The Student M&A Investment Banking Handbook

By Joel Bassil

A note from the author:

If the title of this book has caught your attention, please give this page a read. Feel free to abandon this book (at your own risk) if you see fit after reading this note, but I have a feeling you will want to read on.

My name is Joel, and I am currently studying maths at the University of Bath. Like many STEM (Science, Technology, Engineering and Maths) students, it has become my goal to break into investment banking and crucially, I made this decision towards the end of my first year at university. As a result of this, I missed the opportunity to take part in spring weeks and when the internship applications began, I had less experience than others. However, I only realised this after beginning my applications.

Throughout my entire life, I have always made a point of being the hardest worker in the room. I think that hard work beats talent every time, and I proved this with my academic results by achieving three A*s at A-level and having (one of) the highest grades in my cohort at university. Initially, I believed that this would distinguish me from other students, but I soon realized I was mistaken.

Quickly, the internship assessment centres arrived. My very first one had a case study presentation, and I could not have been less prepared. I had little knowledge about the technical aspects of a role in investment banking, and what seemed like a good application very quickly became a bad one. Not only was I unable to complete the case study effectively, but I was unable to convince the assessors of my interest in this role.

If only my knowledge of investment banking was better, I could have received an offer. But in my preparation, I found it difficult to learn enough about the role. This was not because of the difficulty of the actual content, but rather the quality of explanation online. It made simple concepts seem much more difficult than they were, because they were explained using other unseen concepts. As a maths student, I had to start my learning from scratch.

So, at this point, I was a high-performing, hard-working STEM student but with zero experience and minimal knowledge of investment banking.

The point in me telling you this, is this: If you miss a spring week or even an internship, all is not over. While having good grades is important, employers want to see evidence of your interest in the role. Spring weeks are not the only way to do this. Learning the technical ins and outs of investment banking enables you to prove to employers not only how interested and diligent you are, but also prepares you perfectly for assessment centres.

If you find yourself in an analogous situation, this book will teach you everything you need to know in a structured and accessible manner, ensuring you are well-prepared for assessment centres. I will simplify the concepts as much as possible, as I am also learning through this process.

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1. An Example Case Study: Company Financials

We will begin by introducing the data typically available at the start of any project: an overview of the company and its financials. Every company will be different and unique in their own way, so there is not a single method to every project. However, the financial data of a company is always vital, so we will look at that first. Once this is understood, we can learn about how it can be used, depending on the company. Do not expect to understand anything instantly, it will all be explained shortly.

Suppose we have a company **ABC Ltd.** This company (like all others) will have three financial statements: an **income statement,** a **balance sheet,** and a **cash flow statement.** This makes up the company financials.

- An **income statement** is a statement that reports the **revenues, expenses, profits,** and **losses** of a company during a period. It helps to understand how well the company performs compared to industry peers.

- A **balance sheet** is a statement that reports a company's **assets**, **liabilities** (money owed to outside parties), and **shareholder equity** (how much the company is worth to shareholders, the value of assets minus the value of liabilities) at a specific point in time. It displays the **capital structure** of the company, which is how its finances are made up in some combination of **debt** (money borrowed, part of liabilities) and **equity** (shareholder contribution). Many financial ratios come from this statement.

- A **cash flow statement** is a statement that shows the incoming and outgoing cash movements over a period. It includes three sections: **cash flow from operations** (transactions from all operational business activities), **cash flow from investment** (the result of investment gains and losses), and **cash flow from financing** (cash used from debt and equity).

All three statements are linked together and changes in one affects the others. Exactly how this happens will be explained after we have seen all three statements.

Here is an example set of statements, for **ABC Ltd.**, where the first two years are earlier data and the next four years is forecasted data.

1.1. Income Statement

ABC Ltd. Income Statement [USD $ millions]	2022	2023	2024	2025	2026
Revenue					
Sales	80,000	95,000	110,000	125,000	140,000
Other Revenue	15,000	17,000	19,000	21,000	23,000
Total Net Revenue	**95,000**	**112,000**	**129,000**	**146,000**	**163,000**
Cost of Goods Sold (COGS)	20,000	25,000	30,000	35,000	40,000
Gross Profit	**75,000**	**87,000**	**99,000**	**111,000**	**123,000**
Expenses					
Salaries, Benefits & Wages	5,000	5,000	5,000	5,000	5,000
Depreciation & Amortisation	10,000	9,500	9,000	8,500	8,000
Rent	8,000	9,000	10,000	10,000	10,000
Other Expenses	35,000	38,000	42,000	44,000	45,000
Total Expenses	**58,000**	**61,500**	**66,000**	**67,500**	**68,000**
Earnings Before Interest & Taxes (EBIT)	**17,000**	**25,500**	**33,000**	**43,500**	**55,000**
Interest Expense	3,000	3,000	3,000	3,000	3,000
Earnings Before Taxes	**14,000**	**22,500**	**30,000**	**40,500**	**52,000**
Income Taxes	1,000	2,000	4,000	6,000	8,000
Net Earnings	**13,000**	**20,500**	**26,000**	**34,500**	**44,000**

This example has some items commonly found on an income statement. Different companies will have different income statements, but this is a good basic example.

Like mentioned previously, the income statement records revenues, expenses, profits, and losses.

The first part of the statement is **Revenue.** There may be multiple streams of revenue, but these are all self-explanatory.

The next part of the statement is **COGS,** or **Cost of Goods Sold,** which refers to the costs of producing the goods which have been sold. This includes cost of materials and cost of labour and excludes indirect expenses like distribution costs.

The company then calculates:

$$Gross\ Profit\ =\ COGS\ -\ Total\ Net\ Revenue$$

This is an obvious calculation.

The third part of the statement is **Expenses**. There can be any number of items in this section, mostly business specific but some are commonly found on most income statements.

- **Depreciation** is the loss of value of a tangible asset such as a machine or building.

  Amortisation is the spreading of the cost of an intangible asset, such as a patent or trademark, over the course of its useable life. These items appear together on financial statements.

Using the value of total expenses and gross profit, the company calculates

$$Earnings\ Before\ Interest\ \&\ Taxes\ (EBIT)\ =\ Gross\ Profit\ -\ Total\ Expenses$$

Then the interest expenses (interest payable on borrowings) are recorded, and the company calculates:

$$Earnings\ Before\ Taxes\ =\ EBIT\ -\ Interest\ Expense$$

Finally, the income taxes are recorded, and the company calculates:

$$Net\ Earnings\ =\ Earnings\ Before\ Taxes\ -\ Income\ Taxes$$

This is an important number to calculate, as it provides both the **Retained Earnings** for the balance sheet and the starting point for the cash flow statement. We will see both soon.

1.2. Balance Sheet

ABC Ltd. Balance Sheet [USD $ millions]	2022	2023	2024	2025	2026
Assets					
Current assets:					
Cash	100,000	109,000	130,500	156,500	192,000
Accounts Receivable	8,000	9,000	10,000	10,000	10,000
Prepaid expenses	10,000	11,000	12,000	13,000	14,000
Inventory	10,000	12,000	14,000	17,500	18,000
Total current assets	128,000	141,000	166,500	197,000	234,000
Non-current assets:					
Property, Plant & Equipment	34,000	30,000	25,000	26,000	21,000
Long-term Investments	8,000	5,000	7,000	9,000	11,000
Total Assets	**170,000**	**176,000**	**198,500**	**232,000**	**266,000**
Liabilities					
Current liabilities:					
Accounts Payable	5,000	10,000	15,000	20,000	25,000
Accrued liabilities	1,000	1,500	2,000	2,500	3,000
Unearned revenue	1,000	6,000	11,000	16,000	21,000
Total current liabilities	7,000	17,500	28,000	38,500	49,000
Non-current liabilities:					
Long-term debt	50,000	23,500	34,500	49,000	62,000
Other long-term liabilities		4,000	3,000	3,000	2,000
Total Liabilities	**57,000**	**45,000**	**65,500**	**90,500**	**113,000**
Shareholder's Equity					
Equity Capital	100,000	110,500	107,000	107,000	109,000
Retained Earnings	13,000	20,500	26,000	34,500	44,000
Total Shareholder's Equity	**113,000**	**131,000**	**133,000**	**141,500**	**153,000**
Total Liabilities & Shareholder's Equity	**170,000**	**176,000**	**198,500**	**232,000**	**266,000**
Balance Check	*0*	*0*	*0*	*0*	*0*

This example includes some of the main items one would normally find on a balance sheet.

As mentioned above, the balance sheet is split into three parts: Assets, Liabilities, and Shareholder's Equity.

The first part of the assets section is **Current Assets**, which is cash and other assets that are expected to be converted to cash within a year.

- **Cash** is the company's **liquid** (available for immediate use) funds.
- **Accounts Receivable** is the money owed to the company that is not yet paid, for example by customers.
- **Prepaid Expenses** are things that have been paid for by the company but not yet delivered, like employee insurance benefits.
- **Inventory** is the price of goods ready for sale by a company, as well as the raw materials used to produce them.

The other part of the assets section is **Non-current Assets**, which are assets not expected to be converted into cash within a year.

- **Property, Plant & Equipment** contains assets that are fixed, long-term, tangible, identifiable and expected to generate an economic return for the company for more than one year. The name of this asset class is very representative of what it contains.
- **Long-term investments** are investments like bonds, stocks and real estate expected to be held for longer than a year.
- Non-current assets may also include **goodwill**, which is the asset created on an acquiring company's balance sheet when they purchase a company for a price greater than its net asset value. This is also known as **takeover premium**. **Negative goodwill** and **impairment of goodwill** may appear on the balance sheet, as mentioned previously.

Like the assets section, the liabilities section is split into two parts, the first of which is **current liabilities**. 'Current' still pertains to whether an item is converted into cash within the year or not.

- **Accounts payable** is the money that the company owes in the short-term to suppliers and creditors for goods purchased on credit.
- **Accrued liabilities** are expenses that accumulate over time and are due to be paid. They represent goods or services that have been received but not yet paid for.
- **Unearned revenue** is money received by the company for a service which has not yet been provided.

The other part of the liabilities section is **non-current liabilities**.

- **Long-term debt** is money owed that extends beyond the year.

- **Other long-term liabilities** are likely to be business specific balance sheet items.

Finally, **Shareholder's equity** is the last section of the balance sheet.

- **Equity capital** is the money collected by the company from its owners and shareholders in exchange for partial ownership of the company.

- **Retained earnings** is money that a company has decided to keep or 'retain' after distributing dividends to its shareholders. These earnings are reinvested within the company. These values are exactly the **Net Earnings** from the bottom of the income statement.

Once we have included all necessary items on the balance sheet, it is useful to check that it balances by ensuring that $Assets = Liabilities + Shareholder's\ Equity$ (the fundamental equation of accounting). This has been done for the balance sheet above by using simple Excel formulas.

1.3. Cash Flow Statement

ABC Ltd. Cash Flow Statement [USD $ millions]	2022	2023	2024	2025	2026
Operating Cash Flow					
Net Earnings	13,000	20,500	26,000	34,500	44,000
Plus: Depreciation & Amortisation	10,000	9,500	9,000	8,500	8,000
Less: Changes in Working Capital	-	2,500	15,000	20,000	26,500
Cash From Operations	**23,000**	**27,500**	**20,000**	**23,000**	**25,500**
Investing Cash Flow					
Investments in Property, Plant & Equipment	8,000	5,500	4,000	9,500	3,000
Investments in Stocks, Bonds & Real Estate	8,000	(3,000)	2,000	2,000	2,000
Cash From Investing	**16,000**	**2,500**	**6,000**	**11,500**	**5,000**
Financing Cash Flow					
Issuance (repayment) of debt		(26,500)	11,000	14,500	13,000
Issuance (repayment) of equity	61,000	10,500	(3,500)	-	2,000
Cash From Financing	**61,000**	**(16,000)**	**7,500**	**14,500**	**15,000**
Net Increase (decrease) in Cash	68,000	9,000	21,500	26,000	35,500
Opening Cash Balance	32,000	100,000	109,000	130,500	156,500
Closing Cash Balance	**100,000**	**109,000**	**130,500**	**156,500**	**192,000**

This example includes some of the main items one would normally find on a cash flow statement. As mentioned before, it is split into three sections, the first of which is **Operating Cash Flow.**

- **Net Earnings** are exactly the net earnings from the income statement.

- **Depreciation & Amortisation** is exactly the D&A from the income statement. This is added back because it is a non-cash expense – see the definition of it above.

- **Changes in Working Capital** refers to the fluctuations in net working capital which happens when current assets or current liabilities change in value. **Working capital** is the difference between total current assets and total current liabilities. Then the change in working capital is calculated by finding the difference between the working capital of the earlier period and that of the current period.

The next section of the statement is **Investing Cash Flow.**

- **Investments in PP&E** are exactly what they sound like. They are **Capital Expenditures (CapEx)** which are payments made by the company to purchase long-term, physical, or fixed assets used in their operations. They are not included in operating expenses (income statement) since they are irregular and less predictable and are just movements from one asset (cash) to another. Since they are amortised, their cost is deducted as a depreciation expense over the course of several years.

- **Investments in Stocks, Bonds and Real Estate** are exactly what they sound like.

Then the last section of the cash flow statement is **Financing Cash Flow.** This is cash flow through the change in debt or equity.

- **Issuance of debt** is an inflow of cash from a lender, so that the company is in debt to them. **Repayment** of debt is repaying said lender.

- Similarly, **Issuance (repayment) of equity** is the sale (repurchase) of stock by the company to investors.

Once these three sections have been completed, the company calculates:

$$\begin{aligned} &Net\ Increase\ in\ Cash \\ &\quad = Cash\ from\ Operations - Cash\ from\ Investing \\ &\quad + Cash\ from\ Financing \end{aligned}$$

The cash from investing is subtracted since this is an outflow of cash. Some cash flow statements may treat this as a negative value and so the inflow (negative outflow) is added instead of subtracted. A simple check can determine which is the case.

Then, **Opening Cash Balance** is the previous year's **Closing Cash Balance**, which is calculated by adding together the opening cash balance and the net increase in cash for that year.

1.4. Linking The Three Statements

Firstly, as previously mentioned, the **net income** from the income statement becomes **retained earnings** on the balance sheet and provides the starting point for the cash flow statement.

Depreciation & Amortisation is mentioned directly across both the income statement and the cash flow statement. In fact, this expense on the income statement flows out of the balance sheet from **PP&E** (and is added back in the cash flow statement since it is a non-cash expense). Then **Investments in PP&E** flows into the balance sheet into **PP&E.** We can check that our balance sheet reflects this by finding the difference between **D&A** and **Investments in PP&E** for each year and checking that this is equal to the decrease (from last year) in **PP&E**

on the balance sheet. Looking at the example statements, we can see that this relationship holds true. In fact,

$$Investments\ in\ PP\&E\ =\ CapEx \text{ (by definition)},$$

and the formula for CapEx is:

$$CapEx\ =\ PP\&E \text{ (current)} -\ PP\&E \text{ (previous)} + D\&A \text{ (current)}$$

Which rearranges to:

$$D\&A \text{ (current)} -\ CapEx\ =\ PP\&E \text{ (previous)} -\ PP\&E \text{ (current)}$$

Which is exactly the difference we just checked.

Also, in the cash flow from investing section, the **Investment in Stocks, Bonds and Real Estate** should reflect the changes in investment assets on the balance sheet.

Now, the **Changes in Working Capital,** as mentioned previously, are calculated by finding the difference between the working capital of the earlier period and that of the current period where the working capital is the difference between total current assets and total current liabilities on the balance sheet.

Finally, the financing section of the cash flow statement is linked to both other statements. The **Issuance (repayment) of Debt** is calculated by finding the change in debt in the liabilities section of the balance sheet. The **interest expense** of the debt appears on the income statement. Also, the **Issuance (repayment) of Equity** is calculated by finding the difference in equity capital in the shareholder's equity section of the balance sheet.

All these links are satisfied in the above example – go and check!

Most importantly, if all three of the statements have been correctly linked together as explained above, we should see that the **Closing Cash Balance** at the bottom of the cash flow statement is the same as the cash in the assets section of the balance sheet. Phew!

2. M&A Overview and Types of M&A Transactions

Mergers and Acquisitions (M&A) is a general term that describes the combining of companies or assets through several types of financial transactions. Any type of transaction is made with the goal of creating **synergies** (combined value and performance being greater than that of the sum of the separate entities; think of the saying 2+2=5) and strategic benefits.

- A **merger** is an agreement that unites two existing companies into one company. The companies involved are typically of similar size and assets, liabilities and operations are combined under a single corporate structure.

  Mergers can be categorised in terms of their industry relations. Categories include **horizontal mergers, vertical mergers, conglomerate mergers,** and **concentric mergers.** We will see these in more detail shortly. They can also be categorised in terms of their legal structure, which we will briefly summarise here. Categories include **statutory mergers, subsidiary mergers,** and **consolidations**.

  A **statutory merger** is when two companies combine to form one entity under a single name. This preserves the existence of at least one of the parent companies.

  A **subsidiary merger** is when a company acquires another company, and it is merged with a subsidiary (a company controlled by another) of the acquiring company.

  A **consolidation** is when existing entities combine and agree to create a whole new entity. Both separate companies now cease to exist.

- An **acquisition** is a transaction in which one company buys most or all of another company's shares to gain control of that company.

  A **tender offer** is a type of acquisition in which the acquiring company directly offers to buy shares of the target company from its shareholders. This is a **stock purchase** acquisition and is **friendly** since both companies will have agreed to the transaction.

  An **asset acquisition** is when a company, instead of buying stock of another, buys specific assets of that company.

  Finally, if an acquisition is not friendly, it is **hostile**, where the target company does not wish to be bought.

2.1. Horizontal Merger

A **horizontal merger** is the combining of two companies that are in direct competition with each other in the same or similar industry. The purpose of this type of merger is to utilize **economies of scale, economies of scope**, increase **market share** and **revenue-based synergies.**

- **Economies of scale** are cost advantages experienced by companies when production levels increase.

  For example, if one company has distribution facilities or customers in areas that the other company does not, combining the companies allows the expansion of the other company, thus increasing production. This also reduces costs by reducing the cost of expansion.

- **Economies of scope** are increases in cost efficiency of production when more products are produced together rather than separately.

- **Market share** is the percentage of total sales in an industry generated by a particular company.

  By combining, companies that sell related products will have a combined market share much greater than if they were separate. This reduces competition.

- **Revenue-based synergy** is the generation of more cash flow by combined companies than the sum of their cash flows as separate companies.

  For example, money can be saved and thus cash outflow is decreased by buying more in bulk and increased negotiating power.

2.2. Vertical Merger

A **vertical merger** is the combining of two companies in the same or similar industry that have different supply chain functions. The purpose of this type of merger is to utilise each company's areas of strength to increase **synergies,** gain **more control** of the **supply chain process**, and increase **business**.

- There are many **synergies** that can result from this type of merger. **Operating synergy**, also called **hard** synergy, is the result of better coordination and administration along the supply chain and causes a reduction in operating costs.

Financial synergy, also called **soft synergy**, is the result of cutting financial constraints. Surplus cash flow is used to help the company grow, enlarging the debt capacity, reducing cost of capital, and achieving better creditworthiness.

Management synergy is the result of replacing any poorly performing management team members with more effective ones from the merging company.

2.3. Market-Extension Merger

A **market-extension merger** is the combining of two companies that sell the same products or services but operate in different markets. The goal of this type of merger is to gain access to a **larger market** and thus have a bigger client/customer base.

2.4. Product-Extension Merger

A **product-extension merger**, sometimes called a **congeneric** or **concentric** merger, is the combining of two companies that operate in the same market but provide different products or services that are related or co-consumed. The purpose of this type of merger is once again gain access to a **larger market**.

The key benefit of a product-extension merger is the ability to utilize similar distribution channels, technology, and common supply chains. This can lead to improved efficiency and **operating synergy.**

2.5. Conglomerate Merger

A **conglomerate merger** is the combining of two companies that engage in completely different business activities or industries. There are two types of conglomerate merger: **pure** and **mixed.**

- A **pure conglomerate merger** is between companies with nothing in common who look to continue to operate in their own markets.

- A **mixed conglomerate merger** is between companies that are looking for product or market extensions, so that they may eventually no longer be completely unrelated businesses.

These types of mergers are less common in recent years, however there are many reasons why one may happen such as increased **diversification, cross-selling products,** and **investment opportunity.**

- By combining unrelated industries, the companies become more **diverse**, which means that together, they are less vulnerable to a decline in sales in one of their industries. This could lead to more stable cash flows than competitors in either industry.

- If the two companies have similar target markets, they may be able to **cross-sell** their products to each other's target market and thus generate higher profits for the new company.

- A merger of this type can also be a practical **investment opportunity** for a company with excess cash. It reduces investment risk exposure due to industry variety and allows the company to find new growth opportunities outside of its own industry.

3. The M&A Process

The M&A Process has many steps to ensure the best outcome for any clients involved. Each client will have unique needs and so there won't be a one-size-fits-all approach, but there are some key steps that are common amongst different deal processes.

3.1. Deal Origination

Once a company has decided that they want to expand their business by engaging in an M&A transaction, they will usually consult with an investment bank to help them along their journey. The deal originates through multiple different considerations.

Firstly, the company must decide on an **acquisition strategy.** This involves developing a clear idea of the trajectory of the business and the expected outcome of a merger or acquisition. This also means deciding what type of transaction is most suitable for the company, out of the transaction types we have just seen.

For example, if the company is looking to decrease competition and increase their market share, it may be a clever idea to consider a horizontal merger.

Once a clear strategy has been outlined, it is then necessary to delve slightly deeper into the **criteria** of potential target companies. This may include requirements such as **certain profit margins**, **target markets**, or **geographic locations**. Continuing with the example above, a company wishing to increase their market share may have a requirement for the target market of a potential acquisition.

Using this criterion, the acquirer must now begin their **search for possible targets**. Sourcing a possible deal with a target company can potentially be tricky, as acquisition opportunities may not be publicly advertised. Furthermore, little financial information is publicly available so at this stage, there are mainly qualitative reasons for targeting a specific company.

Hence, proactively building relationships and connections with target companies is especially important to decide initially whether a deal involving that company is the right choice moving forward. This is the beginning of the **acquisition planning**.

3.2. Valuation

Perhaps the most notorious stage of the process, **valuation analysis** is normally the next step in the process. Provided that initial contact went well with the potential target company, the acquirer would request much more detailed and thorough information, including the company financials. This allows the acquirer to gain a much more quantitative overview of the target and further establish the suitability of a deal.

There are many different methods for valuing a company, and we will go into much more detail later. But for now, here is a quick summary of some commonly used valuation techniques. They fall into several broad categories: **market-based, income-based, asset-based,** or **other** valuation techniques.

- A **discounted cash flow (DCF) analysis** is an **income-based** valuation that estimates the value of an investment or enterprise using its expected future cash flows. It tries to find the value of the investment **today**, based on projections for the future, by discounting back to today's value. This is useful since the **time value of money (TVM)** means that money is worth more now than it is in the future.

- **Earnings multiples** are **market-based** financial measurement tools that evaluate one financial metric in terms of another, which allows companies to become more **comparable**. The two types of valuation multiples are **equity multiples** and **enterprise value (EV) multiples**. There are two main methods of performing analysis using these multiples, which are **comparable company analysis** and **precedent transaction analysis.**

- **Comparable company analysis (comps)** is the use of ratios of similar public companies to derive the value of another business. This is a **relative** valuation, unlike **DCF analysis** which is an **intrinsic** valuation.

- **Precedent transaction analysis (precedents)** is the use of historic M&A transactions and their successes to value a comparable business today.

The following three techniques are **asset-based** valuations.

- **Adjusted book value** is the measure of a company's valuation after liabilities, including off-balance sheet liabilities, and assets are adjusted to reflect true, fair market value. This means accounting for appreciation or depreciation of assets since their purchase.

- **Liquidation value** is the net value of a company's physical assets if it were to go out of business and the assets sold. This does not include intangible assets, and typically gives a lower valuation as it assumes the sale of assets under distressed conditions.

- **Replacement cost** is the cost of replacing a company's existing assets with identical new ones at current market prices. Hence, this method provides a value based on the current cost of assets without considering depreciation.

There are **other** important valuation techniques.

- A **real options valuation,** also called a **contingent claims valuation,** is a valuation method that accesses the value of investment decisions contingent on certain outcomes. This treats investment decisions, like M&A transactions, similarly to financial options. More on this later.

Once the first valuations have been completed, the acquirer will have sufficient information to formulate a reasonable offer. This then gets presented to the target who will either accept or deny the offer.

3.3. Due Diligence

Due diligence is an extensive process that begins after the acceptance of an offer. It aims to confirm or amend the acquirer's assessment of the value of the target company, by investigating every aspect of their operations. Its purpose is to provide the buyer with complete assurance of what they are getting and contributes to making more informed decisions.

Due diligence can be categorised as **hard** or **soft**.

- **Hard** due diligence is concerned with quantitative aspects such as the numbers and data found on the financial statements. This involves updating valuations, reviewing financial ratios and **fundamental analysis** (determining a stock's real or fair market value).

However, this can sometimes be manipulated due to being susceptible to interpretation, hence the need for soft due diligence.

- **Soft** due diligence is a qualitative approach that considers aspects such as management quality, employee relationships and corporate culture, and customer base loyalty.

Moreover, due diligence can also be categorised by context by considering factors such as **commercial, legal, financial** and **strategic** positions.

- **Commercial** due diligence is the evaluation of a company's market share, competitive positioning, prospects and growth opportunities.

- **Legal** due diligence makes sure that a company has good control over all its legal, regulatory and compliance matters.

- **Financial** due diligence consists of the hard due diligence outlined above and audits the financial statements to ensure there are no irregularities and the company has a good financial position.

- **Strategic** due diligence is ensuring that the acquired company will fit well into the existing operations of the acquiring company. It also involves developing the ideas of what synergies will be obtained, and the strategic benefits of the transaction.

Due diligence can be exhaustive and quite different depending on the companies involved and the type of deal occurring. There may be many more contexts that require due diligence, but the ones covered here are quite common. In a nutshell, it is important to ask any questions to which the answer affects the quality of the company being acquired, and the due diligence process aims to provide this answer.

3.4. Deal Structuring

The structure of an M&A deal outlines the rights and obligations of both parties involved in the deal. It involves the type of transaction and the method of purchase which could be an **asset purchase** or **share purchase** (we covered these earlier). It also involves two important documents called the **term sheet** and **letter of intent (LOI).**

- A **term sheet** is a document stating the terms and conditions of an intended transaction. These are usually legally binding.

- A **letter of intent (LOI)** is a document outlining the understanding between multiple parties that they intend to later formalise in a legally bounding agreement. This is not intended to be legally binding.

As part of this stage in an acquisition, the acquirer must determine the financial structure of their transaction. Once again, the most optimal finance structure for a deal will be very specific to the companies involved and their goals.

A company can be purchased with **cash**, **stock swap**, **equity, debt**, or some combination of the three.

- A **stock swap** is when an acquirer exchanges stock of a publicly traded company with the target company. This is common for private companies where the owner wants to retain a portion of the stake in the combined company.

- **Equity** is the most expensive form of capital. It is a desirable financing strategy by target companies operating in unstable industries with unsteady free cash flows.

- **Debt** financing is one of the most favourable ways of financing an acquisition since most companies either lack the capacity to pay with cash or equity or their balance

sheets do not permit it. It is also a reasonably inexpensive method of financing and is very versatile with the numerous forms it can take.

Some possible forms of debt are **bonds** or other **debt securities, loans** (from private lenders, banks, or even the seller), and **lines of credit. Bonds** are fixed-income investments where money is lent at a certain interest rate for a certain amount of time. **Lines of credit** are flexible loans that allow access to a preset borrowing limit at any time.

Assumption of debt is another type of debt financing, where debt is transferred from the seller to the buyer. This can command a premium during the M&A process.

At times, the investment bank involved with the selling company may offer financing to the buying company. This is known as **staple financing** and is done to increase and speed up bids.

- **Staple financing** gains its name from the fact that financing details are stapled to the back of the term sheet. It is useful for buyers since financing is pre-arranged and it is useful for the bank since they earn fees from both sides of the deal.

A **leveraged buyout (LBO)** is a unique mix of both equity and debt that is used to finance an acquisition. We will see much more detail on this method later.

It is also important to consider external factors when structuring a deal. Usually, acquisitions are competitive and so, literally, the highest bidder wins. This can involve paying a **takeover premium** due to paying above the market value and more than other interested parties for the acquisition.

- **Takeover premium** is the percentage difference between the market price of the company and the actual price paid to acquire it. It represents the additional value of owning the entirety of the company and is paid for the acquirer to have total control. This is represented as **goodwill** on the acquirer's balance sheet.
  Negative goodwill is the recognition of paying a discount for the acquisition, and **impairment of goodwill** is the recognition of a decline in fair value of goodwill after the time of acquisition.

Finally, there are typically two types of acquirers: **strategic** and **financial buyers.**

- **Strategic buyers** are companies, usually direct competitors or in adjacent industries, which would fit in well the target company with their core business.

- **Financial buyers** are institutional buyers like private equity firms that want to own but not directly run, the target company. The common financing method of this type of buyer is the leveraged buyout.

3.5. Negotiation and Closing

The final stage of the M&A process is to close the deal. The sale or purchase of a business rarely goes smoothly, so it is essential that both parties maintain a good working relationship and fulfil their closing obligations.

The buyer must either **form a new entity** like a corporation or LLC or **obtain DBA (doing business as)** if they wish to operate under the same name. This depends on the type of transaction. In addition, they will need to obtain any **licences, permits** and **accounts** necessary for the future of the combined company.

Usually, an **escrow agent** is involved throughout the process, which is a third party that is responsible for holding all the monies and papers until the conditions of escrow are satisfied. They assist in the closing of the deal by making final adjustments and prorations to account for timing differences between the time of bills being paid and change of possession.

Once the seller and buyer have done a **final inventory count** and **final walk-through** of the business, funds will be transferred to escrow by **wire** or **certified check**, with plenty of time before closing to account for possible delays.

Then, the signing of documents takes place which can be considered the official closing of the deal. The following documents must be signed at or by this stage:

- The **purchase agreement** is the legally binding document outlining the terms and conditions of the sale. This is a more finalised version of the letter of intent and can be signed before closing. This does not transfer legal ownership of the business yet, as this is done with the bill of sale.
- The **bill of sale** is a legally binding document that records the sale or transfer of goods or property in the deal. Legal ownership is transferred once this is signed, and its signing will usually take place after payment.

Now, the deal is considered closed, and the buyer must begin their transition into ownership.

4. Post-Merger Management

4.1. Integration

After the deal has been closed and legal ownership has been transferred, the acquirer must now integrate the company into its own operations. The aim of this stage is to maximise synergies and ensure that the deal lives up to its predicted value. This is done by aligning strategic objectives, integrating technologies, and combining corporate cultures.

Establishing the direction of the combined company is key to a successful PMI (post-merger integration). There should be clear strategic objectives and timeframes that fit into a wider operating model. This ensures that targets begin to be met and synergies are created as expected.

It is useful to have teams that focus on both the value of creation and operability, as well as other areas of value to the company. Having leaders on both sides of the transaction that are committed, credible and highly visible can help to nurture engagement and cultural synergy.

Once the direction has been set, it is essential to **maintain momentum**. This is basically keeping the desired direction in clear view and not forgetting the underlying ambitions of the deal. It may involve working to prevent lost opportunities for synergies by aiming to constantly cover new ground and not waste time on tasks already completed. Furthermore, creating shareholder value is the result of maintaining and increasing client numbers. Thus, looking to engage loyal clients keeps them interested and satisfied with the service being provided.

Also, since computer technology is currently advancing so quickly, it is often found that the better IT systems the company has in place, the better they perform. This is true in PMI as well, as good IT solutions can help to speed up and automate processes, hence maximising synergies and possibly increasing momentum.

Now, a good final step for ensuring successful PMI is combining the two ideas above and actively **building the organisation**. This means rigorously managing talent to only have the best and most beneficial employees; rigorously managing cultural integration and healthy change; and ensuring there is clear communication to allow this to happen.

4.2. Regulatory Considerations

Regulatory considerations are a critical aspect of the M&A process. These considerations ensure that the merger or acquisition complies with all relevant laws and regulations, preventing legal complications and fostering a smooth transition. Understanding and navigating the regulatory environment is essential for the success of any M&A transaction.

Key Regulatory Bodies and Laws

- **Antitrust Authorities**: Antitrust laws, also known as competition laws, are designed to prevent anti-competitive practices and ensure a fair marketplace. In the U.S., the Federal Trade Commission (FTC) and the Department of Justice (DOJ) are the primary enforcers of these laws. In the European Union, the European Commission oversees competition regulations.

- **Securities Regulators**: Securities and Exchange Commission (SEC) in the U.S. regulates the securities industry, protecting investors and maintaining fair and efficient markets. Any M&A deal involving publicly traded companies must comply with SEC regulations, including disclosure requirements and insider trading laws.

- **Industry-Specific Regulators**: Certain industries, such as banking, telecommunications, and healthcare, have specific regulatory bodies overseeing M&A activities. For example, the Office of the Comptroller of the Currency (OCC) regulates banking mergers in the U.S.

Key Regulatory Processes

- **Antitrust Review**: When companies plan to merge, they must notify antitrust authorities, who will review the deal to ensure it doesn't create a monopoly or reduce competition substantially. This process involves submitting detailed information about the transaction, including market analysis and potential impacts on competition.

- **Securities Filings**: For publicly traded companies, various filings must be made with the SEC. These include the Form 8-K to report significant events, the proxy statement for shareholder approval, and the tender offer documents if the transaction involves a tender offer.

- **Foreign Investment Reviews**: Cross-border M&A deals may be subject to additional scrutiny by foreign investment review bodies, such as the Committee on Foreign Investment in the United States (CFIUS), which evaluates the national security implications of foreign investments.

Compliance and Best Practices

- **Early Engagement with Regulators**: Engaging with relevant regulatory bodies early in the M&A process can help identify potential issues and streamline the approval

process. Pre-filing meetings can provide insights into regulator concerns and expectations.

- **Comprehensive Due Diligence**: Conducting thorough due diligence is crucial to identify any regulatory risks associated with the target company. This includes reviewing compliance with existing regulations, potential legal liabilities, and the target's history with regulatory bodies.

- **Clear Communication**: Maintaining clear and transparent communication with regulators and stakeholders throughout the M&A process is essential. This includes timely and accurate disclosures, responding promptly to information requests, and keeping shareholders informed.

5. Valuing A Company

As an M&A analyst, a key part of the job is completing the company valuations, hence why we have devoted a whole section of the book to the different ways this can be done. We will use the previous example financials in any upcoming valuation examples. The method and explanation will come before the example, so give it a go yourself first!

Before we learn about the valuation methods, lets remind ourselves of the example financial data from before:

Income Statement:

ABC Ltd. **Income Statement** [USD $ millions]	2022	2023	2024	2025	2026
Revenue					
Sales	80,000	95,000	110,000	125,000	140,000
Other Revenue	15,000	17,000	19,000	21,000	23,000
Total Net Revenue	**95,000**	**112,000**	**129,000**	**146,000**	**163,000**
Cost of Goods Sold (COGS)	20,000	25,000	30,000	35,000	40,000
Gross Profit	**75,000**	**87,000**	**99,000**	**111,000**	**123,000**
Expenses					
Salaries, Benefits & Wages	5,000	5,000	5,000	5,000	5,000
Depreciation & Amortisation	10,000	9,500	9,000	8,500	8,000
Rent	8,000	9,000	10,000	10,000	10,000
Other Expenses	35,000	38,000	42,000	44,000	45,000
Total Expenses	**58,000**	**61,500**	**66,000**	**67,500**	**68,000**
Earnings Before Interest & Taxes (EBIT)	**17,000**	**25,500**	**33,000**	**43,500**	**55,000**
Interest Expense	3,000	3,000	3,000	3,000	3,000
Earnings Before Taxes	**14,000**	**22,500**	**30,000**	**40,500**	**52,000**
Income Taxes	1,000	2,000	4,000	6,000	8,000
Net Earnings	**13,000**	**20,500**	**26,000**	**34,500**	**44,000**

Balance Sheet:

ABC Ltd. Balance Sheet [USD $ millions]	2022	2023	2024	2025	2026
Assets					
Current assets:					
Cash	100,000	109,000	130,500	156,500	192,000
Accounts Receivable	8,000	9,000	10,000	10,000	10,000
Prepaid expenses	10,000	11,000	12,000	13,000	14,000
Inventory	10,000	12,000	14,000	17,500	18,000
Total current assets	128,000	141,000	166,500	197,000	234,000
Non-current assets:					
Property, Plant & Equipment	34,000	30,000	25,000	26,000	21,000
Long-term Investments	8,000	5,000	7,000	9,000	11,000
Total Assets	**170,000**	**176,000**	**198,500**	**232,000**	**266,000**
Liabilities					
Current liabilities:					
Accounts Payable	5,000	10,000	15,000	20,000	25,000
Accrued liabilities	1,000	1,500	2,000	2,500	3,000
Unearned revenue	1,000	6,000	11,000	16,000	21,000
Total current liabilities	7,000	17,500	28,000	38,500	49,000
Non-current liabilities:					
Long-term debt	50,000	23,500	34,500	49,000	62,000
Other long-term liabilities		4,000	3,000	3,000	2,000
Total Liabilities	**57,000**	**45,000**	**65,500**	**90,500**	**113,000**
Shareholder's Equity					
Equity Capital	100,000	110,500	107,000	107,000	109,000
Retained Earnings	13,000	20,500	26,000	34,500	44,000
Total Shareholder's Equity	**113,000**	**131,000**	**133,000**	**141,500**	**153,000**
Total Liabilities & Shareholder's Equity	**170,000**	**176,000**	**198,500**	**232,000**	**266,000**

Cash Flow Statement:

ABC Ltd. Cash Flow Statement [USD $ millions]	2022	2023	2024	2025	2026
Operating Cash Flow					
Net Earnings	13,000	20,500	26,000	34,500	44,000
Plus: Depreciation & Amortisation	10,000	9,500	9,000	8,500	8,000
Less: Changes in Working Capital	-	2,500	15,000	20,000	26,500
Cash From Operations	**23,000**	**27,500**	**20,000**	**23,000**	**25,500**
Investing Cash Flow					
Investments in Property, Plant & Equipment	8,000	5,500	4,000	9,500	3,000
Investments in Stocks, Bonds & Real Estate	8,000	(3,000)	2,000	2,000	2,000
Cash From Investing	**16,000**	**2,500**	**6,000**	**11,500**	**5,000**
Financing Cash Flow					
Issuance (repayment) of debt		(26,500)	11,000	14,500	13,000
Issuance (repayment) of equity	61,000	10,500	(3,500)	-	2,000
Cash From Financing	**61,000**	**(16,000)**	**7,500**	**14,500**	**15,000**
Net Increase (decrease) in Cash	68,000	9,000	21,500	26,000	35,500
Opening Cash Balance	32,000	100,000	109,000	130,500	156,500
Closing Cash Balance	**100,000**	**109,000**	**130,500**	**156,500**	**192,000**

5.1. Discounted Cash Flow (DCF) Analysis

Perhaps the most notorious and well-known valuation method, the DCF analysis is a method used to estimate the value of an investment or a company based on its expected future cash flows. It is particularly useful for valuing companies with predictable and stable cash flows. The primary principle behind DCF is the concept of the **time value of money**, which suggests that a dollar today is worth more than a dollar in the future due to its potential earning capacity. DCF analysis involves forecasting the future cash flows of a company and then discounting them back to their present value using a **discount rate**, typically the company's **weighted average cost of capital (WACC)**.

Going off on a bit of a tangent, WACC is a financial metric used to determine a company's cost of capital. It represents the average rate of return a company is expected to pay its investors (both equity and debt holders) for using their capital in business operations. It

considers the cost of equity and the cost of debt, weighted by their respective proportions in the company's capital structure. The formula for WACC is:

$$WACC = \left(\frac{E}{E+D}\right) \times r_e + \left(\frac{D}{E+D}\right) \times r_d \times (1-T)$$

where:

- E = Market value of equity
- D = Market value of debt
- r_e = Cost of equity
- r_d = Cost of debt
- T = Corporate tax rate

The **cost of equity** is the return that equity investors expect on their investment in the company. It can be estimated using the **Capital Asset Pricing Model (CAPM)**.

The **cost of debt** is the effective rate that a company pays on its borrowed funds. It can be calculated as the yield to maturity on existing debt or the interest rate on new borrowings. Since interest expenses are tax-deductible, the cost of debt is adjusted for the tax shield.

There are formulas for estimating both, but we won't see them here. Now, back to the DCF.

The DCF calculation involves two main steps: projecting the **free cash flows (FCFs)** of the company and discounting them to the present value.

Projecting Free Cash Flows (FCFs):

- **Free Cash Flow (FCF)** is the cash generated by the company that is available for distribution to the company's investors. It can be calculated using the following formula:

$$FCF = EBIT \times (1 - Tax\ Rate) + Depreciation\ and\ Ammortization - Change\ in\ Working\ Capital - Capital\ Expenditures$$

Discounting the FCFs:

- Once the FCFs are projected, they need to be discounted back to their present value. The formula for discounting a future cash flow is:

$$PV_t = \frac{FCF_t}{(1+r)^t}$$

Where PV_t is the present value, FCF_t is the free cash flow in year t and r is the discount rate (WACC). This calculation makes sense, since if you had an interest rate $r\%$, the amount you have in year t is your original amount multiplied by $(1+r)^t$, hence why we divide by this as we are doing the opposite.

The sum of all discounted cash flows gives the total present value of the projected cash flows. Finally, the terminal value, which represents the value of the company beyond the forecast period, is calculated, discounted and added to the present value of the cash flows.

Terminal Value Calculation:

The terminal value can be estimated using the **perpetuity growth model**, which assumes that the growth rate of free cash flows in the final year of the initial forecast period will continue indefinitely into the future. There are other methods, but this is the most well-known. The formula is:

$$Terminal\ Value = \frac{FCF_n \times (1 + g)}{(r - g)}$$

Where FCF_n is the FCF in the final forecasted year, g is the perpetuity growth rate, and r is the discount rate.

Limitations of DCF Analysis:

Despite its widespread use and theoretical appeal, the Discounted Cash Flow (DCF) analysis has several limitations that can impact its accuracy and reliability.

- **Forecasting Uncertainty**: Accurately predicting future cash flows is challenging, and small errors in projections can lead to significant valuation inaccuracies.

- **Discount Rate Sensitivity**: The valuation is sensitive to the chosen discount rate; minor changes can result in significant differences in the present value of future cash flows.

- **Terminal Value Assumptions**: Calculating the terminal value involves speculative assumptions about long-term growth rates, which can heavily influence the overall valuation.

Now, let's use our fictitious company financial data from **ABC Ltd.** to calculate its value using a DCF model.

Example:

Firstly, we will assume a tax rate of 30%. Then, we calculate the FCF for each of the years in the forecasted data, where each number represents millions:

$$FCF_{2024} = 33000 \times (1 - 0.3) + 9000 - 15000 - 4000 = 13100$$

$$FCF_{2025} = 43500 \times (1 - 0.3) + 8500 - 20000 - 9500 = 9450$$

$$FCF_{2026} = 55000 \times (1 - 0.3) + 8000 - 26500 - 3000 = 17000$$

Now, we would normally calculate WACC using the formula above but for simplicity, lets just assume a WACC of 8% since each component of the formula must also be calculated.

Then, we can discount the FCFs back to present value:

$$PV_{2024} = \frac{13100}{(1+0.08)^1} = 12129.6$$

$$PV_{2025} = \frac{9450}{(1+0.08)^2} = 8101.9$$

$$PV_{2026} = \frac{17000}{(1+0.08)^3} = 13495.1$$

We can calculate the perpetuity growth rate by finding the FCF growth rate in the final forecasted year and then calculate the terminal value. However, the FCF increase is very irregular so it may be sensible to estimate the growth rate assuming growth will slow down in years to come. Let's assume a PGR of 3%.

$$Terminal\ Value = \frac{17000 \times (1+0.03)}{(0.08-0.03)} = 350200$$

Discounting this back to present value gives:

$$PV_{2026} = \frac{350200}{(1+0.08)^3} = 278000$$

Finally, we sum the present values of the FCFs and the terminal value to get the **enterprise value (EV)**:

$$EV = 12129.6 + 8101.9 + 13495.1 + 278000 = £311726.6m = £312b$$

5.2. Earnings Multiples

Earnings multiples, often referred to as **price-to-earnings (P/E) ratios**, compares a company's market value to its earnings, providing investors with a quick and relatively straightforward way to gauge whether a stock is over or undervalued relative to its peers. The P/E ratio is calculated by dividing the **current market price per share** by the **earnings per share (EPS)**.

The primary appeal of using earnings multiples lies in their simplicity and ease of use. Unlike more complex valuation methods, such as the DCF analysis, earnings multiples require fewer assumptions and less detailed financial projections. However, they do depend on the accuracy of the reported earnings and the comparability of the companies being evaluated.

Calculation of P/E Ratio:

The formula for the P/E ratio is straightforward:

$$P/E\ Ratio = \frac{Market\ Price\ per\ Share}{EPS}$$

Where:

- **Market Price per Share** is the current trading price of a single share of the company's stock.
- **Earnings per Share (EPS)** is the portion of a company's profit allocated to each outstanding share of common stock, calculated as:

$$EPS = \frac{Net\ Income}{Number\ of\ Outstanding\ Shares}$$

Types of P/E Ratios:

There are two main types of P/E ratios: **trailing P/E** and **forward P/E**.

- **Trailing P/E** uses the earnings per share from the previous 12 months. It is based on historical data.
- **Forward P/E** uses projected earnings for the next 12 months. It provides an estimate of future performance.

Interpretation of P/E Ratios:

The P/E ratio is a relative valuation metric and is most useful when comparing companies within the same industry or sector. A higher P/E ratio might suggest that investors expect higher future growth, whereas a lower P/E ratio could indicate that the stock is undervalued or that the company is experiencing difficulties.

Limitations of P/E Ratios:

While earnings multiples offer a quick snapshot of a company's valuation, they are not without limitations. Key drawbacks include:

- **Earnings Manipulation**: EPS can be affected by accounting practices and non-recurring items, making it an unreliable measure in some cases.
- **Growth Rates**: Companies with high growth rates often have higher P/E ratios, which can be misleading if future growth does not materialize as expected.
- **Market Conditions**: Broader market trends and economic conditions can influence stock prices and P/E ratios, sometimes making them less reflective of a company's true value.

Example:

Assume that **ABC Ltd.** has a current market price of £50 per share and an EPS of £5. The P/E ratio would be 10.

This means investors are willing to pay £10 for every £1 of earnings ABC Ltd. generates.

Let's extend this example to include both trailing and forward P/E ratios. Suppose ABC Ltd. had an EPS of £5 over the last 12 months (trailing) and is projected to have an EPS of £6 over the next 12 months (forward). The trailing P/E would be 10 and the forward P/E would be 8.33.

The forward P/E is lower, suggesting that ABC Ltd. is expected to grow its earnings, making it potentially more attractive to investors.

5.3. Comparable Companies Analysis (Comps)

Comparable Companies Analysis (Comps) is a valuation method that involves comparing the financial metrics of a company to those of similar publicly traded companies. It is widely used because it provides a market benchmark against which a company's valuation can be measured. The principle behind Comps is that similar companies in the same industry with similar characteristics should trade at similar multiples. It makes use of the P/E ratio above, as well as other key multiples.

The first step in performing a Comps analysis is selecting a group of comparable companies. This selection process is critical and involves choosing companies that operate in the same industry, have similar business models, revenue sizes, growth rates, and risk profiles. Analysts often use industry classification systems and financial databases to identify suitable comparable companies.

Key Multiples Used in Comps Analysis:

Several financial multiples can be used in a Comps analysis, but the most common ones include:

- **Price-to-Earnings (P/E) Ratio** (above)

- **Enterprise Value-to-EBITDA (EV/EBITDA)**: Compares the value of the company, including debt, to its earnings before interest, taxes, depreciation, and amortization. It is calculated as:

$$EV/EBITDA = \frac{EV}{EBITDA}$$

- **Price-to-Sales (P/S) Ratio**: Compares a company's stock price to its revenues. It is calculated as:

$$P/S\ Ratio = \frac{Market\ Price\ per\ Share}{Revenue\ per\ Share}$$

Interpretation of Results:

The results of a Comps analysis provide a range of valuations based on market data. This range helps analysts and investors understand where the target company stands relative to its peers. It also offers insights into how the market values similar companies, reflecting the collective sentiment and expectations of investors.

Limitations of Comps Analysis:

While Comps analysis is a useful and widely used valuation method, it has several limitations:

- **Market Conditions:** The valuation multiples of comparable companies can be influenced by temporary market conditions and may not reflect the intrinsic value of the companies.
- **Selection of Comparables:** The accuracy of the Comps analysis depends heavily on the selection of comparable companies. Inappropriate or insufficient comparables can lead to misleading valuations.
- **Company-Specific Factors:** Unique aspects of the target company, such as management quality, competitive positioning, and strategic initiatives, may not be fully captured by the comparison with other companies.

Calculation, Application and Example:

Once the comparable companies are selected and the relevant multiples are identified, the next step is to calculate the multiples for each comparable company. The average or median of these multiples is then applied to the target company's financial metrics to estimate its valuation.

For example, assume that the average EV/EBITDA multiple for the selected comparables is 10x. **ABC Ltd.** has an EBIT of £25500m in 2023 and a D&A of £9500, so has an EBITDA of £35000m. Hence, the implied enterprise value would be £350b.

5.4. Precedent Transactions Analysis (Precedents)

Precedent Transactions Analysis (Precedents) is a valuation method that involves analysing the prices paid in past transactions of similar companies to establish a valuation range for a target company.

Steps in Precedent Transactions Analysis:

- **Identifying comparable transactions:** Relevant past transactions are those involving companies like the target in terms of industry, size, growth rate and market conditions. It is also important to consider the context of the transaction, like the type of merger or acquisition and under what conditions it was completed.

- **Collect Financial data and calculate multiples:** Data used in comps like EBITDA, revenue and net income are needed to then calculate the relevant metrics like EV/EBITDA, P/E and so on.

- **Analysis:** Using these ratios, analysts can determine ranges of multiples derived from these transactions. This can then be applied to the target company to estimate its value.

Limitations of Precedents:

The limitations associated with precedents are largely the same as those associated with comps. They include:

- **Market Conditions:** Valuations from past transactions may be influenced by market conditions at the time, which may not reflect current conditions.
- **Selection Bias:** The accuracy of the analysis depends on the relevance and comparability of the selected transactions.
- **Unique Circumstances:** Each transaction may involve unique circumstances (e.g., strategic synergies, regulatory environment) that may not apply to the target company.

An example is not necessary here, as it would be similar to the example above in comps.

5.5. Adjusted Book Value

Adjusted Book Value (ABV) is a valuation method that refines the traditional book value of a company by adjusting account for discrepancies between the book value and the market value of assets and liabilities. This approach is particularly useful for valuing companies with significant asset bases or those undergoing substantial changes in asset valuation, such as those in distressed situations or those with significant non-operating assets. ABV provides a more accurate reflection of a company's intrinsic value by considering these adjustments.

Steps in Adjusted Book Value Calculation:

- **Determine Book Value:** The book value of a company is calculated as the difference between total assets and total liabilities:

$$Book\ Value = Total\ Assets - Total\ Liabilities$$

- **Adjust Asset Values:** Assets must be revalued to their fair market value, for example tangible assets like real estate and machinery or intangible assets like patents and trademarks. This is done by accounting for accumulated depreciation and any

impairment charges, and often involves comparing original prices to prices of equivalent products on the market.

- **Adjust Liability Values:** Similarly to the assets, liabilities must be revalued to reflect fair market value, including any potential changes in interest rates or debt terms.

- **Calculate ABV**

Limitations of Adjusted Book Value:

- **Subjectivity in Valuation:** Adjustments often involve subjective judgments about fair market values, which can introduce variability.
- **Exclusion of Intangible Assets:** Traditional adjustments might not fully account for valuable intangible assets not recorded on the balance sheet.
- **Market Conditions:** Changes in market conditions can affect the relevance of the adjusted values, particularly in volatile markets.

5.6. Liquidation Value

Liquidation Value is a valuation method used to estimate the net value that a company would realize if it were to cease operations and sell off its assets. This approach is particularly relevant for companies in financial distress or those being considered for liquidation or bankruptcy. It provides a measure of the potential return to creditors and shareholders under such circumstances. Liquidation Value focuses on the value of assets when they are sold individually, often at a discount to their book value.

Steps in Liquidation Value Calculation:

- **Assess Asset Values:** All assets must be listed, both tangible and intangible, and then have their sale price estimated as if they were to be sold individually. This will usually be lower than their book values.

- **Estimate Liquidation Costs:** There may be costs associated with selling assets such as brokerage fees, legal fees or other administrative fees. This will bring down the value achieved by selling each asset.

- **Subtract Liabilities:** All liabilities must be settled and paid off, including debt, accounts payable and any other financial obligations. There may be claims that take priority, such as **secured debts** and other claims that need settling before distribution to equity holders. **Secured debts** are those backed or secured by collateral which was originally used to reduce the risk of lending for the lender.

- **Calculate Liquidation Value:** Combine the adjusted asset values, subtract liquidation costs and then deduct total liabilities to find the liquidation value. The formula is:

$$Liquidation\ Value = Total\ Asset\ Value - Liquidation\ Costs - Total\ Liabilities$$

Limitations of Liquidation Valuations:

- **Forced Sale Discounts:** Assets are often sold at a significant discount during liquidation, which may not reflect their full market value.
- **Incomplete Asset Capture:** Intangible assets and potential hidden values may not be fully captured in a liquidation scenario.
- **Cost Estimation:** Liquidation costs and processes can be difficult to estimate accurately and may vary depending on the complexity of the liquidation.

5.7. Replacement Cost

Replacement Cost is a valuation method that estimates the cost to replace a company's assets with new ones of equivalent utility. This method is particularly useful for valuing companies in industries where assets are crucial to operations or when assessing the cost to replicate a company's operational capabilities. Replacement Cost provides insights into the current economic value of assets, considering their condition and obsolescence.

Steps in Replacement Cost Calculation:

- **Identify Assets to be Replaced:** This will include both the intangible assets and the tangible assets if applicable.

- **Estimate Replacement Costs:** Determine the cost of purchasing or constructing new assets of similar functionality and capacity. It may be necessary to adjust for improvements in technology that might affect the cost of replacement.

- **Adjust for Depreciation and Obsolescence:** Subtract accumulated depreciation of existing assets to reflect their reduced value compared to new assets and account for any technological obsolescence that may affect the replacement cost.

- **Calculate Replacement Cost:** This is done by adding the estimated costs of replacing all relevant assets and making necessary adjustments for depreciation or obsolescence. The formula is:

$$Replacement\ Cost = Cost\ of\ New\ Assets - Depreciation\ and\ Obsolescence\ Adjustments$$

Limitations of Replacement Cost:

- **Market Fluctuations**: The replacement cost can vary with market conditions, such as changes in material costs or labour rates.
- **Assumptions in Valuation**: Assumptions about the cost and utility of replacement assets may not always reflect the actual market conditions or technological changes.
- **Exclusion of Intangible Value**: Replacement cost focuses on tangible assets and may not capture the value of all intangible assets or proprietary advantages.

5.8. Real Options Valuation

Real Options Valuation (ROV) is a sophisticated valuation method used to assess the value of flexibility and strategic opportunities available to a company. Unlike traditional valuation methods that typically value assets based on their expected cash flows, ROV considers the value of managerial flexibility in making investment decisions, such as deferring, expanding, or abandoning projects. This approach is particularly useful in situations involving high uncertainty or significant strategic options. It is akin to financial options and utilises the same option pricing models.

Steps in Real Options Valuation:

- **Identify Real Options:** The common types of real options include options to expand, contract, defer or abandon a project. For example, a company investing in modern technology might have the option to expand the project if successful or abandon it if it underperforms.

- **Model the Underlying Asset:** Determine the volatility of the asset or project's value, as it affects the value of the option. For a technology project, volatility might be derived from market trends and historical performance data.

- **Apply an Option Pricing Model:** The Black-Scholes model is used for simple options, where the value of the option is determined based on underlying asset price, exercise price, time to expiration, volatility, and risk-free rate. On the other hand, the Binomial model is suitable for complex options, and this model evaluates the option's value by constructing a binomial tree of potential future outcomes. There are formulas for each, but this becomes more focused on machine learning and so is less useful here.

- **Calculate the Option Value:** Use the selected model to determine the value of the real option based on the inputs and market conditions.

Limitations of Real Options Valuation:

- **Complexity:** The valuation process can be complex, requiring detailed assumptions and accurate modelling of uncertainties and options.
- **Data Requirements:** Accurate input data (e.g., volatility, risk-free rate) is essential, and obtaining reliable data can be challenging.
- **Model Assumptions:** The models used may rely on assumptions that might not perfectly reflect the real-world dynamics of the project or asset.

6. Leveraged Buyout (LBO)

A Leveraged Buyout (LBO) is a financial transaction in which a company is acquired using a significant amount of borrowed money (leverage) to meet the cost of acquisition. The assets of the company being acquired and those of the acquiring company are often used as collateral for the loans. The purpose of a leveraged buyout is to allow companies to make large acquisitions without having to commit a lot of capital.

This sort of transaction usually occurs when **private equity (PE)** firms are investing buy buying smaller companies. By putting in as little of their own money as possible, PE firms can achieve a large **return on equity (ROE)** and **internal rate of return (IRR)**, assuming all goes according to plan. Since PE firms are compensated based on their financial returns, the use of leverage in an LBO is critical in achieving their targeted IRRs (typically 20-30% or higher). **Internal rate of return (IRR)** is the expected compound annual rate of return that will be earned on a project or investment.

However, such a large amount of debt causes vastly increased risk, and so it is extremely important to choose a stable company to buy out.

Key Components of an LBO:

- **Equity Contribution:** Typically, 10-30% of the purchase price is funded through equity contributed by the private equity firm.
- **Debt Financing:** The remaining 70-90% of the purchase price is financed through several types of debt. This debt can be in the form of **bank loans**, **high-yield bonds**, or **mezzanine financing**.
- **Cash Flows and Debt Repayment:** The cash flows generated by the company are used to **service** the debt. This is the money required to cover the interest and principal payment. Successful LBOs rely on the target company's ability to generate strong, consistent cash flows.

Financing in an LBO:

- **Senior Debt:** This is debt that takes priority over unsecured debt or more 'junior' debt. Secured by the assets of the target company as collateral, it typically has the lowest interest rate and the highest priority in case of liquidation. Examples include **term loans** (returned in regular payments over a set period) and **revolving credit facilities** (flexible lines of credit).

- **Subordinated Debt:** Also known as junior debt, it is riskier than senior debt and thus carries a higher interest rate. It is only paid after senior debt in the event of liquidation.

- **Mezzanine Financing:** A hybrid of debt and equity financing that provides lenders the right to convert to an equity interest in the company in case of default, generally after other senior debts are paid off.

- **Equity Financing:** Provided by the private equity firm, it represents the owner's stake in the company. Equity holders are last in line in terms of claims on assets and income.

While an LBO transaction involves several steps, they are largely like those in an M&A transaction covered earlier. Here's a brief recap:

Steps in an LBO Transaction:

- **Target Identification and Screening:** The first step is identifying potential target companies suitable for an LBO. Ideal targets typically have stable and predictable cash flows, low existing debt, strong management teams, and tangible assets that can be used as collateral.

- **Valuation and Modelling:** Conduct a detailed valuation analysis using methods such as Comparable Company Analysis, Precedent Transactions Analysis, and Discounted Cash Flow (DCF) Analysis. These have all been covered above.

  Also, it is necessary to build an **LBO model** to project the future financial performance of the target company and determine the maximum purchase price that can be paid while achieving the desired return on investment.

- **Due Diligence:** Perform thorough due diligence to understand the target's business, financials, operations, and potential risks. This involves analysing historical financial statements, assessing management capabilities, and evaluating market conditions.

- **Financing Structure:** Determine the optimal financing structure for the LBO, balancing the amount of debt and equity to ensure financial stability and maximize returns. This includes negotiating terms with lenders and other financing sources.

- **Acquisition and Closing:** Firstly, negotiate the acquisition terms with the target company's management and board of directors. Then, finalize the acquisition agreement, secure financing, and complete all necessary regulatory approvals and closing conditions.

- **Post-Acquisition Integration and Management:** Implement strategic and operational improvements to enhance the target company's performance.

While it is running under new management, monitor the company's performance, manage the debt repayment, and prepare for eventual exit through sale, IPO, or recapitalization.

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