Real State Financial Modeling Introduction and Overview: 90-Minute Industrial Development Modeling Test, Part 3 – Waterfall Returns and Case Study Answers

Welcome to the final part of this 90-minute industrial development modeling case study. We are going to take a look at the waterfall returns schedule in this part. We're also going to go through and answer the case study questions. As usual, to save some time, I've written out the actual answers to these questions, and you can read them yourself. We're going to focus on the Excel parts here, and I'm going to show you how to come to some of these conclusions using the Excel model that we have built up over the last few lessons here.

So, we'll divide this lesson into two main parts and look at the waterfall return schedule first and then go into those case study questions and answers. With the waterfall return schedule, it's pretty similar in some ways to what we looked at in the last case study. We're going to start by calculating how much we should earn in a given year based on the IRR hurdle that we're at. So, if we're looking at a tier that goes up to a 10% IRR, we look at the initial equity invested, we multiply it by 10%, compound it, multiply by 10% again, and that gives us an idea of how much we should be earning each year.

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And then, however much we actually earn is called the repayment and that's based on the cash flow to equity investors. Once we get to the end and we get to the total amount that comes back to us, then we start splitting it up. And we do a 90/10 split initially, then an 80/20 split and then a 70/30 split.

So, the main differences versus the previous waterfall schedule are that we have real multiple tiers now, not just tier one up to 10% and then anything beyond that. We're actually looking at tiers where we go up to 10% and then up to 20%, and then above 20% in the final tier. That's one difference.

The other difference is that we're going to be looking at the project-level IRR. Previously we looked at the leveraged IRR to just the limited partners. But here we're going to be looking at the overall project IRR and splitting up everything between the developers and investors up to a 10% IRR based on the 90/10 equity contributions and then splitting it in different ways beyond that.

[02:07]

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Again, there's no right or wrong way to set them up; there are just different ways and different terms for waterfall return schedules. For this first IRR tier, up to 10%, let's go up to our assumptions, where we have all these filled in. And let's link to IRR hurdle one, right there. For the repayment, it's going to be 100% here because we're looking at these on a project-level leveraged basis.

And then as we go down, we can take this IRR_Hurdle_1 and copy it next to returns accrual in each case. And then for the repayment, in this IRR tier it's a 90/10 split, so for the limited partners we can go up and we can just take 1 minus the developer equity contribution of 10%. We have that. And then a tier for the developer we can just link to our developer equity percentage.

[03:01]

Now, for the ending balance here, we could do this in a couple of different ways. But what I'm going to do is go and link up to the sources and uses schedule first, and link to the developer equity and investor equity. And then we can't just stop here because we also have to keep in mind that, yes, in the very first year we have those equity draws at $15.028 million – it's basically the number that I just linked in. But in addition to that, in the first year we also have the permanent loan refinancing, the permanent loan financing fees, and the construction loan that's being refinanced. All of that is going to change the effective amount of equity that we contribute in this very first period. So, we need to include it in some way.

And here I am just going to add up all these numbers. We could have just linked to total cash flow to equity investors as well and gotten the same result, it doesn't really matter. But this is what I'm doing in this case because we're going to use the setup later on as well.

[03:58]

And then for the ending balances for the others, for the limited partners, let's go up and link to our investor equity, right there. And then we will link to these three items right here and then multiply by the repayment percentage of 90%. And then we can do something very similar for the developer, except that we need to change this to E43 instead. And so, we have that. We should also change all these signs and make them negative.

Now, as usual, the beginning balance each year will be linked to the ending balance from the year before. So, let's take this and copy it over. And then the returns accrual, we'll just take the beginning balance and then multiply it by this percentage right here. So, we have that.

Let's add these up and then copy this one across. And this just gives us a sense of what we should be earning if we assume that 10% IRR each year. So, we should end up with $29.2 million at the very end. Now, the test here is that we have to compare this to what we are actually earning in this tier.

[04:59]

So, let's take our cash flow to equity investors up here, we'll anchor this part and then multiply it by the repayment percentage in cell D184 and anchor the column part there. So, that's how much we potentially get back; we're looking at it at a project-level so it's 100% here, and then let's compare that to the beginning balance plus the returns accrual here. And so we have that.

And you can see here how to get to this 10% IRR – we only need to get back roughly $12.1 or $12.2 million at the end. So, when we get back the $31 or $32 million, that's a pretty good indication that the IRR here is significantly higher than 10%, which we know is a fact because it's over 20% at the project level.

So, let's copy these formulas down and see if we need to tweak anything. And just pressing F2 and going through this very quickly, it looks like we're still linking to all the right numbers and the anchoring has worked properly.

[06:01]

We have this. What this tells us at this point is that we're getting these $31 or $32 million in proceeds at the very end, and we only need $12 million of them to get up to that 10% IRR. So, at this level we're going to end up splitting it 90% / 10% between the developers and investors, the limited partners. And we're still going to have a lot to go around after that.

Now, for the cash flow available to tier 2 investors, let's take our total cash flow to equity investors up here, we'll anchor the 168 part, and then we'll subtract the repayments here. We're subtracting that because we distribute all of the cash flows in this tier to the limited partners and developer. So, it's not as if we need to subtract just one of these, we're subtracting everything in this repayment because that is what gets distributed in this tier. And

then we can see at the very end we can still split up $20 million right there. So, let's go into tier 2 now and link up to our numbers at the top to get all these assumptions.

[07:00]

We have a 100% repayment percentage, and then for the returns accrual, let's link to our IRR hurdle 2, and then for the repayment let's link to 1 minus the developer cash flow above IRR hurdle 1. So, this whole section is going to be very similar to what we did in the first tier; in fact, we can copy down a lot of the same formulas right here. And we can also copy down all the starting invested equity balances.

Let's actually do that right now and just copy down all these formulas and see what, if anything, we need to tweak. The reason we can do this is because in this tier we're just looking at the IRR up to 20% and seeing what type of cash flow that corresponds to. So, the exact setup in all these formulas should be nearly the same as what we have above. And I'm just going through and pressing F2 quickly to check this, we're looking at the cash flow to equity investors and we can see that to get up to this 20% IRR we need a project-level equity balance of around $31.5 or $31.6 million at the end.

[08:07]

And in this case, as you know, we have slightly above that, which tells us, again as it should be, that the IRR in this project is slightly above 20%. What this also tells us is that in this IRR tier we're going to be splitting up these cash flows 80/20 between the limited partners and developer, which is going to significantly increase the developer's IRR and reduce the IRR to the limited partners because so much of these cash flows corresponds to that IRR between 10% and 20%, which is shown in this tier.

And then for the cash flow available for tier 3 distribution, we can take our same formula and just take our cash flow to equity investors and subtract the repayment in Tier 2. We don't need to subtract anything in tier 1 here because we are strictly looking at the amount that corresponds to everything up to a 20% IRR.

[09:00]

So, for the tier 1 IRR—I'm re-assembling all of these cash flows now—let's link up to our repayment for the limited partners and then let's link up to our repayment for the developers in tier 1.

And then for this tier 2 IRR we need to take our cash flow available for tier 2 distribution and then we need to subtract everything that goes beyond that and is put into tier 3. So, subtract the cash flow available for tier 3 distribution right here, and then we'll multiply it by the 80% that goes to limited partners. We don't have that yet, so we need to bring that in.

To do that, let's go up to the top and take 1 minus the developer equity contribution. And then we'll keep going down and we'll take the amount that goes to the limited partners here, 1 minus the developer cash flow above IRR hurdle 1. We have that. And then for the limited partners in tier 3 we can do the same thing but just use a different cell.

[10:00]

We have that. And we can bring down this formula as well. I should have done that slightly differently and either anchored these or just copied and pasted the formula down like that because we want to get the same rows cash flow available for tier 2 Distribution minus the cash flow available for tier 3 distribution. Once we go beyond that, let's take our cash flow available for tier 3 distribution, and we don't have to add or subtract anything here, we can just multiply it by the 70% or 30% numbers. And then we can copy this across. So, we have that. And we can see how everything here is split up.

Let's now look at these returns on an investor-by-investor-group basis. So, starting with the limited partners, let's go up and link to their initial equity contribution and then let's do the same thing for the developers, and link to their initial equity contribution.

[10:58]

And then for the limited partners and the cash flow that goes to them, let's take all of these numbers. And then for the developers we can do the same thing. And then to get the IRR, we can just use the built-in IRR function. And to get the cash-on-cash multiple here, I'm not going to use a SUM function; we're just going to assume that everything that comes to us later on is positive, and in the beginning, this represents our entire equity contribution, which may not be exactly true, but it's good enough for our purposes here. We're just trying to get to the approximate IRR to the equity investors.

We'll flip the sign on all these yields to calculate these, and then we can take all these formulas and just copy them down. And we have that. And so, you can see that as a direct result of this waterfall returns structure, our limited partner IRR is below that 20.2% for the overall project but the developer IRR is far above that 20.2% IRR for the project as a whole.

[12:09]

So, in short, this particular waterfall structure is a great benefit for the developers but it's not so great for us as the limited partners. It's also somewhat unusual here that for a development project we'd split the cash flows in proportion to the equity invested up to this 10% IRR. But then beyond that, we start splitting it at 80/20 at just above 10% IRR.

It's unusual because in most development projects, you're targeting IRRs in the 20%, 30%, even 40% range. The risk is higher, so the potential returns have to be higher. So, it's a little bit odd that we would start splitting it at this rate, at only a 10% to 20% IRR in that range. And that's something that we'll discuss further in the case study answers later on. With that set up, let's now move to the case study answers. I have some written notes over here if you want to look at them.

[13:03]

But let's turn our attention to this document now. So, if we're targeting a 20% IRR, would we do this deal? We would say no. Because the IRR is less than 20%, it's only 19% to us. And then, as I just mentioned, we think the waterfall structure works against us; we think the threshold should be set to a significantly higher level, like 20% or 25%, because of that higher risk.

Splitting the IRR up to 10% and then splitting it differently beyond 10% might work if it's a lower-risk, lower-potential-return deal such as for a stabilized property or simple renovation, but we don't think it's appropriate for a new development. There are a bunch of other problems here as well. One issue is the excess land. Remember, back in the beginning when we looked at the excess land we said that 57% of it goes unused. And if you think about it, this makes a huge difference because if we just bought nine acres instead, let's say, and then we said that 86% of it is used for the property.

[14:03]

So, the size is exactly the same but now only 14% goes unused, take a look at the impact. The IRR goes up to 26%, and the IRR to limited partners goes up to 24%, and for developers it goes up to 38%. So, we have no idea why we're actually making that assumption in the beginning.

Another issue is with the permanent loan refinancing. To us, it doesn't really make much sense to refinance this loan at the very end of construction because year one is still not stabilized. One of the major tenants hasn't moved in. And so, our absorption and turnover vacancy is very high.

And then one final issue here is that we don't really have a good sense of the numbers and operational assumptions in different scenarios. So, we have these Cap Rate trends, but we haven't really looked at the deal and seen what happens if the Cap Rate goes down to 5% or up to 6.5% or even up to 7% or something much higher.

[14:59]

We could tweak this rate now and we could say 6.25% and see what happens. And the IRR goes down a little bit. So, maybe we can justify it and we can say that even if we go up to a 7% Cap Rate, the IRR doesn't really fall by that much; it only falls by around 3% or so.

But we'd like to have more data and we'd like to look at some alternate scenarios and some sensitivities around this instead of just leaving it at what we have right now. So, for all those reasons we say no to this deal.

Would lenders be likely to approve of this deal? If not, how would you change the permanent loan to win their approval? As you can see here, the main problem is that the interest coverage ratio and debt service coverage ratio fall far below the minimums in year one; the debt yield is also below the level that lenders are usually seeking. The interest coverage ratio has to be at least 1.5x, and it's only around half of that. And the debt service coverage ratio should be at least 1.25x, and again, it's only around half of that here. The debt yield, usually lenders want at least 8%, 9%, or 10%, and that's only around 4%.

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So, our main idea to fix this would be to push back this permanent loan refinancing another year to pay capitalized interest, or not really pay capitalized interest, but let capitalized interest

accrue on the construction loan for a year and then refinance this when the property is actually stable.

So, to show you what would happen if we did that, let's say that we moved the permanent loan issuance into the second year. Set everything else to zero. We moved the financing fees into that second year as well. We just replace these with zeroes. The equity draws can stay in place. The construction loan refinancing will also move over another year. And we're going to take this ending balance and multiply it by the construction loan annual interest because a year passes so we assume that all that interest gets capitalized right there. So, take that and delete it.

[17:00]

And we'll set this to zero. So, I'm just doing this very, very quick and dirty to show you what would actually happen in this case. Now, something else that would also change is that we no longer have cash interest and the permanent loan principal repayment, so we can delete those in the very first year. The debt service gives us errors now, but it doesn't really matter because we're not going to be paying attention to any of these in year one if the refinancing only takes place at the end of year one. So, this is roughly what it would look like, but we're not quite done because we also need to change the permanent loan value.

If the refinancing takes place at the end of year one, we should actually be using the implied property value from one year after that, or we should be using the implied property value from the end of year one and then just not discounting it at all. So, if we change this, and we don't discount this at all, the permanent loan amount goes up to around $18.1 million.

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And then when we go down and take a look at this, the IRR does go up slightly to around 22%. To limited partners, it also goes up to around 20%, so that's a good sign. And if you look at the debt service ratios here, we're fine in all cases. We can't really go too much higher in terms of LTV because we're pretty close to that minimum 1.25x for the debt service coverage ratio in fiscal 2023.

But one thing that we could consider doing, and that I mentioned in the written document here, is that if we increase the interest rate and also increase the amortization period, so we increase the interest rate to compensate lenders, we increase the amortization period, which is good for us, we could move this up to a 5% interest rate, let's say, and increase the

amortization period to 35 years. So, if we did that, and we also increased the loan-to-value ratio to 60%, we'd still be in compliance with these ratios that we get very close to not being in compliance in fiscal 2023. The IRR would go up to 23% and the IRR to limited partners would go up to around 21%.

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So, that would be one option for how to fix the debt assumptions here. Again, those are some very, very rough calculations but I just wanted to show you the basic idea of how you could make some very quick modifications to the file and get some answers to a case study question like that.

So, I just undid everything. Let's keep going, what are the approximate IRRs of the construction loan and the permanent loan? So, let's go over to the construction loan first and fill this in because this will actually be easier in this case. We need to enter some dates at the top because we're going to use the XIRR function here, so we use the EOMONTH function and just copy this over. Then for the actual IRR, so the construction loan draws are going to count as investments from the perspective of the lenders here. And then whatever we get paid back at the end will count as the returns from the perspective of the lenders.

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So, we'll link to the ending debt balance at the end of fiscal 2018, and then we can use the XIRR function and we'll enter all these as values, we'll go up to the top and enter the dates right here. And so, we get to an IRR of about 10.8%, which, of course, is higher than the annual interest rate here of 6.25%.

That happens because of the very short time frame here and because of the fact we're capitalizing the interest and the loan fees so that our ending repayment at the end is higher than the total amount of investment that we actually made as lenders; they're higher than the total amount of loan that we funded over the life of this because the fact that these are capitalized, also, the loan issuance fee should add at around 1% to this. So, when you add up all those to a shorter time period, capitalized fees and interest, and the 1% loan fee, we get to an IRR that's quite a bit higher than the interest rate here.

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I'll undo this once again since we don't need this for anything in particular. And then let's go back and look at the IRR for the permanent loan. So, for this one, let's just enter some extra spots to fill this in, the permanent loan issued will be an investment from our perspective as lenders and the financing fees will be something that we get from the company, so count that toward our returns year. Then we'll take the sum of our interest expense and permanent loan principal repayments here and we'll copy this through each year. So, we have that.

And then we need to add in our permanent loan repayment and the prepayment penalty because both of those go to us at the very end. And nothing else will actually go to us as lenders. I also need to flip the signs on all this, I should have done that earlier.

[22:06]

So, if we take the IRR on this, we get to just over 5%, which is slightly higher than the 4.75%. So, the reason this happens here is partially because of the financing fees and the prepayment penalty. If we get rid of both of those, like I just did, we'd actually only get to around a 4.75% IRR, which makes sense because we're using the IPMT and PPMT functions and we're splitting this up and assuming the same payments each year.

So, if we pay this on a regular basis we don't have anything going on with capitalized fees or interest or anything like that, it makes sense that we get to this. But the fact that we have the financing fees and the prepayment penalty pushes us up above that 4.75% number. So, let's just delete all of these. And we have that. What additional analysis might a lender perform to decide whether or not to fund a permanent loan?

[22:58]

Here, the main addition would be looking at more serious downside scenarios. So, for example, a lender might go up here and say, "Okay, let's see what happens if there are 12 months of downtime and the renewal probability is only 40%." If you do this, and you go down and you look at the ratios, in fiscal 2023 we run into some serious problems because our interest coverage ratio is way below the minimum, and so is the debt service coverage ratio.

Now, that isn't necessarily the end of the world; they wouldn't necessarily say, "No" to the deal because it depends on how likely this outcome is. If it turns out that it never takes a year, and that the renewal probability for past properties has always been above 50%, then maybe lenders wouldn't take that seriously. But they would go through and create those types of

scenarios. They might look at something like the number of months of free rent and change it to 8 and 4 instead of 4 and 2. They might change the TIs to 3 and 2 instead of $1.50 and $1, for example.

[23:53]

And in this case, the ratio still looks fine. We still don't go below the minimum in fiscal 2023, so they might look at something like that in one of their downside scenarios and say that that is okay, but if the months of downtime are much longer or the renewal probability is quite a bit lower, then that is more problematic. So, lenders would create and assess those types of scenarios and then make a decision based on that. They might look at scenarios where the rent rises and the vacancy rate increases because the market declines. They might look at a decline and recovery.

And like I say, here they would make a decision based on how likely these different outcomes are. So, even if the debt service coverage ratio drops to 0.50x, if that scenario is incredibly unlikely and represents something that's never happened in the property market in Calgary before, then they probably wouldn't take it that seriously. On the other hand, if it drops that low when there's just a simple decline and recovery, such as the ones that happen probably every few years or every decade in the property market, then they might ask for different terms or they might decide not to fund the loan in the first place.

Question number five, are the operating assumptions realistic?

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Which assumptions might we change to get a more reasonable view of the deal? For the most part, these assumptions are realistic. Now, we don't have that much information, but they do say that the average price per acre for undeveloped industrial land is $600,000 to $750,000, and we're paying $700,000, so that price for the land seems realistic. We don't know about the construction costs, so we're not really sure about that part. We also don't have much information on loans in this market, so we can't really say much about those, but those are not really operational in nature.

For the Cap Rates, we know that they've always been between 5% and 6.5% historically. So, this type of range, 5.8% to 5.5%, seems fine to us.

With the rental assumptions here, we have one tenant that is paying $7.50 per square foot initially; another tenant is paying $8. And in this particular market, asking rents have been between $7 and $9 per square foot over the past few years.

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So, we think the rental assumptions are fine. The additional concessions are worth between $3 and $4 per square foot. So, if you go in and quickly do the rough math on those, let's just take the concessions and free rent and the tenant improvements, and then divide by the rentable square feet. So, it's about $4 right here, then if we look at the other year it's about $3.17. And then if we go to tenant number two, it should be H95 to H96 divided by the rentable square feet. We got $4.25 and $3.36. So, overall, these seem to fit with the assumptions that were given to us. And in fact, these might even be on the high side.

So, that's just a quick example of how you can check some of these assumptions. Really, the main problem with the assumption here is that beyond the ones we don't know or we don't have any information on, we purchased far too much land in the beginning.

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And I showed you earlier how if we change this to 9 acres instead of 18 acres, we would get an IRR that's about 26% instead of just above 20%; the IRR to the LPs would be 24% in that scenario. So, to us that's the most problematic assumption in this entire model and case study. And if we were doing the deal for real, we would immediately push for less land because we're not going to need even close to that full amount. You're always going to have some amount of excess land, but we think 57% is excessive and just makes the numbers in this deal too difficult to work.

Finally, if we had more time and resources, what else might we do to make a more informed decision? The main thing here is to look at scenarios and sensitivities. So, we might create downside cases where there's a market decline followed by a recovery. We might assume rents fall and then vacancy rates, and TIs and free rent all rise because it's harder to attract tenants when there's a decline in the market. We might also look at something like the construction costs per gross square foot and see what happens when that changes.

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We might look at a changing LTV ratio. We might look at a scenario where the Cap Rates go way up to 6.5% or 7.0% or even higher than that, if we wanted to look at a real "Armageddon" scenario here. So, we might look at those types of things and we might create sensitivities for some, we might create scenarios for others, and it really depends on the one we're looking at and how closely they move together.

Something like rent and vacancy rates and TIs and free rent will almost always move together because rents will fall, vacancy rates will rise, TIs will rise, and free rent will rise when there's a downturn; when there's a recovery, rent will start to rise more quickly, and all of those will fall because it'll be easier to attract tenants. So, those are some additional points that we might look at.

We're at the end, so let's do a recap and summary now. The waterfall schedule setup here is quite similar to what we saw in the first case study, but now we have multiple tiers. We're also looking at this on a project level instead of just the IRR to just the limited partners.

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The basic setup, though, is really the same. We look at what we need to earn each year to get this 10% IRR. And then we look at how much we actually earn, and that goes into the repayment row here. Then we split these up 10%, 90% in this first tier and then anything that's left over after the split can be distributed in tiers 2 and 3 below.

So, then we go to tier 2 and we look at what we need to earn to get this 20% IRR. And by the end, we actually have above the $31.5 or $31.6 million that's required. So, that's what goes into tier 3.

In tier 2, we split up these cash flows 80/20, and so 20% goes to the developer, 80% goes to the limited partners, and so the repayments for both those represent the cash flows that go to both of these parties in this tier. And then we reassemble everything at the end and we just make sure that we distribute the tier 1 cash flows as shown above.

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For tier 2, we have to take the tier 1 cash flow available and subtract the tier 3 cash flow available. And then for tier 3, we can just take everything that we'd get to at the very bottom

and split that up. We reassemble them and get to our IRR and cash-on-cash multiples on our annual yields. And then we use it to answer the case study questions.

We said overall, we'd be against this deal because of the issue with excess land, the fact that the IRR doesn't meet the target, and we think the permanent loan refinancing and the waterfall structure could use some work. We think the permanent loan refinancing should be pushed back. You saw how to calculate the IRR for both types of loans here; there is a bigger difference for the construction loan because there is higher risk and higher potential reward and a much shorter time frame.

Lenders would stress-test this model and look at much more pessimistic assumptions for the downtime, the tenant move-in dates, and things like that. We think the operating assumptions for which we have data are reasonable. We're not sure about the Cap Rate trend or the general vacancy numbers or the construction costs or some others.

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But the biggest problem, we think, is the fact that we buy so much excess land in the beginning. If we had more time and resources, we'd look at different scenarios, we'd try to get more market data, we'd try to see what happens when the Cap Rate at the end shifts around, when the LTV changes, when the downtime months change, what if it takes more or less time to find tenants – and we'd look at those types of issues as well.

That's it for this case study. You should now have an idea of how to combine everything we've learned in the first few case studies for office, retail, and industrial properties, for both acquisitions and new developments, and create this type of model and use it to answer case study questions.

Coming up next, we're going to look at a few other types of properties and deals, including a hotel acquisition and renovation and also a pre-sold condo development.