Financial Management for Managers
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Lecture 33
Estimation of Project Cash Flows Part 5

Welcome all. So, after talking about the different conceptual parts and the fundamental say concepts about the estimation of the cash flows. Now, we will learn about that practically in the different situations while evaluating the definite investment proposals, how to estimate the cash flows in the real life situations tomorrow when we have to say estimate the cash flows practically in the field for taking up the new investment proposals or the new projects.

How we will be calculating and how the cash outflow will be calculated, how the cash inflow will be calculated. And finally, arriving at the final cash flow which will be applicable to all the or you call it as the net cash flow, which will be applicable, available to all the stakeholders internal as well as external, how to calculate that? So, if you want to see here, how it has been calculated. So, we will take a situation, we will take a hypothetical information or the hypothetical situation it is given here in this slide.

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And if you read this first you read this slide carefully that what is the requirement of this particular project, which has been identified or is being considered by some existing firm. So, we assume that there is a company called as ABC limited that is already existing in the market and they want to start a new project or they want to take up the new investment proposal.

And when they have say prepare the DPFR detailed project feasibility report which includes all kinds of analysis your say idea first of all, then is a market and demand analysis, technical analysis, financial analysis and then the say other kind of the analysis.

So, the DPFR of the project says the information gathered there, that information is with regard to the all-cash outflows and the cash inflows and out of this means considering all those cash outflows and cash inflows, we have to work out the net cash flow available to all the stakeholders.

So, in this case, first I will means discuss the problem with you and then in this case, because the first problem. So, already we have solved it here and the solution is available in the case of the say this problem in the form of the PPT it is available, it is given here so, that easily you can understand.

But for the subsequent remaining problems or the different type of the problems, I will work it out with the spend and we will calculate, the problem will be given in the PPT and then the solution we will work it out here and we will learn how to calculate the different type of the say means take into consideration the different items and calculate the net cash flow to be available to the say different investors which are going to provide the funds or who are going to provide the funds for the new investment opportunity or the new investment proposal.

So, let us first of all read it but it is given in this slide. The slide says or the information given in this slide says, ABC limited we will be talking about here is that is ABC Limited is considering a new project about which the following information is given. ABC Limited is considering a new project about which the different information is given.

And what the information is given? The information given to us here is that is means all the important items are given here. It is with regard to the cash outflows, cash inflows, different kind of expenses and we have to say factor for all these different say inflow and outflow related information.

First points says the investment outlay on the project will be 100 million rupees, investment outlay will be 100 million rupees, this consists of 80 millions on plant and machinery and 20 millions on the net working capital, I told you net working capital not on the working capital net working capital that is current assets minus current liabilities.

So, it means, this hundred million which is required to be invested in this project proposal, 80 will be required for the fixed assets and 20 millions will be required for meeting the working capital requirements that to the net working capital requirements The entire outlay will be incurred in the beginning of the project years or in the beginning of the say project or the first year of the project. Not first year, we will say call it as a current period of the project which we call it as the 0 period.

Second point says, the project will be financed with 45 millions of equity capital, the project will be financed with the 45 millions of equity capital, 5 of the preference capital 5 millions of preference capital and 50 millions of the debt capital. It means the funds are going to come from both internal as well as external sources.

Equity capital is the internal source, preference capital is also internal source, but we sometime for the treatment of these funds we consider it at par with that debt, because they these funds come for a limited period of time. And they are not exactly as same as the funds coming from the equity shares, they are more means they more resemble with that debt rather than the equity.

But equity is also there in the form of equity capital, preference capital is also there, and the borrowings are also there, that about 50 percent of investment will come in the form of debt as borrowings. Preference capital will carry a dividend rate of 15 percent and debt capital will carry an interest rate of 15 percent. Both will carry the cost of capital will be here for the preference also 15 and the debt also will be the 15. And for the equity capital, you have to calculate yourself by applying the concept of CAPM capital asset pricing model, which we will discuss later on.

The life of the project is expected to be 5 years, point number 3 says, life of the project is expected to be 3 years, sorry 5 years. At the end of 5 years, fixed assets will fetch a net salvage value of 30 millions, project will be terminated after 5 years it has only foreseeable life of 5 years after that we will terminate, dismantle the project.

And when you dismantle it, plant and machinery, fixed assets plant and machinery there you are making the investment of 80 million rupees will fetch as a salvage value 30 million rupees and the net working capital will be liquidated at its book value. I told you earlier also in the discussion or during the discussion part also, their working capital is realizable in full, when you convert the current assets into cash, it comes back in the full.

So, it is convertible into the cash in the full amount. So, it means it will be realizable in the full amount how much we are investing? 20 million and that 20 million will be recoverable. So, 30 million will come back from the fixed assets as a salvage value and 20 millions will come back as the working capital recovery.

Point number 4 says, project is expected to increase the revenue of the firm by 120 millions per year, 120 millions per year. The increase in the cost on account of the project is expected to be rupees 80 million per year, cost of the project will be rupees 80 million per year. This includes all items of cost other than depreciation, interest and tax, cost of the 80 million includes all items, excluding depreciation, interest and tax. The effective tax rate will be 30 percent, the effective tax rate will be 30 percent.

And the last point says, plant and machinery will be depreciated at the rate of 25 percent per year, 25 percent per year as per the WDV method written down value method. Hence, the depreciation charges will be first year the depreciation charge will be 20 million that is the say 25 percent of 80 is 20 millions, then on the reduced balance of how much, 60 the depreciation amount will be again 25 percent which will work out as 15 million, then 11.25 million, then 8.44 million, 6.33 million.

On the basis of all these details given to us with regard to the cash outflows and cash inflows, we have to now calculate the, we have to estimate the cash flows. This is only information given, this information might have been drawn from the DPFR of ABC limited, who is going to start the new investment means who have got the new investment opportunity, they want to convert that into the say a business opportunity, they want to start establish a new project.

And the information available in the detailed the project feasibility report DFR, DPFR says that if you want to go for this project, this much cash outflow will be required or cash to be invested will be required and the cash inflow available will also be, is also estimated here by selling the output of the project or the product in the market.

And finally, by say, incurring the expenses, other expenses and then the means working out the total cash outflow, working out the total cash inflow, we have to finally find out what will be the net cash flow available from this project.

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PROJECT CASH FLOWS

						(RS. IN MILLION)
	0	1	2	3	4	5
A. FIXED ASSETS	(80.00)					
B. NET WORKING CAPITAL	(20.00)					
C. REVENUES		120	120	120	120.00	120.00
D. COST (OTHER THAN DEPRECIATION & TAX)		80	80	80	80.00	80.00
E. DEPRECIATION		20	15	11.25	8.44	6.33
F. PROFIT BEFORE TAX		20	25	28.75	31.56	33.67
G. TAX		6	7.5	8.63	9.47	10.10
H. PROFIT AFTER TAX		14.0	17.5	20.12	22.09	23.57
I. NET SALVAGE VALUE OF FIXED ASSETS						30.00
J. RECOVERY OF NET WORKING CAPITAL						20.00
K. INITIAL OUTLAY	(100.00)					
L. OPERATING CASH FLOW (H+E)		34.0	32.5	31.37	30.53	29.90
M. TERMINAL CASH FLOW (I+J)						50.0
N. NET CASH FLOW (K+L+M)	(100.00)	34.0	32.5	31.37	30.53	79.90
BOOK VALUE OF INVESTMENT	100	80	65	53.75	45.31	

$$C/f \text{ for all investors} = PBIT(1-Taxrate) +$$
$$Dep. \text{ &o Non Cash Charges} -$$
$$Cap. exp. - Changes in W.C$$

$$C/f \text{ to Equity Shareholder} = PAT + Dep \text{ &n N.C.C} -$$
$$Pref \ dividend - Cap. ex. -$$
$$Changes in W.C. -$$
$$repayment of debt +$$
$$Proceeds from debt -$$
$$redemption of Pre. Cap +$$
$$Proceeds from Pre. Shares.$$

So, now after doing this, this all cash flow net cash flow here last column if you look at here, the net cash flow here has been worked out, net cash flow here has been worked out. So, if you look at all these items very simple, very clear, and this particular problem we have taken is, is very clear because it is the first problem.

So, no complexities are involved here and whatever the cash flows have been worked out here, very simple and straight. First, we have assumed here is that the cash outflow is going to occur in the current period that is in the 0 period and in the subsequent years from the year 1 to 5, no cash outflow is expected to be there, no cash outflow expected to be there, only cash inflow will be there

Yes, cash outflow will be on account of say the different other expenses, but as far as that capital cash flow is concerned, that will be only the capital investment will only be in the 0 period in the current period, out of the total 100 millions required to be invested 80 will be invested in the fixed assets which is given here. 80 fixed asset it is given in the problem itself and net working capital requirement is how much, 20 percent or the 20 million rupees these are the values given to you in the million rupees.

So, this is in the 0 period what we are showing here? We are showing only the cash outflow, not the cash inflow no cash inflow is there. So, fixed asset is 80 and the working capital is 20. This is the total investment requirement of the project. Then from the first year onwards now, we will go to the third item.

So, this is the outflow source means the avenue of investment on account of the fixed asset and the current assets and from here onwards now, the cash inflow will start, cash inflow will start and first source of the cash inflow is as I told you earlier also from the sales of the output of the project.

Whatever the product we are manufacturing, whatever the services we are generating out of this project, we are selling that in the market and the inflow will be generated. So it is a first means column number C says here, that first source of the inflow is the revenue. So, we have calculated revenue means the sales revenue that by selling that product or services in the market, the sales revenue will be coming up as 120 millions every year.

It is assumed to be same 120 millions every year, we have not considered as the inflation factor or anything, we are assuming that every year the revenue level will be same 120 million in the first year, second year, third year, fourth year and fifth years. So, this is a first source of inflow, then out of this, we will have that to consider now the important say causes of the say cash outflow.

These causes are cost, for manufacturing, for manufacturing the sales, worth rupee 120 millions you have to incur the cost of the apart from this particular amount of the 80 and 20 invested in the fixed asset and current assets you have to now shell out funds for say incurring or for converting the raw material into the finished product or generating any service.

So, which will give us the revenue of 120, so the cost for that product or service, manufacturing that product or service will be at 80, 80, 80, 80 same in all the 5 years.

Revenue will also be constant, cost will also be constant, we have not considered any other kind of the say different kind of the conditions or situations, we are resuming the life is going to be very simple in this project over the next 5 years foreseeable period.

So, it means this is the cost and then we have say consider the, another head of the cost is after the cost of production that is a direct cost on account of material, labor and the other direct overheads. Now, we have the indirect cost also and the indirect cost first is this is called as depreciation.

It is given to us in the problem also if you look at the problem, it is given to us that the rate of depreciation will be 25 percent and that will be charged as per the WDV method written down value method. So, we have calculated the depreciation here, which will be, here will be called as the cost because total cost of the product when you will work out, will be called as the means the depreciation will also be the part of that cost.

So, it means from the revenue, this is a revenue minus this minus this, you have to subtract that, you will be left with something which is called as the profit before tax. This is called as the profit before tax of the 20 million rupees because we got 120, we paid cost of production 80, we paid indirect costs as depreciation. For example, we do not pay the depreciation but we have to say, say included in the cost sheet.

So, we means counted for the depreciation as a indirect cost which is 100. So, total cost of production is how much this plus this is 100, so 120 minus 100 is now your profit before tax. We have not considered the tax here, profit before tax is 20, profit before tax is 20 here and now we have assumed here what is the tax rate which is given to us here is and tax rate is 30 percent. It is already given to us in the problem tax rate is 30 percent.

So, if you calculate the tax here on this profit before tax 20, 30 percent the tax comes out as 6, tax comes out as 6. So, it means, what is the profit after tax? Profit after tax given here is that is say 14 we are left with the 14 million rupees which is the PAT profit after tax. And in this case now, we have to now go for say winding of the project because everything these all things, all are same in this year. If you talk about this, this and this all the 5 years up to this particular part all the items are same.

First we are considering the revenue of 120 crores, 120 millions remaining same, then we are considering the cost of 18 millions remaining the same. Then we are applying the depreciation at the rate of 25 percent at the by following the say or observing the depreciation

or calculating the depreciation by following the WDV method and then we are calculating the say tax part. So, we calculated the profit before tax, then we subtracted the tax which is calculated at the rate of 30 percent of the profit before tax.

And finally, we are left with something which is called as PAT profit after tax, profit after tax and here means calculating the profit after tax is our first requirement. While estimating the cash flows, the calculation or the profit after tax is the first requirement, first you calculate the PAT, though it is available in the profit and loss account also.

But we pick up the figures from the profit and loss account means they are complementary to each other, means for preparing the profit and loss account you need all these information and for preparing the cash flow information, cash flow statement you need this information. So, it means all this is available from the DPFR. So, we have taken this and we have calculated that PAT profit after tax.

After this, now, once the profit after taxes there, then we have to now go to the year number 5 and in the year number 5 now, we have to think about that all the 5 years we are going to find out profit after taxes 14 million, year 1 17.5, in the year 2 20.12, in the year 3 22.09, year 4 and 23.57 millions in the year 5.

Complete all the 5 years cash flows are worked out here and first source of the cash flow is net cash flow is the PAT profit after tax, we have seen in the formula also, we have seen here cash flow for all the investors. Since we are following this approach, cash flow for all the investors, so, what we are calculating? First requirement given here is PBIT into 1 minus tax rate. So, it becomes actually it becomes the PAT and we have calculated the PAT.

Now, for calculating the cash flow, we will take into account the other items. Depreciation and non-cash charges have to be added back into the PAT because depreciation is the non-cash expense. We subtract that first from the profit and loss account. But since that is only a book entry, and it is a recovery of the capital investment, which has already been made that capital investment of the 80 millions, which has been made for acquiring the fixed asset, now it is a process of recovery of that.

So, we call the depreciation as a expense, indirect expense, but since this expense is not paid to any outsider, so, it is only a book entry and that amount, which is debited with or the profit and loss account debited with we be show there as an indirect expense and that amount is not paid to any outsider. It is retained back, so it becomes a source of cash flow net cash flow.

So, in the PAT, we will be adding back now the depreciation plus any other non-cash charges. For example, say in the other case you can call it as the deferred revenue expenses are also there. Deferred revenue expenses also, we have incurred the expenses sometime in the past, now we are, we will capitalize those expenses and over a period of time through the process of amortization, we will recover those expenses.

So, these all are called as the non-cash expenses, which will be added back into PAT will become the source of this cash flow. Depreciation is subtracted for calculating profit, but for calculating the cash flow it will be added back into the PAT and if there is any kind of the capital expenditure or the expenditure on account of working capital that has to be subtracted from the cash flow available.

Since this project which we are going to, which we have worked out here, we are going to now terminate after 5 years. So, it means no capital expenditure is required. Capital expenditure was required only in the year 0 or in the current period of the 80 million rupees, and then the revenue expenditure that is the working capital.

So, now is a time of recovery of that expenses, because project has only, they set a time of the recovery of that investment, because the project has only 5 years' time. And after this calculating the profit after tax, first source of cash inflow or the net cash flow, we have calculated up to 5 years and at the end of the fifth year, we will be now say dismantling the project, terminating the project.

So, now, we will have to see that, once you close the project, you dismantle it, then how much now the total cash flow will be available in the year 5, net salvage value of the fixed asset is already given to us that 30 millions will be available from that structure, which will be now say sellable in the market. And the working capital will be recoverable in full amount. So, how much of working capital we have invested here? This amount of the 20 millions and that will come back to us.

So, always mind it, you have to recover the full amount of working capital, because there is no loss of working capital in any form, whatever the funds are invested in the working capital for supporting of your inventory, credit sales or cash or prepaid expenses, they are realizable in the full amount.

So, at the end of the fifth year, when you will close down the this manufacturing process or this facility, you will get back first source of cash flow will be PAT, 23.57, second will be 30 as a salvage value and the next one will be 20 as the recovery of the working capital.

So, now, you go for this initial outlay was how much? 100 millions which is here the sum total of this 100 millions and operating cash flows are how much? Operating cash flows are now, operating cash flows we have calculated PAT plus this depreciation amount what is the depreciation amount? 20, so 20 plus 14 is 34.

Similarly, say 15 and 17.5 is how much? 32.5, similarly, this operating cash flow is 31.37. This amount is 30.53 and this amount is operating cash flow works out here as that is 29.90, 29.90 is the because the depreciation has come down very small amount, 6.33 and here we have got the profit after tax 23.57. So, it means the operating cash flow will be 29.90 here at the end of the fifth year.

Terminal cash flows will be how much? This plus this, these two, this amount will become the, plus this will become the 50. So, this will be available with us 50 will be available with us. So, it means finally, if you calculate this amount, this will come up here as this amount we have to add here and this will work out as how much that is 50. So, total amount which will be coming back to us at the end of the fifth year will be how much? This amount will be, you can call it as say net cash flow, we have calculated here as the net cash flow and the net cash flow here is that is 100 outflow net cash flow.

But cash outflow was 100 which was invested in the 0 period and the at the end of the first year we have got back some amount is that is called as 34, then 32.5, then 31.37, then it is 30.53 and here since the terminal value is also available on account of the salvage value of fixed assets and working capital, so, the say the net cash flow coming at the end of the fifth year will be more.

And finally, book value of investment was how much? Book value of investment was 100 in the initial 0 period in the current period and at the end of the first year it was 80, not end of the beginning of the first year. It was at because he was invested on account of the fixed assets.

So, it is equal to 80 but depreciating it at the rate of 25 percent. So, we have depreciated it and depreciation out we worked out here. So, it means it has depreciated over a period of

time. So, this investment has been going down and when you have say subtracted it because depreciation was 20. So, it means, how much is that amount?

Say we were left with this amount is 80. So, it means this is in the beginning of the year and minus this depreciation. So, remaining was the amount of the investment which was made in the beginning of the year then minus depreciation. So, depreciation was here that is 15 is a depreciation it has come down to 65, then it has come down to 53.75 and finally, it has come down to (70) 45.31 and last year we have to provide the depreciation.

So, we are calculating the book value of investment, book value of the investment is not calculated for the fifth year because in the fifth year the project has been closed down, it has been terminated.

So, this is the entire process, it explains the entire process here, how to calculate the say cash flows, but means this problem we have considered here is we have taken that cash outflows in the beginning here only in the current period during which the project is being going to be constructed.

And then over the next 5 years, the life of the project is limited for a period of 5 years and within a period of 5 years, we are going to have this much of the cash outflow, this much of the cash flow, net cash flow is going to be this much because in the last year, when you will dismantle the project, so, it means you will get the terminal cash flows also so along with the operating cash flow.

So, it means now when you calculate this amount net cash flow, it has two components. First component is operating cash flow, if you calculate the operating cash, this will come out here as 29.90, 29.90. But in this when you add up the terminal cash flows also this becomes a net cash flow and net cash flow has become 79.90. So, 29.90 is the operating cash flow plus 50 you are adding up here. So, sum total you can call it test net cash flow becomes here at the end of the fifth year is 79.90.

So, for evaluating this we have calculated the cash flows and now, you remember back in the capital budgeting process, what we did? These cash flows were given to us this, this all these were given to us. We assumed that all these cash flows are available, but we have to calculate this way they are not available, they are not served to us in platter, we have to calculate by preparing the detailed project feasibility report.

So, cash outflow is there. Now, the cash inflows are there. Now, they will be discounted for evaluating the project whether to take up the project or not to take up the project. For go for this investment opportunity or not to go for this investment opportunity, what we have to do is? We have to now discount these at the given cost of capital. And since the funds in this project have come from all the sources, we have the equity capital also, we have the preference capital also, we have the borrowings also.

So, which rate of discount will be applicable? Cost of capital weighted average cost of capital will be applied here for discounting these cash inflows. So, you will be now, discounting these, this, this, this, this and this, they will be discounted for the 5 years, we will discount them at the say weighted average cost of capital and compare against these cash outflows.

So, these 5 cash inflows, 1 cash outflow, so, discounted value of these 5 cash inflows and the 100 will be 100 because it is in the current period. So, this will be say calculated and then the present value of the cash outflow or the present value of the cash inflow will be say will be will be considered for subtracting the present value of the cash outflow.

So, the present value of the cash inflow minus present value of the cash outflow which is 100 in the present period, we will try to find out what is the NPV of the project, what is the net present value of the project.

And if the NPV is positive, then certainly we will go for the say taking of this investment opportunity, otherwise, we will abandon it because it is not worthwhile, but I think if you look at all these cash flows, so, this will I think, come out to be a positive proposition and net present value will be positive here, and that is what we want from every investment opportunity. So this is the one important consideration.

Second important consideration which I want to means share with you here is that look, we have while assuming the cash outflows we have taken very simple and straightforward figures. For example, here it is taken here as the 80 and 20 we assumed. That cash outflows are only in the 0 period, in the present period, in the current period after that in the next 5 years, no cash outflow is there.

But in the practical situation, it may be different that cash outflow is not only in the 0 or in the current period, it may be in the subsequent years also. So, then you have to calculate the present value of the cash outflows also like the present value of the cash inflows, this is one important thing.

Second important thing here is, consideration here is that, for example, we are considering here as the revenue if you look at this revenue figures, these are 120, 120, 120 for all the 5 years. In the real life, this may be quite unlikely because inflation plays the role. Here production remaining the same, number of units remaining the same, but your selling price increases because the price of input will increase the cost, when the cost, cost will also not be 80, cost will also change and when the cost will increase certainly we have to recover that increased cost plus the profits for us. So, this revenue will also increase.

So, this revenue will not be a straight forward figure of 120 and cost us as 80, this will also be the fluctuating figures. So, and sometimes what happens, we do not sell even the same number of units in the market, sometimes we are selling for example, 100 units, but next year demand came down. So, we are selling only 90 units. Next year the demand again went up. So, we are selling 120 units. So, when even the selling price remaining same per unit, because we are selling the different number of units, so, your total sales figure or the revenue will change.

So, we have to adjust for all those changes. And finally, we have to work out the cash flows, both cash outflows and inflows, which are expected to be the practical figures, the expected figures most means you can call it as the say reliable figures. So, since it was the first problem, so we took the very simple straight forward figures, no means Hanky Panky we have adjusted here or we have created the situation that it becomes a complex problem in the beginning itself.

In the in the beginning being a first problem, we have kept it simple and straight and very easy problem, but in the subsequent problems which I will be discussing with you in the subsequent classes, they will be means factoring for the say different typical situations also both in with regard to the estimation of the cash outflows, both with regard to the estimation of the cash inflows as well as the other important components we will be adding some wrinkles.

So, that you understand that practically if the cash outflow and inflows are different or some changes take place, then in that situation how to calculate the net cash flow. But this is just the beginning and just to share with you or to means let you know or make you aware of that after knowing the fundamentals of the estimation of the cash flows from the different investment opportunities or different project proposals, how to estimate the practically how to estimate the cash flows, and especially the Net Cash Flow.

Once this net cash flow is available both cash outflow and cash inflow simple now, the next process is very simple, you discount these inflows by applying the say cost of capital as a discount rate and the cost of this present value of these outflows will remain the same as 100 million rupees and then calculate the NPV and on the basis of that, you take the decision whether to accept the proposal or you reject the proposal or company accepts the proposal ABC limited accepts the proposal or rejects the proposal.

So, working out these cash flows is a complex job in this problem, it was easy, but in the say subsequent problems, we will add some new information and some information which is practically expected to be there in the life. Till then I will stop here and next 2, 3 classes we will discuss more problems and discuss some another important say component of the estimation of the cash flows for the new investment opportunities or the new capital investment projects. Till then, thank you very much.