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Financial Modeling Fundamentals, Module 12: Leveraged Buyouts and LBO Models – Exit Strategies, Investment Recommendations, and More Advanced LBO Features

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Key Rule #6: Exit Strategies and Exit Assumptions

"You can check-out any time you like,

But you can never leave!"

-"Hotel California" by The Eagles

PE firms want the **opposite** of what The Eagles describe in their famous song: They want to be able to **leave** – to **exit** – an investment whenever they want.

A company might be the best in the world, but if there's no way to **sell** your stake in it, there's no way to make money with it.

The 3 main exit strategies in leveraged buyouts are:

1) **M&A** – Sell the company to another company or a different private equity firm within the next 3-7 years.

2) **IPO** – Take the company public and sell off the stake gradually over time.

3) **Dividend Recap AKA "Hotel California"** – The PE firm never "sells" the company, but instead asks the company to issue Dividends continually. *Eventually*, if these Dividends get big enough – quickly enough – the firm might realize acceptable returns.

Of these strategies, PE firms overwhelmingly prefer method #1: The M&A Exit.

This strategy tends to produce the **highest IRR**: The firm sells its entire stake all at once and doesn't have to wait for years to sell its shares.

The PE firm also removes all legal risk and potential "contaminants" because it stops owning the company completely at this stage.

An M&A exit is like a clean break-up where you move out and never talk to your ex again, while the IPO and Dividend Recap options are more like messy divorces where it takes years to work through alimony.

Just as in real life, while an M&A exit (or clean break-up) is *ideal*, the PE firm may not always be able to execute it.

For example, the company might be **too big** to be sold: If it's already the biggest company in its industry, then another company is unlikely to acquire it.

Another problem is that **there may not be any interested acquirers**, at least at the price the PE firm wants.

This problem often comes up in "dying industries," such as mainframe software or newspaper publishing, where the company has strong cash flows from legacy customers but where no *new* companies want to enter the industry.

If an M&A exit is not plausible, the private equity firm will have to consider an **IPO exit**, where it takes the company public and sells off its stake over time.

The advantage of an IPO is that almost any company above a certain size could, theoretically, go public, but the disadvantage is that the PE firm can't sell its entire stake at once.

If the PE firm sold its entire stake in the transaction, it would send a **strong negative signal to the market**: "We like this company… really, we like it, and you should buy its shares. But, oh, by the way, we're selling *all* our shares in the company. But don't worry, its prospects are great!"

The PE firm might be able to sell a portion of its stake – say, 20% or 30% – in the immediate deal, but it will have to sell the remaining 70% or 80% quietly over time.

Here's what the **M&A exit strategy** looks like in terms of MoM multiples and IRR (using the Chuck E. Cheese's LBO for the cash flow and EBITDA figures):

			Projected									
Returns Calculations:	*Units*	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23
EBITDA Exit Multiple:	*x*						7.9x					
EBITDA:	*$ M*	$ 165.6					211.0					
Exit Enterprise Value:	*$ M*						**$ 1,668.3**					
(-) Net Debt:	*$ M*						(921.1)					
Equity Value on Exit:	*$ M*						**$ 747.2**					
Investor Equity:	*$ M*						747.2					
Returns to Investors:												
Sponsor Common Equity:												
Initial Investment:	*$ M*	$ (356.4)										
Dividends:	*$ M*		-	-	-	-	-					
Investor Equity:	*$ M*						747.2					
Total Cash Flows:	*$ M*	**$ (356.4)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 747.2**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Money-on-Money (MoM) Multiple:	*x*	**2.1 x**										
Internal Rate of Return (IRR):	*%*	**16.0%**										

Simple, clean exit where the PE firm sells its *entire* stake after 5 years.

PE firm does slightly better than doubling its money over 5 years, so the IRR is slightly above 15%.

In an IPO exit, the IRR will almost always be lower unless the company's share price increases significantly in the few years after it goes public.

Often, IPO exits result in *similar* or *higher* MoM multiples, but lower IRRs since the PE firm receives the proceeds over several years (at least).

Here's **the math for an IPO exit:**

Returns Calculations:	Units	FY13	Projected FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23
EBITDA Exit Multiple:	x						7.9x					
EBITDA:	$ M	$ 165.6					211.0					
Exit Enterprise Value:	$ M						**$ 1,668.3**					
(-) Net Debt:	$ M						(921.1)					
Equity Value on Exit:	$ M						**$ 747.2**					
Investor Equity:	$ M						747.2					
Share Price Increase Over IPO Price:	%						0.0%	10.0%	20.0%	30.0%		
% Stake Sold by PE Firm:	%						20.0%	35.0%	30.0%	15.0%		
Returns to Investors:												
Sponsor Common Equity:												
Initial Investment:	$ M	$ (356.4)										
Dividends:	$ M		-	-	-	-	-					
Investor Equity:	$ M						149.4	287.7	269.0	145.7		
Total Cash Flows:	$ M	**$ (356.4)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 149.4**	**$ 287.7**	**$ 269.0**	**$ 145.7**	**$ -**	**$ -**
Money-on-Money (MoM) Multiple:	x	**2.4 x**										
Internal Rate of Return (IRR):	%	**14.5%**										

The fact that we're not selling the entire stake at once hurts us, but the assumed share price increases help a bit.

So despite a higher MoM multiple, the IRR is **LOWER** because of the time value of money.

An IPO exit is especially risky because **the company's share price might decrease!** Take a look at the numbers if that happens:

Returns Calculations:	Units	FY13	Projected FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23
EBITDA Exit Multiple:	x						7.9x					
EBITDA:	$ M	$ 165.6					211.0					
Exit Enterprise Value:	$ M						**$ 1,668.3**					
(-) Net Debt:	$ M						(921.1)					
Equity Value on Exit:	$ M						**$ 747.2**					
Investor Equity:	$ M						747.2					
Share Price Increase Over IPO Price:	%						0.0%	(10.0%)	(20.0%)	(30.0%)		
% Stake Sold by PE Firm:	%						20.0%	35.0%	30.0%	15.0%		
Returns to Investors:												
Sponsor Common Equity:												
Initial Investment:	$ M	$ (356.4)										
Dividends:	$ M		-	-	-	-	-					
Investor Equity:	$ M						149.4	235.4	179.3	78.5		
Total Cash Flows:	$ M	**$ (356.4)**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 149.4**	**$ 235.4**	**$ 179.3**	**$ 78.5**	**$ -**	**$ -**
Money-on-Money (MoM) Multiple:	x	**1.8 x**										
Internal Rate of Return (IRR):	%	**9.9%**										

This outcome is why PE firms always prefer M&A exits as long as they're plausible.

In some cases, it might **not** be possible to sell the company *or* to take it public. This happens frequently in:

- **Emerging and Frontier Markets** – If the capital markets in the country are small and undeveloped, it's probably not feasible to take a large company public there. And even if you try to take it public in the U.S. or Europe, investors might not be interested.

- **Cases Where the Company is Too Small to Go Public** – For example, it would be difficult for a $50 million revenue company to go public in the U.S., and even if it did, it might not get the valuation the PE firm desires.

- **Cases Where Regulatory or PR Obstacles Prevent the Company from Going Public or Being Acquired** – For example, if the company operates in an industry with a "bad reputation," such as tobacco or adult entertainment, it might not be able to go public, and potential acquirers might not be interested.

In these cases, the private equity firm will have to consider "partial exits": The real-life analogy would be breaking up with someone but still inviting him/her over for occasional booty calls.

The main "partial exit" strategy is the **dividend recapitalization** or **dividend recap**.

In a dividend recap, the company issues dividends to the private equity firm using its Cash and FCF each year, or by raising new Debt and using the proceeds for dividends.

The first strategy is called a **non-leveraged dividend recapitalization**, and the second one is a **leveraged dividend recapitalization**.

The first strategy works well for high-growth companies whose Free Cash Flow is growing rapidly.

But it's tough to make the math work unless FCF grows **a lot** – if it takes 10 years to recoup the initial investment, this method will never yield a great IRR.

The leveraged dividend recapitalization can work well when the company repays significant Debt or never raises much Debt.

For example, it would work well in this leveraged buyout of 7 Days Inn because:

- The company repays 75% of the initial Debt;
- It doesn't raise much Debt in the beginning; and
- It's clearly able to service leverage above 1.3x Debt / EBITDA.

Here's the math for the non-leveraged dividend recapitalization:

Returns Calculations:	Units	FY13	Projected FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23
EBITDA Exit Multiple:	x						7.9x					
EBITDA:	$ M	$ 165.6					211.0					
Exit Enterprise Value:	$ M											
(-) Net Debt:	$ M											
Equity Value on Exit:	$ M											
Investor Equity:	$ M											
Returns to Investors:												
Sponsor Common Equity:												
Initial Investment:	$ M	$ (356.4)										
Dividends:	$ M		40.0	50.0	60.0	70.0	80.0	90.0	100.0	110.0	120.0	130.0
Investor Equity:	$ M											
Total Cash Flows:	$ M	**$ (356.4)**	**$ 40.0**	**$ 50.0**	**$ 60.0**	**$ 70.0**	**$ 80.0**	**$ 90.0**	**$ 100.0**	**$ 110.0**	**$ 120.0**	**$ 130.0**
Money-on-Money (MoM) Multiple:	x	**2.4 x**										
Internal Rate of Return (IRR):	%	**15.8%**										

The "Exit Assumptions" are irrelevant here because there is no real exit.

These are VERY aggressive assumptions... how many companies have 11% Dividend Yields that increase each year?

The multiple is the same as in the IPO , and the IRR is even higher... but are the Dividend assumptions realistic?

The main problem with this scenario is that **these Dividend assumptions are wildly unrealistic**.

Even companies that issue Dividends tend to have Dividend Yields below 5%; an initial yield of 11% in Year 1 of a leveraged buyout is unheard of.

More realistic assumptions might be the following:

Returns Calculations:	Units	FY13	Projected FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23
EBITDA Exit Multiple:	x						7.9x					
EBITDA:	$ M	$ 165.6					211.0					
Exit Enterprise Value:	$ M											
(-) Net Debt:	$ M											
Equity Value on Exit:	$ M											
Investor Equity:	$ M											
Returns to Investors:												
Sponsor Common Equity:												
Initial Investment:	$ M	$ (356.4)										
Dividends:	$ M		10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0
Investor Equity:	$ M											
Total Cash Flows:	$ M	**$ (356.4**	**$ 10.0**	**$ 15.0**	**$ 20.0**	**$ 25.0**	**$ 30.0**	**$ 35.0**	**$ 40.0**	**$ 45.0**	**$ 50.0**	**$ 55.0**
Money-on-Money (MoM) Multiple:	x	**0.9 x**										
Internal Rate of Return (IRR):	%	**(1.3%)**										

These more realistic assumptions also show why PE firms prefer to avoid this "exit strategy" if at all possible.

In our model for 7 Days Inn, we used the most common exit assumption: **An M&A exit at an exit multiple close to the purchase multiple**.

You'll often set the exit multiple equal to the purchase multiple, and then look at a range of outcomes around that, based on the multiples of peer companies and how this company's FCF growth and ROIC change over time:

		Historical			Projected				
Investor Returns:	*Units*	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17
EBITDA:	¥ *M*			¥ 563.8					¥ 1,045.0
EBITDA Multiple:	*x*			7.4 x					7.4 x
Enterprise Value:	¥ *M*			4,159.8					7,710.0
Equity Value:	¥ *M*			4,313.5					9,035.8
Investor Equity:	¥ *M*			(1,856.5)	-	-	-	-	4,401.7
Money-on-Money (MoM) Multiple:	*x*			2.4 x					
Internal Rate of Return (IRR):	%			18.8%					

Returns Attribution Analysis:		Amount:	%:
EBITDA Growth:	¥ *M*	¥ 1,729.5	68.0%
Multiple Expansion:	¥ *M*	0.0	0.0%
Debt Paydown and Cash Generation:	¥ *M*	815.7	32.0%
Total Return to Equity Investors:	¥ *M*	¥ 2,545.2	100.0%

You'll usually start with an initial exit multiple around the same as the purchase multiple.

Subtract Net Debt to move from Exit Enterprise Value to Exit Equity Value, and then multiply by the PE firm's ownership % to get the Investor Equity.

You must hard-code 0's here in the middle or IRR won't work!

In theory, the company's exit multiple might increase, which is called "Multiple Expansion."

However, you shouldn't necessarily assume multiple expansion in your baseline model because it's tough to predict and rarely happens in real life.

In this model, for example, 7 Days Inn' Return on Invested Capital (ROIC) barely changes over the 5-year holding period: It stays in the 7-10% range, rising slightly by the end.

Its FCF growth also decreases from 100%+ to 20-25% by the end of the period.

A higher multiple *might* be justified because the company is switching to a less capital-intensive business model, but this franchise model also presents risks.

With these numbers, it would be tough to justify Multiple Expansion assumptions.

When you move to the Exit Equity Value at the end, the standard assumption is to **subtract Net Debt**, i.e. to subtract all Debt and add all Cash, to calculate it.

That is **not** necessarily what happens in real life because a private equity firm can't "take" an entire company's Cash balance at the end (e.g., because of the Minimum Cash Balance).

And while a PE firm usually has to repay the remaining Debt balance upon exit, there are cases – especially in IPO scenarios – where some of the Debt may stay in place.

In this model, it's reasonable to add the company's entire Cash balance upon exit because it generates a massive amount of Excess Cash in the holding period.

No PE firm would look at that Cash balance and say, "Well, let's just leave it alone and let the company have it. It's a gift!"

Instead, they would have the company issue a "Special Dividend" or otherwise distribute the Cash upon exit.

Calculating *both* the MoM multiple and the IRR is useful because it tells us how a deal looks based on both criteria.

Also, if the MoM multiple looks acceptable but the IRR does not, we might be able to make the math work by assuming an earlier exit or a dividend recap in between purchase and exit.

Returns Attribution Analysis

As discussed earlier, we can assess the returns drivers via a Returns Attribution Analysis:

		Historical			Projected				
Investor Returns:	*Units*	**FY10**	**FY11**	**FY12**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**
EBITDA:	¥ *M*			¥ 563.8					¥ 1,045.0
EBITDA Multiple:	*x*			7.4 x					7.4 x
Enterprise Value:	¥ *M*			4,159.8					7,710.0
Equity Value:	¥ *M*			4,313.5					9,035.8
Investor Equity:	¥ *M*			(1,856.5)	-	-	-	-	4,401.7
Money-on-Money (MoM) Multiple:	*x*			2.4 x					
Internal Rate of Return (IRR):	%			18.8%					

Returns Attribution Analysis:		**Amount:**	**%:**
EBITDA Growth:	¥ *M*	=(+N301-I301)*I302*Investor_Ownership	
Multiple Expansion:	¥ *M*	0.0	0.0%
Debt Paydown and Cash Generation:	¥ *M*	815.7	32.0%
Total Return to Equity Investors:	¥ *M*	¥ 2,545.2	100.0%

If the multiple had remained *the same* (which it did in this case), how much would the difference in EBITDA contribute to the returns?

Everything *not* related to EBITDA growth or multiple expansion goes here - not completely accurate due to minimum Cash.

For the returns from EBITDA Growth, we subtract the Initial EBITDA from the Final Year EBITDA, multiply by the Purchase Multiple, and then multiply by the PE firm's ownership %.

For the returns from Multiple Expansion, we subtract the Initial Multiple from the Exit Multiple, multiply by the Final Year EBITDA, and then multiply by the PE firm's ownership %.

And then we back into the "Debt Paydown and Cash Generation" figure by taking the Total Return to Equity Investors and subtracting the returns sources above.

In this case, Total Return to Equity Investors = ¥4,401.7 – ¥1,856.5 = ¥2,545.2.

Since there is no Multiple Expansion, the Returns from Debt Paydown and Cash Generation = Total Return to Equity Investors – Return from EBITDA Growth = ¥2,545.2 – ¥1,729.5 = ¥815.7.

Since roughly 2/3 of the returns come from EBITDA growth and 1/3 come from Debt Paydown and Cash Generation (*mostly* Cash Generation), this deal looks plausible.

If a high percentage of the returns came from Multiple Expansion, we'd be a lot more skeptical because multiples are tough to predict.

It's best to bet on **EBITDA growth** because it means the company's core business is growing.

We can also create sensitivity tables that show the impact of different assumptions on the IRR:

Sensitivity Analysis - 5-Year IRR and Purchase Premium vs. Exit Multiple:

			EBITDA Exit Multiple:								
			5.0 x	5.5 x	6.0 x	6.5 x	7.0 x	7.4 x	8.0 x	8.5 x	9.0 x
Purchase Premium and Per Share Offer Price in USD:	$ 3.88	10.0%	15.8%	17.5%	19.2%	20.7%	22.2%	23.3%	25.0%	26.3%	27.6%
	4.05	15.0%	14.6%	16.4%	18.0%	19.6%	21.1%	22.2%	23.8%	25.1%	26.4%
	4.23	20.0%	13.6%	15.3%	16.9%	18.5%	20.0%	21.0%	22.7%	24.0%	25.2%
	4.40	25.0%	12.5%	14.3%	15.9%	17.4%	18.9%	20.0%	21.6%	22.9%	24.2%
	4.60	30.6%	11.4%	13.2%	14.8%	16.3%	17.8%	18.8%	20.5%	21.8%	23.0%
	4.76	35.0%	10.6%	12.3%	13.9%	15.5%	16.9%	18.0%	19.6%	20.9%	22.1%
	4.93	40.0%	9.7%	11.4%	13.0%	14.5%	16.0%	17.0%	18.7%	20.0%	21.2%

Sensitivity Analysis - 5-Year IRR and Purchase Premium vs. % Debt:

			% Debt:								
			10.0%	15.0%	20.0%	25.0%	28.9%	35.0%	40.0%	45.0%	50.0%
Purchase Premium and Per Share Offer Price in USD:	$ 3.88	10.0%	21.6%	22.1%	22.5%	22.9%	23.3%	23.9%	24.5%	25.0%	25.6%
	4.05	15.0%	20.5%	20.9%	21.4%	21.8%	22.1%	22.7%	23.2%	23.8%	24.3%
	4.23	20.0%	19.5%	19.9%	20.3%	20.7%	21.0%	21.6%	22.1%	22.6%	23.1%
	4.40	25.0%	18.5%	18.9%	19.3%	19.7%	20.0%	20.5%	21.0%	21.4%	22.0%
	4.60	30.6%	17.5%	17.8%	18.2%	18.5%	18.8%	19.3%	19.8%	20.2%	20.7%
	4.76	35.0%	16.7%	17.0%	17.3%	17.7%	18.0%	18.5%	18.9%	19.3%	19.8%
	4.93	40.0%	15.8%	16.1%	16.4%	16.8%	17.0%	17.5%	17.9%	18.3%	18.7%

The conclusion here is that even if the exit multiple falls substantially (~50% – down to 5.0x), the deal is still not a *disaster*.

Most PE firms aim to **avoid losing money** in these Downside scenarios, so a 1.5x multiple is a good outcome if things go horribly wrong.

And with modest Multiple Expansion, the IRR would exceed 20%.

With the second table, the main conclusion is that more Debt would increase the IRR modestly, but additional *upfront* Debt is unlikely to make a huge impact.

Going from 28.9% Debt to 50.0% Debt increases the IRR by only ~2%, so this is not the best way to improve the deal metrics.

We get this result because 2/3 of the returns come from EBITDA Growth, not Debt Paydown, and even the 1/3 of the returns from "Debt Paydown" *actually* come from Cash Generation.

It would make more sense to raise additional Debt during the holding period to fund a **Dividend Recap** instead.

How to Quickly Estimate the IRR

If the PE firm exits an LBO via an IPO or a dividend recapitalization, it's tough to estimate the IRR because the proceeds are distributed over time.

In those cases, you're better off using Excel to run the numbers. If you get pressed on how to calculate the IRR, think of it using the rules presented earlier:

- **"Double Your Money" Scenarios:** Take 100%, divide by the # of years, and then multiply by ~75% to approximate the IRR.

- **"Triple Your Money" Scenarios:** Take 200%, divide by the # of years, and then multiply by ~65% to approximate the IRR.

You can adjust the IRR up or down depending on how long it takes to sell off the PE firm's stake.

For this baseline scenario with 7 Days Inn, the MoM multiple is 2.4x, which is right between doubling our money and tripling our money.

If we double our money over 5 years, the IRR is roughly 100% / 5 * 75% = 20% * ~75% = ~15%.

If we triple our money over 5 years, the IRR is roughly 200% / 5 * 65% = 40% * ~65% = ~25%.

Since 2.4x is a *bit closer* to the "Double Our Money" case, we could approximate this IRR as "Just below 20%." The real IRR is 19%.

If the firm sold off its stake in an IPO over 3 years instead, with 1/3 sold per year starting in Year 5, we could approximate the IRR with this logic:

- It takes an average of **6 years** for the firm to sell its entire stake (1/3 in Year 5, 1/3 in Year 6, and 1/3 in Year 7).

- 100% / 6 = 16.7%, and 16.7% * ~75% = ~12.5%. And 200% / 6 = 33.3%, and 33.3% * 75% = ~25%. The IRR must be between ~12.5% and ~25%.

- We'd estimate the IRR as "Between 12.5% and 25%, and likely closer to 12.5% because 2.4x is closer to 2.0x than 3.0x; it might be around 16-17%."

The actual IRR in this IPO scenario where the stake is sold off over 3 years, and the company's share price doesn't change, is **16%**:

		Historical			Projected						
Investor Returns:	*Units*	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17		
EBITDA:	¥ *M*			¥ 563.8					¥ 1,045.0		
EBITDA Multiple:	*x*			7.4 x					7.4 x		
Enterprise Value:	¥ *M*			4,159.8					7,710.0		
Equity Value:	¥ *M*			4,313.5					9,035.8		
Investor Equity:	¥ *M*			(1,856.5)	-	-	-	-	1,467.2	1,467.2	1,467.2
Money-on-Money (MoM) Multiple:	*x*			2.4 x							
Internal Rate of Return (IRR):	*%*			15.6%							

Average of 6 years to sell the entire stake, so the IRR is lower than we'd normally expect.

This trick stops working as well over longer time frames, but it's useful for answering these types of interview questions.

The most important IRR approximations are as follows:

- Double Your Money in 1 Year = 100% IRR
- Double Your Money in 2 Years = ~40% IRR
- **Double Your Money in 3 Years = ~25% IRR**
- Double Your Money in 4 Years = ~20% IRR
- **Double Your Money in 5 Years = ~15% IRR**
- Triple Your Money in 3 Years = ~45% IRR
- **Triple Your Money in 5 Years = ~25% IRR**

Please see the Interview Questions & Answers section for **many** examples of "IRR Calculation" questions, including questions where you're given the IRR or MoM multiple and must solve for something else, such as the purchase multiple.

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Key Rule #7: Using an LBO Model in Real Life

Once you have the final LBO model, can **use it in real life**.

In investment banking, you use the output of an LBO model to **pitch deals** to clients and prospective clients, and sometimes to negotiate with private equity firms as deals progress.

For example, if you're trying to sell your client to a private equity firm in an LBO, and the PE firm tries to negotiate a lower price, you might use the output from your LBO model as part of the argument for a higher price:

"Even with a 5% higher price, you could still realize a 22% 5-year IRR, even with more pessimistic operating assumptions."

The PE firm will disagree with your analysis, but you'll still do what you can to win a better price for your client.

You often use LBO models much earlier in the process as well: If you're speaking with a company that's interested in selling or raising capital, you might present a hypothetical leveraged buyout to management and say:

"You've previously been considering only 'strategic buyers' (normal companies), but if you're interested in selling, you should consider private equity firms as well. They could realize solid returns with your firm, and you could continue to operate independently."

And then you might present a summary of the financial figures backing up your claims.

The **mechanics** of the LBO model aren't much different in investment banking and private equity: You still make assumptions for the Purchase Price, the Equity and Debt levels, the Sources & Uses schedule, the financial statements, the Debt repayment, the exit, and so on.

But the difference is that **you're far more critical of the numbers** in private equity.

If the CFO forecasts revenue growth of 10% per year for 5 years with EBITDA margins rising from 15% to 20%, bankers will accept those projections and incorporate them into the model.

They might create Upside, Base, and Downside Cases, but they won't seriously challenge the client.

But in private equity, you **take the opposite approach** and scrutinize the numbers in-depth.

For example, you might pick apart an assumption like "10% revenue growth" and say:

- "OK, but how much of that comes from price vs. volume growth?"
- "If most of it comes from pricing growth, is that sustainable, or will the company start to lose customers?"
- "If most of it comes from volume growth, is the market big enough to support it?"

You might then interview customers, suppliers, and other market participants to see if these assumptions are realistic.

You approach the process differently because in private equity, you use LBO models to **screen for deals** and **recommend for or against deals**.

If the numbers don't work – e.g., the IRR never goes above 15% even in very optimistic cases – you won't spend any additional time working on the deal.

But if the numbers *do* work in your initial model – e.g., the IRR is 25% in the Base Case and 15% with a 1.5x MoM Multiple in the Downside Case – then you'll stress test them further:

- **Market Research and Channel Checks:** You might look at similar products on the market, see what customers are paying, and see how prices have trended historically. You might also get a sense of what other companies are spending to see how your company's margins might change.

- **Industry Trends:** If you're in a cyclical market, such as real estate, you'll take a look at historical pricing trends to see where you might be in the cycle for prices, occupancy rates, and other key factors, and how much these numbers could rise and fall over time.

- **New Numbers:** Based on this work, you'll refine your initial numbers and create **different scenarios** to represent more optimistic and pessimistic outcomes.

  If the deal still holds up across the different cases, then you might recommend it; if it doesn't, or there's too much risk, then you might recommend against the deal.

In private equity, you'll turn down ~99% of the deal you see.

It's completely different from investment banking, where banks accept almost any client – **PE firms do not get paid when they complete deals, but only when they *make money* with deals**.

The overall process for making a private equity investment recommendation looks like this:

Step 1: Determine Your Investment Criteria

For example, many private equity firms target a 20% IRR and plan to hold companies for 3-7 years; some growth equity firms target money-on-money multiples, such as 3x in the Base Case and 1.5x in the Downside Case.

Your specific numbers matter less than *setting* numbers and sticking to them.

Step 2: Create and Examine the Numbers in the Base Case

If the company or asset continues to operate "as is," what are the IRRs and multiples?

You might use management's projections for this case, but you should usually think of those figures as the "Upside Case."

If there's **no way** to achieve your targeted IRR and multiple in this Base Case, then your work is done: It's an easy "No" recommendation.

Step 3: Test the Downside Cases

Unlike venture capital firms that invest in high-risk startups, private equity firms **cannot** afford to lose money on deals.

A reasonable minimum for a Downside Case might be a **1.0x multiple**, though some firms aim for 1.2x – 1.5x multiples.

To come up with the numbers for this case, you might look at similar-but-worse-performing companies, assume a reversion to the mean for key stats like the occupancy rate or price increases, or find numbers from the last downturn or recession.

If the multiple drops to 0.5x with plausible Downside figures, the deal is probably a "No"; but if the multiple drops to 1.3x or 1.1x, the deal might still be feasible.

Step 4: Make a Decision and Back It Up with Qualitative Factors

Once you've made a decision, you need to go back to the market data and qualitative factors and use them to justify that decision.

For example, many PE firms look for companies with high switching costs, a high percentage of recurring revenue, a strong "moat," and relatively low CapEx requirements.

In case studies and modeling tests, you won't have time to investigate these points fully. Complete your analysis *first*, and then spin the qualitative side to support your decision.

In real life, you'll pay far more attention to these factors, and you might say "No" to an otherwise good deal if the qualitative/market points are not positive.

Your Final Recommendation

Your final recommendation should look something like this:

"Since we could realize an IRR of 20% and a MoM multiple of 2.5x in our Base Case and a 1.2x multiple even in more pessimistic scenarios, we recommend doing the deal and acquiring Company X for an EV / EBITDA multiple of 10.0x.

The company has been spending progressively less on CapEx as a % of revenue over time, even as it has grown its revenue, and we expect its capital efficiency to improve even more.

Even if its growth rate or margins decline to the levels from the last recession, the math still works. For the deal not *to work, the company's revenue growth would have to decline to (10%), which is well below even the worst-performing company in the industry."*

Why We Said "Yes" to 7 Days Inn

We followed a similar process with 7 Days Inn, and in the Downside Case, we focused on **much lower occupancy rates:** A possible decline from 80% to 65-70% over 5 years.

This much lower rate turned the IRR negative, but it wasn't **plausible** because it was well below industry-wide occupancy rates in the region and far below those of its closest peer company (Home Inns, which had 80-90% rates).

In pessimistic but *plausible* cases, we always avoided losing money.

The Base Case IRR was around **19%**, which is below what many PE firms target – why would we say yes, given this result?

A few factors explain our decision:

Factor #1: The Company Can and Should Distribute Its Excess Cash as Dividends Earlier On

This change would boost the IRR almost immediately because the PE firm loses out by waiting until the very end to distribute the cash.

The company also has no reason to make "optional" Debt repayments here: Distributing that cash in the form of Dividends would almost certainly boost the IRR.

Factor #2: We Could Change the Timing to Realize a Higher IRR

Since the MoM multiple is fine, while the IRR is a bit low, we could likely realize a higher IRR by selling earlier.

For example, an exit in Year 4 would produce a 20.3% IRR.

Factor #3: We Could Also Boost Returns via a Leveraged Dividend Recap

Since the company pays off 75% of its new Debt by Year 3, we could raise additional Debt in Year 3 and easily boost the IRR over 20% – even if the new Debt is still only 1-2x EBITDA.

Factor #4: There May, In Fact, Be a Bit of Multiple Expansion

We assumed that the Exit Multiple = the Purchase Multiple in our analysis, but the company *could* command a higher multiple if its business truly becomes less capital-intensive over time.

The ROIC doesn't improve by much in the Base Case, but you don't necessarily *need* a higher ROIC for the multiple expand.

Given these factors, we think the ~19% IRR is on the low end.

Finally, *even if* the PE firm is targeting at least a 20% IRR, it won't necessarily say "No" to a deal that yields an IRR in the high teens.

If the firm is **very certain** of that IRR, it might agree to this type of deal with a more-certain-but-lower return.

Presenting Your Investment Recommendation

The presentation method depends on what you're asked to do: A 2-3-page Word document is quite a bit different from a 20-slide or 40-slide presentation with graphs and charts.

If you're drafting a **short written document**, you might include the following:

- **Page 1:** Your recommendation (Yes/No and why), the Sources & Uses schedule, and a summary of the IRRs and MoM multiples.

- **Page 2:** The operational scenarios and revenue, expense, and cash flow assumptions; if the Excel part is too big to paste in, you can summarize the scenarios in bullet form.

- **Page 3:** The projected FCF numbers, Debt repayment schedule, and the 1-2 most important sensitivity tables. Skip the full Income Statement, Cash Flow Statement, and Balance Sheet projections.

If you create a 20-slide presentation instead, you might use this structure for 7 Days Inn:

- **Slide 1 – Recommendation**
    - Explain that you recommend doing the deal because you can achieve the targeted IRR and MoM multiple in the Base and Downside scenarios.

    - The qualitative factors, shift to a less capital-intensive business model, and the highly fragmented market all support the deal.

    - The deal fails *only* if the occupancy rates or ADRs come in below expectations and drop far below industry averages, which seems unlikely.

- **Slides 2 – 6: Qualitative Factors**

- Explain how the budget hotel market in China is growing quickly but still highly fragmented, how 7 Days Inn is the #2 player, how it beats its competition, and how most of its growth will come from Managed Hotels in the future.

- There are some risks from falling occupancy rates and high fixed costs from its legacy businesses, but those are manageable.

- **Slides 7 – 16: The Numbers**
  - Here, you would point out that the 7.4x EBITDA purchase multiple is reasonable next to the public comps, summarize the revenue, expense, and cash flow assumptions, and show the LBO model output under different scenarios.

  - You'd also explain that even in more pessimistic cases, the numbers still work, and you would paste in the output from those cases.

- **Slides 17 – 19: The Counter-Factual**
  - You explain what might cause you to change your mind, including risks like the falling occupancy rate, and then you explain how you might mitigate those risks (e.g., sell off Assets to raise more cash, switch to Managed Hotels more rapidly, and so on).

- **Slide 20: Conclusion**
  - Restate the first slide but incorporate the numbers and specific details from the preceding slides. You can emphasize how the new business model more than offsets the possible decline in occupancy rates.

And that's it. You may not be an expert on LBO models (yet), but you should have a good grasp of the most common topics in interviews and case studies.

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Key Rule #8: More Advanced LBO Features [OPTIONAL]

As with the "More Advanced" sections of the other guides, this part is **optional**.

These concepts could come up in IB interviews, but they're *far* more likely to come up in private equity, growth equity, and other buy-side interviews.

They are **NOT** as likely to come up in investment banking interviews because interviewers focus more on accounting, valuation/DCF analysis, and merger models there.

You need to be familiar with LBO models; you don't need to know every last detail.

Here are the more advanced features of LBO models:

Dividend Recaps

As we mentioned in the section on Exit Strategies, **Dividend Recapitalizations** can act as alternatives to IPO and M&A exits in leveraged buyouts.

They may be either **leveraged** (funded with additional Debt) or **unleveraged** (funded with the company's Cash Flows).

However, a Dividend Recap is not *just* an exit strategy: Many PE firms execute Dividend Recaps midway through the holding period **to boost returns even further**.

They still plan to sell the company in an M&A deal or take it public, but if the company can afford to raise more Debt, this **Leveraged Dividend Recap** can boost returns.

Here's what it looks like:

Credit Statistics & Ratio Analysis	Historical		Transaction Adjustments			Projected			Dividend Recap			Projected	
	Year 1	Year 2	Debit	Credit	Year 2	Year 3	Year 4	Year 5	Debit	Credit	Year 5	Year 6	Year 7
Leverage Ratios:													
Total Debt / EBITDA:					4.01 x	2.92 x	2.26 x	2.22 x			2.62 x	2.09 x	2.00 x
Senior Debt / EBITDA:					2.40 x	1.37 x	0.68 x	0.62 x			1.02 x	0.56 x	0.51 x
Net Debt / EBITDA:					3.36 x	2.34 x	1.72 x	1.49 x			1.89 x	1.23 x	0.61 x
Total Debt / (EBITDA - CapEx):					5.83 x	4.30 x	3.41 x	3.39 x			4.00 x	3.22 x	3.08 x
Senior Debt / (EBITDA - CapEx):					3.49 x	2.01 x	1.02 x	0.94 x			1.55 x	0.86 x	0.79 x
Net Debt / (EBITDA - CapEx):					4.88 x	3.45 x	2.59 x	2.28 x			2.89 x	1.90 x	0.94 x

The company de-levers significantly after the first 3 years, so it then raises additional Debt in the 3rd year to fund a Dividend.

And on the Balance Sheet:

	Historical		Transaction Adjustments			Projected			Dividend Recap			Projected	
	Year 1	Year 2	Debit	Credit	Year 2	Year 3	Year 4	Year 5	Debit	Credit	Year 5	Year 6	Year 7
Revolver:			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Term Loan A:			$0	$1,927	$1,927	$381	$0	$0	$0	$0	$0	$0	$0
New Term Loan A - Recap:			$0	$0	$0	$0	$0	$0	$20	$1,000	$980	$0	$0
Term Loan B:			$0	$1,156	$1,156	$1,041	$30	$0	$0	$0	$0	$0	$0
Senior Note:			$0	$1,542	$1,542	$1,542	$1,542	$1,542	$0	$0	$1,542	$1,542	$1,542
Subordinated Note:			$0	$1,156	$1,156	$1,156	$1,156	$1,156	$0	$0	$1,156	$1,156	$1,156
Mezzanine:			$0	$1,156	$1,156	$1,304	$1,470	$1,658	$0	$0	$1,658	$1,870	$2,108
Shareholders' Equity:													
Common Stock:	$1.493	$1.527	$1.527	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000	$0.000
Additional Paid-In Capital:	$8,616	$9,937	$9,937	$0	$0	$630	$1,341	$2,136	$0	$0	$2,136	$3,018	$3,978
Treasury Stock:	($3,325)	($5,161)	($5,161)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Retained Earnings:	$3,718	$4,424	$4,515	$0	($91)	($781)	($1,326)	($1,812)	$1,000	$0	($2,812)	($3,261)	($3,604)
Accumulated Other Comprehensive Income:	$151	$331	$331	$0	$0	$40	$79	$119	$0	$0	$119	$159	$198
Preferred Stock:			$0	$771	$771	$887	$1,020	$1,174	$0	$0	$1,174	$1,174	$1,174
Sponsor Common Equity:			$0	$24,801	$24,801	$24,801	$24,801	$24,801	$0	$0	$24,801	$24,801	$24,801
Management Rollover:			$0	$100	$100	$100	$100	$100	$0	$0	$100	$100	$100
Total Shareholders' Equity:	**$9,161**	**$9,533**	**$9,624**	**$25,672**	**$25,581**	**$25,677**	**$26,016**	**$26,518**	**$1,000**	**$0**	**$25,518**	**$25,991**	**$26,647**
Total Liabilities & Shareholders' Equity:	**$11,514**	**$12,230**	**$10,634**	**$34,837**	**$36,433**	**$35,732**	**$35,088**	**$36,016**	**$1,020**	**$1,000**	**$35,996**	**$35,992**	**$37,152**

You adjust the Balance Sheet to reflect the new Debt, deduct the financing fee, and reduce Retained Earnings by the $1,000 Dividend that the company issues to the PE firm. On the other side, Cash is down by $20 because of the financing fees.

And then you include this Dividend at the end when you calculate the IRR and multiple:

Returns to Equity & Debt Investors:						
Sponsor Common Equity:						
Initial Investment:	($24,801)					
Dividends:		$0	$0	$1,000	$0	$0
Equity Value at Exit:						$37,389
Total Cash Flows:	**($24,801)**	**$0**	**$0**	**$1,000**	**$0**	**$37,389**
IRR:						*9.2%*

The Dividends appear in Year 3, boosting the IRR from 8.6% (without Dividends) to 9.2%.

It didn't make a big difference in this case because it was fairly small and the IRR was already terrible (8.6%).

A Dividend Recap can't boost an 8% IRR to 20%, but it can increase the IRR by small percentages.

For example, if a deal generates an 18% IRR, and you're confident that the acquired company could support a Dividend Recap, your recommendation might change from "No" to "Yes" if the Recap boosts the IRR to 20%.

Waterfall Returns and Performance Incentives

Often, the PE firm in a leveraged buyout ends up owning close to 100% of the company, but it lets management and existing investors roll over their shares.

While this Equity Rollover alone should incentivize the management team to keep increasing the company's value, some firms give management teams an **ADDED** incentive beyond that.

For example, if the management team owns 5% of the company after the leveraged buyout, the PE firm would receive 95% of the proceeds and the management team would receive 5% of the proceeds up to a 10% IRR.

But the management team might receive **10%** of the proceeds up to, say, a 15% IRR; and then 15% up to a 20% IRR; and then 20% of the proceeds above that 20% IRR.

These numbers could also be based on MoM multiples, and the calculations are easier if the proceeds are based on multiples instead.

Here's what it looks like if we use those IRR splits to divide the proceeds at each level, assuming that the initial Investor Equity is $1,000 and the Net Proceeds at the end are $3,000 (a 3x multiple, or a ~25% IRR over 5 years):

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
87														
88		**Waterfall Returns Distribution - Assumptions:**												
89														
90			Initial Amount Invested (Investor Equity):				$ 1,000							
91			Initial Management Ownership %:				5%							
92			Net Proceeds at End (After repaying all debt):				$ 3,000	<-- Normally, the management team would get 5% of this:					Mgmt:	$ 150
93													PE Firm:	2,850
94		**Level 1 of Waterfall Distribution Calculation:**												
95														
96			IRR Through:	10%										
97														
98				Year 0	Year 1	Year 2	Year 3	Year 4	Year 5					
99				$ 1,000	$ 1,100	$ 1,210	$ 1,331	$ 1,464	$ 1,611					
100														
101									=MIN(I99,G92)		<-- Distribute and Split This Amount for IRR in This Tier			
102									1,389		<-- Amount of IRR Left to Distribute			
103														
104			PE Firm %:	95%					1,530					
105			Management %:	5%					81					

In the first tier, up to a 10% IRR, things proceed normally: We apply a 10% compounded growth rate to that $1,000 initial investment to determine that a 10% IRR corresponds to $1,611 in proceeds in Year 5.

We then divide that $1,611 and distribute 95% to the PE firm and 5% to the management team.

Here's what Tier 2 looks like:

Level 2 of Waterfall Distribution Calculation:

IRR Through:	15%											
		Year 0		Year 1		Year 2		Year 3		Year 4		Year 5
		$	1,000	$	1,150	$	1,323	$	1,521	$	1,749	$ 2,011
												401 <-- Distribute and Split This Amount for IRR in This Tier
												989 <-- Amount of IRR Left to Distribute
PE Firm %:	90%											361
Management %:	10%											40

Multiply each prior year's figure by (1 + 15%).

$401 = $2,011 - $1,611; the total proceeds exceed $2,011, so we distribute this $401 in a 90% / 10% ratio.

$989 = $3,000 in total proceeds minus the $401 and $1,611 we've distributed so far.

We keep going like this through each tier, calculating the Exit Proceeds that *correspond to* specific IRRs such as 15% or 20%.

In each tier, we distribute **the proceeds that correspond to this IRR range – $401, which corresponds to 10% to 15% in the screenshot above.**

Since the split is 90% / 10% in this tier, we distribute 90% * $401, or $361, to the PE firm, and 10% * $401, or $40, to the management team.

We stop when the Net Proceeds of $3,000 are **less than** the proceeds that correspond to the IRR tier we're in, or when there are no more tiers left to calculate.

For example, an IRR Tier of 30% here corresponds to $3,713 in Year 5 Proceeds.

But there were only $3,000 in Net Proceeds in this deal, so we wouldn't distribute anything in that tier.

In this setup, the last IRR tier is 20%; above a 20% IRR, the PE firm gets 80%, and the management team gets 20%.

At that stage, there are $512 in remaining proceeds, so we split them 80% / 20% between the PE firm and management.

***If* the deal performs well, these management incentives *reduce* the IRR to the PE firm and greatly increase the IRR to the management team:**

IRR Calculations:

Overall Deal IRR:

Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
$ (1,000)	$ -	$ -	$ -	$ -	$ 3,000

5-Year IRR: **24.6%**

IRR Only to PE Firm:

Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
$ (950)	$ -	$ -	$ -	$ -	$ 2,706

5-Year IRR: **23.3%**

IRR Only to Management Team:

Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
$ (50)	$ -	$ -	$ -	$ -	$ 294

5-Year IRR: **42.6%**

Private equity firms offer this structure because a ~1% IRR difference doesn't impact them, but helping management nearly *double* their IRR makes a huge impact on management.

This structure is a great incentive for the executives at the company to perform well and aim for a solid exit, which is why it's used in deals.

Management Options

A PE firm can also incentivize a management team by offering them **stock options** in the company.

Normally, stock options let employees pay an "exercise price" to the company and then receive new shares.

Then, the employees could hold onto these shares or sell them for an immediate profit.

But if the company is already **private** as a result of a leveraged buyout, the employees can't just exercise the options whenever they want.

Instead, they can exercise the options **only upon exit** in an M&A deal or an IPO.

When the employees exercise their options, the **PE firm receives Cash** but also **awards some of the Equity Proceeds** to the employees.

The Equity Proceeds to the PE firm will be lower, but not *as much lower* as if the management team had a higher percentage ownership from the start.

Here's a simple example of how it works:

- **Initial Investor Equity:** $100 million.
- **Management Option Pool:** 5%.
- **Exit Equity Value:** $250 million.

We don't know the exercise price for the options, but the usual assumption is that the exercise price equals the **per-share purchase price**.

Therefore, if the Exit Equity Value exceeds the Initial Investor Equity, these options are in-the-money and will result in proceeds to the management team at the end.

We can estimate the cash payment at the end like this:

- **Cash Payment to PE Firm for Option Exercise** = 5% * $100 million = $5 million.

And we can estimate the proceeds to management upon exit with:

- **Proceeds to Management from Option Exercise** = (5% / (100% + 5%)) * ($250 million + $5 million) = ~4.8% * $255 million = ~$12.1 million.

The PE firm receives: $250 million Exit Equity Value + $5 million in Cash – $12.1 million in Proceeds to Management = $242.9 million.

The ~$12.1 million in proceeds to the management team is 5% of this number.

Private equity firms often use option pools when there's **more uncertainty** around the company's performance.

If the options are out-of-the-money upon exit, the PE firm loses nothing.

If they're in-the-money, the PE firm loses a bit, but the deal must have performed *somewhat* decently since the Exit Equity Value exceeds the Initial Investor Equity.

And in that case, the PE firm is fine paying the management team a bit more: **It's a great way to incentivize the executives to perform well**.

Add-On Acquisitions

Some private equity firms pursue a strategy of "Add-On Acquisitions," where they acquire one company and then use additional Debt and Equity to acquire other, smaller companies and combine everything into one big company.

It's extremely unlikely that these scenarios will come up in modeling tests or case studies because it's complex and time-consuming to include even a single acquisition in an LBO model.

But the basic idea is simple:

- **Step 1:** Assume that the PE firm uses additional Equity and Debt to fund each deal; the percentages would be tied to the original company's leverage and coverage ratios.

  For example, if the acquired company already has 5x Debt / EBITDA, the PE firm might have to use minimal Debt and mostly Equity to fund a deal. But if it has only 3x Debt / EBITDA, the PE firm could use more Debt to fund the deal.

- **Step 2:** Modify the Balance Sheet for these new companies, and factor in their revenue, expense, and cash flow contributions in future periods.

Post-Buyout Acquisition Assumptions		
Acquisition 1 (Year 2) Assumptions	**Percent:**	**Amount:**
Purchase Price:		$ 1,500
% Cash Used (Equity from Silver Lake):	50%	750
% Debt Used:	50%	750
Goodwill % Purchase Price:	70%	$ 1,050
Intangibles % Purchase Price:	40%	600
Cash % Purchase Price:	10%	150
Accounts Receivable % Purchase Price:	5%	75
Long-Term DR % Purchase Price:	(10%)	(150)
Other LT Liabilities % Purchase Price:	(15%)	(225)
Acquisition 1 Debt:		
Interest Rate:	L + 600	
LIBOR Floor:	1.00%	
Principal Repayment %:	5.0%	38
Revenue and Operating Income Contributions:		
Operating Income Yield on Purchase Price:	4.0%	60
Operating Margin:	14.0%	
Revenue Contribution:		429
Revenue Growth Rate:	10.0%	

These adjustments will all show up on the company's Balance Sheet after the add-on acquisition takes place.

The Debt to fund this acquisition will appear in the Debt schedule and affect interest and principal repayments.

You'll add the revenue and operating income contributions from the acquired company to this company's financials.

Here are the adjustments on portions of the Income Statement and Balance Sheet:

Income Statement	Projected		Year 2 Acquisition			Projected	
FY Ending February 1,	2014	2015	Debit	Credit	2015	2016	2017
Dell Inc. - Standalone Revenue:	$ 56,783	$ 58,313				$ 58,031	$ 59,179
Revenue Contribution from Acquisition 1:	-	-				429	471
Revenue Contribution from Acquisition 2:	-	-				-	-
Total Revenue:	**56,783**	**58,313**				**58,459**	**59,650**

You literally add the revenue, expenses, and cash flow items from the acquired company.

Balance Sheet	Projected		Year 2 Acquisition		
FY Ending February 1,	2014	2015	Debit	Credit	2015
Assets:					
Current Assets:					
Cash & Cash-Equivalents:	$ 3,033	$ 3,033	$ 150	$ -	$ 3,183
Short-Term Investments:	208	208	-	-	208
Accounts Receivable:	6,199	6,366	75	-	6,441
Short-Term Financing Receivables:	3,129	3,213	-	-	3,213
Allowances for Losses / Doubtful Accounts:	(321)	(651)	-	-	(651)
Inventories, Net:	1,223	1,251	-	-	1,251
Prepaid Expenses & Other:	4,018	4,001	-	-	4,001
Total Current Assets:	**17,489**	**17,421**			**17,646**
Long-Term Assets:					
Net PP&E:	2,374	2,412	-	-	2,412
Long-Term Investments:	2,897	3,230	-	-	3,230
Long-Term Financing Receivable, Net:	1,328	1,307	-	-	1,307
Other Non-Current Assets:	812	770	-	-	770
Goodwill:	19,389	19,389	1,050	-	20,439
Intangible Assets:	6,319	4,708	600	-	5,308

You reflect all the new items from this add-on acquisition on the company's Balance Sheet.

On the other side, you reflect the new Debt and new Equity used to fund the acquisition as well as any Liabilities assumed.

- **Step 3:** Make sure the Exit Year EBITDA includes the full EBITDA contributions from these acquired companies, and that the Exit Equity Proceeds calculation reflects the Cash and Debt from the acquired companies as well.

- **Step 4:** In the IRR and MoM multiple calculations, reflect the additional Investor Equity the PE firm used to fund these add-on acquisitions.

Investor Returns						
FY Ending February 1,	2013	2014	2015	2016	2017	2018
EBITDA:	$ 4,156					$ 5,464
EBITDA Multiple:	5.1 x					4.[illegible] x
Enterprise Value:	21,129					[illegible],858
Equity Value:	24,592					22,580
Investor Equity:	(1,258)	-	(750)	-	(1,000)	9,050
IRR:	35.8%					

You show the Investor Equity used to make the acquisitions here; for sizable deals, it makes a big impact on the IRR and the MoM multiple.

In this case, the add-on acquisitions end up boosting the IRR because the Exit Year EBITDA is $5,464 rather than $5,301 without the acquisitions.

That, combined with the differences in Cash and Debt and the PE firm's ownership percentage, outweighs the additional Investor Equity contributed in Years 2 and 4.

Add-on acquisitions that have higher yields (e.g., EBITDA / Purchase Enterprise Value = 15% rather than 2%) will tend to boost the IRR and MoM multiple more than ones with lower yields.

But to determine the exact impact, you'd have to run the numbers and see how everything changes – particularly when the ownership percentages also change.

Stub Periods

Many leveraged buyouts close not at the *end* of a fiscal year, but at the end of a quarter, a month, or in the middle of a month.

When this happens, you create a "stub period" that shows the financial results in between transaction close date and the end of the fiscal year.

For example, if a deal closes on September 30th, the "stub period" would show the results in between October 1st and December 31st if the company's fiscal years on December 31st.

As in merger models, stub periods tend to create a lot of extra work without necessarily making models much more accurate.

Think of everything you have to change or add because of this stub period:

- **Balance Sheet:** All the adjustments must be based on the September 30th Balance Sheet instead, which you may or may not have; if you don't have it, you'll have to create it.

- **Income Statement and Cash Flow Statement:** You'll need to create projections for these 3 months or take your full-year projections and multiply by 25%.

- **Debt Schedules:** You'll have to track Debt Repaid, Cash Generated, Interest Income, and Interest Expense in this 3-month period.

- **IRR Calculation:** You'll have to use the XIRR function in Excel to calculate the IRR in the deal because the initial Investor Equity contribution comes at the start of this 3-month stub period, not at the end of a full fiscal year.

In rare cases, stub periods can make a significant difference in models (e.g., if the company's cash flows differ dramatically over a quarter or two), but the impact is usually small.

If you have the time, and your deal closes midway through the year, sure, you can include a stub period, but this concept is not terribly important for interviews or case studies.

Shareholder Loans

The "Shareholder Loan" is an LBO feature more common in **Europe** than North America.

The basic idea is that a PE firm can label some of its Investor Equity used to acquire the company a "Shareholder Loan," and then record "Interest" on it each year.

This Interest is almost always **Paid-in-Kind (PIK)**, so it accrues to the Shareholder Loan principal and doesn't cost the company anything in Cash.

In the end, the Shareholder Loan is "repaid" with the Equity Proceeds remaining after you've calculated the Exit Enterprise Value and subtracted Net Debt.

Here's how a Shareholder Loan might work in our **simple LBO model:**

Assumptions:			
EBITDA Purchase Multiple:	10.0 x	EBITDA Exit Multiple:	11.0 x
Purchase Price:	$ 1,000	Year 0 Revenue:	$ 250
% Debt:	50.0%	Annual Revenue Growth Rate:	10.0%
Debt Used:	500	Annual EBITDA Margin:	40.0%
Equity Contribution:	500		
Shareholder Loan Portion:	400	Shareholder Loan Portion:	80.0%
Normal Sponsor Equity Portion:	100	Normal Sponsor Equity Portion:	20.0%
Shareholder Loan Interest (PIK):	10.0%		
		D&A % Revenue:	3.0%
Initial Cash Balance:	$ 20	CapEx % Revenue:	4.5%
Interest Rate:	10.0%	Change in WC % Change in Revenue:	(15.0%)
Tax Rate:	40.0%		

You assume this Shareholder Loan represents a fairly high percentage of the Investor Equity used to fund the deal. The interest is almost always PIK, and the interest rate is similar to the coupons on Preferred Stock.

And then you record the Interest on this Shareholder Loan on the Income Statement:

Income Statement:	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue:	$ 250	$ 275	$ 303	$ 333	$ 366	$ 403
EBITDA:	100	110	121	133	146	161
(-) Depreciation & Amortization:		(8)	(9)	(10)	(11)	(12)
(-) Interest:		(50)	(46)	(41)	(35)	(28)
(-) Shareholder Loan Interest:		(40)	(44)	(48)	(53)	(59)
Pre-Tax Income:		12	22	33	47	62
(-) Taxes:		(5)	(9)	(13)	(19)	(25)
Net Income:		**$ 7**	**$ 13**	**$ 20**	**$ 28**	**$ 37**

On the IS, the company can deduct the Interest on this "Shareholder Loan," even though it's non-cash.

On the Cash Flow Statement, you add back this non-cash interest expense, which increases the company's FCF and Cash Flow Available for Debt Repayment:

Cash Flow Projections:	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Net Income:		$ 7	$ 13	$ 20	$ 28	$ 37
(+) Shareholder Loan Interest (PIK):		40	44	48	53	59
(+) Depreciation & Amortization:		8	9	10	11	12
(+/-) Change in Working Capital:		(4)	(4)	(5)	(5)	(5)
(-) CapEx:		(12)	(14)	(15)	(16)	(18)
Free Cash Flow:		39	48	59	71	84
Cash Flow Used for Debt Repayment:		39	48	59	71	84
Debt Balance:	500	461	412	353	283	198
Cash Balance:	20	20	20	20	20	20
Shareholder Loan Balance:	400	440	484	532	586	644

And on the CFS, you add back the Shareholder Loan Interest since it's non-cash; as a result, the company's FCF increases due to the tax savings.

And the interest accrues to the Shareholder Loan balance each year.

PE firms use this structure for **tax savings**: By setting up the capital structure this way, the firm effectively "deducts" part of its IRR each year (10% here).

But Shareholder Loans are still treated like Equity, so the Exit Calculations are the same.

The only difference is that you may break out the "Shareholder Loan Proceeds" separately from the other proceeds:

Returns Attribution Analysis:		
EBITDA Growth:	$	611
Multiple Expansion:		161
Debt Paydown and Cash Generation:		322
Return to Equity Investors:	**$**	**1,093**

The Shareholder Loan is still treated like Equity at the end; however, you often show the proceeds separately.

Exit Calculations:		
Exit Enterprise Value:	$	1,772
(-) Debt:		(198)
(+) Cash:		20
Equity Proceeds:	**$**	**1,593**
Shareholder Loan Proceeds:		644
Other Equity Proceeds:		949
Money-on-Money (MoM) Multiple:		**3.2 x**
Internal Rate of Return (IRR):		**26.1%**

The end result of this Shareholder Loan is that the MoM Multiple and IRR increase *slightly* because of the tax savings.

Without this Shareholder Loan structure, the MoM Multiple was 3.0x and the IRR was 24.3%, so it improved the numbers a bit.

This concept is simple, but you should be familiar with it in case you encounter it in a case study, modeling test, or on the job.

Paid-in-Kind (PIK) Interest

Many forms of Debt, especially Subordinated Notes, Mezzanine, and Preferred Stock, offer "Paid-in-Kind" or PIK options on the Interest.

This option allows the Interest to accrue to the loan principal instead of being paid out in Cash.

Mechanically, it's similar to what happens with the Shareholder Loan above: The company still records the Interest Expense on the Income Statement, and, therefore, pays lower taxes, but it adds back the PIK Interest on the Cash Flow Statement as a non-cash expense.

But there's one important difference: This Debt STILL counts as Debt, and it MUST, therefore, be repaid upon exit – unlike Shareholder Loans, it doesn't go in the "Equity" category.

This difference is important because it changes the risk/return profile: Investors in PIK-based Debt are *far* more likely to recover their principal at the end.

Here are the assumptions you might see in an LBO with multiple tranches of Debt, where the Mezzanine has a PIK Interest option:

Debt Tranche:	%:	$ in Millions	x EBITDA	Interest Rate:	LIBOR Floor:	Prepay Allowed:	Principal Repayment:	Undrawn Fee:	Years PIK:
Revolver:	14.8%	-	0.0 x	L + 325	1.00%	Yes	0.0%	0.50%	
Term Loan - A:	25.0%	253.6	1.5 x	L + 350	0.00%	Yes	10.0%		
Term Loan - B:	25.0%	253.6	1.5 x	L + 450	0.00%	Yes	2.0%		
Senior Notes:	20.0%	202.9	1.2 x	L + 675	1.00%	No	0.0%		
Subordinated Note:	15.0%	152.2	0.9 x	10.0%	0.00%	No	0.0%		
Mezzanine:	15.0%	152.2	0.9 x	12.0%	0.00%	No	0.0%		5
Total:	**114.8%**	**$ 1,014.5**	**6.1 x**						

PIK Interest is most common on Mezzanine, Preferred Stock, and Subordinated Notes; It might last only a few years, start after a few years, or be toggled off and on.

PIK Interest still shows up on the Income Statement, reducing the company's Pre-Tax Income, Taxes, and Net Income, but the company adds it back on the Cash Flow Statement:

		Historical				Projected				
Cash Flow Statement:	*Units*	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18
CASH FLOWS FROM OPERATING ACTIVITIES:										
Net Income:	*$ M*	**$ 54.0**	**$ 55.0**	**$ 43.6**	**$ 47.8**	**$ 12.1**	**$ 12.2**	**$ 13.1**	**$ 11.8**	**$ 8.8**
Adjustments for Non-Cash Charges:										
Depreciation & Amortization:	*$ M*	80.7	81.6	79.5	79.0	79.0	83.9	89.4	95.7	102.7
Depreciation of PP&E Write-Up:	*$ M*	-	-	-	-	2.2	2.2	2.2	2.2	2.2
New Intangibles Amortization:	*$ M*	-	-	-	-	0.9	0.9	0.9	0.9	0.9
Accrual of PIK Interest:	*$ M*	-	-	-	-	18.3	20.5	22.9	25.7	28.7
Change in Deferred Tax Liability:	*$ M*	7.2	20.3	(0.8)	(3.0)	(1.2)	(1.2)	(1.2)	(1.2)	(1.2)
Change in Deferred Tax Asset:	*$ M*	-	-	-	-	-	-	-	-	-

You add back the PIK Interest here as a standard non-cash expense (so the net effect is that it just reduces the company's taxes).

LIABILITIES AND EQUITY:										
Current Liabilities, Excluding Debt:										
Accounts Payable:	$ M	$ 42.8	$ 32.9	$ 32.7	$ 35.8	$ 35.2	$ 35.6	$ 36.1	$ 36.8	$ 37.6
Accrued Expenses:	$ M	33.0	34.6	35.5	34.0	35.9	37.0	38.1	39.2	40.3
Unearned Revenues:	$ M	9.4	9.9	11.8	14.5	16.0	18.2	20.5	22.9	25.4
Other Current Liabilities:	$ M	2.9	5.5	2.1	1.4	3.2	3.3	3.3	3.4	3.5
Total Current Liabilities, Excl. Debt:	$ M	**88.1**	**82.9**	**82.1**	**85.7**	**90.3**	**94.1**	**98.0**	**102.4**	**106.8**
Noncurrent Liabilities, Including All Debt:										
Existing Debt:	$ M	377.0	389.6	389.5	361.5	-	-	-	-	-
Total Capital Leases:	$ M	11.3	10.9	22.7	21.4	19.9	18.4	17.0	15.5	13.9
Other Noncurrent Liabilities:	$ M	100.5	100.6	101.3	104.4	106.6	109.9	113.0	116.4	119.5
Deferred Tax Liability:	$ M	43.0	64.4	62.9	57.8	169.5	168.3	167.1	165.9	164.7
Revolver:	$ M	-	-	-	-	30.4	28.0	26.4	29.1	35.4
Term Loan - A:	$ M	-	-	-	-	228.3	202.9	177.5	152.2	126.8
Term Loan - B:	$ M	-	-	-	-	248.6	243.5	238.4	233.3	228.3
Senior Notes:	$ M	-	-	-	-	202.9	202.9	202.9	202.9	202.9
Subordinated Note:	$ M	-	-	-	-	152.2	152.2	152.2	152.2	152.2
Mezzanine:	$ M	-	-	-	-	170.4	190.9	213.8	239.4	268.2
Total Noncurrent Liabilities + Debt:	$ M	**531.8**	**565.4**	**576.5**	**545.2**	**1,328.7**	**1,316.9**	**1,308.3**	**1,306.9**	**1,311.8**

While PIK loans offer some advantages, they also create "ballooning" Debt balances that increase credit risk and make repayment less likely.

The IRR to the Mezzanine investors here is the same as it would be with Cash Interest: 12%, the interest rate on the Mezzanine.

Cash vs. PIK Interest does not affect the IRR to Debt investors – only equity participation, early repayments, and the inability to fully repay the Debt upon exit could result in the IRR being *different* from the interest rate.

Preferred Stock and "Equity Kickers"

Often, private equity firms will grant some "equity participation" to investors in the company's more junior Debt to compensate them for the additional risk they take.

Equity participation happens most often with **Preferred Stock**, and the tend to be very low – ~2-3% or less.

These equity options might be used to **negotiate** with lenders as well: For example, the lenders might agree to a lower interest rate in exchange for a greater percentage of equity.

Similar to the Option Pool and the Equity Rollover, the PE firm receives less in Equity Proceeds upon exit, and the other investor group (the lenders) receives more.

Equity participation almost always benefits the Preferred Stock investors unless the deal is a total disaster.

For it to *hurt* these investors, the Exit Equity Proceeds would have to be so low that they represent an IRR less than the interest rate differential.

For example, if the Preferred Stock investors get a 14% rate with no equity or a 12% rate with 1% equity, the Equity Proceeds at the end must represent *less than* this 2% IRR difference for the investors to be worse off.

As a result, Preferred investors almost always benefit from equity participation in deals that perform decently, but they do lose out with this option in disastrous deals.

Net Operating Losses (NOLs)

NOLs work the same way as always: They affect a company's cash taxes and its Deferred Tax Asset (DTA) on the Balance Sheet.

If the company records negative Pre-Tax Income in one year, it will *increase* its NOL balance by that Negative Pre-Tax Income and increase its DTA by Negative Pre-Tax Income * Tax Rate.

On the Income Statement, the company still records its normal Pre-Tax Income, Taxes, and Net Income; you see the impact of this loss and the new DTA only on the Cash Flow Statement.

As with M&A deals, the company may have to write down a portion of the DTA and NOL balance when the transaction takes place because Stock Purchases are subject to limited NOL use (and in Asset Purchases, the entire balance is written down).

Here's a sample schedule from an LBO:

		Historical				Projected				
Deferred Tax and NOL Schedule:	*Units*	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18
Initial Net Operating Losses (NOLs):	*$ M*				$ 50.0					
Pre-Tax Income:	*$ M*					**19.7**	**20.3**	**(30.0)**	**19.6**	**15.4**
(+) Depreciation of PP&E Write-Up:	*$ M*					2.2	2.2	2.2	2.2	2.2
(+) New Intangibles Amortization:	*$ M*					0.9	0.9	0.9	0.9	0.9
Pre-NOL Taxable Income:	*$ M*					**22.8**	**23.4**	**(26.8)**	**22.8**	**18.6**
Beginning NOL Balance:	*$ M*					50.0	27.2	3.7	30.6	7.8
(+) NOLs Created:	*$ M*					-	-	26.8	-	-
(-) NOLs Used:	*$ M*					(22.8)	(23.4)	-	(22.8)	(7.8)
Ending NOL Balance:	*$ M*					**27.2**	**3.7**	**30.6**	**7.8**	-
NOL-Adjusted Taxable Income:	*$ M*					-	-	**(26.8)**	-	**10.8**
Cash Taxes Payable:	*$ M*					-	-	-	-	**4.2**
Increase / (Decrease) in DTA:	*$ M*					(8.8)	(9.1)	10.4	(8.8)	(3.0)

NOLs get created when Taxable Income is negative, and used up when Taxable Income is positive.

The company pays cash taxes only if it CANNOT offset some of its Taxable Income using NOLs.

Equals (NOLs Created - NOLs Used) * Tax Rate; boosts cash flow when NOLs are used.

When a company ***applies*** **NOLs**, **its Cash Flow increases** because its tax burden is reduced.

When a company ***accumulates*** **NOLs, its Cash Flow decreases** because it doesn't receive any "tax benefit" from taking the loss, contrary to what the Income Statement indicates.

Think about the math for a simple example:

- **Pre-Tax Income:** Negative $100 million.
- **Book Taxes:** *Positive* $40 million at a 40% Tax Rate, i.e. the company *gets* money.
- **What Really Happens:** The company does **not** "get a refund" from the government just because it records negative Pre-Tax Income – instead, it simply pays no cash taxes.
- **Cash Flow Statement:** You reverse this $40 million tax benefit since it wasn't real, and the company pays no cash taxes instead.
- **NOL:** Increases by the $100 million loss, and the DTA increases by $40 million.

NOLs rarely make a big difference in leveraged buyouts unless the company has a massive balance.

If the company does have this massive balance, a PE firm might view it as a better LBO candidate.

In theory, accumulating NOLs in a leveraged buyout would help improve returns, but if a company's Pre-Tax Income is negative, chances are that its cash flow **is not great**.

And since stable cash flow is one of the most important qualities of ideal leveraged buyout candidates, negative Pre-Tax Income is almost always a negative sign.

Cost Savings and Sponsor Fees

In some leveraged buyouts, financial sponsors attempt to realize the same types of synergies that strategic acquirers target in normal M&A deals.

For example, they might look at an underperforming business division, conclude that it generates no revenue but still costs the company a fair amount, and decide to shut it down.

As a result, you might see items like "Cost Savings" or "Operating Cost Reductions" on a company's financial statements following a leveraged buyout.

You would almost certainly **NOT** see anything for "Revenue Synergies" because two normal companies must combine to realize revenue synergies.

Even Cost Savings are speculative because a company, as a standalone entity, can rarely cut expenses to the same degree that it can when it's part of another company.

Some private equity firms also charge acquired companies a "Management Fee" or "Sponsor Fee," which could be a few million USD up to $10 million or more per year.

The purpose of this fee is to get the company to take the deal seriously and put time and effort into working with the PE firm to grow the business.

It's a simple expense on the company's Income Statement, so it reduces Pre-Tax Income, Net Income, and EBITDA.

Some PE firms like to market their portfolio companies' "Pro-Forma EBITDA" figures, which typically exclude this fee.

You're unlikely to encounter this fee in a case study, but you could easily see it in a CIM or other real-life document, so you have to be careful to calculate the EBITDA on the same basis.

Call Premiums and Prepayment Penalties

In a previous section of this guide, we pointed out that "early repayment" or "optional repayment" or "prepayment" is allowed on only certain types of Debt.

For example, companies can typically repay the principal of Term Loans whenever they want.

But Subordinated Notes and Mezzanine don't allow for optional repayments, so even if the company has enough cash flow to repay some of the principal early, it cannot do so.

However, this explanation is a simplification.

In reality, companies *can* sometimes repay Subordinated Notes, Mezzanine, and other Unsecured Debt early **if they're willing to pay a penalty to do so**.

In almost all cases, the company must repay *the entire balance* early as well.

These penalties go by various names: "Prepayment Premiums," "Prepayment Penalties," "Take-Out Premiums," and "Call Premiums" are a few examples.

A typical Subordinated Note with a 10-year maturity might use this structure:

- **First 2 Years:** No early repayments are allowed.

- **Year 3:** Early repayment of the entire Bond is allowed, but the company must pay 105% of its principal.
- **Year 4:** This drops to 104%.
- **Year 5:** This drops to 103%.
- **Year 6:** This drops to 102%.
- **Year 7:** This drops to 101%.
- **Years 8 – 10:** The company can now repay the entire Bond without penalty.

These percentages are **Call Premiums**, and they reduce the risk of early repayment for lenders.

They come up most often in leveraged buyouts when the PE firm goes for an **early exit** (e.g., selling the company after 3 years instead of holding it for 6-7 years).

If the company still has Term Loans or a Revolver outstanding at that point, it's fine; the PE firm simply uses the proceeds from the sale to repay that Debt.

But if the company has Subordinated Notes, Mezzanine, or other Debt with **Call Premiums** attached, it will have to **pay extra** to repay this Debt early.

Here's a simple example of how **Call Premiums** might work:

Exit Year:	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Remaining Debt:		461	412	353	283	198
Call Premium:		104	103	102	101	100
Call Fee:		18	12	7	3	-
EBITDA:		$ 110	$ 121	$ 133	$ 146	$ 161
(x) EBITDA Multiple:		11.0 x	11.0 x	11.0 x	11.0 x	11.0 x
Exit Enterprise Value:		**1,210**	**1,331**	**1,464**	**1,611**	**1,772**
(-) Debt:		(461)	(412)	(353)	(283)	(198)
(-) Call Fee:		(18)	(12)	(7)	(3)	-
(+) Cash:		20	20	20	20	20
Equity Proceeds:		**751**	**926**	**1,124**	**1,345**	**1,593**
Money-on-Money (MoM) Multiple:		**1.50 x**	**1.85 x**	**2.25 x**	**2.69 x**	**3.19 x**
Internal Rate of Return (IRR):		**50.1%**	**36.1%**	**31.0%**	**28.1%**	**26.1%**
Equity Proceeds:		751	926	1,124	1,345	1,593
(+) Call Fee:		18	12	7	3	-
Pre-Call Fee Equity Proceed:		**769**	**939**	**1,131**	**1,348**	**1,593**
Pre-Call Money-on-Money (MoM) Multiple:		**1.54 x**	**1.88 x**	**2.26 x**	**2.70 x**	**3.19 x**
Pre-Call Internal Rate of Return (IRR):		**53.8%**	**37.0%**	**31.3%**	**28.1%**	**26.1%**

A Call Premium of "104" means the company must repay 104% of the principal, so the Call Fee = 4%.

The Call Fee adds to the total cost of Debt Repayment upon Exit...

And as a result, the IRR and MoM Multiples are lower, though they equalize by the end when the Call Premium goes away.

This example is contrived because Call Premiums rarely, if ever, apply to Debt that has both mandatory and optional repayments (i.e., Term Loans).

In real life, you'd expect to see Call Premiums with the Subordinated Notes and Mezzanine tranches that stay constant over time and have fixed interest rates (and possibly with Senior Notes as well).

Original Issue Discount (OID)

Some Debt may be issued at a **discount** to its par value.

This happens mostly when a bond's **coupon rate** is below the rates of other, similar bonds, and the company needs to offer an incentive to investors.

Here's a simple example of a 5.0% coupon rate bond that might be issued at a discount:

Bond Yield and Pricing Assumptions:

Prevailing Interest Rates on Similar Bonds:	5.500%	# Years in Period:	10.0
		Starting Year # for Bond Investment:	1.0
Settlement Date:	2014-12-31		
Bond Coupon Rate:	5.000%	(+) PV of Future Interest Payments:	$ 376.9
Bond Principal or Par Value:	$ 1,000.0	(+) PV of Principal:	585.4
Bond Maturity:	2024-12-31	**Bond Price:**	**$ 962.3**
Bond Redemption Value % Par Value:	100.0		
		Current Yield:	5.196%
Bond Price via Excel Function:	$ 962.3	Yield to Maturity (YTM):	5.500%

Since this bond offers a *lower* coupon rate than similar bonds in the market, the company would have to issue it at a discount to par value.

And as a direct result of this discount, investors would earn a yield higher than 5.0%; the long-term yield would be 5.5% ("Yield to Maturity"), the same as the coupon rates on other, similar bonds.

Since prevailing rates on similar bonds are 5.5%, investors would be unlikely to buy this bond at its par value of $1,000: Why would they when they could get higher-yielding bonds elsewhere?

Instead, investors might buy the bond at a price that makes their long-term yield, or "Yield to Maturity," equal to 5.5%.

The price required to do that is $962.3, which means 96.23% of the bond's par value.

When a company issues Debt at this type of discount, it has to **amortize** the discount over the life of the Debt.

As this discount amortizes, the book value of the Debt on the Balance Sheet increases each year until it finally reaches par value upon maturity (or upon full repayment).

If there are **no mandatory or optional repayments**, OID is straightforward to model: You use straight-line amortization for the OID over the term of the Debt, record it as Interest Expense on the Income Statement, and add it back as a non-cash expense on the CFS.

The *book value* of the Debt will **increase** each year to reflect this amortization, but the *face value* – what the company pays Interest Expense based on – stays the same.

Here's a simple example of how to model an Original Issue Discount (OID) where there's no principal repayment:

OID Example:	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Par Value of Debt:	$ 100					
Issued At:	$ 90					
Annual Amortization:	0.0%					
Years to Amortize:	5					
Interest Rate:	10.0%					
OID Amortization Period Remaining:	5	4	3	2	1	0
OID Beginning Balance:		$ 10	$ 8	$ 6	$ 4	$ 2
(-) Amortization of OID:		(2)	(2)	(2)	(2)	(2)
(-) Loss on Unamortized OID on Repayment:		-	-	-	-	-
OID Ending Balance:	10	8	6	4	2	-
Face Value of Debt Beginning Balance:		100	100	100	100	100
(-) Repayment:		-	-	-	-	-
Face Value of Debt Ending Balance:	100	100	100	100	100	100
Book Value of Debt Beginning Balance:		90	92	94	96	98
(+) Amortization of OID:		2	2	2	2	2
(+) Loss on Unamortized OID on Repayment:		-	-	-	-	-
(-) Repayment:		-	-	-	-	-
Book Value of Debt Ending Balance:	90	92	94	96	98	100

So we need to amortize a $10 OID.

The Debt's tenor is 5 years, so we amortize the OID over 5 years.

The company always pays Interest on the $100 Face Value of Debt, but *on the Balance Sheet*, the Debt increases from $90 to $100 over 5 years.

Income Statement with OID:	Year 1	Year 2	Year 3	Year 4	Year 5
Interest Expense on Debt:	10	10	10	10	10
(+) Amortization of OID:	2	2	2	2	2
Interest Expense on Income Statement:	12	12	12	12	12

The Amortization of OID counts as non-cash Interest, so you add it back on the CFS.

It gets more complicated when there are mandatory or optional repayments because **you need to amortize the OID more rapidly**.

But rather than calling this extra amortization "amortization," companies label it "Loss on Unamortized OID Upon Repayment" or something similar.

In reality, it's just a way to *distribute* the amortization differently and amortize more when the company repays Debt principal.

Here's a simple example using the same numbers, but this time assuming that 20% of the principal amortizes each year so that the Debt is repaid in full by the end of Year 5:

OID Example:		**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Par Value of Debt:	$ 100						
Issued At:	$ 90						
Annual Amortization:	20.0%						
Years to Amortize:	5						
Interest Rate:	10.0%						
OID Amortization Period Remaining:	5		4	3	2	1	0
OID Beginning Balance:			**$ 10**	**$ 6**	**$ 4**	**$ 2**	**$ 0**
(-) Amortization of OID:			=-MIN(G100,G100/F98)		(1)	(1)	(0)
(-) Loss on Unamortized OID on Repayment:			(2)	(1)	(1)	(0)	-
OID Ending Balance:		**10**	**6**	**4**	**2**	**0**	**-**

Amortization is now based on Beginning Balance / # Years Remaining... so it's reduced near the end.

You base the "Loss" on the % of the Debt principal repaid this year times the OID balance after the normal amortization.

In this case, 20% of the Debt principal is repaid, and the OID balance after the normal amortization is $10 – $2 = $8. Therefore, we record a Loss of 20% * $8 = $1.6:

OID Example:		**Year 0**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Par Value of Debt:	$ 100						
Issued At:	$ 90						
Annual Amortization:	20.0%						
Years to Amortize:	5						
Interest Rate:	10.0%						
OID Amortization Period Remaining:		5	4	3	2	1	0
OID Beginning Balance:			**$ 10**	**$ 6**	**$ 4**	**$ 2**	**$ 0**
(-) Amortization of OID:			(2)	(2)	(1)	(1)	(0)
(-) Loss on Unamortized OID on Repayment:			=SUM(G100:G101)*G106/G105			(0)	-
OID Ending Balance:		**10**	**6**	**4**	**2**	**0**	**-**
Face Value of Debt Beginning Balance:			**100**	**80**	**60**	**40**	**20**
(-) Repayment:			(20)	(20)	(20)	(20)	(20)
Face Value of Debt Ending Balance:		**100**	**80**	**60**	**40**	**20**	**-**

The Loss is equal to the OID balance *after* normal amortization, times the % principal repaid this year. So if the company repays 20%, this "Loss" equals 20% * 8 in this case.

On the Balance Sheet, you still record $90 for the Debt issued and subtract the principal repayments of $20 per year.

You also still increase the Balance Sheet value of the Debt by the Amortization of OID, but you *also* have to increase it by this "Loss" from the repayment each year.

With principal repayments, you're amortizing the OID **on an accelerated basis**:

OID Example:	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Par Value of Debt:	$ 100					
Issued At:	$ 90					
Annual Amortization:	20.0%					
Years to Amortize:	5					
Interest Rate:	10.0%					
OID Amortization Period Remaining:	5	4	3	2	1	0
OID Beginning Balance:		**$ 10**	**$ 6**	**$ 4**	**$ 2**	**$ 0**
(-) Amortization of OID:		(2)	(2)	(1)	(1)	(0)
(-) Loss on Unamortized OID on Repayment:		(2)	(1)	(1)	(0)	-
OID Ending Balance:	**10**	**6**	**4**	**2**	**0**	**-**
Face Value of Debt Beginning Balance:		**100**	**80**	**60**	**40**	**20**
(-) Repayment:		(20)	(20)	(20)	(20)	(20)
Face Value of Debt Ending Balance:	**100**	**80**	**60**	**40**	**20**	**-**
Book Value of Debt Beginning Balance:		**90**	**74**	**56**	**38**	**20**
(+) Amortization of OID:		2	2	1	1	0
(+) Loss on Unamortized OID on Repayment:		2	1	1	0	-
(-) Repayment:		(20)	(20)	(20)	(20)	(20)
Book Value of Debt Ending Balance:	**90**	**74**	**56**	**38**	**20**	**-**

Basically, principal repayments on the Debt mean that you have to amortize the OID in an accelerated fashion. Here, we're effectively amortizing $4, $3, $2, etc. rather than $2, $2, $2 *without* the repayments.

On the Income Statement, the Loss on Unamortized OID on Repayment is another component of Interest.

As a result, both this Loss and the normal Amortization of OID reduce a company's Pre-Tax Income, Taxes, and Net Income.

You also add back both components as non-cash expenses on the Cash Flow Statement:

Income Statement with OID:	Year 1	Year 2	Year 3	Year 4	Year 5
Interest Expense on Debt:	10	8	6	4	2
(+) Amortization of OID:	2	2	1	1	0
Interest Expense on Income Statement:	**12**	**10**	**7**	**5**	**2**
EBITDA:	**$ 110**	**$ 121**	**$ 133**	**$ 146**	**$ 161**
(-) Depreciation & Amortization:	(8)	(9)	(10)	(11)	(12)
(-) Interest:	(12)	(10)	(7)	(5)	(2)
(-) Loss on Unamortized OID on Repayment:	(2)	(1)	(1)	(0)	-
Pre-Tax Income:	**88**	**101**	**115**	**130**	**147**
(-) Taxes:	(35)	(40)	(46)	(52)	(59)
Net Income:	**$ 53**	**$ 61**	**$ 69**	**$ 78**	**$ 88**

Cash Flow with OID:	Year 1	Year 2	Year 3	Year 4	Year 5
Net Income:	$ 53	$ 61	$ 69	$ 78	$ 88
(+) Depreciation & Amortization:	8	9	10	11	12
(+) Amortization of OID:	2	2	1	1	0
(+) Loss on Unamortized OID on Repayment:	2	1	1	0	-
(+/-) Change in Working Capital:	(4)	(4)	(5)	(5)	(5)
(-) CapEx:	(12)	(14)	(15)	(16)	(18)
Free Cash Flow:	49	55	62	69	77

Both items related to the Amortization of OID reduce the company's Pre-Tax Income, but get added back as non-cash expenses on the CFS, boosting the company's FCF due to the tax savings.

Much Ado About Something?

In most of our models and case studies, **we completely ignore OID** because it makes a difference of about 0.1% on the IRR in LBO models.

Some case studies and interview guides make a big deal about this concept, but it barely makes a difference because:

1) In most cases, Debt is *not* issued at a huge discount to par value, so the OID is very small. The discount is often ~1-3%.

2) The result is that the company saves a *tiny* amount on its Taxes because the Amortization of OID is a non-cash expense, similar to Depreciation.

3) It creates a lot of extra work for almost no gain. Imagine tracking everything above for *each* tranche of Debt in an LBO model with 8 tranches of Debt.

It's good to be familiar with the concept of Original Issue Discounts (OID), but they are **far** from "key value drivers" in leveraged buyouts.

Cash Flow Sweep Percentages

We assumed earlier on that if a company has sufficient Cash Flow Available for Debt Repayment, it will always use 100% of that cash flow to repay Debt.

For example, if it has $200 in Cash Flow Available for Debt Repayment, a $500 Term Loan, and $100 in mandatory repayments per year, it has to repay $100 of the Term Loan's principal first.

After that, the firm will use its remaining $100 in Cash Flow Available for Debt Repayment to repaying an *additional* $100 of the Term Loan.

However, in some cases, the terms of the Debt will *require* a company to use a certain percentage of its excess cash flow to repay the principal.

This is called a "Cash Flow Sweep" or "Cash Sweep," and values ranging from 50% to 100% are common on Revolvers and Term Loans.

If the Cash Flow Sweep were 50% in the example above, the company would **be required** to use $50, or 50% of its $100 in Available Cash Flow, to repay the Term Loan principal.

After that, it might still choose to repay an additional $50 with its remaining cash flow, but it doesn't have to do so.

When there are Cash Flow Sweeps, you need to perform an additional check in the model and repay, optionally, only the percentages specified by these terms.

You normally assume that anything remaining *after* these sweeps accumulates to the company's Cash balance, though you could set up very complicated formulas to assume even more optional repayment after the sweeps.

We usually skip such logic in our models and examples because:

1) It falls into the "High effort but minimal difference on the model output" category.

2) We've rarely seen this term come up in modeling tests. Most tests state that you should apply *all* excess cash flow to the Revolver and Term Loans. Even OID is more common!

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