

Introduction to the LBO

- Educational Presentation #3 – Private Equity
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- Sources: FT, Investopedia, Wall Street Prep, BIWS,

Section I: Introduction to LBO Modelling

Introduction

Why understanding LBOs is essential



Essential Finance Skill
Relevant across finance,
not just PE



Foundational Knowledge
Enables confident LBO
discussions



Competitive Advantage
For interviews

What is an LBO?

- LBOs are a preferred method for private equity firms to acquire targets
- An LBO involves acquiring a company using a significant amount of borrowed funds
- Investors form a HoldCo to pool equity and secure additional debt
- The HoldCo purchases the target company using its cash flows to pay off debt
- The aim is to enhance the company's operations and increase its market value
- Ultimately, the company is sold at a profit, delivering high returns to investors

Characteristics of an Ideal LBO

Target

What is a good target for an LBO



- Companies with stable and predictable cash flows are crucial for ensuring reliable debt repayment



- Firms undervalued relative to their industry peers present higher potential returns and attractive purchase opportunities



- Businesses operating in stable, non-cyclical markets are less likely to experience significant demand fluctuations



- Targets that offer opportunities for cost-cutting and operational efficiencies can significantly increase profitability post-acquisition



- A strong management team is essential for effectively implementing post-acquisition strategies and achieving success

Out of all factors, stable cash flows are most important for LBOs, making industries with volatile revenues, like oil and gas, less ideal targets

Why do LBO's work

Key drivers of value creation in an LBO model

Minimized Initial Investment

Using debt reduces the initial cash outlay, increasing the return on equity by allowing control of larger assets with less capital

Strategic Cash Flow Management

Cash flows from the acquired company cover interest and debt repayments, enabling the investment to self-finance and lessen the investor's financial burden

Profitable Exit Strategy

The goal is to sell the company at a higher valuation, recovering the initial investment and generating substantial profits through value creation during ownership

Understanding the importance and mechanics of LBOs equips us with foundational finance skills and insights into value creation strategies, setting the stage for exploring the step-by-step process of executing a successful LBO model

Section II: Entry

LBO Entry Valuation Framework

Establishing the suitable purchase price for the target company



First, the private equity firm needs to determine Acquisition Price

To do this, there are 3 main valuation methodologies that you need to know: comparable company analysis, precedent transactions, and Discounted Cash Flow (DCF)

1. Comparable Company Analysis - CCA

- CCA values businesses by comparing them to industry peers to gauge overvaluation or undervaluation through ratio analysis
- To determine the entry valuation in an interview, we simply apply an industry-specific multiple to the relevant financial metric

2. Comparable Transaction Analysis - CTA

- CTA evaluates a fair deal value by comparing recent sales of similar businesses

3. DCF

- A DCF values a business by estimating the present value of its expected future cash flows, applying a discount rate to account for risk and time

$$\text{Entry Valuation (\$)} = \text{EBITDA in Year 1} \times \text{Entry Multiple}$$

Section III: Sources and Uses

Loan Sizing

Sources and uses determination is often an investor-specific decision with no universally correct approach

- The Sources and Uses table serves as a summary of how the acquisition will be financed and how these funds are allocated
- This overview, often a focal point in interviews, breaks down the origin of funds, such as equity contributions and various debt tranches, and their specific uses, including the purchase price, transaction fees, and refinancing requirements

$$\Sigma(\text{Sum of Sources}) = \Sigma(\text{Sum of Uses})$$

- In this process, it always makes sense to determine the uses first, asking “How much money will I need for the acquisition and to cover expenses that are not covered by the cash flow?”
- Following on from this, investors need to determine the size of the debt (irrespective of what kind) using one of the two methods below:

1. LTC Ratio

- Calculate the loan amount as the desired percentage of the total costs; a lower LTC ratio indicates a lower risk to the PE, but less potential to boost returns through leverage

2. DSCR

- Ensure the annual operating income covers the debt service by the target ratio (usually greater than 1.2x) to affirm cash flow adequacy

Uses of Capital in an LBO Model

The uses detail where every dollar raised will go, ensuring that the capital structure supports both the acquisition and the future operations

Example of Uses for Private Equity Transactions

- | | | |
|---|---------------------------|---|
| 1 | Purchase Enterprise Value | This amount represents the total valuation needed to acquire the company's equity and assume its debt |
| 2 | Cash to Balance Sheet | The cash to balance sheet allocated to the target company's provides essential liquidity post-acquisition - this ensures that the company has sufficient working capital to sustain operations and support future growth |
| 3 | Transaction Fees | These fees cover the costs associated with executing the acquisition, such as legal, advisory, and due diligence expenses |
| 4 | Financing Fees | The financing fees are used to cover the costs of arranging the debt used in the acquisition - this includes bank fees, underwriting expenses, and other related costs, which are critical for securing the necessary financing |

Sources of Capital in an LBO Model

Sources represent the forms of capital raised to fund the acquisition, which may include both debt instruments and equity contributions

Example of Sources for Private Equity Transactions		
1	Revolver	A revolving credit facility provides flexible access to short-term funds, allowing the company to draw as needed
2	Term Loan	Senior secured loan (i.e. with collateral {company and CFs} - with a longer maturity and higher interest rates)
3	Senior Debt	Unsecured debt instruments, offering higher interest rates in return for greater risk - they are subordinate to term loans, but provide additional funding without requiring collateral (rare in PE)
4	Subordinated Debt (Mezzanine/Junior)	Positioned below senior notes in the capital structure - these high-yield debt instruments carry higher risk and are commonly used to fill gaps in the financing structure
5	Rollover Equity	Current owners or management have reinvested, aligning their interests with the new owners and signalling confidence in the company's future
6	Sponsor Equity	Private equity sponsor committed equity, underscoring the sponsor's confidence and aligning incentives with other investors ("having skin in the game")

Sources and Uses of Funds - Example

Sources			Uses		
Revolver	\$	10	Purchase Price	\$	600
Term Loan	\$	150	Cash to BS	\$	8
Senior Debt	\$	80	Transaction Fees	\$	12
Subordinated Debt	\$	60	Financing Fees	\$	20
Total Debt	\$	300			
Rollover Equity	\$	65			
Sponsor Equity	\$	275			
Equity	\$	340			
Total Sources	\$	640	Total Uses	\$	640

Section IV: Financial Projections

Financial Projections

Financial projections provide insights into future ability to generate cash flow and pay down debt

- Building on historical statements, PE investors create forecasts for the operations post-acquisition up until free cash flow (FCF). While below provides some general ideas, models built by PEs are much more complex

Revenue Growth	Start by modeling a declining growth rate, for example, beginning at 10% and tapering to 5% by Year 5. This gradual reduction reflects typical market saturation or maturity effects
EBIT/EBITDA Margins	Maintain consistent margins year over year to provide a stable basis for profitability projections, unless there are anticipated changes in operating efficiency or cost structure
Balance Sheet Items	Model these items as percentages of revenue, cost of goods sold (COGS), operating expenses or assets, using historical averages as benchmarks - this helps in projecting working capital needs accurately
D&A and other non-cash expenses	Estimate these items based on historical averages or as a percentage of revenue, ensuring consistency with past performance and industry standards
Capital Expenditures	CapEx can be modeled as a percentage of revenue, based on historical trends, or as a fixed amount that grows annually. This projection is crucial for understanding reinvestment needs

Financial Projections - Example

	Historical			Projected				
	H1	H2	H3	Y1	Y2	Y3	Y4	Y5
Revenue	250	275	303	333	366	403	443	487
COGS & OPEX	200	220	242	266	293	329	370	414
EBITDA	50	55	61	6773	73	73	73	73
D&A	-10	-10	-10	-10	-10	-10	-10	-10
EBIT	40	45	51	57	63	63	63	63
Interests	-4	-4	-3	-2	-2	-1	0	1
EBT	46	51	58	64	72	73	73	74
Tax	-12	-13	-14	-16	-18	-18	-18	-19
Net Income	35	39	43	48	54	54	55	56
Net Income	35	39	43	48	54	54	55	56
D&A	10	10	10	10	10	10	10	10
CAPEX	-10	-10	-10	-10	-10	-10	-10	-10
WCN	-10	-10	-10	-10	-10	-10	-10	-10
FCF	25	29	33	38	44	44	45	46

Section V: Debt repayment

Key Financing Components

Key LBO financing components ordered by purpose, usage, and role in funding the acquisition, providing liquidity, and managing cash flow

- The capital contribution hierarchy (draw) in an LBO starts with equity, followed by subordinated and senior debt, each layer affecting investor risk and potential returns
- Senior debt, with the lowest risk, has the first claim on cash flows, providing clarity on risk and return expectations for each investor tier

1. Equity: Initial At-risk capital with ownership and upside, but residual claim after debt



2. Preferred Equity: Ranks above common equity; provides fixed dividends but is subordinate to all debt



3. Subordinated or Mezzanine Debt: Higher risk/return than senior debt, may include equity participation



4. Senior Debt: Secured by assets, priority claim on cash flows, includes term loans and revolvers

Debt and Equity Hierarchy

This hierarchy determines the repayment order in liquidation, with senior debt having the highest claim and common equity the lowest

- In liquidation, senior debt holds the first claim, followed by second-lien and mezzanine debt; preferred equity ranks above common equity, which has residual ownership
- This structure helps clarify the hierarchy of investor risk and returns, from high-priority debt claims to equity ownership

1. Senior Debt: Secured by company assets and typically includes revolvers and term loans



2. Subordinated or Mezzanine Debt: Higher risk and interest than senior debt, often with warrants or equity kickers



3. Preferred Equity: After all debt, receiving fixed dividends but subordinate to debt in liquidation



4. Common Equity: Residual value after all obligations are met, with returns typically through an exit (e.g., IPO or sale)

Debt Schedule in an LBO Model

The role of the debt schedule in managing repayments in an LBO model

- With financial projections in place, the focus shifts towards understanding how cash flows will be used to manage debt effectively, as debt repayment is a critical component in an LBO model, impacting returns and the company's financial health

Purpose of the Debt Schedule:

- Structured plan that tracks mandatory and optional debt repayments, ensuring that debt obligations are met without jeopardizing the company's liquidity needs



Mandatory Repayments

Fixed payments required by loan agreements that take priority each year



Optional Repayments

Additional payments applied when excess cash is available, allowing for accelerated debt reduction



Minimum Cash Balance

Cash reserve maintained to cover essential expenses and ensure stability in operations

By accurately projecting debt repayments, the debt schedule allows us to understand the pace of debt reduction and its impact on overall returns, balancing between leveraging debt and maintaining liquidity

Key Debt Repayment Structures in LBO Models

Understanding amortization, bullet repayments, and free cash flow allocation for effective debt management

- Interest expense is calculated by multiplying the outstanding loan principal by the period's interest rate, representing the cost of borrowing
- This expense reduces free cash flow, impacting the cash available for repaying the principal

Amortization Structure	• Fixed repayments to reduce principal balance periodically • Includes both mandatory and optional repayments based on available FCF
Bullet Repayment	• Entire principal is repaid in a single lump sum at maturity
Positive & Negative Amortizing Loans	• Positive Amortizing Loans: Principal decreases with each payment • Negative Amortizing Loans: Principal increases due to unpaid interest
FCF Allocation	• FCF is used to cover interest first, followed by principal repayments • Ensures efficient debt reduction while maintaining liquidity

Section VI: Exit

Exit Valuation in an LBO Model

Calculating the exit enterprise and equity values

- In the final step of the LBO model, the exit assumptions determine the financial sponsor's returns when they realize their investment. The key focus is the Exit EV/EBITDA multiple, which is used to calculate the exit value based on the company's projected performance

Exit Multiple Assumption

- The Exit EV/EBITDA multiple is typically set to match the purchase (entry) multiple, adopting a conservative approach
- By assuming an exit multiple, we can estimate the company's Exit Enterprise Value (TEV) based on the EBITDA at the time of exit

$$\text{Exit Enterprise Value (TEV)} = \text{Exit Multiple} \times \text{Exit Year EBITDA}$$

Calculating Exit Equity Value

- From the Exit Enterprise Value, we subtract any remaining net debt on the balance sheet to determine the Exit Equity Value

$$\text{Exit Equity Value} = \text{Exit Enterprise Value (TEV)} - \text{Net Debt}$$

Section VII: Returns

Multiple on Money

Return Metrics are key financial measures used to assess the profitability and success of an investment

- Multiple on Money (MoM), also known as Multiple on Invested Capital (MOIC) is a key metric for assessing the return on an investment and evaluating the performance of a fund

$$\text{MoM (x)} = \text{Total Cash Inflows} / \text{Total Cash Outflows}$$

Interpretation of MoM/MOIC

- Absolute multiple of the initial investment: “By how many times was the initial investment returned”
- Example – MoM 2x: The investment has generated twice as much as initially invested (irrespective of equity or debt)

Breakdown of MoM/MOIC

- Cash inflows: Operating CF, Debt Draw, Dividends, Disposition (Exit Sale or IPO), Tax Benefits (tax shield)
- Cash outflows: Acquisition, Debt Repayment, Operating Expenses, CapEx etc.

Conceptual understanding of the MoM/MOIC

- Unlike IRR, MOIC does not account for the time value of money – it is a purely multiple-based measure

Internal Rate of Return

Return Metrics are key financial measures used to assess the profitability and success of an investment

- Internal Rate of Return (IRR) is the discount rate that makes the net present value (NPV) of an investment's cash flows zero. It represents the annualized rate of return at which the present value of the future cash inflows equals the initial investment (break-even)

$$\text{IRR (\%)} = (\text{Future Value of CF} / \text{Present Value of CF})^{1/\text{periods}} - 1 = \text{MoM}^{1/\text{periods}} - 1$$

Interpretation of IRR

- IRR conceptually represents the break-even rate of return where the investment covers all costs without generating a net profit or loss
- In general, a higher IRR makes an investment more desirable to undertake

Excel Application: IRR-Function

- The built-in function “=IRR” allows you to input the array of a periodic cash flow, to calculate a precise value

=IRR(values,[guess¹])

Excel Application: XIRR-Function

- For aperiodic (unevenly timed) series of cash flows, the function “=XIRR” will calculate a precise value for the IRR

=XIRR(values, dates,[guess¹])

1. guess is a set default of 10%, if omitted

Unlevered and Levered IRR

Understanding the impact of leverage on IRR

Unlevered IRR	
Focus	Measures the return on the firm's core operations, excluding financing effects
Calculation Basis	Cash flows are projected as if the firm operates debt-free
Model Formation	Assesses the inherent operational value and profitability without the impact of interest expenses or leverage
Use Case	Provides a baseline return metric, helping evaluate the investment's performance irrespective of capital structure

Levered IRR	
Focus	Measures the return to equity investors, accounting for the financing effects of debt
Calculation Basis	Cash flows reflect debt service obligations, capturing the effect of leverage
Model Formation	Enhances potential equity returns through the use of debt, showing the impact of debt repayment and interest on cash flows to equity holders
Use Case	Reflects the actual return to equity investors in an LBO, factoring in the leverage used to finance the acquisition

- Levered IRR is higher than unlevered IRR by definition, and when IRR is referred to, the levered IRR is typically implied (See Newsletter (1) – Private Equity)

Factors affecting IRR in an LBO

Key drivers of IRR in LBOs



- A lower purchase price boosts IRR by reducing initial costs and increasing returns on exit



- A higher exit multiple raises IRR, while a lower multiple reduces it



- Higher leverage can enhance IRR by lowering initial equity but adds risk



- Revenue and EBITDA growth drives value creation, raising the exit value and IRR



- Operational efficiencies and cost savings improve margins, increase EBITDA, and support a higher exit value and IRR



- Shorter holding periods with high exit values increase IRR by realizing returns faster

How PEs actually use IRRs

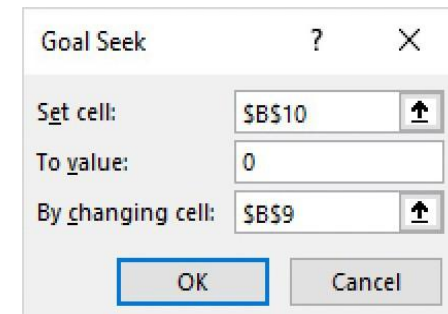
Return Metrics are key financial measures used to assess the profitability and success of an investment

Conceptual understanding of IRR as a benchmark

- IRR is more frequently used as a conceptual benchmark to guide acquisition process of a target
- Private Equity firms might target a specific IRR from their specifications set in their funds during raising
 - For example, KKR's new North America Fund XIV, has a target IRR (levered) of 20-25% (Jun 2024)
- By working “backwards”, the IRR can be used to determine the maximum amount you would be able to pay for the target company, to achieve the targeted return

Excel Application: Goal Seek

- To determine the acquisition price, that will yield the IRR to equal the desired target, we can use the goal seek feature
 - Set value -> reference IRR cell
 - To value -> IRR target as a decimal
 - By changing cell -> reference acquisition price cell
- This will change the acquisition price to the maximum amount you could pay to still achieve your targeted IRR
 - This is valuable for negotiating, and stress-testing an investment



Sensitivity Analysis

Sensitivity analysis in LBOs helps investors understand how financial assumptions will influence returns

- Sensitivity analysis consists of building different "cases" for the underlying model, which will then yield different initial rates of return. The different outcomes are based on the adjustment of variables like revenue growth, EBITDA margin or cash flow

Upside Case ↑	Base Case =	Downside Case ↓
• Best-case scenario where performance exceeds expectations (e.g. higher revenue growth rate)	• Expected or most probable outcome based on realistic assumption	• Worst-case scenario where performance falls short of expectations

Case study:

Revenue growth rate from 3% in Base to 5% in Upside:

- All mentioned variables will be directly influenced by an increase in revenue, consequently leading to a higher exit value, raising the initial IRR from base case
- Higher Revenue -> Higher EBITDA -> Higher CF -> Lower debt balance at exit -> Higher exit value -> Higher IRR

Sensitivity Table - Example

Summary: return metrics measure investment success, while sensitivity analysis ensures preparedness for various outcomes

- Finally, we build a sensitivity table to illustrate the impact of entry/exit assumptions on the achieved IRR of the investment:

5-Year IRR (Entry vs. Exit Multiple Sensitivity)						
Exit Multiple (EV / LTM EBITDA)	Transaction Multiple (EV / LTM EBITDA)					
		8.0x	8.5x	9.0x	9.5x	10.0x
	8.0x	24.2%	19.1%	15.1%	11.8%	9.0%
	8.5x	26.7%	21.5%	17.4%	14.0%	11.1%
	9.0x	28.9%	23.7%	19.5%	16.1%	13.1%
	9.5x	31.1%	25.8%	21.5%	18.0%	15.0%
	10.0x	33.1%	27.7%	23.4%	19.8%	16.8%

- Through this table we can determine how the changing acquisition/disposition assumptions of the model impacts our 5-year IRR

Risk Assessment

- By showing how outcomes fluctuate with different assumptions, sensitivity tables help identify which variables have the biggest impact on results, helping to assess potential risks

Decision Making Tool

- They provide a way to test “what-if” scenarios, which is valuable for making informed decisions under uncertainty or varying conditions



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