The Complete Investment Banking Course: Course Notes

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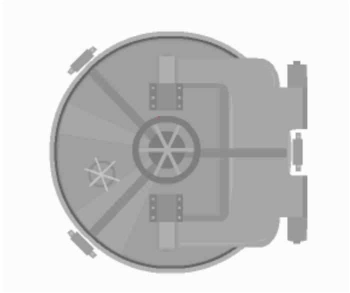
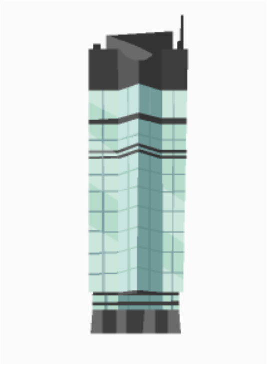
Commercial vs. Investment Banks

The two types of banking institutions





Commercial Banking	vs	Investment Banking
Commercial banking is often referred as “deposit taking, credit giving activity”. Commercial banks’ main business is collecting money from families and corporations and lending them to borrowers.	Description	Investment banks deal with a more complex set of operations: listing of firms on stock exchanges (IPOs), advisory in M&A deals and corporate restructurings, trading, and asset management.
Accepting deposits, Lending money, Issuing bank cheques, Cash management, Treasury management	Services	Capital Markets (IPOs, SEOs, Private Placements), M&A, Restructurings, Trading and Brokerage, Asset Management
Retail clients, Small Corporate Clients, Medium and Large Corporate Clients	Clients	HNWI, Medium and Large Corporations, Institutional Investors, Hedge Funds, Private Equity Funds

Universal vs. Pure Investment Banks

One stop shop or a specialized shop?

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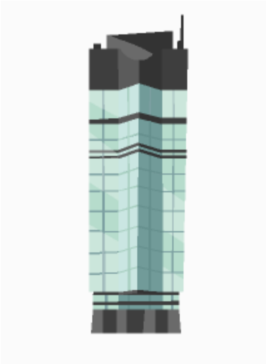
Universal Banks **VS**



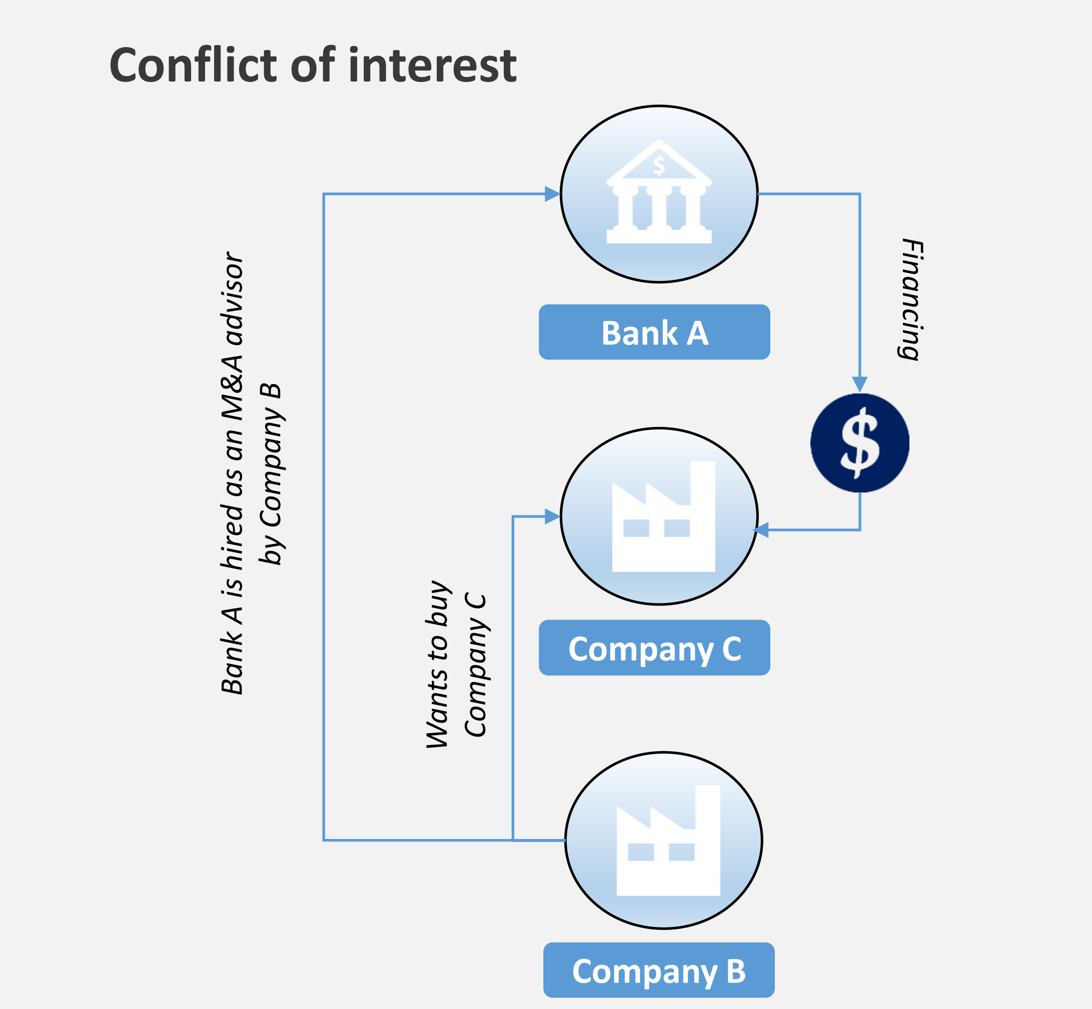
Pure Investment Banks

Universal Banks		Pure Investment Banks
Universal banks engage in both commercial and investment banking operations	Description	A pure investment bank is involved with investment banking services only. It does not do "deposit taking, credit giving"
Universal banks are able to sell more products to their clients, offering a one stop shop for all banking services	Competitive Advantage	Specialization, focus, and historical relationships; Superb services offered to clients
J.P. Morgan Chase, HSBC, Credit Suisse, Societe Generale, BNP Paribas, Barclays, Bank of America Merrill Lynch	Examples	Goldman Sachs, Morgan Stanley, Lazard

Conflicts of Interest

An example

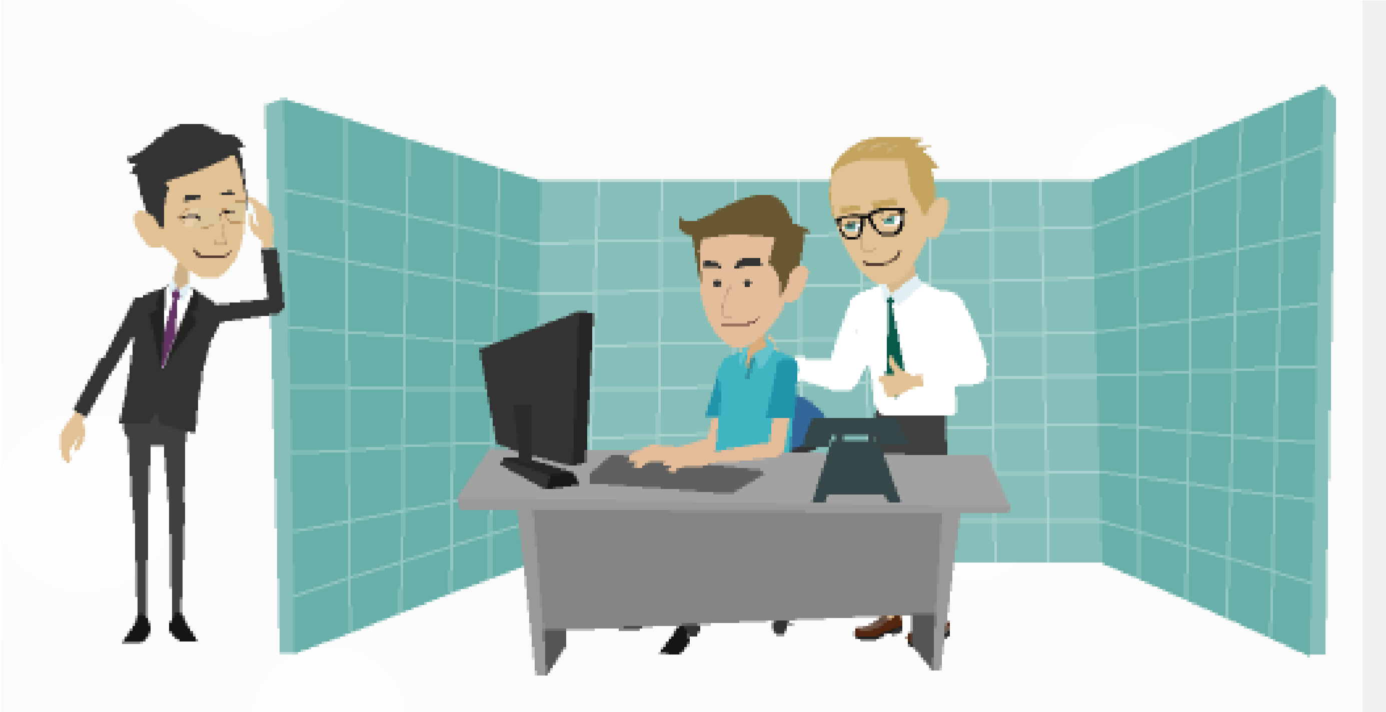
On the right, we have described the following situation. A Universal Bank (offering both commercial and investment banking services) has financed a company (Company C). Another firm (Company B) is interested in acquiring Company C. Company B decides to hire Universal Bank A as an advisor for the deal. Imagine that the Universal Bank knows very well the business of Company C and has serious reasons to be worried that it won't be able to receive the entirety of the money that it lent to Company C. Do you think that Universal Bank A would be tempted to help Company B acquire Company C and get back all of its money plus a success fee for advisory? Of course, it would! Otherwise it will lose a big portion of the loan that was given to Company C and would miss on the advisory fees. Hence Universal Bank A has a conflict of interest.



Chinese Walls

Preventing conflicts of interest

The role of Chinese Walls is to create a barrier between different divisions. Client information is considered confidential and cannot be shared with people from the same firm who do not have authorized access to it. People working in different departments of an investment bank are often required to act as if they work for separate organizations.



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The four main divisions in Investment Banking

Capital Markets

Financing medium and large corporations

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Capital markets are one of the most fascinating areas of investment banking. Companies need these services when they are about to go public or want to issue debt that will be sold to the public.

Issuing Equity (ECM)

Going public is a critical moment in the life of any company. The Equity Capital Markets division of an investment bank works with companies that are going to be listed. This means these businesses have grown to become large entities that are ready to get public investors on board. When a company is listed its shares will be sold to public investors and they will be able to determine who will run the business and who will sit on the Board of Directors.

Issuing Debt (DCM)

Besides equity, a company could be interested in issuing debt securities called bonds. The Debt Capital Markets division of an investment bank works with these clients. A bond offering is not really different from an equity offering. The players who are involved are almost the same. The main difference is that bonds can be issued by sovereign countries too. On average, bonds are much easier to price compared to equity, mainly because every company that issues a bond has a credit rating – an opinion about its creditworthiness that is expressed by independent credit agencies.

Advisory

Serve clients in M&A transactions and Restructuring procedures

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Advisory is a division that employs individuals with significant experience in Corporate Finance. They are able to serve clients in sophisticated transactions such as M&A and Corporate Restructuring

M&A

M&A stands for Mergers and Acquisitions. We talk about an acquisition, when a company buys another company's shares or assets. Alternatively, we have a merger when the buying company absorbs the target company. The target company ceases to exist after the transaction, as it is merged into the buying company. There are a number of reasons why M&A deals play an important role in a company's life. Top managers understand well that sometimes it is cheaper to acquire something that has been already created rather than trying to generate it internally.

Restructuring

These services are necessary when a firm is unable to service its debt and is in danger of going bankrupt. There can be a number of reasons for corporate distress. Some companies can have operating difficulties - problems with their core business. Or alternatively, companies can have financial difficulties – situations in which the core business is profitable, but interest payments are having a detrimental effect on cash flows. The two main alternatives in these situations are a private workout and a formal bankruptcy procedure in court. Most lenders prefer a private workout because it provides them with faster results and a significantly higher recovery rate.

Trading and Brokerage

Buying and selling of financial instruments

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Purchasing and selling securities by using an investment bank's own money or doing it on behalf of clients

Trading

Proprietary trading means using the bank's own money in order to buy financial instruments that are held for a while and are later sold at a profit. In most cases this is a are very profitable activity because investment banks have an excellent idea of how financial markets function and what type of trades are likely to be profitable in the short term.

Brokerage

Asset Managers and Other institutional investors are some of the clients using brokerage services. Investment banks sell securities to these clients and profits from a bid/ask spread - the difference between the price at which a financial security can be acquired and the price at which it can be sold.

Asset Management

Using money in order to make more money

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Investment banks offer asset management services to institutional investors (pension funds and investment companies) and high net-worth individuals (HNWI)

Institutional Investors

Large institutional investors like pension funds and investment companies work with investment banks as these are able to offer them attractive investment opportunities that are not available to other investors. Investments in structured products, equity, fixed income, private equity, real estate are some of the products that are offered to institutional investors.

HNWI (High Net-Worth Individuals)

Individuals with investible income of more than $5 million. Investment banks offer highly specialized services to these clients: deposit taking and payments, discretionary asset management, tax advisory services, and possibly some concierge services.

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Capital Markets

Capital Markets Services

A detailed description

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Category		Product type	Description	Type of investors
Equity Offerings	1	Initial Public Offerings	The first time when a company's stock is offered to the public. It is listed on a Stock Exchange and offered to investors at a given price range	Private Investors & Sophisticated Investors
	2	Seasoned Public Offerings	SEOs are transactions in which firms that are already listed raise additional equity capital	Private Investors & Sophisticated Investors
	3	Private Placements	Raising equity without offering it to the wide public, but to selected sophisticated investors only. In this way the transaction does not need to go through the full registration process that is required for IPOs	Sophisticated Investors
Debt Offerings	1	Bond Offerings	Issuance of bonds by public authorities, credit institutions, companies and supranational organizations. The process is similar to equity offerings although pricing is easier	Private Investors & Sophisticated Investors
	2	Securitization	Receivables under some form (credits, rents, leases) are packaged together and sold as a security to investors. Often these securities are referred to as Asset Backed Securities	Private Investors & Sophisticated Investors
	3	Loan syndication	A group of banks (rather than a single bank) providing a loan	Financial Institutions

Why Companies Go Public?

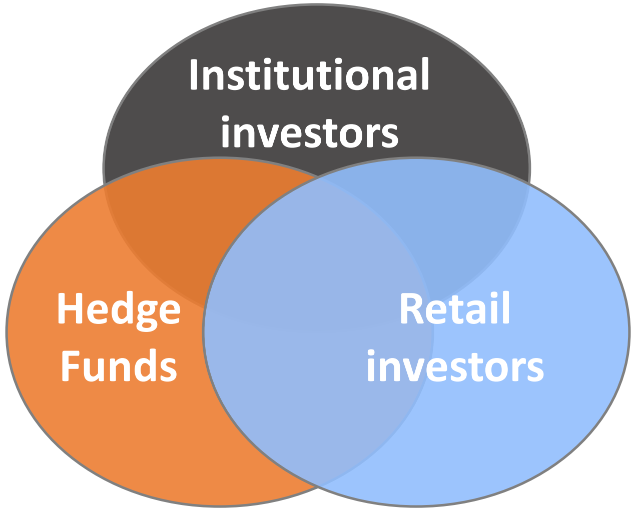
The reasons behind owners decision to list the company on the Stock Exchange

Stock Exchange listing

- Finance Growth
- Exit opportunity for founders
- Tool for Management compensation
- Be able to buy companies with stock
- Reputation and Visibility
- Signal for strong market position

Who are the investors and what do they look for?

The different types of investor profiles



The above categories of investors differ from each other in their:

- **Investment horizon**
- **Return expectations**
- **Risk profile**
- **Sophistication**

Nevertheless, investors are interested in similar type of stories:

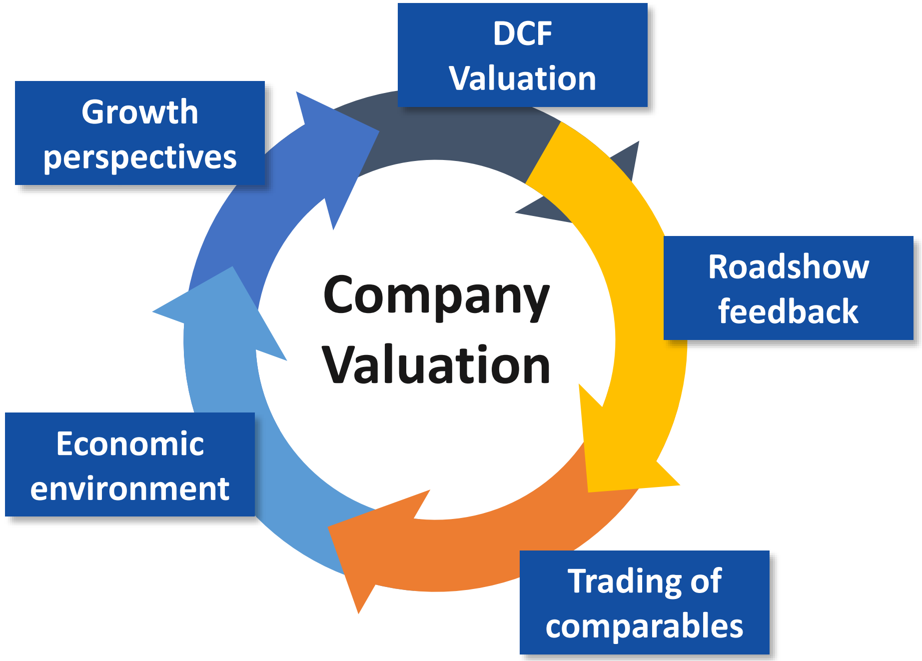
- Success stories
- Strong leadership
- Growth potential
- Modest valuation (Lower Price Range)
- Companies with positive Cash flows
- Solid market position

High demand for the IPO

Pricing mechanisms of an IPO

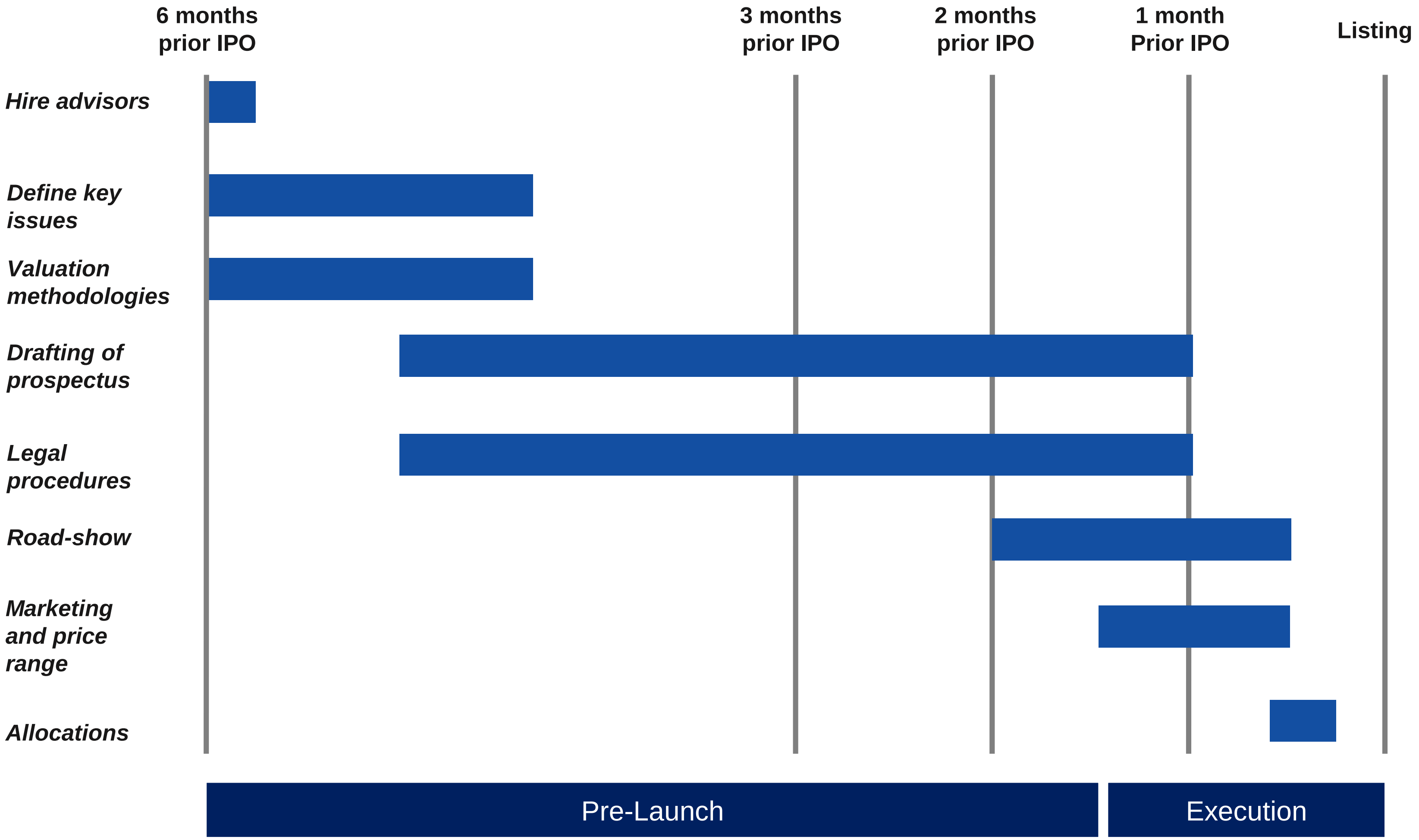
Factors that determine the price of a company that is going public

The price range which is set for an IPO depends on multiple factors. Its key goal is to provide a slight discount to the trading value of the company. This will keep investors happy and facilitate the post-launch trading of the shares



Timetable of an IPO

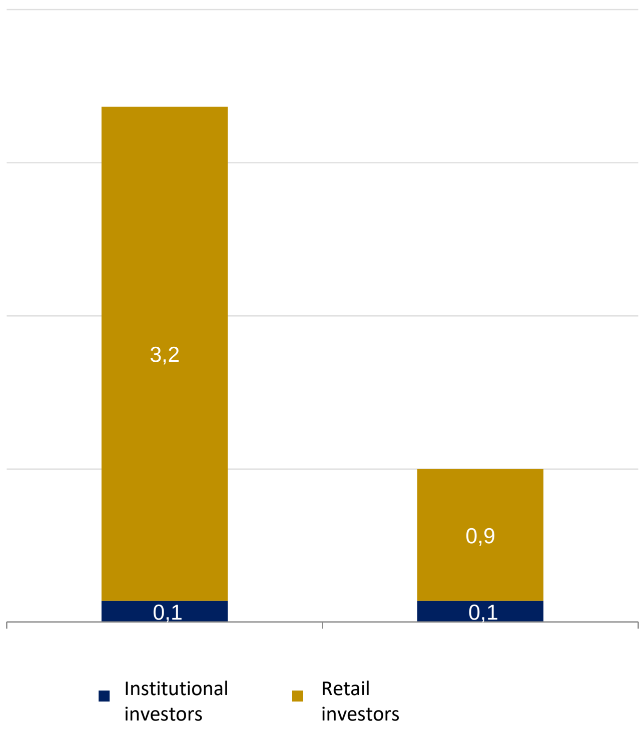
Timing of the different phases in an IPO



The allocation of shares

How allocation is carried out in practice

The primary goal of the allocation process is to find investors who believe in the stock and are willing to hold onto it in the long run



Throughout the process of allocation banks try to include the following types of investors:

- Investors willing to keep the stock for a sustained period of time
- Industry opinion leaders
- Investors who participated in the roadshow and provided valuable feedback
- Investors with strong reputation (Blackrock, State Street etc.)
- Investors who worked hard to understand the company

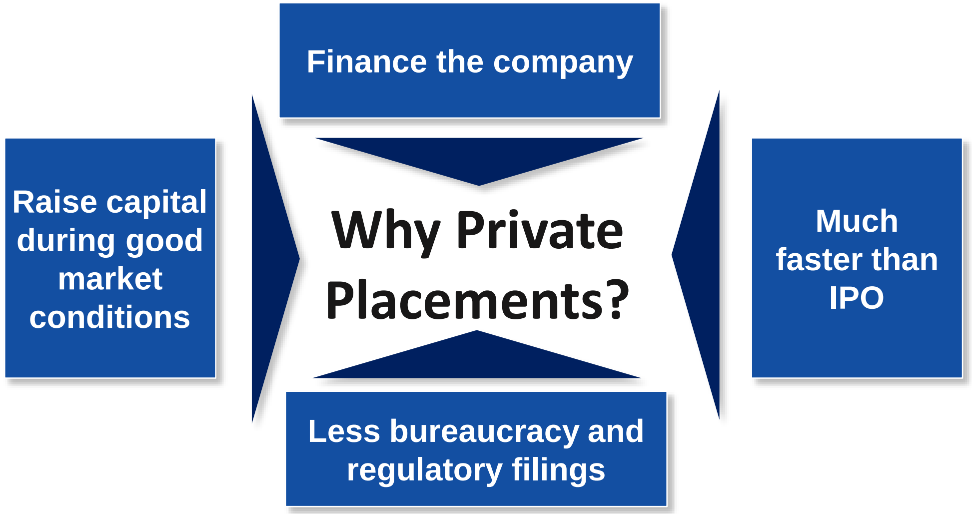
Nevertheless, it should be remembered that the leading bank proposes an allocation and then the company decides whether to go through with it or not

SEOs and Private Placements

Other ways to raise equity

Seasoned Equity Offerings are similar to IPOs, but much simpler due to the following reasons:

- Documentation and filings are already prepared and submitted
- Valuation is much easier as the company is traded on the market
- Many investors are familiar with the company

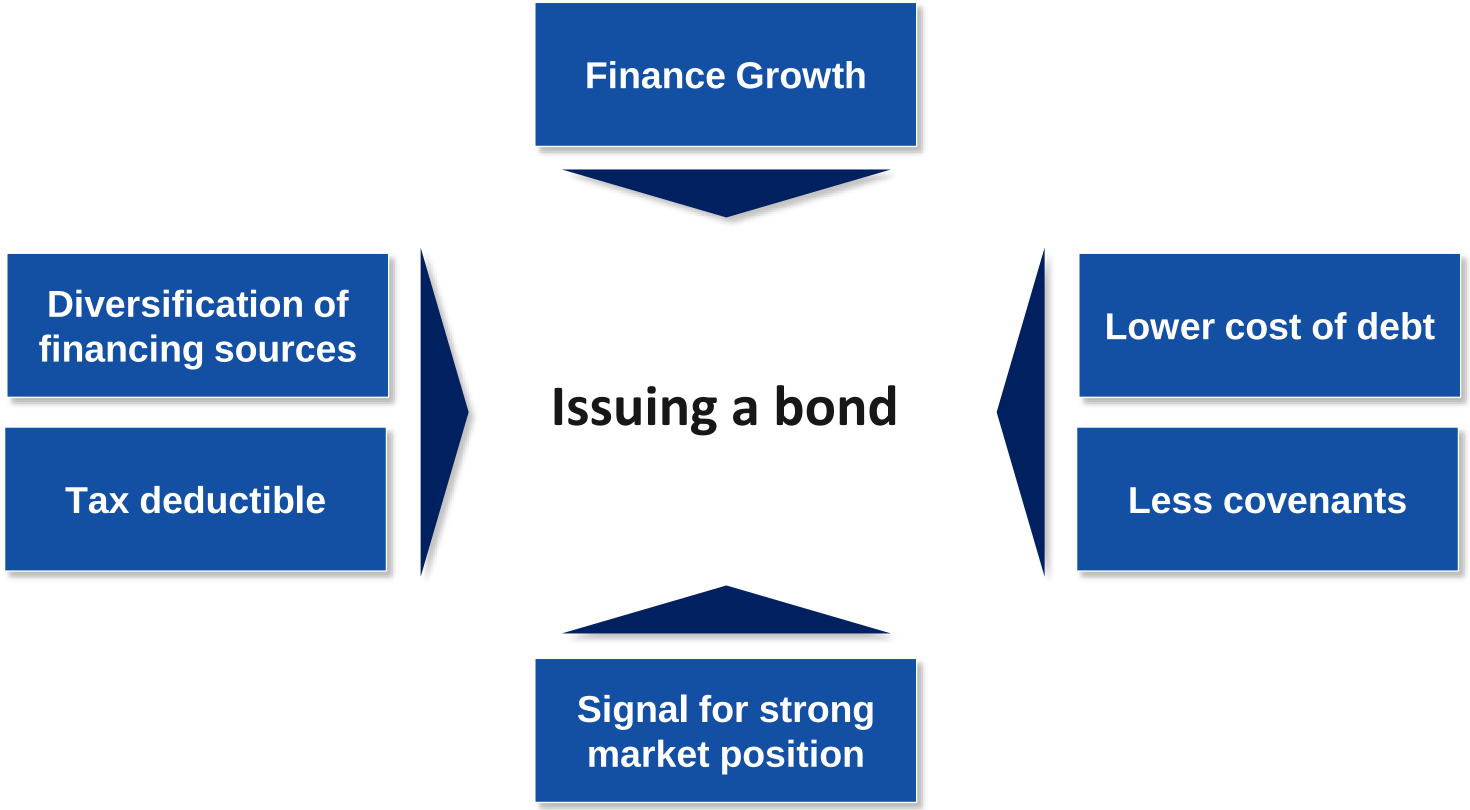


Private placements are equity offerings exempt from a large part of the registration procedures

They are offered only to institutional investors

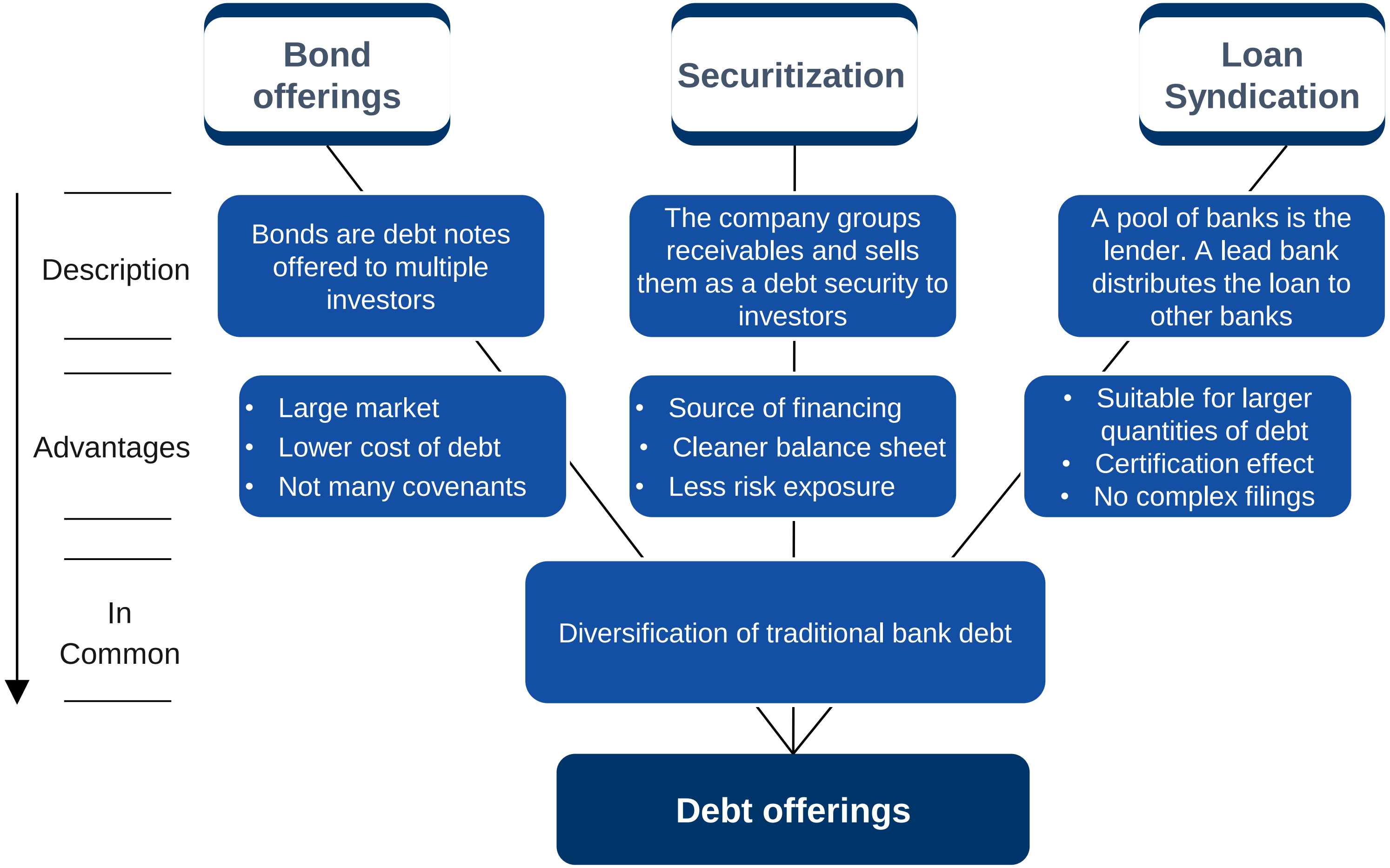
Bond offerings

The reasons why large companies prefer bond financing



Comparison of debt offerings

Characteristics of the types of debt offerings carried out by investment banks



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Advisory

Why acquire another company?

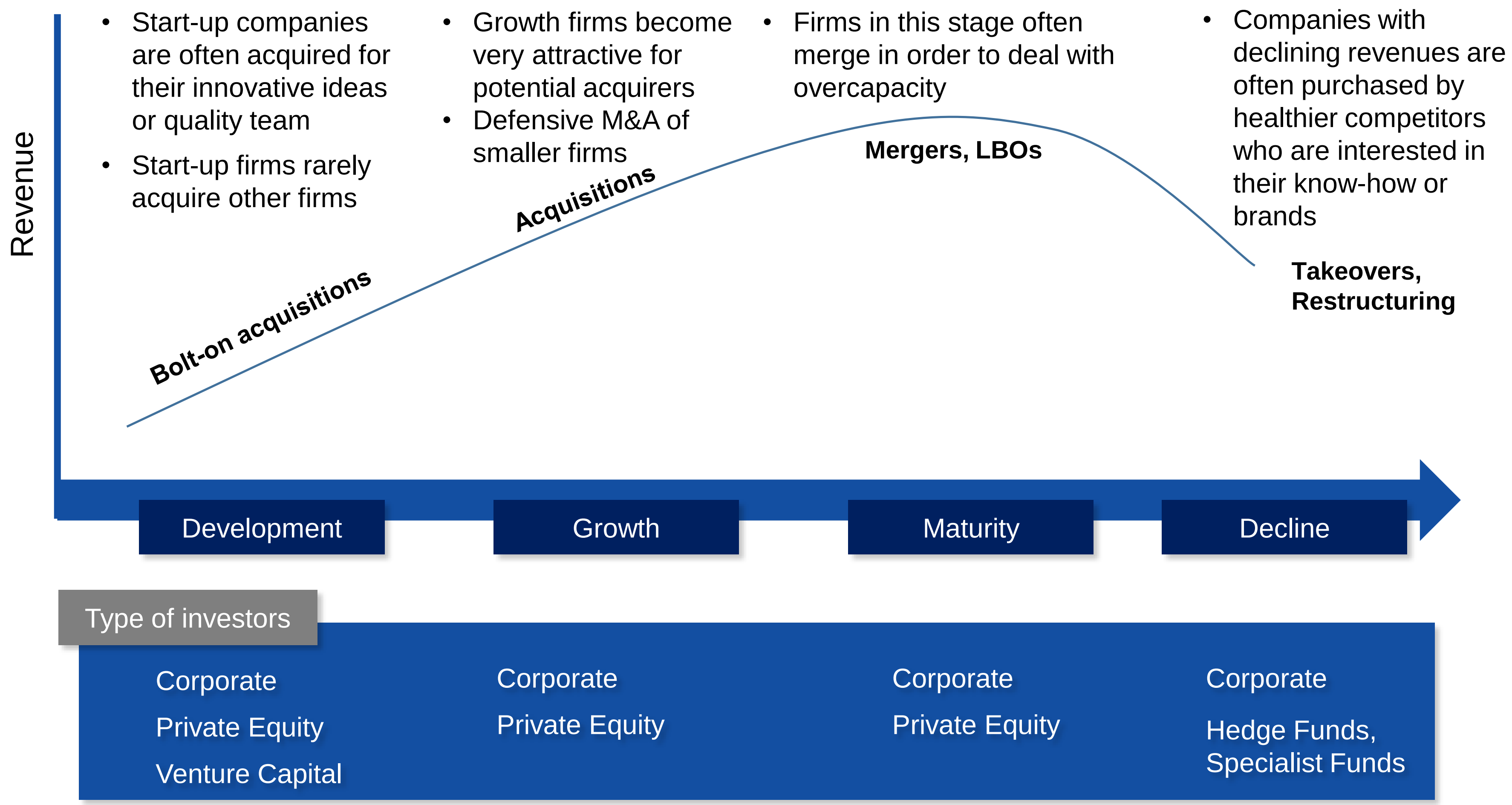
Understanding the rationale behind M&A deals

Why acquire another company?

- Synergies
- Product-line extension
- Deal with overcapacity
- Defensive M&A: Eliminate Competition
- Acquire R&D/patents
- Gain access to new distribution channels
- Increase supply-chain power
- Acquire key personnel

Deal lifecycle and buyers

Types of M&A deals that occur throughout a company's lifecycle



The process of acquiring another company

Preparing a teaser offer

The deal process

	Teaser	Confid. agreem.	Info Memo	Process Letter	Due diligence	Binding offers	Short List	Negotiation	Tender offer
Private Transaction		✓		✓	✓			✓	
Auction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Listed target		✓		✓	✓			✓	✓

The process usually lasts between 2-6 months. Some auctions could even last up to an year

Teaser	A brief summary of the company with a short description of its business. Often does not include the company's name

The process of acquiring another company

Agreeing to keep a secret

The deal process

	Teaser	Confid. agreem.	Info Memo	Process Letter	Due diligence	Binding offers	Short List	Negotiation	Tender offer
Private Transaction		✓		✓	✓			✓	
Auction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Listed target		✓		✓	✓			✓	✓

The process usually lasts between 2-6 months. Some auctions could even last up to an year

Confidentiality agreement

An agreement not to distribute reserved information. The target needs to be assured that the access it gives to the bidders would not lead to a leakage of strategic information

The process of acquiring another company

Drafting and providing a more detailed description of the firm that is about to be sold

The deal process

	Teaser	Confid. agreem.	Info Memo	Process Letter	Due diligence	Binding offers	Short List	Negotiati on	Tender offer
Private Transaction		✓		✓	✓			✓	
Auction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Listed target		✓		✓	✓			✓	✓

The process usually lasts between 2-6 months. Some auctions could even last up to an year

Information Memorandum

A document providing a description of the target's business, financials, management team, product portfolio, market positioning etc.

The process of acquiring another company

Communicating the rules of the transaction

The deal process

	Teaser	Confid. agreem.	Info Memo	Process Letter	Due diligence	Binding offers	Short List	Negotiation	Tender offer
Private Transaction		✓		✓	✓			✓	
Auction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Listed target		✓		✓	✓			✓	✓

The process usually lasts between 2-6 months. Some auctions could even last up to an year

Process Letter

Defines the essential elements of the transaction: timing, valuation range, other conditions, due diligence access

The process of acquiring another company

Providing an inside look to potential acquirers

The deal process

	Teaser	Confid. agreem.	Info Memo	Process Letter	Due diligence	Binding offers	Short List	Negotiation	Tender offer
Private Transaction		✓		✓	✓			✓	
Auction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Listed target		✓		✓	✓			✓	✓

The process usually lasts between 2-6 months. Some auctions could even last up to an year

Due Diligence

The target firm provides access (limited or full) to its financial, tax and legal documentation. Often, information about the target is provided in a data room

The process of acquiring another company

Receiving offers from several buyers

The deal process

	Teaser	Confid. agreem.	Info Memo	Process Letter	Due diligence	Binding offers	Short List	Negotiation	Tender offer
Private Transaction		✓		✓	✓			✓	
Auction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Listed target		✓		✓	✓			✓	✓

The process usually lasts between 2-6 months. Some auctions could even last up to an year

Binding Offers

Offers made by the participants in an auction, indicating how much they are willing to offer for the target. As the name suggests, these offers are binding

The process of acquiring another company

Choosing a selected few

The deal process

	Teaser	Confid. agreem.	Info Memo	Process Letter	Due diligence	Binding offers	Short List	Negotiati on	Tender offer
Private Transaction		✓		✓	✓			✓	
Auction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Listed target		✓		✓	✓			✓	✓

The process usually lasts between 2-6 months. Some auctions could even last up to an year

Short List

After receiving indications about a possible valuation, the target and its advisors decide which participants will be left in the auction and will receive due diligence access

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The process of acquiring another company

Bridging financial or operational differences

The deal process

	Teaser	Confid. agreem.	Info Memo	Process Letter	Due diligence	Binding offers	Short List	Negotiation	Tender offer
Private Transaction		✓		✓	✓			✓	
Auction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Listed target		✓		✓	✓			✓	✓

The process usually lasts between 2-6 months. Some auctions could even last up to an year

Negotiation

Negotiation includes various elements such as the structure of the price, earn-out mechanisms, price adjustment terms, etc.

The process of acquiring another company

Approaching the shareholders of a listed firm

The deal process

	Teaser	Confid. agreem.	Info Memo	Process Letter	Due diligence	Binding offers	Short List	Negotiation	Tender offer
Private Transaction		✓		✓	✓			✓	
Auction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Listed target		✓		✓	✓			✓	✓

The process usually lasts between 2-6 months. Some auctions could even last up to an year

Tender offer

A tender offer is submitted to a listed firm. It is a public, open offer addressed to all stockholders, which offers to buy their shares at a specified price

Valuation of target companies

Different ways to value a company

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Why is it necessary to perform a valuation of the target company?

Find Fair Value for the Transaction

- ✓ Find Fair Value
- ✓ Value Synergies: Corporate buyers
- ✓ Value IRR: Private equity

Approach the right Buyers

- ✓ Approach Bidders who could "afford" the firm

Arrange financing

- ✓ Define how much needs to be financed
- ✓ Justify financing in front of banks

Discounted Cash Flows (DCF)

Inputs:

- Top line forecast for 5-10 years,
- Estimated cost of capital
- Growth rate after the forecast period

Trading Multiples

Inputs:

- Comparable firms which are listed
- A measure indicating operating profitability (e.g. EBITDA)

Transaction Multiples

Inputs:

- Comparable firms, which have been subject to a transaction
- A measure indicating operating profitability (e.g. EBITDA)

Use a combination in order to triangulate results

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Payment options in M&A deals

Different ways to pay when buying a company

Enterprise Value

Net Debt

Financial liabilities
-
Cash

Special treatment of:
- Pension obligations
- Tax liabilities
- Litigations
- Overdue payables

Equity

Enterprise value
-/+
Net debt

Equity paid with:
- Cash
- Stock
- Deferral – “Vendor loans”, “Earn outs”

Type of payment	 **Cash**	 **Stock**	 **Earn-out**
Advantages	✓ Does not dilute ownership ✓ Crystal value for seller	✓ Aligns the interests of new and old ownership ✓ No need for financing	✓ Aligns the interests of new and old ownership ✓ Helps to bridge expectations
Disadvantages	❖ If cost of debt is high, could be heavy ❖ No upside from future performance	❖ Dilutes ownership ❖ Subject to valuation	❖ Seller needs to monitor the firm post closing ❖ Seller depends on the Buyer’s management

Financial vs. Corporate Buyers

An important comparison between the two types of buyers in M&A deals

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Type of Buyer	Financial Buyer	Corporate Buyer
Focus in the transaction	• Focus on cash flows, and capital gains	• Unlock synergies
Investment Horizon	• 3-5 years	• Long term
Type of deal	• Full Acquisition or consortia	• Full Acquisition, Merger, Joint Venture
Leverage in the transaction	• High	• Medium
Management involvement	• Following the company through Board representatives	• Integration of the Management of the two companies
Valuation focus	• Multiples • Cash flows • Cost of capital	• Synergies • Growth • Long term view

Restructuring: why and when

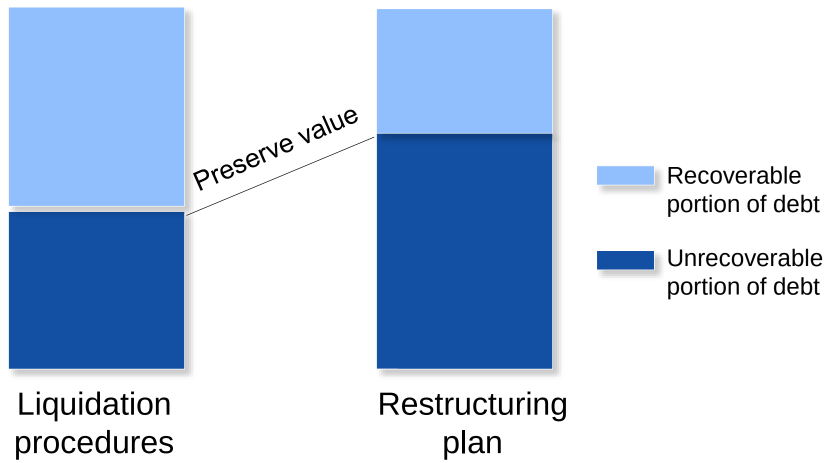
Understanding the purpose of restructuring

Which are the typical reasons for corporate distress?

- Product obsolescence
- Industry decline
- Bad investments in non-core assets
- Lack of innovation
- Inefficiency
- Bad Management
- Bad M&A deals
- Excessive leverage

Insufficient cash for operating activities

Which are the scenarios when restructuring is a viable option?



Restructuring aims to preserve the firm as a whole and repay more debt to creditors

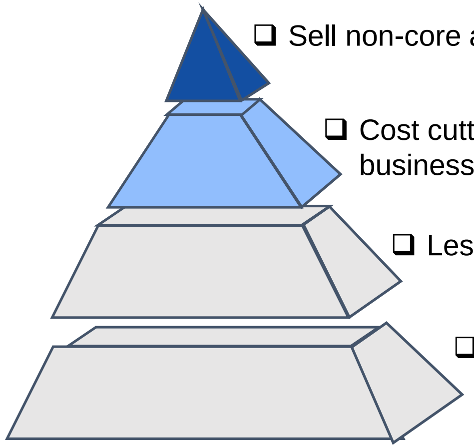
Types of restructuring

How restructuring can be carried out in practice

Asset side restructuring

Cash Flow generation

Strategic importance		Low	High
	High	**Optimization/ Cost cutting**	**Keep**
	Low	**Divest**	**Consider divesting**



- ❑ Sell non-core assets
- ❑ Cost cutting of existing business
- ❑ Less capex
- ❑ Sale of controlled firms

Liability side restructuring

An agreement between creditors to alter the conditions under which liabilities of the company will be restructured, as it will be unable to repay them in their entirety

The various options for debt restructuring are:

- Debt refinancing
- Suspending interest payments
- Debt write-off
- Debt-equity swap
- Introduce convertible bonds

Creditors need to assess 3 key parameters:

- Loss given default – Liquidation
- Loss given default – Restructuring
- Probability of successful restructuring

Trading and Brokerage

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Overview

Trading clients

Trading is the activity of buying and selling financial securities

Type of institution	Focus	Time Horizon	Type of trading
Investment banks – trading desk	• Market making, profit from a bid/ask spread • Take proprietary positions and profit from them	Short Short	Brokerage Proprietary
Asset Management	• Buy securities for clients according to their preferences for portfolio allocation • Provide a low price	Long	Brokerage
Hedge Funds	• Explore vulnerabilities in market pricing and profit from them	Short	Proprietary

Asset Classes

A description of the different categories of asset classes traded by investment banks

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Category		Product type	Description	Typical Investors
Equities	1	**Blue chips**	Well recognized and established large firms that have stable earnings. Also known as "investment grade" companies	Mutual funds, Pension funds
Equities	2	**Other stocks**	The residual universe of stocks includes all other listed companies. Among them could be distinguished Mid and Small Cap stocks that have different risk profiles	Insurance companies, Retail Investors
Fixed Income	1	**Government bonds**	Government bonds are considered as less risky, although there is a big difference between the risk profile of some governments and others. Credit Rating Agencies track the credibility of governments to repay their debt	Mutual funds, Pension funds, Insurance companies
Fixed Income	2	**Corporate bonds**	Bonds issued by corporations. Credit Rating Agencies value most of the corporations and assign them with a rating. Based on this rating, some Mutual and Pension funds can buy only certain bonds (least risky ones)	Mutual funds, Insurance companies, Retail investors
Other Financial Instruments	1	**Commodities**	Trading goods such as: coffee, corn, live cattle, rice, sugar, gold, silver, crude oil, gas, etc.	Companies, Commodity traders, Hedge Funds
Other Financial Instruments	2	**Derivative instruments**	Derivative financial instruments are many and vary significantly in their nature. Some of them are used for hedging purposes by companies (in order to reduce risk), while others are for speculative reasons. Examples are forwards, futures, options, swaps, etc.	Companies, Hedge Funds

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Asset Management

Overview

Asset Management opportunities

Asset Management is a heterogeneous area. Various types of vehicles provide different returns and risk profiles to investors

- **Traditional asset management**
  - **Open end mutual funds**: Funds able to raise additional capital even after the fund's life starts
  - **Closed end mutual funds**: Funds that raise capital only at their commencement

- **Alternative investments**
  - **Real estate funds**: Funds investing in real estate (commercial, residential etc.)
  - **Private equity**: Private equity funds specialize in: growth capital and LBOs
  - **Hedge Funds**: Hedge funds aim to take advantage of market pricing errors
  - **Vehicles investing in other asset classes**: Specialized funds investing in asset classes like art. They claim that it offers a nice diversification to the portfolio

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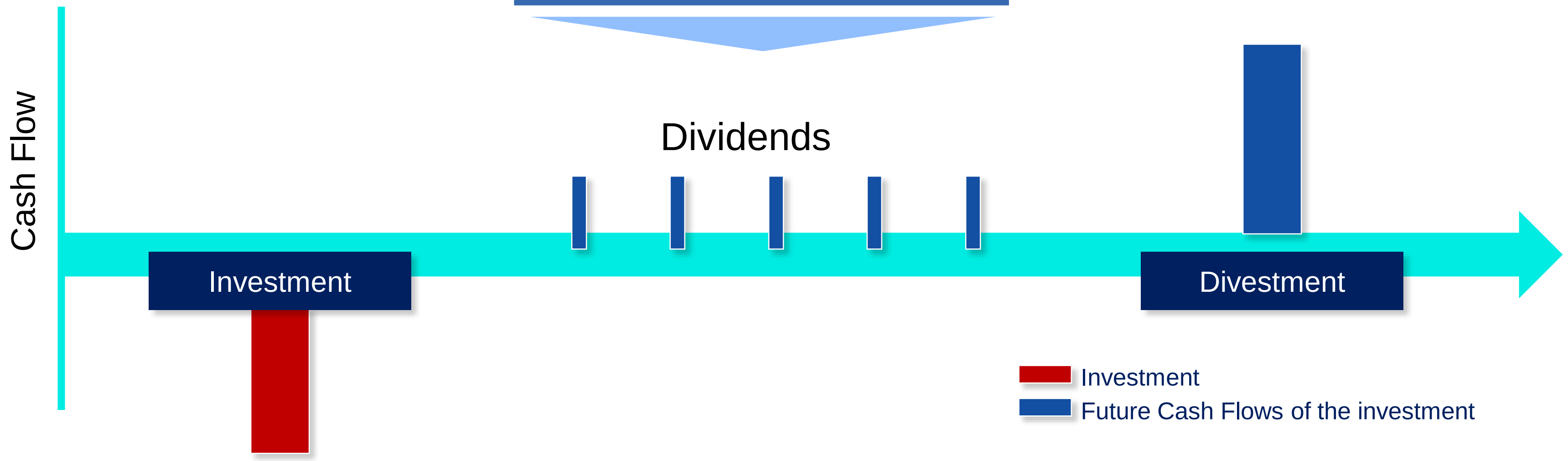
Company Valuation - DCF

Why discounting future Cash Flows?

The investor perspective

Let's consider that an investor wants invest in a company

Their primary goal? **Return on Investment**



Every Investor buys the shares of a company based on their expectations for future Cash Flows

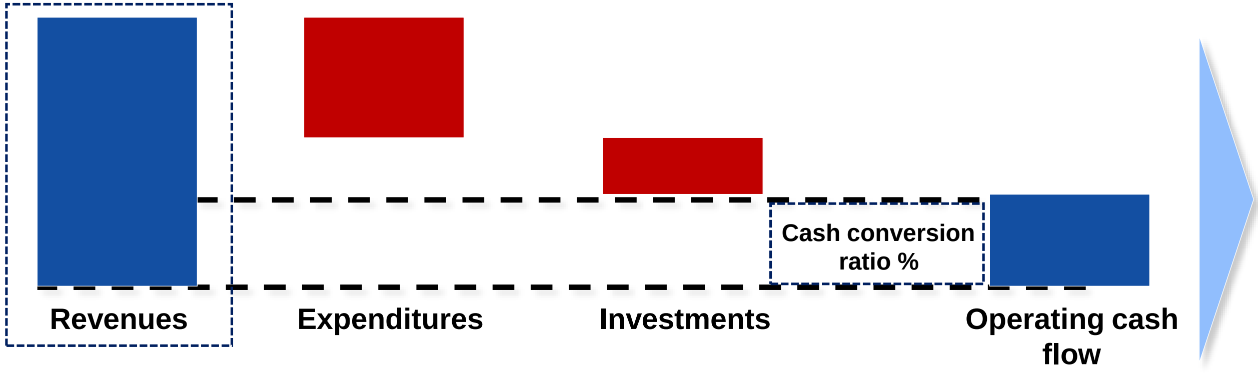
Dividends are a function of future Cash Flows

Divestment price is a function of future Cash Flows

What drives company value?

The two parameters determining a firm's value

Given that a company's value is a function of its future cash flows, we need to determine what drives future cash flows



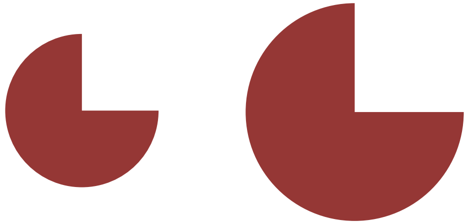
Two functions drive a firm's value in the future:

Growth

Profitability

1 Why growth?

2 Why profitability?



- Bigger size
- Same conversion ratio

- Same size
- Stronger conversion ratio

Higher future cash flows, higher valuation

Calculating Cash Flow: NOPAT

NOPAT = Net Operating Profit less Adjust Taxes

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1 **NOPAT (Net Operating Profit After Taxes) :**

$ in million	Year 1	Year 2	Year 3
Net Sales	17,022	18,341	18,549
Cost of goods sold	(9,483)	(9,822)	(9,857)
Gross Margin	**7,539**	**8,519**	**8,692**
Operating expenses	(3,492)	(4,394)	(4,123)
D&A	(487)	(511)	(693)
EBIT	**3,560**	**3,614**	**3,876**
Tax rate	35%	35%	35%
Operating taxes	(1,246)	(1,265)	(1,356)
NOPAT 1	**2,314**	**2,349**	**2,520**

NOPAT is a measure of operating profitability. It does not take into consideration financial structure. Interest expense is not included in the calculation above.

Calculating Cash Flow: Working Capital & Capex

The cash impact of Balance Sheet items

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2 Working Capital

$ in million	Year 1	Year 2	Year 3	DeltaY1-Y2	Calculate cash effect
Account receivables	3,621	4,174	3,492	(553)	-(Receivables Y2-Receivables Y1)
Inventories	2,311	1,813	2,104	498	-(InventoriesY2-InventoriesY1)
Trade payables*	3,383	4,207	3,212	824	PayablesY2-PayablesY1
Working Capital 2	**2,549**	**1,780**	**2,384**	**769**	

*Please note that Trade Payables are with a negative sign because they are a liability

3 Capital Expenditures

Capital expenditure is the cost which the company sustains in order to replace old PP&E or Acquire new PP&E.

A reasonable assumption is that a growing business will need additional PP&E investments.

4 Other assets and liabilities

Operating → Used for the generation of Operating Cash Flows; Could be modeled as a % of revenues

vs.

Non-operating → Not used for the generation of Operating Cash Flows; Their value (positive or negative) should be added/(subtracted) to Enterprise Value

Calculating Cash Flow

Discounting Unlevered Free Cash Flows

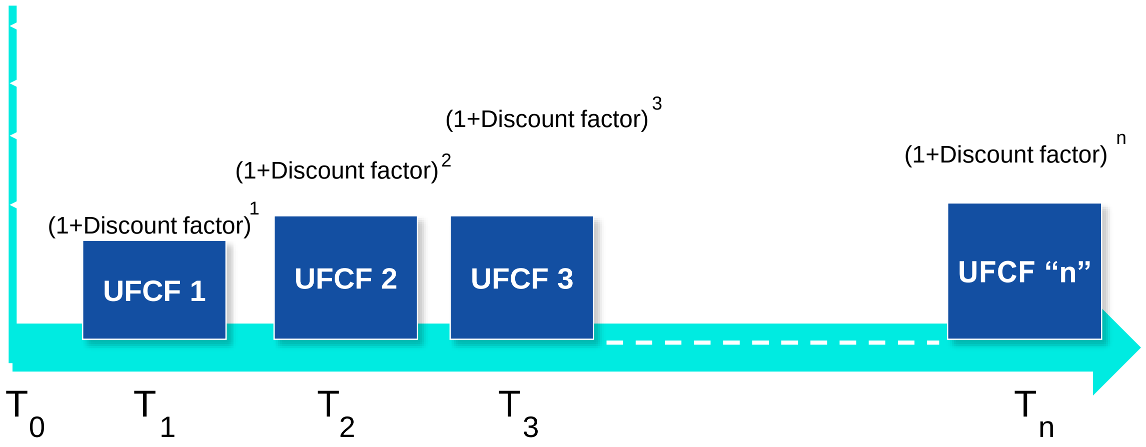
$ in million

- NOPAT
- Add-back D&A
- △ Working capital
- △ Net other assets, liabilities
- Capex

Unlevered Free Cash Flow

NOPAT	Net Operating Profit After Taxes is a measure of operating profitability
Add-back D&A	D&A is added back as it is not a Cash expense
Delta Working Capital	Growing a business requires investments in Receivables and Inventory and generates more Payables
Delta Net Other Operating assets	Similar to Working Capital. As a business grows it needs more other operating assets
Capex	Expenditure for PP&E used to replace old PP&E or acquire new PP&E in order to support the growth of the business

!Free Cash Flows are available to both debt and equity investors!



Finding a proper discount factor: WACC

WACC = Weighted Average Cost of Capital

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There are two types of financial investors in a firm

Debt investors

Equity investors

Free cash flow is available to both debt and equity investors

WACC
(Weighted average cost of capital)

Takes into consideration both debt and equity investors

WACC (*Weighted Average Cost of Capital*) represents the opportunity cost that investors sustain for investing their funds in the firm

$$WACC = \left(\frac{D}{D+E}\right) * k_d * (1-t) + \left(\frac{E}{D+E}\right) * k_e$$

D = Amount of debt financing

E = Amount of equity financing

k_d = Cost of debt

k_e = Cost of equity

t = Tax rate

Finding cost of equity and cost of debt

The practical way to calculate cost of equity and debt

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	Methodology	Needed data	Practical implementation
Cost of debt	▪ **Market value of debt**	▪ Bond current pricing	Use the bond's Yield to Maturity
	▪ **Book value of debt**	▪ Book value of Financial debt in BS ▪ Interest expense in P&L	Divide Interest expense to the amount of Financial debt
Cost of equity	▪ **CAPM (Capital Asset Pricing Model)** $k_e = r_f + \beta * Market\ risk\ Premium$	▪ Risk-free rate	Use a 10 year government bond
		▪ Market Risk Premium	Studies show it is between 4.5% and 5.5%
		▪ Company beta	A measure of the stock's volatility in relation to the market. Available in financial platforms such as Bloomberg, Thomson Reuters etc.

Two stages of DCF

Explicit forecast period + Continuing value

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	Stage 1		***Stage 2***
Present Value of Free Cash Flows =	**Cash Flows in the Forecast period** (5-10 years)	+	**Continuing value** (After forecast)

	Description	Needed data	Math formula
Forecast period (Stage 1)	The explicit forecast period should be long enough to allow the business to reach a maturity stage	▪ Free Cash Flow Forecast (5 or 10 years ▪ WACC	$\frac{FCF_1}{(1+WACC)^1}+\frac{FCF_2}{(1+WACC)^2}+\frac{FCF_3}{(1+WACC)^3}+\frac{FCF_4}{(1+WACC)^4}+\frac{FCF_5}{(1+WACC)^5}$
Continuing Value (Stage 2)	Continuing Value is the period after the explicit forecast period. Often a large portion (>50%) of a company's valuation lies in its Continuing Value	▪ Free Cash Flow Forecast for 5th year ▪ WACC ▪ Perpetuity growth rate (g)	$\frac{\frac{FCF_5*(1+g)}{(WACC-g)^1}}{(1+WACC)^5}$

From Enterprise Value to Equity Value

Understanding the difference between Enterprise Value and Equity Value

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	Present Value of Free Cash Flows	
+	Non-operating Assets	1
	Enterprise Value	
-	Financial debt	2
-	Debt-like items	3
	Equity Value	

1 **Non-operating Assets:** These are assets that are not used in the operating business of the company

Non-operating real estate, personal cars, financial subsidiaries etc.

2 **Financial debt:** Interest-bearing financial debt

Debt to banks, Bond issues, Leases etc.

3 **Debt-like items:** Non-interest bearing liabilities that are not considered within Free Cash Flow

Provisions, Unfunded Pension liabilities, Liabilities from litigation, etc.

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Company Valuation - Multiples

The Process

Performing multiples valuation

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1. **Select a multiple**

   Is it a transactional or a trading multiple?
   Is it an EV or Equity multiple?

2. **Find a peer group**

   Are the companies in the peer group a suitable comparator?

3. **Clean financials**

   Are there any one-off events in the P&L?

4. **Calculate the multiple**

   Calculate the multiple after financials have been cleaned

5. **Multiply by the comparator and obtain EV or Equity**

   For ex. If you have calculated EV / EBITDA, multiply by the target's EBITDA and obtain its EV

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Why multiples?

The advantages of using multiples

Viable alternative to DCF

Incorporate Acquisition Premium

Easy to Update

Multiples Valuation

Triangulate results

Market sentiment

Easy to communicate

Transaction vs. Trading multiples

A comparison between the two types of multiples

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Type of Multiple	Transaction Multiples	Trading Multiples
Description	• A multiple that was observed in an M&A deal	• A multiple that is based on the stock price of a listed firm
Pros	• Includes premium • Shows the value of the entire firm	• Current • Large universe of comparable firms
Cons	• Difficult to find suitable transactions • Figures are not always disclosed	• Does not include premium • Assumes market pricing is perfect
Timing	• Not always up-to-date	• Easy to update

Enterprise Value vs. Equity Multiples

One of the subtleties of multiples valuation

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Type of Multiple	Enterprise Value	Equity Value
Relevant for	• Debt and equity holders	• Equity holders
Can be compared to	• EBITDA, Sales, EBIT	• Net Income
Cannot be compared to	• Net Income	• EBITDA, Sales, EBIT
Advantages	• Approximates cash • One-off events not considered	• Easier to calculate • Shows owners' perspective
Popular examples	• EV / EBITDA • EV / EBIT • EV / Sales	• Price / Earnings

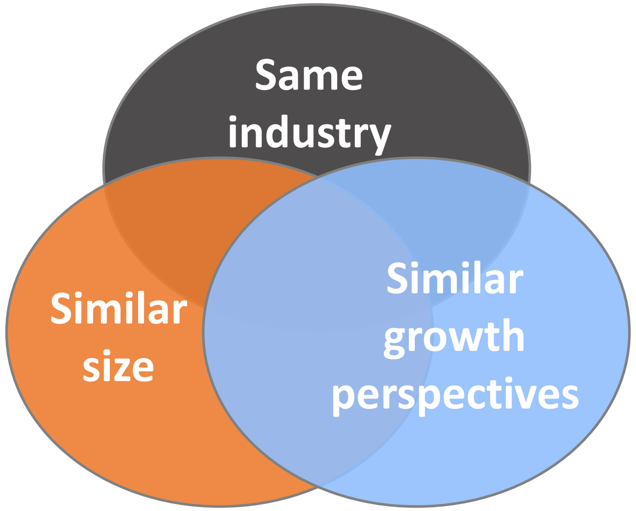
Popular Multiples

Examples of multiples used by practitioners

Multiple	Why use it?	Why not?	Popularity
Price / Earnings	• Easy to apply • Represents shareholders view	• Depends on capital structure • Easily influenced by one-off events	Very popular
EV / EBITDA	• Considers profitability • Not influenced by capital structure	• Does not consider items that are below EBITDA • Difficult to apply	Very popular
EV / Sales	• Can be applied in all situations (revenues cannot be negative) • Not influenced by capital structure	• Does not consider profitability	Narrow Application
Sector Specific (number of users, MW installed, etc.)	• Good proxy for future potential • Comparable across the entire industry	• Does not consider profitability	Narrow Application

How do we select the right peer group?

One of the most important aspects in multiples valuation



Find 6 or 7 companies that are similar enough to the Target firm

When selecting a peer group we should look for companies that are similar in terms of:

- Size
- Profitability
- Growth
- Geography of operations
- Business Segment
- Opportunities

Solid list of comparable firms

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Leveraged Buyouts

Leveraged Buyouts

An introduction to LBO deals

LBO is a deal in which an SPV that is predominantly financed with debt acquires a target firm that has low leverage and stable cash flows

What is an LBO?

Leveraged Buy-outs are deals, in which the acquirer of a firm uses a high portion of debt in order to finance the deal. The collateral for the debt that is being used are the target's cash flows. Lenders are willing to provide their funds because the target has a solid underlying business, which is expected to generate a stable stream of cash flows and hence they are likely to be repaid in full.

When is it feasible?

Mature companies are the ideal target for LBO transactions. They are well established in their market, and are typically generating a solid stream of cash flows. There is little room for innovation in their business so their cash needs are limited and predictable. It is reasonable to expect that the cash flows of the company can be used in order to reimburse the high leverage that is generated in an LBO transaction.

Leveraged Buyouts

An introduction to LBO deals

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70 – 75% of the deal is financed through debt and mezzanine loans. Financial sponsors are able to acquire large companies with a minimal investment by applying significant leverage

The amount of debt in an LBO

Financial sponsors are willing to take on board as much debt as possible. However, lenders need to know that there is a sufficient amount of equity that will protect their capital and decrease the overall risk of the transaction. For every firm can be measured a so- called maximum debt capacity, which is function of the firm's cash flows and risk profile.

The lenders in an LBO

In general, LBOs are a risky business and lenders expect a good IRR. Senior lenders' remuneration will come from the spread on money market rates. They will take into consideration the initial debt drawdown amount, the holding period of the deal, the periodic interest rates they will receive, and the principal repayment that they will get at closing. Mezzanine investors have a different risk profile. They make an initial contribution, receive periodic interest rates, a principal repayment at closing of the deal, and an equity kicker. The equity kicker allows mezzanine investors to acquire shares of the Target at a predetermined price upon closing, which ensures that they participate in the upside from the deal.

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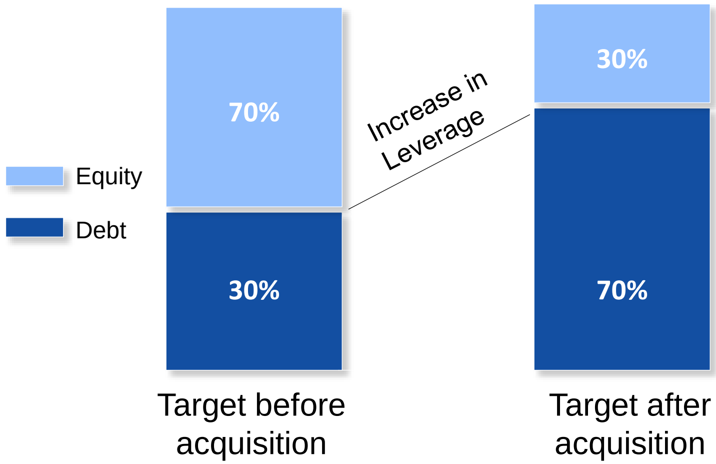
The mechanics of an LBO transaction

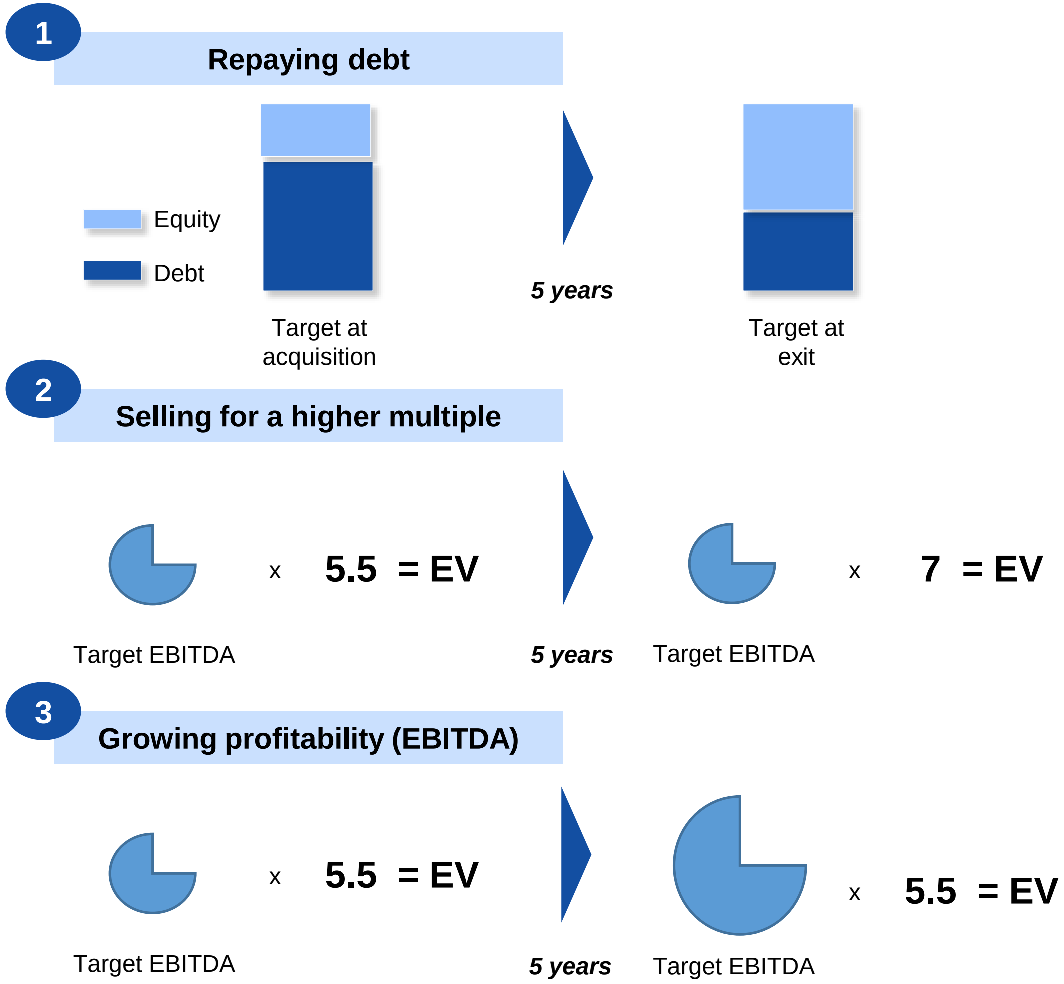
How does an LBO function and how come financial sponsors make so much money?

How does an LBO function?



Leveraged Buyouts are deals, in which the acquirer of a firm uses a high portion of debt in order to finance the deal

How do financial sponsors make money in an LBO?



Finalizing the deal

Completing an LBO deal in practice

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Phase 1 **Newco BS**

Cash 100%	Debt 30%
	Equity 70%

In Phase 1, Financial Sponsors create a new company that has the cash that is necessary to complete the deal

Phase 2 **Newco BS**

Target Shares 100%	Debt 30%
	Equity 70%

In Phase 2, the Newco acquires all of the Target's shares

Phase 3 **Merger**

Target's Assets 100%	Debt 30%
	Equity 70%

In Phase 3, the Newco and the Target are merged