Access the Rest of the Fundamentals Course

Financial Modeling Fundamentals, Module 10: M&A Deals and Merger Models – Core Concepts and Accretion/Dilution Calculations

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Overview & Key Rules of Thumb

M&A deals and merger models are likely topics in finance interviews, but they're **less important** than accounting, valuation, and DCF analysis for several reasons:

1. Mergers and acquisitions are **not relevant for all groups**. For example, you don't work on M&A deals in the debt capital markets (DCM) or equity capital markets (ECM) groups in investment banking.

2. They're also **less important in roles** like equity research and hedge funds, where you follow public companies and make investment recommendations.

3. They're **more advanced** than the other topics, so you're more likely to get questions on easier subjects first.

You'll get at least *a few* questions on M&A deals if you interview for investment banking roles, but advanced questions are unlikely unless you have significant work experience.

Basic M&A analysis is **simple** – it's easier to explain than the 3 financial statements, for example.

But interview questions can be quite tricky since many candidates memorize questions and answers without understanding the *underlying concepts*.

We start this guide by describing **why** one company might want to buy another company, and then we move into a walk-through of merger model mechanics.

Then, we look at a merger model for real companies, more advanced features, and other ways to evaluate deals besides the traditional EPS accretion/dilution analysis.

Key Rule #1: Why and How Do You Buy Another Company?

A company would buy another company for the same reason that you would buy a book, a video game, a new car, or a university degree: **Because you think you'll be better off after buying the item.**

For example, a university degree might be expensive, but after paying for tuition and completing the degree, you'll be able to get jobs that pay much higher salaries.

Even if you take out student loans to pay for the degree, the higher-paying job you get afterward means that the degree will pay for itself – eventually.

It's the same with companies: It might be very expensive to acquire another company, but the Acquirer will benefit from higher profits and cash flow afterward.

The Acquirer might be able to grow its profits and cash flow to a similar, higher level on its own – but it would take far more time and money to do so independently.

Just like an expensive university degree is a shortcut to higher-paying jobs, an acquisition might be a shortcut to higher financial performance for a company.

We've repeatedly used this formula to describe different concepts:

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate)

And you can use this same formula to describe M&A deals and merger models as well.

An Acquirer might want to purchase another company (the "Target") if the Target's "asking price" is less than its Implied Value.

For example, let's say the Target wants $500 million for its business.

The Acquirer knows the following information about the Target:

- **Current Cash Flow** = $50 million
- **Cash Flow Growth Rate** = 4%
- **Discount Rate** = 12%

The Discount Rate of 12% means that the Acquirer wants its internal projects to deliver at least a 12% average annualized return.

So the Target's Implied Value = $50 million / (12% – 4%) = $625 million.

Therefore, it may be **undervalued**… but only if the Acquirer's assumptions are correct!

An Acquirer might be inclined to purchase a Target if:

- The Target's **Asking Price** is less than its **Implied Value**, i.e. the Present Value of its future cash flows.

- The Acquirer's expected **IRR** from the acquisition exceeds its **WACC**.

You should know that these statements are **equivalent**: If a Buyer pays *less* than what a Seller is really worth, its IRR will always exceed WACC.

These rules are based on finance theory, but in real life, something else enters the equation: **Earnings per Share (EPS)**.

In theory, companies should only care about their cash flow and expected future cash flow.

In reality, companies have **angry and unreasonable shareholders** and are subject to short-term pressure from those shareholders.

Those shareholders pay *a lot* of attention to metrics like Net Income and Earnings per Share (EPS), and they want companies to grow those metrics over time.

So if a company announces an acquisition that will boost its cash flow "in the long term," but which will also greatly reduce its EPS in the next year, **shareholders will be angry**.

Shareholders don't get angry simply because they're "irrational": **They get angry because an unexpected drop in EPS will affect the company's share price!**

For example, the following sequence often happens in real life:

- **Step 1:** Company A announces plans to acquire Company B for $100 million. It doesn't say anything about EPS at first.
- **Step 2:** Company A's share price falls because many investors *expect* its EPS to decline after the deal is complete.
- **Step 3:** Company A now clarifies its expectations. Its EPS will fall by 10% next year, but increase after that, and its cash flow will increase next year.
- **Step 4:** Investors had expected only a 5% drop in EPS, so they're disappointed by this expected decline of 10%. The company's share price falls substantially, and the company is now worth less to its investors.

So all else being equal, companies prefer to pursue deals that are **accretive to EPS** – transactions that *increase* their EPS.

For example, if Company A expects to earn $2.00 per share next year, an EPS-accretive deal might boost its EPS to $2.10 or $2.50.

A deal that's **dilutive to EPS** might reduce Company A's EPS to $1.50, $1.80, or another number less than $2.00.

These are the two most important **financial criteria** for deals: The Target's asking price must be reasonable, and the deal must have a decent chance of being neutral or accretive to EPS.

In real life, though, no company *decides* to do a deal based on financial criteria.

Instead, the company decides to do a deal and then *justifies it* with financial criteria.

It's like your friend who keeps dating horrible men/women: He/she dates based on whether or not the person looks like a model – even if the other person also happens to be a serial killer – and then *finds reasons* to justify his/her behavior afterward.

We can divide motivation for acquisitions into **financial reasons** and **fuzzy reasons**.

Financial reasons tend to be a bit more logical and include:

- **Consolidation / Economies of Scale:** If the biggest and second-biggest companies in the market combine, they can get better deals with suppliers and save money.
- **Geographic Expansion:** The Buyer operates mostly in Europe, which is a declining/mature market. It wants to acquire the Seller to expand into Asia and grow more quickly.
- **Gain Market Share:** Neither the Buyer nor the Seller is growing because the market is competitive and the products/services are nearly the same. But if one company acquires another, it instantly captures market share.
- **Seller is Undervalued:** The Seller's asking price seems attractive because its share price has fallen significantly; the Buyer sees an opportunity to get a cheap Asset.
- **Acquire Customers or Distribution Channels:** One company could sell more widgets if it had access to another company's customers and partners.
- **Tax Reductions:** The Buyer could "invert" by acquiring a Seller in a low-tax jurisdiction like Ireland and then claiming it is "headquartered" there.
- **Product Expansion or Diversification:** The Acquirer's core industry is declining, but it could grow more quickly by purchasing a company in a faster-growing industry.

These count as **financial reasons** because the Buyer could use numbers or analysis to justify its decision:

"We can now sell 1,000 more contracts per year to customers in Asia, resulting in EUR 121 million of additional revenue. After expenses, the acquisition will pay for itself within 5 years."

Here's a chart that summarizes everything:

Reason:	Logic:	Financial Impact:	Real-Life Example:	Common In:
Consolidation / Economies of Scale	There are 4 major players in the market and the 3rd largest company wants to acquire the 4th largest company to take on the #1 and #2 companies more effectively.	Hopefully boost EPS and result in IRR > WACC.		Declining / Consolidating Industries (see: the dying middle class in America)
Geographic Expansion	Our home market is saturated, or isn't growing as quickly as expected - let's expand overseas and find more customers there.	Hopefully boost EPS and result in IRR > WACC.		Declining, stagnant, and growth industries.
Grab Market Share	We're not growing much organically - let's buy market share and come closer to being a #1 or #2 player in this industry.	Hopefully boost EPS and result in IRR > WACC.		Industries that are on the verge of consolidating, or have done so to some extent.
Seller is Undervalued / Has Underperformed	Our company is strong now! Let's find weaker, undervalued companies and gobble them up like a large bear!	Hopefully boost EPS and result in IRR > WACC.		Declining industries or ones in a cyclical downturn.
Acquire Customers / Distribution Channels	We could sell a lot more of our own products/services, if only we had easy to access to this other company's customers or distribution partners.	Hopefully boost EPS and result in IRR > WACC.		Declining, stagnant, and growth industries.
Seller Might Reduce Our Tax Bill! (Tax Inversion Deals)	We could bypass tax laws and use questionable tactics to reduce our tax bill by acquiring a company "based in" a lower-tax region like Ireland, and then incorporating there.	Hopefully boost EPS and result in IRR > WACC (after all, taxes will be a lot lower).		Wherever it can be done…
Product Expansion / Diversification	We could sell more products/services if we expand our portfolio and go into different, presumably higher-growth, areas.	Hopefully boost EPS and result in IRR > WACC.		Declining, stagnant, and growth industries.

And then there are **fuzzy reasons** for acquisitions. For example:

- **Intellectual Property / Patent / Key Technology:** The Acquirer wants a cool, shiny object that the Target has. It can't determine exactly how much revenue, profit, or cash flow this shiny object will produce…. But it's really shiny!

- **Defensive Acquisition:** The Acquirer is fearful of a fast-growing competitor and acquires it to prevent disruption of its main business. This rationale explains many acquisitions in the technology industry, including most deals that Facebook and Google have done.

- **Acqui-Hire:** Recruiting top-notch employees is **expensive**. Why not just shortcut the whole process by buying an entire, smaller company and hiring everyone like that? This rationale explains the acquisitions of many small tech startups.

- **"The Intangibles":** The other company is doing something cool. We're not cool. Let's buy them so that we become cool!

- **Office Politics, Ego, and Pride:** Let's buy this company to get bigger! Because bigger is better! Also, I want to become CEO, and this acquisition will help me get there and destroy all my rivals.

Most M&A deals fall into this category of **fuzzy reasons**, but companies often *make up* **financial reasons** to justify them. Here's a summary:

Reason:	Logic:	Financial Impact:	Real-Life Example:	Common In:
Acquire IP / Patent / Other Technology	This company has useful IP we could use, or patents we could use as future ammunition when we get sued.	Make lawsuits less likely/expensive, or go on the offensive and take out competitors… boosting sales.	Google MOTOROLA	Tech / biotech / pharmaceuticals.
Defensive Acquisition - Prevent Competition!	This other company is about to kill our business! Let's acquire them. We can't let the competition get their hands on them!	Make sure our own business continues to exist…	facebook WhatsApp	High-growth industries like tech / biotech where new companies can rapidly disrupt incumbents.
Acqui-Hire to Get "Amazing" Employees	Hiring people is really expensive (especially top engineers) - maybe it's cheaper for us to buy the company and get a bunch of talented employees like that.	Reduce our hiring expenses and get employees that will help our business expand.	Google milk	Tech / biotech / other highly speculative industries.
"The Intangibles"	This other company has something cool. Our company is not so cool. Let's buy it!	Hope that "cool" translates into profits.	Y! tumblr.	Tech / biotech / other highly speculative industries.
Office Politics / Ego / Mistaken Pride	It's our DESTINY to be the greatest company in the world, ever! Also, we want to "prove" ourselves to the outside world by becoming bigger!	Become… bigger?	AOL TimeWarner	Financial/market bubbles, and with stupid people at all levels.

The actual **process** of acquiring another company is complicated and can take anywhere from several months to several years to complete.

If you're an investment banker advising a company that wants to **sell**, the process looks like this:

- **Step 1: Plan the Process and Create the Marketing Materials.**

In this step, you'll meet with the management team of the company to learn more about it, set valuation expectations with the Board of Directors, and prepare "marketing materials."

You'll create a short 5-10-page "Teaser" that summarizes the company, its financial profile, and why another company might want to acquire it.

For example, maybe your company has recurring cash flow, low capital requirements, and 10-year contracts that guarantee long-term customers.

You'll also create a much longer (50-100 page) "Confidential Information Memorandum" (CIM), also known as an Information Memorandum (IM) or Offering Memorandum (OM), that does the same thing but in more depth.

Finally, you'll think about **how many Buyers** to contact (5? 10? 100?) and the **timing** for contacting them.

- **Step 2: Contact the Initial Set of Buyers.**

You'll then start contacting the Buyers, pitching the company, and sending out the Teaser. If a potential Buyer is interested, you'll negotiate a Non-Disclosure Agreement (NDA) and send the CIM, along with more data as the process continues.

Interested buyers will request more information from you, and you'll have to respond to questions and address their concerns.

- **Step 3: Set Up Management Meetings and Presentations.**

You'll then schedule in-person meetings between the management team of your company and potential Buyers who have remained interested.

As part of this process, you'll prepare a "Management Presentation" that highlights the company's merits in slide form.

The management team, accompanied by you and other bankers, will go around making this presentation and answering questions afterward.

- **Step 4: Solicit Initial and Subsequent Bids from Buyers.**

Once you've presented the company to all the interested Buyers, you'll set a **deadline** for Indications of Interest (IOIs), also known as Letters of Interest (LOIs) or "bids."

Each potential Buyer will submit a term sheet outlining its proposed purchase price, form of consideration (Cash or Stock), and the additional information it needs to do the deal.

You might pick a single winner from this round of bidding, or you might go through *multiple* rounds of bidding.

But at some point, you will have to select a single winner and start negotiating the deal.

- **Step 5: Conduct Final Negotiations, Arrange Financing, and Close the Deal.**

The Buyer will conduct final "due diligence" – reviewing your company's financial statements, taxes, customer contracts, etc. – at this point.

If everything is fine, the Buyer and Seller, supported by bankers, will negotiate the **Definitive Agreement** that defines the exact terms of the deal such as price, employee retention, the treatment of options, and more.

If the Buyer needs to issue Debt or Stock to complete the deal, it will do so at this point. Both parties will also complete any required regulatory filings.

If all goes well, you'll announce the deal and wait for it to close.

Here's a summary of the process:

Description:	Timing:	Responsibility:
Plan Process and Create Marketing Materials.	~1 month.	
Determine length/breadth of process.		Adviser, Seller.
Think about potential buyers.		Adviser, Seller.
Value the company and set pricing expectations.		Adviser.
Prepare "Teaser" and Offering Memorandum (OM).		Adviser, Seller.
Contact Initial Set of Potential Buyers.	~1 month.	
Send "Teaser" to buyers after contacting them.		Adviser.
Negotiate NDAs / other confidentiality agreements.		Adviser, Lawyers.
Distribute Offering Memorandum to interested parties.		Adviser.
Set up meetings with interested buyers.		Adviser, Potential Buyers.
Handle information requests and due diligence.		Adviser, Seller, Potential Buyers.
Management Meetings and Presentations.	~1 month.	
Schedule a "roadshow" with all interested buyers.		Adviser, Potential Buyers.
Prepare management team for presentations and questions.		Adviser, Seller.
Conduct presentations and answer requests and questions.		Adviser, Seller, Potential Buyers.
Initial Bids / Negotiations with Interested Buyers.	~1-2 months.	
Answer information requests from buyers.		Adviser, Seller, Potential Buyers.
Set deadline for Indications of Interest (IOIs) and receive them.		Adviser, Potential Buyers.
Evaluate and negotiate term sheets.		Adviser, Seller.
Potentially conduct additional rounds of bidding.		Adviser, Seller, Potential Buyers.
Select final buyer / buyer(s).		Adviser, Seller.
Final Negotiations, Financing, and Deal Closing.	~1-2 months.	
Conduct final due diligence.		Adviser, Seller, Lawyers, Buyer.
Negotiate Definitive Agreement.		Adviser, Seller, Lawyers, Buyer.
Arrange debt/stock financing.		Buyer, Buyer's Advisers.
Complete regulatory filings (HSR, anti-trust, etc.).		Seller, Buyer, Lawyers.
Close / announce deal.		Adviser, Seller, Lawyers, Buyer.

In a **buy-side M&A deal**, where your bank is helping one company *buy* another one, the process is similar, but it's more about *finding* companies to acquire.

The company you're advising doesn't have to "market itself," so Step 1 is more about researching the market and finding the best acquisition targets.

In Step 2, you'll contact this initial set of potential Sellers, gauge their interest in selling, and collect information from them.

And then Steps 3 – 5 proceed as described above, but you're representing **the other party** – so you help the Buyer assess the information that Sellers send and ask follow-up questions.

And then you help the Buyer arrange financing and negotiate the final terms of the deal.

Financing… What Financing?

You know from the valuation and DCF lessons that a company can fund its operations in two ways: **Debt** and **Equity** (and Preferred Stock, but it's similar to Debt).

Just like a company can fund its operations with Debt and Equity, it can also use Debt and Equity to **acquire other companies**.

And if a company has extra cash on its Balance Sheet, it can also use Cash for acquisitions.

In a valuation, Debt is cheaper than Equity, up to a point, and the same rule applies here: Companies prefer to fund acquisitions with Debt rather than Equity because Debt is cheaper.

However, if the company has **extra Cash**, it will almost always prefer to use that Cash first because Cash is even cheaper than Debt (companies earn almost nothing on extra Cash).

Using Cash or Debt to pay for another company is straightforward.

With Equity, or Stock, it's a bit different because the Buyer can use 2 methods:

1) It can **issue new shares to OTHER investors**, get cash from those investors, and use that cash to pay for the Seller.

2) It can issue shares **directly TO the Seller** in exchange for the Seller's shares.

The financial model works the same way regardless of what happens: The Buyer always gets additional shares outstanding as a result.

These additional shares **cost** the Buyer something for the same reason that stock-based compensation costs it something: The additional shares **dilute** the company's existing investors.

For example, if an existing equity investor previously owned 11% of the company, it might own only 8% or 9% after the company uses Stock to make an acquisition.

As a result, the investor's stake *in* this company just dropped in value even though the investor didn't sell any of its stake.

Here's a summary of the different purchase methods in M&A deals:

Purchase Method:	Advantages:	Disadvantages:
Cash	Typically the cheapest method (interest earned on cash is very low). Seller gets cold, hard cash immediately. No need for time-consuming financing.	Seller also gets taxed immediately. Seller can't take advantage of potential upside in buyer's stock price.
Debt	Typically cheaper than stock (Cost of Debt vs. Cost of Equity). Seller gets cold, hard cash immediately.	Increased debt profile for combined company. Financing can be expensive/time-consuming. Seller also gets taxed immediately. Seller can't take advantage of potential upside in buyer's stock price.
Stock	*Can* be cheaper sometimes if the buyer has a high stock price and P / E multiple. Can be faster than raising debt financing. Seller gets to participate in potential upside of buyer's stock price. Seller isn't taxed until stock is sold.	More risk for the seller since the buyer's share price could change. There may be lock-up periods for the stock and the seller might have to hold it for a long time before selling. Fixed shares vs. fixed value could make a big impact on the seller if the buyer's share price changes a lot.

Mergers vs. Acquisitions vs….

There is no mechanical difference between a "merger" and an "acquisition." The only difference is that the Buyer and Seller tend to be closer in size in a merger, while the Buyer tends to be much bigger in an acquisition.

If the companies are about the same size, the Buyer is unlikely to have enough Cash or enough Debt capacity to acquire the Seller through one of those.

So you'll see 100% Stock or mostly Stock deals far more often in mergers.

The **ownership split** is also far more important in mergers and can be a major point of disagreement as negotiations progress.

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Key Rule #2: Mechanics of EPS Accretion/Dilution

To assess the impact of an M&A deal, you create a **merger model** in Excel that:

- **Summarizes** the financial profiles of the Buyer and Seller, including projections and each company's Equity Value and Enterprise Value.
- Lists the **purchase price**, i.e. the amount the Buyer is planning to pay for the Seller, and the mix of Cash, Debt, and Stock the Buyer will use.
- Includes other **key terms** of the deal, such as the interest rates on Cash and Debt and estimates for **synergies** – ways to boost revenue or cut costs.
- Shows what the Buyer and Seller look like as a **combined entity** and how the **combined EPS** compares with the Buyer's standalone EPS.

Besides the shareholder concerns, there is another reason why EPS is the key metric in this analysis: **It's the only easy-to-calculate metric that captures the FULL impact of the deal**.

Metrics such as EBITDA and NOPAT will never capture the effects of the deal because they are *before* Interest Income and Interest Expense and they do not reflect the share count.

Even if you created new metrics, such as EBITDA per Share or NOPAT per Share, they would still exclude Net Interest Expense.

The only other metrics that could capture the **FULL** impact of the deal are Free Cash Flow per Share and Levered Free Cash Flow per Share.

And those metrics are less than ideal because they're more time-consuming to calculate than EPS and tend to be far more volatile.

Here's the step-by-step process for building a **simple** EPS accretion/dilution analysis, otherwise known as a merger model:

Step 1: Get the Financial Stats for the Buyer and Seller

At the minimum, you need each company's **Current Equity Value** and **Net Income**, along with everything that goes into those calculations – Current Share Price, Shares Outstanding, Pre-Tax Income, and Tax Rate.

Here are the assumptions for our *very creatively named* "Companies A and B":

Transaction Assumptions - Year 1 of Illustrative M&A Deal

Company A acquires Company B. Please use the following figures to model the deal:

Company A Current Share Price:	$ 7.00	Company B Current Share Price:	$ 5.00
Company A Diluted Shares (Millions):	100.000	Company B Diluted Shares:	100.000
Company A Current Equity Value:	$ 700.0	Company B Current Equity Value:	$ 500.0
Company A Pre-Tax Income:	$ 100.0	Company B Pre-Tax Income:	$ 50.0
Company A Tax Rate:	40.0%	Company B Tax Rate:	40.0%
Company A Net Income:	$ 60.0	Company B Net Income:	$ 30.0

A merger model is always based on the **PROJECTED** figures in the year after the deal closes. So you must have the *projected* Revenue, Operating Income, Pre-Tax Income, Net Income, etc. for each company.

Step 2: Determine the Purchase Price and Cash/Debt/Stock Mix

In the section on Precedent Transactions, we mentioned how the Buyer must pay a **control premium** to acquire a Seller, at least if the Seller is a public company.

That same concept comes up here because we must assume that the Buyer pays a **premium** to do the deal.

So if the Seller's share price is currently $5.00, the Buyer might pay $6.00 per share, which represents a 20% premium.

In real life, you would **value** the Seller – Company B – with a DCF, Public Comps, and Precedent Transactions to make sure this price is reasonable.

You'd also look at comparable deals to verify that the 20% premium is within the range of the premiums paid in those recent transactions.

Here's our setup:

Transaction Assumptions - Year 1 of Illustrative M&A Deal

Company A acquires Company B. Please use the following figures to model the deal:

Company A Current Share Price:	$ 7.00	Company B Current Share Price:	$ 5.00
Company A Diluted Shares (Millions):	100.000	Company B Diluted Shares:	100.000
Company A Current Equity Value:	$ 700.0	Company B Current Equity Value:	$ 500.0
Company A Pre-Tax Income:	$ 100.0	Company B Pre-Tax Income:	$ 50.0
Company A Tax Rate:	40.0%	Company B Tax Rate:	40.0%
Company A Net Income:	$ 60.0	Company B Net Income:	$ 30.0
Premium Paid for Company B:	20.0%	Pre-Tax Synergies (Cost-savings opportunities):	$ -
Company B - Purchase Equity Value:	=+Seller_Share_Price*Seller_Shares*(1+Premium_Paid)		

The **Purchase Equity Value** here is $600 million because $5.00 * 100 million shares * (1 + 20%) = $600 million.

Then, you estimate how much of this $600 million can be funded with Cash, Debt, and Stock.

"But wait!" you say, "Shouldn't we use the Purchase Enterprise Value for this calculation instead? Enterprise Value represents the true cost of acquiring the company!"

Yup, that is a common question… so here's the deal:

In merger models, you always **start** with the Seller's Purchase Equity Value because, at *the bare minimum*, the Buyer needs to pay that much to acquire the Seller's shares.

Beyond that, **the price the Buyer pays is NOT necessarily the Purchase Enterprise Value**.

Why?

1) The Buyer doesn't just "get" all the Seller's Cash – even if the Seller has some excess Cash, it may choose to keep all of it.

2) The Buyer *may* choose to "refinance" the Seller's Debt by replacing it with new Debt in the same amount with the same terms. So existing Debt may not cost the Buyer anything.

3) Or the Buyer may choose to completely repay the Seller's Debt using the deal funding, in which case the existing Debt *does* increase the purchase price.

4) The treatment of items like Unfunded Pensions is "murky" – the Buyer doesn't need to pay for them immediately, so they don't increase the upfront price. But they will cost the Buyer something extra in the long term.

5) There are also transaction fees and integration costs associated with the deal that may add to the upfront price.

So although Enterprise Value may be closer to the true cost of acquiring a company, that is NOT always true, and it is NOT the real definition of Enterprise Value.

In this simple example, we're assuming that the Seller has no Debt and no Cash, so Purchase Equity Value = Purchase Enterprise Value.

Once you have the purchase price, you estimate the percentages of Cash, Stock, and Debt that can be used to fund the deal.

You start by looking at the Buyer's Cash balance and using as much of it as possible; in most cases, it is the cheapest method.

Then, if you still need additional funding, you use a reasonable amount of Debt.

For example, maybe the Buyer has Debt of $300 million and EBITDA of $100 million for a Debt / EBITDA ratio of 3x.

Similar companies have Debt / EBITDA ratios of between 4x and 5x, so it's reasonable for the Buyer to raise an additional $200 million of Debt, taking it to 5x Debt / EBITDA.

It might even be able to go beyond that if the Seller has significant EBITDA.

If you still need more funding after that, you then move to Stock.

There are fewer hard limits on the amount of Stock a Buyer can issue, but most companies don't want to give up majority ownership to make an acquisition.

Some companies will only issue Stock up to the level at which a deal remains accretive.

In this example, we assumed a simple 1/3, 1/3, and 1/3 mix of Cash, Debt, and Stock.

We didn't do any of the checks above, but instead assumed that these were reasonable amounts of Cash, Debt, and Stock for the Buyer.

Once you have that, you can lay out the Cash, Debt, and Stock side-by-side, along with the Cost of each method:

Premium Paid for Company B:	20.0%
Company B - Purchase Equity Value:	**$ 600.0**
% Cash:	33.3%
% Debt:	33.3%
% Stock:	33.3%
Company A's P / E:	11.7 x
Company B's P / E @ 20.0% Premium:	20.0 x

Pre-Tax Synergies (Cost-savings opportunities):

	Amount:	Pre-Tax Cost:	After-Tax Cost:
Cash Used:	$ 200.0	3.0%	1.8%
Debt Issued:	200.0	6.0%	3.6%
Company A Shares Issued (Millions):	28.571		8.6%
Company B Yield @ 20.0% Premium:			5.0%
Weighted "Cost" for Company A:			4.7%

Shares Issued is based on $600 million * 33.3% / Company A's Current Share Price.

So if its Share Price is higher, fewer shares will be issued, and vice versa.

The Cost of Debt is just like the Cost of Debt in the WACC calculation: It's the interest rate the company would have to pay if it issued *additional* Debt.

You estimate it in the same way as well: Look at the YTM or coupon rates of the company's current Debt or the YTM or coupon rates for the Debt of peer companies.

The Cost of Cash is based on the interest rate the company is currently earning on its Cash balance, which tends to be very low.

The company *could* earn more by investing this Cash in the stock market or corporate bonds, but then its **risk profile** would change.

The Cost of Cash is supposed to be similar to the Risk-Free Rate, so the risk profile of Cash must be similar to the risk profile of government bonds.

The Cost of Equity is based on **Buyer Net Income / Buyer Equity Value**, or the *reciprocal* of the Buyer's P / E multiple.

Yes, that's different from how you calculate Cost of Equity in the WACC calculation.

It's different because you are looking at the Cost of Equity in terms of *its impact on the company's EPS*, not the company's overall Discount Rate.

WACC is a theoretical concept that companies don't necessarily prioritize in real life, but *every* CFO alive cares about his/her Net Income and EPS numbers.

So you can think of *this* Cost of Equity as "The Practical Version."

In most cases, this method will still produce values that are higher than the After-Tax Costs of Debt and Cash, so the *results* are not much different.

Neither method is "correct" – they're just different. **As we mentioned before, measuring the Cost of Equity is always subjective; this is just another way to do it.**

Once we've calculated all the Costs, we can calculate the **Weighted Cost of Acquisition**:

- **Weighted Cost of Acquisition** = % Cash Used * After-Tax Cost of Cash + % Debt Used * After-Tax Cost of Debt + % Stock Used * After-Tax Cost of Stock

This Weighted Cost tells us how much the Buyer is "giving up," in percentage terms, to acquire the Seller.

We can also calculate **Company B's Yield** at this 20% premium.

Its Yield equals its Net Income divided by the Purchase Equity Price, or $30 million / $600 million = 5.0% here.

This "Yield" is how much you get in Net Income for each $1.00 spent on Company B's stock.

Whether a deal is accretive or dilutive depends on how the Seller's Yield compares with the Weighted Cost of Acquisition.

Here's how we calculated the Weighted Cost here:

18			Company B - Purchase Equity Value:			$	600.0																		
19																									
20																			Pre-Tax		After-Tax				
21			% Cash:				33.3%												Amount:		Cost:		Cost:		
22			% Debt:				33.3%												Cash Used:	$	200.0		3.0%		1.8%
23			% Stock:				33.3%												Debt Issued:		200.0		6.0%		3.6%
24																			Company A Shares Issued (Millions):		28.571				8.6%
25			Company A's P / E:				11.7 x												Company B Yield @ 20.0% Premium:						5.0%
26			Company B's P / E @ 20.0% Premium:				20.0 x												Weighted "Cost" for Company A:						=+Pct_Cash*M21+Pct_Debt*M22+Pct_Stock*M23
27																			The Deal Will Be:						Accretive

Accretion/dilution follows these rules:

- **Weighted Cost of Acquisition < Yield of Seller:** Accretive
- **Weighted Cost of Acquisition = Yield of Seller:** Neutral
- **Weighted Cost of Acquisition > Yield of Seller:** Dilutive

In this case, the Weighted Cost of Acquisition is 4.7%, and Company B's Yield is 5.0%.

Company A is paying *less* than what Company B is yielding, which makes the deal accretive.

If the Pre-Tax Cost of Debt increased to 10.0%, making the Weighted Cost of Acquisition 5.5%, the opposite would happen:

	Amount:	Pre-Tax Cost:	After-Tax Cost:
Cash Used:	$ 200.0	3.0%	1.8%
Debt Issued:	200.0	6.0%	3.6%
Company A Shares Issued (Millions):	28.571		8.6%
Company B Yield @ 20.0% Premium:			5.0%
Weighted "Cost" for Company A:			4.7%
The Deal Will Be:			**Accretive**

	Amount:	Pre-Tax Cost:	After-Tax Cost:
Cash Used:	$ 200.0	3.0%	1.8%
Debt Issued:	200.0	10.0%	6.0%
Company A Shares Issued (Millions):	28.571		8.6%
Company B Yield @ 20.0% Premium:			5.0%
Weighted "Cost" for Company A:			5.5%
The Deal Will Be:			**Dilutive**

There's also a special rule for **100% Stock deals**: You can look at the P / E multiples of the Buyer and Seller (*at* the Seller's Purchase Equity Value) to see if the deal is accretive or dilutive.

- **100% Stock Deal, Buyer's P / E > Seller's P / E at Purchase Price**: Accretive
- **100% Stock Deal, Buyer's P / E = Seller's P / E at Purchase Price**: Neutral
- **100% Stock Deal, Buyer's P / E < Seller's P / E at Purchase Price**: Dilutive

In a 100% Stock deal, the Cost of Acquisition is the reciprocal of the Buyer's P / E multiple.

So if the Buyer's P / E is 10x and the Seller's Purchase P / E is 5x, the Buyer's Weighted Cost of Acquisition is 1/10, or 10%, and the Seller's Yield is 1/5, or 20%.

The Buyer is paying **less** than what the Seller is yielding, so the deal will boost its EPS.

But if the Buyer's P / E were 10x and the Seller's Purchase P /E were 20x, the Buyer's Weighted Cost would be 1/10, or 10%, and the Seller's Yield would be 1/20, or 5%.

The Buyer is paying **more** than what the Seller is yielding, so the deal will reduce its EPS.

% Cash:	0.0%
% Debt:	0.0%
% Stock:	100.0%
Company A's P / E:	11.7 x
Company B's P / E @ 20.0% Premium:	20.0 x

	Amount:	Pre-Tax Cost:	After-Tax Cost:
Cash Used:	$ -	3.0%	1.8%
Debt Issued:	-	6.0%	3.6%
Company A Shares Issued (Millions):	85.714		8.6%
Company B Yield @ 20.0% Premium:			5.0%
Weighted "Cost" for Company A:			8.6%
The Deal Will Be:			**Dilutive**

It's a 100% Stock deal, and the Buyer's P / E multiple is less than the Seller's, making its Weighted Cost greater than the seller's Yield. So the deal will be Dilutive.

% Cash:	0.0%
% Debt:	0.0%
% Stock:	100.0%
Company A's P / E:	23.3 x
Company B's P / E @ 20.0% Premium:	20.0 x

	Amount:	Pre-Tax Cost:	After-Tax Cost:
Cash Used:	$ -	3.0%	1.8%
Debt Issued:	-	6.0%	3.6%
Company A Shares Issued (Millions):	85.714		4.3%
Company B Yield @ 20.0% Premium:			5.0%
Weighted "Cost" for Company A:			4.3%
The Deal Will Be:			**Accretive**

It's a 100% Stock deal, and the Buyer's P / E multiple is greater than the Seller's, making its Weighted Cost less than the Seller's Yield. So the deal will be Accretive.

Step 3: Combine Both Companies' Pre-Tax Incomes and Adjust for the Acquisition Effects

Once you put all the assumptions in place, you **add together** the Pre-Tax Incomes of the Buyer and Seller and factor in the **acquisition effects**:

- **Debt:** If an Acquirer uses Debt, it will have to pay Interest Expense on that Debt in the future, which will reduce its Pre-Tax Income, its Net Income, and its EPS.

- **Stock:** If an Acquirer uses Stock, it will have additional shares outstanding in the future, which will reduce its EPS.

- **Cash:** If an Acquirer uses Cash, it will give up *future* Interest Income on that Cash, which will reduce its Pre-Tax Income, its Net Income, and its EPS. This is called "Foregone Interest on Cash."

Many students think the Foregone Interest on Cash is "just an opportunity cost" or "is not a true cash cost," **but that is incorrect: It IS a true cash cost**.

It is a real cash cost because you add together both companies' *projected* Pre-Tax Incomes before applying the Buyer's tax rate to calculate the Combined Net Income.

And those *projected* Pre-Tax Incomes **already include** the *expected* Interest Income earned on Cash by both companies.

Let's say that the Buyer has $200 in projected Pre-Tax Income and the Seller has $100 in projected Pre-Tax Income.

The Buyer's Pre-Tax Income consists of $180 in Operating Income and $20 in Interest Income.

If the Buyer uses Cash to fund the deal and earns $10 less in Interest Income as a result, **you must subtract this $10 from the Combined Pre-Tax Income**.

If you did **not** do this, you would be pretending that the Buyer *still earns* $20 in Interest Income even though its Cash Balance is much lower.

But that's incorrect: The Buyer **won't** be able to earn as much in Interest Income.

Before you combine both companies' Pre-Tax Incomes and factor in these acquisition effects, you can set up the analysis so that you see the results at different premiums:

		Premium to Paid to Company B's Share Price:				
EPS Accretion / Dilution Analysis	*Units*	**0.0%**	**10.0%**	**20.0%**	**30.0%**	**40.0%**
Company A Share Price:	*$ as Stated*	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00
Company B Offer Price per Share:	*$ as Stated*	5.00	5.50	6.00	6.50	7.00
Company B - Purchase Equity Value:	*$ M*	**500.0**	**550.0**	**600.0**	**650.0**	**700.0**
Cash Used:	*$ M*	166.7	183.3	200.0	216.7	233.3
Debt Issued:	*$ M*	166.7	183.3	200.0	216.7	233.3
Company A Shares Issued:	*M Shares*	23.810	26.190	28.571	30.952	33.333
After-Tax Cost of Cash:	*%*	1.8%	1.8%	1.8%	1.8%	1.8%
After-Tax Cost of Debt:	*%*	3.6%	3.6%	3.6%	3.6%	3.6%
After-Tax Cost of Company A Stock:	*%*	8.6%	8.6%	8.6%	8.6%	8.6%
Weighted "Cost" for Company A:	*%*	4.7%	4.7%	4.7%	4.7%	4.7%
After-Tax Yield of Company B:	*%*	6.0%	5.5%	5.0%	4.6%	4.3%
The Deal is Predicted to Be:	*Text*	**Accretive**	**Accretive**	**Accretive**	**Dilutive**	**Dilutive**

The rule for predicting accretion / dilution based on the Weighted Cost of Acquisition and the Seller's Yield holds up ONLY if you keep the analysis simple and include the impact of Cash, Debt, and Stock, but nothing else.

And then you can combine the Pre-Tax Incomes and factor in the acquisition effects:

EPS Accretion / Dilution Analysis	Units	Premium to Paid to Company B's Share Price: 0.0%	10.0%	20.0%	30.0%	40.0%
Company A Share Price:	$ as Stated	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00
Company B Offer Price per Share:	$ as Stated	5.00	5.50	6.00	6.50	7.00
Company B - Purchase Equity Value:	$ M	**500.0**	**550.0**	**600.0**	**650.0**	**700.0**
Cash Used:	$ M	166.7	183.3	200.0	216.7	233.3
Debt Issued:	$ M	166.7	183.3	200.0	216.7	233.3
Company A Shares Issued:	M Shares	23.810	26.190	28.571	30.952	33.333
(+) Company A Pre-Tax Income:	$ M	100.0	100.0	100.0	100.0	100.0
(+) Company B Pre-Tax Income:	$ M	50.0	50.0	50.0	50.0	50.0
(-) Foregone Interest on Cash:	$ M	(5.0)	(5.5)	(6.0)	(6.5)	(7.0)
(-) Interest Paid on New Debt Issued:	$ M	(10.0)	(11.0)	(12.0)	(13.0)	(14.0)
(+) Synergies:	$ M	-	-	-	-	-
Combined Pre-Tax Income:	$ M	**135.0**	**133.5**	**132.0**	**130.5**	**129.0**

Multiply the Cash Used by the Interest Rate on Cash to get the Foregone Interest on Cash in each case.

Multiply the Debt Issued by the Interest Rate on Debt to get the Interest Paid on New Debt Issued.

You calculate "Company A Shares Issued" with (Purchase Equity Value * % Stock) / Company A Share Price.

You should already see one potential problem with that calculation: **What if the Buyer's share price changes?**

Step 4: Calculate the Combined Net Income and EPS

Next, you tax-effect the Combined Pre-Tax Income at the **Buyer's tax rate** to calculate the Combined Net Income.

Then, you add the Shares Issued in the deal to the Buyer's existing share count to get the Total Shares Outstanding.

The Seller's shares go away because it no longer exists as an independent entity – Company A has acquired all of Company B's shares and removed them from the market.

You then divide the Combined Net Income by the Total Shares Outstanding to determine the Combined EPS:

49							
50	(+) Company A Pre-Tax Income:	$ M	100.0	100.0	100.0	100.0	100.0
51	(+) Company B Pre-Tax Income:	$ M	50.0	50.0	50.0	50.0	50.0
52	(-) Foregone Interest on Cash:	$ M	(5.0)	(5.5)	(6.0)	(6.5)	(7.0)
53	(-) Interest Paid on New Debt Issued:	$ M	(10.0)	(11.0)	(12.0)	(13.0)	(14.0)
54	(+) Synergies:	$ M	-	-	-	-	-
55	**Combined Pre-Tax Income:**	$ M	**135.0**	**133.5**	**132.0**	**130.5**	**129.0**
56							
57	(-) Combined Income Tax Provision:	$ M	=-I55*Buyer_Tax_Rate		(52.8)	(52.2)	(51.6)
58							
59	**Combined Net Income:**	$ M	**$ 81.0**	**$ 80.1**	**$ 79.2**	**$ 78.3**	**$ 77.4**
60							
61	(+) Company A - Diluted Shares:	M Shares	100.000	100.000	100.000	100.000	100.000
62	(+) Shares Issued in Transaction:	M Shares	23.810	26.190	28.571	30.952	33.333
63	**Total Diluted Shares:**	M Shares	**123.810**	**126.190**	**128.571**	**130.952**	**133.333**
64							
65	**Combined Earnings Per Share (EPS):**	$ / Share	**$ 0.65**	**$ 0.63**	**$ 0.62**	**$ 0.60**	**$ 0.58**

You use the **Buyer's** tax rate, even though this may not be exactly correct in real life.

You add the Shares Issued, based on the Buyer's Share Price, to the Buyer's existing share count.

Here are the most common questions on this part:

- **Should You Really Use the Buyer's Tax Rate?**

In interviews, case studies, and modeling tests, **yes**. This is the standard assumption because the Seller becomes a subsidiary of the Buyer after the deal closes.

In real life, this assumption may not hold up because tax laws are complex; for example, if the companies are based in different countries, the Seller may still pay taxes based on the rates in its country.

- **What Happened to the Seller's Shares?**

They are removed from the combined share count because the Seller is no longer an independent entity after the deal closes.

The shares don't "disappear," but they are **removed from the market** – it's the same thing that happens companies repurchase shares.

- **Is It Correct to Use the Buyer's Current Share Price to Determine the Shares Issued in the Transaction?**

No, but you do it in simple analyses anyway. The problem is that the Buyer's share price might **change** between deal announcement and deal close.

In a more complex analysis, you account for this possibility by creating sensitivity tables that show what happens across a **range** of share prices for the Buyer.

Step 5: Calculate the EPS Accretion/Dilution and Draw Conclusions

In the final step, you calculate **EPS accretion/dilution** by comparing the Combined EPS with the Buyer's Standalone EPS from before the deal took place:

58							
59	**Combined Net Income:**	*$ M*	**$ 81.0**	**$ 80.1**	**$ 79.2**	**$ 78.3**	**$ 77.4**
60							
61	(+) Company A - Diluted Shares:	*M Shares*	100.000	100.000	100.000	100.000	100.000
62	(+) Shares Issued in Transaction:	*M Shares*	23.810	26.190	28.571	30.952	33.333
63	**Total Diluted Shares:**	*M Shares*	**123.810**	**126.190**	**128.571**	**130.952**	**133.333**
64							
65	**Combined Earnings Per Share (EPS):**	*$ / Share*	=+I59/I63	**$ 0.63**	**$ 0.62**	**$ 0.60**	**$ 0.58**
66							
67	Company A - Standalone EPS:	*$ / Share*	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60
68							
69	Accretion / (Dilution) - $:	*$ / Share*	$ 0.05	$ 0.03	$ 0.02	$ (0.00)	$ (0.02)
70	Accretion / (Dilution) - %:	*%*	9.0%	5.8%	2.7%	(0.3%)	(3.2%)
71							
72	**Was Our Prediction Correct?**		**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

If the Combined EPS is higher than the Buyer's Standalone EPS, the deal is **accretive**; if the Combined EPS is lower, the deal is **dilutive**; and if it's the same, the deal is **neutral**.

Once you have these results, you can **use the analysis in real life** in a few ways:

1. **Deal Screening** – You might set up simple models like the one above to screen for potential acquisitions that make sense for your client. While this simple analysis doesn't give you the whole story, it *can* tell you whether or not a deal is plausible.

2. **Pitching Ideas to Clients** – You might create this type of analysis and show it to clients or potential clients to propose deals to them. For example, you might say, "We should consider talking to Microsoft as a potential Buyer because an acquisition of your company would be highly accretive, even at a high premium."

3. **Deal Negotiations** – As a deal progresses, you might use the output from a merger model to negotiate a higher price or get better terms. For example, you might say to the Buyer, "Our client (the Seller) is willing to accept more in Stock and less in Cash if you agree to raise the price by 5%; even at that level, the deal is accretive for you."

Companies never "decide" to do deals based on merger models.

It's a supporting tool used to screen for ideas, examine potential transactions, and support deal negotiations.

Why This Simple Analysis Doesn't Give You the Whole Story

The section above presented a *simplified* merger model to teach you the **mechanics**.

Here are just a few of the oversights in this analysis:

- **Share Prices and Tax Rates:** As mentioned above, the Buyer's share price won't necessarily stay the same after a deal is announced. And the Combined Tax Rate may not necessarily be the Buyer's tax rate.

- **Purchase Price:** We've assumed that the purchase price is the Seller's Purchase Equity Value. But in real life, the Buyer may refinance the Seller's Debt and pay for other fees associated with the deal. Sometimes the Seller can even use a portion of its Cash balance to fund the deal, further complicating the purchase price.

- **Synergies:** "Synergies" are ways for the Combined Company to boost revenue or cut costs after the acquisition takes place. For example, maybe the Combined Company no longer needs 10 separate offices – it can consolidate and move everyone into 8 offices instead, which will reduce its rental expense.

Even a modest amount of Synergies can throw off our predictions:

Weighted "Cost" for Company A:	%	4.7%	4.7%	4.7%	4.7%	4.7%
After-Tax Yield of Company B:	%	6.0%	5.5%	5.0%	4.6%	4.3%
The Deal is Predicted to Be:	*Text*	**Accretive**	**Accretive**	**Accretive**	**Dilutive**	**Dilutive**
(+) Company A Pre-Tax Income:	*$ M*	100.0	100.0	100.0	100.0	100.0
(+) Company B Pre-Tax Income:	*$ M*	50.0	50.0	50.0	50.0	50.0
(-) Foregone Interest on Cash:	*$ M*	(5.0)	(5.5)	(6.0)	(6.5)	(7.0)
(-) Interest Paid on New Debt Issued:	*$ M*	(10.0)	(11.0)	(12.0)	(13.0)	(14.0)
(+) Synergies:	*$ M*	10.0	10.0	10.0	10.0	10.0
Combined Pre-Tax Income:	*$ M*	**145.0**	**143.5**	**142.0**	**140.5**	**139.0**
(-) Combined Income Tax Provision:	*$ M*	(58.0)	(57.4)	(56.8)	(56.2)	(55.6)
Combined Net Income:	*$ M*	**$ 87.0**	**$ 86.1**	**$ 85.2**	**$ 84.3**	**$ 83.4**
(+) Company A - Diluted Shares:	*M Shares*	100.000	100.000	100.000	100.000	100.000
(+) Shares Issued in Transaction:	*M Shares*	23.810	26.190	28.571	30.952	33.333
Total Diluted Shares:	*M Shares*	**123.810**	**126.190**	**128.571**	**130.952**	**133.333**
Combined Earnings Per Share (EPS):	*$ / Share*	**$ 0.70**	**$ 0.68**	**$ 0.66**	**$ 0.64**	**$ 0.63**
Company A - Standalone EPS:	*$ / Share*	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60
Accretion / (Dilution) - $:	*$ / Share*	$ 0.10	$ 0.08	$ 0.06	$ 0.04	$ 0.03
Accretion / (Dilution) - %:	*%*	17.1%	13.7%	10.4%	7.3%	4.2%
Was Our Prediction Correct?		**Yes**	**Yes**	**Yes**	**No**	**No**

We predicted that the deal would be dilutive in this range of premiums, but the $10 million of synergies end up making the deal **accretive** instead. This is just one example of how the simple rules for EPS accretion / dilution don't always hold up in real life.

- **Other Acquisition Effects:** Accounting rules require the Buyer to re-assess the value of the Seller's Assets and Liabilities when a deal takes place. If the values of Assets like

PP&E change, there might be additional Depreciation or Amortization. In many deals, new items, such as Other Intangible Assets, also get created.

Besides these additional factors, there are other problems with merger models and EPS accretion/dilution:

1. **EPS is Not Always a Meaningful Metric** – For example, if the Acquirer is a private company, it probably doesn't care much about EPS. If the Acquirer has negative Net Income, it also doesn't care about EPS.

2. **Net Income and Cash Flow Are Very Different** – Deals that look great based on EPS might look terrible based on cash flow. This one goes back to the *reason* the financial statements exist: There's a difference between profits and cash flows.

3. **Merger Models Don't Capture the Risk of M&A Deals** – 100% Cash deals are almost always accretive. If the Acquirer earns 1.0% on Cash, that's a 0.6% After-Tax Cast of Cash. So the Seller's P / E would have to be *above* 166x for the deal to be dilutive.

But it's **very risky to acquire another company**. The integration might go wrong, the teams might not mesh, there could be legal issues, customers might not like the deal, and so on – and the analysis doesn't capture any of these risks.

4. **Merger Models Don't Reflect the Qualitative Factors** – You can't "measure" cultural fit or the ability of management teams to work together, for example. But they're both critical for deals to be successful.

So while it's important to understand the mechanics of merger models, you also have to understand their **drawbacks**.

The remaining sections in this guide will be devoted to **the full story behind merger models**: How you can make simple merger models more accurate and how you can use other analyses to assess M&A deals more effectively.

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Key Rule #3: Determining the Purchase Price and Payment Method

With the **purchase price** in an M&A deal, there are 2 key questions:

1) What is the Target's **Implied Value?** In other words, how much *should* an Acquirer pay for it based on valuation methodologies such as the DCF?

2) What will the Buyer *really* pay for the Seller? To answer this question, you have to look at the treatment of Debt, Cash, and potentially other items such as Preferred Stock.

If you're acquiring a **public company**, you almost always need to pay a **premium** to that company's current share price to do the deal.

If the company's shares are currently trading at $12.00, it would never sell 100% of its shares for just $12.00; shareholders could get that much from selling their shares on the market!

Investors need a higher price to **incentivize** them to sell *everything*.

So even if your DCF and Public Comps say that a company is worth $10.00 per share, a Buyer can't *acquire* that company for $10.00 per share if its share price is currently $15.00.

In acquisitions of public companies, therefore, you use the valuation methodologies to **confirm or deny** that the purchase price is reasonable.

For example, assume that you get the following results for a company:

- **Current Share Price:** $15.00
- **Average Premium Paid in This Market for Acquired Companies:** 30%
- **Calculated Offer Price for Company:** $19.50
- **Valuation Output:** The company's Implied Share Price is between $15.00 and $25.00 per share based on all the methodologies.

Based on this data, a $19.50 per share offer price is reasonable. It reflects the average premium in this market, and it's exactly in the middle of the range of Implied Share Prices.

But if the Implied Share Prices ranged from $8.00 to $15.00, then a $19.50 offer price might **not** be so reasonable.

We might advise the Buyer to stay away or offer a lower premium in that case.

For a **private Seller**, the purchase price is linked to the company's Implied Value from the valuation methodologies more closely.

There isn't a "minimum price" because private companies don't have easy-to-establish share prices.

Instead, the "minimum price" is the lowest number the owners of the company will accept.

In merger models, you normally base a private company's purchase price on a simple multiple such as EV / EBIT or EV / EBITDA.

But What's the *Real* Price the Buyer Pays?

This is where the concept of "purchase price" gets tricky.

At the minimum, the Acquirer must pay for all the Target's shares, so the Purchase Equity Value is always the *starting point* for the purchase price.

Beyond that, the exact purchase price depends on the terms of the deal.

Here are the main factors that affect it:

Factor #1: Treatment of the Seller's Existing Debt

In theory, Debt should increase the purchase price because in most cases, Debt must be refinanced when a company is acquired.

So the Buyer has to pay off the Debt using its cash balance or replace the existing Debt with new Debt.

But those methods are **not equivalent**.

If a Buyer *repays* the Seller's existing Debt using cash, two things happen:

1) The Seller's projected Interest Expense (and principal repayments) go away.

2) The Buyer's projected Interest Income decreases because it has less in Cash.

So in this case, the Debt repayment will **increase** the purchase price.

The real amount the Buyer pays will be closer to Purchase Equity Value + Seller's Debt.

On the other hand, if the Buyer simply *replaces* the Seller's existing Debt with new Debt, the effects are quite different:

1) The Seller's projected Interest Expense is still there, but it might be *a bit different* if the interest rate on the new Debt is different.

2) The Buyer's projected Interest Income remains the same because it has the same amount of Cash.

In *most* cases, the Buyer uses this second option and simply replaces the existing Debt.

And then there are even stranger scenarios – for example, the Buyer might repay *its own Debt*, using cash, because it wants to "clean up" its capital structure in the deal.

That repayment will change its projected Interest Expense and projected Interest Income, so it must affect the purchase price.

So there isn't a universal rule for the treatment of Debt in M&A deals, so you have to read the terms of the deal to make the right decision.

Here's a summary:

- **Seller's Debt is Assumed with No Changes:** Does **not** increase the amount the Buyer "really pays" for the Seller. Interest doesn't change.

- **Seller's Debt is Repaid with the Buyer's Cash:** *Does* increase the amount the Buyer "really pays." Interest changes.

- **Seller's Debt is Replaced with New Debt:** Does **not** increase the amount the Buyer "really pays," but it *may* affect the Interest slightly.

Factor #2: Treatment of the Seller's Existing Cash

If an Acquirer buys a Target that has $100 million in Cash on its Balance Sheet, it "gets" that Cash, reducing the effective purchase price, right?

No, not necessarily.

Remember that all companies must maintain **minimum Cash balances** to continue operating.

This minimum Cash balance *is* a core-business Asset, but as a simplification, you lump all Cash together and count it as *non-core* when moving from Equity Value to Enterprise Value.

But in real life, this simplification breaks down: An Acquirer can't necessarily "take" the Seller's entire Cash balance for itself.

Even if the Seller has excess Cash, it may choose to keep it or allocate it to future projects.

To make things even trickier, sometimes the **Combined Cash Balance** is used to fund the deal.

So not only does the Buyer use its Cash to purchase the Seller's shares, but *the Seller* uses some of *its* Cash to repurchase its own shares.

So you have to review the deal terms to determine the proper treatment of Cash.

Factor #3: Transaction Fees, Unfunded Pensions, and Other Items

In any M&A deal, the companies involved pay fees to bankers, accountants, auditors, and lawyers, and to the parties providing the financing for the deal.

Those fees increase the effective purchase price, but sometimes it is unclear whether the Buyer or Seller is paying.

Items such as Unfunded Pensions and Capital Leases tend to **stay the same** in M&A deals.

You do add them when moving from Equity Value to Enterprise Value, but unlike Debt, **they don't (necessarily) have to be refinanced when the company's ownership changes.**

But you have to read the terms of the deal to apply the correct treatment.

Sometimes there are also issues with **Working Capital**: Some Sellers may need *additional* Working Capital to pay for items like Inventory and continue operating smoothly.

This issue comes up more often in distressed/restructuring deals, but it's also a point in many acquisitions of private companies.

The Buyer and Seller often agree on a "normalized level of Working Capital," and the Buyer will pay more or less depending on the Seller's Working Capital level at the deal close.

The Bottom Line: There is a big difference between a company's *Implied Value*, as determined by the Equity Value or Enterprise Value produced by the valuation methodologies, and the actual price a Buyer must pay for the company in an M&A deal.

The "real" purchase price in an M&A deal is **NOT** necessarily the Seller's Purchase Equity Value or Purchase Enterprise Value – in fact, it almost never is.

If the Buyer repays the Seller's Debt using the transaction funding, the effective price will be *closer* to the Purchase Enterprise Value, but the treatment of Cash, transaction fees, and other items will create differences.

When you see language like "Including assumption of Net Debt" in press releases, that refers to the approximate Purchase Enterprise Value: Purchase Equity Value + Debt – Cash.

But it's not what the Buyer actually pays. It's just a way to calculate purchase multiples like EV / EBITDA.

To calculate how much the Buyer pays, you must create a **Sources & Uses schedule**, which we'll cover in an upcoming section.

Deal Feasibility and Payment Methods

In most cases, the Buyer prefers to use Cash, then Debt, and then Stock to fund a deal since Cash tends to be the cheapest, followed by Debt, and then Stock.

There's a significant implication of that statement: **A Buyer might not be able to *afford* a Seller**.

Intuitively, you see how that works: Could a 10-person company ever "acquire" Google, Facebook, or Apple?

No! The company doesn't have hundreds of billions in Cash, it couldn't issue that much Debt, and it couldn't issue that much Stock – nor would the shareholders of Google, Apple, or Facebook ever agree to a deal.

But let's go beyond the intuition and look at **the numbers** that explain this principle.

To determine what a Buyer can afford, you have to look at its Current Equity Value (its Market Cap), its Cash and Debt balances, and its Debt / EBITDA and EBITDA / Interest ratios.

Let's say the Buyer has the following profile:

- **Current Equity Value:** $500 million
- **Cash:** $200 million; **Minimum Cash:** $50 million
- **Debt:** $100 million
- **EBITDA:** $33 million
- **Debt / EBITDA:** 3.0x; **EBITDA / Interest:** 4.1x
- **Debt / EBITDA for Comparable Levered Companies:** 5.0x; **EBITDA / Interest:** 2.5x

Without knowing *anything* about the potential Seller, you can already tell a few things:

- **Cash:** The Buyer could use a *maximum* of $150 million in Cash in any deal.

- **Debt:** The Buyer could raise more Debt, but probably not much more than $65 million, since $165 million of total Debt would make its Debt / EBITDA 5.0x.

  However, it might go above this level if the acquisition of the target company boosted its EBITDA (for example, if the Combined EBITDA increased to $45 million, then the Combined Company could carry up to $225 million in Debt).

- **Stock:** While the Buyer could, theoretically, issue any amount of Stock, most companies like to minimize dilution and keep deals EPS-accretive.

So it would be *very* unusual for this company to issue, say, $600 million in Stock to acquire another company. At that level, existing investors would lose control, and the deal would almost certainly be dilutive.

But a much smaller Stock issuance, such as $50 or $100 million, might work.

For the **maximum amount of Stock**, you could also use the boundary between EPS accretion and dilution for the limit.

So if the deal is accretive with $150 million of Cash, $100 million of Debt, and $200 million of Stock, but it turns dilutive with over $200 million in Stock, that $200 million of Stock might be the maximum amount.

This analysis lets you answer questions such as:

1) "If the Buyer wants to acquire a Seller for $400 million, would the deal be feasible? If so, how would the Buyer pay for it?"

2) "What's the biggest acquisition the Buyer might be able to complete?"

The answer to the first question is: "Yes, the deal is feasible; the Buyer would likely use $150 million in Cash, $65 to $100 million in Debt, depending on the acquired company's EBITDA, and Stock for the remainder of $150 million to $185 million."

The answer to the second question is more subjective, but the Buyer could use $150 million in Cash and perhaps up to $100 – $150 million in Debt, depending on the Seller's EBITDA.

The Buyer's Current Equity Value is $500 million, so it would probably **not** issue more Stock than that.

So you could say the maximum deal size is $150 million + $150 million + $500 million = $800 million, but even that's a stretch.

Issuing Stock worth *half* the company's Current Equity Value ($250 million) might be more realistic and would produce a maximum deal size of $550 million.

You could also say the maximum amount of Stock is the level at which the deal turns dilutive, which you'd evaluate by solving for the % Stock that makes the Weighted Average Cost of Acquisition equal to the Seller's Yield at the purchase price.

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Key Rule #4: How Equity Value and Enterprise Value Change in M&A

We mentioned in the previous section that the "true Purchase Price" in an M&A deal is **not** the Purchase Equity Value or Purchase Enterprise Value of the Seller.

It's usually in between those numbers, depending on the treatment of Cash and Debt.

However, it's still useful to use the **concepts of Equity Value and Enterprise Value** to analyze an M&A deal because they change depending on the structure of the deal.

Different purchase methods also affect common valuation multiples such as EV / EBITDA and P / E differently.

Let's say that the Buyer – Company A – and the Seller – Company B – look like this:

Company A:			**Company B:**		
Current Equity Value (Market Cap):	**$**	**80.0**	**Current Equity Value (Market Cap):**	**$**	**40.0**
(-) Cash & Cash-Equivalents:		(60.0)	(-) Cash & Cash-Equivalents:		(10.0)
(+) Total Debt:		80.0	(+) Total Debt:		10.0
(+) Preferred Stock:		-	(+) Preferred Stock:		-
(+) Noncontrolling Interests:		-	(+) Noncontrolling Interests:		-
Current Enterprise Value:	**$**	**100.0**	**Current Enterprise Value:**	**$**	**40.0**
Operating Income (EBIT):		8.0	Operating Income (EBIT):		7.0
(+) Depreciation & Amortization:		2.0	(+) Depreciation & Amortization:		1.0
EBITDA:	**$**	**10.0**	**EBITDA:**	**$**	**8.0**
Net Interest Expense:		(2.0)	Net Interest Expense:		(1.0)
Pre-Tax Income:		6.0	Pre-Tax Income:		6.0
Tax Rate:		33.3%	Tax Rate:		33.3%
Net Income:	**$**	**4.0**	**Net Income:**	**$**	**4.0**
EV / EBITDA:		10.0 x	EV / EBITDA:		5.0 x
EV / EBIT:		12.5 x	EV / EBIT:		5.7 x
P / E:		20.0 x	P / E:		10.0 x

When Company A acquires Company B, the **Combined Equity Value** is equal to Company A's Equity Value plus the value of any Stock issued in the deal.

So if no Stock is used, Combined Equity Value = Company A's Equity Value.

If it's a 100% Stock deal, Combined Equity Value = Company A's Equity Value + Company B's Purchase Equity Value.

It's not that Company B's value "disappears" – instead, its value is *transferred* to the Cash, Debt, and Stock that Company A uses to acquire it.

And then the **Combined Enterprise Value** is equal to the Combined Equity Value, plus the Debt (and other Debt-like Liabilities), minus the Cash (and other non-core-business Assets) of the Combined Company… *including* the Cash or Debt used to fund the deal.

But it's easier to write it like this:

Combined Enterprise Value = Acquirer's Current Enterprise Value + Seller's Purchase Enterprise Value

Here's an example of what happens if Company A uses 100% Debt to acquire Company B and pays no premium for it:

Purchase Consideration:	
Premium Paid for Company B:	0.0%
Purchase Equity Value:	$ 40.0
Purchase Enterprise Value:	40.0
% Cash:	0.0%
% Debt:	100.0%
% Stock:	0.0%
Combined Enterprise Value:	$ 140.0
Combined Equity Value:	80.0

If Company A uses no Stock in this deal, Combined Equity Value = Company A Equity Value.

If Company A pays no premium for Company B, Combined Enterprise Value = Company A Enterprise Value + Company B Enterprise Value.

But in real life, the Acquirer must always pay a premium for a public Seller:

Purchase Consideration:	
Premium Paid for Company B:	25.0%
Purchase Equity Value:	$ 50.0
Purchase Enterprise Value:	50.0
% Cash:	0.0%
% Debt:	100.0%
% Stock:	0.0%
Combined Enterprise Value:	$ 150.0
Combined Equity Value:	80.0

With a premium paid for Company B, the only difference is that Combined Enterprise Value = Company A Enterprise Value + Company B *Purchase* Enterprise Value.

The Combined Equity Value stays the same – it's still Company A's Equity Value – because Company A doesn't issue any Stock in this deal.

You can see everything for yourself if you run through the math:

- Company A Equity Value = $80
- – Combined Cash Balance of $70 ($60 from the Buyer and $10 from the Seller)
- + Combined Debt Balance of $90 ($80 from the Buyer and $10 from the Seller)
- + New Debt of $50
- **= Combined Enterprise Value of $150**

The Combined Enterprise Value tells you how much the Combined Company's core business will be worth to *all investors*, regardless of how the Buyer pays for the Seller.

Play around with the numbers in Excel, and you'll see that the Combined Enterprise Value remains the same as long as Company A pays *the same amount* for Company B.

If Company A pays a 25% premium for Company B using 50% Debt and 50% Stock, the Combined Equity Value changes, but the Combined Enterprise Value remains the same:

Purchase Consideration:		
Premium Paid for Company B:		25.0%
Purchase Equity Value:	$	50.0
Purchase Enterprise Value:		50.0
% Cash:		0.0%
% Debt:		50.0%
% Stock:		50.0%
Combined Enterprise Value:	$	150.0
Combined Equity Value:		105.0

If Stock is used in the deal, the Combined Equity Value will be higher than the Buyer's Equity Value because you add the value of Stock issued.

But the Combined Enterprise Value stays the same!

Since the Combined Enterprise Value stays the same regardless of the purchase method, there's another important implication as well:

Enterprise Value-based multiples for the Combined Company also stay the same regardless of the purchase method.

The logic is simple: An Enterprise Value-based multiple such as EV / EBITDA includes Enterprise Value in the numerator and some financial metric in the denominator.

We already know that Enterprise Value doesn't change, so the numerator of this multiple stays the same.

And since the denominator also stays the same, the multiple must stay the same.

The denominator stays the same because EV-based metrics like Revenue, EBIT, and EBITDA are all *before* Net Interest Expense, so neither the Foregone Interest on Cash nor the Interest Paid on New Debt change anything.

And the additional shares issued don't factor in since these are **not** per-share metrics.

Even a metric like Unlevered Free Cash Flow stays the same because it also excludes the Net Interest Expense and is **not** a per-share metric.

Since the numerator and denominator of EV-based multiples stay the same regardless of the purchase method, EV-based multiples also stay the same regardless of the purchase method.

Here are a few examples of this principle in Excel using the same 25% premium for Company B with different purchase methods:

Purchase Consideration:		Purchase Consideration:		Purchase Consideration:	
Premium Paid for Company B:	25.0%	Premium Paid for Company B:	25.0%	Premium Paid for Company B:	25.0%
Purchase Equity Value:	$ 50.0	Purchase Equity Value:	$ 50.0	Purchase Equity Value:	$ 50.0
Purchase Enterprise Value:	50.0	Purchase Enterprise Value:	50.0	Purchase Enterprise Value:	50.0
% Cash:	0.0%	% Cash:	100.0%	% Cash:	33.3%
% Debt:	50.0%	% Debt:	0.0%	% Debt:	33.3%
% Stock:	50.0%	% Stock:	0.0%	% Stock:	33.3%
Combined Enterprise Value:	$ 150.0	Combined Enterprise Value:	$ 150.0	Combined Enterprise Value:	$ 150.0
Combined Equity Value:	105.0	Combined Equity Value:	80.0	Combined Equity Value:	96.7
Interest Rate on Cash:	3.0%	Interest Rate on Cash:	3.0%	Interest Rate on Cash:	3.0%
Interest Rate on Debt:	10.0%	Interest Rate on Debt:	10.0%	Interest Rate on Debt:	10.0%
Combined EBITDA:	18.0	Combined EBITDA:	18.0	Combined EBITDA:	18.0
Combined EBIT:	15.0	Combined EBIT:	15.0	Combined EBIT:	15.0
Combined Net Income:	6.3	Combined Net Income:	7.0	Combined Net Income:	6.6
Combined EV / EBITDA:	8.3 x	Combined EV / EBITDA:	8.3 x	Combined EV / EBITDA:	8.3 x
Combined EV / EBIT:	10.0 x	Combined EV / EBIT:	10.0 x	Combined EV / EBIT:	10.0 x
Combined P / E:	16.6 x	Combined P / E:	11.4 x	Combined P / E:	14.7 x

The Combined P / E multiple will change based on the Cash / Debt / Stock mix used in the deal...

But the Combined EV / EBITDA and EV / EBIT multiples won't change because the Combined Enterprise Value stays the same, as do the Combined EBITDA and Combined EBIT.

The Combined P / E multiple changes because **both** the Combined Equity Value and the Combined Net Income change based on the purchase method.

The Combined Net Income tends to be lowest for 100% Debt deals because the interest rate on Debt is far higher than the interest rate on Cash, meaning the Combined Net Income will include a higher interest expense and decline by a greater amount.

These concepts are important because many case studies, modeling tests, and interview questions are based on them.

Here's what you can say about the Combined Enterprise Value, Equity Value, and valuation multiples in M&A deals:

1. **Combined Equity Value** = Acquirer's Equity Value + Value of Stock Issued in Deal.

2. **Combined Enterprise Value** = Acquirer's Enterprise Value + Purchase Enterprise Value of Target.

3. **HOW the Combined Valuation Multiples Change** – The Combined Multiples will be in between the Acquirer's multiples and Target's purchase multiples.

4. **Combined Enterprise Value-Based Multiples** – These will **not** change regardless of the purchase method because the Combined Enterprise Value isn't affected by the purchase method, and neither are metrics like Revenue, EBIT, or EBITDA.

5. **Combined Equity Value-Based Multiples** – These *will* change based on the purchase method because the Combined Equity Value changes based on the amount of Stock used, and the Combined Net Income changes based on the amount of Cash and Debt used and the interest rates on them.

Finally, remember that these concepts are **simplifications** that ignore many real-world factors.

For example, **revenue synergies** will affect the Combined EV / Revenue multiple.

If the expected synergies change, then this multiple will change even if the purchase price and purchase method stay the same.

Acquisition effects such as additional D&A on Asset Write-Ups can also distort these numbers.

So these rules are similar to the claim that Enterprise Value is "capital structure-neutral": Enterprise Value is *less* impacted by financing changes than Equity Value, **but there is still an impact**.

And with these rules, Combined Enterprise Value is *less* impacted by the purchase method than the Combined Equity Value.

But there will still be *some* impact, and the real-life outcomes won't match these rules exactly.

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