



## **90-Minute LBO Model, Part 4: Debt Schedule (Revolver, Cash Flow Sweeps, and PIK Interest)**

Welcome to our next lesson in this 90-minute LBO modeling case study. We're going to move into part four here, the cash flow and debt repayment, and you could see the case study document has given us some instructions about the repayment priority for the revolver and the term loan and then they say a little bit about the subordinated notes and the mezzanine as well and the accrued or paid-in-kind interest and the cash interest. So, we have some instructions from there and up to this point in the model so far, we have the income statement for the company, the income statement projections rather, and then the cash flow projections, or at least what we could finish of the cash flow projections.

So, now we're going to turn our attention to this debt schedule. Up at the top we have the interest rates for each tranche of debt. We have the cash flow and revolver calculations, so if we have a cash flow shortfall, we'll need to draw on the revolver which acts as sort of a bank overdraft account but for a company rather than a person. Then we have the term loans which are the most senior form of debt here, then subordinated notes, mezzanine, and then we have some summary statistics at the bottom.

[01:09]

So, this is probably the most difficult part of the LBO model because there are some new features here and there some trickier formulas. I still don't think this is that difficult but under time pressure it is easy to make mistakes with some of the formulas here. Doing this schedule sequentially and starting at the top and going to the bottom doesn't really make any sense because some of the parts at the top depend on the parts at the bottom. So, we're going to start with the easy, more straightforward parts, then move to the more complex parts, and then finish up with another set of relatively easier parts that just involve linking in some numbers and making sure that the statements connect properly.

So, we'll start with the links to the debt and the fixed interest and repayments then we'll go into the revolver and cash flow sweep which are probably the most difficult parts. We'll then look at the interest, and then we'll go in and we'll link the statements after that and make sure everything is properly reflected on the income statement and cash flow statement projections.

[02:05]

Let's start with the debt links here, and this is pretty straightforward. For each of these, for the revolver, the term loans, subordinated notes, and mezzanine, we're just going to go up to the sources and uses schedule where we have all the debt projected right here. So, we have our



revolver, and then for the term loans let's go up once again and get it from our schedule here, ¥60 billion yen, so about \$600 million U.S. dollars, something in that range, and then for the subordinated notes and mezzanine, these are both about ¥20 billion yen. And so, we have that.

Now, for the term loans, and actually for all these, the beginning term loans, the BoP beginning of period term loans here will just be equal to the end of period or EoP term loans from the previous period, so we can just start by linking that.

[02:55]

And then for the amortization here, so we're going to use a negative and then use the MIN function and say that this is the minimum between our beginning balance, or the ending balance from the previous period, and then the very first balance here times the fixed annual repayment percentage which is 10%. And of course, we have to anchor both of these, so these do not shift around as we copy this across.

The cash flow sweep I'm going to leave blank for now and we'll come back and finish this in a little bit. Let's add these up for now and then let's copy this across so we have this. And so, we can see how our term loan balance here decreases by a fixed number each year.

Now, for the subordinated notes, the beginning balance will just be equal to the ending balance from the previous period. For the paid-in-kind interest, so this interest accrues to the loan principle and increases it. It's not paid in cash. To avoid a circular reference or a possible circular reference, we always use the beginning balance for this one. So, I could link to the ending balance from the previous period or just the beginning period subordinated notes here and we'll multiply by the paid-in-kind margin of 3% up here. We'll sum these up.

[04:05]

For the cash interest expense, I can take the beginning period, subordinated notes, and then I can multiply by the fixed rate cash interest here of 4%.

And then for the mezzanine, the beginning number will just be the ending number from the previous period. Paid-in-kind interest will be the beginning number times the 5% paid-in-kind margin. We can add these up to get the ending number, and then for the cash interest, we'll take the beginning number here and then multiply by the 5% fixed cash interest. And with all these in place, we can now copy this across, so we have this.

And that is all we need to do for the first part here. Like I said, this part is pretty straightforward, and I wanted to start with it because it's the easiest part of this schedule. Let's



now go to the revolver and the cash flow sweep here. This is going to get a little bit more involved with two formulas that are a bit tricky.

[05:00]

So, let's go up to the top and see what the basic logic is here first. So, we need to start by looking at the cash at the beginning of the period, and this will be our basic input to this schedule. Now, of course we don't exactly have this yet, so what we have to do is we have to get the cash at the end of the period from right when the deal closes at the end of fiscal 2020, and to get this we can simply go up and we can look at the company's cash and cash equivalence right here, so the 26 billion. We'll put a negative sign in front and then we'll subtract the excess cash that's being used to fund the deal, and this gives us the 20 billion that we have right when the deal closes which is exactly equal to the company's minimum cash balance.

Let's then link to this, and then here for the cash at the beginning of the period let's link to our number up here. For the free cash flow, we can go and link to our free cash flow and then for the amortization, this is just referring to the mandatory repayments of any debt tranches, and in this case only the term loan has the amortization. There's nothing mandatory for the subordinated notes or for the mezzanine and there's also nothing mandatory for the revolver here.

[06:06]

So, we're only going to repay something on the revolver optionally if we have the cash flow available to do so but there's no requirement to repay anything each year. Let's link to our amortization and then let's link to our minimum cash balance and put a negative sign in front. Go up here 20 billion you add about \$200 million U.S. dollars. And so, we have our cash flow surplus or shortfall based on that. I'm going to copy this across and fill this out and just link in some of these numbers, so cash at the end of period.

Even though these are mostly blank for now I just want to have them for our reference. Also link in our free cash flow here. And this is just so the schedule actually works properly. If we don't have that it's a little bit hard to test this and see what's going on.

Now for the beginning period revolver we're going to link to the ending number from the previous period and then we get to our first formula here that requires some explanation.

[07:02]



So, for this the idea with this formula is that if we actually have a cash flow surplus here, so if this is greater than zero, then we're going to take the minimum between our surplus and then our beginning period revolver, so the revolver at this point in time, so we'll repay whichever one of these is lesser. If we have a revolver of a 100 and we have cash flow of 50, we're only going to repay 50, but if the revolver was 50 and we have a 100 of cash flow, we're going to repay the entire remaining revolver of 50.

Now if this is not the case, then we're just going to link to our cash flow shortfall here and put a negative sign in front so that we actually draw on the revolver instead and we use it for additional borrowing. Let's sum this up. And just to demonstrate how this works let's say our revolver here is a 1000. Well, in this case, we have 30 of cash flow and so we can repay 30 of this revolver, so the revolver goes to 970 by the end.

[08:00]

On the other hand, if we had a revolver of say 15 here, then we just repay the entire remaining revolver. Our revolver goes to 0 and we still have 15 of cash flow at this point that we can use for optional repayments on the term loan here for example.

So, that's how it works. I'll just leave the set to zero for now because that's what it's going to look like until we finish linking everything and until we get the interest expense linked in properly here.

Let's now go down to the cash flow sweep. So, the way this works is simple to describe but the formula is a little bit tricky. The idea is that if the company has some excess cash flow as was stated in the instructions, then they can spend 50% of the excess cash flow on repaying the principle for the term loans right here. So, we need to see if they actually have excess cash flow and if they do, we need to apply 50% of it to repaying the term loan balance.

[08:53]

I'm going to use an if statement and I'm going to look at the cash flow surplus first, or shortfall if this is negative. I'm going to add this together with the revolver repayments or drawdowns, and if this is greater than zero...So, if this is positive, meaning that we have some excess cash flow we can use to repay this term loan, then we are going to use a negative sign. And I'm going to take the minimum between this cash flow surplus and any revolver repayments or drawdowns, and I'll multiply by the 50% number that was given up here and anchor this, so this does not shift around.



So, this is one term, and the other term here is we can look at the total remaining term loan balance at this point by summing these up, the beginning period term loans and then any amortization we had. So, this setup just ensures that we never repay more than the total remaining term loan balance at this point in time, very similar to the other minimum function that we used for the amortization itself, only it's a little bit more complicated here because this is for optional repayments. And then if we have no excess cash flow at all, this is just going to be zero, so I'll enter zero right here.

[10:01]

And I accidentally entered an extra parenthesis somewhere or forgot to enter one and it's right here. I forgot to enter the parentheses around the first MIN, or double parentheses there. So, this should work now, and we can copy this across and you can see how the cash flow sweep works. It looks great right now because we repay the entire term loan balance in year four. Of course, that's going to change once we link in the interest expense and everything else here.

So, now we have our revolver and our cash flow sweep for the term loans set up. Let's now go down to part three here, the interest. This is not too complicated. All we're going to do is link in the assumptions for each tranche of debt and the interest rate corresponding to it at the top. We do have a floor for some of these, so if the 10-year Japanese government bond yield is below a certain number, then we're going to bump it up to that number using a MAX function and then add the spread to get the total interest rate on that tranche of debt.

[11:00]

So, let's go up and start doing this. And the revolver we know has a floor. So, I'm going to use a MAX function right here, and the floor for the revolver is the 0.5%, so I'm going to take the MAX between that and the 10-year Japanese government bond yield in this year. I'll anchor the D45 part but I'm not going to anchor fully the I42. I'm only going to anchor the 142 part so that this does not shift down as we copy and paste this down and around.

So, that's the first part and then we need to add the spread to this to get the actual interest rate on the revolver, so it's the 3% right there and I'll anchor that. And we could see it's 3.5% and as we go across, it goes up slightly as the yield finally increases slightly or so we assume.

Now for the term loan I can copy and paste down the same formula, but I have to tweak some of the parts that are anchored a little bit. Here we need to move down to row 46 and same for the E45. Let's move that down to row E...or cell E46 rather.



[12:01]

So, now we have a 1% floor and a 4% spread for the term loans, and as we copy this across, we can see it's 5%, 5%, 5% and eventually goes up to 5.25% in year five.

Then for the subordinated notes, so let's go up. We don't really need this, but we might as well link in the total interest rate. So, let's do these and let's anchor both these and then for the mezzanine we can do something very similar. And then for the cash here, once again we have a spread. So, let's take our 10-year Japanese government bond yield and then we'll add the spread of 0.5% right there, and I anchored that so that does not shift around. So, we have this.

Now at this point we can go down and we can actually calculate the cash interest expense for the revolver, so let's take our beginning period number and then multiply it by the 3.5% right there, copy that across. And then for the term loan, we could do the same thing. So, we'll take the beginning period term loan and then multiply it by the 5% here and so we have that.

[13:06]

So, we have our interest and that's really all we need to do for this part. It's also fairly simple and we're using beginning balances again to avoid circular references. If we use average balances or ending balances, then the problem is that the ending balance for the term loans depends on how much of the term loan we repaid optionally with the cash flow suite. So, we get a situation where the ending balance depends on the interest expense and the interest expense influences the cash flow which determines in turn how much we repay. So, to avoid all that we just use the beginning balances here.

Let's now go down and do some aggregation of this data. So, we have the debt repayment and drawdown. Let's go and sum up the revolver and then the amortization for the term loans and then the cash flow sweeps right here.

Now for the cash interest expense, we're going to link to everything and we're going to use a negative sign here to flip all these to negatives. So, we have the revolver, we have the term loans, we have the subordinated note, and we have the mezzanine.

[14:05]

Now for the total interest expense, we take this and then we subtract the paid-in-kind interest on the subordinated notes and then the mezzanine. And then for the cash interest income, so here we just go up and we take our beginning period cash balance. We multiply it by the interest rate right here. We can now copy these across and link them in like that.



Now, for the final step here we need to link everything properly. Let's start with the income statement. So, the interest's expense here you have to be careful. This is the total interest expense not just cash interest. So, let's go down. We want the paid-in-kind interest as well, so I'll link to total interest expense. And then for interest income, this is all cash, so we can just link to the cash interest income down here and we'll copy this across, and let's fix these extra decimal places here. That's very strange.

[15:01]

Now, for the cash flow projections here, since we are starting free cash flow with EBITDA, we only want to worry about the cash interest expense and cash interest income. The non-cash interest, the paid-in-kind interest or accrued interest, is irrelevant because it's just going to be added back here. It saves us something in terms of cash taxes, so it is included in this calculation, but it doesn't actually represent a cash outflow. It just changes something with the company's taxes.

So, let's link to the cash interest expense down here. And then for the cash interest income, let's go down and link to this so we have these. And then as the final step here, let's link to our debt drawdowns or repayments, and this is just this aggregate number at the very bottom. And now we could see that our schedule changes quite a bit. Now we actually have to draw on the revolver for the first few years, which is what is supposed to happen here because remember, the company is spending extra on CapEx in its first few years and its margins also go down.

[16:02]

Look at its operating margin. It goes from 4% to less than 1% up to 1%, 2%, and eventually goes back to around 4%, but we get a pretty steep margin drop here in the first few years as the company spends money to expand its business, and so that is that.

We are pretty much done with the LBO model for now. The one remaining thing is to do the returns calculations here at the bottom, set up a sensitivity table, and then look at something called a value creation analysis and we'll be getting to those in the next two lessons in this case study of the module.

We're at the end so let's do a recap and summary. We started out here by linking in the debt and setting up the easy parts such as the amortization of the term loan, which is always a fixed number, or at least most of the time is a fixed number. We set up the paid-in-kind interest and the cash interest for the subordinated notes and the mezzanine. Then after that we got into some of the more difficult parts like the revolver here. So, to calculate this we had to look at



the cash flow surplus or shortfall, so we took the beginning cash, added the free cash flow, subtracted mandatory debt repayments, and subtracted the minimum cash balance.

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This told us what kind of surplus or shortfall the company had. Based on that we then either borrowed something on the revolver if we had a shortfall, or if we had a surplus, we repaid any amount on the revolver that was still there.

Then we got to the cash flow sweep for the term loans, and here basically we said that if the company has any excess cash flow after repaying what it can of its revolver then we'll use 50% of that to repay the term loan balance and we set up an if statement and a MIN formula to do that.

Then once we had that we linked in the interest rates here and factored in the floors that ensured that the prevailing yield or prevailing interest rate here always has to be a certain minimum even if the 10-year government bond yield is below that. We then calculated the cash interest for the revolver and for the term loan and summed up everything here at the bottom, and then finally we linked everything starting with the income statement and the interest expense and interest income.

[18:04]

Then we went down to the cash flow projections and linked in the cash interest expense, the cash interest income, and then we linked in the debt drawdowns, repayments and calculated the beginning and end in cash balances here in each period.

That's it for this lesson. Coming up next we will get into the returns calculation, the sensitivities, the value creation, and then go back to the case study document and actually answer these questions at the bottom in part seven.