Security Analysis and Portfolio Management
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Lecture - 02
Introduction (Debt & Equity)

So, before the break we were discussing the role of lenders, should the loan agreement contain covenants/ encumbrances. Insofar as decision making in the company is concerned, there could be situations in which there is a conflict between the interests of the lenders and the interests of shareholders, which may lead to sub-optimal decisions with corresponding costs which are termed as agency costs.

Now, we move on to some further properties which differentiate debt from equity. Interest is usually a fixed rate payment, although we have a huge spectrum of debt instruments with various varieties of computational methods for the computation of return to the lenders i.e. computation of interest. We have floating rate bonds, index bonds and so on. There is a huge variety of such instruments, but nevertheless the traditional bonds, the conventional debt instruments carry a fixed rate of interest whereas, the dividends on the companies is obviously not fixed.

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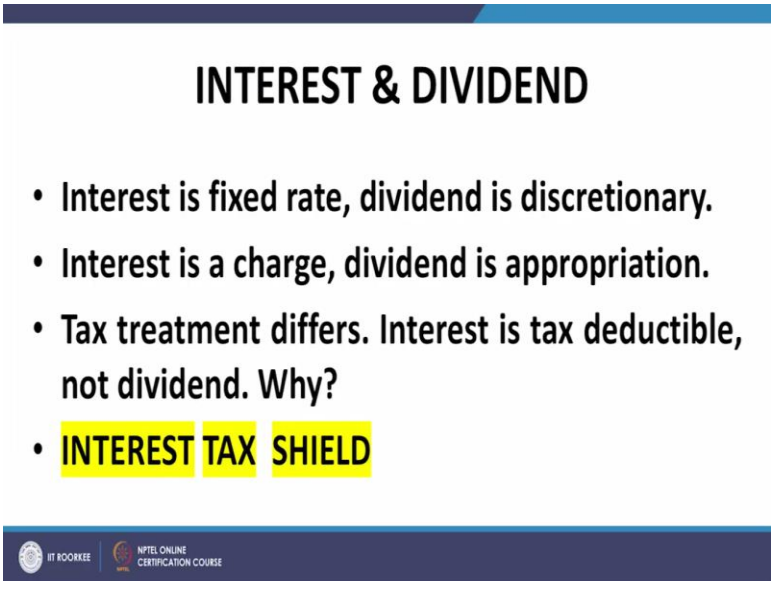

Dividend is discretionary. It depends on the earning of profits of the company. Not only on the earning of profits by the company but also on the intention or the desire of the company to undertake further expansion for which it wants to retain a part of the profits or it wants to go

about distribution of the profits to the owners of the company. So, to that extent, interest is usually a fixed rate payment, whereas, dividend is discretionary. Dividends are variable rate, they may change from year to year, depending on the profitability of the company as decided by the shareholders in general meeting of the company.

Now, we come to the most important property that differentiates interest and dividend. The property goes to the root or the fundamental philosophy of lending versus ownership. The interest that we pay on a debt is a charge to the profit and loss account.

What does this mean?

This means that irrespective of whether the company earns profits or it makes losses, whatever may be the performance of the company, whatever may be the outcome of operations of the company, whether the company is doing well and it is earning profit, whether the company is not doing well and it is not earning profits, it is incurring cash losses or overall losses, whatever the case may be, the interest needs to be paid to the lenders.

Interest is as much a charge against the company as is the expense or the payments on account of other facilities obtained by the enterprise. For example, the power bill, the salaries and other expenses that are incurred by the company. So, interest is a charge against the company. It needs to be debited to the profit and loss account above the line. Interest is, in essence, the rent that you pay for the utilization of money of the lenders.

So, to that extent, interest is mandatory, interest is independent of the profits of the company and it must be debited to the profit and loss account irrespective of whether the company earns profits or not.

However, what about dividend?

Well, dividend is an appropriation of profits. It is a distribution of profits. If a company earns profits, then it is the discretion of the company in general meeting, I will come back to this point also, but it is the discretion of the company in general meeting as to how much of these profits are to be distributed, how much of these profits are to be paid out to the owners of the company i.e. the shareholders of the company and how much are to be retained by the company for future utilization of resources towards expansion, renovation and so on.

This is a fundamental difference. I reiterate this point. Interest is a charge against the profits, it is a mandatory payment. Dividend is discretionary, dividend is an appropriation of profits. This is a philosophical difference between the concept of debt and the concept of equity.

Now, this difference gives rise to the tax treatment or the tax implications of interest and dividend. As far as the government is concerned, as far as tax legislation is concerned, it views interest on the same pedestal as other mandatory payments like salaries, wages, power bills, expenses on account of administration, selling and so on. And as such, because it considers lenders as not being part owners of the company (not having ownership rights in the company, not having decision making powers in as so far as the operations of the business is concerned), the tax legislations treat interest as an expense. This is also justified by the fact that interest is debited to the profit and loss account and not to the appropriation account.

And therefore, on account of this fact, if you debit an amount of 100 rupees on account of interest to the profit and loss account, your tax liability decreases by the equivalent amount of tax payable on those 100 rupees. For example, if the tax rate is 30 percent, then the tax liability decreases by 30 percent. The net result of this is that the effective cost to you of the borrowing of funds comes down. In some sense, you may say, that the government is funding a part of your interest cost which has now decreased from 100 rupees to 70 rupees. This phenomenon is given a technical name. It is called the interest tax shield.

However, in the case of dividends, there is no such protection afforded under the tax legislations. Why not? Because, obviously, dividend is a distribution, an appropriation of profits, and because it is part of the profits that are simply distributed to the shareholders (because the company decides to do so). Therefore, dividends do not attract any tax protection. You do not get any tax shield on the amount of dividend that you pay out to the shareholders.

Let us investigate this issue further. This is very important for financial decision making.

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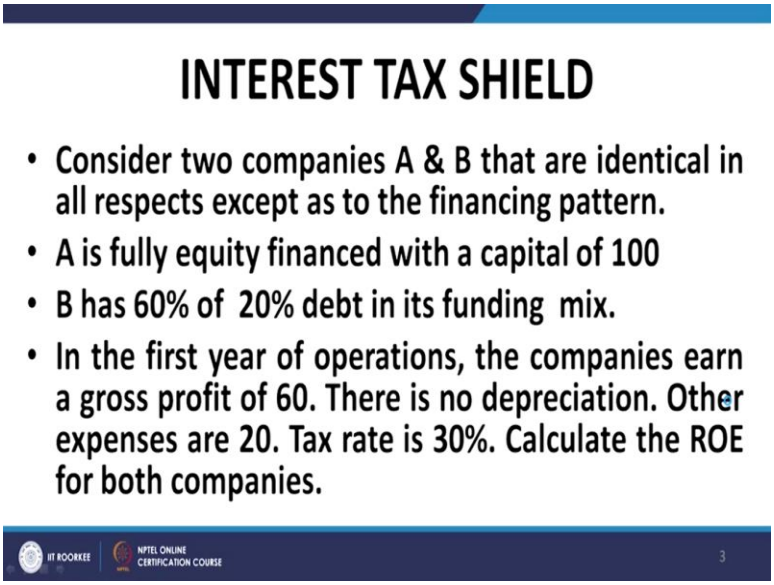

We consider two companies A & B that are identical in all operational respects except for the financing structure. A is a fully equity financed with a capital of 100 units (whatever those units may be), B has 60 percent of 20% debt (20% is the annual interest rate on debt). This means that B has 60 units of debt and 40 units of equity. It has a debt-equity mix in which 60 units are of debt and 40 units are of equity.

Let us assume that in the first year of operations, the company makes a gross profit of 60. Both companies being identical in operational aspects make the same gross profit. Let us say the gross profit is 60 units of money. The other expenses in relation to the operations is 20. So, the EBIT turns out to be 40. Let us see how the financing structure influences the outcome of the company as far as the shareholders are concerned.

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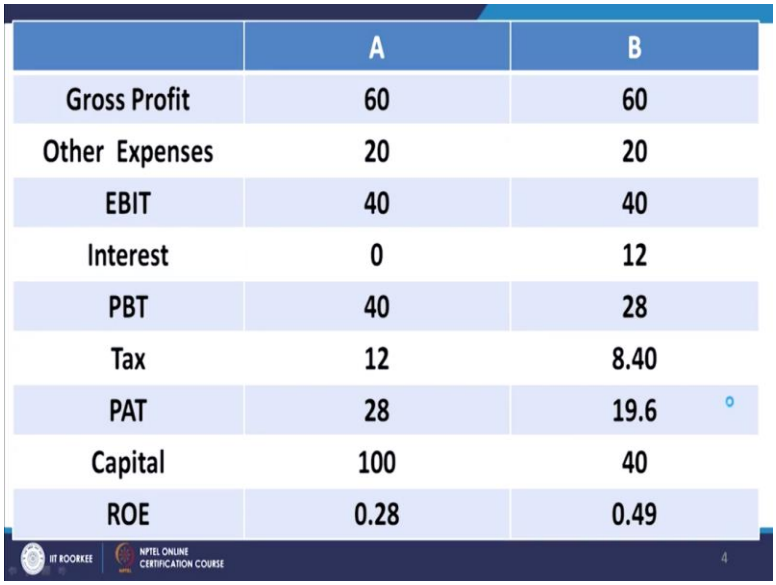

Look at this table here. A & B both have the same gross profit of 60 units each, Both companies have administrative and other related expenses & indirect operational expenses of 20. So, the EBIT turns out to be 40 in each case.

Since A is entirely equity financed, there is no interest costs. As far as B is concerned, it has 60 units of money financed at 20% p.a. So, it has an interest cost of 12 units.

So, the PBT turns out to be 40 for A and 28 for B. With the tax rate of 30%, the profit after tax turns out to be 28 for A and 19.6 for B. The capital in the case of A is 100 because it is entirely equity financed, in the case of B is only 40 because it is financed by 60 units of debt and 40 units of equity. You can easily see that the return of equity turns out to be 0.28 for A and 0.49 for B. So, look how the introduction of debt into the financing mix has resulted in a massive increase in the return on equity. This is called the leverage effect.

Let us see what the reasons for this are. There are two reasons for this.

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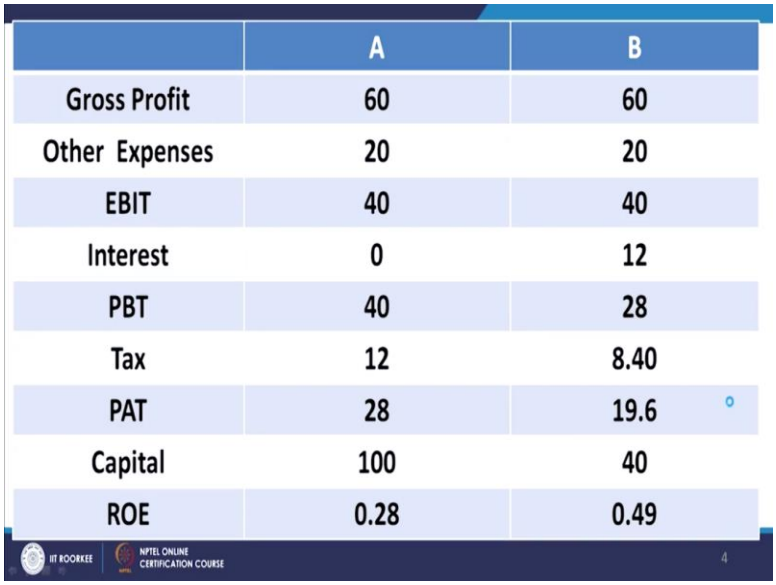

	A	B
Gross Profit	60	60
Other Expenses	20	20
EBIT	40	40
Interest	0	12
PBT	40	28
Tax	12	8.40
PAT	28	19.6
Capital	100	40
ROE	0.28	0.49

(i) The EBIT is being generated at the rate of 40% of investment. In other words, the return on investment of both the companies is 40% (EBIT/Total investment which is 100). So, the ROI is 40 percent in each case. However, part of that investment is being funded by debt by Company B at a cost of 20% p.a. In other words, the money financed at 20% is also earning for company B at the rate of 40%. This surplus of 20% earnings adds value for the equity shareholders and therefore, the return on equity grows.

Let me repeat, the EBIT or the return on investment in both cases is 40%. However, 60% of the funding that is obtained by company B at 20% p.a. In other words, 60 units of money out of the 100 units of total capital are procured by company B at the rate of 20% but these funds are earning 40%. So, while B is paying off @ 20% to the debt holders, it is earning 40% on those funds. This adds value to the equity shareholders of the company as a whole. So, that is one reason i.e. the leverage effect.

(ii) If the above was only the only effect, then the profits would not have been 0.49 or 49% or B. They would have been slightly less. But this effect is magnified even more because of the impact of the interest tax shield. Even the 20% that the company has to pay to the lenders on its borrowings is subject to tax shield @ 30%. In other words, the net cost to

the company of this borrowed funds is only 20(1-0.3)=14% and that is also adding value for the equity shareholder.

So, there are two factors that contribute to value addition due to debt financing. First factor is that the company on a pre-tax basis is earning more than the cost of debt. The second factor is that the cost of debt is also subject to interest tax shield which further reduces the effective cost of debt. Both are things added together operate to handsomely benefit the company and its return on equity increases from 28 percent to 49 percent.

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	A	B
Gross Profit	(-)60	(-)60
Other Expenses	20	20
EBIT	(-)80	(-)80
Interest	0	12
PBT	(-)80	(-)92
Tax	0	0
PAT	(-)80	(-)92
Capital	100	40
ROE	(-)0.80	(-)2.30

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But as we say there is nothing called free lunch. At least in finance, we use this phrase very, very often. I just illustrated how the introduction of debt into the total capital of the company results in magnification of the profits of the company. This leverage effect as I said, results in magnification of the profits, but this effect also magnifies the losses. Let us look at the situation in the adverse scenario. Let us assume that the both the companies have incurred losses and the gross loss is 60 units for company A as well as company B.

Other expenses are 20 units as in the previous case. We end up with an EBIT, negative EBIT of 80 units in both cases. The interest cost in the case of company A is 0 as it is totally equity financed. The interest cost in the case of company B is 12 because, as I mentioned, that interest is a charge against the profit. So, even if this company B is incurring losses, you cannot do away with interest. You cannot say that because the company has incurred losses, it will not pay

interest. The interest on debt must necessarily be paid irrespective of whether the company is in profit or loss. The outcome is that the interest of 12 units has also to be debited to the profit and loss account, which further escalates the losses of company B and the total amount of loss of company B now goes to 92 against 80 for company A before tax.

Now, if you assume that the companies do not pay any tax, then the return on equity will be minus 80 divided by 100 that is 80 percent negative for company A whereas, for Company B, it will be minus 92 divided by 40, which comes to minus 230 percent. So, note again how ROE is being magnified by the introduction of debt. Not only are profits magnified, not only the positive return on equity magnified, but also the negative return on equity magnified.

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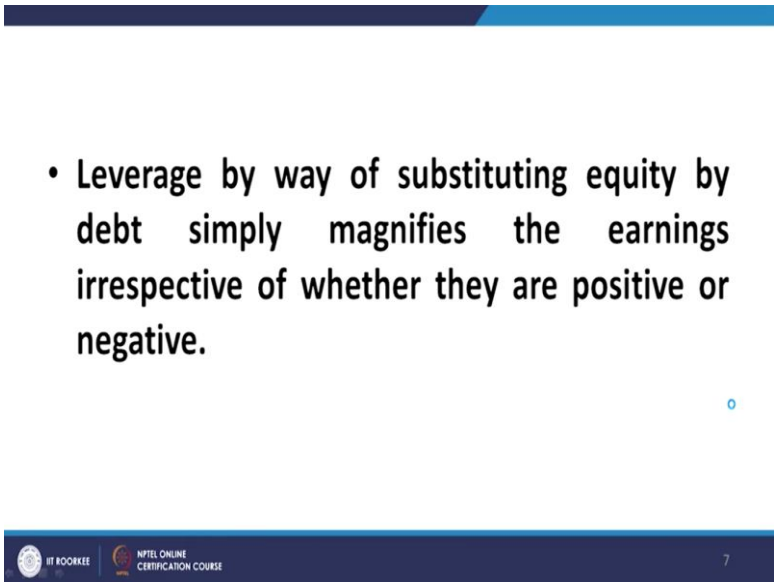

	A	B
Gross Profit	(-)60	(-)60
Other Expenses	20	20
EBIT	(-)80	(-)80
Interest	0	12
PBT	(-)80	(-)92
Tax	0	0
PAT	(-)80	(-)92
Capital	100	40
ROE	(-)0.80	(-)2.30

Thus, leverage operates both ways. It operates not only to magnify the profits, but if the company falls on bad days, the leverage also operates to magnify the losses of the company, because the interest component must necessarily be debited to the company's profit and loss account. However, in this case, I ignored the tax effect of on the losses. In other words, because there were losses in the companies, I assumed the tax liability to be zero, which is logical, but there could be a situation where the company has earned profits in previous years and as a result of it, the losses of this current year could be set off against those profits, and as a result of which we could get a tax shield again against these losses.

If that is the case, even then, what we find is that the return on equity in the case of equity financed company turns out to be minus 56 percent whereas, in the case of the hybrid financing company, it turns out to be minus 161 percent. So, here again, irrespective of whether we considered the tax liability as 0 on account of losses, or we assume that the losses could be set up against the profits of previous years, and hence, we could provide for taxation on that basis, we find that the difference between the two still magnifies due to the leverage effect.

So, to reiterate, the takeaway from this is that, a levered capital structure i.e. replacement of equity by debt, magnifies both profits as well as losses on account on two counts number one, that the interest on account of debt must be charged to the profit and loss account and number two the effect of tax on interest is to allow for a shield on interest which does not accrue to the company on the dividends.

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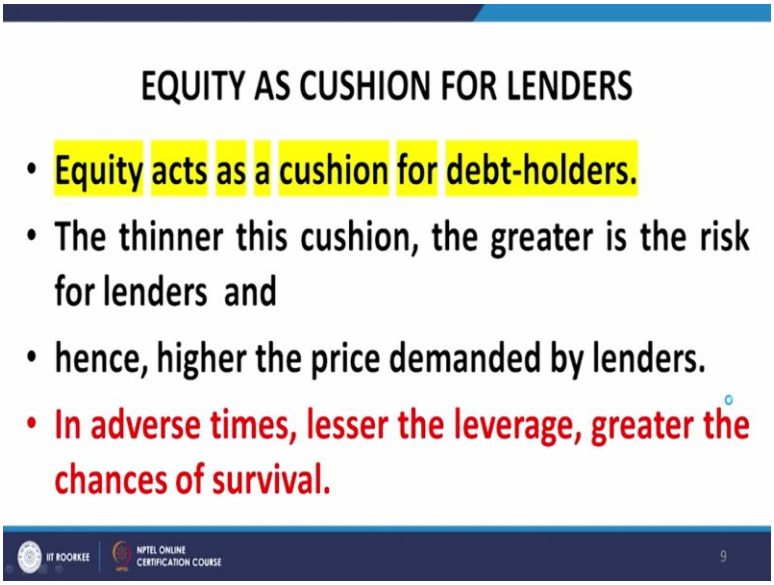

Now, we come to another interesting issue, another philosophical issue, associated with equity. As we discussed just a few minutes back and saw in the example that if we replace equity by debt, we tend to magnify the profits. So, there could very well be a temptation to replace equity significantly and have high debt companies. What happens in such a situation? What operates against such a philosophy of having a very high debt financed company i.e. a company with a very high debt to equity ratio? What operates against such a philosophy? That is the next question that we will try to address.

Now, I illustrate with an example, that equity operates as a cushion for the lenders. Higher the amount of equity in a company, higher is the safety net, higher is the safety protection, higher is the safety cushion that is available to lenders. In other words, if a company falls on bad days, the interests of the lenders in terms of repayment of principal and interest is protected more, as much more as the amount of equity subsists in the company. Let us take the example:

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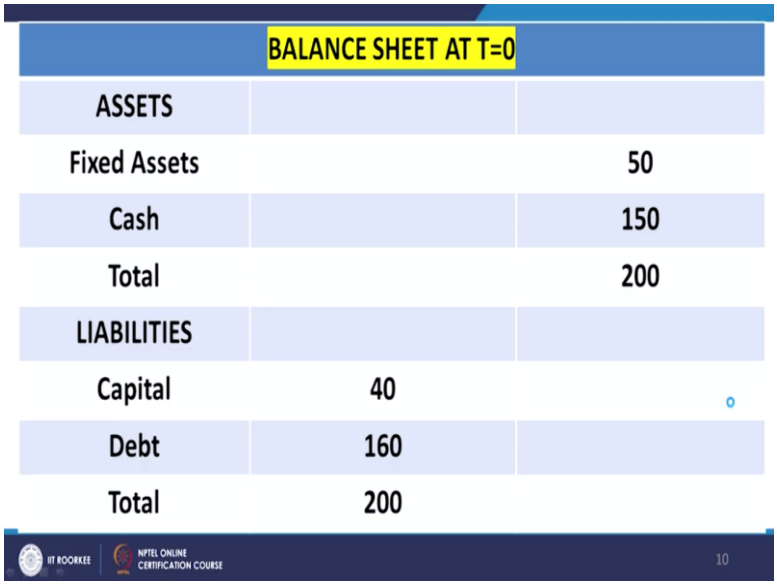

Let us take a very simple case. Let us say we are starting a company at t=0. The company has a fixed assets of 50 units of money and it has cash of 150 units of money which is financed by a equity capital of 40 units of money and a debt of 160 units of money.

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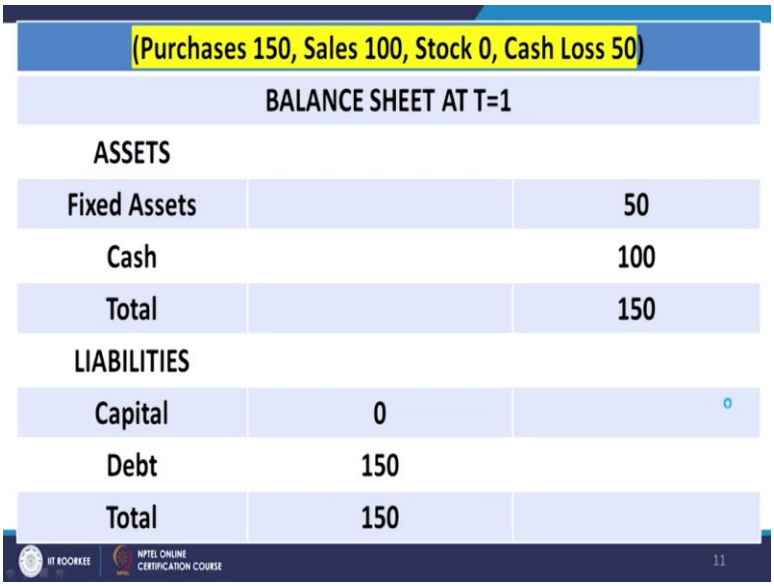

Let us assume that in the first year of operations, the total purchases are 150 units of money, the sales are 100 units and there is no closing stock. As a result of this, the company has incurred a cash loss of 50 units. There is no depreciation as well. Let us ignore these things, let us keep the traction very simple. So, what does the balance sheet look like at the end of the year? The

balance sheet would look like this: fixed assets 50, cash 100, because 50 of the cash has been wiped off through cash losses.

So, we are now left with only 100 units of cash and what happens to the liability side? That is very interesting. As I mentioned in the context of defining debt, that the lenders have a pre emptive right to repayment of principal and interest. In other words, first of all the lenders would be repaid and then the equity shareholders would be repaid. Making this statement the other way around, we can say that the losses would operate first of all to wipe out equity and then they would affect the interests of the lenders.

This is also justified by our contention that equity shareholders are the owners of the company and take the substantive business risk. So, if there is loss in the company, the loss would first operate to wipe out or to reduce or to curtail the equity capital of the company. Once that is wiped out, then we come back to the lenders and the interests of the lenders will then start getting effected as it is happening in this particular situation.

If you look at this example, the loss for the year is 50, the equity was 40. So, obviously, the entire equity is wiped out, but even after wiping out the entire equity, what we find is that the entire losses have not been accounted for. Therefore, what will happen is that 10 units of money would be reduced from the interests of the lenders.

You can also look at it this way, if this company was to be liquidated today, let us assume that the fixed assets realize their book value and therefore, your fixed assets will give you 50 units of money and the cash that is available with you is 100. So, the total resources that are available with you is 150 units of money. Against this, the lenders have lent you 160 units of money. But because you have no money with you, the company is bankrupt, the company will only pay 150 units of money to the lenders and obviously the entire equity capital is wiped out. So, this is the situation. This is how the dynamics will operate.

Let us, now, look at a slight variant of this. Let us change the equity capital from 40 to 60 and let us reduce the amount of debt from 160 to 140. So, this is the new situation and let us again assume that the company has incurred a loss of 50 units of money.

Now if you look at it carefully, suppose the company is liquidated, then the company has 150 units of cash with it, 50 from the liquidation of fixed assets and 100 from the cash balance. Against this, the lenders' stakes that are confined to 140. As a result of you will pay them up, up to their book value. The loss of 50 is transferred to the equity capital which gets reduced from 60 to 10 and this 10 units of money are returned to the equity capital.

So, what is the takeaway? The takeaway is that lower the amount of debt, higher the amount of equity, greater is the protection to the lenders or greater the safety to the lenders, greater is the cushion to the lenders, insofar as their interest in the company is concerned.

As the cushion gets thinner and thinner by the generation of losses by a company, the protection to the lenders, before their interests get prejudicially affected becomes more and more reduced. The risk of default becomes more and more prominent as the company continues generating losses again and again.

Now, there is a related question. The question is, I talked about, let us go back to this balance sheet, I talked about this capital being 0. The question arises, why cannot this capital be negative? Why do we not have a situation where the equity shareholders are directed to bring in more money and why the interests of lenders are prejudicially affected? Why not repay the entire amount that the lenders have lent of 160 and ask the equity shareholder to bring in 10 units of money and use that 10 units of money to extinguish the interests of the lenders in full?

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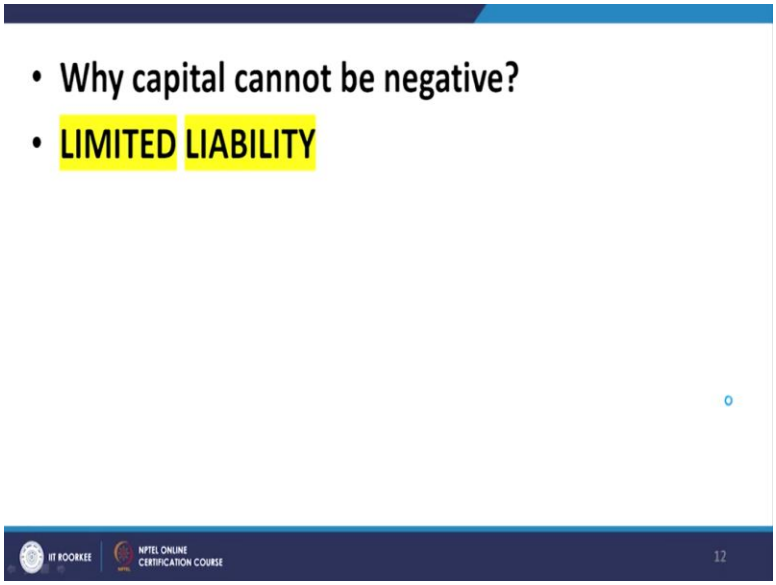

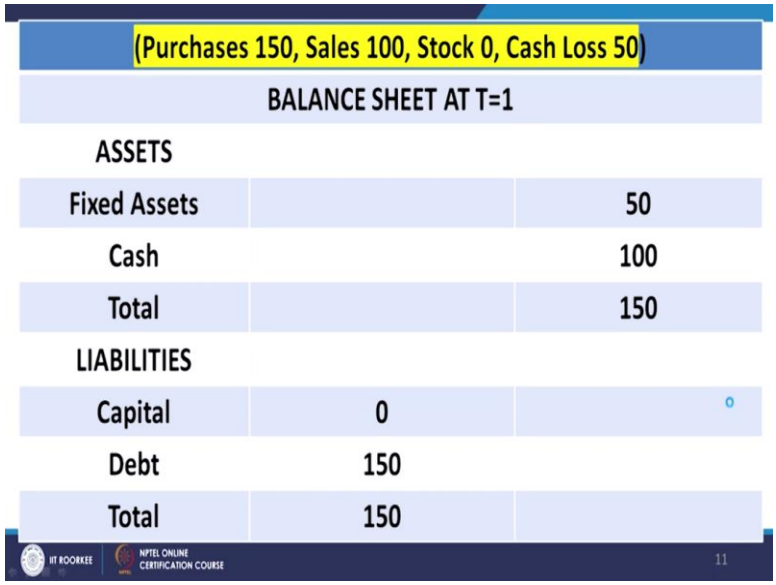

The answer to this question lies in the concept of Limited Liability. This is a very important issue, which needs to be explained at this point before we proceed further. When a company is incorporated, as most of the business entities are, under the Companies Act, the promoters have a choice of incorporating the company as a company limited by shares or a company limited by guarantee or an unlimited company. By and large majority of the companies that engage in commercial business are companies that are limited by shares.

What does it mean?

What it means is that if a shareholder takes up, let us say 100 shares of rupees 10 each in a company, if an investor invests in 100 shares of the company at rupees 10 each and let us say he pays of 5 rupees together with the application and is allotted those 100 shares. That means, he has paid 500 rupees against a otal value of shares of worth 1000 rupees that is 100 into 10 rupees per share. That is the nominal value of his shareholding.

Now, the concept of Limited Liability says that the maximum further amount that the investor can be asked to bring in, in the event that the company has insufficiency of funds to pay off its creditors is confined to the balance amount of money that is yet to be paid on his shareholding. As I mentioned in this example, the investor has already paid 500 rupees so he has to pay 500 rupees more.

Now, the point is, he can be called upon to pay (it is called a call) another 500 rupees. But the company cannot call upon him to pay under any circumstances even a rupee more than the amount that is due on his shares. And in the event that the shareholder or the investor has paid up the entire amount on his nominal shareholding i.e. in this example, he has paid up the entire 1000 amount, then the company has no recourse to the shareholder for asking for further funds of money against those shareholdings. So, that is what we mean by Limited Liability.

The liability of the shareholder who holds equity shares in a company which is limited by shares is confined to the amount that remains unpaid, if any, on his holding of shares. If the shares are fully paid up, then the investor or the shareholder cannot be asked to bring in any money, even in the event of winding up of the company, or in the event of the funds with a company being insufficient to pay off its lenders.

So, that is the reason why in this particular example, which we look at in this slide, the maximum capital that can be wiped off to, is 0, you cannot have negative capital. In other words, you cannot ask the shareholders to bring in any more money and thereby repay the lenders the full amount that is due to them. The lenders will have to suffer on account of the inadequacy of the funds or inadequacy of resources with the company to make their full repayment. We will continue from here in the next class. Thank you.