

The entire earnings before tax becomes a net income for that year, as long as the company does not pay any tax, because of past accumulated tax credits the earnings before tax becomes the net income. But, as we move along if the company is actually paying the tax, then the net income would be nothing but the earnings before tax 643.2 in this case net of the tax paid which is 212.3, then the net income will be 430.9.

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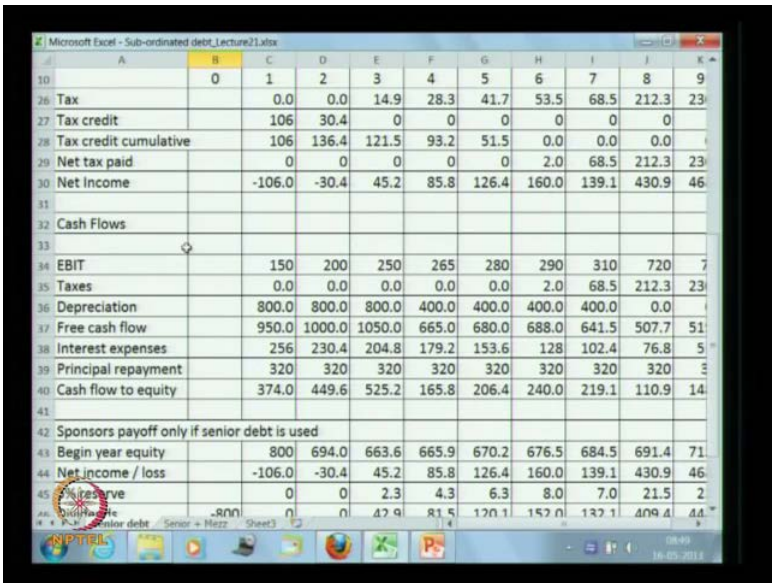

		0	1	2	3	4	5	6	7	8	9
Tax			0.0	0.0	14.9	28.3	41.7	53.5	68.5	212.3	23
Tax credit			106	30.4	0	0	0	0	0	0	
Tax credit cumulative			106	136.4	121.5	93.2	51.5	0.0	0.0	0.0	
Net tax paid			0	0	0	0	0	2.0	68.5	212.3	23
Net Income			-106.0	-30.4	45.2	85.8	126.4	160.0	139.1	430.9	46
Cash Flows											
EBIT			150	200	250	265	280	290	310	720	7
Taxes			0.0	0.0	0.0	0.0	0.0	2.0	68.5	212.3	23
Depreciation			800.0	800.0	800.0	400.0	400.0	400.0	400.0	0.0	
Free cash flow			950.0	1000.0	1050.0	665.0	680.0	688.0	641.5	507.7	51
Interest expenses			256	230.4	204.8	179.2	153.6	128	102.4	76.8	5
Principal repayment			320	320	320	320	320	320	320	320	3
Cash flow to equity			374.0	449.6	525.2	165.8	206.4	240.0	219.1	110.9	14
Sponsors payoff only if senior debt is used											
Begin year equity			800	694.0	663.6	665.9	670.2	676.5	684.5	691.4	71
Net income / loss			-106.0	-30.4	45.2	85.8	126.4	160.0	139.1	430.9	46
Interest reserve			0	0	2.3	4.3	6.3	8.0	7.0	21.5	2
Dividends		-800	0	0	42.9	81.5	120.1	152.0	132.1	409.4	44

So, now we have calculated the net income, next we will try and do the cash flow calculations, so we need to determine ultimately how much the sponsors are payables, so for that we will have to actually calculate the cash flows. We had calculated the earnings before interest and tax, and then we calculate the actual taxes that are paid by the company and then we add back depreciation. So, depreciation is considered as an expense, but as we have discussed earlier depreciation is not any cash out flow, the cash does not leave, the company the cash remains with the company.

So, therefore, it is not considered as cash out flow, the free cash flow, therefore then becomes EBIT minus the taxes and you add back depreciation, this is your free cash flows to the firm, the firm during the year generates so much of cash. So, if you notice actually, the company has actually incurred a loss during year 1 and year 2, if you look at it the net income is negative the company has actually incurred a loss, but then the free cash flows are positive.

So, this actually has occurred, because of a higher level of depreciation, then if you actually account for the interest expenses, because we need to actually calculate the cash flows to the equity holders or the sponsors. The firm has free cash flows of 950 out of that interest expenses are paid, and then you have your principle repayment, and then whatever is remaining is the cash flows to equity holders.

So, after subtracting the interest expenses and the principle repayment, the cash flows that remains to the equity holders is 374. So, again if you look at it the net income during year 1 is negative, but the cash flows to equity holders is being positive, this is again because of the depreciation that is being incurred during the project. So, by the same measure, we calculate the cash flow to the equity holders for all the 10 years, then we actually determine what is going to be the sponsors payoff, the equity holders invest 20 percent of the project.

So, that means, the investment that they make is 800 out of the total project cost of 4000 during year 1, the company incurs net loss of 106, so therefore the equity is written off to that extent. The end of the year equity is 694, 694 because a part of the equity investment is written off, because of the losses that the company has made in the first year. So, 694 is end year equity which in turn becomes the opening equity in year 2, so the end year equity in year 1 becomes the opening equity value in year 2, again we have some loss which has to be written off against the equity value.

So, therefore, the end of the year equity is 663.6, so as the company is experiencing losses the equity value gets written off, the equity value becomes lesser and lesser. Now, from year 3 onwards the company starts making profits, in year 3 45.2 is actually is a profit of the company has made. If you assume that the company retains 5 percent of the profits, it makes in every year towards the reserve, to reserve to meet maintenance, to reserve to meet some kind of contingency needs.

And the remaining is distributed as dividends, out of 45.2 the company retains 2.3 and the remaining 42.9 is distributed as dividends, it is a standard practice that all the profits are distributed as dividends, but a certain amount is retained as reserves to take care of some of the firm expenditures. So, the end year equity during year 3 is nothing but the beginning year equity plus the amount that has been retained as reserve, because it is only that amount that is remains with the company, the remaining is distributed as dividends. So, if you actually look at the end year equity is nothing but the opening value of the equity plus the amount that has been retained.

So, similarly we actually calculate the end year equity and the dividends for each of the 10 years, so if you look at it in year 4, the end year equity of year 3 becomes the opening value of equity in year 4. Similarly, we use the all the other values as discussed to

calculate the end year equity, now in terms of payoffs to the sponsors, the sponsors actually get only dividends. As long as the firm is not liquidated, as long as the firm is functioning the dividends that are the only cash flows that the sponsors get from the project.

So, we try and calculate the internal rate of return for the sponsors in the case of project being funded only by senior debt, so in the current example what we actually see is the project is only funded by senior debt. And the investors made an initial investment of 800 and these are the dividends that they actually get during the various years. And if you actually use these numerical values to calculate the internal rate of return, the internal rate of return from dividends works out to be 11 percent, so this is a number that you will have to keep in mind.

Because, we are trying compare this payoffs to a situation the project is funded both by senior debt and mezzanine debt. Now, the same example we just discussed, we will try and see what happens, if the project is funded by both senior debt and mezzanine debt.

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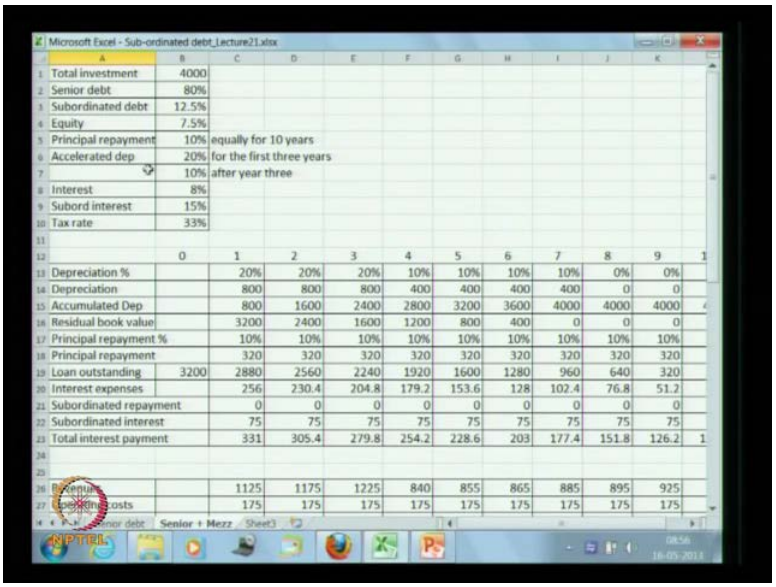

So, there is one small change here instead of the sponsors contributing entire amount by way of equity, this is 20 percent being contributed by equity holders contribute part of the amount by way of sub-ordinated debt. So, that 20 percent is divided between sub-ordinated debt and equity, sub-ordinated debt accounts for 12.5 percent and equity accounts for 7.5 percent, so the total of sub-ordinated debt and equity is 20 percent. So,

this is a 20 percent that the equity investors have invested in the previous example, the principle repayment as far as the senior debt is concerned is remains a same.

The depreciation remains the same, the interest is 8 percent on the senior debt and the interest on subordinated debt is 15 percent, so what we actually see is sub-ordinated debt holders, because of the fact that they assume a higher interest they actually have a higher interest rate, they are enjoying a higher interest rate. On the calculations remains the same except for the fact that, when you actually calculate the interest payment we also have what is called as your sub-ordinated interest payment.

We also have sub-ordinated interest payment; sub-ordinated payment is 15 percent interest on the 12.5 percent capital from sub-ordinated debt, so 12.5 percent of 4000 is 500. So, 15 percent of 500 gives you the sub-ordinated interest every year, and the sub-ordinated interest remains the same every year, because what we consider is there is no principle repayment of the sub-ordinated loan, the sub-ordinated loan does not get repaid unless until the senior debt is completely repaid.

So, in this case both the interest payments and the principle repayments of sub-ordinated debt is junior to the senior debt, the principle repayment of sub-ordinated debt occurs only after the senior debt has been completely repaid. So, the total interest payment works out to the interest expense of senior debt, and the interest expense of sub-ordinated debt, so this is a total interest payment that we calculate for each of the 10 years, now the revenues remains the same, the operating cost remains the same.

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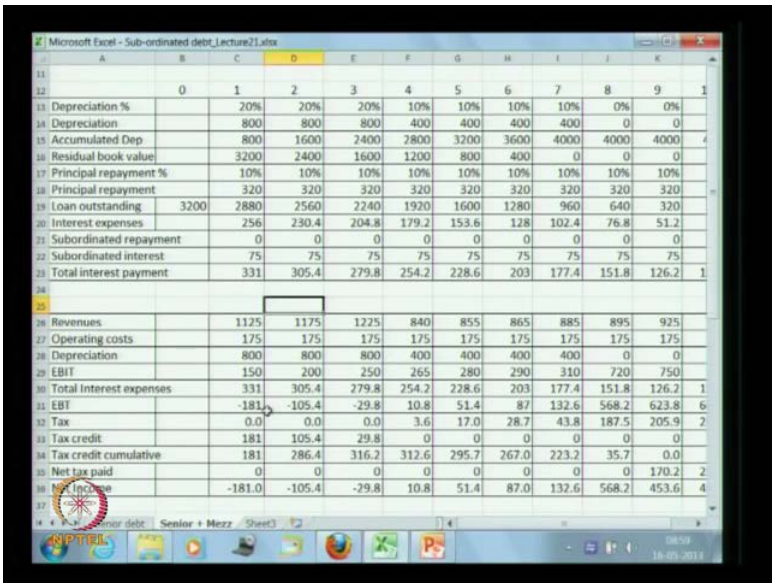

		0	1	2	3	4	5	6	7	8	9
Depreciation %			20%	20%	20%	10%	10%	10%	10%	0%	0%
Depreciation			800	800	800	400	400	400	400	0	0
Accumulated Dep			800	1600	2400	2800	3200	3600	4000	4000	4000
Residual book value			3200	2400	1600	1200	800	400	0	0	0
Principal repayment %			10%	10%	10%	10%	10%	10%	10%	10%	10%
Principal repayment			320	320	320	320	320	320	320	320	320
Loan outstanding		3200	2880	2560	2240	1920	1600	1280	960	640	320
Interest expenses			256	230.4	204.8	179.2	153.6	128	102.4	76.8	51.2
Subordinated repayment			0	0	0	0	0	0	0	0	0
Subordinated interest			75	75	75	75	75	75	75	75	75
Total interest payment			331	305.4	279.8	254.2	228.6	203	177.4	151.8	126.2
Revenues			1125	1175	1225	840	855	865	885	895	925
Operating costs			175	175	175	175	175	175	175	175	175
Depreciation			800	800	800	400	400	400	400	0	0
EBIT			150	200	250	265	280	290	310	720	750
Total Interest expenses			331	305.4	279.8	254.2	228.6	203	177.4	151.8	126.2
EBT			-181	-105.4	-29.8	10.8	51.4	87	132.6	568.2	623.8
Tax			0.0	0.0	0.0	3.6	17.0	28.7	43.8	187.5	205.9
Tax credit			181	105.4	29.8	0	0	0	0	0	0
Tax credit cumulative			181	286.4	316.2	312.6	295.7	267.0	223.2	35.7	0.0
Net tax paid			0	0	0	0	0	0	0	0	170.2
Net Income			-181.0	-105.4	-29.8	10.8	51.4	87.0	132.6	568.2	453.6

We calculate the net income using the same method that we actually did for the previous example, we calculate EBIT, we look at total interest expenses, we take the tax credits except if you find that the EBT values is much lower as compared to what it in the previous example. The previous example the company made a loss of 106 in the first year, but the current instants the company is making a loss of 181.

The higher loss is because of the fact that the interest expense in higher, the sub-ordinated interest payments are also made and therefore, the earnings before tax is much lower. So, then we actually also calculate the tax credits and we take the cumulative tax credits account for net tax paid during the project. So, in this case if you look at it that the cumulative tax credits exits, until about year 8 and the company start paying tax only in year 9 onwards, so the net income is calculated after all of this.

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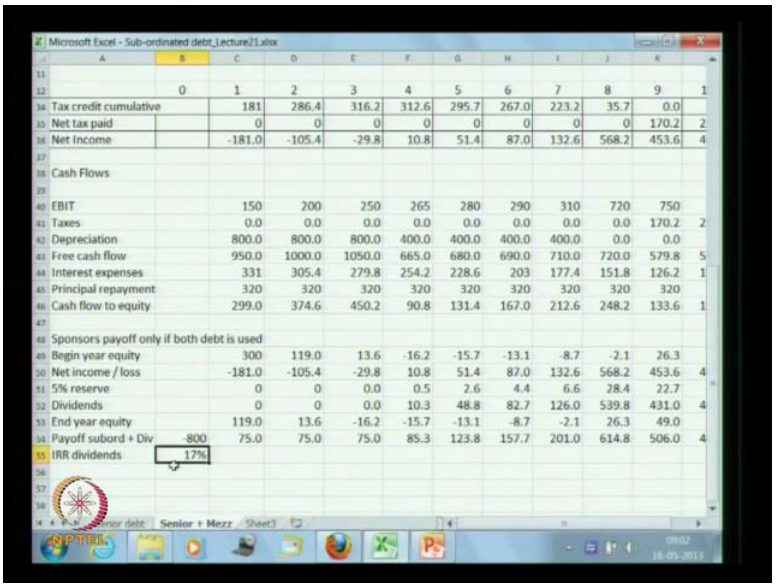

	0	1	2	3	4	5	6	7	8	9	1
Tax credit cumulative		181	286.4	316.2	312.6	295.7	267.0	223.2	35.7	0.0	
Net tax paid		0	0	0	0	0	0	0	0	170.2	2
Net Income		-181.0	-105.4	-29.8	10.8	51.4	87.0	132.6	568.2	453.6	4
Cash Flows											
EBIT		150	200	250	265	280	290	310	720	750	
Taxes		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.2	2
Depreciation		800.0	800.0	800.0	400.0	400.0	400.0	400.0	0.0	0.0	
Free cash flow		950.0	1000.0	1050.0	665.0	680.0	690.0	710.0	720.0	579.8	5
Interest expenses		331	305.4	279.8	254.2	228.6	203	177.4	151.8	126.2	1
Principal repayment		320	320	320	320	320	320	320	320	320	
Cash flow to equity		299.0	374.6	450.2	90.8	131.4	167.0	212.6	248.2	133.6	1
Sponsors payoff only if both debt is used											
Begin year equity		300	119.0	13.6	-16.2	-15.7	-13.1	-8.7	-2.1	26.3	
Net income / loss		-181.0	-105.4	-29.8	10.8	51.4	87.0	132.6	568.2	453.6	4
5% reserve		0	0	0.0	0.5	2.6	4.4	6.6	28.4	22.7	
Dividends		0	0	0.0	10.3	48.8	82.7	126.0	539.8	431.0	4
End year equity		119.0	13.6	-16.2	-15.7	-13.1	-8.7	-2.1	26.3	49.0	
Payoff subord + Div	-800	75.0	75.0	75.0	85.3	123.8	157.7	201.0	614.8	506.0	4
IRR dividends	17%										

Next we also look at the cash flows using the same principle that we looked at the previous example, we actually calculate the free cash flows to the project. And then we actually remove the interest expense and then we remove the principle repayment to determine the cash flows to the equity holders. Next we calculate the sponsors payoffs, if both types of debt is used that is we have both sub-ordinated debt, and then we have senior debt.

And we again follow the same principle, we have the beginning year equity, the net income loss incurred during the year and then we account for a 5 percent reserve, for all the years the firm makes a profit. And then the remaining profit is declared as dividends and then you have the end year equity, so we also then calculate the payoff to the sub-ordinated debt and in terms of dividends. Remember, the sub-ordinated debt and the equity are actually paid by the sponsors, so therefore the sub-ordinated debt and the interests on the sub-ordinated debt as well as the dividends of both of them go to the project sponsors.

And this row actually gives the sub-ordinated interest payments and dividends to the sponsors, next if you actually calculate the IRR on this sub-ordinated dividend payments, sub-ordinated and dividend payments IRR works out to be 17 percent. So, the total investment is being 800 in both the examples, but in the second example we actually find this 800 is dividend between sub-ordinated debt and equity. And because of this division

we are able to actually have a higher IRR; the payoffs are just without accounting for the residual project value has higher for the second example.

So, this actually indicates the benefit that, the share holders get from investing a part of equity as sub-ordinated debt, so far we have seen benefits of using sub-ordinated debt, now I will leave you with a thought question.

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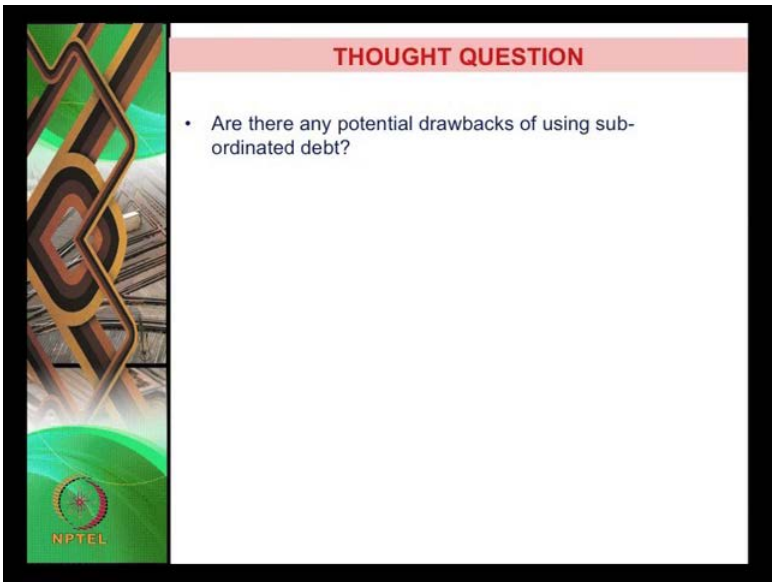

Are there any potential drawbacks of using sub-ordinated debt, what does the drawbacks that one should be aware of, so you can use same examples that I have illustrated. Look at the cash flows, look at the values in each of the years carefully, and then think about some of the drawbacks of using sub-ordinated debt.